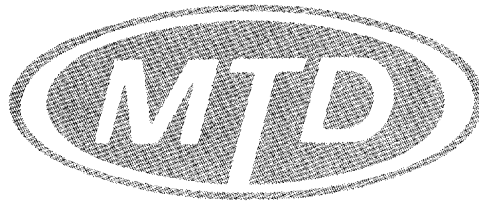


Your New

10 CENTS

Model No. 219-100



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.**

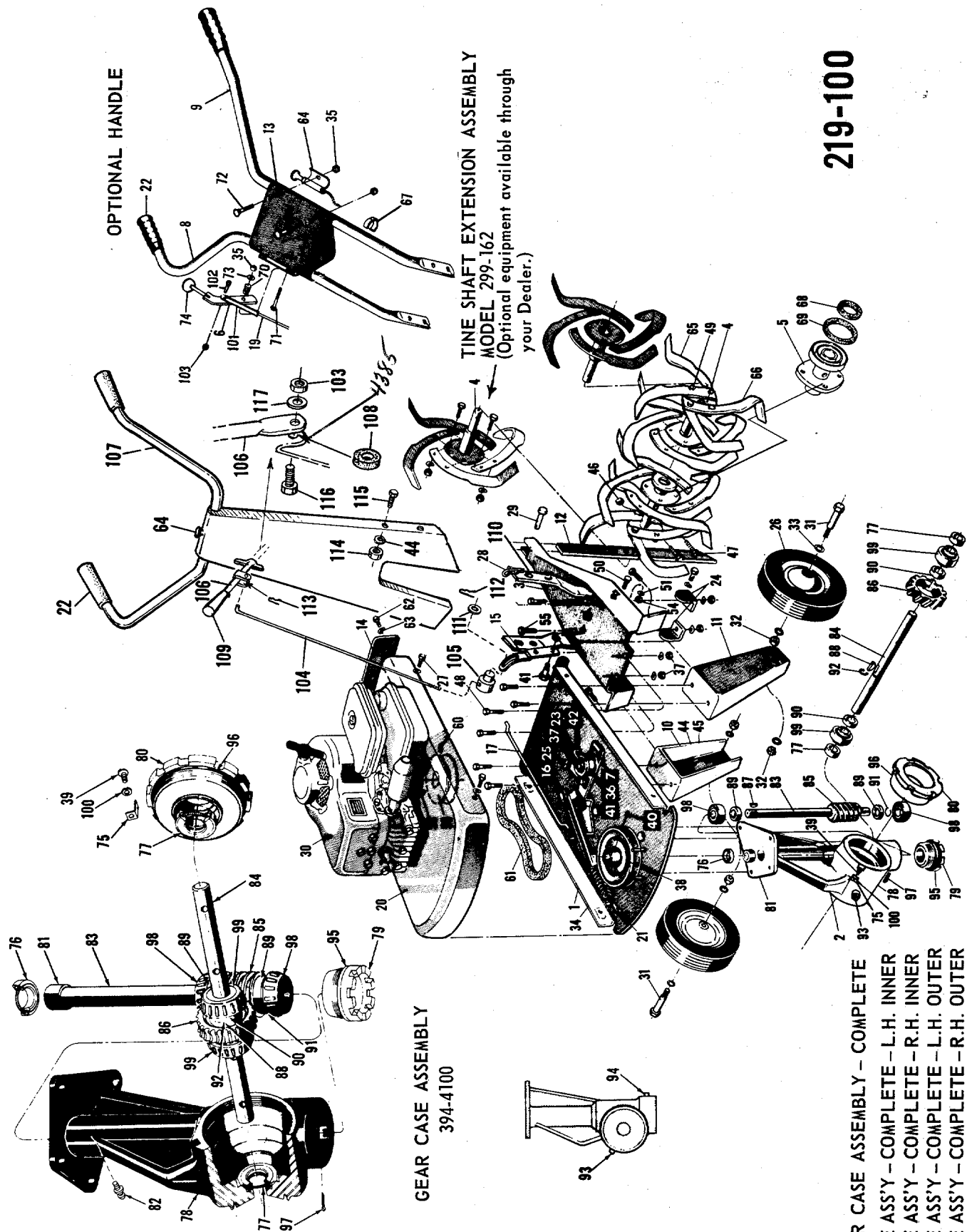
SAFETY RULES

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



219-100

- 394-4100 GEAR CASE ASSEMBLY - COMPLETE
- 901-4291 TINE ASS'Y - COMPLETE - L.H. INNER
- 901-4292 TINE ASS'Y - COMPLETE - R.H. INNER
- 901-4293 TINE ASS'Y - COMPLETE - L.H. OUTER
- 901-4294 TINE ASS'Y - COMPLETE - R.H. OUTER

TINE SHAFT EXTENSION ASSEMBLY
MODEL 299-162
(Optional equipment available through
your Dealer.)

TILLER MODEL 219-100

Illus. No.	Part No.	Description () - No. req'd. per Assy.	Illus. No.	Part No.	Description () - No. req'd. per Assy.	Illus. No.	Part No.	Description () - No. req'd. per Assy.
1	351-4105	Mounting Plate Assembly	41	710-373	Shoulder Bolt	79	719-102	Bearing Adjustment Cap 3/4" **
2	321-4100	Gear Case Assembly (complete)	42	736-300	Washer 3/8 I. D. *	80	719-101R	Bearing Adjustment Cap 1" **
3	351-4329	Tailpiece Assembly	43	712-430	Hex Elastic Stop Nut 3/8 - 16 thd.	81	748-106	Bronze Sleeve Bearing **
4	321-4134	Outer Tine Adapter Assembly	44	736-169	Lockwasher 3/8 Screw *	82	737-108	Alemite Drive Fitting - #1992-B1**
5	321-4138	Inner Tine Adapter Assembly	45	712-198	Hex Nut 3/8 - 16 thd. *	83	711-132	Worm Shaft 3/4" **
6	310-4164	Control Handle Assembly	46	712-116	Hex Elastic Stop Nut 3/8-24 thd.	84	711-133	Tine Shaft 1" **
7	312-4187	Idler Bracket Assembly	47	710-113	Hex Hd. Cap Sw. 3/8-24 x 1-5/8 Lg. *	85	717-104	Worm **
8	312-4244	Handle - R. H.	48	710-253	Hex Hd. Cap Sw. 3/8-16 x 1 Lg. *	86	717-105	Worm Wheel **
9	312-4245	Handle - L. H.	49	710-183	Hex Hd. Cap Sw. 3/8-16 x 1-1/8 Lg. *	87	714-314	Key - Hi Pro #606 ** **
10	351-4110	Leg - R. H.	50	710-451	Hex Hd. Cap Sw. 3/8-16 x 1-1/8 Lg. *	88	714-103	Key - Woodruff #91 ** **
11	351-4109	Leg - L. H.	51	736-119	Carriage Bolt 5/16-18 x 3/4 Lg. *	89	711-130	Spacer 3/4" **
12	321-4328	De yth Bar	52	712-123	Lockwasher 5/16 Screw *	90	711-131	Spacer 1" **
13	351-4243	Handle Panel	53	710-158	Engine Mounting Nut - not shown	91	716-101	Snap Ring - TruArc #5100-75 **
14	310-4126	Inspection Plate	54	712-287	Hex Hd. Cap Sw. 5/16-24x1-1/4 Lg. *	92	716-102	Snap Ring - TruArc #5100-100 **
15	310-4156	Control Lever	55	710-118	Engine Mounting Bolt - not shown	93	737-102	Pipe Plug - Special Breather Type **
16	312-4161	Belt Guard	56	710-606	Hex Nut 5/16 - 18 thd. *	94	737-103	Pipe Plug - Square Hd. 3/8 thd. ** *
17	310-4152	Control Rod - lower	57	714-105	Hex Hd. Cap Sw. 5/16 - 18 x 3/4 Lg. *	95	735-100	"O" Ring 2-1/8 x 2-3/8 x 1/8 **
19	711-393	Control Rod - upper	58	710-107	Key - Sq. 3/16 x 3/16 x 1 *	96	735-101	"O" Ring 3-5/8 x 3-7/8 x 1/8 **
20	312-4103	Engine Bed	59	756-107	Pulley 2-1/2 x 7/8	97	714-474	Cotter Pin 1/8
21	310-7439	Anchor Spring Pin	60	710-765	Set Sw. - Allen 5/16 - 24 x 1/4 Lg. *	98	741-107	Roller Bearing - Timken 3/4
22	305-1166	Grip	61	754-103	"V" Belt 1/2 x 27 - Gates *	99	741-108	Roller Bearing - Timken 1" **
23	310-7353	Belt Clip	62	710-202	Hex Hd. Self-tapping Sw. 10-32 x 1/2 Lg.	100	736-147	Lockwasher #10 Screw **
24	310-4124	Handle Mounting Bracket	63	736-147	Lockwasher #10 Screw *	101	310-8271	Adjustment Tube
25	310-4195	Belt Clip	64	746-124	Control - Throttle (complete)	102	710-252	Hex Hd. Cap Sw. 1/4 - 20 x 3/4 Lg. *
26	501-8009	Wheel Assembly	65	742-105	Tine - L. H.	103	712-324	Hex Elastic Stop Nut 1/4 - 20 thd. **
27	710-259	Hex Hd. Cap Sw. 5/16-18x5/8 Lg. *	66	742-106	Tine - R. H.	104	711-414	Control Rod
28	732-194	Spring Pin	67	746-111	Cable Clip	105	711-392	Ferrule
29	711-231	Clevis Pin	68	736-124	Dust Pad	106	310-4392	Handle Rod Assembly
30		Engine	69	736-125	Dust Pad	107	351-4381	Handle Assembly
31	710-182	Hex Hd. Cap Sw. 1/2-13 x 3 Lg. *	70	732-958	Spring - Compression	108	736-155	Rubber Washer
32	712-384	Hex Centerlock Nut 1/2 - 13 thd. *	71	710-186	Hex Hd. Cap Sw. 1/4-20 x 1-3/4 Lg. *	109	720-143	Knob
33	736-108	Washer 33/64 I. D. *	72	710-256	Carriage Bolt 1/4-20 x 1-1/2 Lg. *	110	351-4386	Brackets - Panel
34	732-376	Spring - Tension	73	736-463	Washer 9/32 I. D. *	111	736-204	Flat Washer
35	712-107	Hex Centerlock Nut 1/4 - 20 thd. *	74	305-7891	Ball Knob +	112	714-507	Cotter Pin 3/32 x 3/4 Lg. *
36	756-370	Idler Bearing Assembly	75	310-4101	Locking Clamp **	113	714-115	Cotter Pin 1/8 x 1 Lg. *
37	712-372	Hex Centerlock Nut 5/16 - 18 thd. *	76	721-101	Oil Seal - Garlock #76 x 6113 **	114	712-798	Hex Nut 3/8 - 16 thd. *
38	756-926	Pulley 4-1/2 x 3/4	77	731-100	Oil Seal - Garlock #78 x 7510 **	115	710-253	Hex Hd. Cap Sw. 3/8 - 16 x 1 Lg. *
39	710-125	Rd. Hd. Mach. Sw. 10-24 x 1/2 Lg. *	78	719-100	Housing - Gear Case **	116	710-106	Hex Hd. Cap Sw. 1/4 - 20 x 1-1/4 Lg. *
40	710-421	Set Sw. Allen 5/16 - 18 x 1/4 Lg. *				117	736-195	Flat Washer

* 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 Gear Case Assembly (complete) 394-4100.
+ Part of Control Handle Assembly 310-4164.

321-4100 Gear Case Assembly (complete)
901-4291 Tine Assembly, complete - L. H. Inner
901-4292 Tine Assembly, complete - R. H. Inner
901-4293 Tine Assembly, complete - L. H. Outer
901-4294 Tine Assembly, complete - R. H. Outer
727-112 Mobilube SAE 140 - 502

ASSEMBLY – ONE PIECE HANDLE

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.
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 (110) to the handle (107) with hex head screw (115), lockwashers (44) and hex nuts (114). Do not tighten. Place the handle (110) 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 (54). Tighten all screws and nuts.

CLUTCH CONTROL LEVER ASSEMBLY

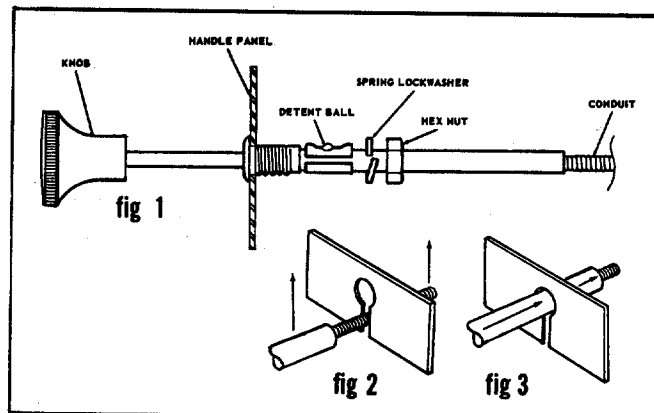
Lockout Lever. Place the hex head screw 1/4-20 x 1 1/4 (116) through the hole in the tab below the slot in the handle panel from the right hand side. Assemble in this order: Rubber washer, lock out rod (rod bracket to the front), steel washer and lock nut. Tighten until rubber washer compresses slightly.

Clutch control assembly. Screw the ferrule (105) on the threaded end of the lock out rod (104) until about 1/2" of the threads show. Insert the ferrule through the control lever (15), fasten with flat washer (111) and cotter hairpin (113). 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.

DEPTH BAR – Attach depth bar (12) in desired position with clevis pin (29) and locking pin (28).

GRIPS – Assemble grips (22) to handle bars.

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 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.



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.

HANDLES – Insert handles (8 & 9) into slots in tailpiece assembly (3). **NOTE:** The handles are left (9) and right (8) and must be positioned accordingly. Secure handles in position with cap screws (48) through the upper mounting holes and the tailpiece bracket (24). Fasten with lockwashers (44) and nuts (45). Do not tighten. Select desired handle position and secure lower part of handle with carriage bolts (50), lockwashers (51) and nuts (54). Do not tighten.

HANDLE PANEL – Position handle panel (13) over upper handles and attach with carriage bolt (72) and locknuts (35). The throttle control is mounted on the under side of the left handle. Fasten with carriage bolt (72) through upper handle hole and through the middle hole in the control (64) mounting plate. Fasten control cable to handle with cable clip (67). Tighten all nuts securely.

CLUTCH CONTROL – Insert lower end of control rod (19) into control lever (15), mounting hole from left side. Attach adjustment tube (101) to control rod and adjust for approximate length. Attach tube to control handle assembly (6) with cap screw (102) and stop nut (103). Readjust if necessary.

DEPTH BAR – Attach depth bar (12) in desired position with clevis pin (29) and locking pin (28).

GRIPS – Assemble grips (22) to handle bars.

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 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 Mobilube SAE 140 Gear Oil or equivalent. The gear case holds five (5) ounces of lubricant.
4. Check fuel tank. Clean, fresh, regular gasoline should be used at all times.
5. 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 "Start" position.
3. After cranking the engine several times, or as the engine fires, move the throttle control lever to run position.
4. Adjust throttle control lever for desired operating speed.
5. 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 "Start" position. Pulling the knob further out reduces 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 by moving the engine bed. Loosen the four bolts which secure it and move the engine bed forward or backward as required. Adjusting the control rod will also effect belt and clutch adjustment. These adjustments may be necessary if handle position is changed.

"O" – 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 "START" position.
3. Move lever, to which control wire is fastened at engine, to full "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 tines from outer tine assemblies. Tines may be interchanged with opposite sides 20"
3. 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 filter plug and tip filler 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 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) forease of operation.

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

1. Remove four cap screws which secure engine bed to mounting plate assembly. Remove engine and engine bed. Do not kink control wire.
2. Loosen set screw in 4½" pulley. Remove pulley and "V" belt. If belt clip on idler must be loosened to remove belt, mark correct location of belt clip in relation to idler before loosening. This can be done by scribing the belt clip and the end of the weld bolt in idler with a file. It is most important that this clip be reassembled in the right position.
3. Position belt on 4½" pulley and replace on worm shaft. Pulley must be mounted in position so that it will line up with engine pulley when assembly is completed. The correct position is that point at which the center of the pulley is 1-1/8" above the mounting plate assembly. Tighten set screw securely.
4. If belt clip has been loosened, line up in original position and tighten securely. Make sure belt is inside belt guards. While holding the belt taut (grasp at extreme rear position), move clutch control handle to "Forward" and "Neutral" position. If belt clip touches belt with handle in either position, readjust position of clip.
5. Move clutch control handle to "Neutral" position. Remove inspection plate from engine bed.
6. Replace engine bed and engine on mounting plate assembly. Do not kink control wire. Move engine bed and engine as far forward as possible.

7. Reach through inspection hole and guide belt into position on engine pulley.
8. Check visually through inspection hole to make sure belt is inside all belt guards and that pulleys are in proper alignment. A flashlight will help you make this check quickly and easily.
9. Line up mounting holes and replace cap screws. 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 299-162.

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.

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