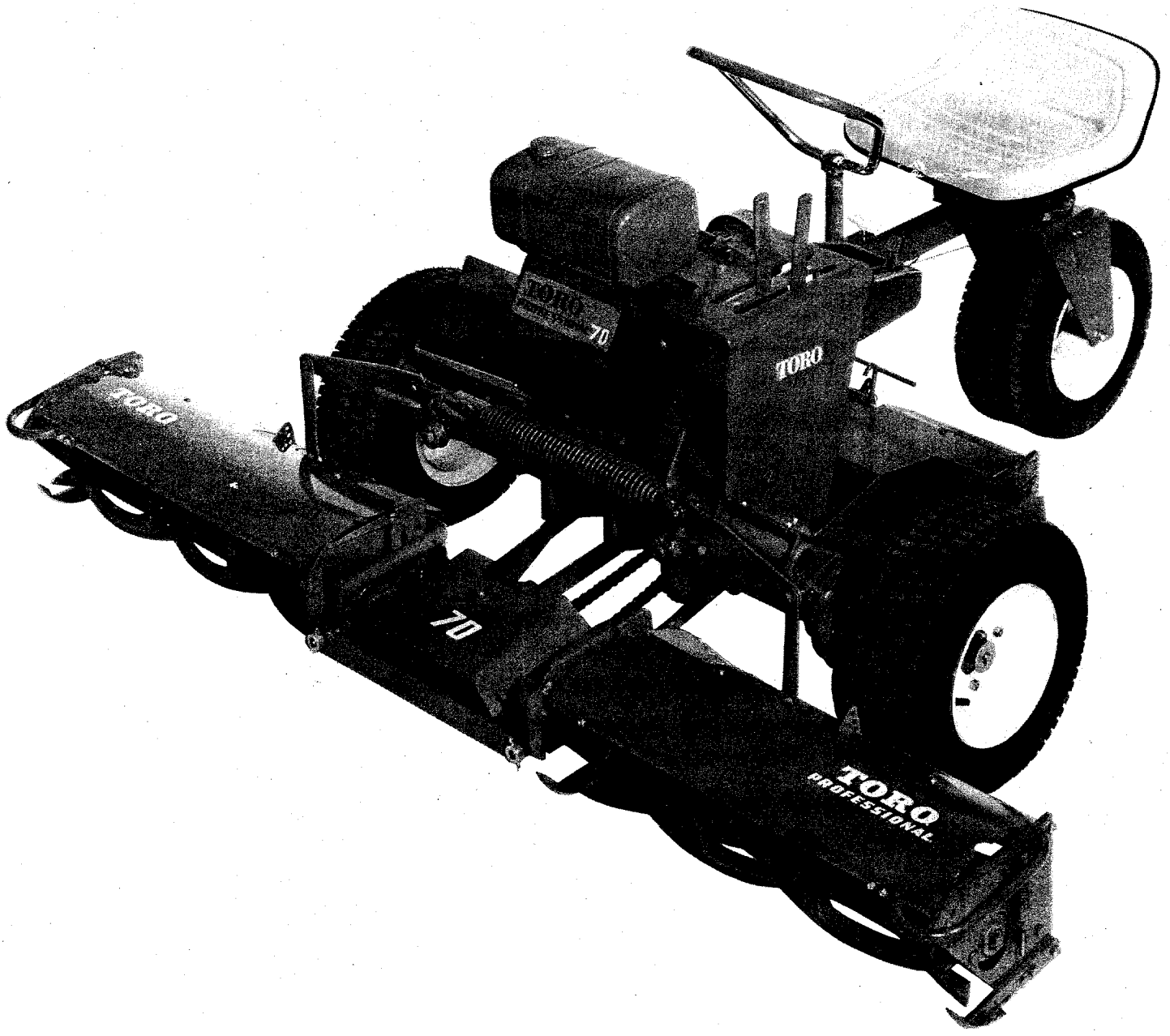
FORM NO. 3311-266 Rev. A

TORO®

RECOIL (6 BLADE)
MODEL NOS. 03215 – 90001 & UP

OPERATOR'S MANUAL

70" (1.78 m) PROFESSIONAL®



PRICE $1.00

FOREWORD

This Operator's Manual has been especially prepared for your information and guidance in the operation and care of your new Toro mower.

Properly adjusted, operated and maintained, this Toro mower will respond quickly and easily to every reasonable demand and give years of reliable service.

Toro mowers have been manufactured by an organization of mowing machinery specialists for over fifty years. Each machine is carefully inspected and tested before leaving the factory. For best performance from your Toro mower, study this manual for regular maintenance procedures.

OPTIONAL SPARK ARRESTER

In some areas there are local, state or federal regulations requiring that a spark arrester be used on the engine of this mower. If a spark arrester is required, order the following parts from your Authorized Toro Distributor:

1	36-3190	Spark Arrester Muffler
1	36-3130	Bracket, Spark Arrester
1	2112-9	Clamp
2	3217-6	Nut
2	12-3270	Special Screw

These parts are approved by the United States Department of Agriculture and Forestry. The approval number for the exhaust system is 49114.

CAUTION

When mower is used or operated on any California forest, brush or grass covered land, a working order spark arrester must be attached to muffler. If not, the operator is violating state law, Section 4442 Public Resources Code.

TABLE OF CONTENTS

SAFETY INSTRUCTIONS

The 70" (1.778 m) Pro is designed and tested to offer safe service. However, improper use or maintenance by the operator or owner of the machine can still result in injury. To reduce the potential for any injury, comply with the following safety instructions.

BEFORE OPERATING

1. Operate the machine only after reading and understanding the contents of this manual. A replacement manual is available by sending complete model and serial number to: The Toro Company 8111 Lyndale Avenue South, Minneapolis, Minnesota. 55420.

2. Never allow children to operate the machine or adults to operate it without proper instructions.

3. Become familiar with the controls and know how to stop the engine quickly.

4. Keep all shields, safety devices and decals in place. If a shield, safety device or decal is defective or damaged, repair or replace it before operating the machine.

5. Always wear substantial shoes. Do not operate machine while wearing sandals, tennis shoes or sneakers. Do not wear loose fitting clothing which could get caught in moving parts and cause personal injury.

6. Wearing safety glasses, safety shoes, long pants and a helmet is advisable and required by some local safety and insurance regulations.

7. Assure work area is clear of objects which might be picked up and thrown by the reels.

8. Do not carry passengers on the machine and keep everyone, especially children and pets away from the areas of operation.

The Toro Company — 1978, Rev. 1979
MINNEAPOLIS, MN 55420 — U.S.A.

SAFETY INSTRUCTIONS

9. Since gasoline is highly flammable, handle it carefully.

A. Use an approved gasoline container.

B. Do not remove cap from fuel tank when engine is hot or running.

C. Do not smoke while handling gasoline.

D. Fill fuel tank outdoors and not over one inch (25 mm) from the top of the tank, not the filler neck. Do not overfill.

E. Wipe up any spilled gasoline.

WHILE OPERATING

10. Do not run the engine in a confined area without adequate ventilation. Exhaust fumes are hazardous and could be deadly.

11. Sit on the seat when starting and operating the machine.

12. To start the engine:

A. Open fuel valve and sit on the seat.

B. Verify that traction lever is in NEUTRAL.

C. Verify that reel drive lever is in the DISENGAGE position.

D. Turn key to RUN.

E. Proceed to start engine.

13. Using the machine demands attention, and to prevent loss of control:

A. Mow only in daylight or when there is good artificial light.

B. Watch for holes or other hidden hazards.

C. Do not drive close to sand traps, ditches, creeks or other hazards.

D. Reduce speed when making sharp turns. Avoid sudden stops and starts.

E. Before backing up, look to the rear and assure no one is behind the machine.

F. Watch out for traffic when near or crossing roads. Always yield the right-of-way.

G. Slow engine speed when going downhill to keep forward speed slow and to maintain control of the machine. Work slopes from side to side, never up and down.

14. Keep hands, feet and clothing away from mowing parts and the reel discharge area.

15. Raise the cutting units when driving from one work area to another.

16. Do not touch engine, muffler or exhaust pipe while engine is running or soon after it is stopped because these areas could be hot enough to cause burns.

17. If a cutting unit strikes a solid object or vibrates abnormally, stop immediately, turn engine off, wait for all motion to stop and inspect for damage. A damaged reel or bedknife must be repaired or replaced before operation is continued.

18. Before getting off the seat:

A. Move traction lever to NEUTRAL position.

B. Move reel drive lever to DISENGAGE position.

C. Stop the engine by turning key to OFF.

D. Insure machine is parked on level surface so that it cannot roll away.

19. Whenever machine is left unattended, assure cutting unit reels are not spinning.

MAINTENANCE

20. Before servicing or making adjustments to the machine, stop the engine and pull high tension wire off spark plug to prevent accidental starting of the engine.

21. To assure entire machine is in good condition, keep all nuts, bolts, screws, belts and chains properly tightened.

22. If major repairs are ever needed or if assistance is desired, contact an Authorized Toro Distributor. Ask about Red Wagon Maintenance.

23. To reduce potential fire hazard, keep the engine area free of excessive grease, grass, leaves and accumulation of dirt.

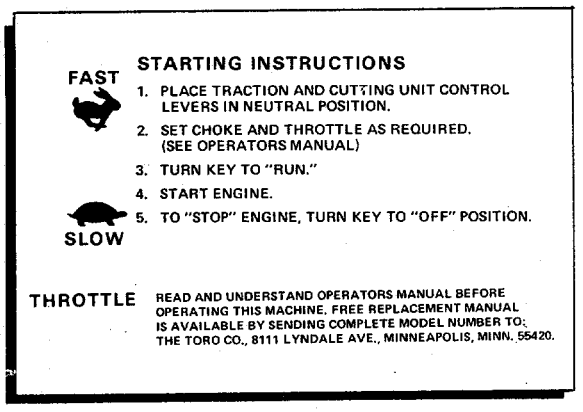
24. If the engine must be running to perform a maintenance adjustment, keep hands, feet, clothing and any parts of the body away from the cutting units and any moving parts. Keep everyone away.

25. Do not overspeed the engine by changing governor settings. Maximum engine speed is 3600 rpm. To assure safety and accuracy, have an Authorized Toro Distributor check maximum engine speed with a tachometer.

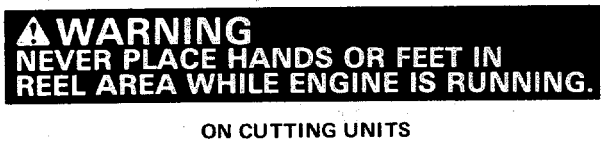
26. Engine must be shut off before checking oil or adding oil to the crankcase.

SAFETY INSTRUCTION DECALS

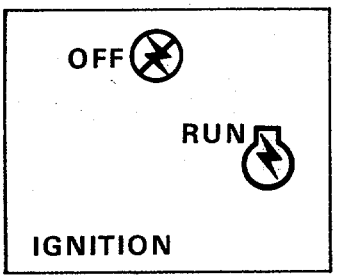
The following safety and instruction decals are installed on the unit. If any become damaged or illegible, replace them. Decals are listed in your Parts Catalog. Order replacements from your Authorized Toro Distributor.



ON IGNITION SWITCH PANEL



ON CUTTING UNITS



AROUND IGNITION SWITCH

ON CONTROL PANEL

SPECIFICATIONS

Engine: 6.25 horsepower (4.7 kw) engine with 6 quart (5.7 l) capacity gas tank. Champion RJ-8 spark plug with recommended gap of .030" (0.76 mm).

Engine Interlock Circuit: Contains switches which:

A. Prevents engine start up when cutting lever is engaged.

B. Prevents engine start up when traction lever is engaged.

C. Shuts off engine if operator leaves the seat with cutting or traction lever engaged.

D. Shuts engine off if unattended machine's traction or cutting unit lever is accidentally bumped into engaged position.

Height-Of-Cut: 1/2" to 2-1/4" (13 to 57 mm). Raise or lower skids to vary.

Width of Cut: 70" (1.778 m)

Mowing Capacity: Mows 2 acres an hour (8.094 m^2/hr).

Ground Speed: Forward 3.0 m.p.h. (4.8 Km/hr) @ 2800 r.p.m.
Reverse 2.8 m.p.h. (4.5 Km/hr) @ 2800 r.p.m.

Traction Drive Forward: Poly-V "J10-section" belt. 1.75 P.D. and 5.00 P.D. pulleys (2.85:1 reduction) from engine to first countershaft. 1/2" (13 mm) pitch x .306 (7.77 mm) roller diameter (#41) chain on 10 and 30 tooth sprockets, (3:1 reduction) from first countershaft to second countershaft. 1/2" (13 mm) pitch x .312 (7.92 mm) roller diameter chain on 10 tooth and 48 tooth sprockets (4.8:1 reduction) from second countershaft to differential.

Traction Drive Reverse: 1.64 P.D. Poly-V friction pulley operating against 4.91 P.D. heat treated steel pulley (2.99:1 reduction) from engine to first countershaft. 1/2" (13 mm) pitch x .306 (7.77 mm) roller diameter chain on 10 tooth and 30 tooth sprockets, (3:1 reduction) from first countershaft to second countershaft. 1/2" (13 mm) pitch x .312 (7.92 mm) roller diameter chain on 10 tooth and 48 tooth sprockets (4.8:1 reduction) from second countershaft to differential.

Reel Drive: Poly—V "J10-section" belt 1.75 P.D. and 5.00 P.D. pulleys (2.85:1) from engine to reel drive countershaft. 1/2" (13 mm) pitch x 3.12 (7.92 mm) roller diameter (#40) chain on 12 tooth sprockets and 20 tooth sprockets (1.67:1 reduction) reel drive countershaft to reels.

Reels: 7" (17.8 cm) diameter with 6 blades double riveted to malleable cast steel spiders. 1" (25 mm) diameter steel shaft on sealed ball bearings.

Bedknife: #10 gauge (3.41 mm) HRPO formed section with stellite hard surface cutting edge.

Reel Clutch: Tight-slack Poly-V belt.

Traction Clutch: Tight-slack Poly-V belt.

SPECIFICATIONS

Differential: Stamped steel case with roll formed hardened spur gears.

Reduction: Engine to reel 4.75:1
Traction Wheel Drive-Forward 41.00:1
Traction Wheel Drive-Reverse 43.05:1

Wheels: Drive wheels and sulky. #14 gauge (18.97 mm) steel discs. Steel hubs.

Tires: 16 x 6.50 x 8 tubeless Terra-tire

Clip: .79" (20 mm) – 6 blade reel.

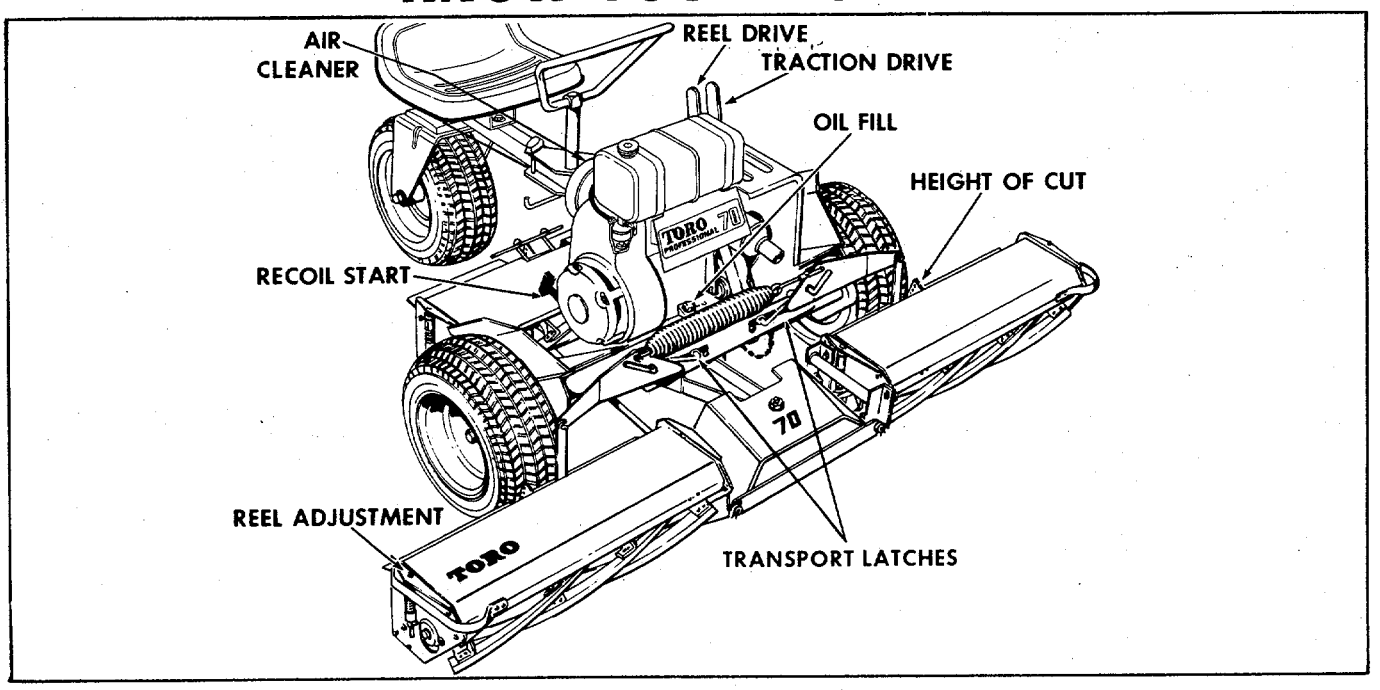
Construction: Welded Steel frame consisting of 1-3/4" (45 mm) square and round steel tubing. Engine base and other supporting members are formed sheet steel. Cutting units consist of welded flat and tubular steel. Sulky of 1-3/4" (45 mm) square steel tubing with cast iron pivot.

Dimensions: Operating – Width: 74 1/2" (1.892 m)
Height: 33 1/2" (0.851 m)
Length: 64 1/8" (1.629 m)
Storage – Width: 52 1/2" (1.334 m)
Height: 33 1/2" (0.851 m)
Length: 38 7/8" (0.987 m)

Weight: 460 pounds (2046 N).

Optional Equipment:
Grass Catcher Kit #4-7469
Rear Roller Kit #4-5279 (Coated)
Rear Roller Kit #4-8349 (Uncoated)
Anti-Scalp Roller Kit #4-7379

KNOW YOUR MOWER



LOOSE PARTS CHART

Loose Parts	Qty.	Where Used
Steering Wheel	1	Mount to steering column.
Seat Assembly	1	Mount to frame.
Capscrew 5/16-18 x 2-1/2 in. (64 mm)	2	Use to mount seat to frame.
Flange Lock Nut 5/16-18	2	
Flat Washer 9/16 x .032 in (0.813 mm)	8	Use to mount cutting units to machine.
Collar	4	
Cotter Pin 5/32 x 1-1/4 in. (32 mm)	4	
Cotter Pin 1/8 x 3/4 in. (19 mm)	2	
Stud & Handle Assembly (on sulky tube)	1	Secure transport links to cutting units. Clamp sulky frame into position.
Key	2	Insert into key switch.
Operator's Manual	1	
Sales/Service Directory	1	
Engine Manual	1	
Parts Catalog	1	
Registration Card	1	

SETTING UP INSTRUCTIONS

1. Break shipping bands and remove top from crate.

2. Remove side of crate, then the top and one side support board at rear of machine (Fig. 1).

3. Clip the bands "A" securing the front and rear of machine to pallet, remove the stud and handle assembly "B" from the frame (Fig. 1).

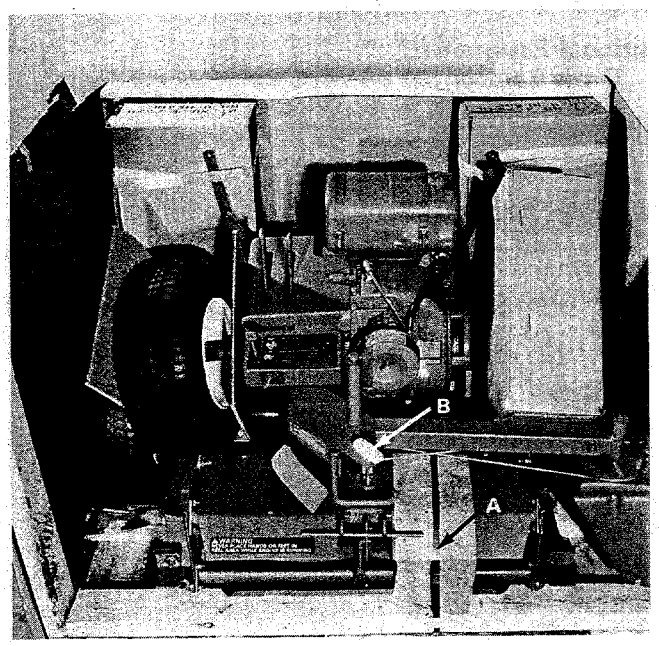


Figure 1

4. Rotate sulky "A" out into position, install stud and handle assembly "B" and install rear wheel "C" (Fig.2 & 3).

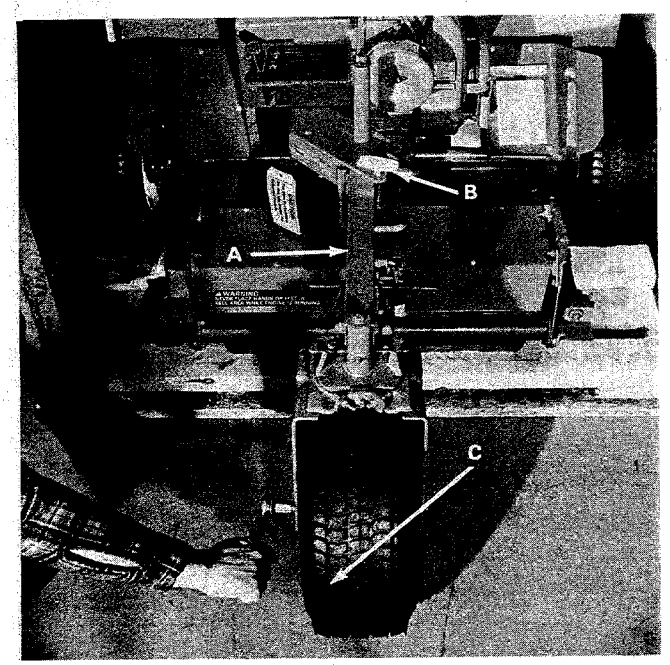


Figure 2

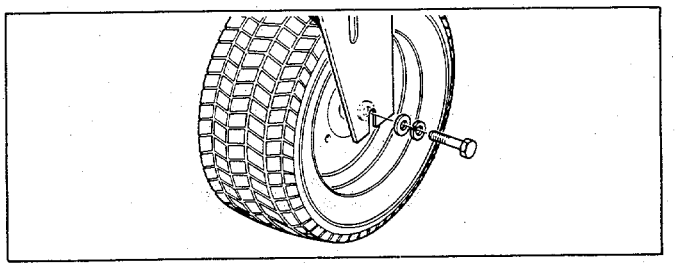


Figure 3

5. Remove roll pin at top of steering shaft and install steering handle (Fig. 4).

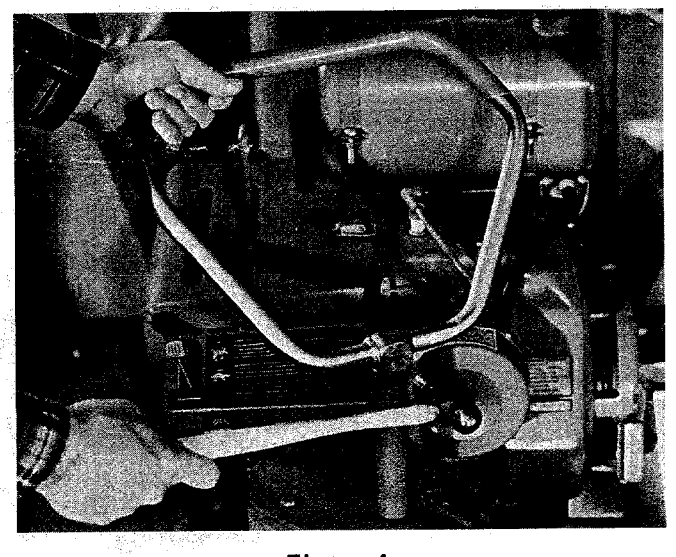


Figure 4

6. Place seat assembly over rear frame assembly, align holes with seat in comfortable operator position, route interlock cable through seat channel and secure seat and cable with capscrews and flange nuts (Fig. 5).

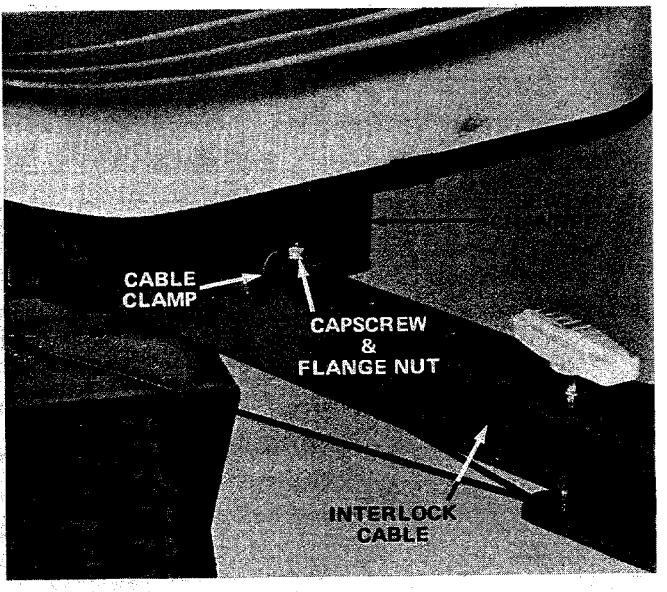


Figure 5

SETTING UP INSTRUCTIONS

7. Connect switch cable to interlock cable (Fig. 6).

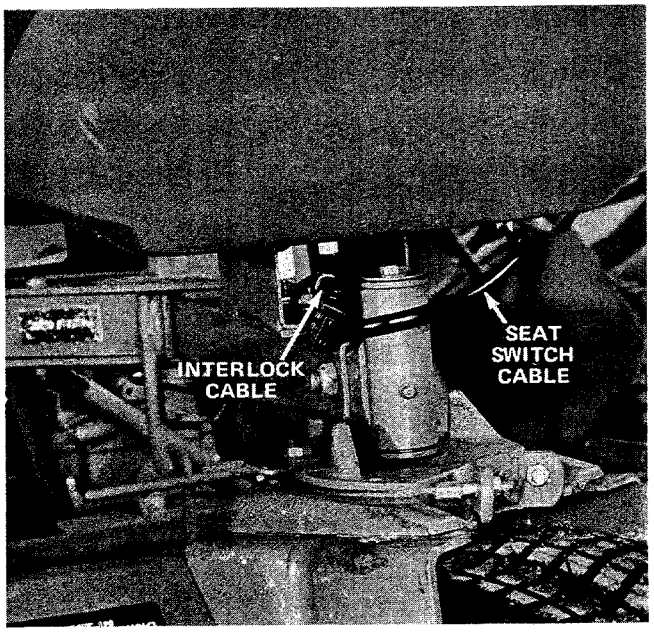


Figure 6

8. Roll machine off pallet, remove two front cutting units from cartons and clean excess paint off mounting pivot studs.

9. Install a flat washer "A" on each pivot stud, position pivot studs with center frame holes "B" and drive ball with drive shaft "C" and install cutting unit to frame (Fig. 7).

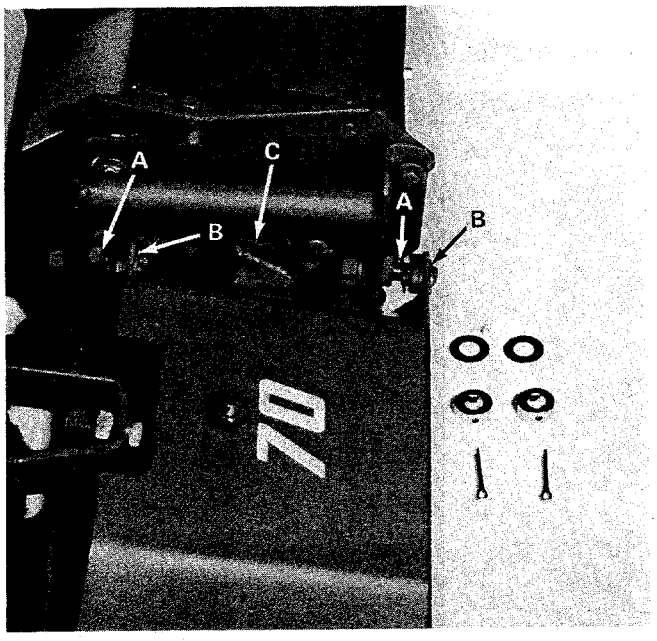


Figure 7

10. Add flat washers and collars "A" to pivot studs and install cotter pins "B" through collars and pivot studs to secure cutting units to frame (Fig. 8).

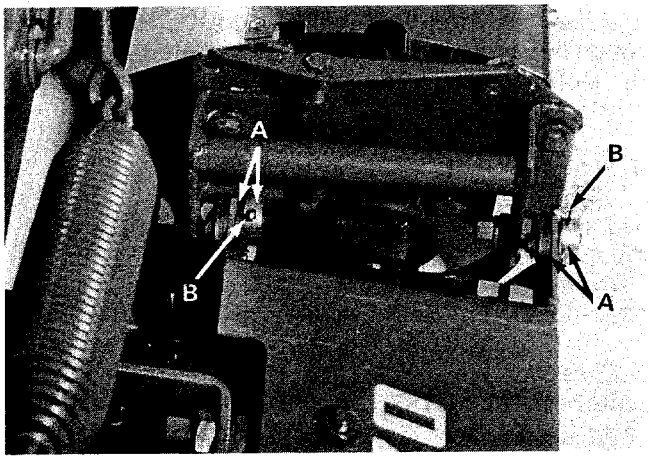


Figure 8

11. Install transport link "A" to center pin on rear of cutting unit and secure with cotter pin (Fig. 9).

12. Check cutting unit drive chains for proper adjustment. Adjust, if necessary: refer to Cutting Unit Chain Adjustments, page 18.

CAUTION

FRONT COUNTERBALANCE SPRING — Since extension spring is tensioned, GRASP SUPPORT ARMS when installing or removing transport links from cutting units ("A", Fig. 9).

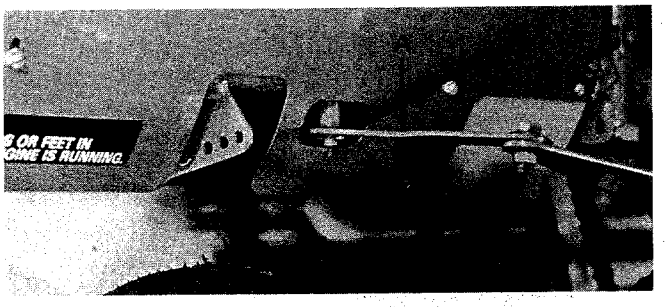


Figure 9

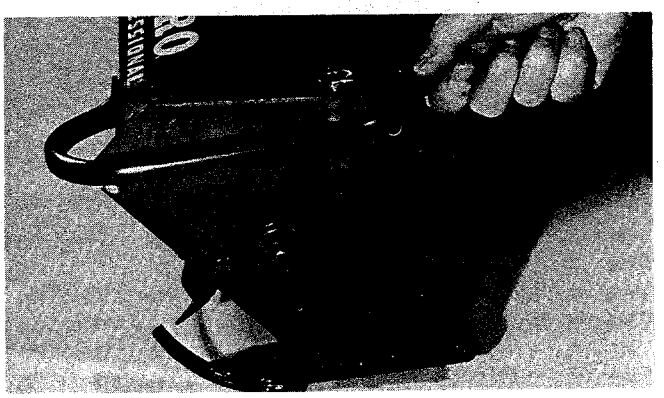


Figure 10

SETTING UP INSTRUCTIONS

13. Adjust cutting unit reel to bed knife to assure proper cutting performance will be achieved. (Fig. 10). Refer to Reel Adjustment, page 14, for proper adjustment procedures.

14. Mower height is set at factory at 1-3/32 inches (27.8 mm) height of cut. Set cutting units on a level surface and use center link and holes "A" to adjust to a different height setting, if desired (Fig. 11). Refer to page 14 for more complete adjustment instructions.

15. Tires are over inflated for shipment. Reduce the pressure to 12 psi (82.7 kpa).

Figure 11

OPERATION

CONTROLS

Traction Control Lever, ("A", Fig 12): Push forward to "F" for forward traction; pull rearward to "R" and hold firmly for reverse operation. Return lever to "N", neutral before leaving machine and stopping engine.

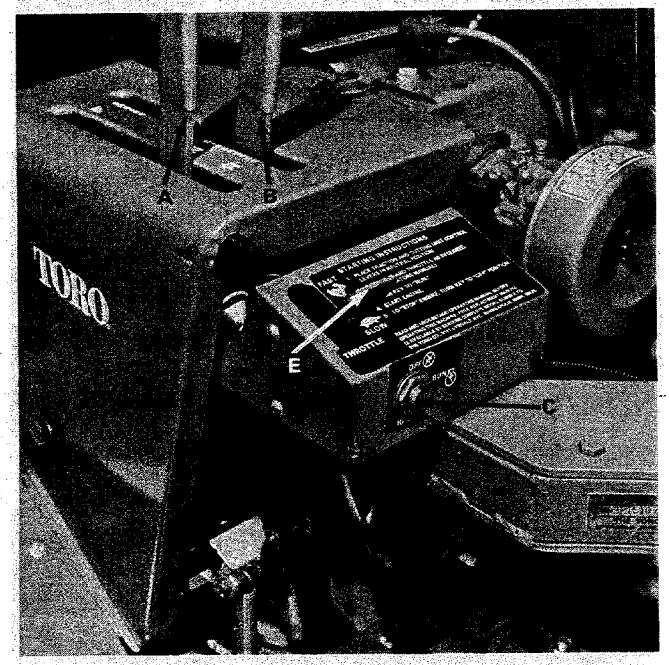


Figure 12

Reel Drive Control Lever, ("B", Fig. 12): Push forward to ENGAGE reels. Pull rearward to DISENGAGE reels.

Fuel Shut Off Valve. (Not shown): Located under fuel tank. Open valve to allow fuel to flow to engine carburetor.

Ignition Switch, ("C", Fig. 12): Turn Key to RUN before pulling recoil starter cord to start engine. Turn key to OFF to stop engine.

Choke Lever, ("D", Fig. 13): Located on carburetor. Close to start a cold engine.

Throttle Lever, ("E", Fig. 12): Move between FAST and SLOW position to regulate speed of engine and control speed of mower.

Steering Wheel, ("F", Fig. 13): Use to guide machine in proper direction.

Starter Handle, ("G", Fig. 13): Pull to start engine.

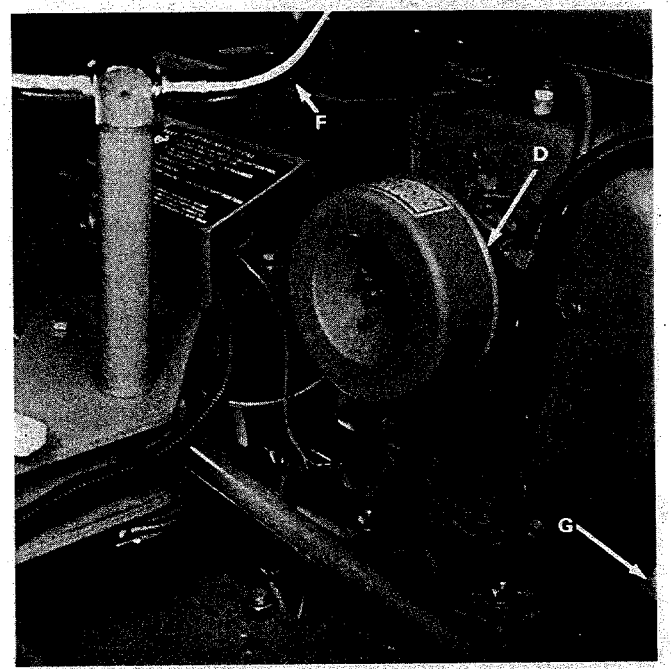


Figure 13

OPERATION

With the 70" (1.78 m) Professional on a level surface, remove the oil filter cap (see photo below). Fill crankcase to the full mark (F) on the dipstick. Fill engine to proper level with SAE 30MS motor oil (Fig. 14).

OIL CHART
API Service MS

Air Temperature	Single Viscosity Oil	Multiple Viscosity Oil
Above 30°F (-1°C)	SAE 30	
30° - 0°F (-1° - 18°C)	SAE 10	SAE 10W-30
Below 0°F (-18°C)		SAE 5W-20

Figure 14

For a smoother running engine change oil every 25 operating hours; more often under dusty conditions. Check oil level once each day (Fig. 15).

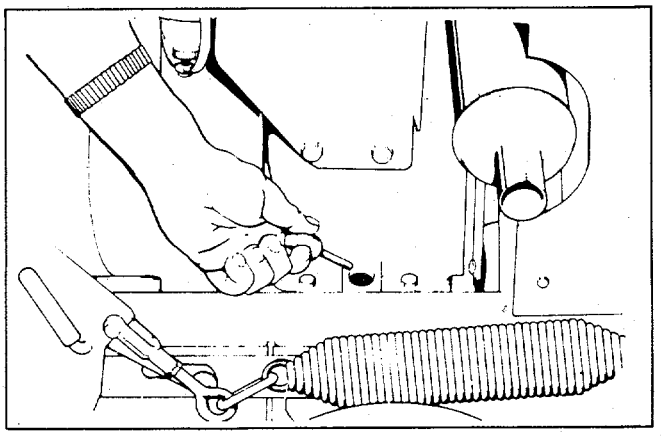


Figure 15

Carefully fill the fuel tank with a good grade of leaded or non-leaded regular, fresh gasoline (Fig. 16). Do not mix oil with gas for this engine. Open fuel shut-off valve (sediment bowl).

Note: Lead-free gasoline reduces combustion deposits and extends valve life, and when available, this type of gasoline is recommended. Otherwise, use leaded-regular gasoline.

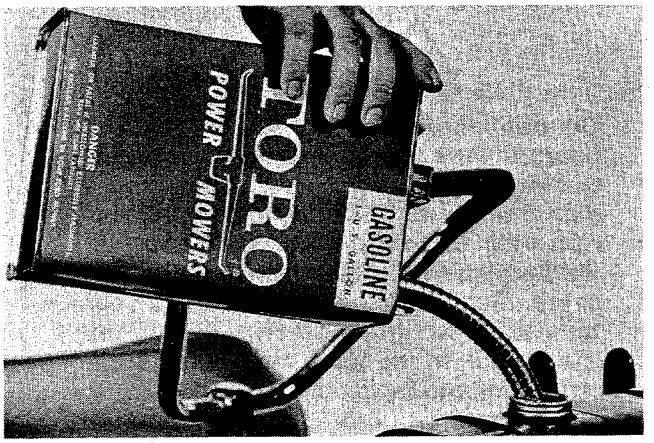
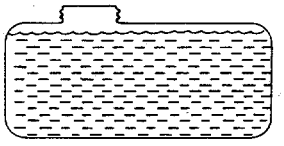


Figure 16

CAUTION

Because gasoline is flammable, caution must be used when storing or handling it. Do not fill fuel tank while engine is running, hot or when unit is in an enclosed area. Keep away from open flame and electrical spark, and DO NOT SMOKE while filling the fuel tank to prevent the possibility of an explosion. Always fill fuel tank outside and wipe up any spilled gasoline before starting engine. Use a funnel or spout to prevent spilling gasoline, and fill fuel tank to no more than 1 inch (25 mm) from top of tank, not filler neck.



Store gasoline in a clean, approved container and keep the cap in place on the container. Keep gasoline in a cool, well-ventilated place; never in the house. To assure volatility, do not buy more than a 30 day supply of gasoline. Gasoline is a fuel for internal combustion engines; therefore, do not use it for any other purpose. Since many children like the smell of gasoline, keep it out of their reach because the fumes are explosive and dangerous to inhale.

CHECKING OPERATION OF INTERLOCK SWITCHES

The machine has interlock switches mounted in the electrical system. These switches are designed to stop the engine when the operator gets off the seat while either the traction or reel drive lever is engaged. (Except reverse which is dead man control).

OPERATION

CAUTION

Do not disconnect the safety switches because they are for the operator's protection. Check operation of the switches daily to assure the interlock system is operating correctly. If a switch is defective, replace it before operating the machine. Replace the switches once a year to assure maximum safety. Assure the machine is in an open area, free of obstructions and bystanders.

1. Move reel drive lever to DISENGAGE position and traction lever to N (NEUTRAL) position.

2. Try to start the engine. When engine starts, proceed to step 3. If engine does not start, there may be a defect in the interlock system: refer to Electrical Troubleshooting, page 20.

3. Raise off the seat and engage the reel drive lever while the engine is running. The engine should stop. If engine stops, the switch is operating correctly; thus, proceed to step 4. If engine does not stop, there is a defect in the interlock system: refer to Electrical Troubleshooting, page 20.

CAUTION

Keep feet on footrests and use steering column for leverage to raise off seat to avoid personal injury.

4. Slow engine down to moderate speed, raise off the seat and move the traction lever to F (FORWARD) position while engine is running and reel drive lever is in DISENGAGED position. The engine should stop. If engine stops the switch is operating correctly; thus, continue operation. If engine does not stop, there is a defect in the interlock system: refer to Electrical Troubleshooting, page 20.

TRAINING PERIOD

Before mowing, find a clear area and practice starting and stopping, turning, etc. This training period will be beneficial to the operator in gaining confidence. Insure long belt life by always engaging the traction and reel drive levers slowly at minimal engine speed. Pull traction lever back into REVERSE and hold firmly while in reverse traction operation to minimize wear of the reverse pulley (Fig. 21).

To start engine, assure fuel shut off valve is open, traction drive lever is in N, (NEUTRAL) and reel drive lever is in DISENGAGE, close choke, place throttle control lever half-way between FAST and SLOW, turn ignition switch key to RUN (Fig. 17), and pull starter rope with a quick full arm stroke (Fig. 18). When engine starts, open choke and place throttle control lever in the run position.

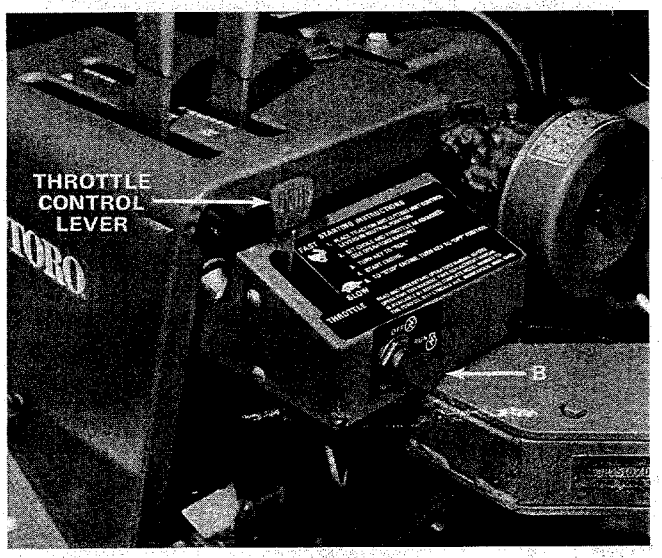


Figure 17

To stop engine, place control levers in N (NEUTRAL) and DISENGAGE and turn ignition key to OFF.

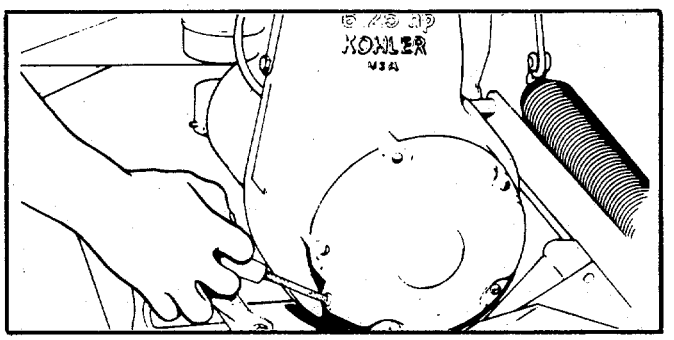


Figure 18

The front cutting units are put into transport position or returned to mowing position by pressing transport lever 'A' while lifting on reel guard 'B' (Fig. 19).

FRONT TRANSPORT POSITION

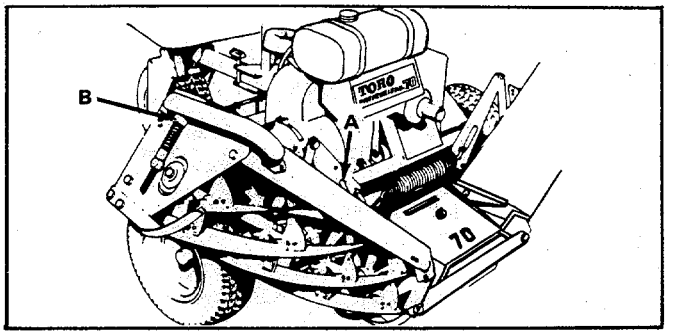


Figure 19

OPERATION

The rear cutting unit is put into transport position by lifting the cutting unit and hooking the hanger assembly 'A' over rod of lower plate of the sulky (Fig. 20).

REAR TRANSPORT POSITION

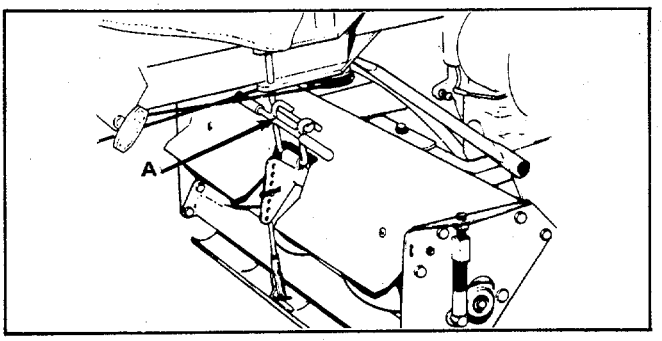


Figure 20

IMPORTANT: Do not engage cutting unit drive with cutting units in transport position.

EVALUATING QUALITY OF CUT

FREQUENCY OF MOWING: The frequency of mowing is as important as the height-of-cut. Lawn grasses should be cut often enough so that never more than 1/3, preferably 1/4, of leaf surface is removed. If excessive clippings are removed at one mowing, the plant is "shocked" and will not grow properly until it recovers.

MOWER: To maintain a well-groomed appearance, the lawn must always be cut with a sharp, properly adjusted mower. Dull, improperly adjusted cutting units leave the lawn ragged and often the grass will turn gray and brown-off the leaf tips. Keep Your Mower Operating Properly.

1. Examine cutting units for the following:
   a. Blades and bed bar sharp.
   b. Skids adjusted to same hole, mounting clips not bent, adjusting links same length.
   c. Pivot points free, no binding, proper lubrication.
   d. Reels properly adjusted to the bed knives. Correct any deficiencies.

2. Place mower on a hard, level surface with cutting units in cutting position, stop the engine and check the following:
   a. Attitude of mowers — top flange of side plates parallel to ground.
   b. Both ends of cutting units on ground.
   c. Counterbalance springs properly adjusted.
   d. Height-of-cut of each unit approximately the same — within 1/16" (1.6 mm).
   e. Chain tightness.
   f. Axes of cutting units parallel to axle.
   g. Check push rods and frame for bent or broken parts and correct any deficiencies.

3. Start the engine. Make trial cut in the grass on a level area and examine for the following:
   a. Each unit cutting clean. A few stragglers are not uncommon — look for bruised grass as evidence of improper cutting.
   b. Units cutting the same height on each end. If there is evidence that one end of a unit is cutting higher than the other, re-examine skid for damage — if none, re-check pivots for free motion — if correct, re-check length of counterbalance spring. Increased tension on front spring will raise the inside end of units and lower outside ends. Reducing the tension has opposite effect. Increasing compression on rear spring will raise left end of unit and lower right end. Reducing compression has opposite effect.

4. If an adjustment has been made per above paragraphs, make a new trial run. Adjust minor variations in cutting height of units by turning adjusting link in shackle — shorten to lower cut and lengthen to raise cut.

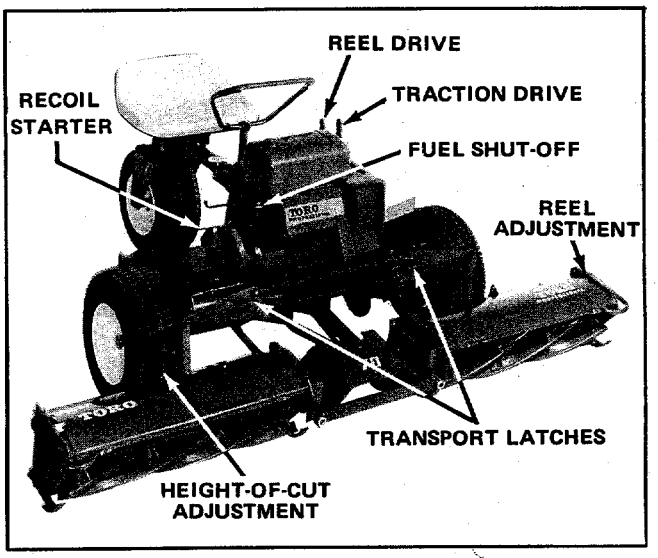


Figure 21

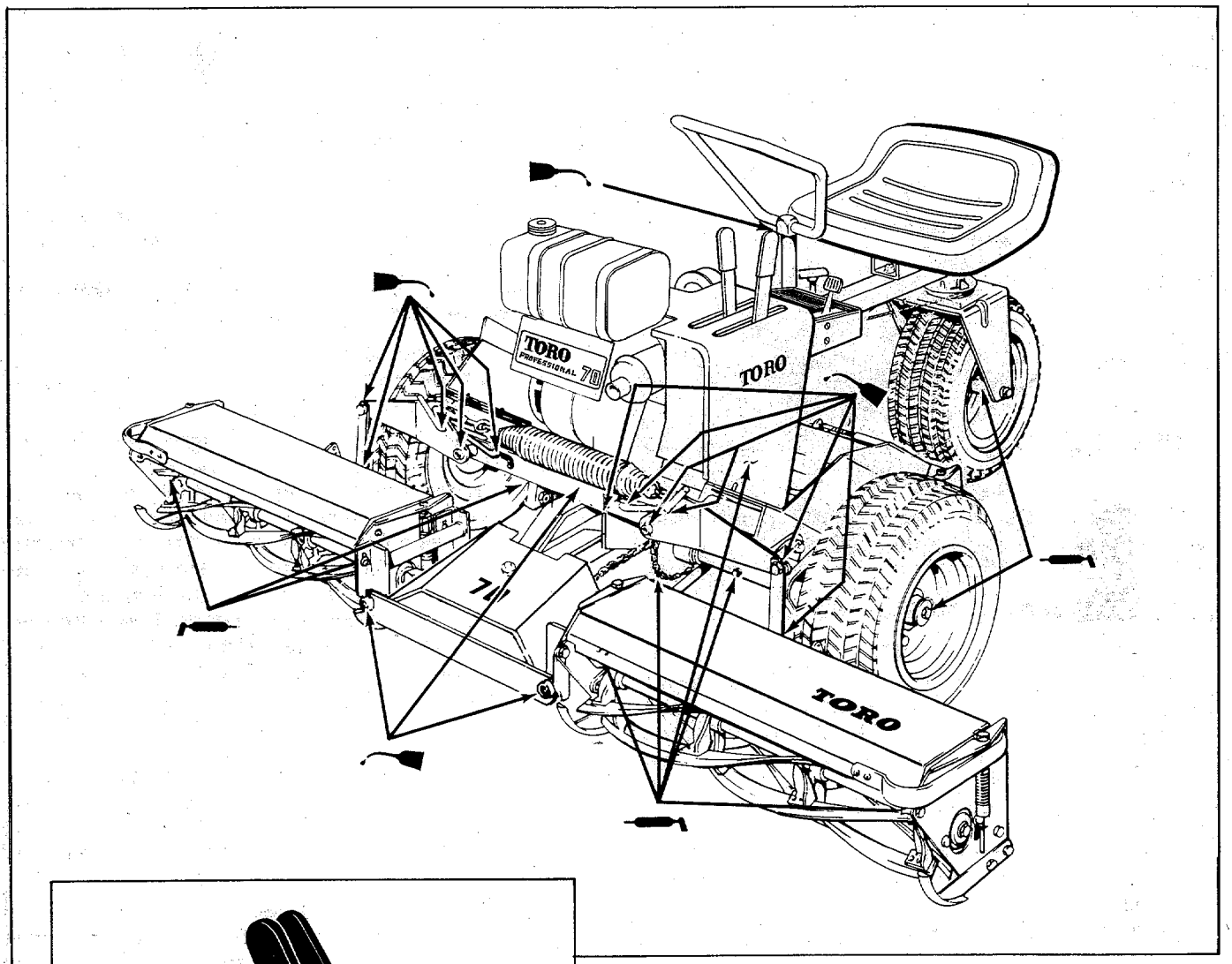


Figure 22

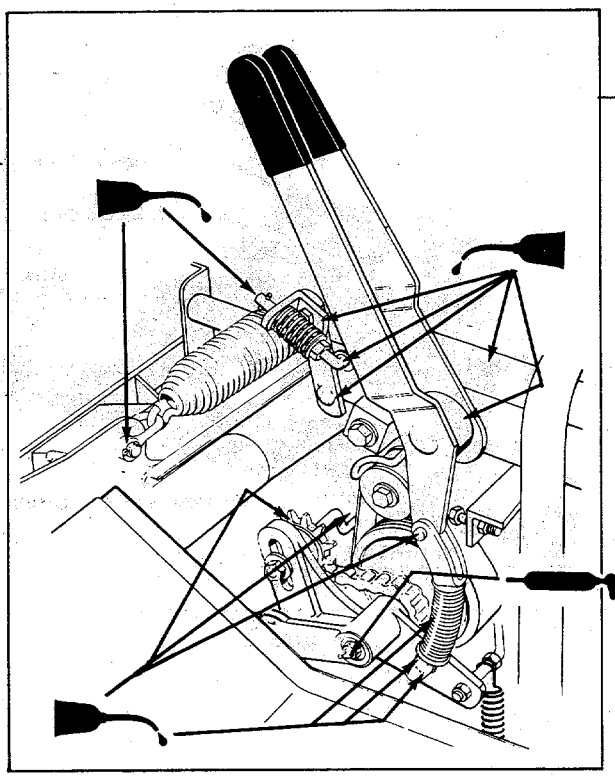


Figure 23

LUBRICATION

1. Grease fitting – use good grade of gun grease every eight hours of operation. There are 13 grease fittings in all (Fig. 22). Two fittings on rear cutting unit are not shown but are in the same position as those on front cutting units.

2. Linkage – apply a few drops of good grade of lubricating oil every eight hours of operation.

3. Engine – use a good grade of SAE 30MS engine oil (capacity is 2-1/2 pints – 1.183 l). Check engine oil level daily and change oil every 25 hours of operation.

4. Every eight operating hours, remove shroud and lubricate areas that should move freely to insure smooth operation (Fig. 23). A few drops of good lubricating oil at these points every eight operating hours is essential. Avoid getting oil on drive belts.

MAINTENANCE

SERVICING AIR CLEANER

1. Remove wing nut and lift air cleaner from carburetor.

2. Take off cover and lift out cartridge.

3. Cartridge should be cleaned every 50 hours by gently tapping on a flat surface.

4. Replace cartridge if bent, crushed or damaged and under extreme dust conditions after 100 operating hours.

5. Clean or replace cartridge when loss of power is noticeable.

6. Be sure cartridge fits on bottom adapter plate, and wing nut on top adapter plate is finger tight.

TRACTION DRIVE CONTROL (Fig. 24)

The clevis yoke "A" has been adjusted at the factory for proper position when belts and pulleys are new. As these parts wear, the clevis yoke "A" will position itself closer to roll pin "B". Contact between the inner surface of clevis and roll pin in the engage position will result in loss of traction. When this occurs, proceed as follows:

1. Remove cotter pin "C" and clevis pin "D"; then swing yoke "A" backward to disengage from casting.

2. Turn yoke "A" counter clockwise three turns.

3. Reinstall yoke "A" and fasten with clevis pin and cotter pin.

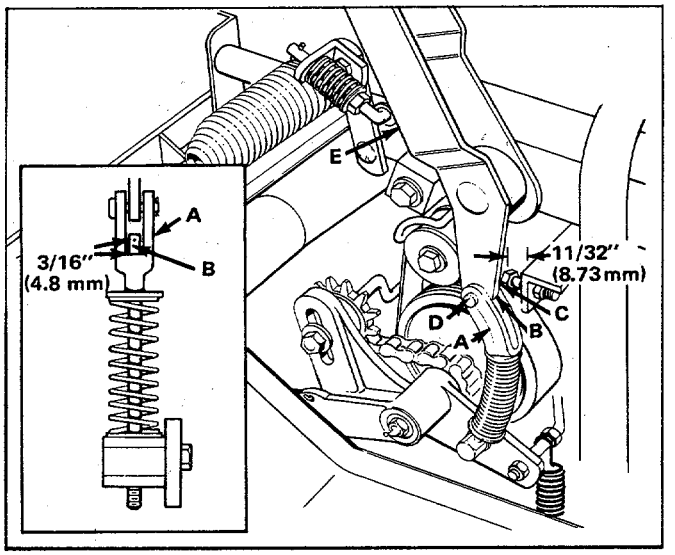


Figure 24

4. This will provide original 3/16" (4.76 mm) clearance between "A" and "B" (see inset) with traction control lever "E" in forward position with bolt length 11/32" (8.73 mm) for proper over center condition of lever "E".

REEL DRIVE BELT (Fig. 25)

REEL DRIVE BELT ADJUSTMENT: With reel drive control lever in the engaged position, adjust nut "A" to compress spring "B" to a total height of 1-1/8" (28.6 mm).

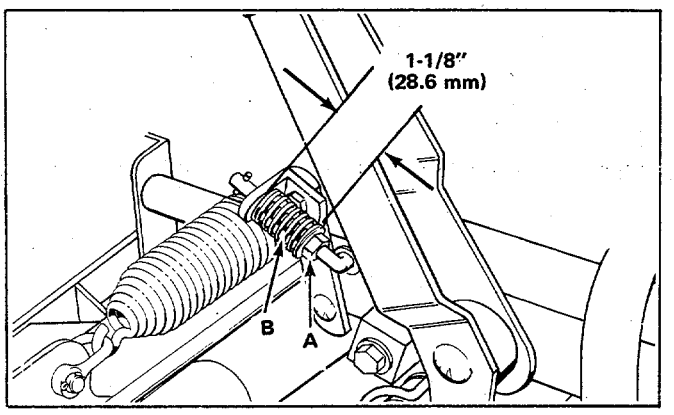


Figure 25

BELT GUIDES (Fig. 26)

BELT GUIDE CLEARANCE: Remove hood. Belt guides must be set at minimum clearance to prevent belt from becoming misaligned. These guides should be set within .050" and .070" (1.27 and 1.78 mm) for proper clearance (thin dime). To adjust belt guides, place traction lever in engaged position. Loosen nut 'A'. Move guide 'B' to proper setting and hold while retightening nut 'A'. Repeat same procedure with nut 'D'; however, sprocket 'C' should be maintained in place so as not to alter chain adjustment.

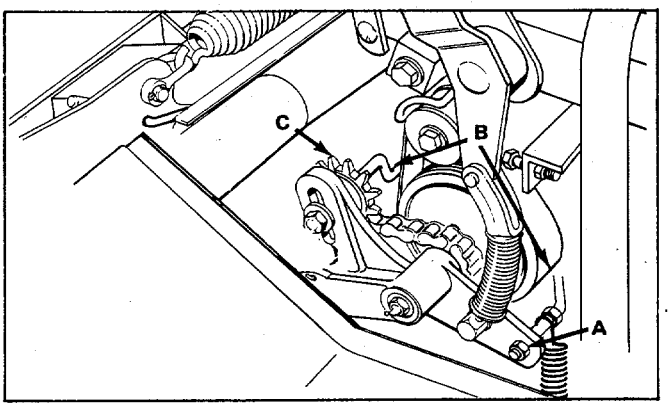


Figure 26

MAINTENANCE

REEL ADJUSTMENT (Fig. 27)

REEL ADJUSTMENT: To adjust reel toward bed knife for proper cutting, turn hex bolt head 'A', on each end of cutting unit counterclockwise 1/6 turn. Using a plastic head hammer, smartly tap on head 'A' to insure seating of the bolt head against side plate flange, and insure positive reel movement to the bed knife. Proper reel to bed knife adjustment is achieved when each reel blade will crease paper across its full length.

A 1-13/32" (35.7 mm) dimension has been set at the factory for the spring (See Fig. 27). After adjusting reel toward bed knife, check dimension periodically and if adjustment is required, turn adjustment bolt "B" counterclockwise.

NOTE: Assure locknut securing reel bearing screw "C" is loose enough to allow bearing screw to move in slot in side plate (Fig. 27).

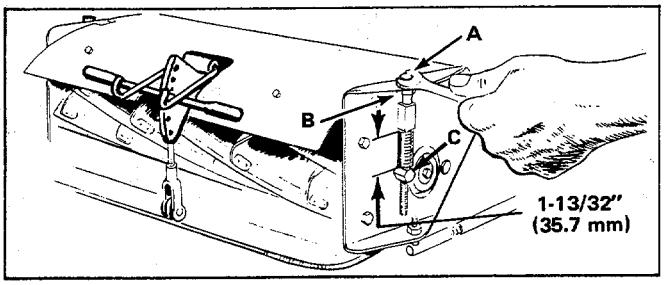


Figure 27

HEIGHT-OF-CUT (Fig. 28)

HEIGHT-OF-CUT ADJUSTMENT: Mowers are shipped from the factory set at 1-3/32" (27.8 mm) height-of-cut. If another setting is desired, remove hairpin cotter "A" and move link "B" to appropriate hole; up for lower cut and down for higher cut. Be sure all reels are set in the same height-of-cut position. Intermediate height-of-cut positions can be achieved by screwing the link either in or out to lengthen or shorten the link.

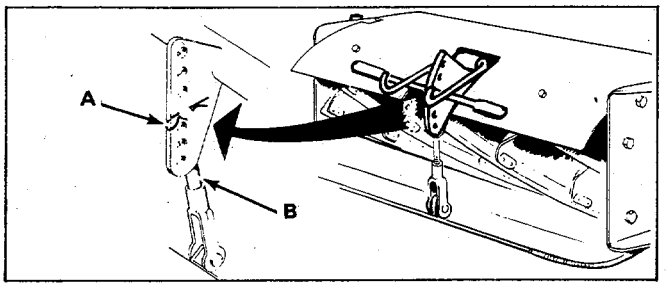


Figure 28

PIVOT FRAME (Fig. 29)

PIVOT FRAME ADJUSTMENT: If pivot frame is removed or reel is ground or replaced, readjust the pivot frame so that the center line of pivot pins 'A' pass through the center line of reel shaft 'B'.

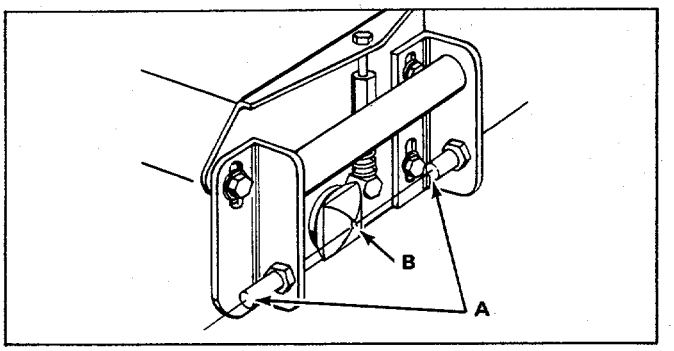


Figure 29

COUNTERBALANCE (Fig. 30, 31)

COUNTERBALANCE ADJUSTMENTS: The counterbalance of the cutting units is accomplished by a tension spring attached to the lift arms of each mower. Proper counterbalancing has been set at the factory for cutting at 1-3/32" (27.8 mm). When a different height-of-cut is desired, it may be necessary to reset the counterbalance springs. With the mower set at the desired height-of-cut, move mower onto grass. Front counterbalance spring can now be adjusted to desired tension that will be achieved by increasing spring overall length by 4-1/4" (10.8 cm) from spring relaxed position. This is accomplished by loosening nut 'A' on front cutting units, rotating spring clockwise or counterclockwise as required, and loosening or tightening rod 'B' on rear unit. Counterbalance spring on rear units should be maintained at 4-1/4" (10.8 cm) Fig. 30, 31).

See Evaluating Quality of Cut, item 3, page 11.

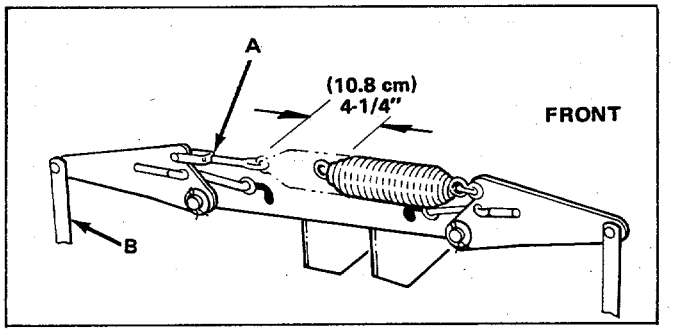


Figure 30

CAUTION

FRONT COUNTERBALANCE SPRING — Since extension spring is tensioned, GRASP SUPPORT ARMS when releasing links from cutting units (Fig. 30, "B").

REAR COUNTERBALANCE SPRING — Turn adjusting nut (Fig. 31, "B") counterclockwise to release tension when disassembling counterbalance spring assembly.

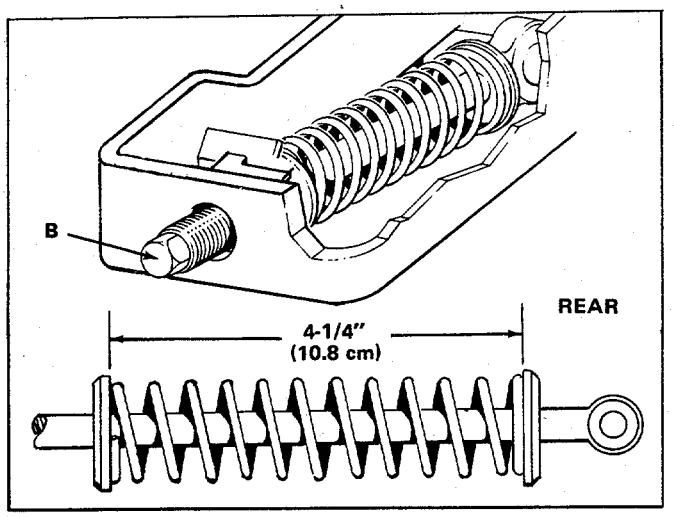


Figure 31

DIFFERENTIAL DRIVE CHAIN (Fig. 32)

DIFFERENTIAL DRIVE CHAIN ADJUSTMENT: Loosen fasteners 'A' and rotate shaft and housing assembly 'B' as shown until chain is snug – but not taut (Fig. 32). Care should be taken to assure alignment of shaft assembly before retightening fasteners 'A'. Alignment is correct when grooves of traction pulley mesh with grooves of engine pulley.

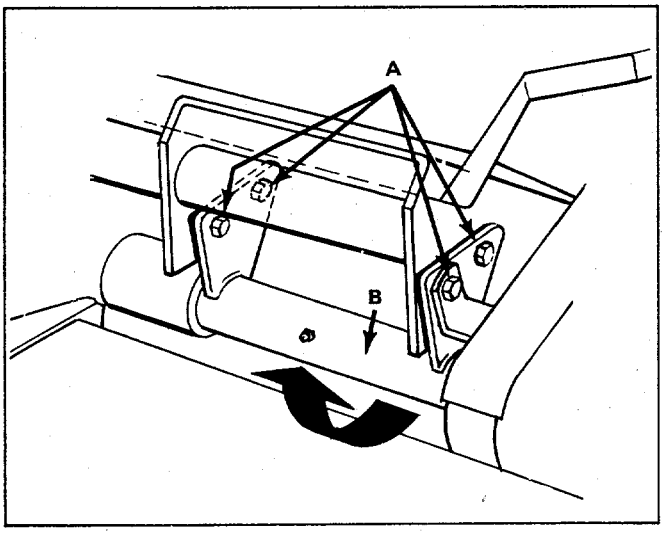


Figure 32

TRACTION DRIVE CHAIN (Fig. 33)

TRACTION DRIVE CHAIN ADJUSTMENT: Loosen nut 'A' on belt guide 'C' and slide sprocket 'B' down in slot until chain is snug. Hold sprocket in the position while retightening nut 'A'.

CAUTION

Be sure belt guide is in proper position: refer to Belt Guides, Page 13, Fig. 26.

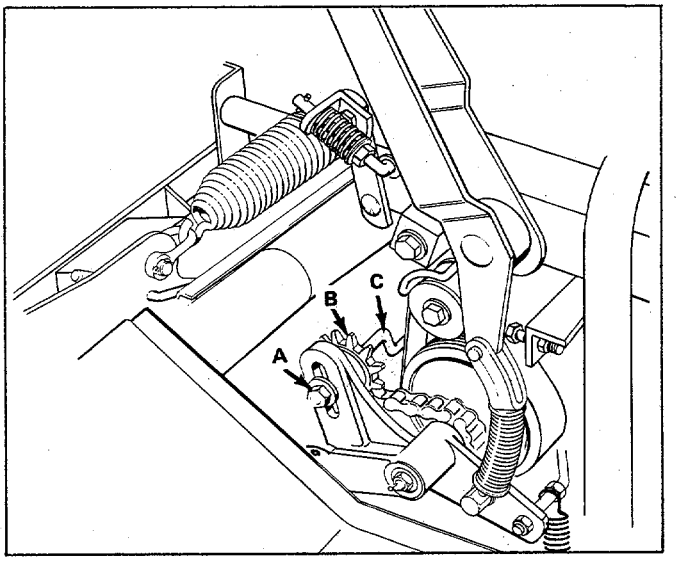


Figure 33

SEAT ADJUSTMENT (Fig. 34)

The seat can be adjusted fore and aft by removing mounting capscrews and nuts and repositioning the capscrews and nuts in the desired location (Fig. 34). Assure interlock cable clamp is re-installed.

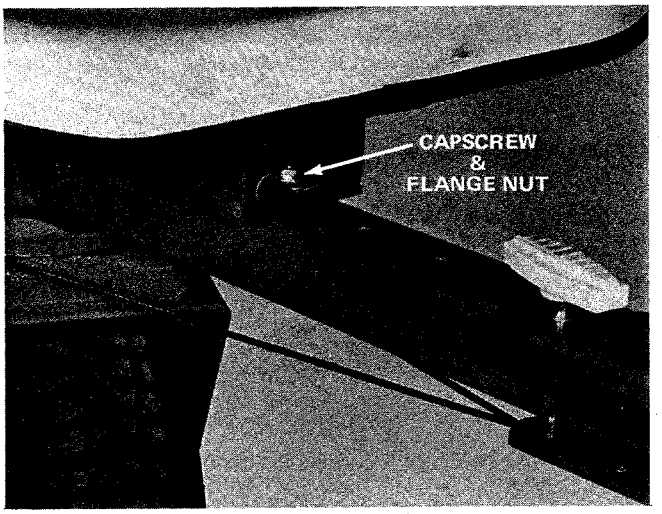


Figure 34

STEERING CABLE ADJUSTMENT (Fig. 35)

Steering cable tension should be adjusted whenever play is felt in the steering wheel. A loose steering cable will make it difficult to steer a straight line. However, overtightening cables will cause undue wear to pulleys and cause the cable to stretch and fail prematurely. Proceed as follows to adjust the steering cable:

Remove the slack from both cable ends by securing the cable end hex with an open end wrench and turn nut on the cable end with another (Fig. 35).

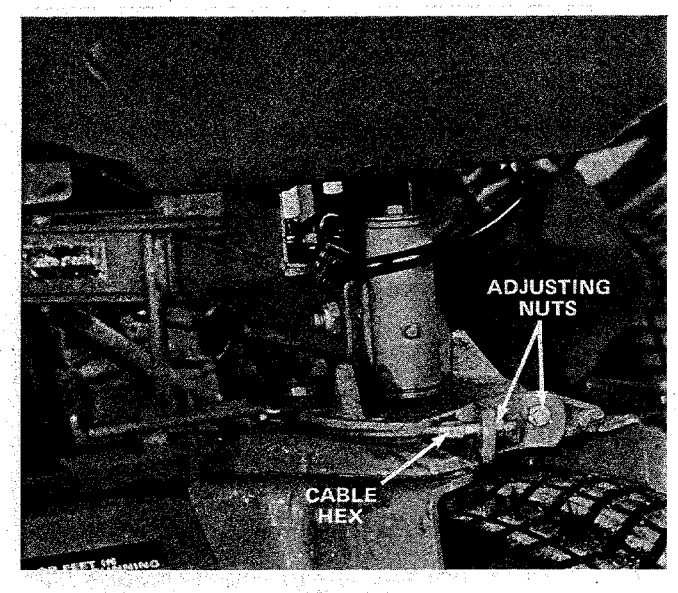


Figure 35

TRACTION BELT REPLACEMENT (Fig. 36)

TRACTION BELT REPLACEMENT: Loosen belt guides 'A'. Work belt off end of engine pulley 'B' and traction drive pulley 'C'. Slide belt edgewise between traction pulley and reel drive pulley. Reverse process to install new belt. Readjust belt guides: refer to Belt Guides, page 13.

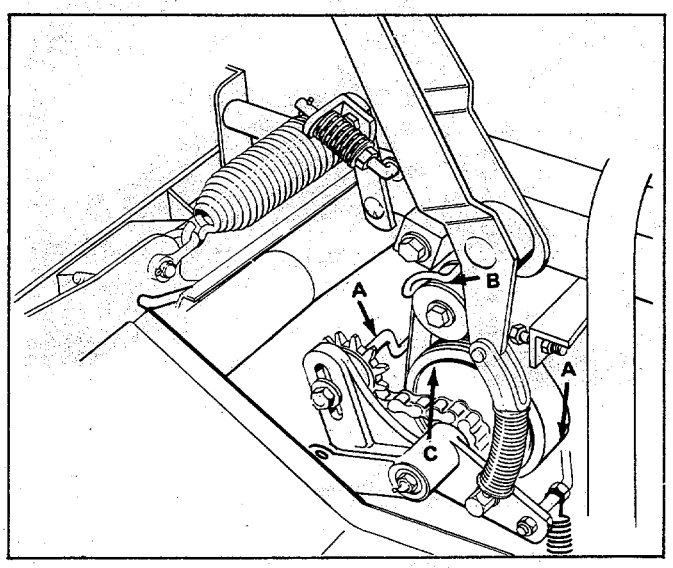


Figure 36

CUTTING UNIT DRIVE BELT REPLACEMENT

When replacing cutting unit drive belt, begin by placing wooden blocks under frame members (Fig. 37). A piece of 4" x 4" (10.2 x 10.2 cm) or equivalent should be sufficient. Remove traction belt.

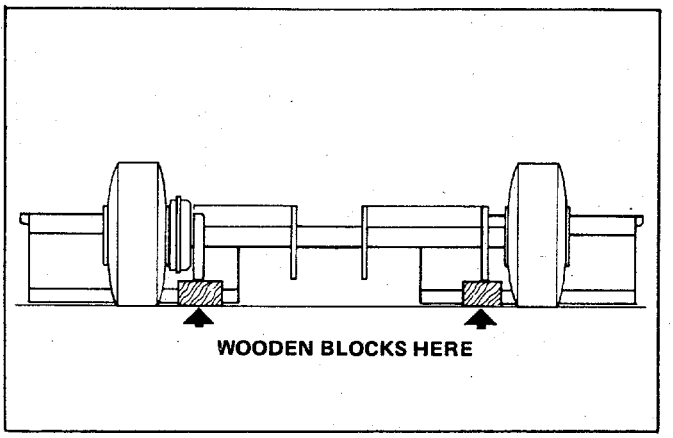


Figure 37

Remove capscrew and washers 'A' from axle at the wheel hub, right side (Fig. 38). Pull wheel, tire and hub assembly from axle. Remove key and thrust washer.

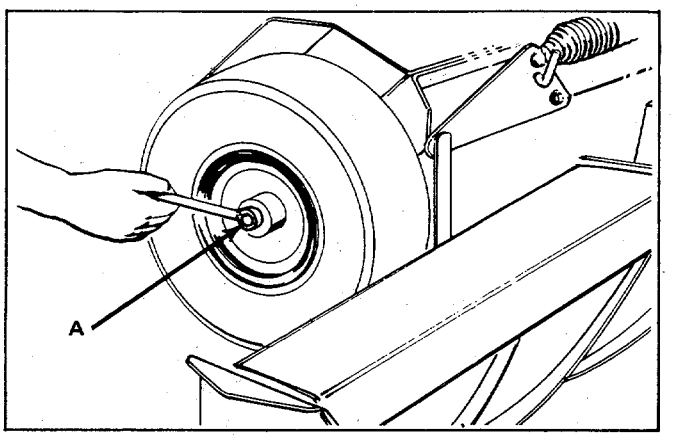


Figure 38

Disconnect the chain 'B' by removing the master link (Fig. 39).

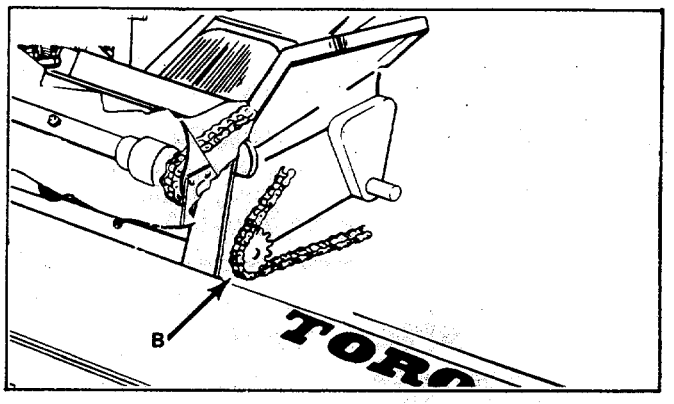


Figure 39

Remove axle by pulling on left wheel (Fig. 40). The tire, wheel and differential do not need to be removed.

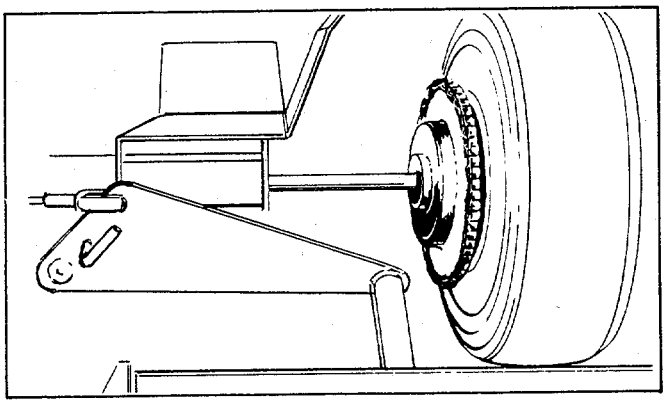


Figure 40

At this point the countershaft assembly 'A' is held only by belt 'B' and front cutting unit drive chain 'D' (Fig. 41). Disconnect chain, then remove belt 'B' and replace. At either end of the countershaft assembly are spacer washers 'C' (see inset). The number of spacer washers used may vary with each machine, but it is extremely important that the same spacers are reinstalled and at the same ends of the countershaft assembly. Proper belt and chain alignment can only be achieved by having these spacer washers in their proper place. Reverse the above procedure to assemble the mower.

CUTTING UNIT ATTITUDE

Attitude is the relationship of the cutting unit to a level ground surface. Proper attitude occurs when the side plate flanges 'A' (of the three cutting units) are all level with the ground and parallel with each other (Fig. 42).

The attitude of each machine is factory set and should never have to be reset. However, if replacement of cutting units or adjustment of hanger brackets 'B' is needed, the attitude must be reset as follows:

1. Place cutting units in most widely used height-of-cut position.

2. Disconnect chain 'C' or 'D'.

3. Adjust attitude by lengthening or shortening center ball joints 'E' (Fig. 42) or 'P' (Fig. 44) in yokes 'F' (Fig. 42) or 'L' (Fig. 44), being certain that the ball joints are locked securely in the yoke upon completion of adjustment.

4. Reattach chains and correct for proper chain tension as described on page 18.

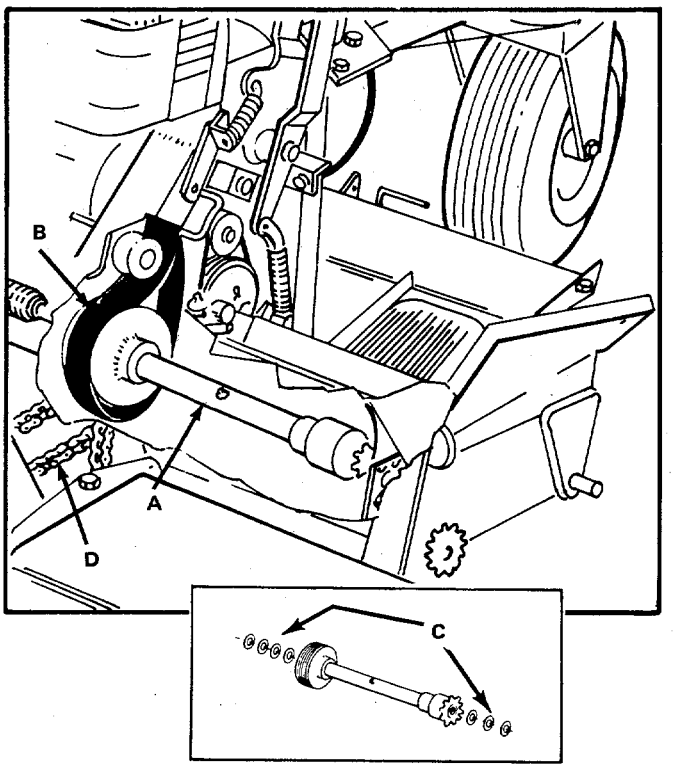


Figure 41

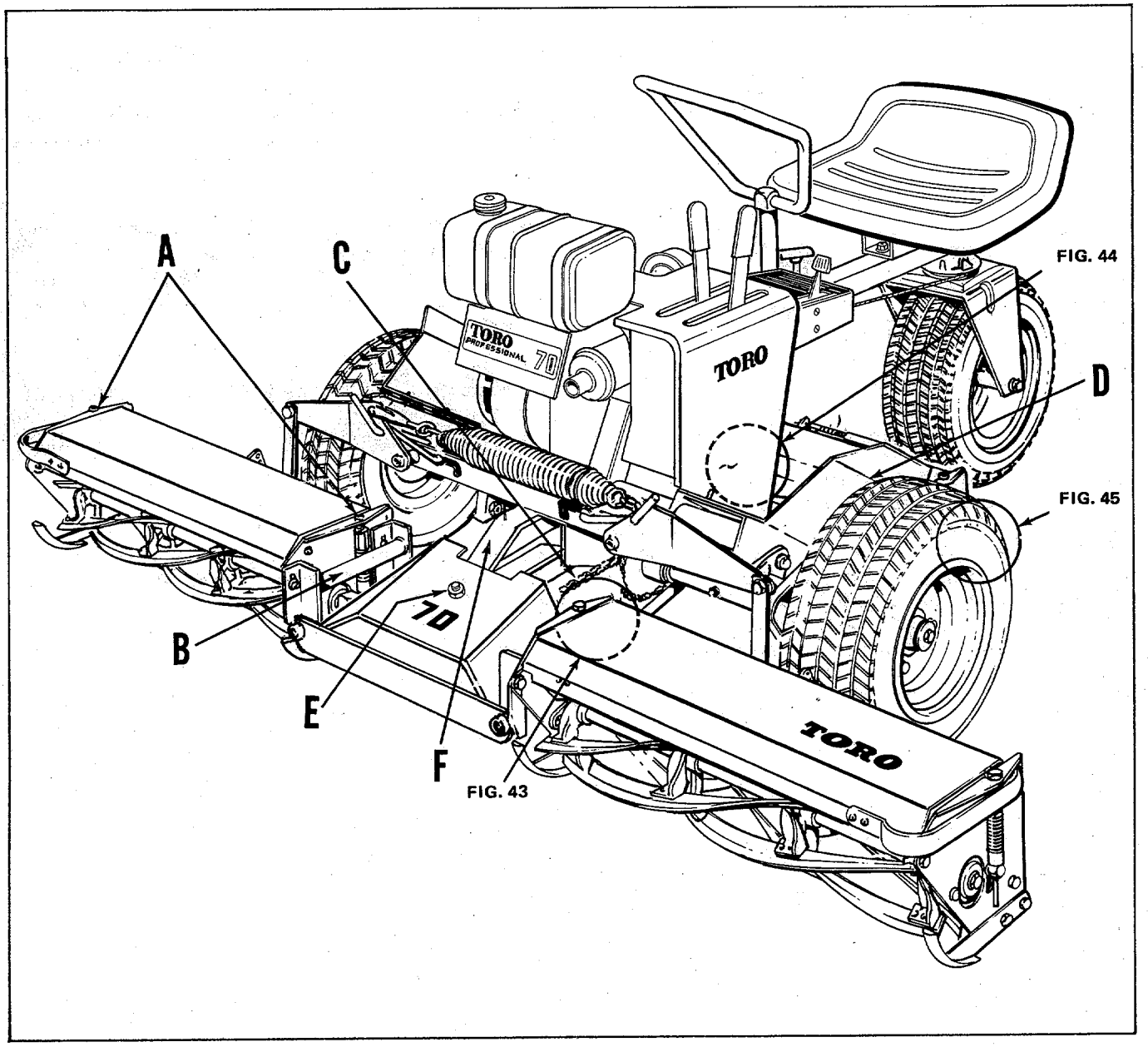


Figure 42

CUTTING UNIT CHAIN ADJUSTMENTS

Front Cutting Unit Drive (Fig. 43)
To tighten front cutting unit drive chain:

1. Remove screw 'J'.

2. Move one shim 'H' on each of the four corners (as shown) of the intermediate frame 'G'.

3. Be certain that one shim (or the same number) is moved on each corner and that screw 'J' is then reinserted.

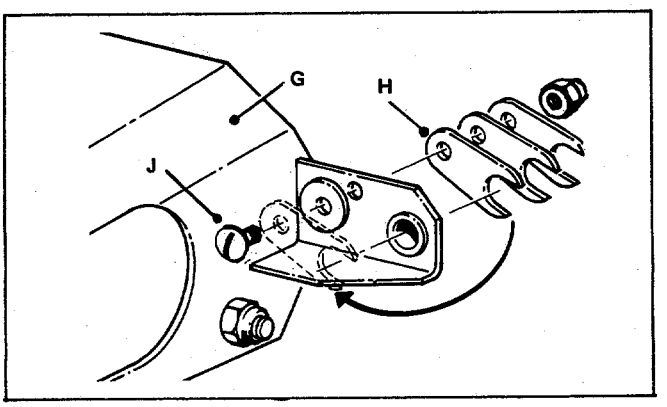


Figure 43

Rear Cutting Unit Drive (Fig. 44 & 45)
To tighten rear cutting unit drive chain:

1. Remove screw 'T'.

2. Move shims 'K' and 'R' (one shim 'R' on each side of reel).

3. If necessary, nut 'N' may be slightly loosened to remove shim 'K', and retightened after move.

4. Care must be taken so that nut 'M' does not rotate during adjustment as this will affect the attitude of the reel and thus change the cutting height slightly.

5. Reinsert screw 'T' and nut 'S'.

6. Be certain that one shim (or the same number) is moved in each of the three shim areas.

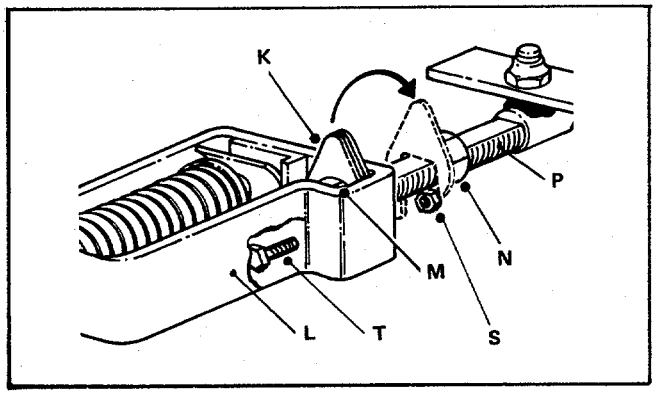


Figure 44

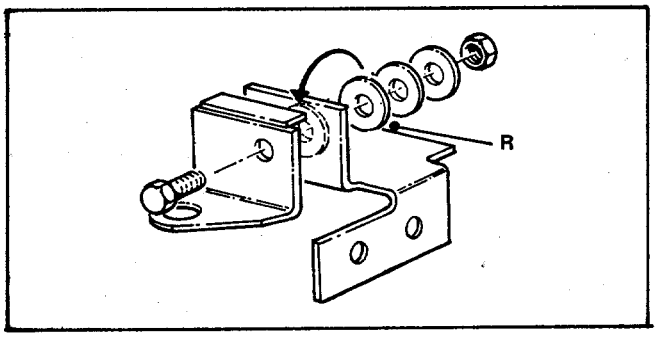


Figure 45

GENERAL

Chain adjustments should be made when chains can be squeezed together with fingers and come within 1/2" (13 mm) of touching. At this point, moving one set of shims, as described above, should sufficiently tighten chain. If all shims are moved to the adjusted positions and drive chains are still loose, move all shims to the unadjusted position and remove a half-link from the chain (Fig. 46). Then, adjust for proper tension as described above for Front and Rear Cutting Unit Drive.

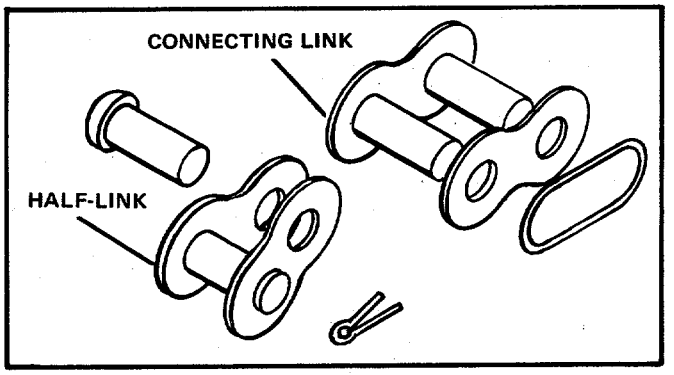


Figure 46

ADJUSTING INTERLOCK SWITCHES

Use the following procedures should a switch need adjustment or replacement:

1. Remove shroud from around traction and reel drive levers and position traction lever in N (NEUTRAL) and reel drive lever in DISENGAGE position (Fig. 47).

2. Loosen the nuts securing the mounting capscrews for the control panel and adjust control panel so both switch levers contact the insulation blocks and are deflected 3/8 inches (10 mm). Tighten the nuts and capscrews (Fig. 47).

3. Loosen round head screw securing reel drive lever switch (Fig. 47). Move reel drive lever switch in slotted hole in control panel to further deflect switch lever. Adjust until contact is lost between switch and reel drive lever when top of lever (handle end) is moved 1/2 - 3/4 inches (13 - 19 mm) and tighten round head screw.

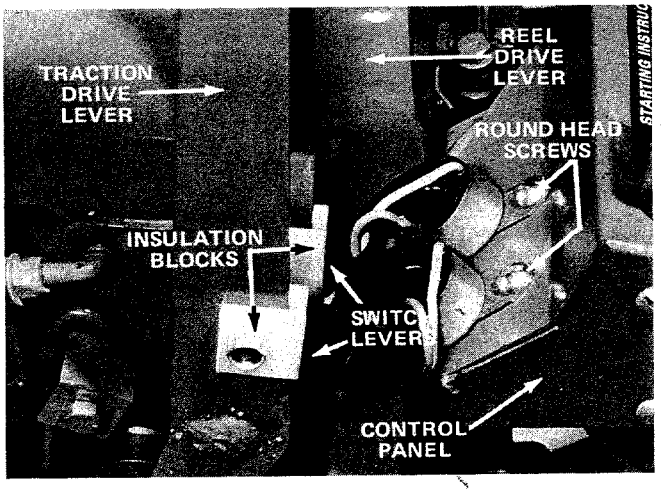


Figure 47

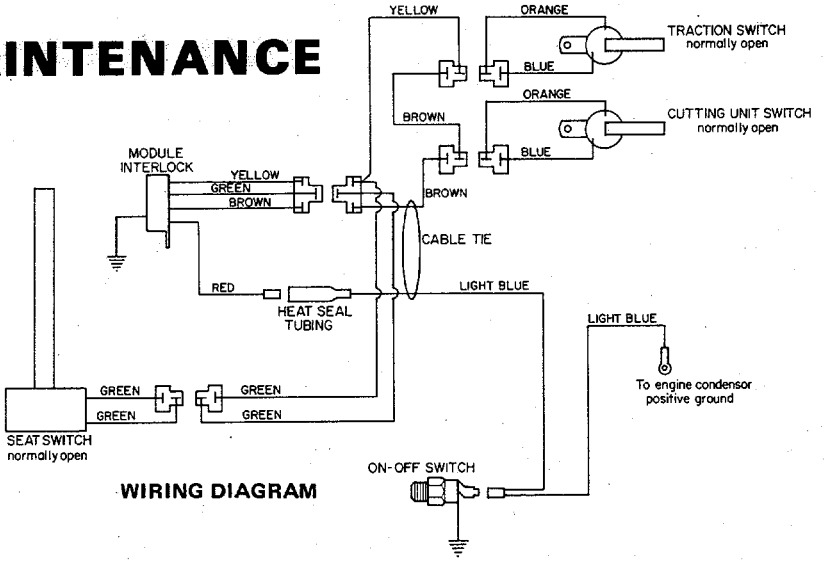
4. Check interlock system: refer to Checking Operation of Interlock Switches, page 9. Re-adjust as necessary.

5. Install shroud.

MAINTENANCE

ELECTRICAL TROUBLE SHOOTING

IMPORTANT: Before troubleshooting interlock system, assure all wires are connected correctly and making good contact. Check for short circuits between wires and other parts. Repair short circuits before troubleshooting any problem.



WIRING DIAGRAM

Condition	Cause	Correction
Engine fails to start or run.	1. Defective key switch. 2. Electrical wire grounded to vehicle. 3. Switches incorrectly positioned at control levers for traction or cutting unit drive. 4. Connectors for switches not making contact because of corrosion or disconnected. 5. Engine trouble or out of fuel. 6. Defective interlock module.	1. Replace switch. 2. Check wires for damaged, exposed, or pinched condition. 3. Adjust so that switches are "closed" when controls are in neutral position: refer to Adjusting Interlock Switches, pg. 19. 4. Remove corrosion, protect terminals with skin-over grease. Make connection. 5. Determine problem and correct. 6. Replace.
Engine does not stop with control levers engaged and operator off seat. (Except reverse which is deadman control.)	1. Interlock module not grounded to frame. 2. Wire disconnected between interlock module, key switch and engine condensor terminal. 3. Defective seat switch. 4. Defective or deteriorated seat cushion. 5. Switches at control levers for traction and cutting units not adjusted properly. 6. Defective interlock module.	1. Remove paint or other obstruction, at attachment fastener, to insure electrical ground. 2. Check for broken or damaged wires. Check all connectors for electrical contact. 3. Check electrical continuity of switch. Should be "normally open" with operator off seat, "normally close" when activated. Replace switch if necessary. 4. Examine cavity in seat cushion to make certain operation of switch is not impaired. 5. Adjust so that switches are "closed" when controls are in neutral position: refer to Adjusting Interlock Switches, pg. 19. 6. Replace.
Engine stops regardless of control lever positions.	1. Switches at control levers for traction and cutting units not adjusted properly. 2. Defective interlock module. 3. Defective key switch. 4. Engine trouble or out of fuel.	1. Adjust so that switches are "closed" when controls are in neutral position: refer to Adjusting Interlock Switches, pg. 19. 2. Replace. 3. Replace. 4. Determine problem and correct.
Engine "cuts-out" when operator is on seat.	1. Operator not seated on seat correctly. 2. Seat is not positioned properly for operator. 3. Operator traveling too fast on rough terrain.	1. Instruct operator to sit back in seat. 2. Reposition seat. 3. Slow vehicle speed so that operator remains seated.
Engine does not stop when key is rotated to "OFF" position.	1. Key switch not properly grounded. 2. Wire disconnected between interlock module, key switch and engine condensor terminal.	1. Remove paint or foreign material to insure ground. 2. Check for broken or damaged wires. Check all connectors for electrical contact.

MAINTENANCE

BED KNIFE & REEL SHARPENING

Your 70" (1.78 m) Professional is equipped with hard coated bed knives. This hard coating process is a very hard layer of stellite material applied to the front face of the knife. This will help keep your 70" (1.78 m) Professional sharper longer. DO NOT GRIND THE HARD COATED FACE OF THE KNIFE.

When Is Sharpening Necessary?

The first indication that sharpening is necessary is when the grass is not cleanly cut. The sheared end of the blade of grass will appear torn or ragged. When this occurs the reel blade edges and the bed knife edge have become rounded. Grinding and lapping are necessary when the following condition or conditions exist:

1. Severely rounded reel blade edges and bed knife edge.

2. High reel blade or blades. Blade has become bent and reel is no longer round.

3. When severe nicks exist on the bed knife and/or reel blades.

4. When uneven wear exists on the bed knife and reel blades.

Bed Knife Grinding

1. GRINDING-STONE FOR BED KNIFE
An aluminum oxide grinding stone such as Norton's grade 23A46-N5B5 is recommended. This is a medium grit stone which will not "load up" as quickly as a hard stone. A silicone carbide stone will wear out quickly and is not recommended.

2. GRINDING ANGLE
Grind the top surface of the bed knife only, and at the proper angle (Fig. 48).

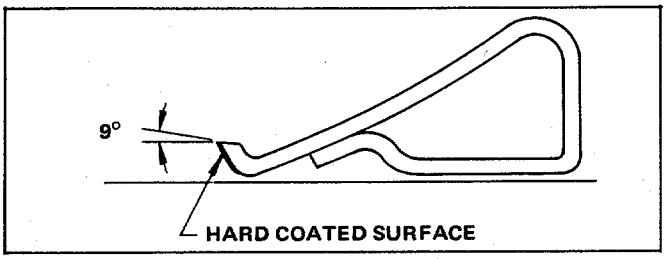


Figure 48

Install the reel and sharpened bed knife. Adjust the reel to the bed knife: refer to Reel Adjustment, page 14.

3. REPLACING THE BED KNIFE
If the bed knife is ever replaced, it may be necessary to grind the reel.

4. REEL REPLACEMENT
If only the reel of the 70" (1.78 m) Professional mower must be replaced, it will be necessary to grind the bed knife to provide a good alignment between the bed knife and reel.

Reel Grinding

Back grind the reel blades approximately 15 degrees, to allow the reel blades to wear into the bed knife more easily (Fig. 49).

The land area is that part of the reel blade that actually comes in contact with the bed knife and cuts the grass in a scissors action. The land area for the 70" (1.78 m) Professional is 1/32" to 1/16" (0.794 to 1.6 mm) (Fig. 49).

Note: Refer to TORO "Reel Mower Sharpening Manual" for detailed bed knife grinding, reel grinding, and lapping procedures.

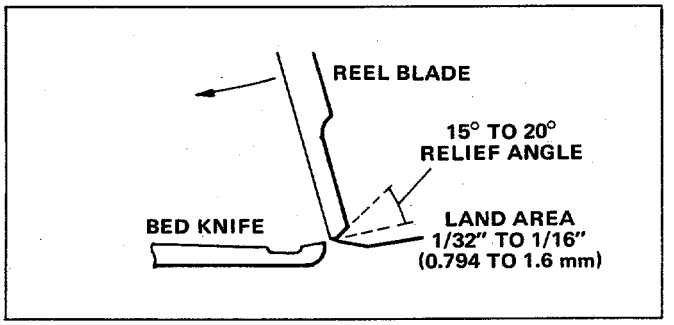


Figure 49

Lapping

Lapping is an operation to achieve a more perfect match of the bed knife and reel. The lapping process should be performed after the bed knife and reel have been ground and re-assembled in cutting unit. Lapping will greatly improve the cutting edges and reduce the need for grinding if performed frequently.

The lapping process should not be performed when the bed knife or reel has severe "nicks" or when the reel is worn "out of round".

Lapping Procedure

When lapping, use a good grade of commercial lapping compound. A medium grit should be used for initial lapping and a fine grit for finishing. A solution of one part liquid detergent and two parts lapping compound is recommended. The liquid detergent greatly eases washing away the compound when finished. Water soluble oil may also be successfully used as a compound carrier.

The lapping procedure is as follows:

MAINTENANCE

1. Adjust the reel to bed knife to obtain a light contact.

2. Operate the lapping machine so the reel turns in reverse direction for about three minutes. Apply lapping solution continuously and evenly along entire length of the reel.

3. Again, lightly adjust the bed knife and reel. Then lap for approximately two additional minutes. Apply lapping solution continuously.

4. Wash off all lapping solution.

5. For final sharpness, check that each reel blade will crease paper across its full length.

Note: It is not necessary to adjust the reel and bed knife tight or with hard contact to obtain a quality cut if the mower is sharp. Tight contact will cause bearing wear, short bed knife and reel blade life and eventually could cause a wavy pattern to develop on the bed knife which in turn will cause streaking.

STORAGE INSTRUCTIONS

If you wish to store the 70" (1.78 m) Professional for a long period of time, the following steps should be accomplished prior to storage:

1. Remove accumulations of dirt and old grass clippings. Sharpen reels and bedknives, if necessary: refer to Bed Knife and Reel Sharpening, page 21. Use a rust preventive on bed knives and reel blades. Grease and oil all lubrication points: refer to Lubrication, page 12.

2. Block up wheels to remove tire weight.

3. Relieve tension on all belts and springs.

4. All fuel should be removed from fuel tank; run the engine until it stops from lack of fuel. The small amount of fuel that remains in the bottom of the tank should then be removed by absorbing it with a clean dry cloth.

5. While engine is still warm, drain oil from crankcase. Refill with fresh oil.

6. Remove spark plug, pour 1 ounce (30 ml) of SAE-30 oil into cylinder and crank slowly to distribute oil. Replace spark plug.

7. Clean dirt and chaff from cylinder, cylinder head fins and blower housing.

MAINTENANCE RECORD

Date	Hours Used	Oil Change	Air Cleaner Service	Lubrication	Sharpen Reels	Notes

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Date	Hours Used	Oil Change	Air Cleaner Service	Lubri- cation	Sharpen Reels	Notes

The Toro Promise

A One Year Limited Warranty on Turf Products Other Than Walk Rotary Mowers

The Toro Company promises to repair any TORO Product if defective in materials or workmanship. The following time periods from the date of purchase apply:

Turf Products	1 Year
Hevi-Duty Walk Rotary Mowers	90 Days

The costs of parts and labor are included, but the customer pays the transportation costs on walk rotary mowers.

Should you feel your TORO is defective and wish to rely on The Toro Promise, the following procedure is recommended:

1. Contact your Authorized TORO Distributor (the Yellow Pages of your telephone directory is a good reference source).

2. The TORO Distributor will advise you on the arrangements that can be made to inspect and repair your product.

3. The TORO Distributor will inspect the product and advise you whether the product is defective and, if so, make all repairs necessary to correct the defect without extra charge to you.

If for any reason you are dissatisfied with the distributor's analysis of the defect or the service performed, you may contact us.

Write:

TORO Turf Products Service Department
8111 Lyndale Avenue South
Minneapolis, Minnesota 55420

The above remedy of product defects through repair by an Authorized TORO Distributor is the purchaser's sole remedy for any defect.

THERE IS NO OTHER EXPRESS WARRANTY. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR USE ARE LIMITED TO THE DURATION OF THE EXPRESS WARRANTY.

Some states do not allow limitation on how long implied warranty lasts, so the above limitation may not apply to you.

This Warranty applies only to parts or components which are defective and does not cover repairs necessary due to normal wear, misuse, accidents, or lack of proper maintenance. Regular, routine maintenance of the unit to keep it in proper operating condition is the responsibility of the owner.

All warranty repairs reimbursable under The Toro Promise must be performed by an Authorized TORO Distributor using Toro approved replacement parts.

Repairs or attempted repairs by anyone other than an Authorized TORO Distributor are not reimbursable under The Toro Promise. In addition, these unauthorized repair attempts may result in additional malfunctions, the correction of which is not covered by warranty.

The Toro Company is not liable for indirect, incidental or consequential damages in connection with the use of the product including any cost or expense of providing substitute equipment or service during periods of malfunction or non-use.

Some states do not allow the exclusion of incidental or consequential damages, so the above exclusion may not apply to you.

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

Compliance with Radio Interference Regulations Certified.
Certifie Conforme au Reglement sur le Brouillage Radioelectrique.

Litho in U.S.A.