

Model: Range Rider 21	
Width of Cut	21"
Horse Power	5



# Range Rider<sup>®</sup>

## Your Dependable Mower

With the *Root Power Riding Mowers* you can look ahead to years of trouble free service. It's design is simple and functional. It was engineered to build in maximum structural strength; and to perform satisfactorily under difficult mowing conditions.

## How to use a rotary mower

Your Root rotary power mower is capable of performance that will amaze you. However, like all machines, it has a limit to its capacity to perform. *Never force it.*

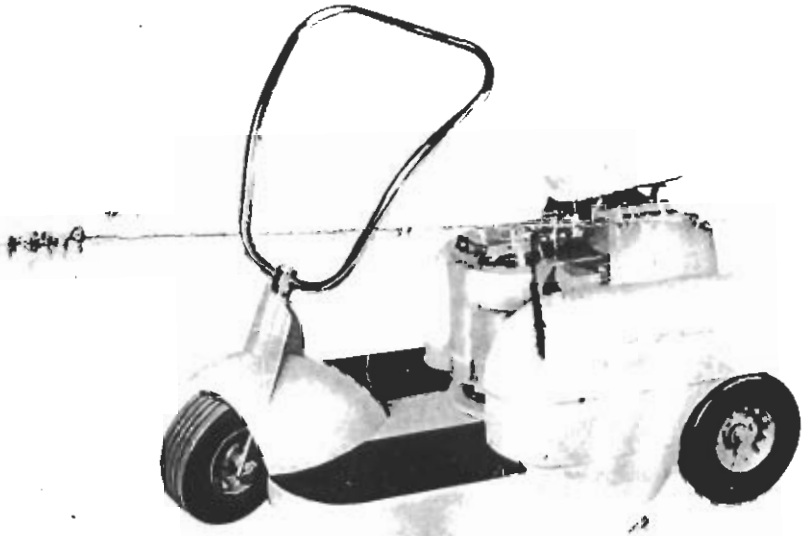
Cut a light stand of grass, not too tall, in clockwise (right to left) movement. It will make finer mulch, as most mowers throw grass to the right and into the path of next next turn.

To cut heavy, tall, or wet grass, go *counterclockwise*. You will avoid clogging, and bones and rocks will be thrown clear of mower.

To give lawn smooth appearance, alternate direction of cutting from time to time.

Overlap each swath about 3". Thus you will avoid ridges. If possible, cut all borders and fence rows first. Next cut around flower beds, trees, etc. Then finish remaining open areas.

Do not mow your lawn when the grass is heavy with dew or immediately following a rain. The lawn cannot be trimmed neatly when the moisture content in the grass is too great. Damp clippings will stick to the mower walls and fall off in unsightly clumps. The moisture content of grass will vary greatly even from dawn after a dew fall, and late afternoon.



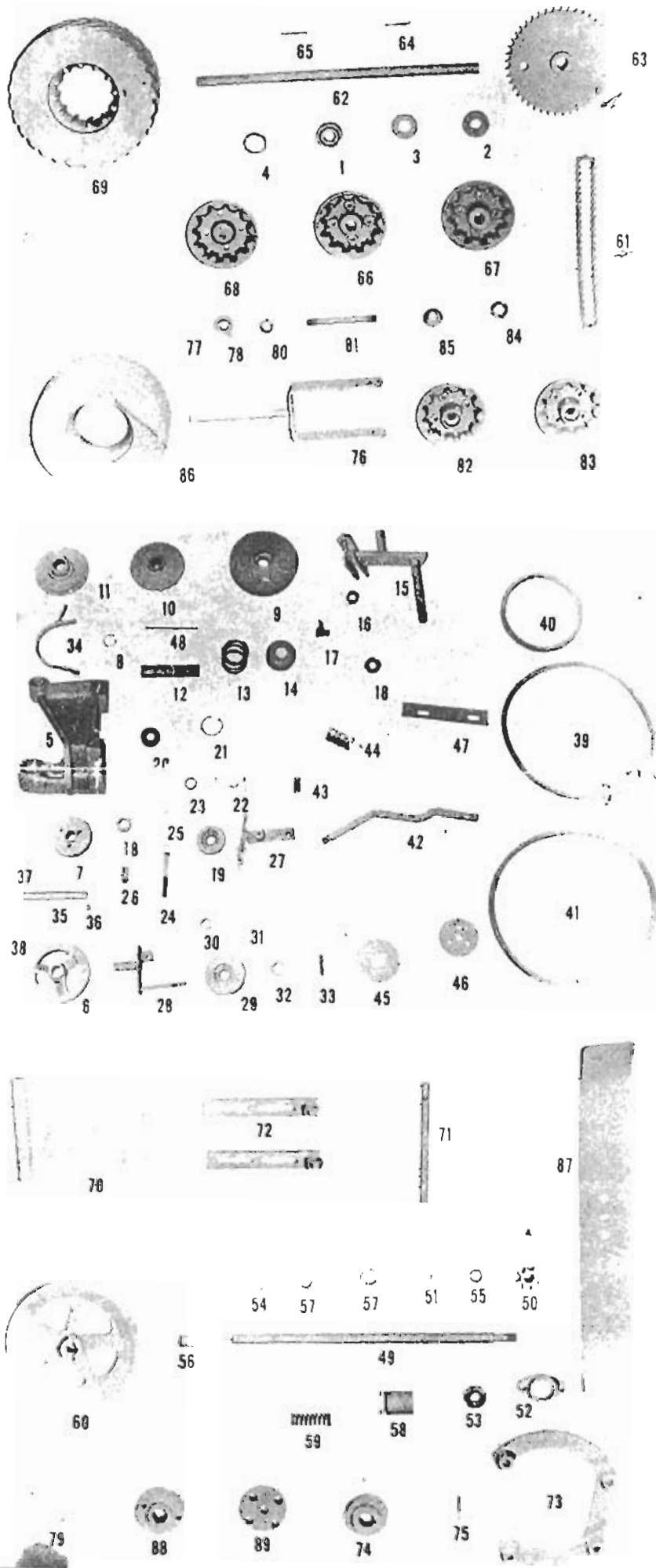
Before starting mower, read mower and engine operation manual completely and orient yourself on the function of the engine, mower and controls. Manual clutch control (Fig. 1) can be disengaged for ease in moving this mower about when engine is not running. For operation when engine is running, manual clutch must be engaged in order to propel unit.

Throttle control is mounted on front of engine and provides engine choking, engine speed control and engine stop switch.

Mower propelling control lever is positioned at left of seat and provides different forward speeds of mower, a neutral position and a reverse propelling drive for mower. The transmission is an automatic variable pitch type and control lever can be moved directly from fastest forward speed to reverse position for braking or stopping the mower instantly.

# 6173 Gals

# PARTS LIST FOR RANGE RIDER 2!



ILL. PART NO. NO.	DESCRIPTION	NO. REQ.
3800	Main Frame	1
3802	Fender LH	1
3803	Fender RH	1
12156	Fender Bolt 1/4-20 x 1/2 TCS	8
395	Fender Lock Washer	6
3804	Stop Pad LH	1
3805	Stop Pad RH	1
1107	Countershaft Jack Screw 5/16-18 x 1-1/4	1
13373	Countershaft Jack Screw Lock Nut 5/16-18 Jam	2
1	Rear Axle Bearings	2
2	3508 Rear Axle Seal Retainers (Inner)	2
3	3509 Rear Axle Seal Retainers (Outer)	2
4	3605 Rear Axle Seal (Felt)	2
2713	Set Screws 5/16 x 1/4	2
3815-1	Transmission Assembly	1
5	3816 Variable Speed Frame	1
6	3817 Mule Drive Pulley	1
2543	Pulley Set Screws	1
7	12029 Friction Disc Pulley	1
12155	Variable Speed Pulley	1
8	9754 Shaft Retaining Ring	1
9	12151 Fixed Face	1
10	12031 Floating Face	1
11	12036 Spring Loaded Face	1
12032	Bushing - Floating Face	1
12037	Bushing - Spring Loaded Face	1
12	12152 Shaft with Bushings	1
12035	Shaft Bushings Shoulder	1
48	12158 Shaft Key	1
13	12038 Spring	1
14	12039 Spring Cap	1
15	3818 Variable Speed Pulley Arm	1
16	2744 5/8 x 7/8 x 1/2 Bushing	1
17	9756 Oil Cup	1
18	2712 Set Collar	1
2713	Set Collar Set Screw 5/16 x 1/4	1
19	3819 Slack Idler	1
20	3511 Slack Idler Bearing	1
21	9759 Slack Idler Bearing Ret. Ring	1
22	3512 Slack Idler Bearing Spacer (Inner)	1
	5/8 x 3/4 x 3/16	
23	3769 Slack Idler Bearing Spacer (Outer)	1
	5/8 x 3/4 x 1/4	
505	Slack Idler Cap Screw 1/4-28 x 1	1
395	Slack Idler Lock Washer 1/4 SP	1
24	3820 Slack Idler Take Up Bolt	1
25	9763 Take Up Bolt Spacer 5/16 x 3/8 x 5/32	1
26	9764 Take Up Bolt Spring	1
609	Take Up Bolt Flat Washer 5/16	1
367	Take Up Bolt Lock Nut 5/16-24	1
27	3821 Slack Idler Arm	1
28	3822 Tension Idler Arm	1
29	3823 Tension Idler	1
20	3511 Tension Idler Bearing	1
30	9768 Tension Idler Bearing Spacer (Inner)	1
	5/8 x 3/4 x 3/8	
31	7324 Tension Idler Bearing Spacer (Outer)	1
	5/8 x 7/8 x 1/16	
21	9759 Tension Idler Bearing Ret. Ring	1
32	2712 Tension Idler Set Collar	1
2713	Tension Idler Set Collar Set Screw 5/16-18	1
33	806 Tension Idler Jack Bolt 5/16-18 x 1	1
13373	Tension Idler Jack Bolt Jam Nut 5/16-18	1
34	9971 Belt Guard	1
806	Belt Guard Cap Screw 5/16-18 x 1	1
8521	Belt Guard Lock Washer 5/16 SP	1
35	3824 Mule Drive Shaft	1
20	3511 Mule Drive Shaft Bearings	2
36	729 Mule Drive Shaft Key #3	1
37	9769 Bearing to Friction Pulley Spacer	1
	5/8 x 3/4 x 1/4	
38	3512 Bearing to Mule Drive Pulley Spacer	1
	5/8 x 3/4 x 3/16	
39	3547 Round Belt 30YR74	1
40	9924 V-Belt 2190-60	1
41	8607 V-Belt 5L360	1
723	Trans. to Frame Cap Screw 5/16-24 x 1-1/2	1
367	Trans. to Frame Nut 5/16-24 Lock	1
609	Trans. to Frame Washers 5/16 Flat	1
42	3825 Shift Lever	1
43	3515 Shift Lever Spring	1

ILL. PART NO. NO.	DESCRIPTION	NO. REQ.
374	Shift Lever to Arm Cap Screw 1/4-28 x 1-1/4	1
364	Shift Lever to Arm Nut 1/4-28 Lock	1
44 5506	Shift Lever Plate	1
505	Shift Lever Plate Cap Screw 1/4-28 x 1	2
364	Shift Lever Plate Nut 1/4-28 Lock	2
13375	Shift Lever Knob	1
45 12042	Reverse Friction Disc	4
46 12064	Reverse Friction Plate	1
374	Reverse Friction Cap Screw 1/4-28 x 1-1/4	3
395	Reverse Friction Lock Washers 1/4 SP	3
47 3826	Shift Lever Rack	1
1403	Rack to Seat Stand Cap Screw 1/4-28 x 1/2	2
364	Rack to Seat Stand Nut 1/4-28 Lock	2
49 3513	Countershaft	1
50 3510	Countershaft Sprocket	1
9963	Countershaft Sprocket Nut 1/2-20 Lock	1
51 729	Countershaft Sprocket Key #3	1
52 7609	Bearing Retainers	2
53 3511	Countershaft Bearings	2
374	Retainer to Frame Cap Screw 1/4-28 x 1-1/4	4
364	Retainer to Frame Nut 1/4-28 Lock	4
1204	Retainer to Frame Washer 1/4 Flat	8
54 9760	Bearing to Set Collar Spacer 5/8 x 3/4 x 3/8	1
55 3827	Bearing to Sprocket Spacer 5/8 x 3/4 x 7/8	1
56 7263	Bearing to Pulley Spacer	1
57 2712	Countershaft Set Collar	2
2713	Set Screw	2
58 3516	Manual Clutch	1
59 2714	Manual Clutch Spring	1
60 8803	Drive Pulley 8" 5L	1
61 3518	Drive Chain 53 P	1

#### REAR AXLE ASSEMBLY

62 3830	Rear Axle	1
63 3519	Rear Axle Sprocket	1
2713	Set Screw	2
64 9739	Rear Axle Key (RH) 3/16 Sq. 2-1/4	1
65 4134	Rear Axle Key (LH) 3/16 Sq. 1-1/2	1
733	Rear Axle Cap Screw 3/8-24 x 1-1/4	2
382	Rear Axle Lock Washer 3/8 SP	2
3604	Rear Axle Flat Washer 3/8	2
68 3831	Rear Wheel Hub RH	1
67 3832	Rear Wheel Hub LH	1
68 3833	Rear Wheel Flange	2
89 3855	Rear Tire 10 x 3 TT	2
9716	Rear Wheel Bolts 5/16-18 x 3/4	8
8521	Rear Wheel Lock Washers 5/16 SP	8

#### SEAT ASSEMBLY

7210	Contour Seat	1
7210C	Contour Seat Cover	1
399	Seat Bolt 1/2 x 1 Carr.	1
6204	Seat Nut 1/2-13 Square	1
70 3840	Seat Plate	1
71 3841	Seat Plate Pin	1
72 9916	Seat Adjustment Bracket	2
2713	Set Screw 5/16 x 1/4	2
505	Bracket to Stand Cap Screw 1/4-28 x 1	4
364	Bracket to Stand Nut 1/4-28 Lock	4
1204	Bracket to Stand Washer 1/4 Flat	4
9962	Seat Springs	2
723	Seat Spring Cap Screw 5/16-24 x 1-1/2	2
367	Seat Spring Lock Nut 5/16-24	2
609	Seat Spring Washer 5/16 Flat	2
73 3845	Eng. to Frame Adap. Ring	1
3846	Eng. to Frame Cap Screw 5/16-24 x 2-3/4	3
3847	Eng. to Frame Cap Screw 5/16-18 x 2	1
367	Eng. to Frame Lock Nut 5/16-24	3
609	Eng. to Frame Washer 5/16 Flat	4
8521	Eng. to Frame Washer 5/16 Lock	1
74 3850	Engine Pulley	1
2713	Engine Pulley Set Screw 5/16 x 1/4	2
75 9739	Engine Pulley Key 3/16 x 2-1/4	1
3848	Throttle Control	1
386	Throttle Bolts 3/16 x 1-1/4	2
7632	Throttle Nuts 3/16 Hex	2
2508	Throttle Lock Washer 3/16 SP	2
3849	Throttle Assy. to Eng. Spacer 1/4 x 3/8 x 1/2	2
9798	Oil Drain Cock	1
9799	Oil Drain Tube	1

ILL. PART NO. NO.	DESCRIPTION	NO. REQ.
9728	Oil Drain Clamp	1
12156	Oil Drain Tube Clamp Self Tap Screw 1/4	1
76 3860	Front Wheel Fork	1
77 729	Front Wheel Fork Key #3	1
78 3537	Steering Column Bearing	2
79 7834	Countersunk Washer	1
80 2721	Thrust Bearing	1
81 3540	Front Axle	1
82 3862	Front Wheel 1/2 (Alum.)	1
83 3863	Front Wheel 1/2 (Alum.) Gr. Ftg.	1
1107	Front Wheel Cap Screw 5/16-18 x 1-1/4	4
12006	Front Wheel Nut 5/16-18 Hex	4
8521	Front Wheel Washer 5/16 SP	4
603	Front Wheel Bearings	2
84 514	Front Wheel Bearing Felts	2
85 515	Felt Retainer	2
720	Axle Nut 1/2 x 20 Slot 5/16 Tall	2
513	Cotter Key	2
712	Grease Fitting	1
88 3865	Front Tire 10 x 3 Rib Tread	1
3501	Handle Bar	1
705	Handle Cap Screw 5/16-24 x 3/4	1
609	Handle Washer 5/16 Flat	1
8521	Handle Washer 5/16 SP	1
<b>BLADE ASSEMBLY</b>		
87 3867	Blade (Heel)	1
88 12068	Blade Adapter	1
734	3/8 Mod. Carbon Lock Washer	3
7644	Blade Bolt 3/8-24 x 2-3/4	1
3115	Blade Bolt 3/8-24 x 2-1/4	2
2917	Blade Bolt 3/8-24 x 1-3/4	2
733	Blade Bolt 3/8-24 x 1-1/4	2
735	Blade Bolt 3/8-24 x 3/4	2
89 2303	Blade Spacers	3

## Unpacking the mower

Check the package carefully to see that the following is included with engine instruction manual, mower instruction manual and warranty card: 1-3/8" x 2-3/4" Cap Screw, 1-3/8" x 2-1/4" Cap Screw, 2-3/8" x 1-1/4" Cap Screws and 2-3/8" x 3/4" Cap Screws and 1-Blade Spacer.

NOTE Check mower carefully for any damages that might have resulted in shipping. If any are found, notify the carrier immediately since they are liable for all damages.

## Assembling the mower

**Handle.** First, remove bolt and washers from top of steering column. Then, remove tape. This tape holds the "half-moon" key in the steering column in shipping. The handle is then placed on the steering column. Make sure that the key way in the handle is in line with the "half-moon" key. The purpose of this key is to keep the handle from turning freely on the column. Place cap screw and washers in place at the top of the steering column and tighten securely.

**Seat.** The seat is attached to the mower by slipping the shaft through the provided brackets and securing it at both ends with set screws.

**Blade.** The suction-lift bar blade has been put on the mower at the factory. The blade is set to cut grass at a height of 2 inches. The lowest cut of 1-1/2 inches can be obtained by adding the other aluminum blade spacer. When changing blade cutting height, be sure to use proper length cap screws provided with spacers.

## Bolt and Spacer Arrangements for Different Blade Heights

- 3 Spacers for Lowest Cutting Height  
Center Bolt—2-3/4" Long  
Outside Two Bolts—2-1/4" Long
- 2 Spacers for Normal Mowing  
Center Bolt—2-1/4" Long  
Outside Two Bolts—1-3/4" Long
- 1 Spacer for Mowing Rough Terrain  
Center Bolt—1-3/4" Long  
Outside Two Bolts—1-1/4" Long
- Blade Only (No Spacers) For Mowing Extremely Rough Terrain  
Center Bolt—1-1/4" Long  
Outside Two Bolts—3/4" Long

NOTE: THREE CAP SCREWS MUST BE USED TO SECURE BLADE PROPERLY TO THE ENGINE.

NOTE: TO PREVENT SERIOUS INJURY, REMOVE THE WIRE FROM SPARK PLUG WHENEVER WORKING ON THE UNDERSIDE OF THE MOWER.

*Operation of Manual Clutch* For ease in moving this mower about when engine is not running, the mower has been provided with a manual clutch. For demonstrating mower, disengage manual clutch ("C" Fig. 1) by pulling the clutch collar ("C" Fig. 1.) away from pulley and rotate collar 1/4 turn to lock clutch in disengaged position. For operation, manual clutch ("C") must be engaged in order to propel unit.

## Servicing, starting & operating the mower

### ENGINE SERVICING

1. Read engine manual thoroughly before placing mower in operation.
2. Fill Oil Sump with oil. Remove the oil filler plug located on the operator's left at the base of the engine. (See Fig. 3). Mower should be level. Pour oil in the opening until it rises to the top of the filler opening. Replace the oil filler plug. Screw it down tight.
3. Fill Gasoline Tank. Fill with a clean regular grade of gasoline.

NOTE: THIS UNIT IS FURNISHED WITH A TECUMSEH ENGINE AND SERVICE STATIONS ARE AVAILABLE IN MOST CITIES FOR SERVICE OR REPAIR. CONSULT THE YELLOW PAGES OF YOUR TELEPHONE DIRECTORY FOR LOCATION.

## Mower servicing

1. Variable Speed Transmission Must Be Lubricated Before Using. The transmission is lubricated by raising the spring cap on oil cup (located underneath the left rear fender) and filling cup with SAE 30 oil. This oil is the same as that used in the crankcase. See Item "A" Fig. 1 for location.
2. Front wheel bearings lubricated at the factory and require lubrication every 50 hours of operation. Zerk fitting is provided.

## Starting engine after servicing

1. Engaging lever must be in neutral position.
  2. Open throttle to choke position. As soon as engine starts, move throttle from choke position to running position.
  3. Place left knee and left hand on seat, check right foot to be sure it is not under mower frame.
  4. Grasp recoil starter grip in right hand and pull sharply upward.
- NOTE: IT IS RECOMMENDED TO START YOUR NEW MOWER ON A CONCRETE DRIVE OR WALK. THIS FACILITATES EASY STARTING BECAUSE THERE IS NO DRAG ON THE DIRECT CONNECTED BLADE.

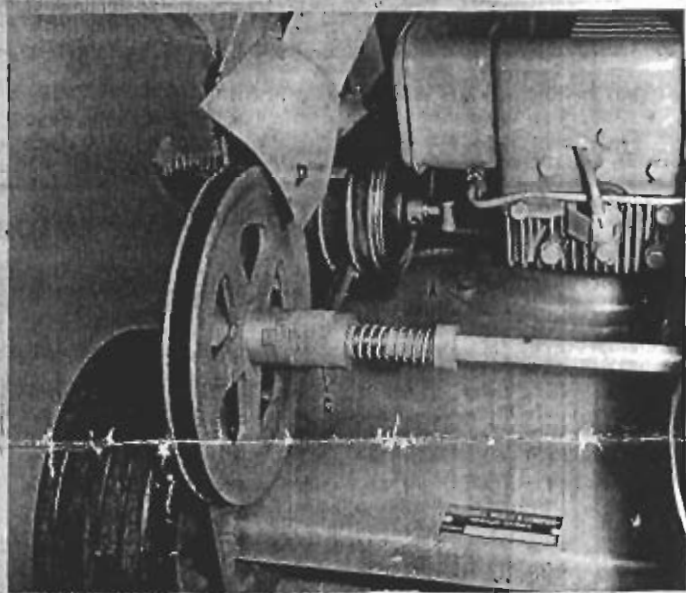


FIGURE 1

## Mower operation

*To Move Forward.* Open throttle about half way. Engaging lever should be moved slowly forward to insure smooth performance.

NOTE: ENGAGING LEVER HAS THE SAME FUNCTION AS AN AUTOMOBILE CLUTCH AND SHOULD BE ENGAGED SLOWLY TO ELIMINATE JERKY STARTS. TO STOP MOWER, MOVE ENGAGING LEVER QUICKLY TO REVERSE POSITION. THE TRANSMISSION IS AN AUTOMATIC VARIABLE PITCH PULLEY TYPE AND IS DESIGNED TO PROPEL THE MOWER INSTANTLY FROM REVERSE TO FORWARD OR FORWARD TO REVERSE.

As the engaging lever is moved further forward the speed of the mower will increase. You will soon become accustomed to the operation of this mower and will know at what speed and throttle setting (not over 3/4 open) to use in mowing your lawn.

## Adjustments

**Chain.** See Figure 2. Check chain tension before mower is put in use. This chain has been set at the factory for proper tension. Should chain become too loose, loosen the two shakeproof nuts "A" so that the bearing and bearing retainer "B" can be moved freely in the provided slots. Then loosen jam nut "C" and turn jack screw "D" in a clock-wise direction. This raises the retainer "B" thus tightening the chain. The chain must not be extremely tight, but have a little slack. When chain has been tightened once or twice, it will probably be necessary to remove the chain and remove a link from this chain. After making necessary adjustment, tighten jam nut "C" against bracket and nuts "A".

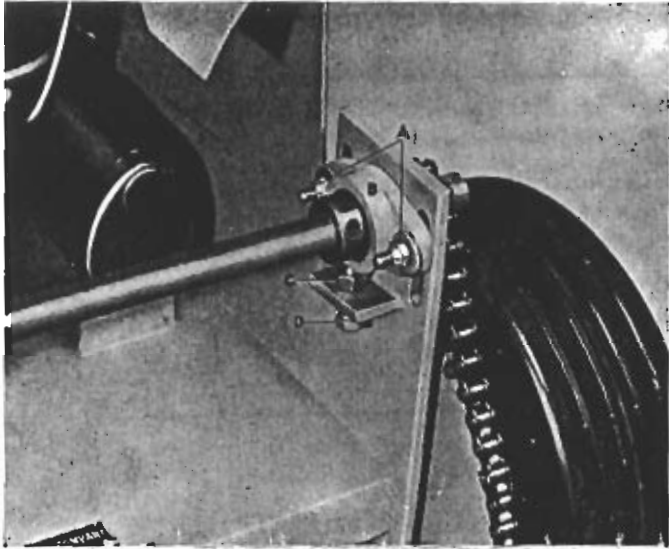


FIGURE 2

TO REPLACE REVERSE FRICTION DISC shown in Fig. 3, remove left rear fender. Remove three cap screws which attach reverse friction disc to hub. Remove worn disc. Bolt new disc in place and replace fender.

**Belts.** Ref. Fig. No. 3. Basic adjustments for belt tension for all belts are provided for with spring tension. Drive belt ("C" Fig. 3) and speed selector belt ("D" Fig. 3) require no manual adjustments. Should engine to speed selector round belt ("B" Fig. 3) become loose and slap on pulley, slots are provided in the frame for adjusting it. To make such adjustments, remove left rear fender by removing four screws, loosen three cap screws ("A" Fig. 3) slide selector assembly away from engine from 1/8" to 1/4" to give from 10 to 12 lbs. tension on spring ("F" Fig. 3). Tighten cap screws "A", replace fender.

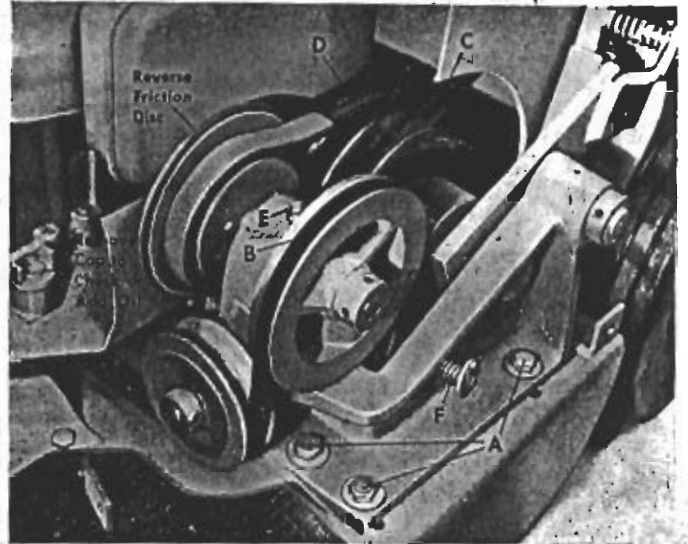


Figure 3

## To replace variable speed assembly:

1. Remove left rear fender.
2. Remove variable speed reverse friction disc.
3. Place variable speed engaging lever in far reverse position to remove speed selector belt ("D" Fig. 3).
4. Move variable engaging lever to far forward position to remove drive belt ("C" Fig. 3).
5. Remove cotter key and tension spring "F" on speed selector idler.
6. Remove three cap screws ("A" Fig. 3).
7. Remove engine to speed selector round belt ("B" Fig. 3) from selector assembly.
8. Remove speed selector assembly from frame.
9. Attach variable speed engaging lever to replacement assembly. Note: Engaging lever is not furnished with replacement assembly.
10. Re-assemble unit in reverse steps as outlined above.

## CAUTION LIST FOR POWER MOWER SAFETY AND OPERATION

1. **START SAFELY.** Stand firmly. Make sure your feet are in a safe place.
2. Learn how to **DISENGAGE THE CLUTCH** or stop the motor quickly in case of any emergency. Stop the motor whenever you leave the mower.
3. **KEEP THE WAY CLEAR OF** little tots and pets. Don't let them play around the mower while it is in operation.
4. **ALWAYS BE SURE** of your footing and balance when mowing on inclines. The steeper the incline the more care required.
5. **INSPECT THE LAWN** that is to be mowed before the mowing begins. Clear the lawn of all stones, wire and other debris.
6. **DISCONNECT THE SPARK PLUG WIRE** whenever you want to work on the underside of a mower. Tip mower over by means of the handle. Don't reach under the deck, chain guards or belt guards of any mower. Keep hands, feet and clothing away from any moving parts. Never attempt removal of any objects from the mower until motor has been completely stopped.
7. **RESPECT YOUR POWER MOWER** and teach this respect to the younger members of the family who use it. Teach them, too, these simple safety suggestions.
8. Excessive cutting blade speed is dangerous—do not overspeed the engine by tampering with the governor.
9. When operating a riding type mower, keep feet clear of rotating blade.

**YOUR MOWER IS NOT A TOY. IT IS A PIECE OF MACHINERY AND SHOULD BE USED AS SUCH TO INSURE SAFE AND EFFICIENT OPERATION.**

## Warranty and Agreement

The Root Manufacturing Co., Inc., (Manufacturer), warrants each new mower of their manufacture against defects in material and workmanship, under normal use and service, for a period of one year from date of original purchase except for products used in commercial rental or industrial operations which are not warranted in any respect, to the extent that we will furnish new parts without charge, to replace any parts, which, within said period of time, our investigation shows were defective when shipped, provided written notice has been given us immediately upon the discovery of such defect; and we reserve the right of requiring the return of the defective parts (transportation and insurance prepaid) before any claim is recognized.

Goods, or parts thereof, not manufactured by us are guaranteed only in accordance with the manufacturer's guarantee, and then only to the extent that we are able to enforce the manufacturer's guarantee. No claims for labor, transportation, special, incidental, indirect or consequential damages will be allowed. We reserve the right to incorporate design changes at any time, and to effect price changes without previous notice.

The above warranty is in lieu of all other warranties, statutory or otherwise, expressed or implied, all other representations to Purchaser, and all other obligations or liabilities with respect to such machines. No warranty or representation whatsoever has been made by the manufacturer and relied on by Purchaser, and Seller has no authority to make any such warranty or representation on behalf of such manufacturer.

To insure warranty service, fill in, sign and return warranty cards.

**HOW TO ORDER PARTS**— When ordering parts, always furnish the model number and serial number of the mower, the part number and description of the parts. If the dealer where you purchased the mower cannot furnish the parts, you may order direct from Root Manufacturing Company, Inc., P.O. Box 191, Baxter Springs, Kansas 66713. If the model number, serial number and part number is not available, you may send the old part for duplication. All engine parts are carried by your local engine service dealer who is listed under gasoline engines in the yellow pages of your telephone directory.

# The Root Manufacturing Company, Inc.

**P. O. BOX 191 :: BAXTER SPRINGS, KANSAS 66713**

AG 254-2