



Parts & Maintenance Manual

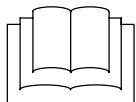
GA 60

Model 544913



WARNING: If incorrectly used this machine can cause severe injury. Those who use and maintain this machine should be trained in its proper use, warned of its dangers and should read the entire manual before attempting to set up, operate, adjust or service the machine.

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.

NOTE: This 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.**

Additional manuals are available through your dealer.

IMPORTANT!

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



WARNING

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

Direct any inquiries to:

Textron Golf, Turf and Specialty Products
Attn: Director of Engineering
P.O. Box 7708
Charlotte, NC 28241-7708 USA

SPECIFICATION INFORMATION

All information contained in this manual is the latest available at the time of printing. Textron Golf, Turf and Specialty Products 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

Textron Golf, Turf and Specialty Products 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:

Textron Golf, Turf and Specialty Products
Attn: Sales
P.O. Box 7708
Charlotte, NC 28241-7708 USA

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

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2 IDENTIFICATION

THESE IDENTIFICATION NUMBERS MUST APPEAR ON ALL CORRESPONDENCE CONCERNING THIS UNIT.

2.1— MODEL NUMBER & SERIAL NUMBER

Both the Model Number and Serial Number are on the identification nameplate located on the right side of the tool box by the gas tank (See Fig. 1).



Figure 1
1. Identification Nameplate

3 SERVICE PARTS AND SUPPORT MATERIAL

Description Part Number

Drive Belt	835063
Chain, #50 sealed roller, 69 links	891956
Connector, #50 sealed	522123
Element, Fuel Filter	821814
Element, Air Filter	840352
Element, Oil Filter	833438
Condenser, Ignition	833475
Spark Plug	835825
Points, Ignition	888587
Rotor, Ignition	888588
Chain Lubricant, Spray	523248
Wool Grease	893078
Safety and Operation Manual	4117232
Coring tines	See pages 81 and 83
Touch up paint, Jacobsen Orange:	
16 oz. (.5L) spray	2700345
1 qt. (.95L) can	2700351
Black, 16 oz. (.5L) spray	814294

4 SPECIFICATIONS

4 SPECIFICATIONS

(subject to change without notice)

Aerating Width:

60" (1524 mm)

Engine:

Bore – 2.62" (66.5 mm)
Stroke – 3.19" (81 mm)
Displacement – 51.7 cu. in. (847 cm³)
Compression Ratio – 9.5:1
Cylinder Compression – 213 PSI at 400 RPM
(1486 KPa at 400 RPM)
Horsepower – 33 h.p. at 3600 RPM
Engine Rotation (viewed from flywheel) –
counterclockwise
Spark Plug Gap – .032 (0.81 mm)
Breaker Point Gap – .017 (0.43 mm)
Ignition Timing – 5° BTDC at 900 RPM
Idle Speed – 1300 RPM (minimum)
Valve Clearance – (Cold) Intake .006 (.15 mm)
(Cold) Exhaust .008 (.02 mm)

Equipment Height: 42" (1067 mm)

Equipment Length: 101" (2565 mm) (GA 60 alone)
172" (4369 mm) (with 3-wheel Turf-Truckster)

Equipment Weight: 2209 lbs. (1002.8 kg) with
440 lbs. (199.7 kg) carried on Turf-Truckster

Equipment Width: 92" (2337 mm)

Hole Spacing: 3 1/2" to 5" variable
(89 mm to 127 mm)

Penetration Depth: 2 1/2" (64 mm) to 4" (102 mm)
maximum (depending on soil conditions)

Truckster Speed: Engine: 2300 RPM (maximum
during aeration)
Aeration: 1500 to 2300 RPM
Transport: Reasonable safe speed (10 mph max.)
Use caution when towing aerator at
speeds above 5 M.P.H.

Standard Tines: Type: Hollow, tapered (self-cleaning)
Material: Through hardened steel
Quantity: 24 tines per unit
Sizes: 3/4" (19 mm)

Tires: Size: 23 – 10.50 x 12 High flotation
Recommended Pressure – 18 psi

4.1— TOWING VEHICLE SPECIFICATIONS (Utility Vehicles)

NOTE: It is recommended that an 8720 or later model Cushman Turf-Truckster be used to tow and operate the GA-60 aerator. The following towing vehicle specifications must be met to insure proper and safe operation of the GA-60.

Minimum towing vehicle weight – 1000 lbs. (454 kg)

Hitch height – approximately 31 1/4" (794 mm) for 9120 and prior models and approximately 25" (635 mm) for 9210 and later models.

Vibration dampening hitch required.

Mechanism to insure towing vehicle will not tip over backwards when attached to GA-60.

Brakes – 7" (178 mm) hydraulic (minimum) on axle with most weight.

Brake light system to power the electric brakes.

Hydraulic system requirements: 1800 psi minimum at 5 gallons per minute.

Variable speed governor (22 H.P. minimum engine size).

Mechanical transmission and drive to prevent change in ground speed.

Ability to maintain constant 1–2 mph speed with governed engine for 3 1/2" – 5" (89 mm to 127 mm) core spacing.

With the aerator heads raised, the GA-60 can be transported at any reasonable safe speed (**10 m.p.h. maximum**). **ALWAYS** use extreme care when towing aerator at any speeds above 5 m.p.h.

4.2— TURF UTILITY TRACTOR SPECIFICATIONS

Minimum weight of utility tractor – 2700 lbs. (1225 kg).

12 volt negative ground electrical system.

Standard drawbar approved by tractor manufacturer. Drawbar height must be 13 – 19.7 inches (330–500 mm) from ground to top of drawbar.

Hydraulic system with 1800 to 2250 psi (12.4 to 15.5 MPa) maximum pressure. Minimum output of 3 gallon per minute (11.4 L/min). Quick couplers located at rear of tractor.

Braking system capable of controlling the tractor and the towed GA-60 weighing 2300 lbs. (1044 Kg).

Governor and properly geared transmission capable of controlling ground speed from 1 to 2 mph (1.6 to 3.2 km/hr) while aerating.

With the aerator heads raised, the GA-60 can be transported at any reasonable safe speed (**10 m.p.h. maximum**). **ALWAYS** use extreme care when towing aerator at any speeds above 5 m.p.h.

5—— SERVICE AND MAINTENANCE**WARNING**

When performing service or maintenance work on the GA 60, **ALWAYS** lock the uplatch bar in place to prevent the aeration heads from being lowered accidentally or due to a loss in hydraulic pressure. Set the park brake on the tractor.

If any type of work is to be performed on the GA 60, disconnect the power cord and remove the key from the towing vehicle. This will prevent the GA 60 and the towing vehicle from being accidentally started.

When replacement parts are required, use genuine RYAN parts or parts with equivalent characteristics such as type, strength and material. Failure to do so may result in product malfunction and possible injury to the operator and/or bystanders.

NEVER attempt to perform service or maintenance functions on the GA 60 if you are UNTRAINED or UNAUTHORIZED. Improper maintenance can and will cause hazardous conditions. For necessary maintenance and service, contact your authorized RYAN dealer.

When it is necessary to raise the GA 60PT for any repair or service, use jackstands to help provide adequate support.

DO NOT rely on hydraulic or mechanical jacks for support.

Immediately replace any warning and/or safety decal that becomes damaged or difficult to read.

To reduce hazard of fire, always keep engine free of excessive grease. If fuel system leakage is detected, repair leak immediately. **DO NOT** operate unit until leak is repaired. **ALWAYS** stop engine and do not allow open flames or sparks when performing any maintenance function involving gasoline.

This product is heavy equipment and may present a crush hazard unless safety precautions are taken.

DO NOT operate equipment without all shields and guards in place.

To prevent possible injury, keep bystanders a safe distance away from machinery.

DO NOT make any adjustments or perform any maintenance while the engine is running.

BE SURE to read the service section of this operators manual prior to performing any service work on this product.

5.1—— RECOMMENDED SAE VISCOSITY GRADES

Use SAE 10W30 SG or SH for all temperature ranges. Using oil other than the service classes listed, or oil change intervals longer than recommended, will greatly reduce engine life. Damage caused by improper maintenance such as incorrect oil quality and/or viscosity, are not covered under Cushman warranty.

5.2—— DRIVE CHAIN LUBRICATION

To prevent rust and prolong chain life, **BE SURE** the chains are well lubricated at all times. Use chain lubricant, spray (Part No. 523248).

5.3—— ENGINE OIL LEVEL

The oil level must be maintained between the two marks on the dipstick at all times.

NEVER overfill engine oil. Overfilling engine oil will cause overheating and damage may result.

Engine oil should be checked with aerator heads down, and the tines resting on the ground to obtain an accurate reading.

Checking oil level with the aerating heads in the "RAISED" position will give you inaccurate readings.

5.4—— ENGINE OIL FILTER

The oil filter may be removed with an oil filter strap wrench or similar tool. **DO NOT** use wrench when replacing the filter. Use hand pressure **ONLY** to tighten oil filter.

When replacing the filter, oil the rubber seal and screw element on until the seal contacts the crankcase, then tighten 1/2 turn more.

5 MAINTENANCE

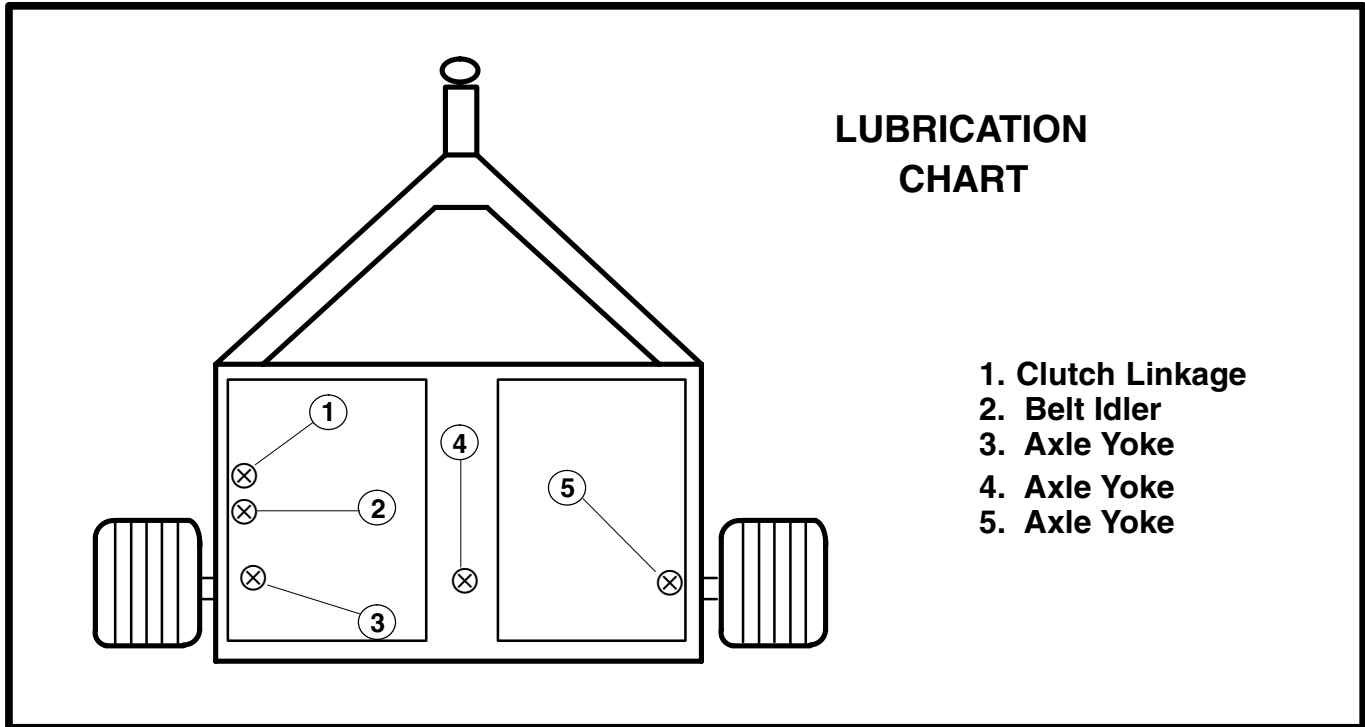
5.5 MAINTENANCE GUIDE

The following maintenance chart has been compiled as a general guideline for service intervals, based on hours of operation.

Maintenance Operation	Daily	Weekly	100 Hrs	200 Hrs	600 Hrs or Yearly	Every 1500 Hrs
Check tire pressure	●					
Check chain alignment	●					
Check belt alignment	●					
Check radiator coolant level	●					
Clean radiator intake screen	●					
Check engine oil level	●					
Lubricate axle pivots	●					
Lubricate belt idler pivot	●					
Lubricate clutch linkage bellcrank	●					
Lubricate aerator drive chains	●					
Check air cleaner element ◇		●				
Check chain tension	●					
Change engine oil ◇◇			●			
Change engine oil filter ◇◇			●			
Check brake adjustment			●			
Check clutch adjustment					●	
Check governor oil level			●			
Check PTO oil level			●			
Check and adjust valve clearance						●
Check point gap					●	
Check spark plugs and replace as required					●	
Check slip clutch for rust and readjust			●			
Lubricate clutch lever					●	
Replace fuel filter					●	
Check starter motor brushes					●	
Check brake linings					●	
Drain and replace radiator coolant					●	
Check and clean clutch linkage					●	
Replace main drive belt						●
Replace engine timing belt						●

◇ Depending on the operating conditions, the air cleaner element may need more frequent replacement to maintain engine performance and help avoid unnecessary repairs.

◇◇ Depending on the operating conditions, the engine oil and oil filter may need more frequent changing to maintain engine performance and help avoid unnecessary repairs.



5.6 ————— LUBRICATION FITTINGS

There are five (5) lubrication fittings that should be lubricated daily with a standard lithium based grease.

Three (3) fittings are located on the rear axle yoke assemblies. Refer to Figure 2 for lubrication points.

NOTE: When lubricating the rear axle yoke assemblies, the wheels should be off the ground and the weight should be off the rear axle to allow proper lubrication of the yoke.

One (1) fitting is located on the clutch linkage pivot tube, and the fifth is located at the drive belt idler pivot.

The four (4) drive chains in the aerator head assembly should be sprayed with chain lubricant, spray (Part No. 523248) each time the GA 60 is refueled, to greatly extend chain life.

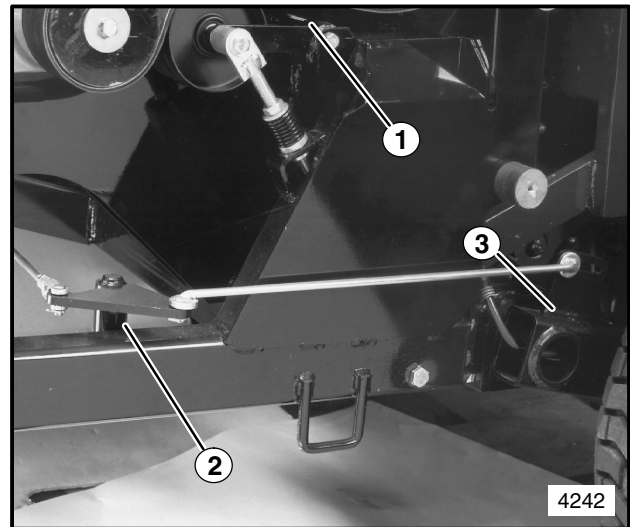


Figure 2

- 1. Belt Idler Lube Fitting
- 2. Clutch Linkage Lube Fitting
- 3. Axle Yoke Lube Fittings (3)

5 MAINTENANCE

5.7— AIR CLEANER

This is a large capacity, dry type air cleaner with a replaceable paper element.

5.8— SERVICING AIR CLEANER ELEMENT

NOTE: DO NOT use bent or damaged air cleaner element.

DO NOT use a bent or dented air cleaner assembly.

IMPORTANT!

A FILTER ELEMENT BECOMES MORE EFFICIENT REMOVING DUST FROM THE AIR AS THE FILTER ELEMENT BECOMES DIRTY.

WE RECOMMEND THE FILTER ELEMENT BE REPLACED BEFORE ENGINE PERFORMANCE IS AFFECTED. THIS MAY OCCUR AT 250 HOURS OF SERVICE IN VERY DIRTY OPERATING CONDITIONS OR AT 500 HOURS IN NORMAL OPERATING CONDITIONS.

WE **DO NOT** RECOMMEND CLEANING THE FILTER ELEMENT BECAUSE OF THE POSSIBILITY OF DAMAGING THE ELEMENT.

5.9— CHECKING ELEMENT

Check element for damage, pin holes, etc. by placing a light source such as a flashlight inside.

5.10— INSTALLING ELEMENT

1. Clean dust from inside of housing with a damp cloth.
BE SURE dust does not enter intake.
2. Check all gaskets to make sure they are not loose or damaged.
3. Insert element into housing as shown in Figure 3.
4. Apply a light grease film to the nylon washer and wing nut. Secure element with washer and wing nut.

NOTE: The dust collector empties automatically when properly installed with collector pointing DOWN. Refer to Figure 4 for proper positioning.

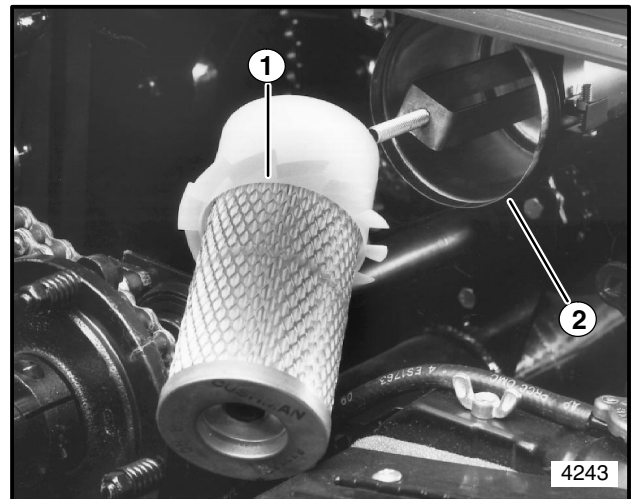


Figure 3
1. Filter Element
2. Filter Housing

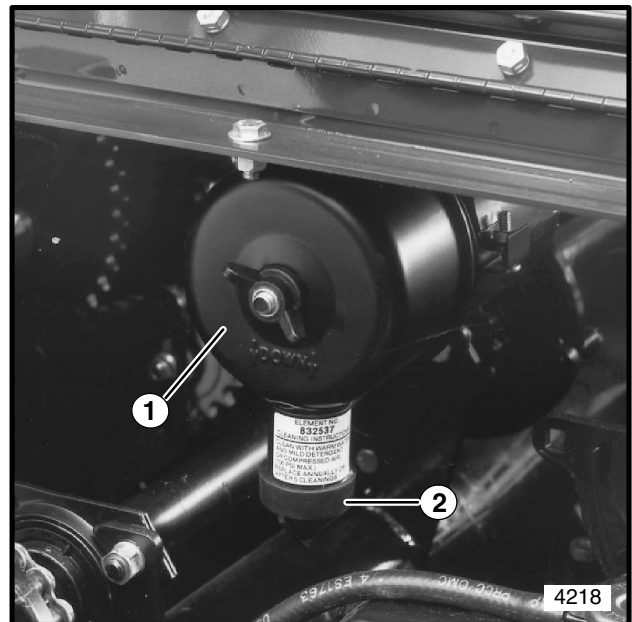


Figure 4
1. Filter Assembly
2. Dust Collector

5.11 — FUEL SYSTEM

Fuel Capacity 10 gal. (45.4 L)
 Gasoline good grade of non-leaded only,
 87 octane minimum

GASOLINE CONTAINING ALCOHOL

We **DO NOT** recommend the use of ALCOHOL bearing fuels in any of our products. The use of these fuels may create a potential safety hazard. See warning below.

**WARNING**

Gasoline containing ALCOHOL can cause deterioration of some non-metallic materials in the fuel system.

Gasoline containing ALCOHOL will attract and hold moisture inside fuel tanks. Moisture may cause corrosion of metallic parts within the fuel system.

Fuel leakage from a fuel system, may occur while the system is in use, in transit, or in storage. Such leakage can contribute to an explosion or fire causing serious bodily injury or death.

NOTE: The use of alcohol bearing fuels may cause engine malfunction, particularly “vapor lock” at temperatures above 50° F (10° C).

**WARNING**

Remove fuel tank cap slowly. Fuel tank pressure may cause spray which can cause injury.

Gasoline is extremely flammable and highly explosive under certain conditions.

Never remove the fuel tank cap or attempt to refuel the GA-60 or Turf-Truckster while either engine is operating.

Never refuel indoors.

Always wipe up any spilled gasoline.

Never operate any equipment without an approved gas cap on the fuel tank filler opening.

5.12 — FUEL FILTER

The fuel filter is secured to the main frame just to the right of the fuel tank as shown in Figure 5.

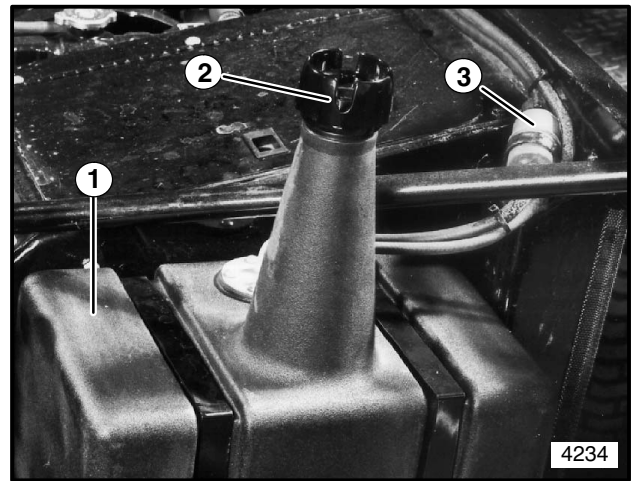


Figure 5

- 1. Fuel Tank
- 2. Fuel Tank Cap
- 3. Fuel Filter

5.13 — ENGINE CHOKE CONTROL

The choke control of the GA-60 engine is automatically applied during starting and warm-up to allow easier starting and smoother operation of engine.

5 MAINTENANCE

5.14 ENGINE COOLING SYSTEM

Radiator Capacity 8 qts. (7.57 L)

IMPORTANT!

FILLING THE COOLING SYSTEM REQUIRES A SPECIAL FILLING PROCEDURE TO REMOVE AIR.

FAILURE TO FOLLOW THIS SPECIFIC PROCEDURE WILL CAUSE ENGINE OVERHEATING AND POSSIBLE ENGINE FAILURE.

5.15 FILLING COOLANT SYSTEM

A 50/50 mixture of a good grade ethylene glycol antifreeze and clean water is recommended.

It is important that antifreeze and water are mixed in a separate container before adding.

NEVER add straight antifreeze to radiator. The mixture must **NEVER** be more than 50% antifreeze.

1. Add coolant until it is up to filler port. **DO NOT** install radiator cap.
2. Locate petcock on engine head near fuel pump. Start engine and slowly open petcock to bleed cooling system. Close petcock when coolant is steadily flowing from hole in petcock (See Fig. 6).

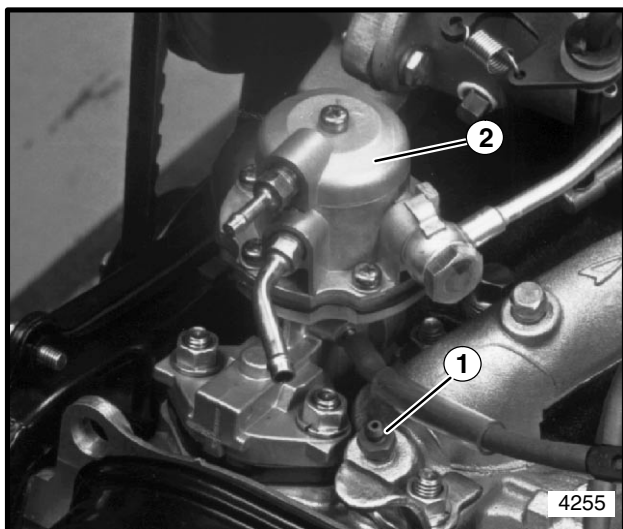
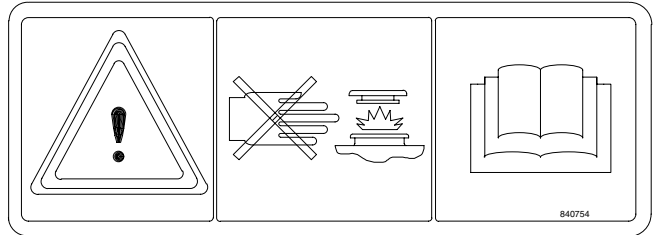


Figure 6

1. Petcock
2. Fuel Pump

3. Run engine until thermostat opens and coolant level drops. Stop engine.
4. Add additional coolant until level rises to filler port. Install radiator pressure cap.



WARNING

DO NOT remove radiator cap while engine is hot. Radiator contents are under pressure and spray may cause serious injury. Read this manual thoroughly to be aware of safe operating procedures.

NOTE: ALWAYS check coolant level in the radiator. The correct level in the reservoir tank does **NOT** assure the radiator is full.

Check engine radiator and screen for accumulation of dirt or debris. Maintaining this area will help the engine run cooler.

Clean with compressed air. **DO NOT** use water under pressure unless all water is blown from the radiator after cleaning. Water will collect dirt and may clog radiator fins.

Check radiator and coolant hoses for leaks or faulty connections. Repair or replace as needed. Failure to maintain the cooling system will cause permanent engine damage.

5.16 ————— ENGINE OIL

Engine Oil use only oils recommended
for service class SG or SH
Crankcase capacity 2.8 quarts (2.7 L)

5.17 — RECOMMENDED SAE VISCOSITY GRADES

Use SAE 10W30 SG or SH for all temperature ranges. Using oil other than the service classes listed, or oil change intervals longer than recommended, will greatly reduce engine life. Damage caused by improper maintenance such as incorrect oil quality and/or viscosity, are **NOT** covered under Cushman warranty.

5.18 ————— ENGINE OIL LEVEL

NOTE: The oil level must be maintained between the two marks on the dipstick at all times.

NEVER overfill engine oil. Overfilling engine oil will cause overheating and damage may result.

Engine oil should be checked with aerator heads down, and the tines resting on the ground to obtain an accurate reading.

Checking oil level with the aerating heads in the "RAISED" position will give you inaccurate readings.

5.19 ————— ENGINE OIL FILTER

The oil filter may be removed with an oil filter strap wrench or similar tool. **DO NOT** use wrench when replacing the filter. Use hand pressure **ONLY** to tighten oil filter.

When replacing the filter, oil the rubber seal and screw element on until the seal contacts the crankcase, then tighten 1/2 turn more.

5.20 ————— DRIVE CHAIN LUBRICATION

To prevent rust and prolong chain life, **BE SURE** the chains are well lubricated at all times. Use chain lubricant, spray (Part No. 523248).

5.21 ————— GOVERNOR LUBRICATION

Check the governor oil level after every 100 hours of operation. The oil level plug is located on the LEFT side of the governor housing as shown in Figure 7. Add approximately 1.5 oz. (44 ml) of 20W engine oil or until it runs out of the oil level hole. Reinstall and tighten oil level plug.

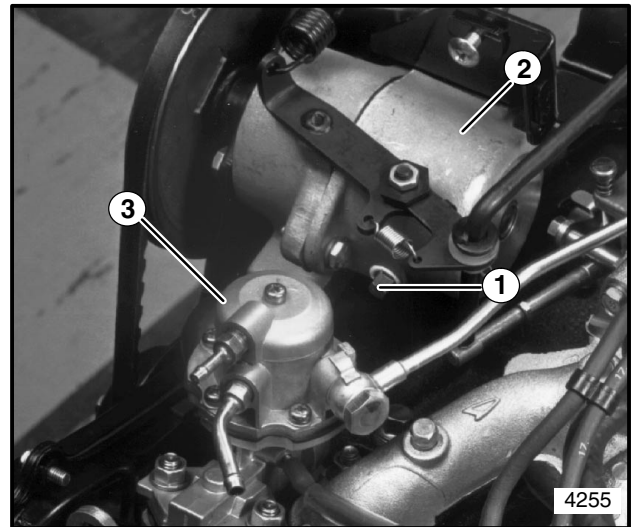


Figure 7
1. Oil Level Plug
2. Governor
3. Fuel Pump

5.22 ————— PTO LUBRICATION

The oil level in the PTO should be checked at least after every 100 hours of operation.

If additional oil is required, remove allen head screw from the side of PTO case and the pressure relief valve from the top of the case.

Fill with 80W oil through the top hole until the oil runs out of the lower hole.

Replace both the pressure relief valve and the allen head screw in the PTO case.

5 MAINTENANCE

5.23 — HYDRAULIC FLUID

The hydraulic system on the GA-60 is filled before being shipped from the factory.

Normally the system should not require any additional fluid be added unless a leak develops.

NOTE: To avoid damage to the hydraulic system, repair any leaks immediately and refill the system using GreensCare 68 Biodegradable Hydraulic Oil. **DO NOT** operate GA-60 until system has been repaired and oil refilled.

DO NOT substitute any other type of fluid in the hydraulic system.

NEVER overfill the hydraulic system.

To prevent dirt from entering the hydraulic system when the aerator is not being used, connect the two hydraulic hoses of the GA-60 together.

5.24 — ELECTRIC BRAKES

NOTE: The GA-60 is equipped with electric brakes that are adjusted prior to leaving the factory.



WARNING

Factory adjusted electric brakes will aid you in stopping but will not reach their peak efficiency until the brake shoes have “seated”.

The GA 60 brakes are not functional when a tractor is being utilized as a towing vehicle. **BE SURE** the tractor weighs at least 2700 lbs. and has adequate brakes to safely stop both the tractor and the GA 60.

5.25 — ELECTRIC BRAKE OPERATION

To apply GA-60 electric brakes, press down on the brake pedal of the Turf-Truckster which activates the GA-60 brakes.

For emergency stops, press and hold the red brake activating bar located under the dash on the left side of the Turf-Truckster.

The amount of braking pressure is regulated by the rheostat on the brake activating bar. Turning clockwise will increase pressure and counterclockwise will decrease pressure.

5.26 — BRAKE ADJUSTMENT

Check brakes periodically and adjust when necessary. The following adjustment procedures should be followed:

NOTE: All of the following adjustments are made with the brakes **NOT** applied.

1. Using a floor jack, raise one wheel off the ground.
2. Tighten brake adjustment notch until the wheel will not rotate, then loosen adjustment notch until there is no drag by the brake shoes.
3. Lower unit to the ground and repeat procedure on opposite side.

5.27 — SLIP CLUTCH ADJUSTMENT

Before the start of each aerating season, the slip clutch should be checked for rust and re-adjusted.

1. Loosen the six (6) inner locknuts located on the inside of the clutch spring plate (See Fig. 8).
2. Carefully remove and retain the six (6) outer lock nuts to allow the spring plate to be removed. Remove the six (6) inner lock nuts and disassemble the the clutch.
3. Check for rust on clutch plates. If rust is present on clutch plates, remove the rust using crocus cloth. Mix 1 part wool grease (part no. 893078) to 7 parts kerosene and apply a light coat to the surfaces of the clutch liners contacting the clutch disc.
4. Reassemble clutch and reinstall spring plate using original lock nuts. Tighten outer nuts equally until each spring length is 15/16” (24 mm). Tighten inner lock nuts after the 15/16” (24 mm) measurement is attained at all spring locations.

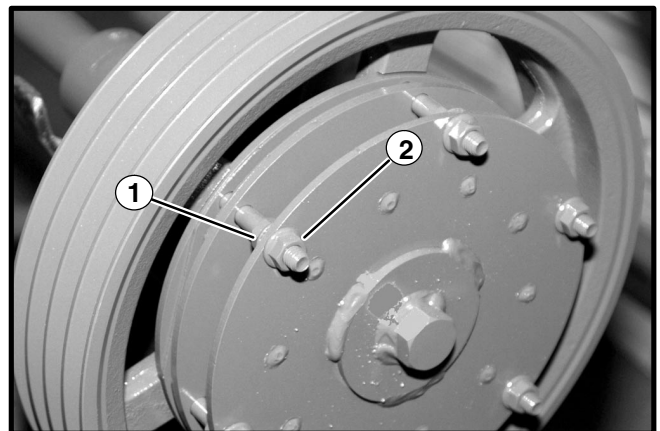


Figure 8

1. Inner Locknuts
2. Outer Locknuts

5.28 ————— BATTERY

The GA-60 derives electrical power for starting and operation from the battery of the towing vehicle. The electrical power is transferred by way of a quick disconnect power cable (parts included in the GA-60 loose parts bag or the tractor tow hitch extension accessory).

Volts 12
 Ampere Hour Rating 70
 Ground Terminal Polarity Negative

**WARNING**

UNTRAINED/UNAUTHORIZED persons should **NEVER** attempt to service or recharge the battery of the towing vehicle.

The factory installed Turf-Truckster battery is a “low maintenance” type battery. Add distilled water only as required.

**WARNING**

Battery electrolyte is an acidic solution and should be handled with extreme care. If electrolyte is spilled or splashed on any part of the body, immediately flush the exposed area with liberal amounts of water and obtain medical aid immediately.

NOTE: Keep top of battery clean and free of corrosion by washing with a solution of baking soda and water or ammonia and water. Terminals with heavy corrosion should be removed and cleaned. After cleaning, reposition cable on battery post and resecure.

5.29 ————— TIRE PRESSURE

The recommended tire pressure is 18 psi. **DO NOT** operate the GA 60 with over inflated or underinflated tires.

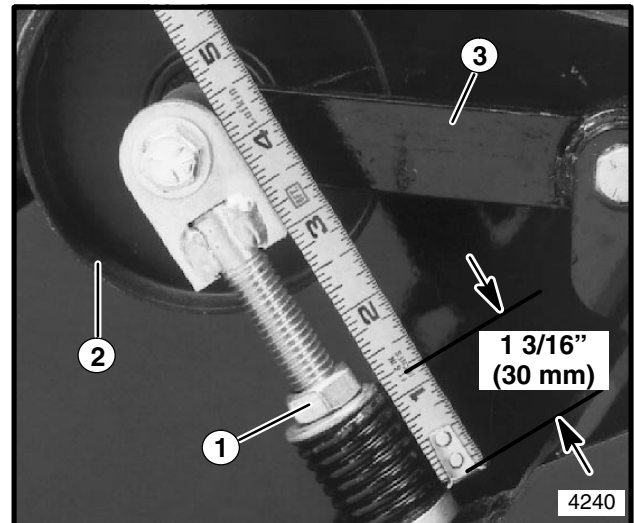
NOTE: Improper inflation will greatly shorten the life of your tires.

**WARNING**

Caution must be used when re-inflating or bringing a low tire to recommended pressure. Check air pressure with a gauge before connecting an air hose to a partly inflated tire.

5.30 ————— BELT REPLACEMENT

1. Loosen the spring tension nut on the belt idler until the belt is loose enough to be removed. Remove and discard old belt.
2. Place the new belt over the PTO pulley and the main drive pulley.
3. Tighten the spring tension nut on the belt idler until the spring length is 1 3/16" (30 mm) as shown in Figure 9.

**Figure 9**

1. Spring Tension Nut
2. Belt Idler Pulley
3. Belt Idler

5 MAINTENANCE

5.31 ————— REVERSING GEAR BOX

NOTE: The reversing gearbox is heavy. **BE SURE** it is not dropped while being removed from the GA-60.

1. Unscrew plugs from gearbox halves and turn gearbox upside down in a drain pan to drain gear oil before disassembly. Later units are filled with grease.
2. Once gearbox has drained, loosen and remove four (4) 3/8" screws, lockwashers and locknuts securing gearbox halves.
3. Separate gearbox halves and remove gasket. Clean and rinse out the grease from the gearbox halves.
4. Prepare case half surfaces for installation of new gasket.
5. Using a new gasket, place both gearbox halves upside down on a flat surface and carefully engage the gears so both vertical links are pointing straight up and are facing forward when the gearbox halves are placed together.
6. Loosely bolt the gearbox halves together using the original hardware, making sure the lockwashers are against the screw heads.
7. With the gearbox still upside down on a flat surface, laterally slide the halves together to get zero backlash on the gears (when both links are pointing upward). Tighten the four (4) 3/8-24 x 1 1/4" screws to secure the gearbox halves together and torque to 35 ± 5 ft. lbs. (47 ± 7 N-m). Refer to Figure 10.
8. Fill gearbox with grease by pumping into one gearbox plug hole and filling until it comes out the other hole.

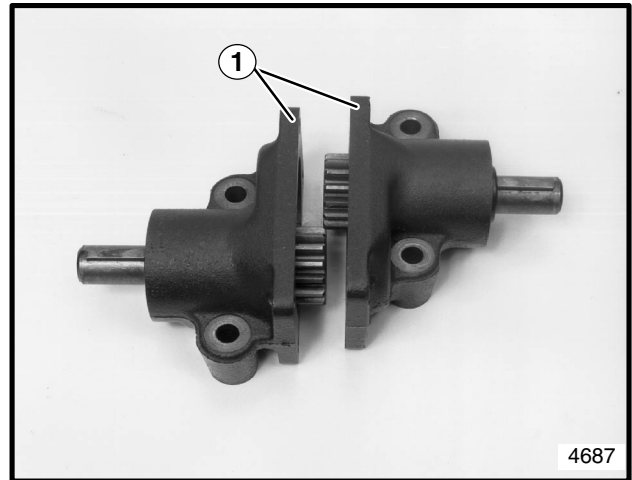


Figure 10
1. Gearbox Halves

5.32— AERATOR TIMING ADJUSTMENT

1. Loosen chain idlers to allow easier removal of chains. Remove and retain connector links and O-rings from each of the four (4) chains. Remove and retain chains for reassembly.

NOTE: Facing the aerator heads from behind the unit and counting the crank arms from left to right, crank arms #1 and #8 should be parallel with the top plate and pointing forward and crank arms #4 and #5 should be vertical and pointing down. Crank arms #2 and #7 should be horizontal and point back, and crank arms #3 and #6 should be vertical and pointing up. Refer to illustration on following page.

2. When crank arms are positioned properly, reassemble the chains and resecure the chain idlers.

NOTE: Self adjusting idler sprockets will maintain chain tension. Pull idler adjust lever until the urethane spring measures 1 1/8" (29mm). The urethane spring will keep the proper chain tension. **BE SURE** when the urethane spring is compressed evenly, **NOT** bending (See Fig. 11).

3. Reinstall rear cover panels and secure with original flangelock screws. Lower top cover panels and latch in the "DOWN" position.

NOTE: To prevent rust and prolong chain life, **BE SURE** the chains are well lubricated at all times. Use chain lubricant, spray (Part No. 523248).

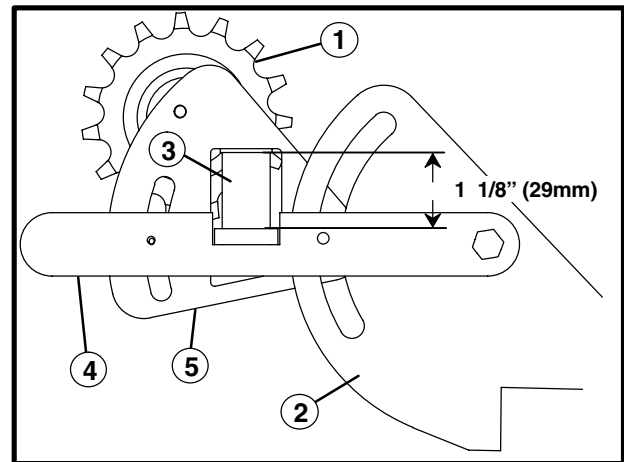
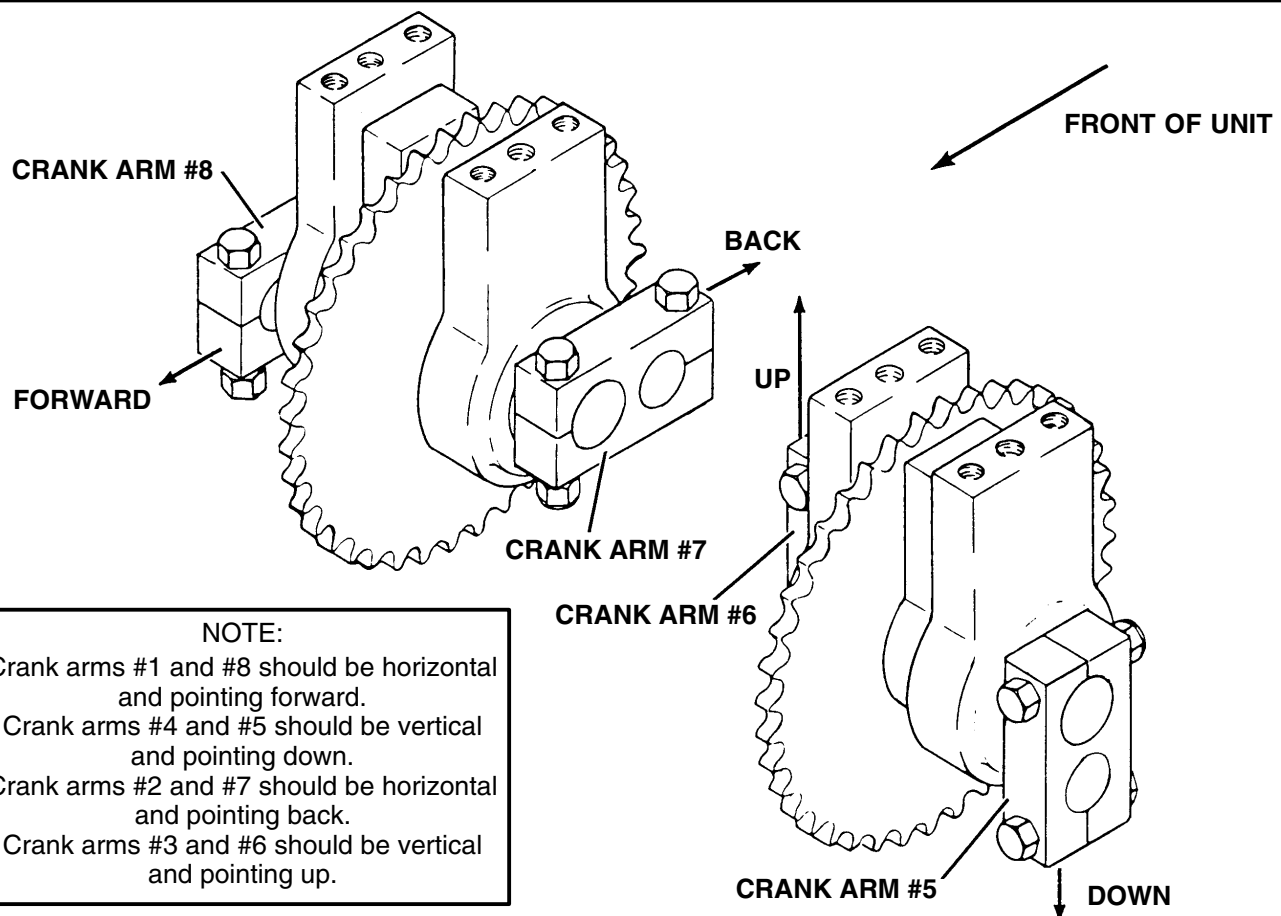


Figure 11

1. Idler Sprocket
2. Bracket Welded on Main Frame
3. Urethane Spring
4. Idler Adjust Lever
5. Chain Tensioner Pivot



5 MAINTENANCE

5.33 ——— TURF GUARD ADJUSTMENT

1. Adjust downstop bushings firmly against square posts of downstop brackets as shown in Figure 12.
2. Check the alignment of the turf guards by placing a line in each of the tine holders and slowly lowering the tine rams by rotating the main drive pulley. The tines should be centered between the fingers of the turf guards to keep the tines from striking the turf guards.
3. When you have the proper alignment, tighten the hardware securing downstop bushing to upstop bracket.

NOTE: After tightening the hardware securing downstop bushing, the distance between the downstop brackets and the upstop bracket should be approximately $3/16'' - 3/8''$ (4.7 mm – 9.6 mm). Refer to Figure 13.

The distance between downstop bracket and upstop brackets may be adjusted by removing one of the $1/2''$ washers between the spring and pivot bracket and turf guard mount bracket.

If one of the $1/2''$ washers is removed, a $1/2''$ lockwasher must be added to the screw securing the turf guard mount bracket to the spring and pivot bracket.

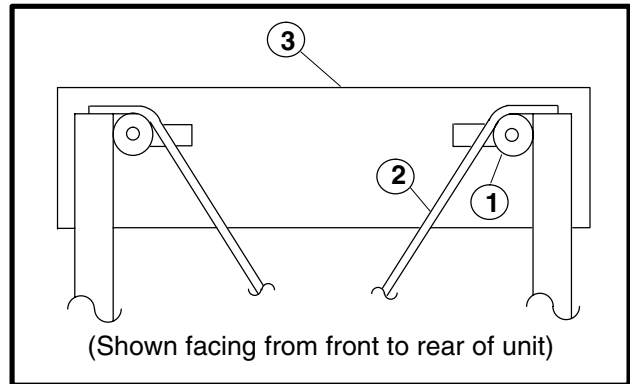


Figure 12

1. Downstop Bushing
2. Downstop Bracket
3. Upstop Bracket

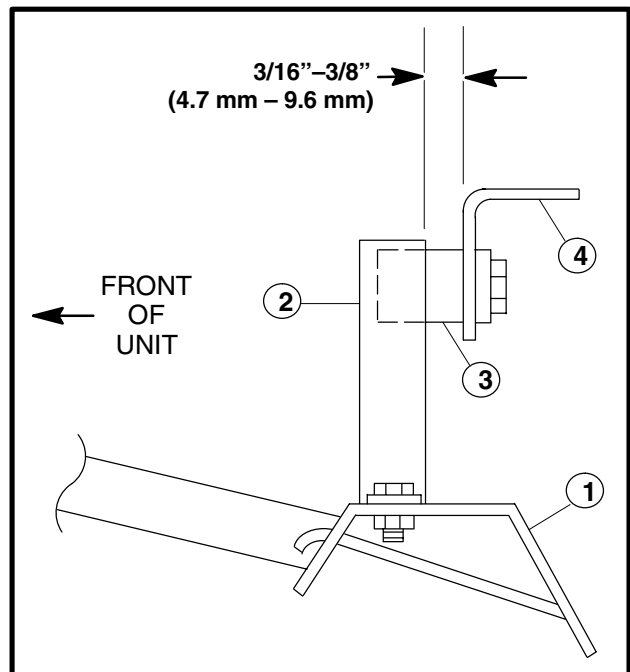


Figure 13

1. Turf Guard Mounting Bracket
2. Downstop Bracket
3. Downstop Bushing
4. Upstop Bracket

5.34— LATERAL TINE RAM ADJUSTMENT

1. Measure the distance between the center of the tine holders by rotating the main drive pulley until two (2) of the four (4) tine holders are parallel with each other. Measure as shown in Figure 14.

NOTE: The distance between the individual tine holders should be 7 1/2" (191 mm).

2. If the distance between the tine holders is not 7 1/2" (191 mm), loosen the two (2) lower nuts on the vertical link on the reversing gearbox to allow the pivot pin that passes through the vertical link to be moved to the right or left to help you achieve the proper distance between tine holders.
3. Adjust all four (4) tine rams until they are equally spaced 7 1/2" (191 mm) at the centers of the tine holders. Resecure nuts on the vertical links and repeat the same procedure on the opposite side to align the other four (4) tine rams.

NOTE: Each of the four (4) tine rams on either side will be equally spaced at 7 1/2" (191 mm) but the two center tine rams will be spaced farther apart because of the spacing between the two individual head assemblies.

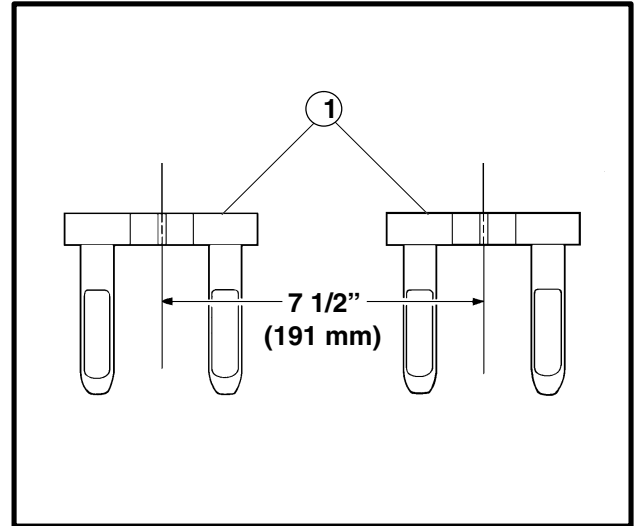


Figure 14
1. Tine Holders

5 MAINTENANCE

5.35— THROTTLE & CLUTCH LINKAGE ADJUSTMENT

Throttle Linkage Adjustment



WARNING

Remove all tines from tine holders before performing the following linkage adjustments. If tines are not removed, bystanders may be injured or the unit may be damaged.

1. Start GA 60 and raise aerator heads to the "UP" position. Secure the uplatch bar (with heads in "UP" position) to prevent lowering of heads.
2. Work on adjustable rod with yokes on either end. Remove the clevis pin at yoke to disconnect the adjustment rod at pivot connector (See Fig. 15).

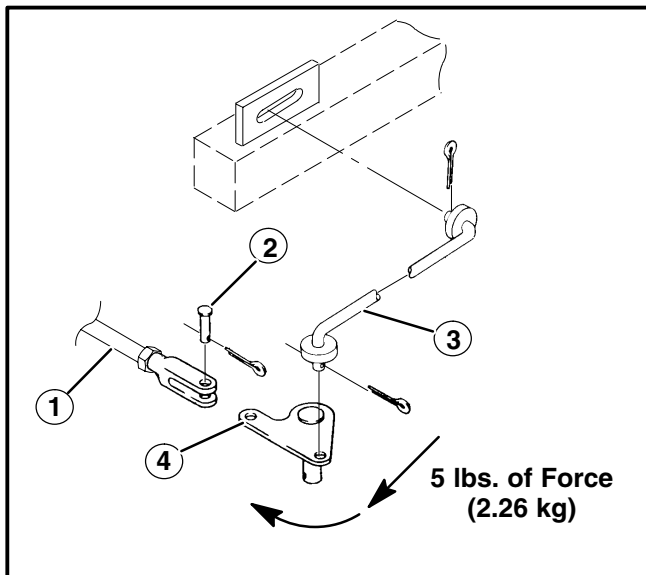


Figure 15

1. Adjustable Rod
2. Clevis Pin
3. Fixed Rod
4. Pivot Connector

3. Rotate and push on pivot toward adjustable rod while pulling on the rod end toward pivot with 5 pounds (2.26 kg) of force. The distance center to center between the rod yoke end and pivot connector should be one inch (25mm). Turn rod yoke in or out until proper dimensioning is achieved (See Fig. 16).

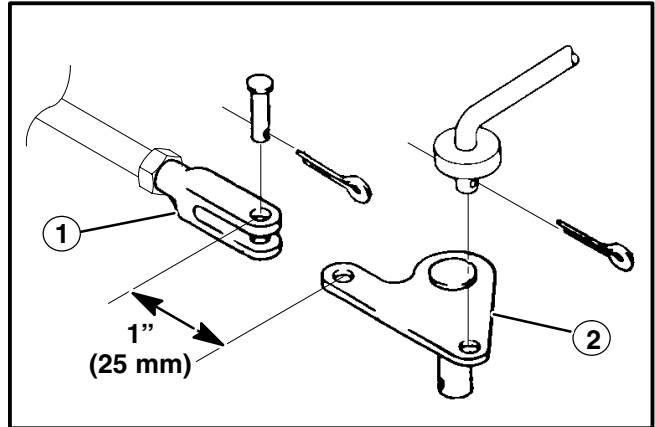


Figure 16

1. Rod End Yoke
2. Pivot Connector

4. Unlatch the uplatch bar and lower the aerating heads to ease installation of the clevis pin into the yoke and pivot connector. Secure clevis pin with a new cotter pin. **DO NOT** reuse any cotter pins.

Engine Acceleration Timing

5. **BE SURE** the aerator heads are raised to the "UP" position.
6. The first point to check is the adjustment of the throttle rod pin at the control rod. Remove the cotter pin, two (2) washers and the spring securing the throttle rod pin to the clutch arm. Observe that one (1) washer goes on either side of the side of the spring during reassembly (See Fig. 17).
7. The throttle rod pin should drop into the slot toward the front of the clutch arm. Adjust pin as necessary by threading in or out. Secure pin with two (2) original washers and spring. Retain with a new cotter pin (See Fig 17).

NOTE: Shortening the control rod will make engine speed up more quickly when the aerator head is lowered.

Lengthening the control rod will delay engine acceleration when the aerator head is lowered.

Upper And Lower Throttle Adjustment

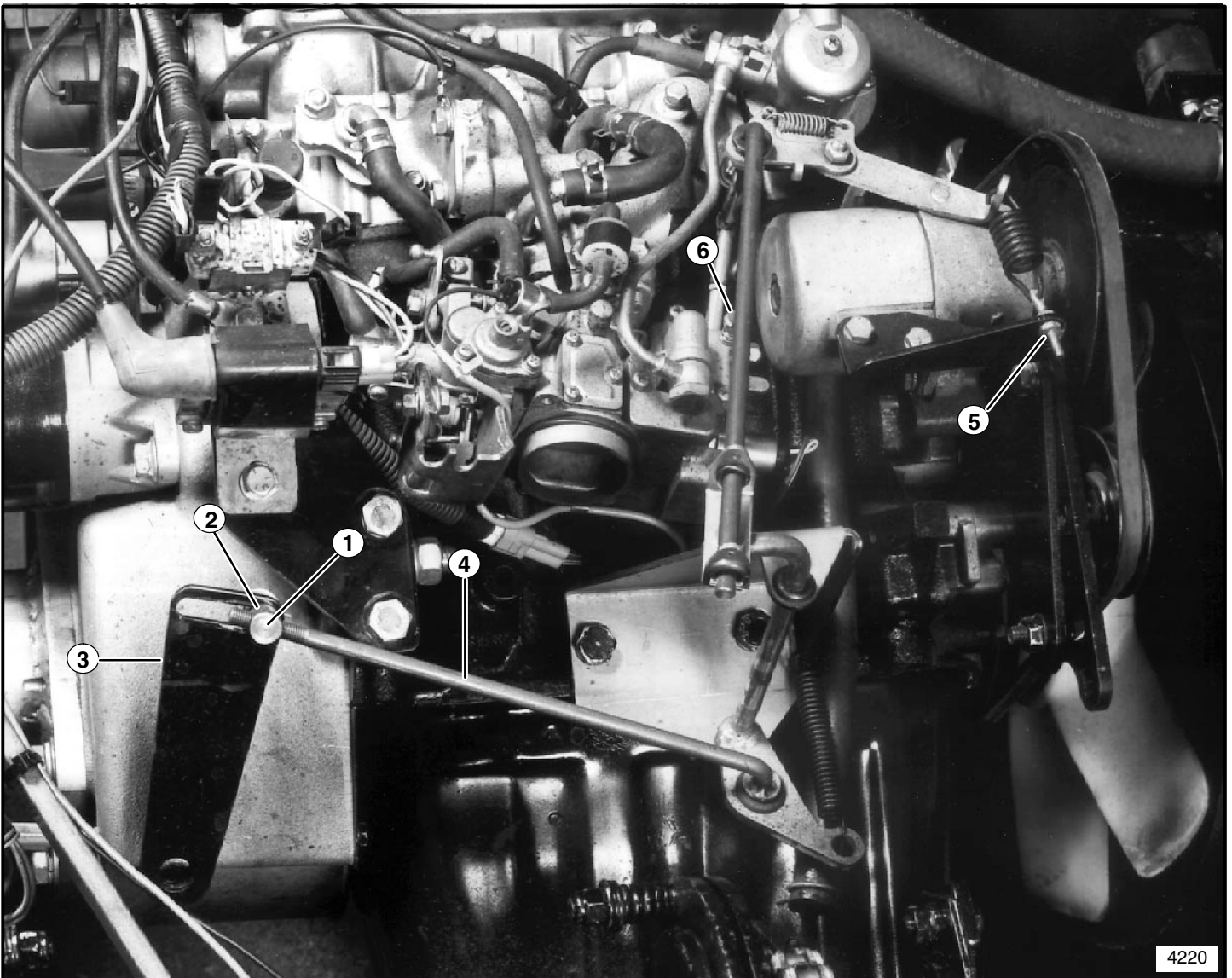
8. High engine RPM is achieved by turning in or out the adjusting nuts located at the end of the governor return spring (See Fig. 17).
9. Connect tachometer to engine. Start engine.



WARNING

Lowering aerator head will create movement in the aerator arms. Stay away from moving arms to avoid unnecessary injury to yourself or bystanders. BE SURE tines have been removed before lowering aerator heads.

10. Lower aerator head and adjust spring tension at governor return spring until engine runs at 3600 RPM at normal operating speed.
11. Raise aerator head, engine will slow to idle speed. Adjust idle with screw on top of carburetor. Set idle speed at 1000 RPM (See Fig. 17).



4220

Figure 17

- | | |
|---------------------------------|--|
| 1. Throttle Rod Pin | 4. Control Rod |
| 2. Cotter Pin, Washers & Spring | 5. Governor Return Spring Adjusting Nuts |
| 3. Clutch Arm | 6. Idle Adjustment Screws |

6 STORAGE

5.36 TOWING

With the aerator heads raised, the GA-60 can be transported at any reasonable safe speed (**10 m.p.h. maximum**). **ALWAYS** use extreme care when towing aerator at any speeds above 5 m.p.h.

NOTE: The GA-60 may be damaged if towed on a flatbed trailer without the aerator heads lowered. Place boards or similar type material on trailer to prevent damage to trailer and/or tines when the heads are lowered.

6 STORAGE INSTRUCTIONS



WARNING

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

6.1 DAILY STORAGE

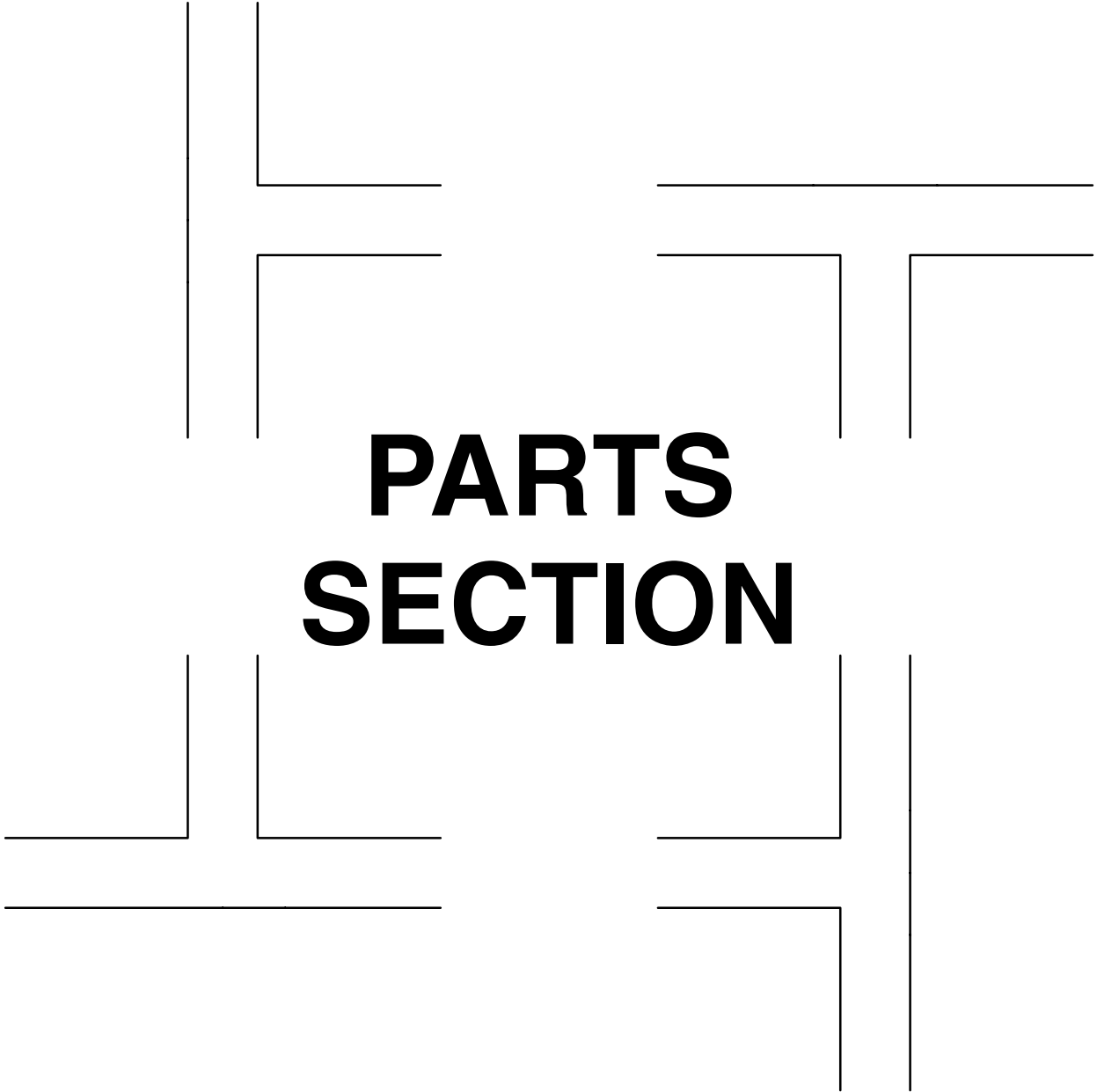
1. Inspect and clean tines, replace any broken or damaged tines as required.
2. Check engine oil level and add oil if needed.

3. Check for loose or missing hardware. Tighten or replace as required before placing equipment back into operation.

6.2 EXTENDED STORAGE

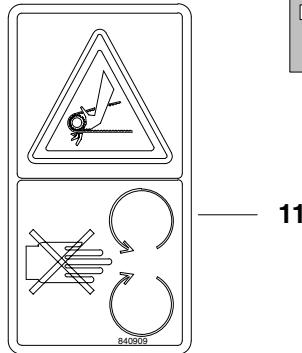
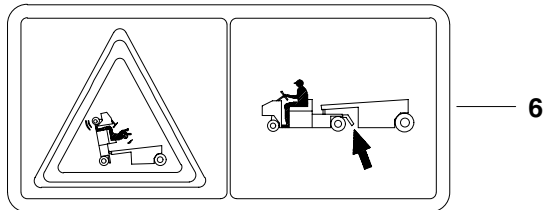
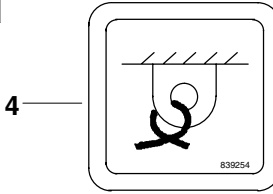
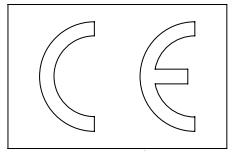
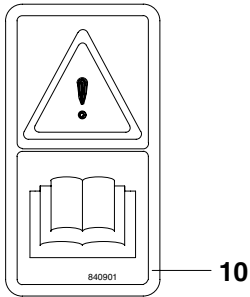
1. Drain all fuel from fuel tank and lines.
2. Start engine and run until all fuel in the carburetor is used.
3. While engine is still warm, drain the crankcase oil. Replace oil with the proper type and quantity. Refer to the engine oil section of this manual.
4. Remove engine spark plugs and squirt a small quantity of engine oil into each cylinder. Turn the engine over a few times to distribute this oil.
5. Remove and thoroughly clean tines. Cover with a light coating of oil to prevent rust and store tines with unit.
6. Lower aerating head (with tines removed) to relieve hydraulic pressure, and to engage clutch.

To put equipment into operation after an extended storage, check slip clutch for rust (see slip clutch adjustment), check crankcase oil level, fill fuel tank, start engine and check for fuel leaks, **RAISE** aerator heads, check hydraulic reservoir oil level. **BE SURE** to lock uplatch bar in place. Stop engine and re-install tines.

A decorative graphic consisting of several thin black lines forming a series of nested and intersecting L-shapes and rectangles, creating a modern, architectural frame around the central text.

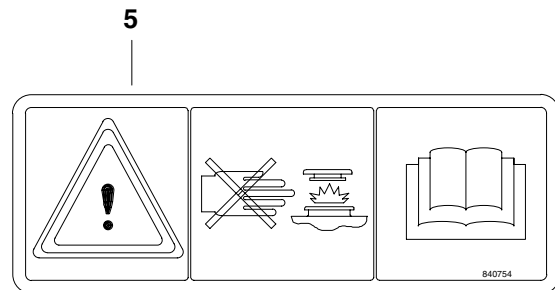
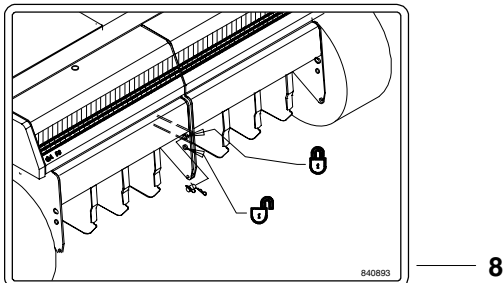
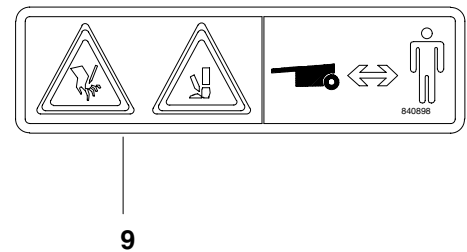
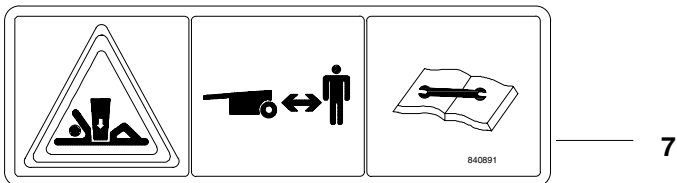
PARTS SECTION

RYAN[®] — 1



TEXTRON 844847 — 12

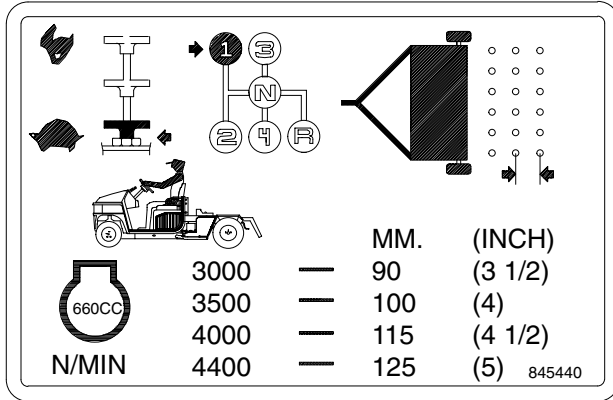
2 — GA 60



DECALS 7.1

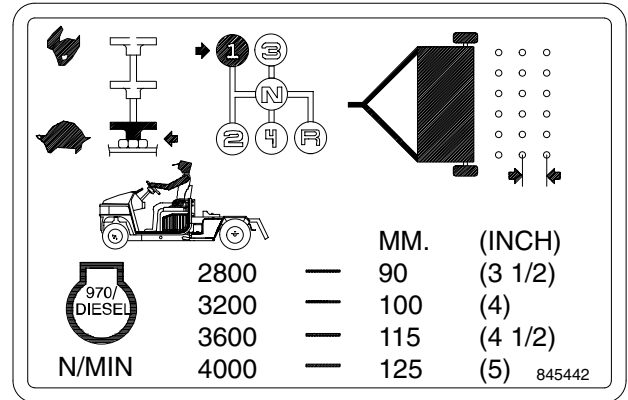
Ref. No.	Part No.	Description	No. Req'd	Notes
1	524281	Decal, RYAN, 1"	3	
2	838582	Decal, GA 60	3	
3	9039290	Decal, C.E.	1	
4	839254	Decal, tie down	2	
5	840754	Decal, warning, pressure	1	
6	840890	Decal, warning, stabilzer	1	
7	840891	Decal, warning, stay away	1	
8	840893	Decal, uplatch operation	1	
9	840898	Decal, danger, hands & feet	1	
10	840901	Decal, warning, op/manual	1	
11	840909	Decal, warning, hand injury	2	
12	844847	Decal, TEXTRON	3	

7.1 DECALS



USED WITH TURF TRUCKSTER
WITH A 660 SUZUKI ENGINE AND
A MANUAL TRANSMISSION

3

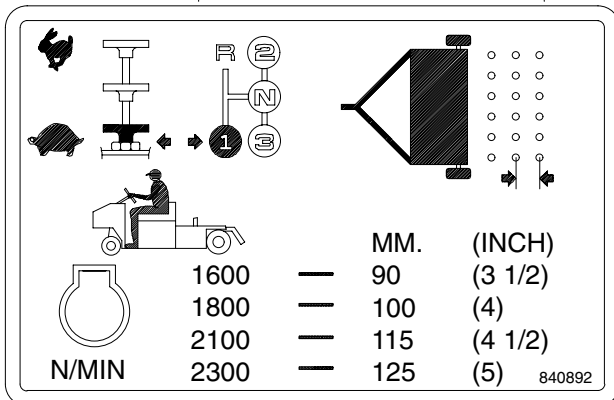


USED WITH TURF TRUCKSTER
WITH 970 OR DIESEL ENGINE
AND A MANUAL TRANSMISSION

5

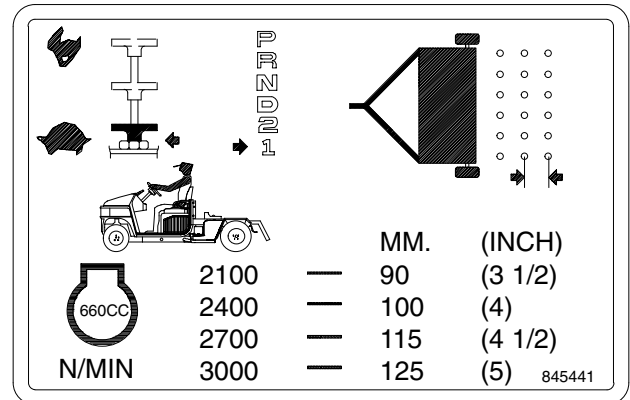
USED WITH TURF TRUCKSTER
MANUFACTURED PRIOR TO
AUGUST 1998

1

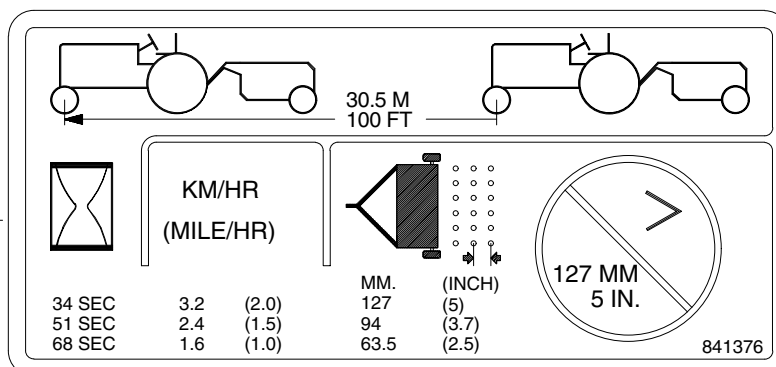


USED WITH TURF TRUCKSTER
WITH A 660 SUZUKI ENGINE AND
A AUTOMATIC TRANSMISSION

4



2

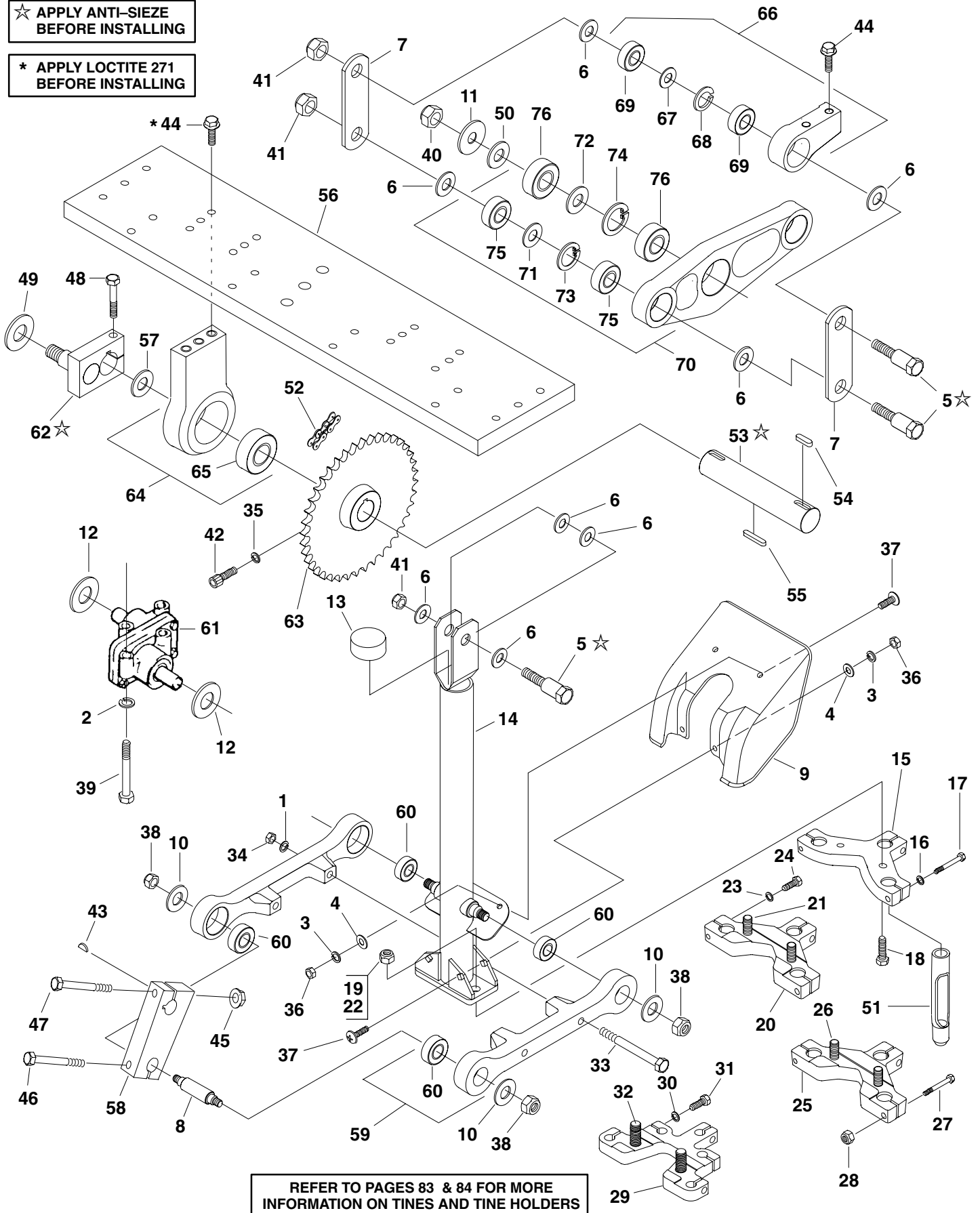


USED WITH TURF TRACTOR

DECALS 7.1

Ref. No.	Part No.	Description	No. Req'd	Notes
1	840892	Decal, RPM/hole spacing	1	Used with trucks prior to Aug. 98
2	841376	Decal, tractor hole spacing	1	Used with turf tractor
3	845440	Decal, RPM/hole spacing	1	Used with 660 Suzuki, ATM
4	845441	Decal, RPM/hole spacing	1	Used with 660 Suzuki, manual
5	845442	Decal, RPM/hole spacing	1	Used with 970 or diesel, manual

*** APPLY LOCTITE 271
BEFORE INSTALLING**

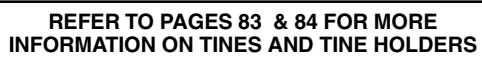


HEAD ASSEMBLY 7.2

Ref. No.	Part No.	Description	No. Req'd	Notes
1	120177	Lockwasher, 3/8"	16	Apply anti-seize before installing
2	303269	Lockwasher, 7/16"	32	
3	306396	Lockwasher, 1/4"	32	
4	308090	Washer, 1/4"	32	
5	522836	Pin, linkage	24	
6	522839	Washer, thrust (.062 thick)	32	
7	4116498.7	Link, rocker	16	
8	522857	Pin, pivot	8	
9	522952	Deflector, core	8	
10	523222	Washer, thrust (.062 x .505 x 1.22)	32	
11	523234	Washer, thrust (.062 x .781 x 2.06)	8	
12	523240	Washer, thrust (.062 x 1.00 x 1.51)	8	
13	523297	Plug, tine arm	8	
14	4116624.7	Ram, tine	8	
15	4116255.7	Holder, tine, 5/8" (15.9 mm)	8	
16	306325	•Lockwasher, 5/16"	3	
17	306435	•Screw, 5/16–18 x 1 1/4"	3	
18	523474	•Screw, 1/2–20 x 1 13/16", grade 8	2	
19	800559	•Nut, crownlock, 1/2–20	2	
20	4117122.7	Holder, tine, 1/4"–3/8"–1/2"	8	
21	523474	•Screw, 1/2–20 x 1 13/16", grade 8	2	
22	800559	•Nut, crownlock, 1/2–20	2	
23	306325	•Lockwasher, 5/16"	3	
24	306435	•Screw, 5/16–18 x 1 1/4"	3	
25	4116625.7	Holder, tine, 3/4" (19 mm)	8	
26	523474	•Screw, 1/2–20 x 1 13/16", grade 8	2	
27	548938	•Screw, 5/16–24 x 1 3/4", grade 8	3	
28	800446	•Nut, stop, 5/16–24	3	
29	4116982.7	Holder, tine, quint	8	
30	306325	•Lockwasher, 5/16"	5	
31	306416	•Screw, 5/16–18 x 1"	5	
32	523474	•Screw, 1/2–20 x 1 13/16", grade 8	2	
33	548024	Screw, 3/8–16 x 4 1/4"	16	
34	548052	Nut, lock, 3/8–16	16	
35	548183	Lockwasher, 5/16"	4	
36	548597	Nut, lock, 1/4–20	32	
37	800277	Screw, 1/4–20 x 5/8 " P.T.H.	32	
38	800198	Nut, crownlock, 1/2–20	32	

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

*** APPLY LOCTITE 271
BEFORE INSTALLING**

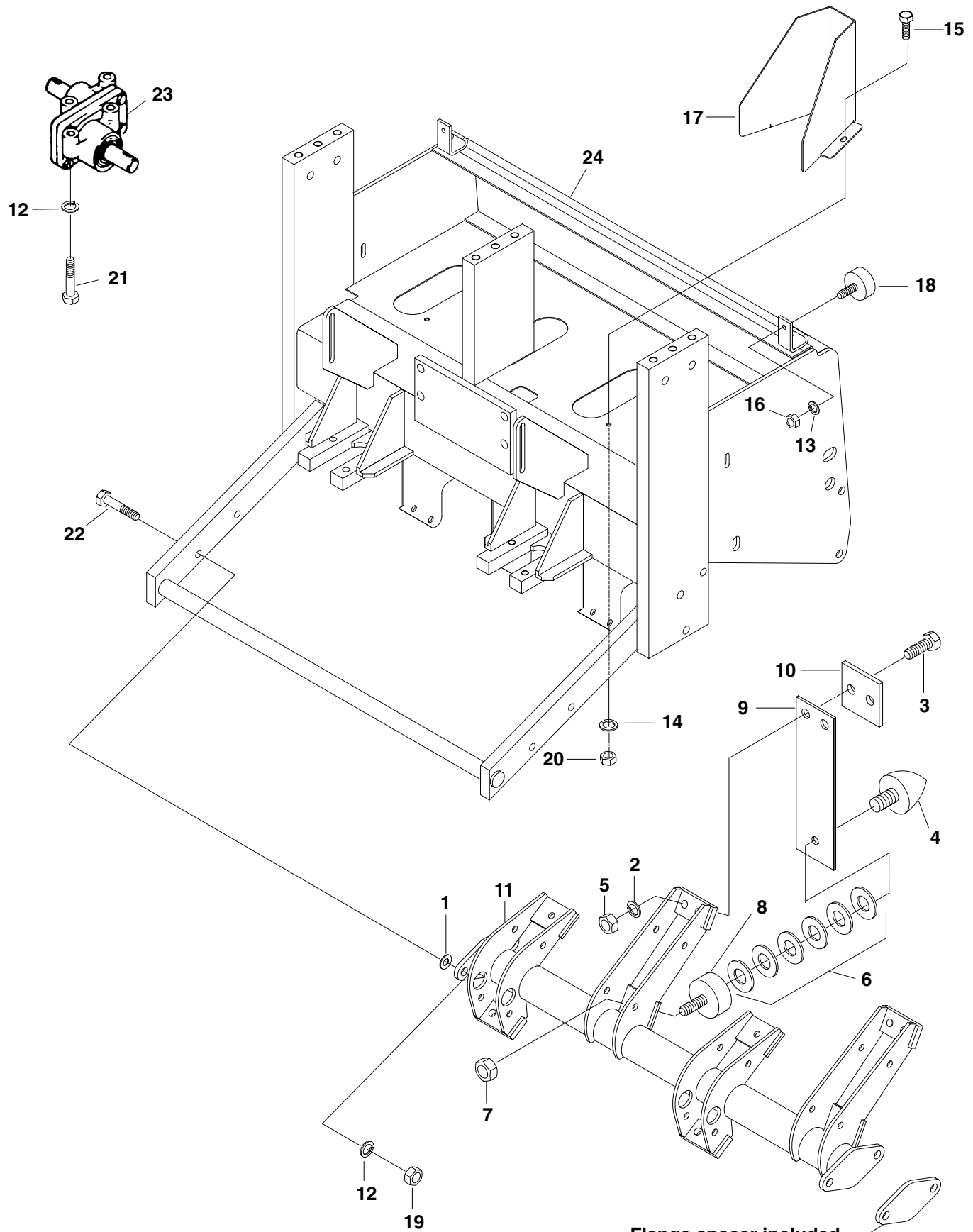


HEAD ASSEMBLY 7.2

Ref. No.	Part No.	Description	No. Req'd	Notes
39	800444	Screw, 7/16–14 x 2 1/2", grade 8	16	Apply Loctite 271 before installing
40	800508	Nut, stop, 3/4–16	8	
41	800509	Nut, stop, 5/8–18	24	
42	800513	Screw, socket head, 5/16–18 x 1 1/4"	4	
43	800519	Key, woodruff, 1/4" x 1 1/4"	2	
44	800594	Screw, flangelock, 1/2–20 x 1 3/4", grade 8	36	
45	800698	Nut, crownlock, 3/8–16	16	
46	800712	Screw, 3/8–16 x 2"	8	
47	800713	Screw, 3/8–16 x 2 1/4"	8	
48	800762	Screw, 7/16–20 x 3", grade 8	16	
49	830692	Washer, thrust (.032 thick)	8	Not Illustrated Apply anti-seize before installing
50	831096	Washer, thrust (.032 thick)	8	
51	834973	Tine, coring, 3/4" (19 mm)	24	
52	891956	Chain, #50 sealed roller 69 links	4	
	522123	•Connector, #50 sealed	1	
53	837416	Shaft, crank	4	
54	837419	Key, .313 x .313 x .845	8	
55	837420	Key, .313 x .313 x 1.47	4	
56	4116642.7	Plate, top	2	
57	837437	Washer, thrust (.032 thick)	8	Refer to page 50 for breakdown Apply anti-seize before installing
58	869067	Link, vertical	8	
59	889447	Link, return	16	
60	832498	•Bearing, ball	2	
61	889469	Gearbox, reversing	4	
62	4116643.7	Arm, crank	8	
63	4116644.7	Sprocket, crank	4	
64	4116646.7	Support, crank	8	
65	837429	•Bearing, ball	2	
66	4116647.7	Pivot, rocker	8	
67	522839	•Washer, thrust (.062 thick)	1	
68	548325	•Ring, lock	1	
69	832498	•Bearing, ball	2	
70	890543	Arm, pitman	8	
71	522839	•Washer, thrust (.062 thick)	2	
72	522840	•Washer, thrust (.083 thick)	1	
73	548325	•Ring, lock	2	
74	548355	•Ring, retaining	1	
75	832498	•Bearing, ball	4	
76	832499	•Bearing, ball	4	

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

7.3 RETURN BUMPER

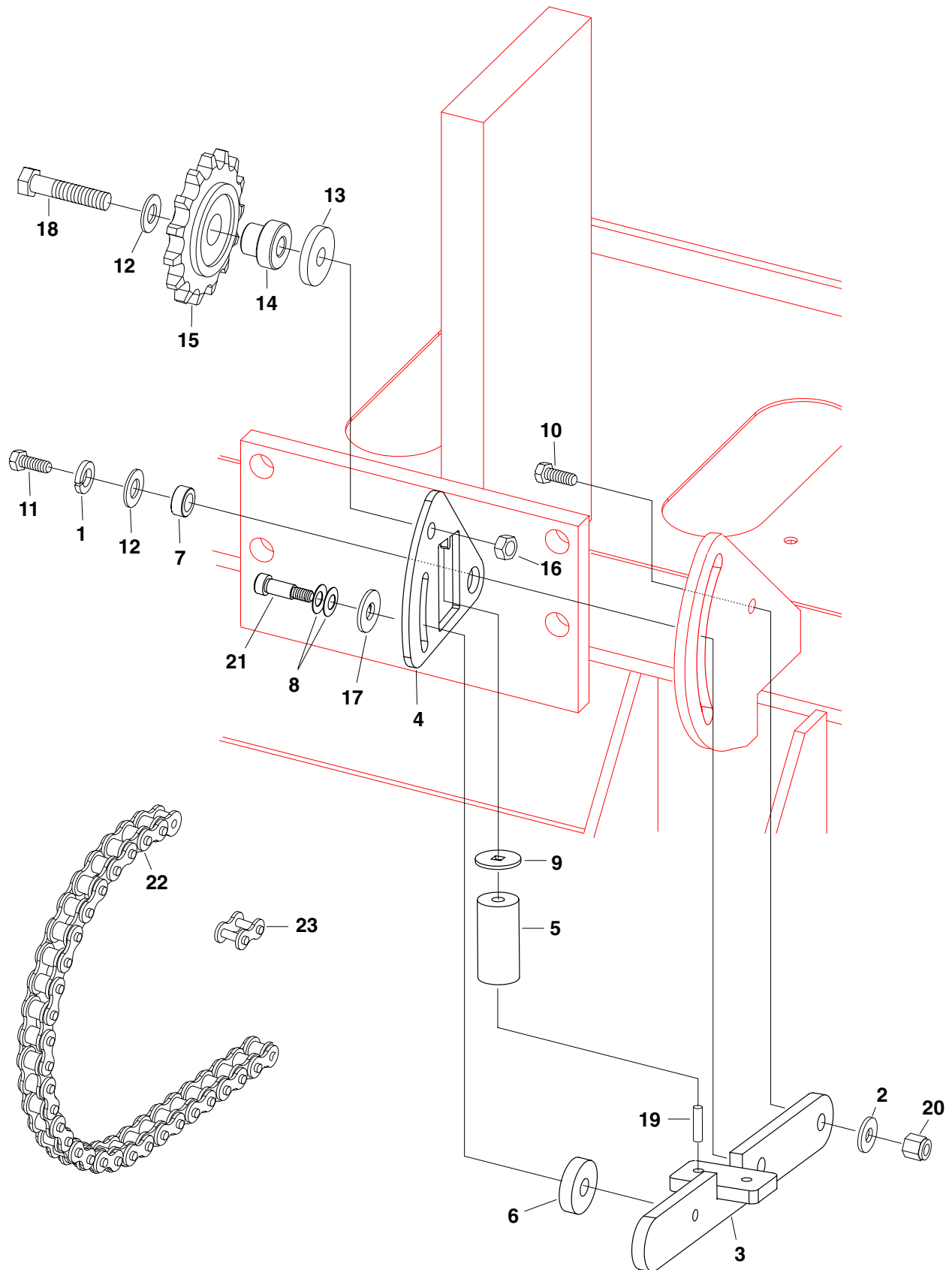


RETURN BUMPER 7.3

Ref. No.	Part No.	Description	No. Req'd	Notes
1	308091	Washer, 1/2"	As Req'd	Use as spacers on left side
2	120177	•Lockwasher, 3/8"	8	
3	302600	•Screw, 3/8–16 x 1 1/2"	8	
4	523126	•Bumper, rubber	4	
5	548052	•Nut, lock, 3/8–16	8	
6	548159	•Washer, 5/16"	24	
7	548911	•Nut, flangelock, 5/16–18	4	
8	835567	•Mount, isolation	4	
9	836298	•Spring, bumper	4	
10	836875	•Pad, spring retainer	4	
11	4113522.7	•Arm, stop	1	
12	303269	Lockwasher, 7/16"	8	
13	306325	Lockwasher, 5/16"	4	
14	306396	Lockwasher, 1/4"	8	
15	306419	Screw, 1/4–20 x 1/2"	8	
16	306932	Nut, 5/16–18	4	
17	4116482.7	Shield	4	
18	523224	Bumper, rubber	4	
19	548056	Nut, lock, 7/16–14	8	
20	548597	Nut, lock, 1/4–20	8	
21	800444	Screw, 7/16–14 x 2 1/2", grade 8	8	
22	800522	Screw, 7/16–14 x 1 3/4"	8	
23	889469	Gearbox, reversing	4	
24	4116617	Frame, aerator	2	
				Refer to page 48 for breakdown

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

7.4 CHAIN TENSIONER

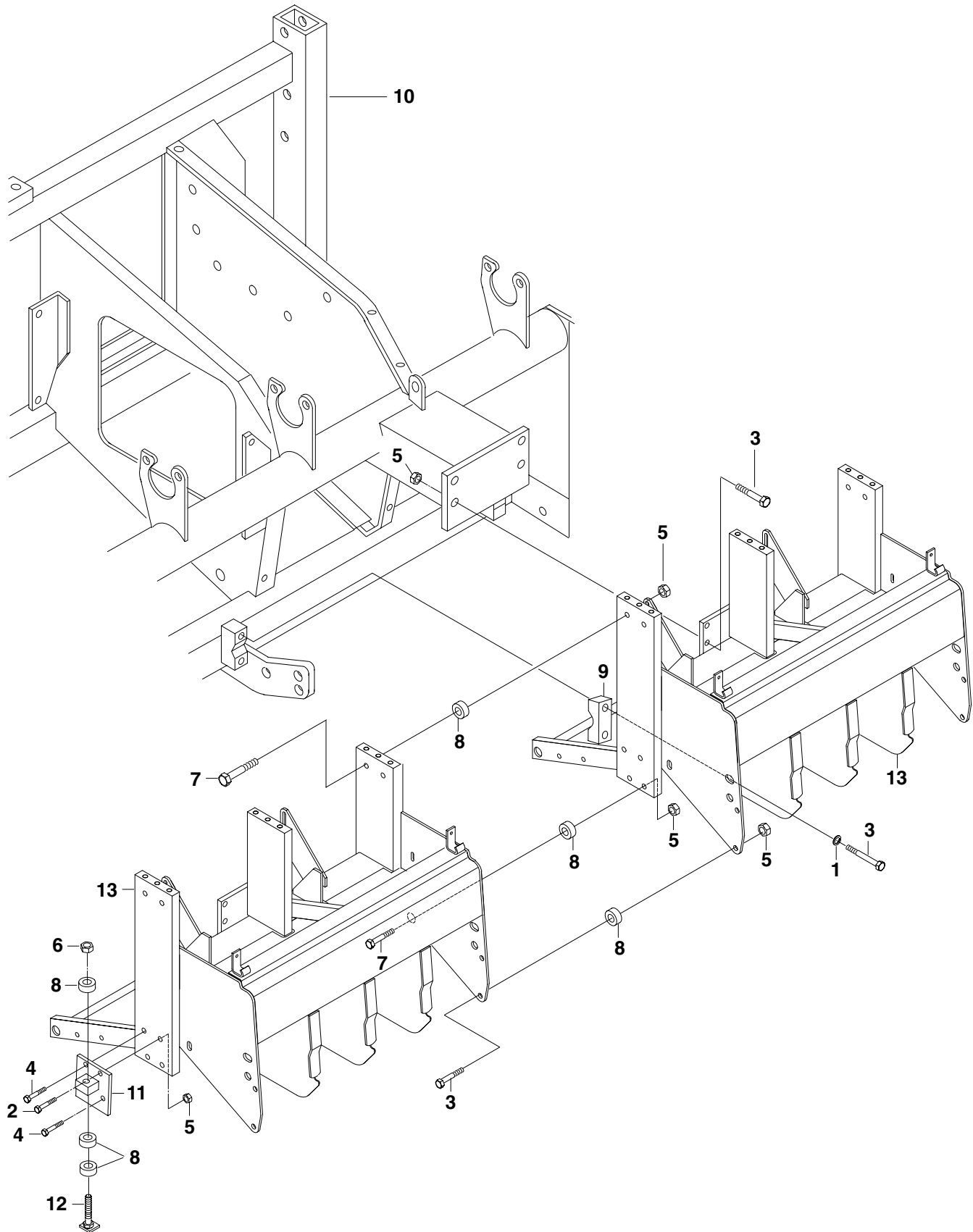


CHAIN TENSIONER 7.4

Ref. No.	Part No.	Description	No. Req'd	Notes
1	120177	Lockwasher, 3/8"	4	
2	120590	Washer, 1/4"	2	
3	2701295	Lever, Idler adjust	4	
4	2701296	Pivot, chain tensioner	4	
5	2701299	Spring, urethane	4	
6	2701307	Spacer	4	
7	2701308	Spacer, pivot	4	
8	2701309	Spring, disc	8	
9	2701871	Washer, spring	4	
10	302288	Screw, 1/4–20 x 1"	4	
11	306414	Screw, 3/8–16 x 1"	4	
12	306981	Washer, 3/8"	8	
13	515390	Washer, special	2	
14	523100	Bushing, sprocket spacing	4	
15	547596	Sprocket, idler, 15 teeth	4	
16	548052	Locknut, 3/8–16	4	
17	548159	Washer, 5/16"	4	
18	551094	Screw, 3/8–16 x 1 3/4"	4	
19	800586	Pin, roll, 3/16 x 3/4"	4	
20	800814	Locknut, 1/4–20	4	
21	800927	Bolt, shoulder, 1/4–20 x 5/8"	4	
22	891956	Chain, #50 sealed roller, 69 links	4	
23	522123	•Connector, #50 sealed	1	

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

7.5 AERATOR HEAD HARDWARE

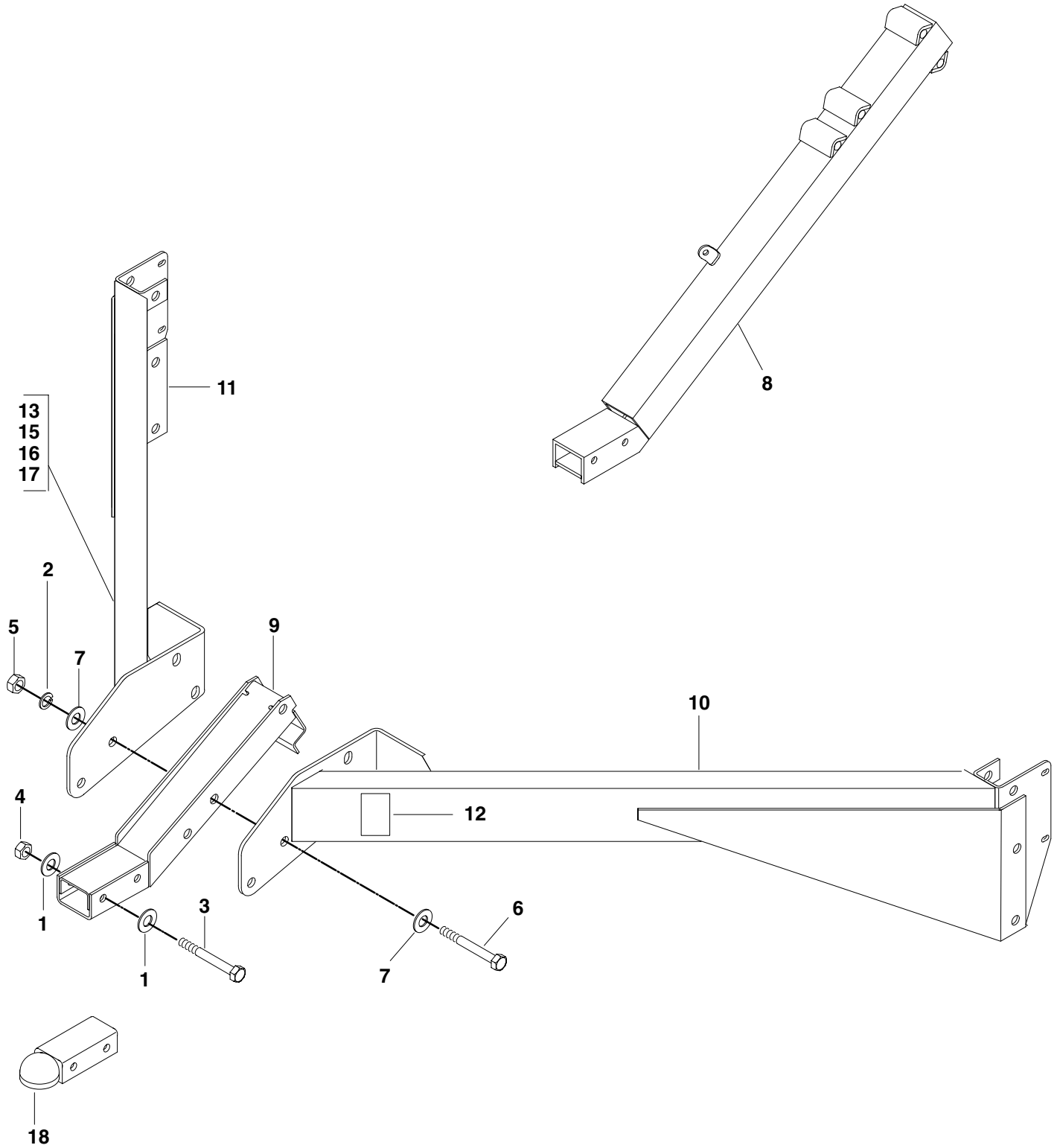


AERATOR HEAD HARDWARE 7.5

Ref. No.	Part No.	Description	No. Req'd	Notes
1	120166	Lockwasher, 1/2"	6	
2	311763	Screw, 1/2-20 x 1 1/4"	2	
3	312176	Screw, 1/2-13 x 1 3/4"	18	
4	316912	Screw, 1/2-13 x 2 1/4"	4	
5	800602	Nut, lock, 1/2-13	17	
6	800603	Nut, lock, 5/8-11	2	
7	800623	Screw, 1/2-13 x 3 1/4"	3	
8	834129	Spacer	11	
9	4116622.7	Clamp, lower mount	4	
10	4116354.7	Frame, main	1	
11	4116648.7	Block	2	
12	889168	Strike	2	
13	4116617	Frame, aerator	2	

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

7.6 TONGUE AND EXTENSION

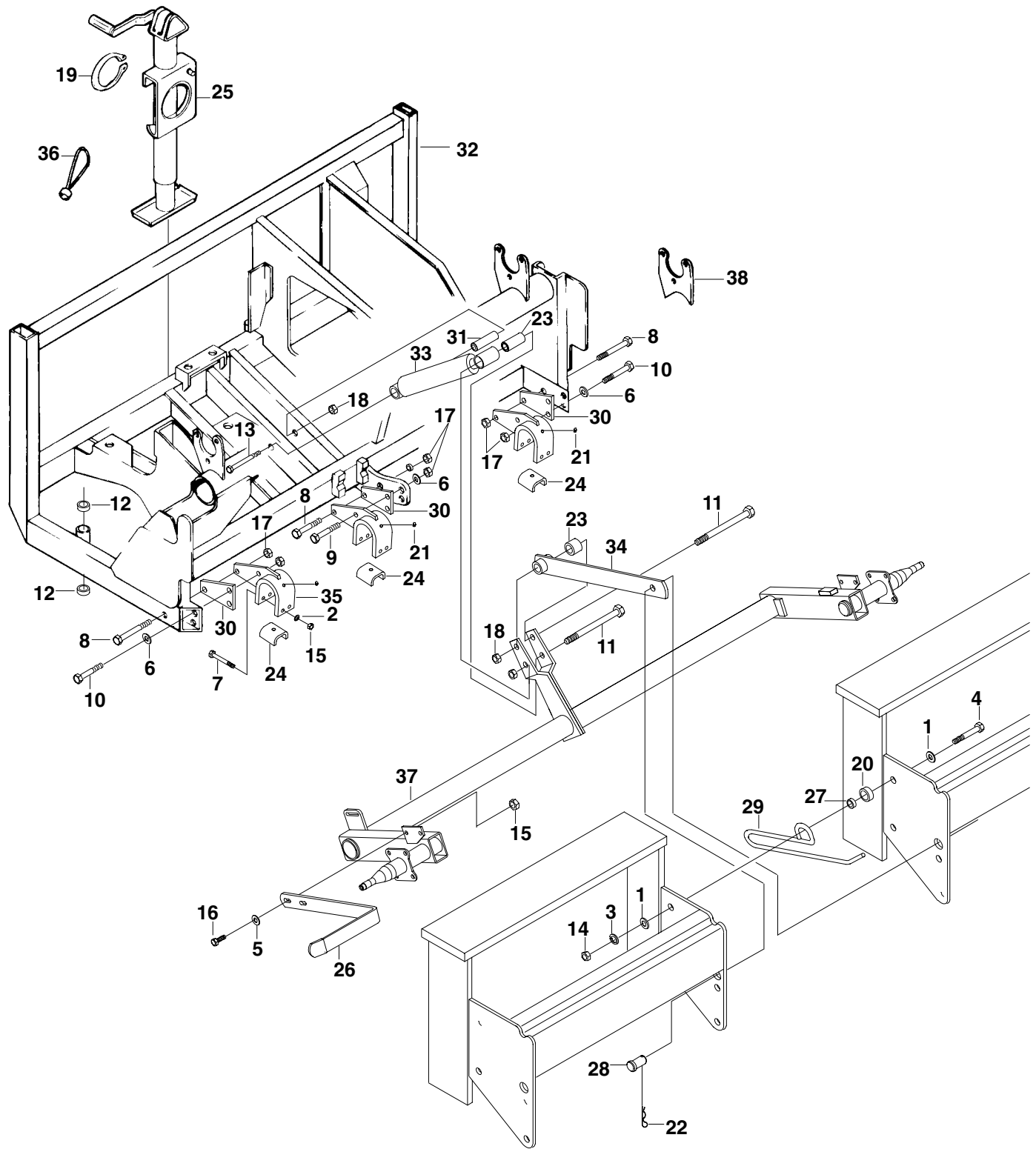


TONGUE AND EXTENSION 7.6

Ref. No.	Part No.	Description	No. Req'd	Notes
1	308091	Washer, 1/2"	4	
2	310856	Lockwasher, 5/8"	4	
3	800537	Screw, 1/2-13 x 4 1/4"	2	
4	800602	Nut, stop, 1/2-13	2	
5	800603	Nut, stop, 5/8-11	4	
6	800887	Screw, 5/8-11 x 5"	4	
7	809156	Washer, 5/8"	8	
8	4116722.7	Extension, long	1	
9	4116721.7	Extension, short	1	
10	4116723	Tube, left side	1	
11	4116724	Tube, right side	1	
12	840901	Decal, warning-read op/manual	1	
13	840892	Decal, RPM/hole spacing	1	Used with trucks prior to Aug. 98
14	841376	Decal, tractor hole spacing	1	Used with turf tractor
15	845440	Decal, RPM/hole spacing	1	Used with 660 Suzuki, ATM
16	845441	Decal, RPM/hole spacing	1	Used with 660 Suzuki, manual
17	845442	Decal, RPM/hole spacing	1	Used with 970 or diesel, manual
18	889552	Body, hitch coupler	1	
19	889565	•Coupler kit, hitch	1	Not Illustrated

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

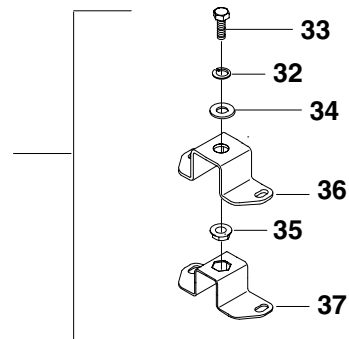
7.7 REAR AXLE



REAR AXLE 7.7

Ref. No.	Part No.	Description	No. Req'd	Notes
1	103867	Washer, 5/16"	2	Apply loctite 609 before installing
2	120177	Lockwasher, 3/8"	6	
3	306325	Lockwasher, 5/16"	1	
4	306501	Screw, 5/16–18 x 1 1/2"	1	
5	306981	Washer, 3/8"	4	
6	308091	Washer, 1/2"	6	
7	311391	Screw, 3/8–16 x 4"	6	
8	311398	Screw, 1/2–13 x 3 1/2"	3	
9	311840	Screw, 1/2–13 x 2"	3	
10	312176	Screw, 1/2–13 x 1 3/4"	4	
11	318370	Screw, 5/8–11 x 4"	2	
12	523160	Bushing	2	
13	548043	Screw, 5/8–11 x 5 1/2"	1	
14	548048	Nut, lock, 5/16–18	1	
15	548052	Nut, lock, 3/8–16	10	
16	548905	Screw, flangelock, 3/8–16 x 1"	4	
17	800602	Nut, stop, 1/2–13	9	
18	800603	Nut, stop, 5/8–11	3	
19	800614	Ring, retaining	1	
20	806493	Mount, rubber	1	
21	807442	Fitting, lubrication, 1/4–28, 90°	4	
22	809265	Pin, hair	2	
23	834120	Spacer	2	
24	4116469.7	Channel	3	
25	835040	Jack, swivel	1	
26	4116470.7	Scraper, tire	2	
27	835280	Bushing	1	
28	835363	Pin, uplatch	1	
29	835364	Spring, compression	1	
30	4116471.7	Spacer, axle yoke	3	
31	836084	Spacer	1	
32	4116354.7	Frame, main	1	
33	889152	Cylinder, hydraulic, 2" (51mm)	1	
34	889205	Bar	1	
35	4116473.7	Yoke, axle	3	
36	889991	Restraint, jack	1	
37	4116472.7	Axle, rear	1	
38	834155	Mount, bearing	1	Must be welded to frame

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

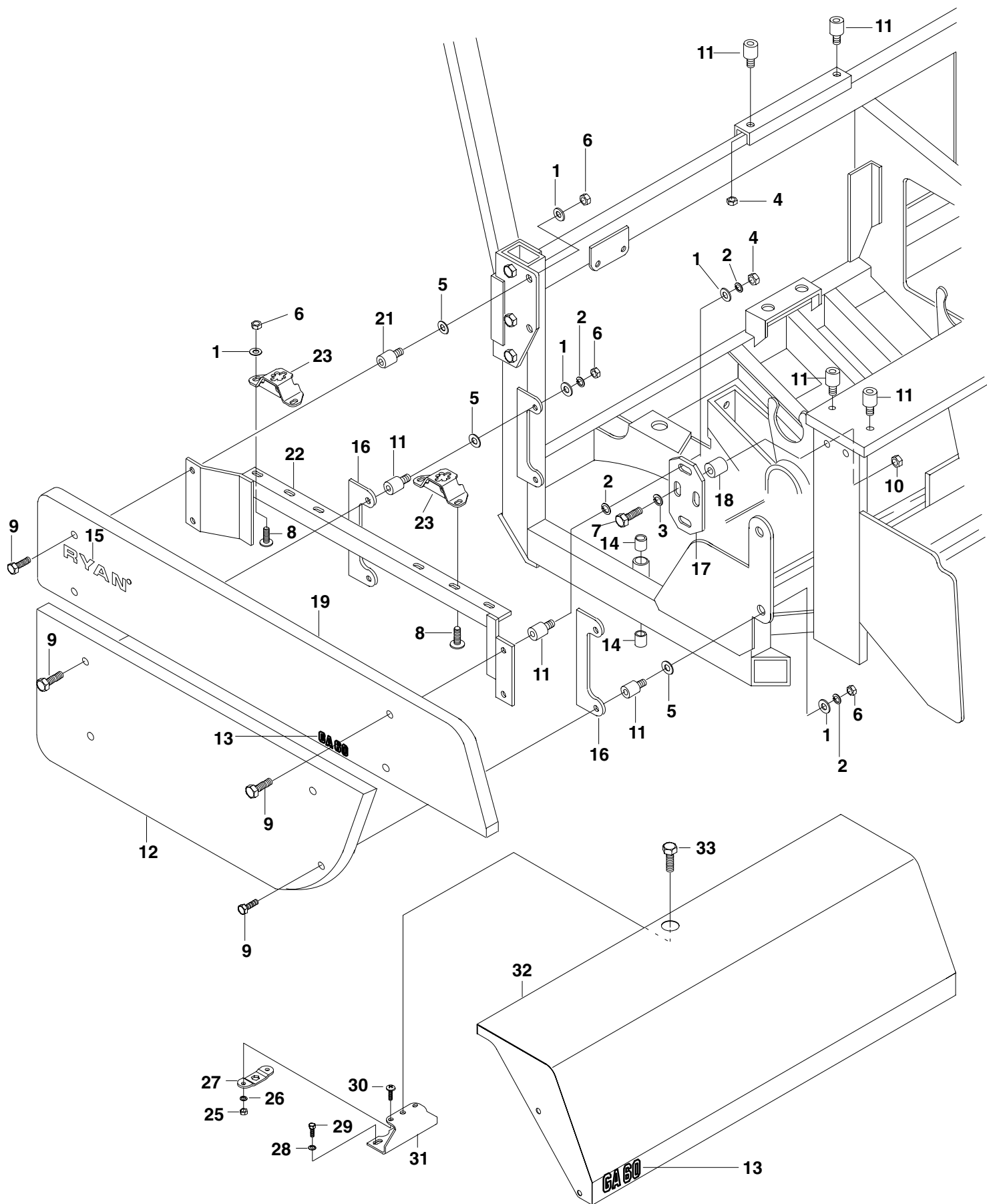


TOP COVER PANELS 7.8

Ref. No.	Part No.	Description	No. Req'd	Notes
1	103867	Washer, 5/16"	16	
2	306325	Lockwasher, 5/16"	6	
3	306396	Lockwasher, 1/4"	18	
4	306416	Screw, 5/16–18 x 1"	2	
5	306419	Screw, 1/4–20 x 1/2"	4	
6	306450	Screw, 5/16–18 x 3/4"	4	
7	306501	Screw, 5/16–18 x 1 1/2"	4	
8	306823	Screw, 5/16–18 x 2 3/4"	4	
9	515268	Bushing	8	
10	522900	Spring, extension	2	
11	548048	Nut, lock, 5/16–18	18	
12	548159	Washer, 5/16"	2	
13	548597	Nut, lock, 1/4–20	18	
14	548911	Nut, flangelock, 5/16–18	4	
15	800019	Screw, 1/4–20 x 1/2", P.T.H.	14	
16	800601	Screw, flange, 5/16–18 x 3/8"	6	
17	823765	Mount, rubber	4	
18	809156	Washer, thrust, 9/16"	4	
19	821893	Molding	As Req'd	
20	829148	Mount, isolation	10	
21	4116432.6	Channel, cover support	1	
22	835249	Arm	2	
23	4116433.7	Channel, cover hold	1	
24	4116434.7	Bracket, cover hold spring	2	
25	835260	Washer, nylon	4	
26	836478	Handle, cover latch	4	
27	4116435.6	Panel, right	1	
28	4116436.6	Panel, left	1	
29	4116437.6	Channel, center	1	
30	889795	Bracket, cover latch	4	
31	889796	Pin, cover latch	4	
32	303269	Lockwasher, 7/16"	4	
33	306838	Screw, 7/16–14 x 1"	4	
34	306982	Washer, 7/16"	4	
35	548912	Nut, flangelock, 7/16–14	4	
36	840886	Bracket, hold down	4	
37	840888	Bracket, nut retainer	4	
38	9039290	Decal, C.E.	1	

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

7.9 REAR AND SIDE COVER PANELS

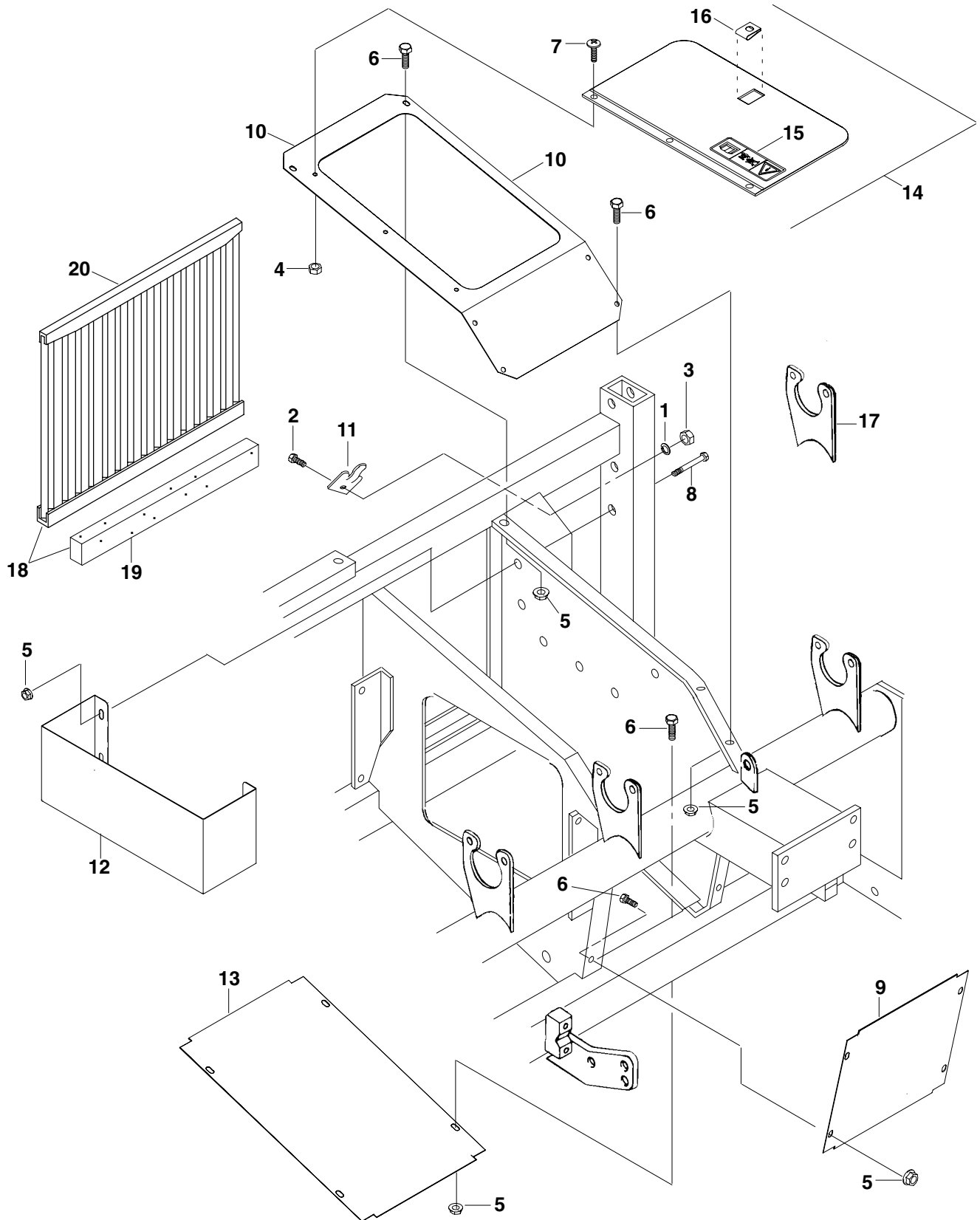


REAR AND SIDE COVER PANELS 7.9

Ref. No.	Part No.	Description	No. Req'd	Notes
1	103867	Washer, 5/16"	28	
2	306325	Lockwasher, 5/16"	24	
3	308091	Washer, 1/2"	4	
4	548048	Nut, lock, 5/16–18	20	
5	548159	Washer, 5/16"	12	
6	548911	Nut, lock, 5/16–18	6	
7	800082	Bolt, carriage, 1/2–13 x 3 1/2"	4	
8	800557	Bolt, carriage, 5/16–18 x 3/4"	8	
9	548901	Screw, flange, 5/16–18 x 3/8"	16	
10	800602	Nut, stop, 1/2–13	4	
11	829148	Mount, isolation	20	
12	4116389.6	Panel, lower left	1	
13	838582	Decal, GA 60	3	
14	523160	Bushing	2	
15	524281	Decal, RYAN 1"	3	
16	4116355.7	Bracket, front	4	
17	4116366.7	Plate, mounting	2	
18	835253	Spacer, mounting plate	4	
19	4116392.6	Panel, upper left	1	
20	4116393.6	Panel, upper right	1	Not Illustrated
21	835567	Mount, isolation	5	
22	4116367.7	Support	2	
23	889795	Bracket	4	
24	4116391.6	Panel, lower right	1	Not Illustrated
25	800059	Nut, lock, 1/4–20	4	
26	306396	Lockwasher, 1/4"	4	
27	835254	Retainer, latch nut	2	
28	103867	Washer, 5/16"	4	
29	306501	Screw, 5/16–18 x 1 1/2"	4	
30	800277	Screw, 1/4–20 x 5/8", P.T.H.	4	
31	4116623.7	Bracket, latch	2	
32	4116649.6	Cover, rear	2	
33	548971	Screw, flangelock, 5/16–18 x 5/8"	2	

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

7.10 TOOL BOX AND RADIATOR SCREEN

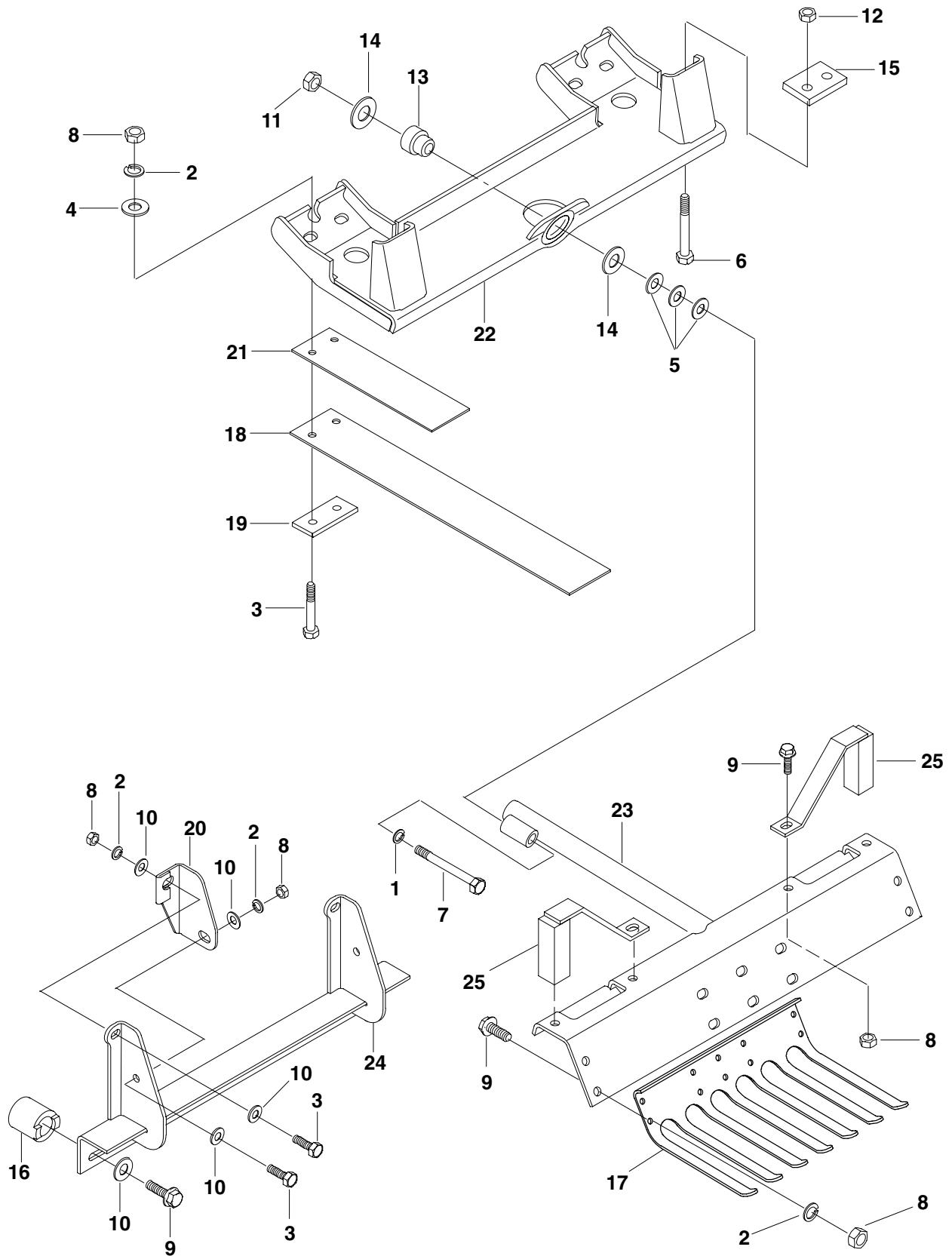


TOOL BOX AND RADIATOR SCREEN 7.10

Ref. No.	Part No.	Description	No. Req'd	Notes
1	120052	Lockwasher, #10	2	
2	306514	Screw, #10-24 x 1/2"	2	
3	306531	Nut, machine, #10-24	2	
4	548910	Nut, flangelock, 1/4-20	3	
5	548911	Nut, flangelock, 5/16-18	18	
6	548971	Screw, flangelock, 5/16-18 x 5/8"	14	
7	800277	Screw, 1/4-20 x 5/8", P.T.H.	3	
8	800557	Bolt, carriage, 5/16-18 x 3/4"	7	
9	4116247.7	Panel, rear	1	
10	4116248.7	Panel, top	1	
11	835039	Fastener, snap	2	
12	4116249.7	Box, tool	1	
13	4116251.7	Panel, bottom	1	
14	4116592	Lid, air duct	1	
15	840754	•Decal, warning, pressure	1	
16	835213	•Latch, slide	1	
17	834155	Mount, bearing	4	Must be welded to frame
18	891866	Kit, screen	1	
19	828382	•Stripping	1	
20		•Screen	1	Not offered seperately

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

7.11 TURF GUARDS

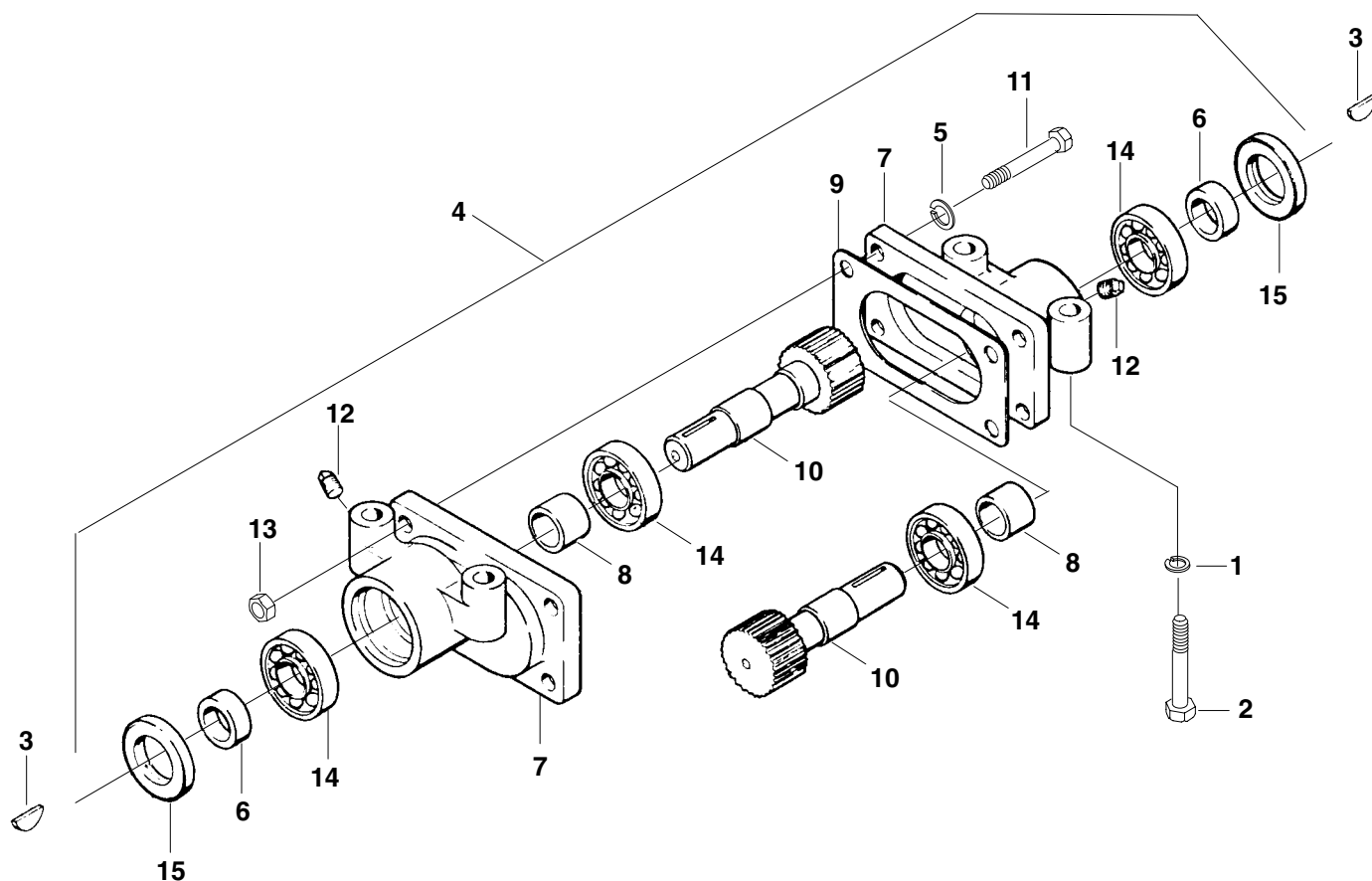


TURF GUARDS 7.11

Ref. No.	Part No.	Description	No. Req'd	Notes
1	120166	•Lockwasher, 1/2"	2	
2	120177	•Lockwasher, 3/8"	32	
3	306835	•Screw, 3/8–16 x 1 1/4"	16	
4	306981	•Washer, 3/8"	8	
5	308091	•Washer, 1/2"	6	
6	311391	•Screw, 3/8–16 x 4"	8	
7	311398	•Screw, 1/2–13 x 3 1/2"	2	
8	548052	•Nut, lock, 3/8–16	40	
9	548905	•Screw, flangelock, 3/8–16 x 1"	28	
10	603620	•Washer, 3/8"	20	
11	800602	•Nut, lock, 1/2–13	2	
12	800619	•Nut, stop, 3/8–16	8	
13	831838	•Mount, isolation	2	
14	836147	•Washer, thrust	4	
15	4116506.7	•Plate, bracket mounting	4	
16	836154	•Bushing, downstop	4	
17	4116507.7	•Guard, turf	4	
18	4116508.7	•Spring, turf guard (long)	4	
19	4116509.7	•Plate, spring mount	4	
20	4116510.7	•Bracket, upstop mount	4	
21	4116511.7	•Spring, turf guard (short)	4	
22	4116512.7	•Bracket, spring and pivot	2	
23	4116513.7	•Bracket, turf guard mount	2	
24	4116514.7	•Bracket, upstop	2	
25	4116515.7	•Bracket, downstop	2	

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

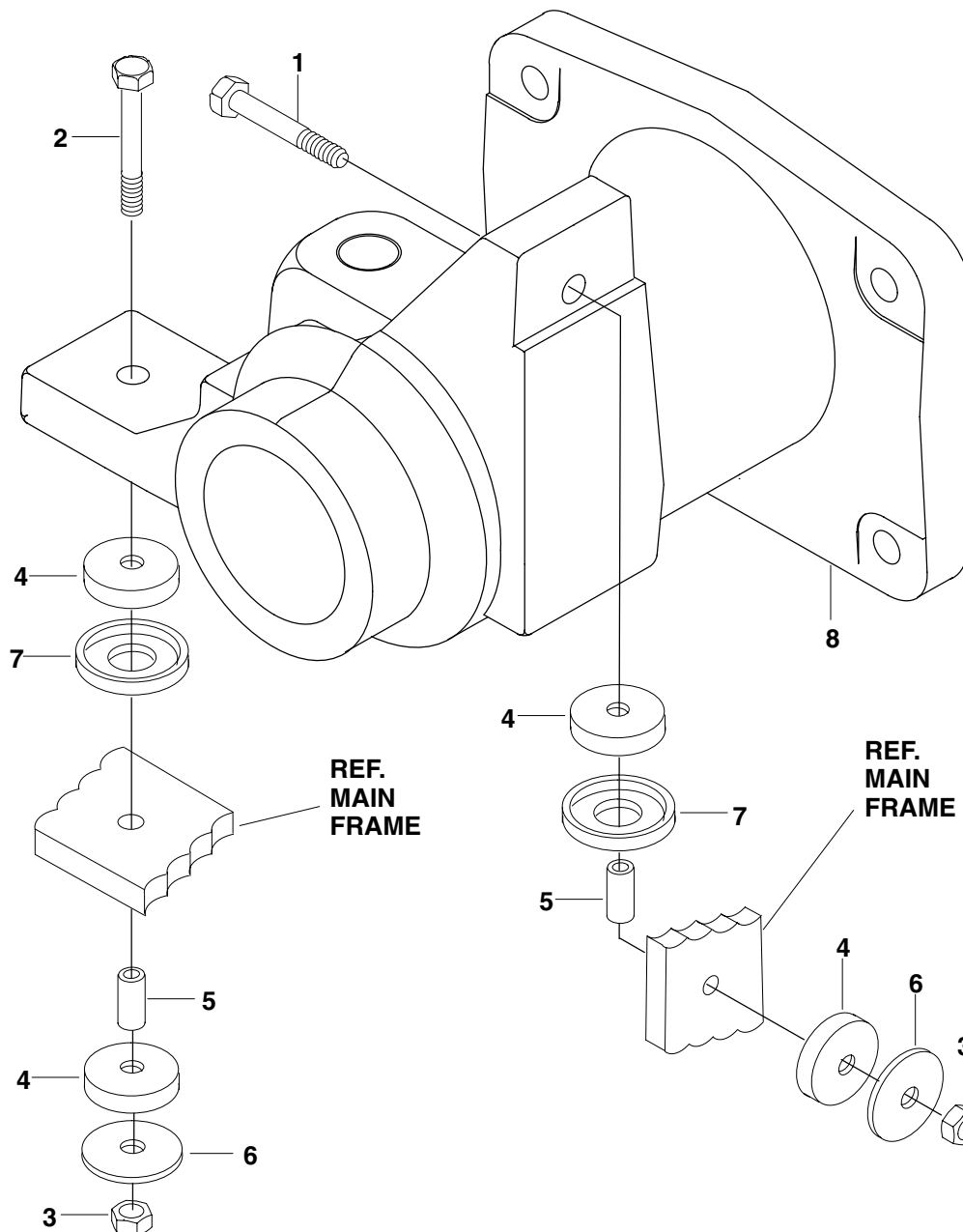
7.12 REVERSING GEAR BOX



Ref. No.	Part No.	Description	No. Req'd	Notes
1	303269	Lockwasher, 7/16"	8	
2	800444	Screw, 7/16-14 x 2 1/2", grade 8	2	
3	800519	Key, woodruff, 1/4" x 1 1/4"	4	
4	889469	Gearbox, reversing	4	
5	120177	•Lockwasher, 3/8"	4	
6	522747	•Spacer	2	
7	522807	•Case, gear (half)	2	
8	522991	•Spacer	1	
9	522992	•Gasket	1	
10	523104	•Shaft, rocker	2	
11	548798	•Screw, 3/8-24 x 1 1/4", grade 8	4	
12	800227	•Plug, 1/8-27 NPT	2	
13	800531	•Nut, lock, 3/8-24	4	
14	815093	•Bearing, ball	4	
15	887272	•Seal, oil	2	

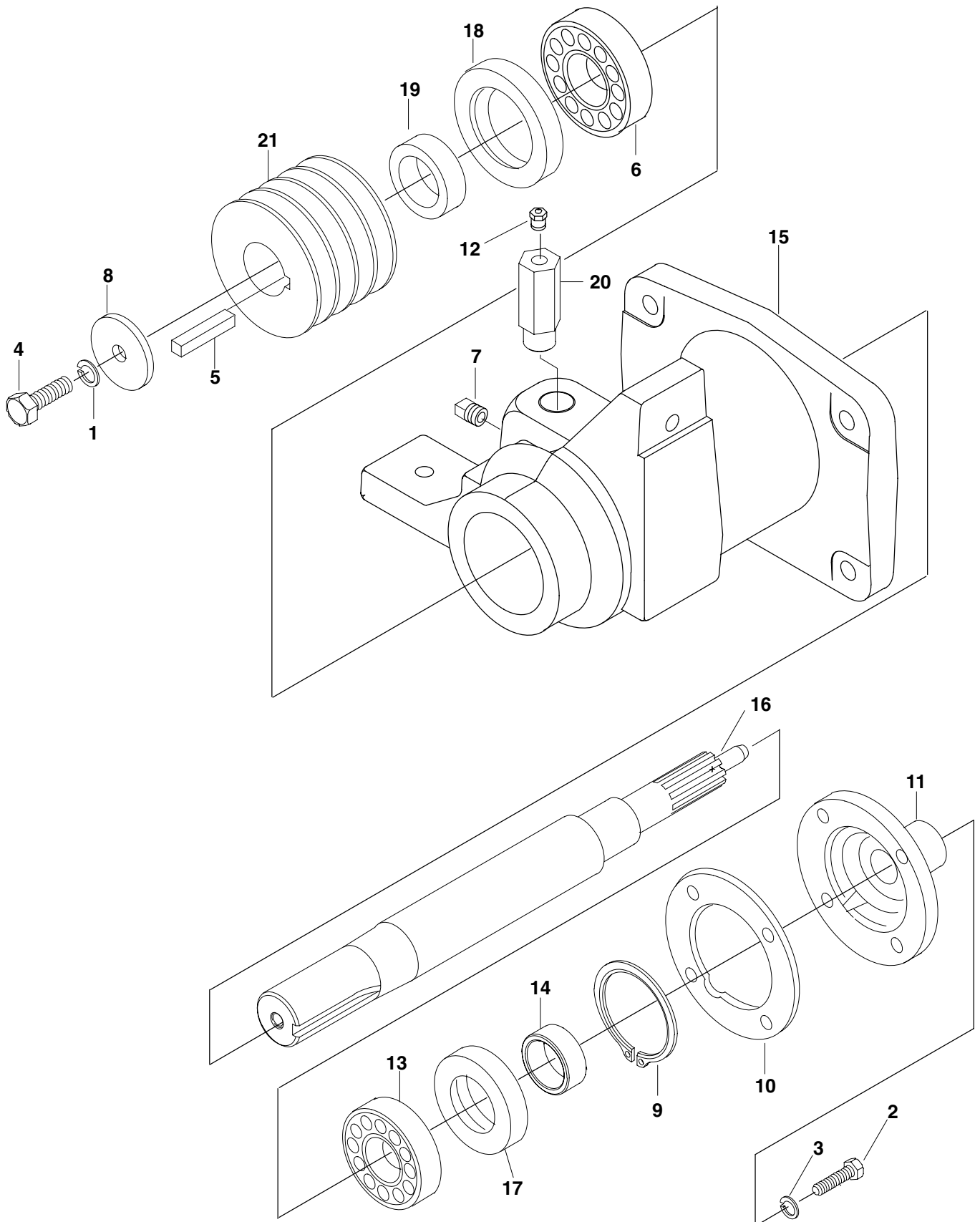
• INDENTED PART NAMES INDICATE THESE PARTS ARE INCLUDED IN PRECEDING ASSEMBLY

PTO MOUNTS 7.13



Ref. No.	Part No.	Description	No. Req'd	Notes
1	306836	Screw, 3/8-16 x 2 1/4"	1	
2	307776	Screw, 3/8-16 x 2 3/4"	1	
3	548052	Nut, lock, 3/8-16	2	
4	806493	Mount, rubber	4	
5	808959	Spacer	2	
6	809174	Washer, 3/8"	2	
7	809242	Retainer	2	
8	835033	Housing, PTO	1	

7.14 PTO ASSEMBLY

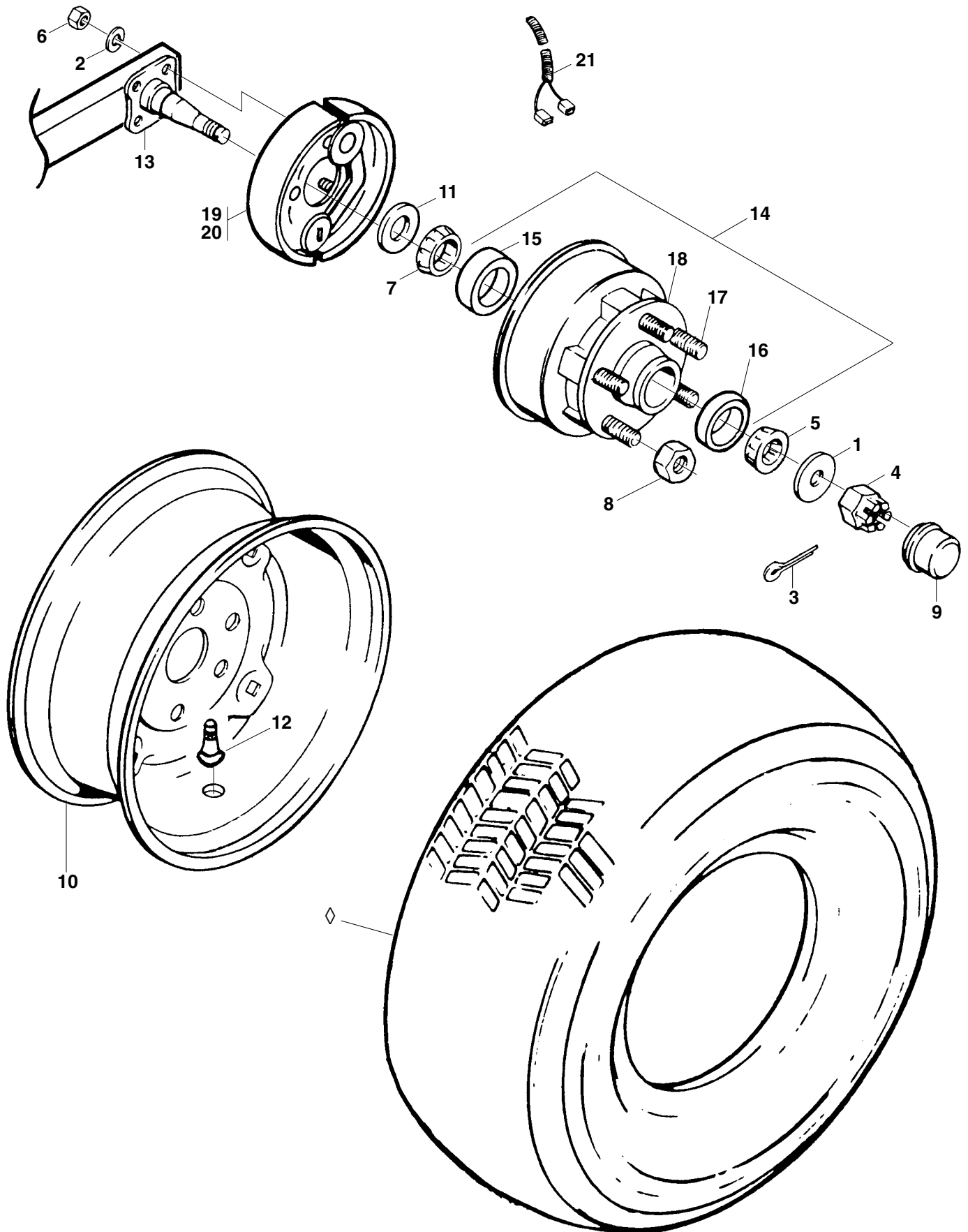


PTO ASSEMBLY 7.14

Ref. No.	Part No.	Description	No. Req'd	Notes
9	889161	PTO, complete	1	
1	120177	•Lockwasher, 3/8"	1	
2	306322	•Screw, 5/16–18 x 7/8"	4	
3	306325	•Lockwasher, 5/16"	4	
4	306835	•Screw, 3/8–16 x 1 1/4"	1	
5	548374	•Key, 5/16" x 5/16" x 1 3/4"	1	
6	548953	•Bearing, ball	1	
7	800114	•Plug, 1/8–27 NPT	1	
8	800609	•Washer	1	
9	809254	•Ring, retaining	1	
10	815173	•Gasket, front bearing retainer	1	
11	815174	•Retainer	1	
12	827486	•Valve, pressure relief	1	
13	831104	•Bearing, ball	1	
14	834135	•Sleeve	1	
15	835033	•Housing, PTO	1	
16	835073	•Shaft, PTO	1	
17	835120	•Seal, oil	1	
18	835121	•Seal, oil	1	
19	835153	•Spacer	1	
20	835856	•Coupling, pipe	1	
21	836849	•Pulley, PTO, 3 1/2" (89 mm)	1	

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

7.15 TIRES, WHEELS, AND BRAKES

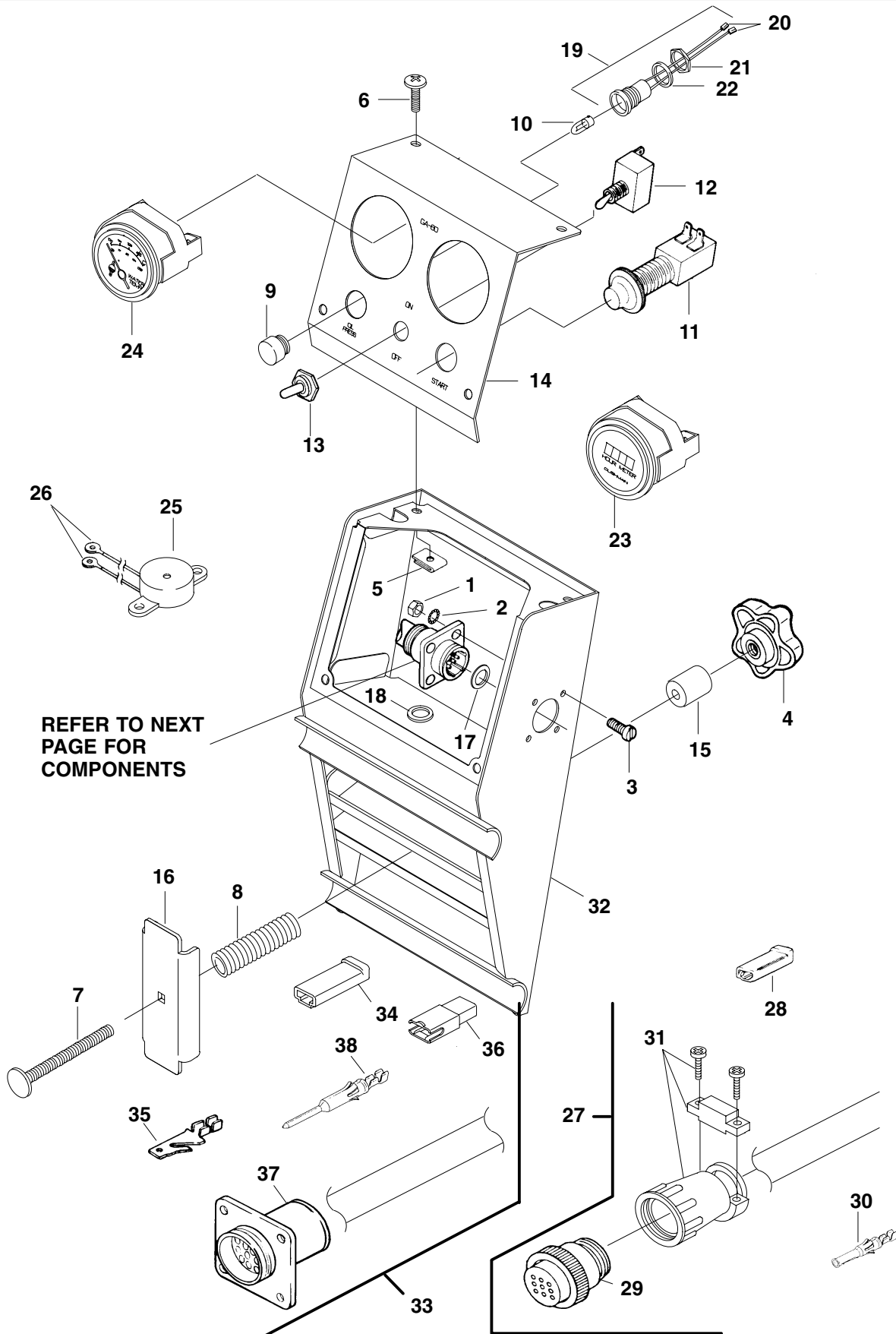


TIRES, WHEELS, AND BRAKES 7.15

Ref. No.	Part No.	Description	No. Req'd	Notes
1	103960	Washer, 3/4"	2	
2	303269	Lockwasher, 7/16"	8	
3	304636	Pin, cotter, 1/8" x 1 1/8"	2	
4	2702247	Nut, castle, 3/4–16	2	
5	385174	Bearing	2	
6	548061	Nut, 7/16–20	8	
7	548136	Bearing	2	
8	800419	Nut, wheel mounting	10	
9	817250	Cap, grease	2	
10	827447	Wheel, 12" x 7"	2	
11	829256	Seal	2	
12	886735	Stem, valve	2	
13	4116593	Axle, rear	1	
14	888997	Drum, complete	2	
15	548135	•Cup, roller bearing	1	
16	808088	•Cup, roller bearing	1	
17	819804	•Screw, wheel mount, 7/16–20 x 1 3/4", grade 8 .	5	
18	886852	•Hub, axle	1	
19	889262	Brake, electric (left)	1	Refer to page 78
20	889263	Brake, electric (right)	1	Refer to page 78
21	889547	Harness, main	1	
22	889548	Harness, axle	1	

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

7.16 CONTROL PANEL

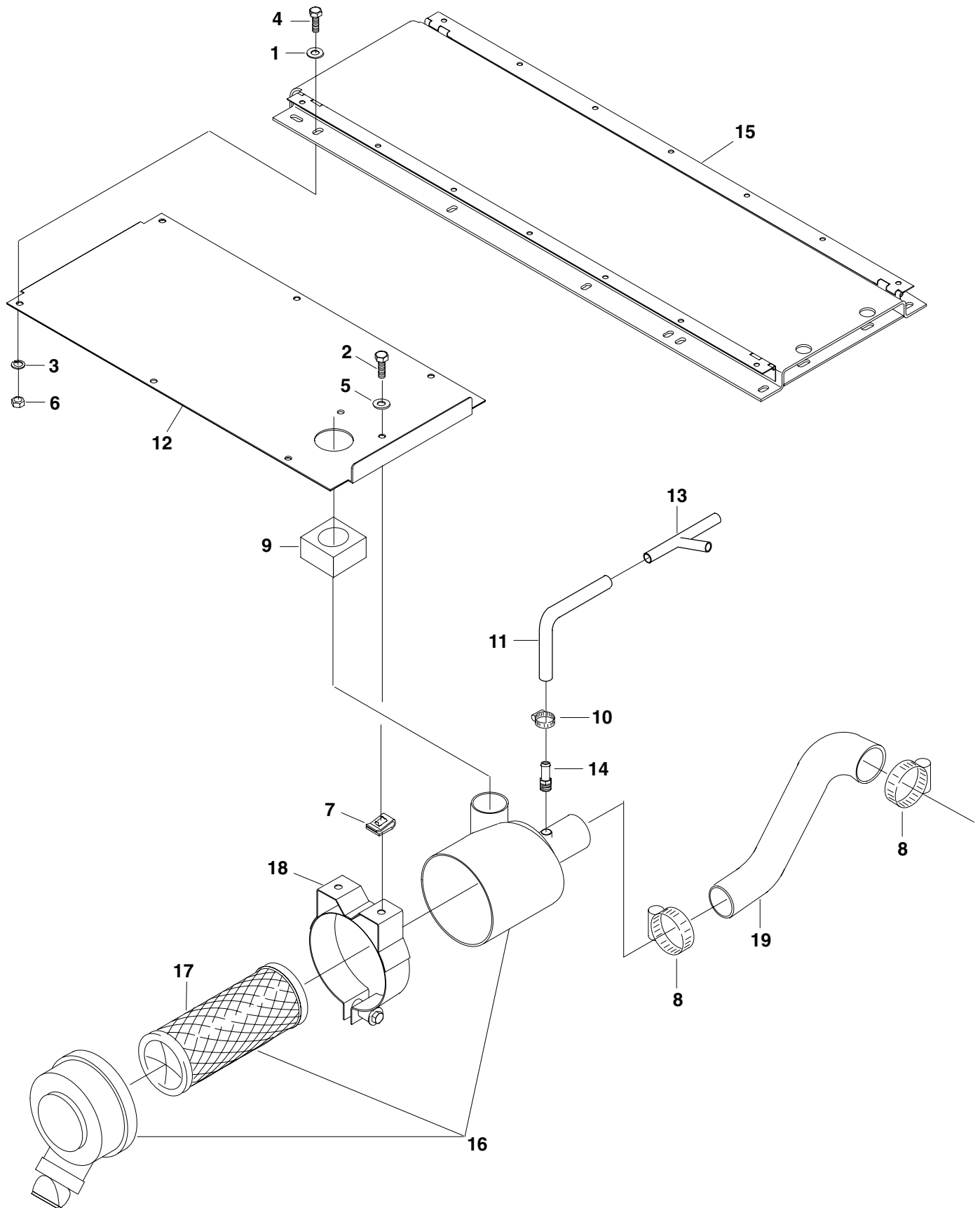


CONTROL PANEL 7.16

Ref. No.	Part No.	Description	No. Req'd	Notes
	888962	Control panel, complete	1	
1	302437	•Nut, machine, #6–32	4	
2	306990	•Lockwasher, #6, external shakeproof	4	
3	307136	•Screw, #6–32 x 5/16"	4	
4	607544	•Knob, nut	1	
5	800170	•Nut, speed, #10–24	4	
6	800271	•Screw, #10–24 x 1/2", P.T.H.	4	
7	800635	•Bolt, carriage, 5/16–18 x 4"	1	
8	820435	•Spring, latch	1	
9	828470	•Lens, indicator light	1	
10	828473	•Bulb, indicator light	1	
11	830366	•Switch, push	1	
12	834419	•Switch, toggle	1	
13	834428	•Seal, switch	1	
14	835138	•Cover, control panel	1	
15	835139	•Bushing	1	
16	835140	•Channel	1	
17	835460	•Seal, peripheral	1	
18	835467	•Bushing, electrical	1	
19	885999	•Socket, light	1	
20	826726	••Connector, male, 1–contact	2	
21	828771	••Nut, light mounting	1	
22	828772	••Lockwasher, light mounting	1	
23	886802	•Gauge, hour meter	1	
24	889022	•Gauge, water temperature	1	
25	889023	•Buzzer	1	
26	825879	••Terminal, eyelet, #6	2	
27	889052	•Harness, wire	1	
*	825748	••Terminal, female	3	Not illustrated.
28	825880	••Connector, female, single contact	2	
29	834533	••Connector, male, 9–contact	1	
30	835114	••Terminal, female, connector plug socket	3	
31	889139	••Clamp	1	
32	889146	•Enclosure, electrical	1	
33	889174	•Harness, control	1	
*	825748	••Terminal, female	2	Not illustrated.
*	825878	••Terminal, female	5	Not illustrated.
34	825880	••Connector, female, 1–contact	6	
35	825886	••Terminal, male blade	2	
36	826726	••Connector, male, 1–contact	2	
37	834324	••Connector, female, 9–contact	1	
38	834575	••Terminal, male	7	

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

7.17 AIR CLEANER

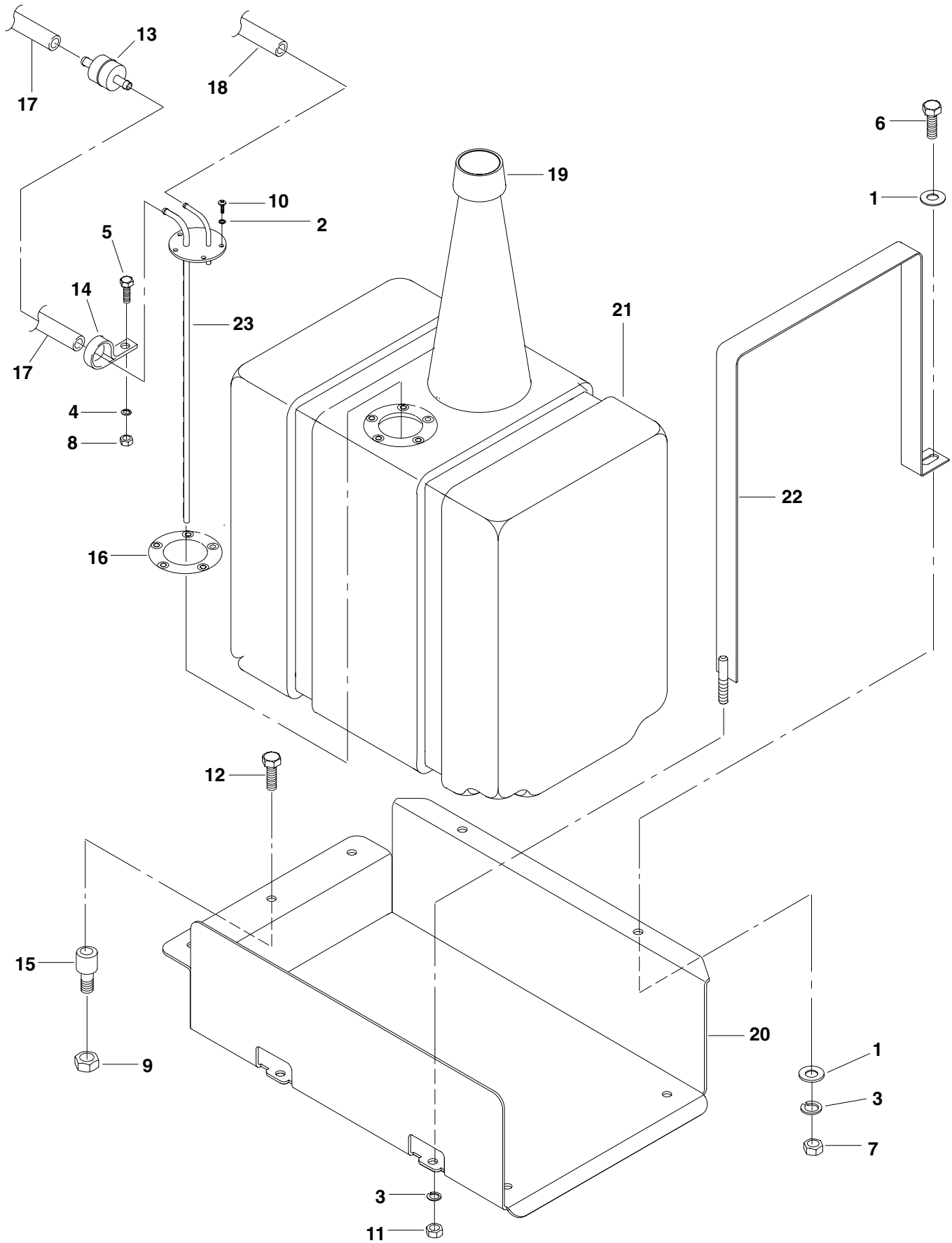


AIR CLEANER 7.17

Ref. No.	Part No.	Description	No. Req'd	Notes
1	103867	Washer, 5/16"	6	
2	300646	Screw, 1/4-20 x 3/4"	2	
3	306396	Lockwasher, 1/4"	8	
4	306450	Screw, 5/16-18 x 3/4"	6	
5	308090	Washer, 1/4"	2	
6	548048	Nut, lock, 5/16-18	8	
7	800279	Nut, speed, 1/4-20	2	
8	825358	Clamp	2	
9	825772	Gasket	1	
10	830930	Clamp	2	
11	834029	Hose	1	
12	4116281.7	Bracket, mounting	1	
13	841229	Connector, plastic, "Y"	1	
14	841230	Connector	1	
15	4116437.6	Panel, center	1	
16	892679	Filter, air	1	
17	840352	•Element, air filter	1	
18	892680	Bracket, filter	1	
19	835064	Hose, air	1	

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

7.18 FUEL TANK

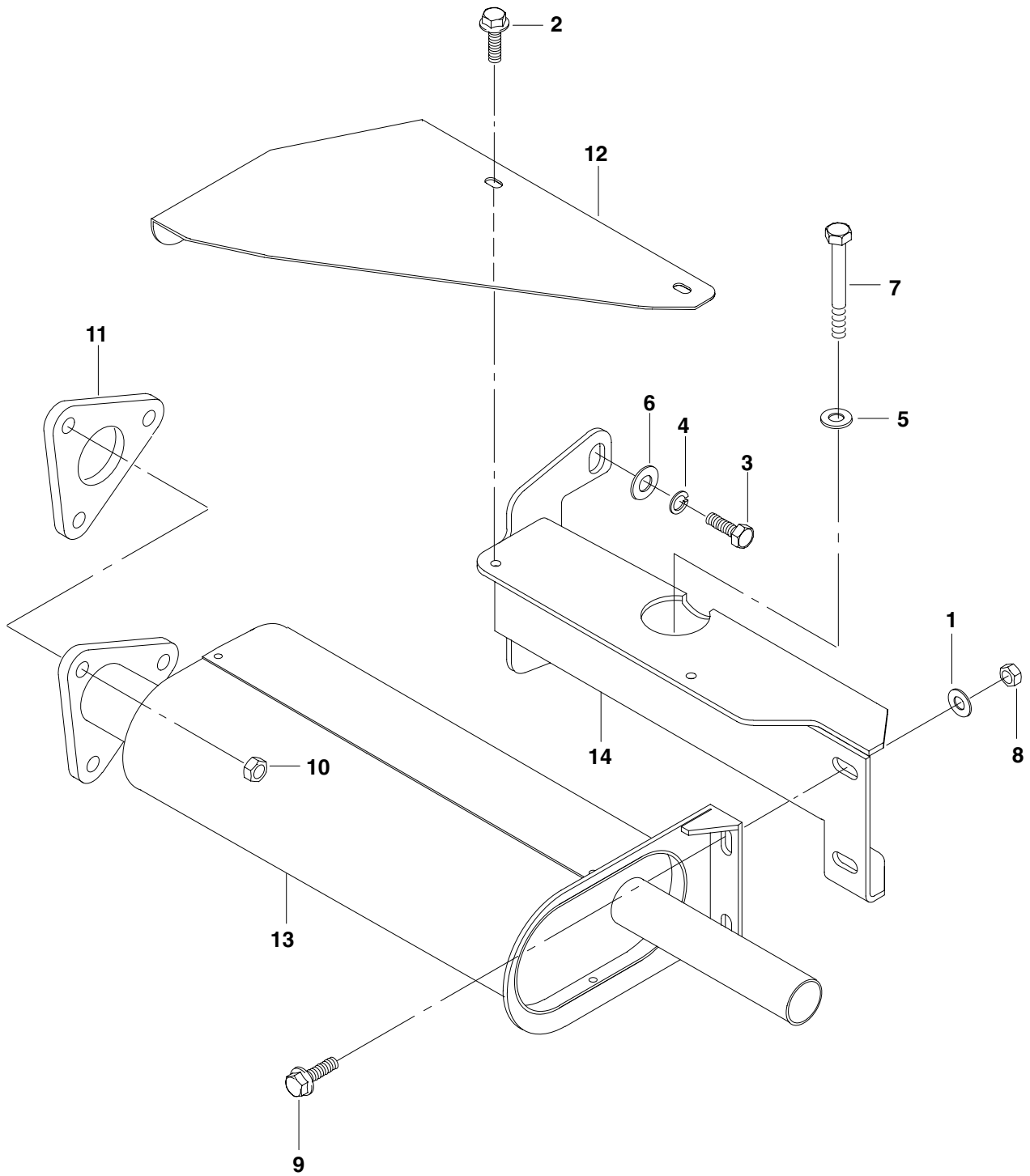


FUEL TANK COMPONENTS 7.18

Ref. No.	Part No.	Description	No. Req'd	Notes
1	103867	Washer, 5/16"	4	Not illustrated.
2	120052	Lockwasher, #10	5	
3	306325	Lockwasher, 5/16"	4	
4	306396	Lockwasher, 1/4"	1	
5	306487	Screw, 1/4-20 x 5/8"	1	
6	306555	Screw, 5/16-18 x 5/8"	2	
*	320107	Tie strap, 7 1/2" (191 mm)	12	
7	548048	Nut, lock, 5/16-18	2	
8	548597	Nut, lock, 1/4-20	1	
9	548911	Nut, flangelock, 5/16-18	5	
10	800021	Screw, #10-32 x 1/2", P.T.H.	5	
11	800221	Nut, crownlock, 5/16-24	2	
12	800601	Screw, 5/16-18 x 3/8"	5	
13	821814	Filter, fuel	1	
14	825884	Clamp, fuel filter	1	
15	829148	Mount, isolation	5	
16	829954	Gasket, fuel tank	1	
17	830425	Hose, fuel	As Req'd	
18	831039	Hose, fuel	As Req'd	
19	833790	Cap, fuel	1	
20	4116561.7	Pan, fuel tank	1	
21	889150	Tank, fuel	1	
22	4116562.7	Strap, fuel tank	2	
23	889154	Pickup, fuel	1	

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

7.19 MUFFLER

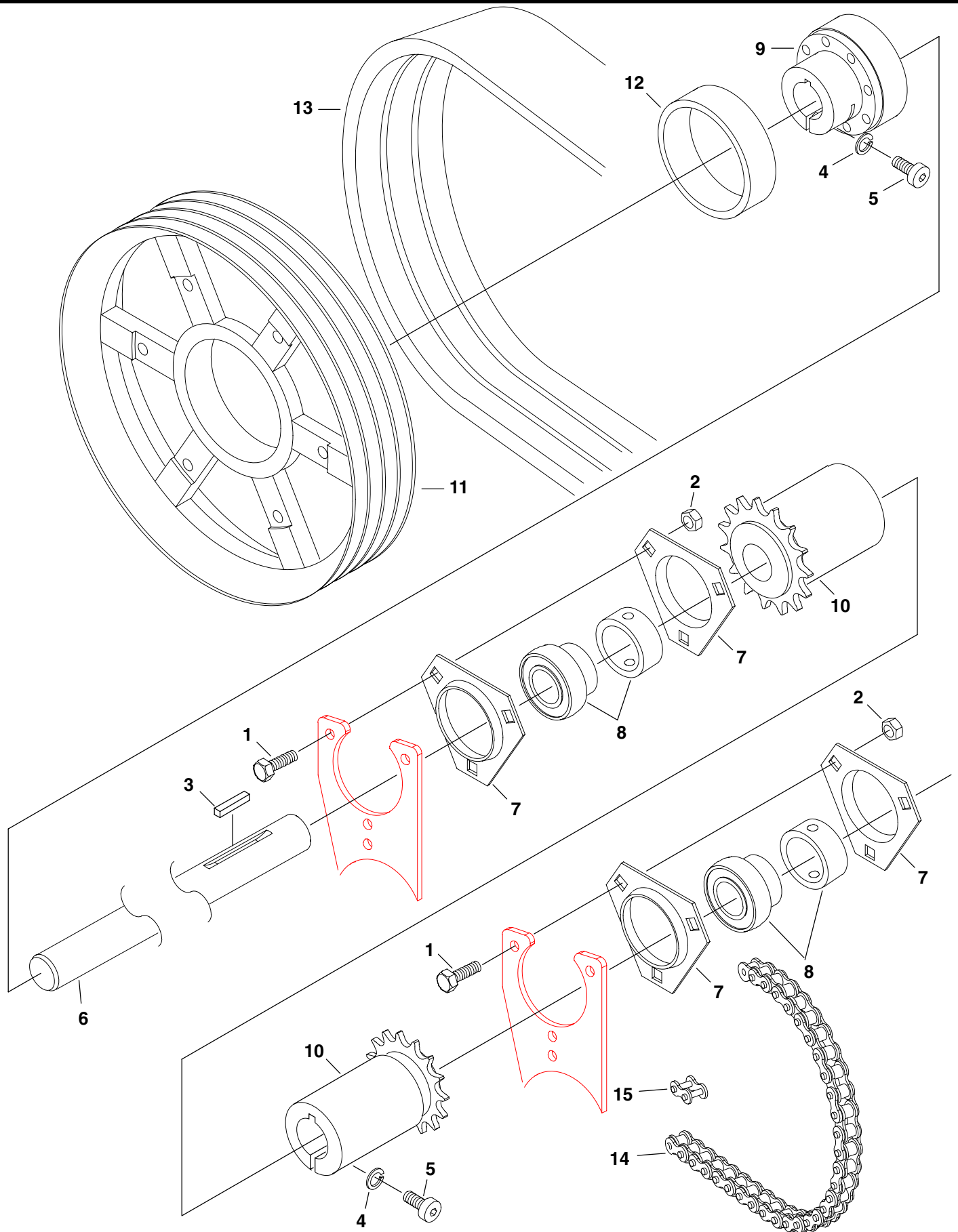


MUFFLER 7.19

Ref. No.	Part No.	Description	No. Req'd	Notes
1	103867	Washer, 5/16"	2	
2	112050	Screw, tapping, 1/4-20 x 5/8"	2	
3	130538	Screw, 7/16-14 x 1 1/4"	2	
4	303269	Lockwasher, 7/16"	2	
5	306981	Washer, 3/8"	1	
6	306982	Washer, 7/16"	2	
7	307776	Screw, 3/8-16 x 2 3/4"	1	
8	548048	Nut, lock, 5/16-18	2	
9	548971	Screw, flangelock, 5/16-18 x 5/8"	2	
10	800821	Nut, lock, 10mm x 1.25	3	
11	833208	Gasket, exhaust	1	
12	835717	Shield, muffler	1	
13	888961	Muffler, complete	1	
14	889432	Bracket	1	

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

7.20 MAIN DRIVE ASSEMBLY

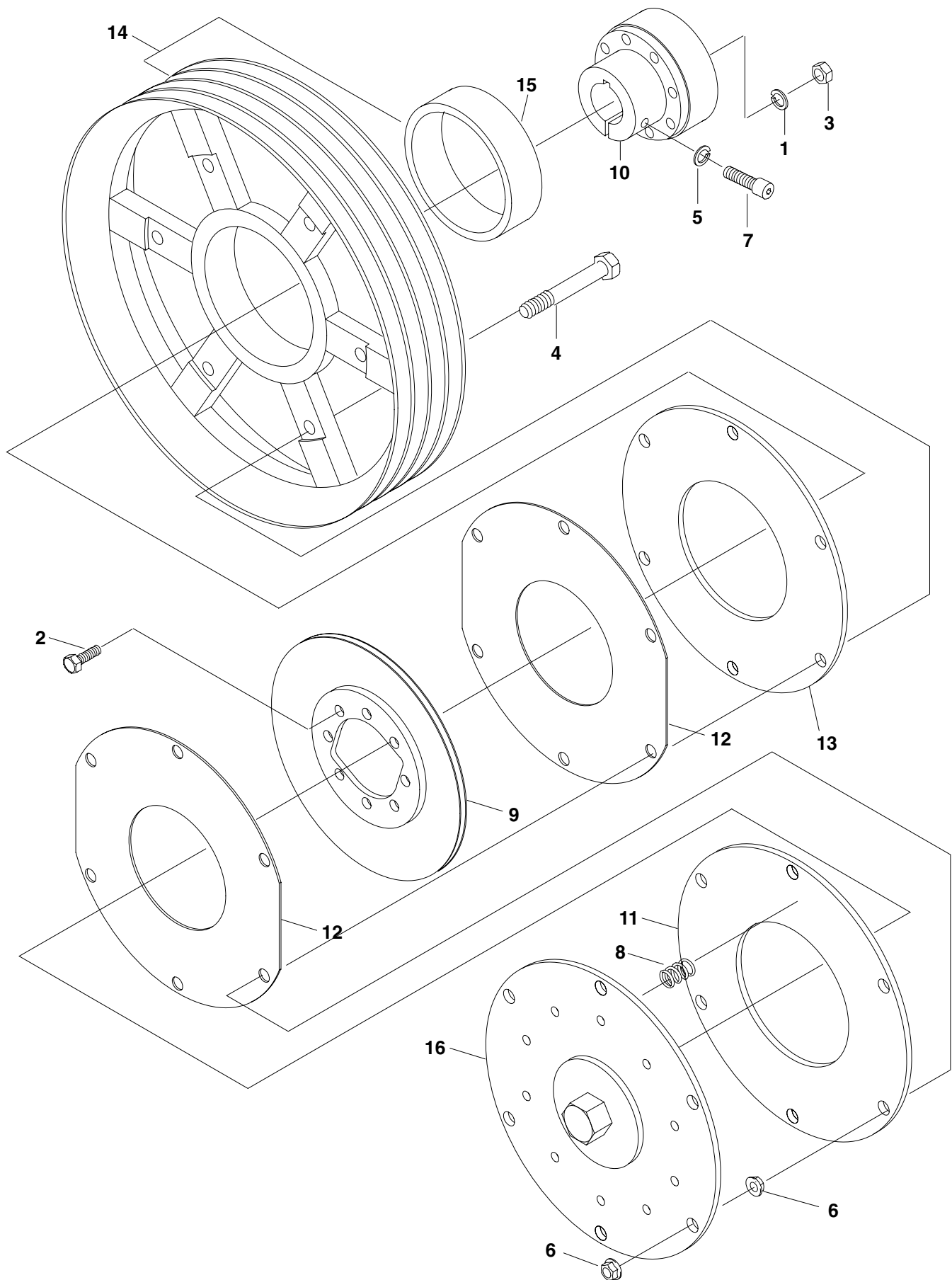


MAIN DRIVE ASSEMBLY 7.20

Ref. No.	Part No.	Description	No. Req'd	Notes
		Shaft, main drive	1	
1	306414	•Screw, 3/8–16 x 1”	4	
2	306562	•Nut, 3/8–16	4	
3	523184	•Key, 1/4” x 1/4” x 27/32”	5	
4	548183	•Lockwasher, 5/16”	5	
5	800513	•Screw, 5/16–18 x 1 1/4”, grade 8	5	
6	832982	•Jackshaft	1	
7	835104	•Flange, bearing	8	
8	835105	•Bearing, ball, w/collar	4	
9	836814	•Hub	1	
10	4116214.7	•Sprocket	4	
11	889911	•Pulley	1	
12	836812	••Bearing	1	
13	835063	Belt, drive	1	
14	891956	Chain, #50 sealed roller, 69 links	4	
15	522123	•Connector, #50 sealed	1	

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

7.21 SLIP CLUTCH

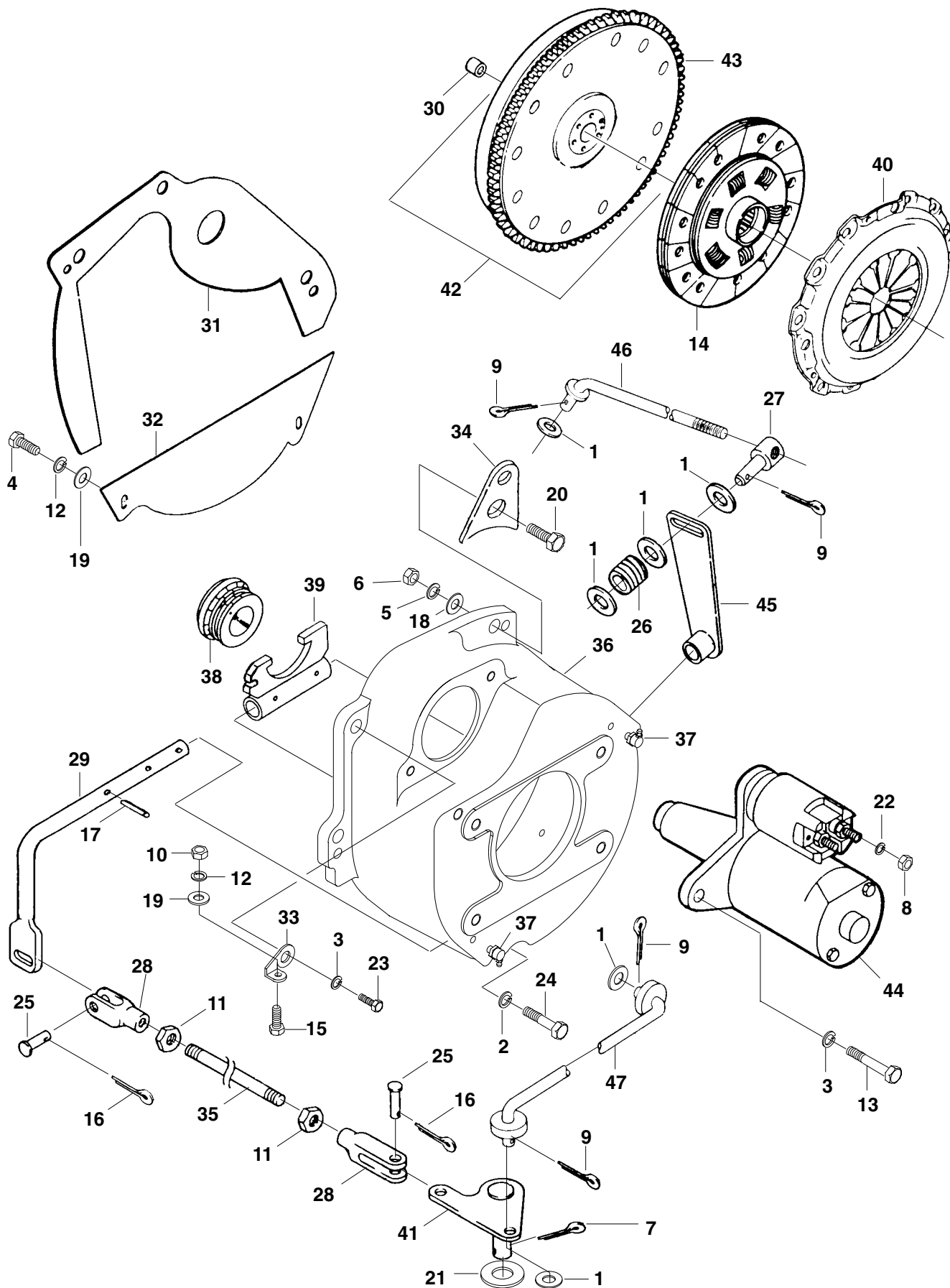


SLIP CLUTCH 7.21

Ref. No.	Part No.	Description	No. Req'd	Notes
1	306325	Lockwasher, 5/16"	8	
2	306424	Screw, 5/16-18 x 2"	8	
3	306932	Nut, 5/16-18	8	
4	311213	Screw, 3/8-16 x 3"	6	
5	548183	Lockwasher, 5/16"	1	
6	548804	Nut, flangelock, 3/8-16	12	
7	800513	Screw, 5/16-18 x 1 1/4", grade 8	6	
8	818020	Spring	10	
9	836729	Disc, slip clutch	1	
10	836814	Hub	1	
11	836819	Plate, pressure	1	
12	836820	Liner	2	
13	836821	Plate, backing	1	
14	2701470	Pulley	1	
15	836812	•Bearing	1	
16	889921	Plate, spring mounting	1	

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

7.22 CLUTCH, HOUSING, AND STARTER

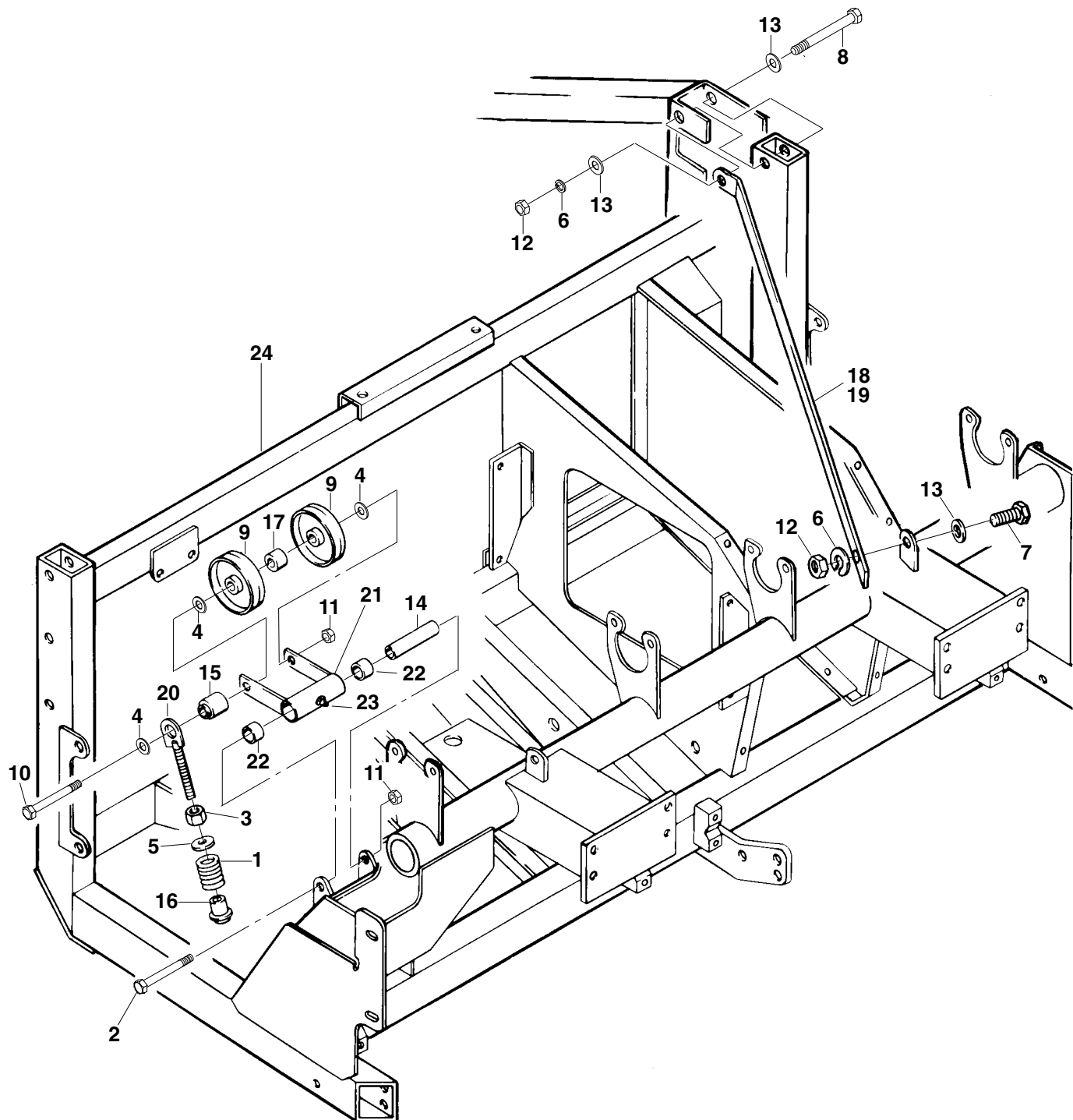


CLUTCH, HOUSING AND STARTER 7.22

Ref. No.	Part No.	Description	No. Req'd	Notes
1	103867	Washer, 5/16"	2	
2	120166	Lockwasher, 1/2"	3	
3	120177	Lockwasher, 3/8"	2	
4	300977	Screw, 1/4-28 x 5/8"	2	
5	303269	Lockwasher, 7/16"	1	
6	304364	Nut, 7/16-14	1	
7	304636	Pin, cotter, 1/8" x 1 1/8"	1	
8	306325	Lockwasher, 5/16"	1	
9	306328	Pin, cotter, 3/32" x 3/4"	6	
10	306375	Nut, 1/4-20	1	
11	306388	Nut, jam, 3/8-24	2	
12	306396	Lockwasher, 1/4"	3	
13	306414	Screw, 3/8-16 x 1"	2	
14	889793	Disc, clutch	1	
15	306487	Screw, 1/4-20 x 5/8"	1	
16	306956	Pin, cotter, 1/8" x 3/4"	2	
17	306971	Pin, roll, 3/16" x 1 1/8"	3	
18	306982	Washer, 7/16"	1	
19	308090	Washer, 1/4"	3	
20	311396	Screw, 7/16-14 x 2 1/4"	1	
21	522226	Washer, 5/8"	1	
22	450324	Nut, M8 x 1.25, grade 8	1	
23	800546	Screw, M12 x 1.25 x 35mm, grade 8	2	
24	800562	Screw, M12 x 1.25 x 75mm, grade 8	1	
25	814079	Pin, clevis, 5/16" x 1 1/8"	2	
26	817446	Spring	1	
27	830799	Pin, connector	1	
28	831297	Yoke	2	
29	832983	Lever, clutch	1	
30	833277	Bearing, sleeve	1	
31	833311	Plate, cover	1	
32	833312	Plate, cover	1	
33	833625	Bracket, mounting	1	
34	833626	Bracket, hoist	1	
35	837782	Rod, clutch linkage	1	
36	888304	Housing, clutch	1	
37	807442	•Fitting, lubrication, 1/4-28, 90°	2	
38	888348	Sleeve	1	
39	888508	Actuator	1	
40	888564	Cover, clutch	1	
41	4116689.7	Bellcrank	1	
42	889032	Flywheel	1	
43	837060	•Gear, flywheel ring	1	
44	889057	Starter, complete	1	
45	889158	Lever, throttle	1	
46	889175	Rod, control	1	
47	889222	Rod	1	

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

7.23 BELT IDLER AND ANGLE BRACE

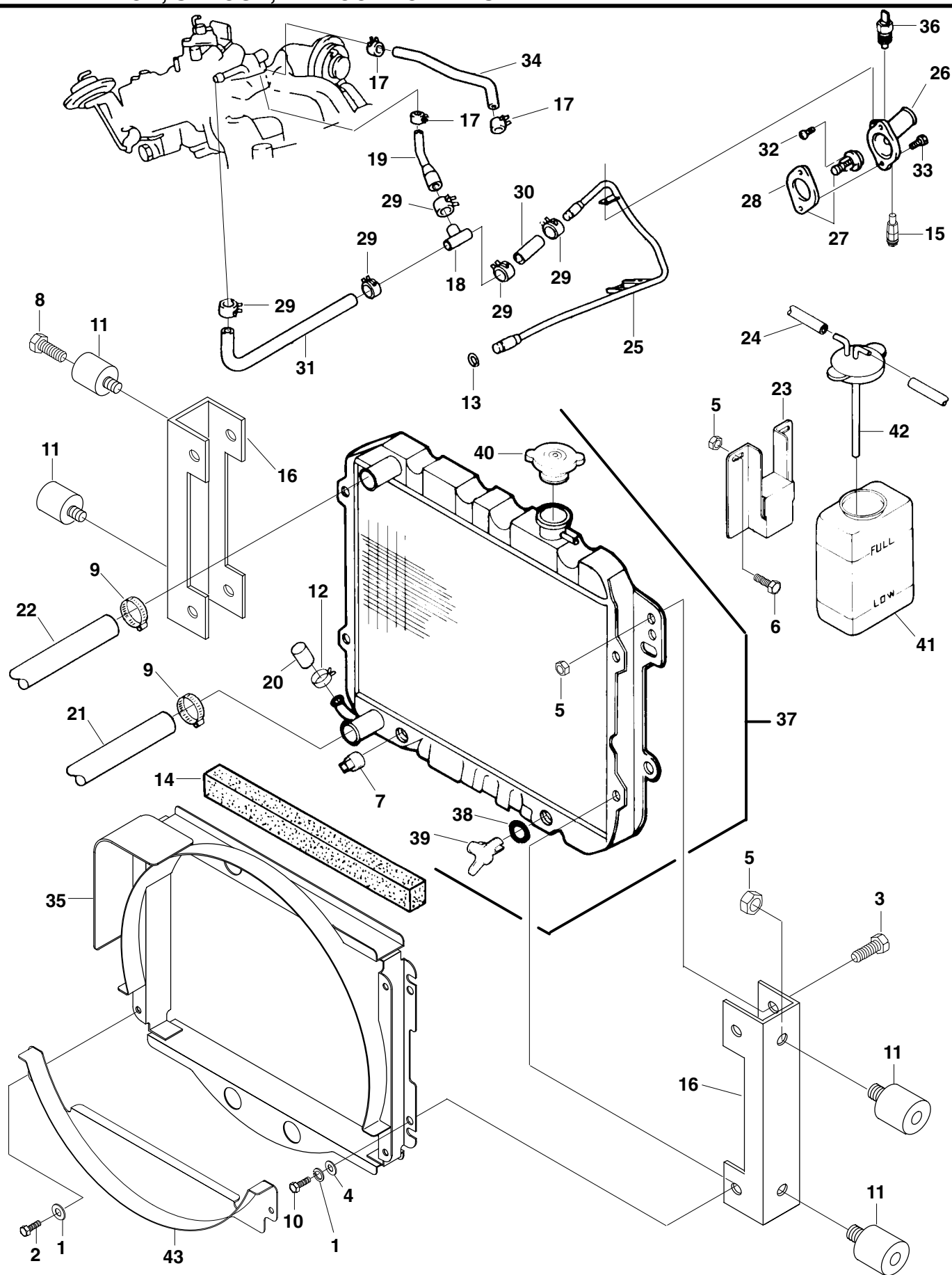


BELT IDLER ASSEMBLY and ANGLE BRACE 7.23

Ref. No.	Part No.	Description	No. Req'd	Notes
1	111750	Spring, compression	1	Not Illustrated
2	201809	Screw, 3/8–16 x 4 1/2"	1	
3	306933	Nut, 1/2–13	1	
4	306981	Washer, 3/8"	3	
5	308091	Washer, 1/2"	1	
6	310856	Lockwasher, 5/8"	2	
7	316914	Screw, 5/8–11 x 2"	2	
8	318370	Hitch Bolt, 5/8–11 x 4"	6	
9	522973	Pulley, idler	2	
10	548021	Screw, 3/8–16 x 6"	1	
11	548052	Nut, lock, 3/8–16	2	
12	800603	Nut, 5/8–11	8	
13	809156	Washer, 5/8"	14	
14	834106	Shaft	1	
15	834121	Spacer	1	
16	834124	Base	1	
17	834243	Spacer	1	
18	4116189.7	Brace, frame (left)	1	
19	4116191.7	Brace, frame (right)	1	
20	888866	Rod, spring	1	
21	4116206.7	Bracket, idler	1	
22	523160	•Bushing	2	
23	807442	•Fitting, lubrication, 1/4–28, 90°	1	
24	4116354.7	Frame, main	1	

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

7.24 RADIATOR, SHROUD, AND COMPONENTS

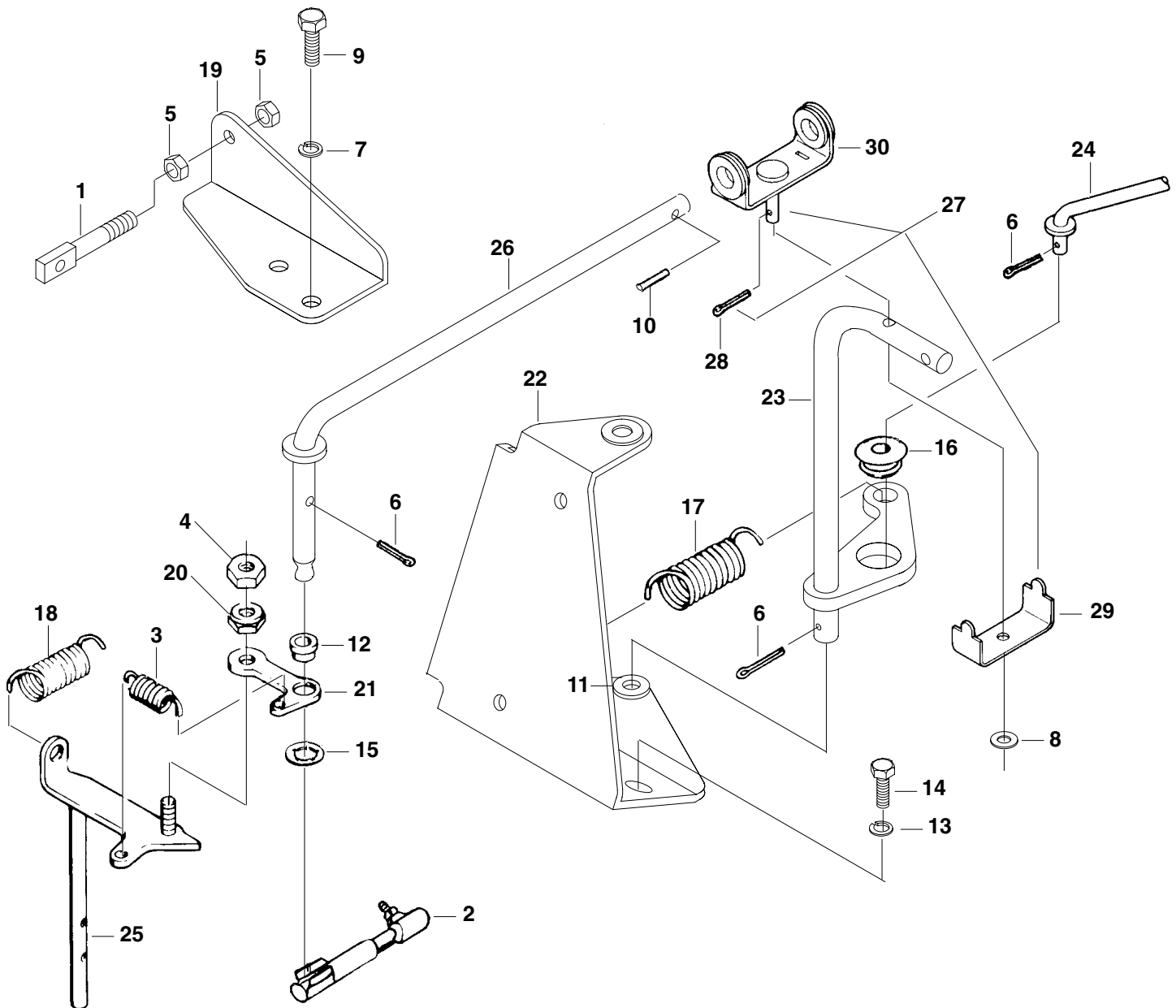


RADIATOR, SHROUD, AND COMPONENTS 7.24

Ref. No.	Part No.	Description	No. Req'd	Notes
1	306396	Lockwasher, 1/4"	6	
2	306487	Screw, 1/4–20 x 5/8"	2	
3	306555	Screw, 5/16–18 x 5/8"	4	
4	308090	Washer, 1/4"	4	
5	548911	Nut, flangelock, 5/16–18	10	
6	548971	Screw, flangelock, 5/16–18 x 5/8"	2	
7	800120	Plug, 3/8–18 NPT	1	
8	800601	Screw, flange, 5/16–18 x 3/8"	4	
9	820889	Clamp, tubing	2	
10	828162	Screw, M6 x 1.0 x 16mm, grade 8	4	
11	829148	Mount, isolation	4	
12	832033	Clamp	1	
13	833441	O–ring	1	
14	833512	Foam	4	
15	833615	Sender, water temperature	1	
16	834163	Channel	2	
17	834813	Clip	1	
18	834817	Connector, three way	1	
19	834820	Hose	1	
20	834821	Plug, hose	1	
21	835065	Hose, radiator (lower)	1	
22	835066	Hose, radiator (upper)	1	
23	4116353.7	Bracket, mounting	1	
24	835805	Hose, overflow	1	
25	836409	Pipe, water by–pass	1	
26	836974	Outlet, water	1	
27	836975	Thermostat	1	
28	833445	•Gasket, water outlet	1	
29	836991	Clip, hose	1	
30	836992	Hose	1	
31	836993	Hose	1	
32	837081	Screw, tapping	1	
33	837086	Screw, M8 x 1.25 x 23mm	2	
34	837538	Hose	1	
35	888214	Shroud, fan	1	
36	888566	Switch, thermal control	1	
37	889048	Radiator, complete	1	
38	833442	•Gasket	1	
39	833443	•Plug, drain cock	1	
40	889049	•Cap, radiator	1	
41	889050	Reservoir, coolant	1	
42	889051	Cap, coolant reservoir	1	
43	889133	Cover	1	

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

7.25 THROTTLE LINKAGE

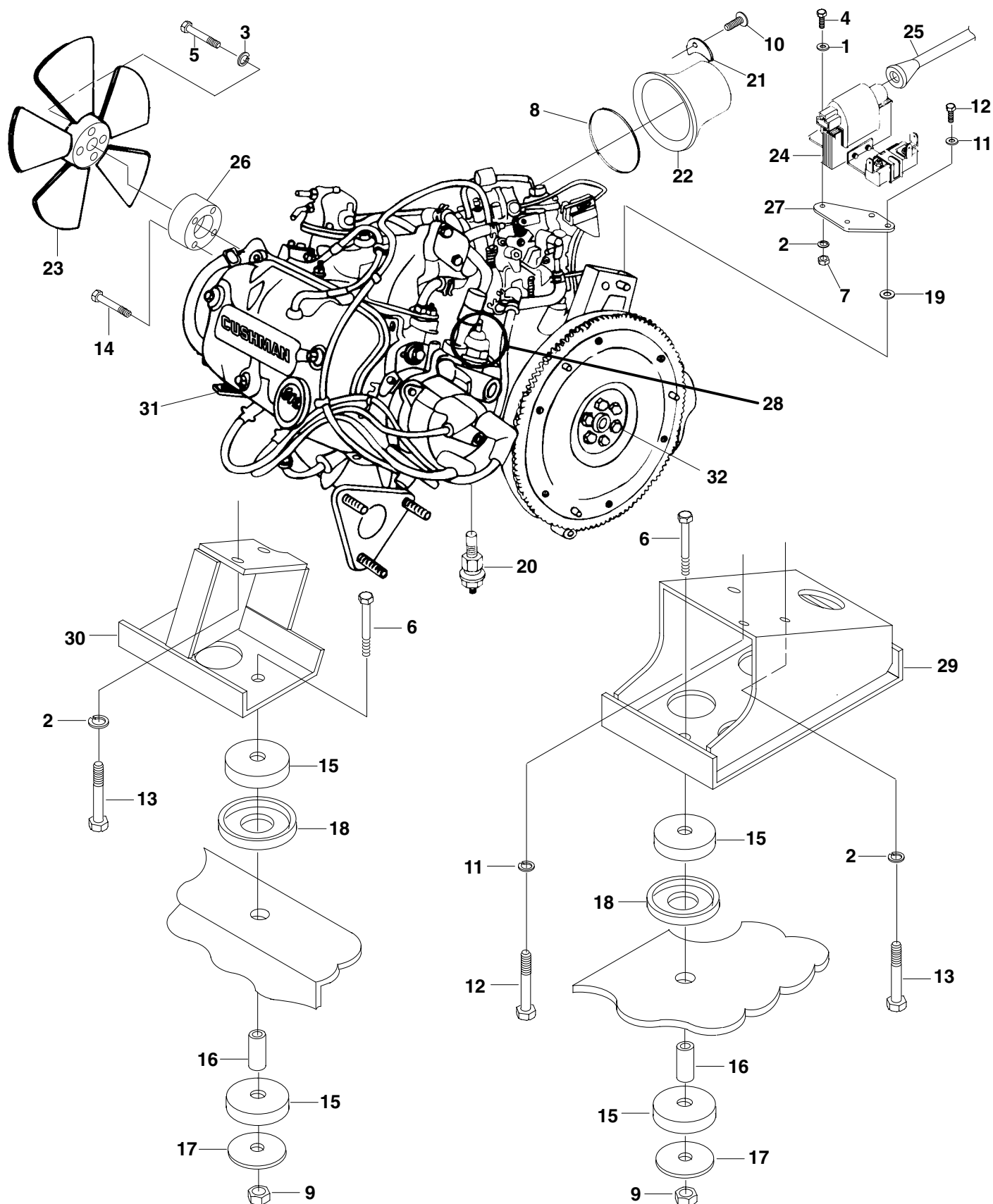


THROTTLE LINKAGE 7.25

Ref. No.	Part No.	Description	No. Req'd	Notes
1	111893	Screw, #10-32 x 1 3/4"	1	Not offered separately
2	838780	Ball link, governor	1	
3	114444	Spring, extension	1	
4	130728	Nut, jam, 1/4-20	1	
5	2702244	Nut, #10-32	2	
6	306372	Pin, cotter, 3/32" x 1/2"	3	
7	306396	Lockwasher, 1/4"	2	
8	306453	Washer, 5/16"	1	
9	306487	Screw, 1/4-20 x 5/8"	2	
10	306966	Pin, roll, 1/8" x 3/4"	1	
11	306981	Washer, 3/8"	1	
12	523358	Bearing, flanged	1	
13	450412	Lockwasher, M10	2	
14	800547	Screw, M10 x 1.25 x 20 mm, grade 8	2	
15	800563	Ring, retaining, external	1	
16	813007	Bushing	1	
17	818092	Spring, extension	1	
18	833101	Spring, extension	1	
19	833366	Bracket, spring	1	
20	835271	Nut, special	1	
21	835272	Lever, auxiliary	1	
22	835274	Bracket	1	
23	889018	Shaft, vertical throttle	1	
24	889175	Rod, control	1	
25	889195	Lever	1	
26	889197	Rod, control	1	
27	890001	Bracket kit, throttle	1	
28	306463	•Pin, cotter, 1/16" x 1/2"	1	
29	836730	•Retainer, throttle bracket	1	
30		•Bracket, throttle	1	

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

7.26 ENGINE AND MOUNTS

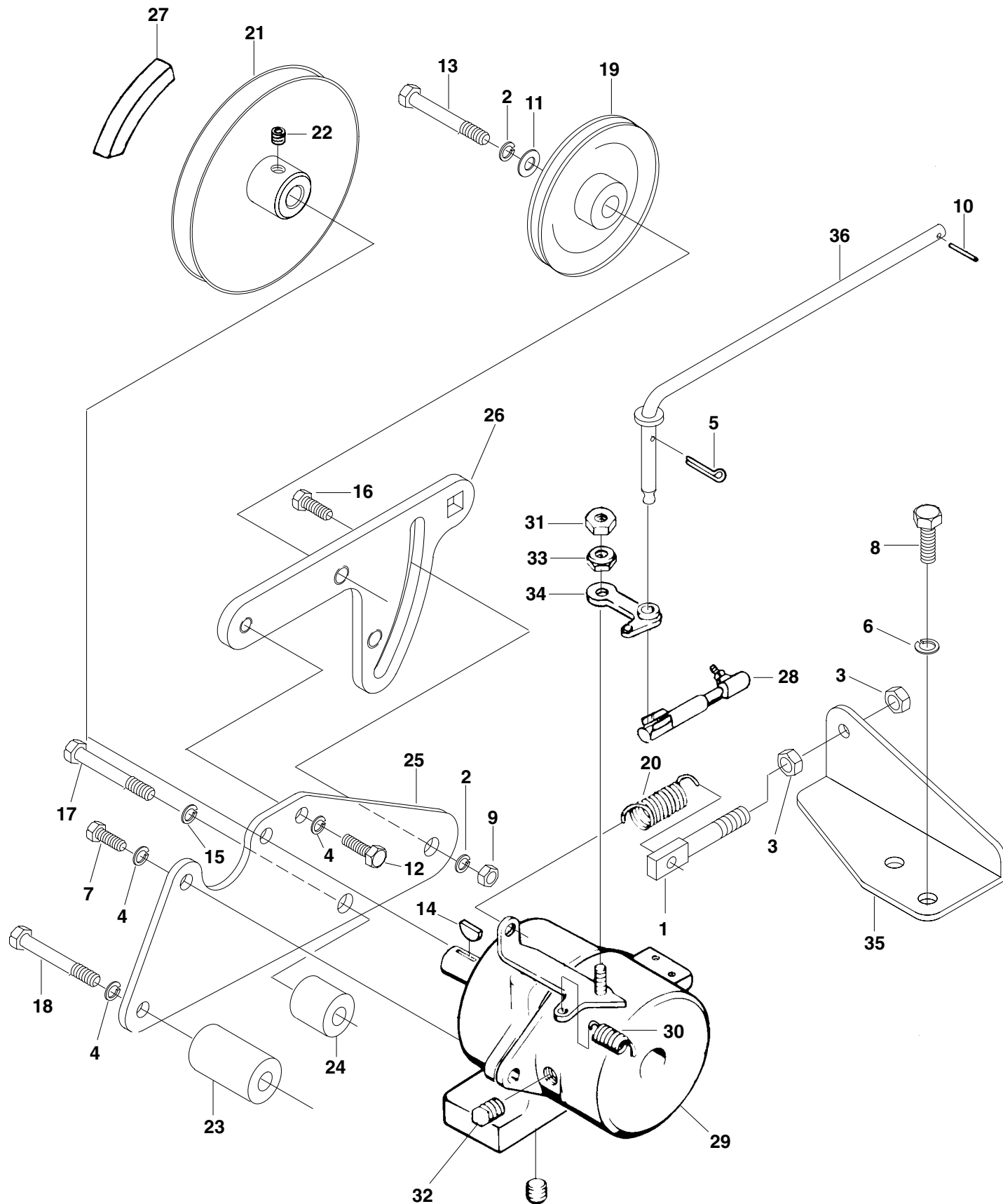


ENGINE AND MOUNTS 7.26

Ref. No.	Part No.	Description	No. Req'd	Notes
1	103867	Washer, 5/16"	2	Not connected for GA 60 appl.
2	306325	Lockwasher, 5/16"	6	
3	306396	Lockwasher, 1/4"	4	
4	306450	Screw, 5/16–18 x 3/4"	2	
5	306487	Screw, 1/4–20 x 5/8"	4	
6	306836	Screw, 3/8–16 x 2 1/4"	4	
7	306932	Nut, 5/16–18	2	
8	522583	O–ring, seal	1	
9	548052	Nut, lock, 3/8–16	3	
10	800009	Screw, tapping, #10–24 x 3/8"	2	
11	450412	Lockwasher, 10mm	3	
12	800547	Screw, M10 x 1.25 x 20mm, grade 8	1	
13	800548	Screw, M8 x 1.25 x 20mm, grade 8	4	
14	450724	Screw, M8 x 1.25 x 25mm, grade 12.9	4	
15	806493	Mount, rubber	8	
16	808959	Spacer	4	
17	809174	Washer, 3/8"	4	
18	809242	Retainer	4	
19	821702	Washer, special, 3/8"	2	
20	833615	Sender, water temperature	1	
21	834244	Clip, tube	2	
22	834245	Tube, inlet	1	
23	834554	Fan, suction	1	
24	834873	Coil w/resistor, ignition	1	
25	834875	Wire, coil	1	
26	835047	Adapter, fan	1	
27	835244	Bracket	1	
28	888566	Switch, fan control	1	
29	4116704.7	Mount, engine	1	
30	4116705.7	Mount, engine	1	
31	890205	Engine, complete	1	
32	837089	Bolt, flywheel	6	

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

7.27 GOVERNOR, BRACKETS, AND PULLEYS

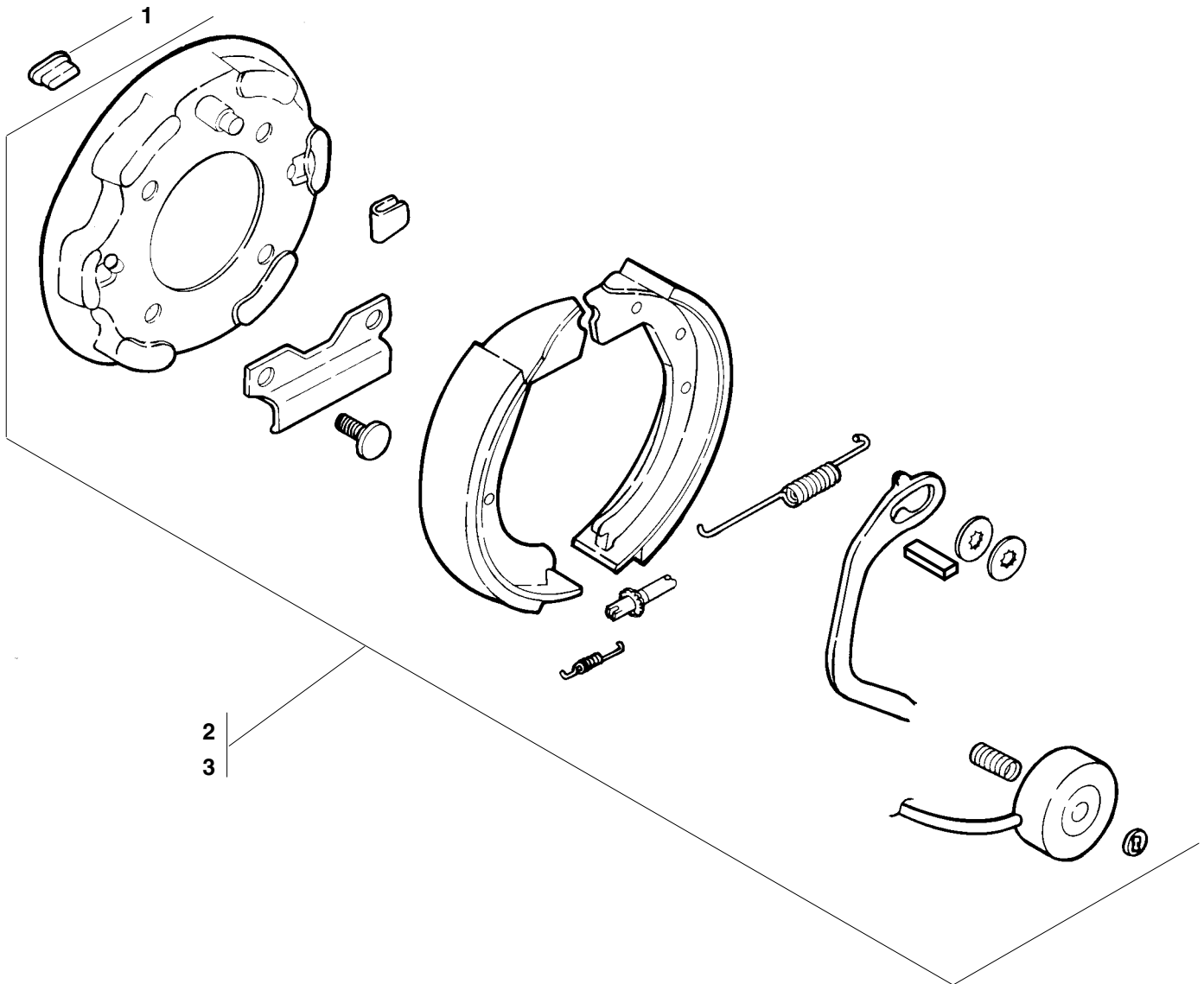


GOVERNOR, BRACKETS, AND PULLEYS 7.27

Ref. No.	Part No.	Description	No. Req'd	Notes
1	111893	Screw, #10–32 x 1 3/4", special	1	
2	120177	Lockwasher, 3/8"	2	
3	132520	Nut, #10–32	2	
4	306325	Lockwasher, 5/16"	4	
5	306372	Pin, cotter, 3/32" x 1/2"	1	
6	306396	Lockwasher, 1/4"	2	
7	306450	Screw, 5/16–18 x 3/4"	2	
8	306487	Screw, 1/4–20 x 5/8"	2	
9	306562	Nut, 3/8–16	1	
10	306966	Pin, roll, 1/8" x 3/4"	1	
11	306981	Washer, 3/8"	1	
12	309512	Screw, 5/16–18 x 1/2"	1	
13	310896	Screw, 3/8–16 x 1 1/8"	1	
14	2702249	Key, woodruff, 1/8" x 1/2"	1	
15	450412	Lockwasher, 10mm	2	
16	800500	Bolt, carriage, 3/8–16 x 1"	1	
17	800566	Screw, M10 x 1.25 x 60 mm grade 8	1	
18	450019	Screw, M8 x 1.25 x 55 mm grade 8.8	1	
19	832043	Pulley, idler	1	
20	833101	Spring, extension	1	
21	833236	Pulley, 5 1/4" (133 mm)	1	
22	548201	•Screw, set, 5/16–18 x 5/16"	2	
23	822660	Sleeve, spacer	1	
24	833135	Sleeve, spacer	1	
25	835048	Bracket, mounting	1	
26	835061	Bracket, idler	1	
27	835062	Belt, fan	1	
28	838780	Link, overtravel ball	1	
29	888398	Governor, complete	1	
30	114444	•Spring	1	
31	130728	•Nut, jam, 1/4–20	1	
32	800114	•Plug, pipe, 1/8–27 NPT	1	
33	835271	•Nut, 1/4–20	1	
34	892159	•Lever, auxiliary	1	
35	833366	Bracket	1	
36	889197	Rod, control	1	

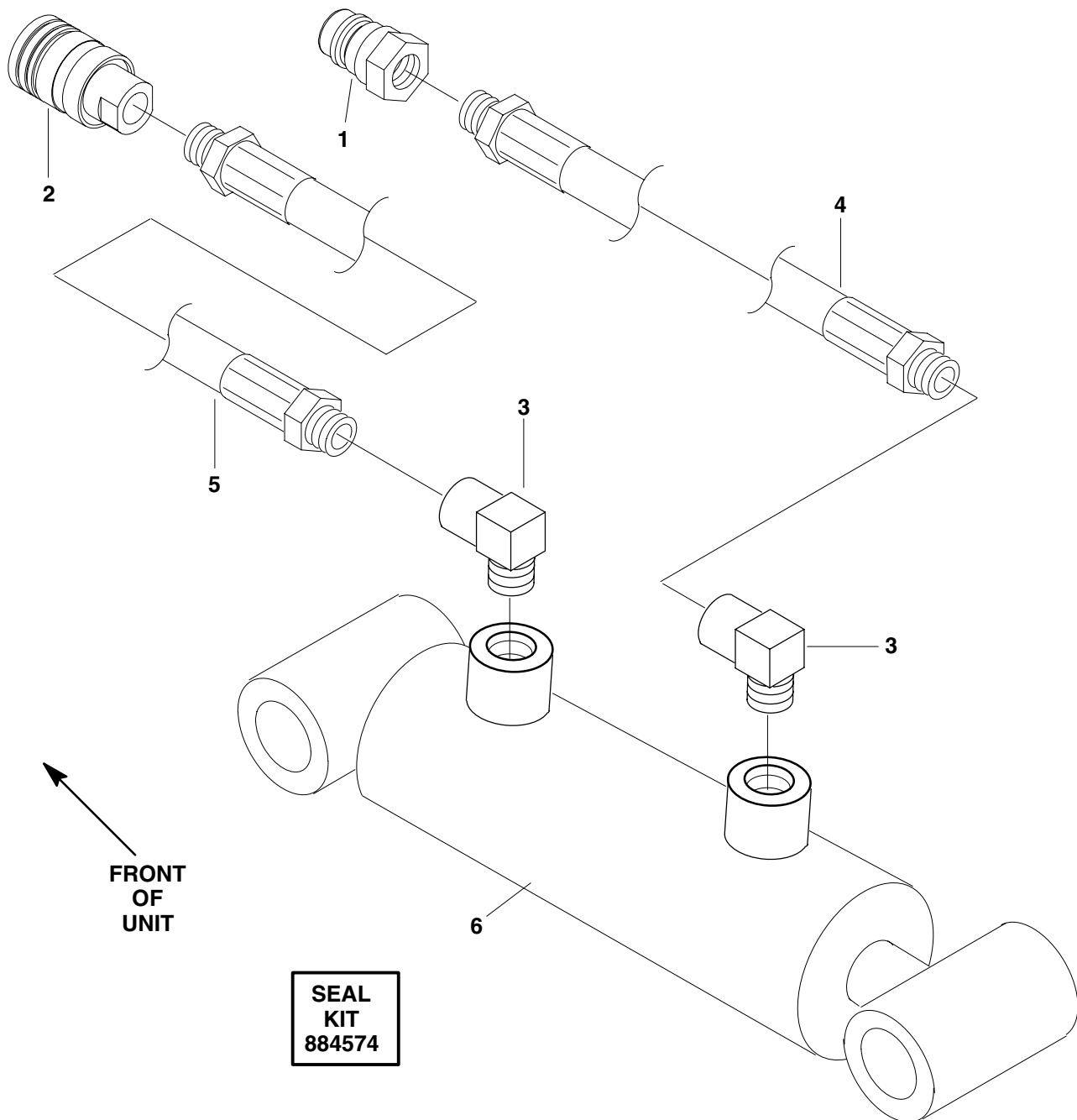
• INDENTED PART NAMES INDICATE THESE PARTS ARE INCLUDED IN PRECEDING ASSEMBLY

7.28 BRAKES



Ref. No.	Part No.	Description	No. Req'd	Notes
1	824833	Cover, adjusting hole	2	
2	889262	Brake assembly, electric (LEFT)	1	
3	889263	Brake assembly, electric (RIGHT)	1	

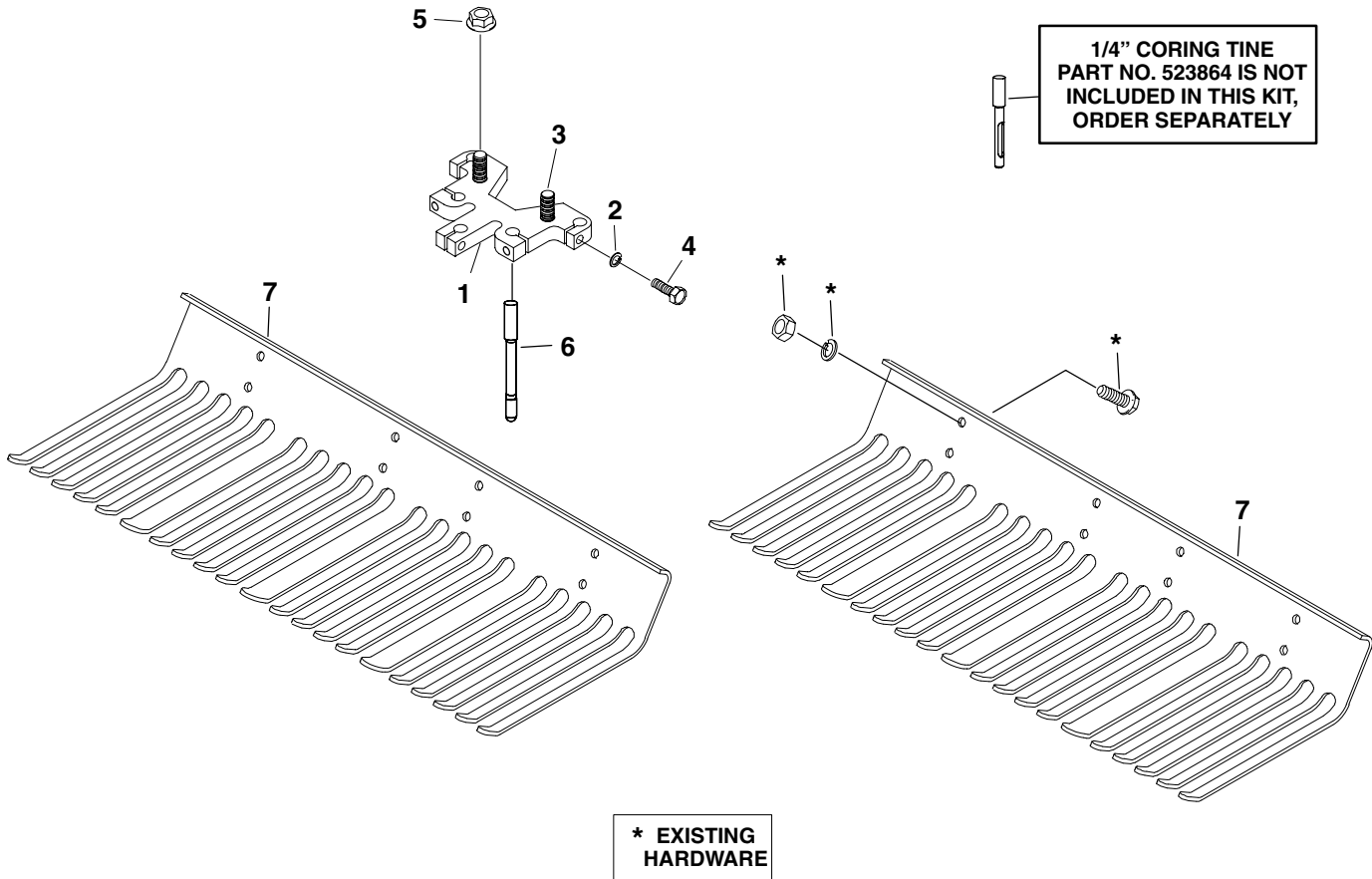
HYDRAULIC CYLINDER AND HOSES 7.29



Ref. No.	Part No.	Description	No. Req'd	Notes
1	832408	Coupler half, male	1	Not Illustrated
2	832409	Coupler half, female	1	
3	835101	Fitting, hydraulic, 90°	2	
4	835242	Hose, hydraulic, 118" (2997 mm)	1	
5	835243	Hose, hydraulic, 112" (2845 mm)	1	
6	889152	Cylinder, hydraulic, 2" (51 mm)	1	
	884574	•Kit, seal	1	

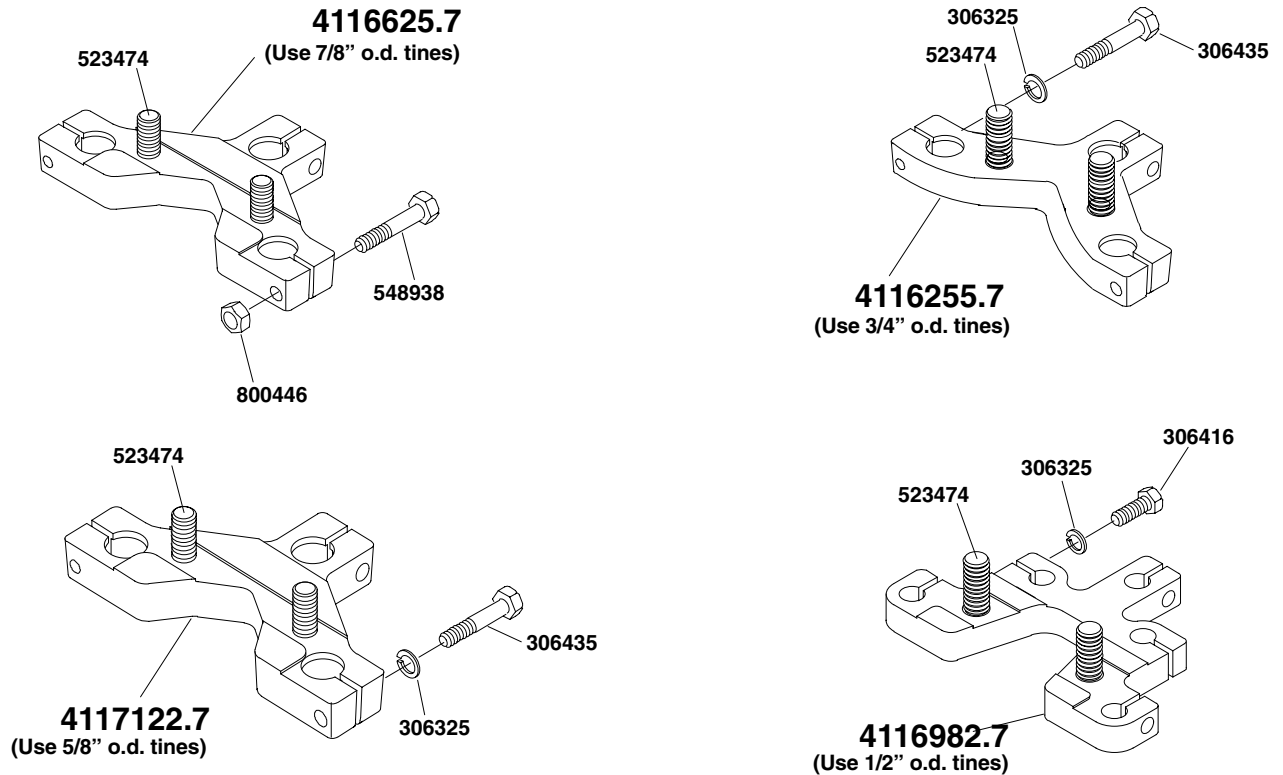
• INDENTED PART NAMES INDICATE THESE PARTS ARE INCLUDED IN PRECEDING ASSEMBLY

7.30 QUINT TINE ACCESSORY



Ref. No.	Part No.	Description	No. Req'd	Notes
	4116951	Quint tine accessory	1	
1	4116982.7	•Holder, quint tine	8	
2	306325	••Lockwasher, 5/16"	5	
3	523474	••Screw, serrated, 1/2–20 x 1 3/4"	2	
4	800463	••Screw, 5/16–18 x 1	5	
5	800559	••Nut, crownlock 1/2–20	2	
6	523863	•Tine, 1/4" solid	40	
7	4116983.7	•Guard, turf, 21 finger	1	
	523864	Tine, 1/4" coring	40	Order separately

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



Tine Holder 4116625.7 (Standard)

Tines Used W/Holder
 (Standard) 834973 3/4" Coring Tine
 523273 3/4" Coring Tine

Tine Holder 4117122.7

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 4116255.7

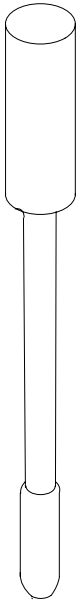
Tines Used W/Holder
 517487 3/8" Coring Tine
 517489 5/8" Coring Tine
 523028 5/8" Coring Tine
 523421 3/8" Coring Tine
 523472 1/2" Coring Tine
 523394 5/8" Coring Tine
 838323 1/2" Solid Tine

***Tine Holder 4116982.7**

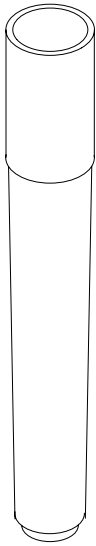
Tines Used W/Holder
 523863 1/4" Solid Tine
 523864 1/4" Coring Tine

*Turf guards (Part No. 4116983.7) must be used when using this tine holder.

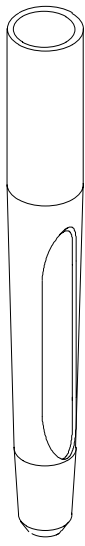
9 TINES



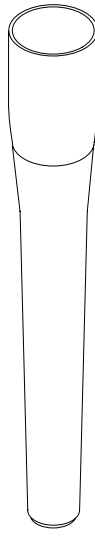
523863
(1/2" o.d.)



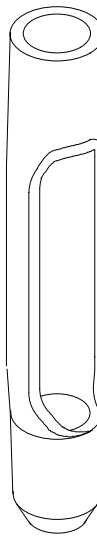
523995
(5/8" o.d.)



523864
(1/2" o.d.)



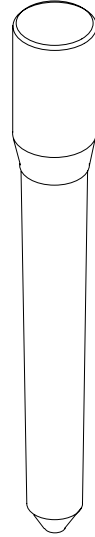
523421
(3/4" o.d.)



834973
(7/8" o.d.)



523394
(3/4" o.d.)



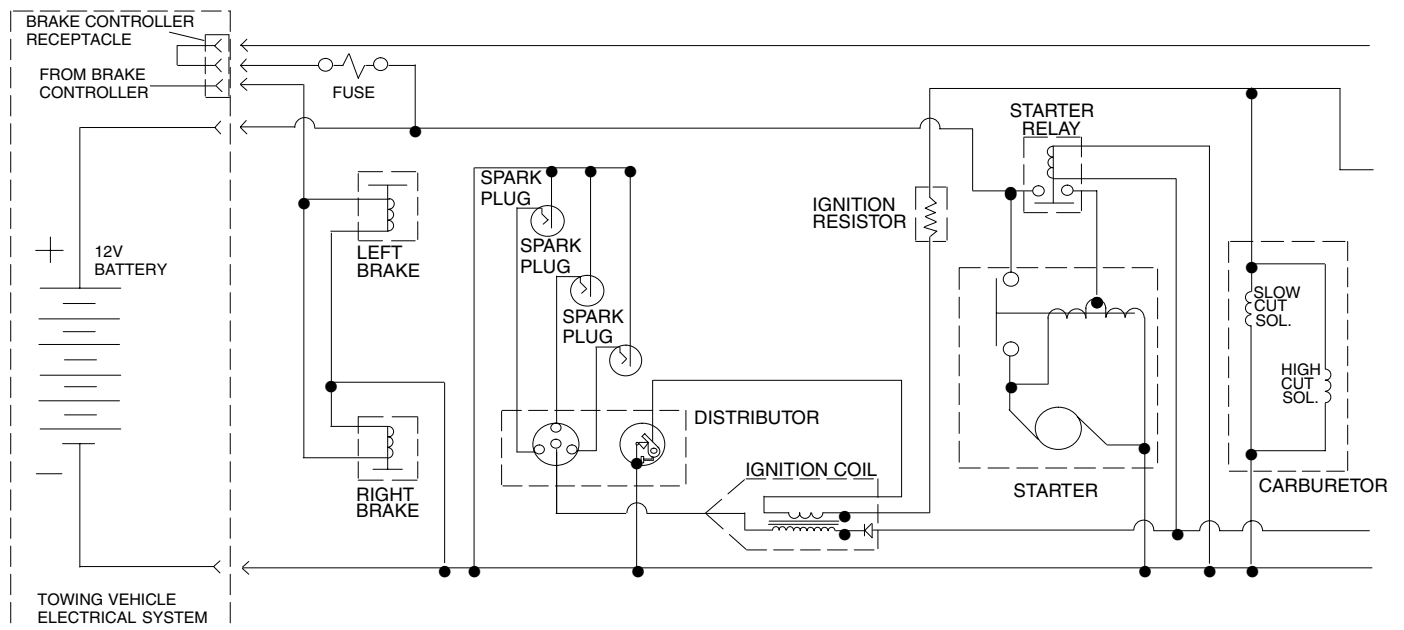
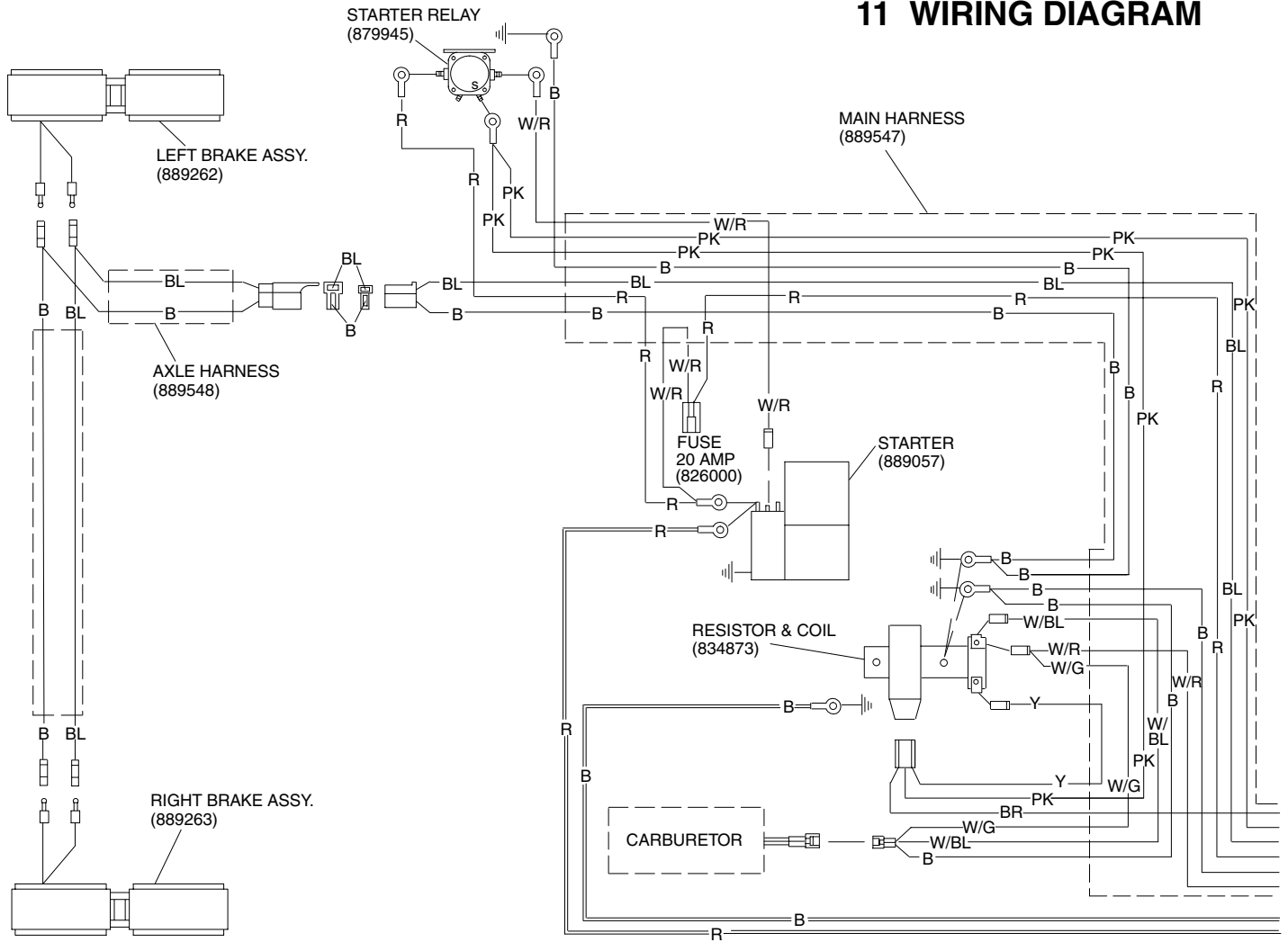
838323
(3/4" o.d.)

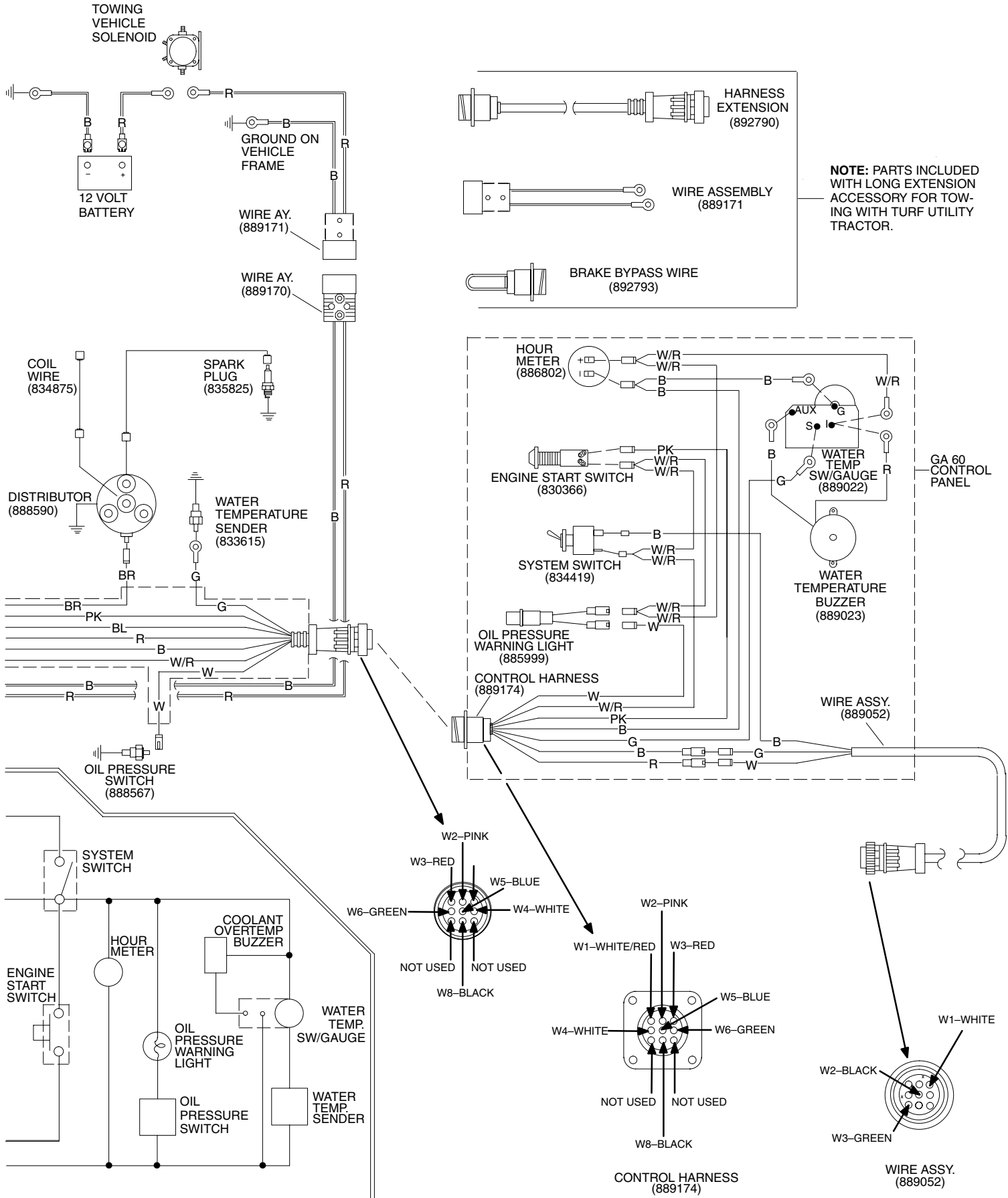
TINE P.N.	DESCRIPTION	HOLE SIZE	HOLDER P.N.
523863	1/4" Solid Tine	1/4" x 2 1/2"	4116982.7
523864	1/4" Coring Tine	1/4" x 2 1/2"	4116982.7
517486	1/4" Coring Tine	1/4" x 2 1/2"	4117122.7
517487	3/8" Coring Tine	3/8" x 2 1/2"	4117122.7
523421	3/8" Coring Tine	3/8" x 3 1/4"	4116255.7
517488	1/2" Coring Tine	1/2" x 2 1/2"	4117122.7
523472	1/2" Coring Tine	1/2" x 3 3/4"	4116255.7
523995	1/2" Coring Tine (H.D.)	1/2" x 2 1/2"	4117122.7
547132	1/2" Coring Tine (Carbide tip)	1/2" x 2 1/2"	4117122.7
838323	1/2" Solid Tine	1/2" x 3 3/4"	4116255.7
523394	5/8" Coring Tine	5/8" x 3 3/4"	4116255.7
517489	5/8" Coring Tine	5/8" x 2 1/2"	4116255.7
523028	5/8" Coring Tine	5/8" x 3 3/4"	4116255.7
523273	3/4" Coring Tine	3/4" x 3 3/4"	4116625.7
834973	3/4" Coring Tine (open side)	3/4" x 3 3/4"	4116625.7

10 TINE APPLICATION

PART NUMBER	ACTUAL LENGTH	HOLE SIZE	TINE HOLDER USED	APPLICATION
523863	5" (127 mm)	1/4" x 2 1/2" (6 mm x 64 mm)	4116982.7	For aerating when removing cores would be inconvenient.
523864	4" (102 mm)	1/4" x 2 1/2" (6 mm x 64 mm)	4116982.7	For greens only. Use on greens with high sand content or wet conditions if cores are being left in greens.
517486	4 1/4" (108 mm)	1/4" x 2 1/2" (6 mm x 64 mm)	4117122.7	Less penetration (use on hard soils).
517487	4 1/4" (108 mm)	3/8" x 2 1/2" (10 mm x 64 mm)	4117122.7	Less penetration (use on hard soils).
517488	4 1/4" (108 mm)	1/2" x 2 1/2" (13 mm x 64 mm)	4117122.7	Less penetration (use on hard soils).
517489	4 1/4" (108 mm)	5/8" x 2 1/2" (16 mm x 64 mm)	4116255.7	Less penetration (use on hard soils).
523028	5 1/2" (140 mm)	5/8" x 3 3/4" (16 mm x 95 mm)	4116255.7	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)	4116625.7	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)	4116255.7	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)	4116255.7	Older greens with high soil content, fairways & tees with irrigation and no rocks.
523394	5 1/2" (140 mm)	5/8" x 3 3/4" (16 mm x 95 mm)	4116255.7	For greens only. Use on greens with high sand content or wet conditions if cores are being left in greens.
547132 Carbide Tip	4 1/2" (114 mm)	1/2" x 2 1/2" (13 mm x 64 mm)	4117122.7	More durable tine with less penetration (use where tine wear rate is a problem).
838323 Solid Tine	5 1/2" (140 mm)	1/2" x 3 3/4" (13 mm x 95 mm)	4116255.7	For aerating when removing cores would be inconvenient.
834973	5 1/2" (140 mm)	3/4" x 3 3/4" (19 mm x 95 mm)	4116625.7	Standard GA-60 tine. For intensive fairway aeration.

11 WIRING DIAGRAM





12 TORQUE CHART

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 – 

SERVICE

[illegible]

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