Your New

Model No. 219-200
(3-1/2 H.P.)

219-250
(4 H.P.)

10 CENTS

ROTARY TILLER

WARRANTY

For one year from date of purchase, MTD Products Inc., will replace for the original purchaser, free of charge, F.O.B. factory or authorized service firm, any part or parts found to be defective in material or workmanship. All transportation charges on parts submitted for replacement under this warranty must be paid by the purchaser. This warranty does not include replacement of parts which become inoperative through misuse, excessive use, accident, neglect, improper maintenance or alterations by unauthorized persons. This warranty does not include the engine, motor, battery, battery charger or any component parts thereof. For service on these units refer to the applicable manufacturer's warranty.

The above warranty will apply only to the original owner and will be effective only if the warranty card has been properly processed. It will not apply where the unit has been used commercially.

Warranty service is available through your local authorized service dealer or distributor. UNDER NO CIRCUMSTANCES WILL THE RETURN OF A COMPLETE UNIT BE ACCEPTED BY THE FACTORY UNLESS PRIOR WRITTEN PERMISSION HAS BEEN EXTENDED.

SAFETY RULES

Your rotary tiller is a precision built machine designed to take the work out of gardening and other related chores. It can be used for seed bed preparation, tilling, cultivating, furrowing, composting and mulching. Like any other piece of power equipment, it requires a certain amount of care and maintenance. In return for this, it will give a maximum of service and efficiency. Read these instructions carefully before assembling or operating your tiller. Through proper care and operation, you will obtain long, efficient service and trouble free operation.

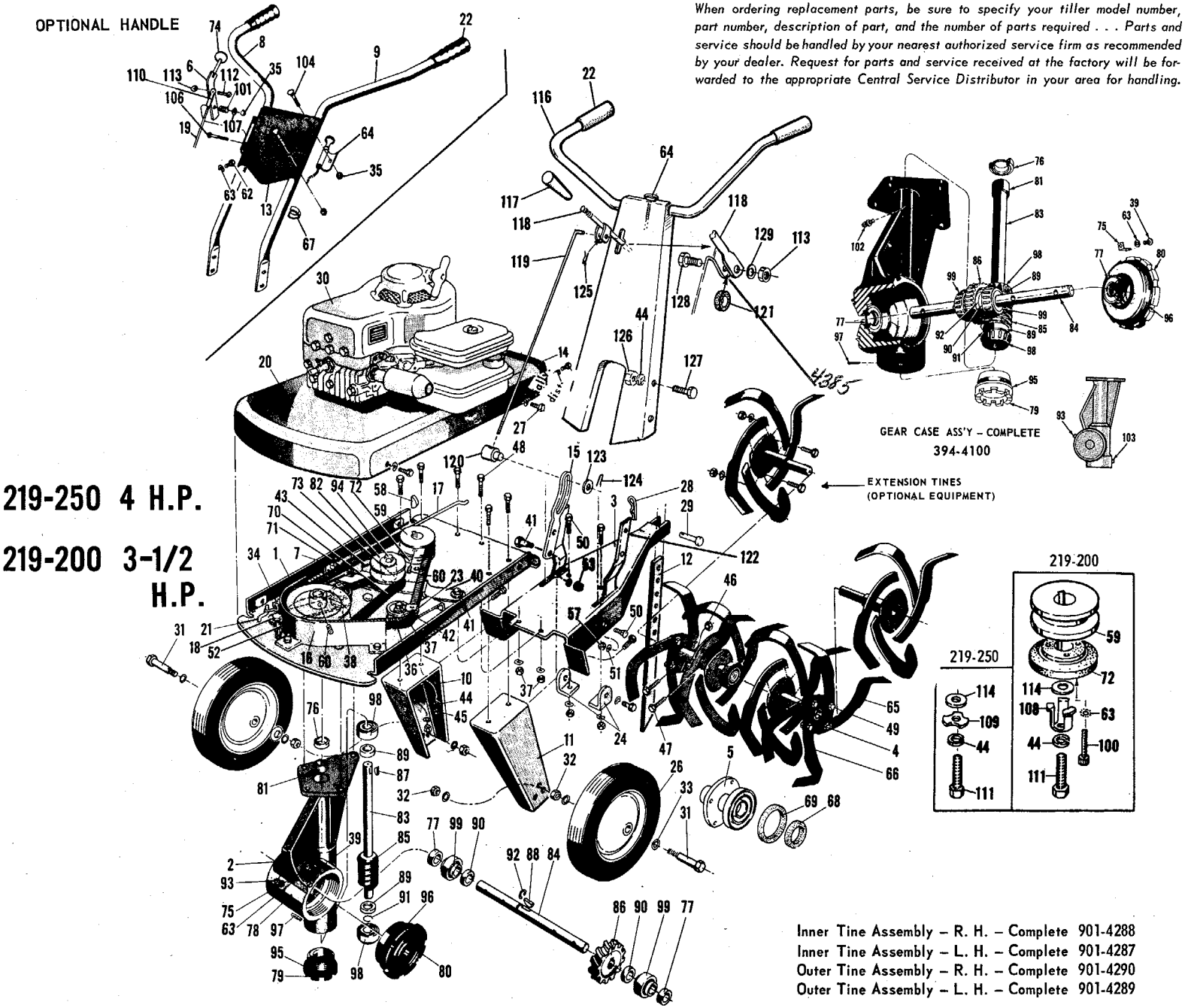
1. Your tiller is a precision piece of power equipment. Exercise extreme caution at all times.
2. Do not attempt to start engine with the clutch control in engaged or "Forward" position.
3. Stand clear of tines when starting engine. Never stand in front of, or work on tines while the engine is running.
4. **NEVER** place hands or feet in the vicinity of the tines while the engine is running.
5. Always stop engine when tiller is not in actual use.
6. Always disconnect spark plug wire during repairs or refueling operations.
7. Do not fill gas tank while engine is running. Do not spill gasoline on hot engine.

MANUFACTURED BY

MTD PRODUCTS INC • 5389 WEST 130th ST. • P.O. BOX 2741 • CLEVELAND, OHIO 44111

FORM NO. 770-1882A

When ordering replacement parts, be sure to specify your tiller model number, part number, description of part, and the number of parts required . . . Parts and service should be handled by your nearest authorized service firm as recommended by your dealer. Request for parts and service received at the factory will be forwarded to the appropriate Central Service Distributor in your area for handling.



Inner Tine Assembly – R. H. – Complete 901-4288
Inner Tine Assembly – L. H. – Complete 901-4287
Outer Tine Assembly – R. H. – Complete 901-4290
Outer Tine Assembly – L. H. – Complete 901-4289

PARTS LIST FOR MODELS NO. 219-200 AND 219-250

Part No.	Illus. No.	DESCRIPTION ( ) - No. Required Per Assembly
1	351-4107	Mounting Plate Assembly
2	321-4100	Gear Case Assembly (Complete)
3	351-4329	Tailpiece Assembly
4	351-4134	Outer Tine Adapter Assembly
5	351-4138	Inner Tine Assembly
6	310-4164	Control Handle Assembly (Complete)
7	310-4202	Idler Bracket
8	310-4246	Handle - R.H.
9	310-4247	Handle - L.H.
10	351-4110	Leg - R.H.
11	351-4109	Leg - L.H.
12	321-4328	Depth Bar
13	351-4243	Handle Panel
14	310-4126	Inspection Plate
15	310-4156	Control Pivot Lever
16	312-4197	Belt Guard
17	310-4198	Control Rod - Lower
18	310-4200	Reverse Idler Bracket Assembly
19	711-393	Control Rod - Upper
20	312-4258	Engine Bed
21	310-7439	Anchor Spring Pin
22	305-1166	Grips
23	310-7353	Belt Grip
24	310-4124	Handle Mounting Bracket
26	501-4221	Wheel Assembly
27	710-259	Hex Hd. Cap Scw. 5/16–18 x 5/8 lg. *
28	732-194	Spring Pin
29	711-231	Clevis Pin
30		Engine
31	710-182	Hex Hd. Cap Scw. ½–13 x 3 lg. *
32	712-384	Hex Centerlock Nut ½–13 thread *
33	736-108	Washer 33/64 I.D. *
34	732-112	Spring – Tension
35	712-107	Hex Centerlock Nut ½–20 thread *
36	756-370	Idler Bearing Assembly
37	712-372	Hex Centerlock Nut 5/16 - 18 thread *
38	756-108	Pulley - 2 Stage
39	710-125	Rd. Hd. Mach. Scw. 10-24 x ½ lg. * †
40	310-4204	Belt Pusher
41	710-373	Shoulder Bolt
42	736-300	Washer 3/8 I.D.
43	310-4196	Hold-down Clamp
44	736-169	Lockwasher 3/8 Screw *
45	712-798	Hex Nut 3/8-16 thread *
46	712-116	Hex Elastic Stop Nut 3/8-24 thread
47	710-113	Hex Hd. Cap Scw. 3/8-24 x 1-5/8 lg. - Heat Treated
48	710-253	Hex Hd. Cap Scw. 3/8–16 x 1 long *
49	710-183	Hex Hd. Cap Scw. 3/8–16 x 1 1/8 lg. *
50	710-451	Carriage Bolt 5/16 - 18 x 3/4 lg. *
51	736-119	Lockwasher 5/16 screw *
52	732-250	Spring
53	712-430	Hex Elastic Stop Nut 3/8-16 thd.
54	712-123	Hex Nut 5/16-24 thd. * (N.S.)
55	710-118	Hex Hd. Cap Scw. 5/16-18 x 3/4 lg. *
56	710-158	Hex Hd. Cap Scw. 5/16-24 x 1-¼ lg. *
57	712-267	Hex Nut 5/16-18 thread *
58	714-105	Key-Sq. 3/16 x 3/16 x 1 lg. *
59	756-105	Pulley
60	710-765	Set Screw-Allen 5/16-24 x ¼ lg. *
61	710-606	Hex Hd. Cap Scw. ¼-20 x 1-½ lg. * Plow Type Handle
62	710-240	Hex Hd. Self Tapping Screw 10-32 x ½ lg. Type F *
63	736-147	Lockwasher # 10 Screw *
64	746-120(X)	Control - Throttle (Complete) -
65	742-107	Tine – L.H.
66	742-108	Tine – R.H.
67	746-111	Cable Clip
68	736-124	Dust Pad
69	736-125	Dust Pad
70	754-106	"V" Belt ½ x 25 Gates *
71	754-107	"V" Belt ½ x 30 Gates *
72	717-120	Reverse Drive Wheel
73	748-111	Bronze Sleeve Bearing
74	305-7891	Ball Knob ⊕
75	310-4101	Locking Clamp †
76	721-100	Oil Seal - Garlock # 76 x 6113 †
77	721-101	Oil Seal - Garlock # 78 x 7510 †
78	719-100	Housing - Gear Case †
79	719-102	Bearing Adjustment Cap ¾" †
80	719-101R	Bearing Adjustment Cap 1" †
81	748-106	Bronze Sleeve Bearing †
82	756-112	Pulley – 2 Stage
83	711-132	Worm Shaft ¾" †
84	711-133	Tine Shaft 1" †
85	717-104	Worm †
86	717-105	Worm Wheel †
87	714-314	Key - Hi Pro No. 606 †
88	714-103	Key - Woodruff # 91 * †
89	711-130	Spacer †
90	711-131	Spacer †
91	716-101	Snap Ring - Tru Arc # 5100-75 †
92	716-102	Snap Ring - Tru Arc # 5100-100 †
93	737-102	Pipe Plug - Special Breather Type †
94	711-138	Shoulder Screw
95	735-100	"O" Ring 2-1/8 x 2-3/8 x 1/8 †
96	735-101	"O" Ring 3-5/8 x 3-7/8 x 1/8 †
97	714-474	Cotter Pin 1/8 dia. x ¾ lg. *†
98	741-107	Roller Bearing - Timken ¾" lg. †
99	741-108	Roller Bearing - Timken 1" †
100	710-185	Allen Socket Hd. Cap Scw. 10–32 x 1 lg. Heat Treated
101	732-958	Spring - Compression
102	737-108	Alemite Drive Fitting - # 1992-B1 * †
103	737-103	Pipe Plug - Square Head 3/8 thd. * †
104	710-256	Carriage Bolt ¼–20 x 1-½ lg. *
105	736-466	Flat Washer 17/32 I.D.
106	710-136	Hex Hd. Cap Scw. ¼–20 x 1-¾ lg. *
107	736-463	Flat Washer 9/32 I.D. *
108	310-4259	Engine Shaft Spacer
109	310-4260	Washer Shaft Spacer
110	310-8271	Adjustment Tube
111	710-152	Hex Hd. Cap Screw 3/8–24 x 1" lg.
112	710-136	Hex Hd. Cap Screw ¼–20 x 1-¾ lg.
113	712-324	Hex Stop Nut ¼–20 thread
114	736-117	Flat Washer
116	351-4381	Handle Assembly
117	720-143	Knob
118	310-4392	Handle Rod Assembly
119	711-414	Control Rod
120	711-392	Ferrule
121	736-155	Washer - Rubber
122	351-4386	Brackets - Panel
123	736-204	Flat Washer *
124	714-507	Cotter Pin 3/32 x ¾ lg. *
125	714-115	Cotter Pin 1/8 x 1 lg. *
126	712-798	Hex Nut 3/8 - 16 thd. *
127	710-253	Hex Head Cap Scr. 3/8 - 16 x 1 lg. *
128	710-106	Hex Head Cap Scr. ¼-20 x 1 ¼ lg. *
129	736-195	Flat Washer *
	901-4287	Inner Tine Ass'y - L.H. - Complete
	901-4288	Inner Tine Ass'y - R.H. - Complete
	901-4289	Outer Tine Ass'y - L.H. - Complete
	901-4290	Outer Tine Ass'y - R.H. - Complete
	727-112	Lubricant 5 oz. (Gear Case)

* For faster service obtain standard nuts, bolts and washers locally. If these items cannot be obtained locally order by part number and size as shown on parts list.

⊕ Part of Control Handle Assembly (Complete) 310-4164.

† Part of Gear Case Assembly (Complete) 321-4100.

ASSEMBLY 217-100

Your rotary tiller is shipped complete in a single carton. The tines, wheels, handles, controls and depth bar are to be assembled. This is done in the manner described below.

TINES – Mount tines on tine shaft as shown. Tines must be mounted with the cutting edges facing the front. The tiller will not operate properly unless the sharpened surface of the tines enter the soil first. Secure tines in position on tine shaft with cap screws (47), and nuts (46). **NOTE:** Dust pads (68 & 69) are provided in screw pack. These must be assembled as shown.

WHEELS – Insert axle bolts (31) into wheel hubs. Secure with locknuts (32) tightened only enough to allow free movement of the wheels (26). Attach wheel and axle assemblies to outside of tiller legs (10 & 11). Fasten with locknuts (32) as shown.

HANDLE– Assemble the handle brackets (122) to the handle (116) with hex head screw (127), lockwashers (44) and hex nuts (126). Do Not Tighten. Place the handle brackets (122) in the tail piece slots. Fasten the lower hole in the handle brackets to the frame with a carriage bolt 5/16 -18 x 3/4 lg. (50), lockwasher (51) and hex nut (57). Tighten all screws and nuts.

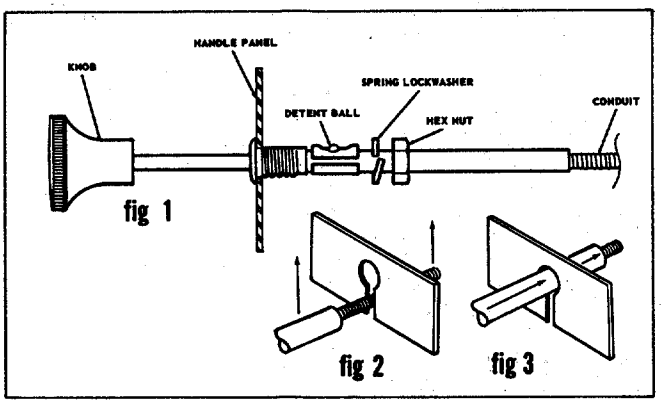
CLUTCH CONTROL LEVER ASSEMBLY

LOCKOUT LEVER–Place the hex head screw ¼-20 x 1¼ (128) through the hole in the tab below the slot in the handle panel from the right hand side. Assemble in this order: Rubber washer, lock out rod (rod bracket to the front), steel washer and lock nut. Tighten until rubber washer compresses slightly.

CLUTCH CONTROL ASS'Y– Screw the ferrule (120) on the threaded end of the lock out rod (119) until about ½" of the threads show. Insert the ferrule through the control lever (15), fasten with flat washer (123) and cotter hairpin (124). Put the lockout handle in the neutral position. Insert the lockout rod in the bracket on the lockout lever and secure with a cotter hairpin through the center of the bracket. Adjust the ferrule so both belts are slack when the lockout lever is in the neutral position.

THROTTLE–To assemble the throttle push the black plastic knob in all the way then pull it out until the detent ball clicks into the second notch. The knob will be pulled out approximately 1–3/8" when in the second notch. In this position the spring lockwasher and the hex nut will slide past the detent ball. Place the conduit through the slot in the handle panel (see fig 2) and push the unit (see fig 3) in until it seats as shown (see fig 1). Secure with the spring lockwasher and hex nut.

OPTIONAL HANDLE – Assemble handle panel (13) (small) to handles as shown. Secure top portion with carriage bolts (104) and locknuts (35). Secure bottom with cap screws (48), lockwashers (44) and nuts (53). Assemble control handle assembly (6) to panel with cap screw (106), spring (101), washer (107) and locknut (35) as shown. Attach adjustment tube (110) to control rod (19). Insert formed end of control rod into control pivot lever (15) from left side. Fasten upper end of control handle assembly with cap screw (112) and locknut (113). Move throttle control knob out enough to allow face washer to be loosened. Position control (64) into slot in end of large panel. Tighten face washer. Fasten control cable to handle with cable clip (67).



CHECK LIST BEFORE OPERATION

1. Check tiller tines for proper installation. With throttle control lever set on "Stop" position and the clutch control handle set in "Forward" position, slowly crank engine to determine direction of tine rotation. Be sure all tines are mounted so the sharpened edges enter the soil first.
2. Check all nuts and bolts for proper tightness. This is especially important during the initial operation period. Make this same check periodically thereafter.
3. Check throttle control for proper setting. If choke control on engine is not fully extended when the throttle control lever is on "Choke" position, reset as shown in ADJUSTMENT instructions. (4 H.P. only)
4. Check gear case for proper lubricant level. With tiller on a level surface, lubricant level should be up to the rear pipe plug opening. This can be checked by removing rear pipe plug. Maintain correct lubricant level with Molilube SAE 140 Gear Oil or equivalent. The gear case holds five (5) ounces of lubricant.
5. Check fuel tank. Clean, fresh, regular gasoline should be used at all times.
6. Check engine crankcase for proper oil level. The engine is shipped without oil in the crankcase. Be sure to fill crankcase before starting engine. Be sure crankcase is FULL.

NOTE: The engine is warranted separately by the engine manufacturer. For warranty service contact the engine manufacturer or their local authorized service station. All important information pertaining to care and operation is included in the engine manual.

STARTING YOUR TILLER

1. Be sure clutch control handle is in "Neutral" position.
2. Move throttle control lever to "Choke or Start" position.
3. After cranking the engine several times, or as the engine fires, move the throttle control lever to run position.
4. Use "Choke" as needed to keep engine operating during warm-up period on 4 H.P. model.
5. Adjust throttle control lever for desired operating speed.
6. To stop engine, move throttle control lever to "Stop" position. Keep throttle control lever in "Stop" position at all times when tiller is not in use.

NOTE: A brief break in period is essential to insure maximum engine life. This consists of running the engine at half speed for a period of time required to use one tank of gasoline. This is necessary on the initial run only. It is also recommended that the oil be changed after five (5) hours of operation. This allows for the removal of impurities which may have accumulated during the break in period. Subsequent oil changes should be made as stated in the engine manual. Always check oil before using your tiller. Be sure crankcase is full.

OPERATING INSTRUCTIONS

For your own convenience and safety, observe all safety suggestions shown on the front cover. Your tiller is not a toy, it is a precision piece of power equipment. Treat it as such.

It is important to recognize the fact that the forward and penetrating action of the rotary tiller is obtained from the rotating action of the tines in the soil. The depth bar acts as a brake for the tiller and controls the depth and speed at which the machine will operate. By lowering the setting of the depth bar, the forward speed of the machine is reduced and the working depth of the tines is increased. Raising the setting of the depth bar increases the forward speed and reduces the working depth. When soil conditions are severe and several passes must be made over a certain area, the depth bar setting should be lowered each time a pass is made. Further control of tilling depth and travel speed can be obtained by variation of pressure on the handles. A downward pressure on the handles will increase the working depth and reduce the forward speed. An upward pressure on the handles will reduce the working depth and increase the forward speed. The type of soil and working conditions will determine the actual setting of the depth bar and the handle pressure required.

1. Tine engagement and forward travel is achieved by moving the clutch control handle to "Forward" position. Tine rotation and forward motion are stopped by moving the clutch control handle to "Neutral" position. Reverse tine action and reverse travel motion can be maintained by HOLDING the clutch control handle in "Reverse" position. Releasing the handle stops reverse operation automatically.
2. The throttle control lever adjusts the engine speed. It also gives finger tip control of the carburetor and magneto stop switch. With the throttle control knob pushed completely forward, the carburetor is in "Choke or Start" position. Pulling the knob out slightly adjusts the engine speed to "Fast." Pulling the knob further out reduces the the engine speed to "Slow."

   When the knob is pulled completely out, the magneto stop switch grounds out the spark and stops the engine.
3. With the depth bar raised out of operation, self propelled transporting of the tiller is easily achieved. With no pressure on the handles and the throttle control set for "Slow" engine speed, move the clutch control handle to the forward position and let the tiller gently propel itself.

ADJUSTMENTS

BELTS – Belt slack is taken up by a spring loaded idler pulley. Because of this, belt adjustment is not required.

CLUTCH – No adjustment in clutch linkage is required. This is done automatically by the spring loaded idler.

NOTE: Belt and clutch adjustments can be made with the adjustable control rod.

"O" RING – If oil leakage at the bearing cap should occur, take up on the "O" ring of the gear case may be needed. This is accomplished by removing the locking clamp and turning the bearing adjustment cap clockwise enough to correct. Move adjustment cap back one notch and replace locking clamp.

THROTTLE – If adjustment becomes necessary, the throttle control wire assembly can be reset as follows:

1. Loosen, but do not remove, screw securing throttle control wire assembly at engine.
2. Move throttle control knob to "Choke or Start" position.
3. Move lever, to which control wire is fastened at engine, to full choke or open position and retighten screw to secure throttle control wire assembly.

HANDLES – The position of the handles may be adjusted by removing and moving carriage bolts in the lower mounting holes. Adjustment should be made for the most convenient operating height.

WHEELS – Wheel positions may be varied to give further adjustment of handle height. Various wheel positions also give variations of the leverage and weight distribution over the tines. Wheels should be set to suit the local soil conditions and the operator's convenience.

TINES – The standard width of cut is 26". Because of the various types of work the tiller may be put to, variation in the tilling widths may be necessary. This can be accomplished in a number of ways.

1. Standard tine arrangement . . . . . 26"
2. Remove outer tine assemblies (complete). . . . . 12"
3. Remove outer tines from outer tine assemblies. Tines may be interchanged with opposite sides. . . . . 20"
4. Add tine extensions to standard arrangement. . 40"

Note: When adjusting tines, be sure the cutting edges enter the soil first.

MAINTENANCE AND LUBRICATION

ENGINE – Service engine in accordance with the engine manufacturer's owner's guide. **NOTE:** To drain oil, remove oil filler plug and tip tiller on its side. Drain oil while the engine is warm. See engine manual for filling instructions.

GEAR CASE – Proper lubricant level should be up to the rear pipe plug. Check with tiller on a level surface. Add lubricant through vented pipe plug hole. Add enough to bring level up to rear pipe plug hole. Use Mobilube SAE 140 Gear Oil or equivalent. Gear case should be maintained with five (5) ounces of lubricant.

Lubricate the upper bushing in the gear case with a small amount of grease. Do not over lubricate as any excess will enter the gear case proper. Use a high pressure gun grease.

THROTTLE – Periodically lubricate throttle control lever and throttle control wire assembly with a few drops of light oil (SAE 10 or 20) for ease of operation.

BELTS – Access to "V" belt and pulley assemblies is accomplished by removing the engine and engine bed as described below.

1. Place clutch control handle into "Neutral" position.

2. Remove four cap screws which secure engine bed to mounting plate assembly. Remove engine and engine bed Do not kink control wire.
3. Remove front belt guard.
4. Remove upper belt from pulley assembly.
5. Place clutch control handle into "Forward" position.
6. Remove bottom belt.
7. Replace bottom belt. This must be properly mounted in the lower pulley grooves and between the belt clip and the idler pulley on the spring tensioned idler pulley assembly.
8. Place clutch control handle into "Neutral" position.
9. Replace upper belt.
10. Remove inspection plate from engine bed.
11. Replace engine bed and engine on mounting plate assembly. Do not kink control wire. Move engine bed and engine as far forward as possibly.
12. Reach through inspection hole and guide belt into position on engine pulley.
13. Check visually through inspection hole to make sure belt is inside all belt guards and that belt is properly seated on engine pulley. A flashlight will help you make this check quickly and easily.
14. Line up mounting holes and replace cap screws and lockwashers. Do not tighten cap screws until all are in place. Replace inspection plate.

REPLACING TILLER GEAR CASE OIL SEALS

1. Drain lubricant.
2. Remove tine assemblies.
3. Remove bearing adjustment cap.
4. Remove bearings, worm wheel, and tine shaft. Do not remove bearing races.
5. Remove oil seals from gear case and bearing adjustment cap.
6. Remove all burrs from holes in tine shaft.
7. Dip oil seals in lubricant and then insert one in gear case, and one in bearing adjustment cap.
8. Wipe tine shaft clean of filings and lubricate before assembling with bearings and worm wheel in gear case.
9. Replace bearing adjustment cap. **CAUTION:** Do not damage oil seals. The open flanges face to the outside of the gear case.
10. Tighten bearing adjustment cap enough to seal "O" rings.
11. Lock bearing adjustment cap in position with locking clamp.
12. Replace tines and add lubricant.

GENERAL – Check periodically all nuts and bolts. Loose nuts and bolts can cause permanent damage to your unit. Keep all nuts and bolts securely tightened.

STORAGE – The following steps should be taken to prepare your tiller for storage.

1. Clean tiller thoroughly and lubricate as described in the preceding instructions.
2. Coat tilling tines with grease to prevent rusting.
3. Prepare engine for storage in accordance with engine manufacturer's owner's guide.
4. Block tiller legs to raise tires clear of floor. Be sure tiller is level.
5. Store in a dry clean area.

ATTACHMENTS

EXTENSION TINES – This attachment is available to increase your tilling width up to 40". Extension tines are easily installed and removed. Order under part number 299-164.

FURROW OPENER – This attachment is easily installed on the depth bar of your tiller. It can be used for either furrowing or hilling operations. These attachments are available through your local dealer.

For wide (2" x .43") depth bar, order furrow opener 299-179.

SERVICE NOTES

DRIVE BELT SLIPS

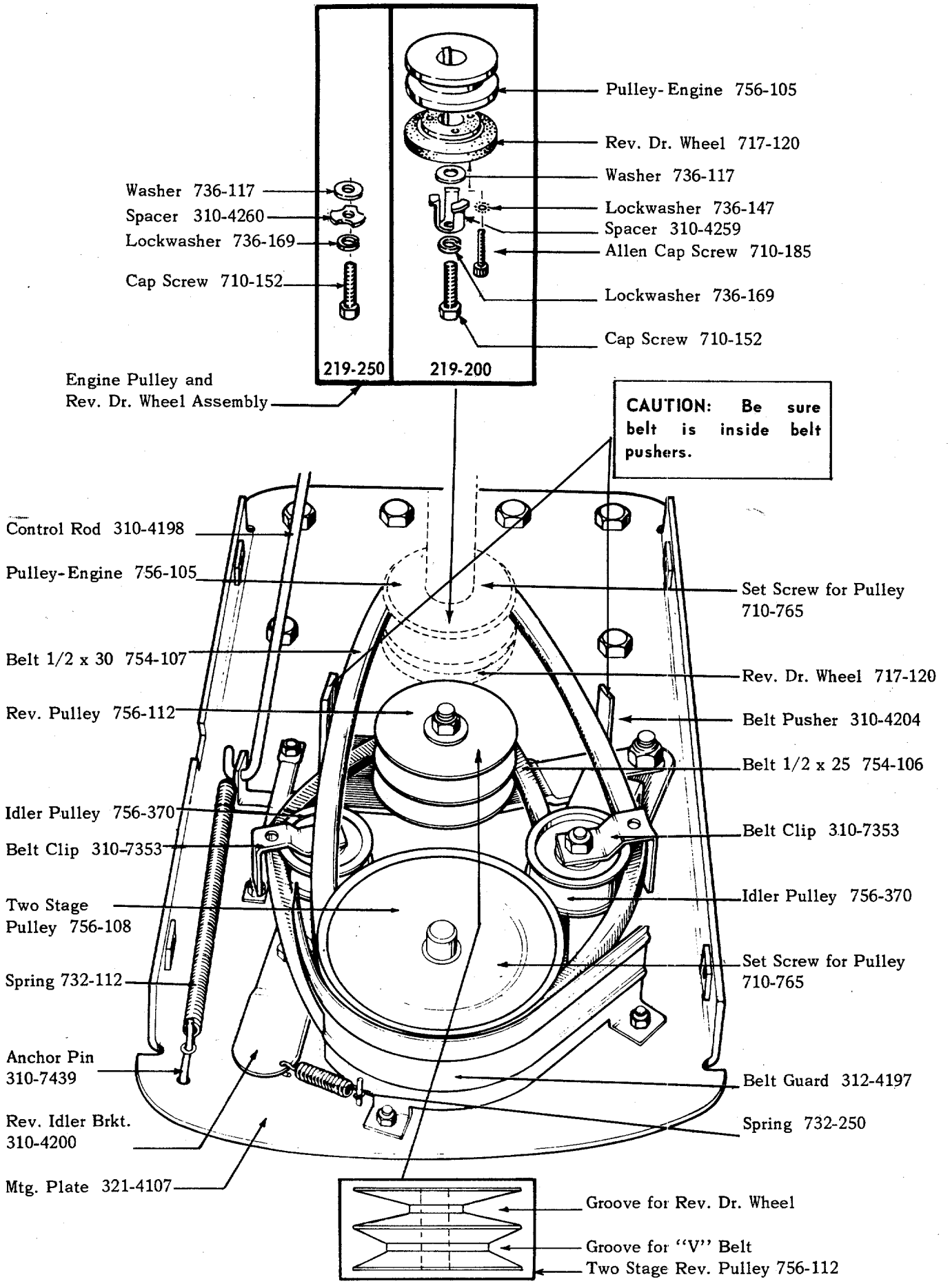
1. Lubricate contact surface under idler pulley bracket
2. Check idler pulley bracket mounting bolts for excessive tightness. Idler pulley brackets must be mounted securely but still must move freely.
3. Check control rod for improper assembly. If adjustment tube is attached to lower end of control rod instead of upper end, it may bind on control pivot lever and prevent full use of tension spring.
4. Check belt guards. Belt guards must clear all points of the tightened belt.
5. Check belt clips. These must not touch belt when belt is tightened.
6. Check control rod adjustment. Adjusting the adjustment tube on the control rod lengthens or shortens control linkage.
7. Belt must be mounted on engine pulley. When assembling, it is often mounted between pulley and reverse drive wheel. It must also be mounted inside the stationary belt guards.

REVERSE DRIVE

1. Reverse drive wheel should line up with its matching pulley. Check mounting bolt in engine pulley for proper tightness.
2. Matching pulley for reverse drive wheel must be assembled as shown on diagram. The deeper groove matches the reverse drive wheel. The shallow groove matches the "V" belt.
3. Belt guards and belt clips must not touch the tightened belt.
4. Reverse idler bracket must move freely. Check mounting bolts for excessive tightness. Lubricate contact surface under idler bracket.
5. Reverse should operate only when control handle assembly is **held** in reverse position. Adjust control rod for proper operating position.

NOTE: If belts are excessively stretched, replacement will be necessary.

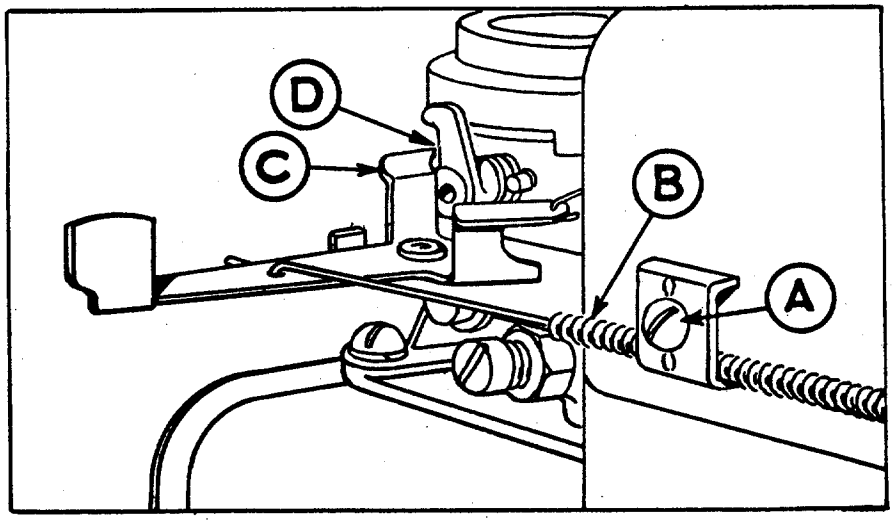
TILLER DRIVE MECHANISM



ADJUSTMENTS – (4 H.P. only)

To Check:

Remove Air Cleaner. Move Throttle Assembly to CHOKE position. The carburetor choke should then be closed. Move the Throttle to STOP. Control lever on carburetor should then make good contact with stop switch to short out ignition.



To Adjust:

Place Throttle on equipment in FAST (high speed) position. Lever "C" on carburetor should be just touching choke arm at "D". To adjust, loosen casing clamp screw "A" on blower housing. Move control casing "B" forward or backward until correct position is obtained. Tighten screw "A". Recheck above operation and replace Air Cleaner.

FORM NO. 770-1882H

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