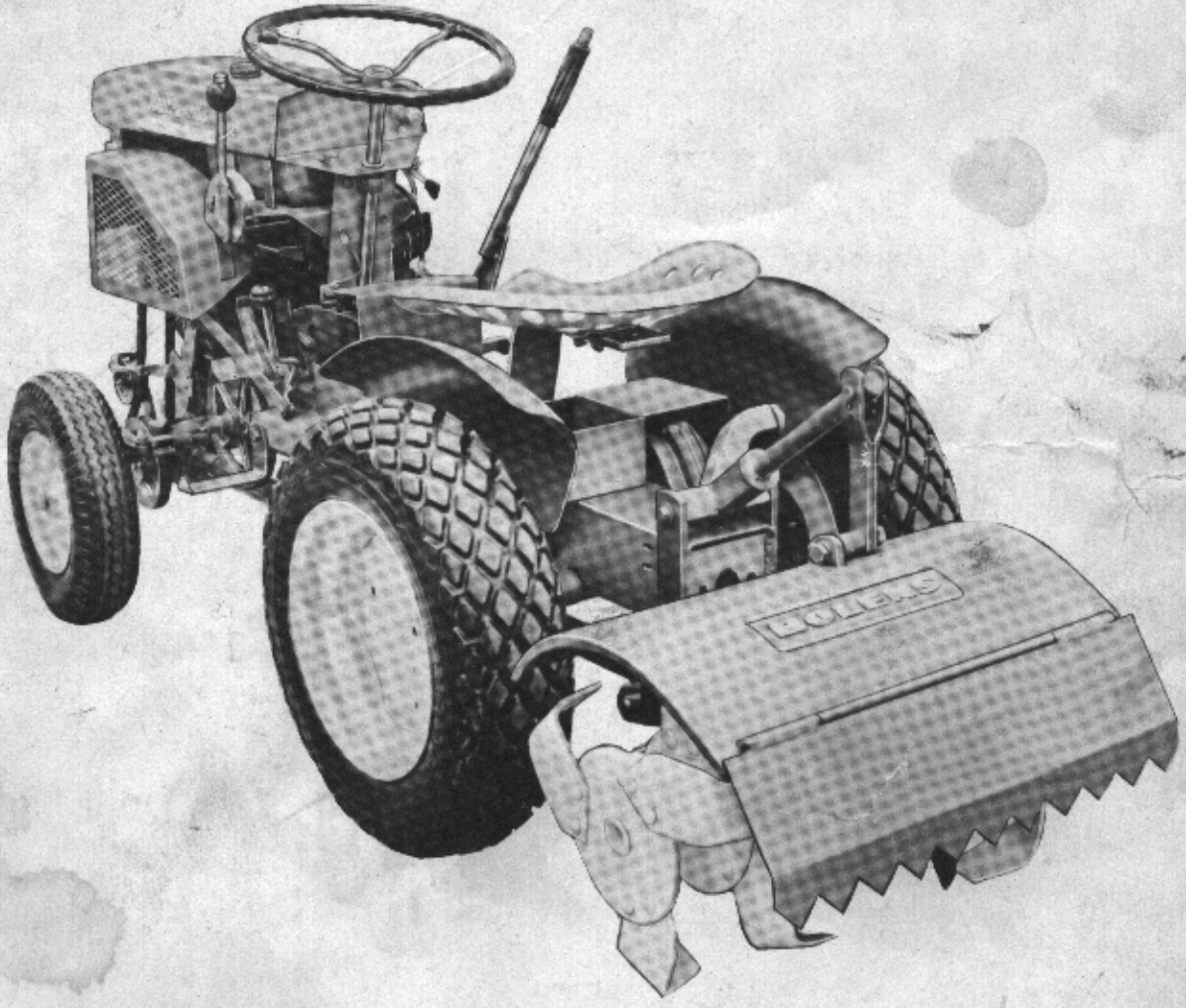
Owner Manual with Parts List

BOLENS

TILLER ATTACHMENT

TYPE 23609-02



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FOOD MACHINERY AND CHEMICAL CORPORATION

® FORM NO. 550991-1

BOLENS PRODUCTS DIVISION

Food Machinery & Chemical Corporation

Port Washington Wisconsin

The tiller attachment is shipped in one crate and one box. The crate contains the front gear housing assembly, belt, tiller unit, lift linkage, and leveling board. The box contains the drive shaft assembly.

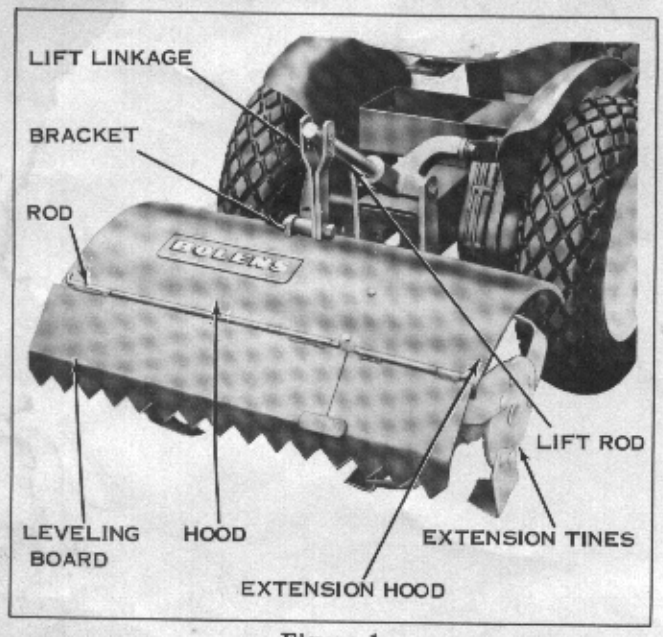

Figure 1

LUBRICATION

The tiller rotor gear housing is filled at the factory to the oil filler plug level with #90 gear lubricant. For shipping purposes, the front gear housing is shipped WITHOUT oil and should be filled to oil filler plug level with #90 gear lubricant. Note: The oil filler plugs are located on the sides of the gear housings. The plug located on the top side of front gear case is a breather plug only and should not be confused with the oil level plug (Fig. 3). Do not overfill gear cases. Periodically check gear cases and maintain gear lubricant at plug hole level.

The unit is designed with two grease fittings; one on the idler pulley, and the other on the drive shaft universal joint. Lubricate regularly with pressure gun grease. Other working parts such as leveling board hinge and lift linkage should be lubricated regularly with light oil for longer life and smoother operation.

INSTALLATION

Mount the leveling board on rear of tiller hood with rod and secure with cotter pin. Install lift linkage to right side of bracket on top of tiller hood and secure with capscrew and lockwasher (Fig. 1).

Insert key in tiller shaft key way. Assemble coupling on drive shaft universal joint over end of tiller shaft and tighten setscrew securely (Fig. 2). Place tiller behind tractor with tiller drive shaft extending forward underneath tractor frame.

Insert tiller lift rod into hole of tractor tool lift casting and secure with spring clip over forward end of lift rod (Fig. 1). Position ends of tiller draw bar over lower ends of brackets on rear of tractor frame, align holes and secure with clevis pins and spring cotters (Fig. 2).

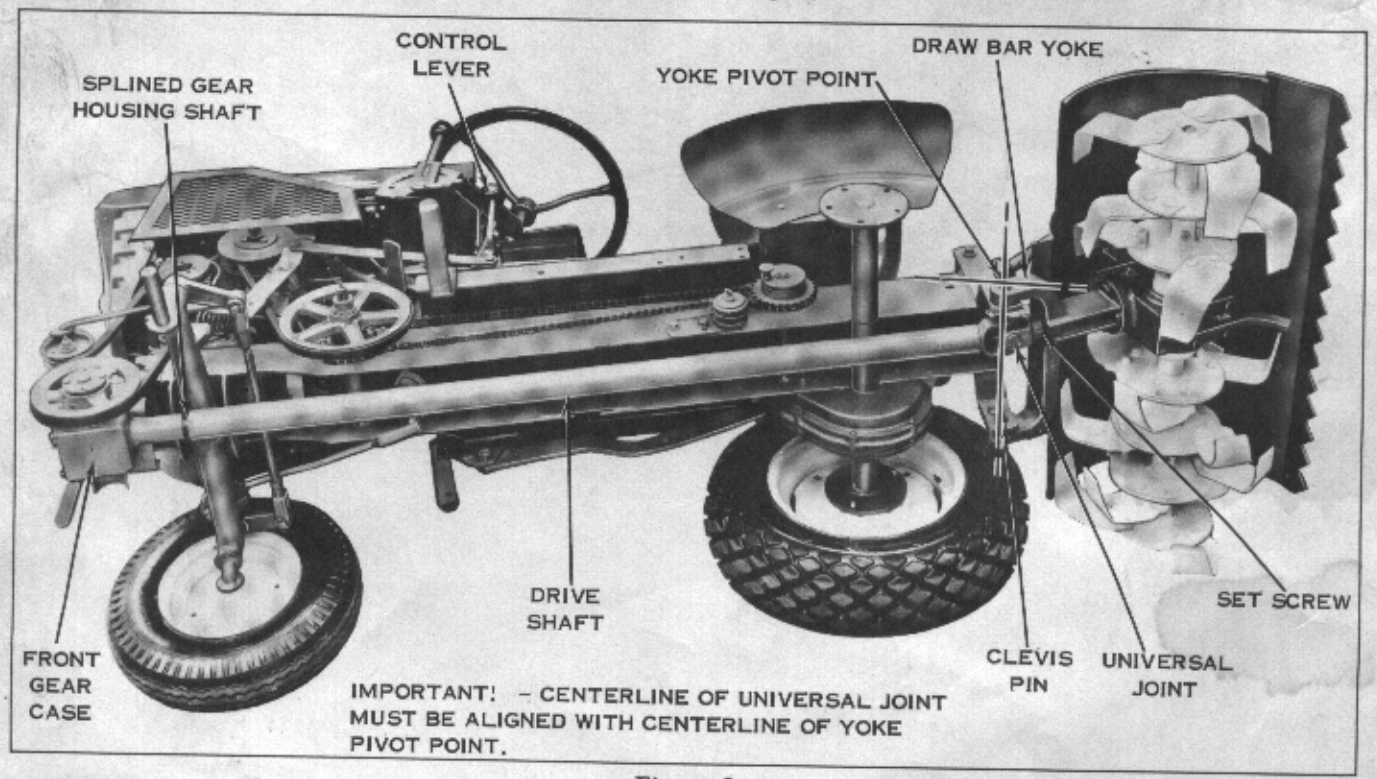

Figure 2

Loosen wing nut and two pivot capscrews directly behind wing nut bolt on front gear housing hitch (Fig. 3). Note: On tractor models 230 and 220 it is also necessary to loosen the handwheel of snap hitch located on top side of main frame directly behind the engine.

Insert rear end of front gear housing hitch into front end of tractor frame and at the same time insert splined gear housing shaft into pilot hole of drive shaft. Rotate shaft to align splines if necessary (Fig. 3). Work the gear housing assembly backward until the prongs on gear housing hitch are firmly seated in grooves in front side of tractor frame. (On Model 230 or 220 tractor, raise the rear end of gear housing hitch until it engages the tractor snap hitch and tighten handwheel securely. On tractor Models 231 and 232, raise gear case until rear holes in gear case align with holes in tractor frame and secure with 3/8 x 16 x 7/8 capscrews.) Apply constant upward pressure on sheave side of gear case and tighten wing nut securely. Then tighten the two pivot capscrews directly behind wing nut bolt (Fig. 3). Install drive belt from tractor engine sheave to gear drive sheave.

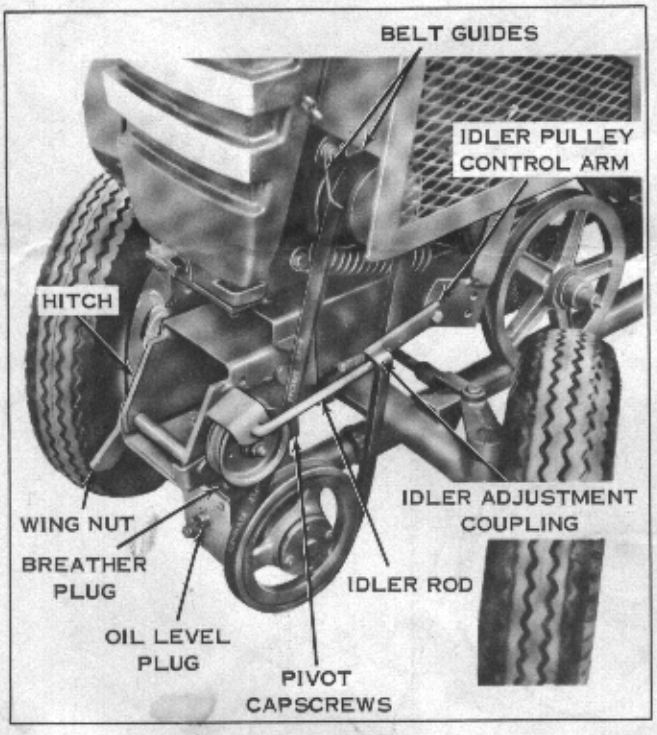

Figure 3

Two length idler rods are supplied; the shorter to be used with Model 230 and 220 tractors and the longer with Model 231 and 232 tractors. Join idler rod and idler coupling and mount idler coupling to outside bottom of tractor pulley control arm with clevis pin and spring cotter. Note: On tractor models 230 and 220 the forward hole in control arm should be used.

Check idler pulley setting in both engaged and disengaged positions. If either setting is unsatisfactory, adjustment should be made by changing the distance the idler rod is turned into the idler coupling. Location of belt guides (Fig. 3) is also very important in obtaining smooth idling. With the belt in engaged position there should not be more than 1/16 inch clearance between belt and guides. Tighten belt guide capscrews securely.

NOTE

Due to the heavy construction of belt it may be difficult to obtain smooth idling for the first few hours of operation.

IMPORTANT

If it becomes necessary to replace the belt be certain to replace with a "Bolens" belt as specified by number in this manual. This is a special industrial belt of tire cord construction with non-tacky envelope cover. An ordinary standard fractional H.P. belt will not provide satisfactory service.

OPERATION

All tilling should be done with tractor in low speed drive chain setting which is the outer sprockets of both the front and rear multiple sprockets on the tractor. Refer to your tractor manual for various operational chain settings.

To operate tiller - move tractor tool lift lever forward which will lower tiller into operating position. With the tool lift lever completely forward the tiller will be in "float" position and can penetrate to maximum depth. The depth of penetrations will depend upon soil conditions and more than one pass may be necessary to meet required depth.

For cultivating, the depth of tine penetrations can be controlled by moving the tractor tool lift lever either forward or backward to secure the depth desired.

For turning and transport, pull tool lift lever all the way back which will raise the tiller above soil surface. There are three holes in the lift linkage for adjustment to provide sufficient ground clearance for transport and maximum penetration for tillage.

The tiller is mounted on the tractor to cover the tracks of the left tractor wheels. A type 23837-01 tine extension is available to provide 30 inch cultivating width and also cover the tracks of right tractor wheels (Fig. 1). To install, mount extension hood and leveling board on left side of tiller hood with capscrews, lockwasher, and nuts. Insert shaft of one tine extension into tine plate hub on tiller. Rotate so that extension tines are positioned between tines on tiller. Align hole in tiller hub with hole in extension shaft and secure with clevis pin and spring cotter. In like manner, install second extension to hub of first extension.

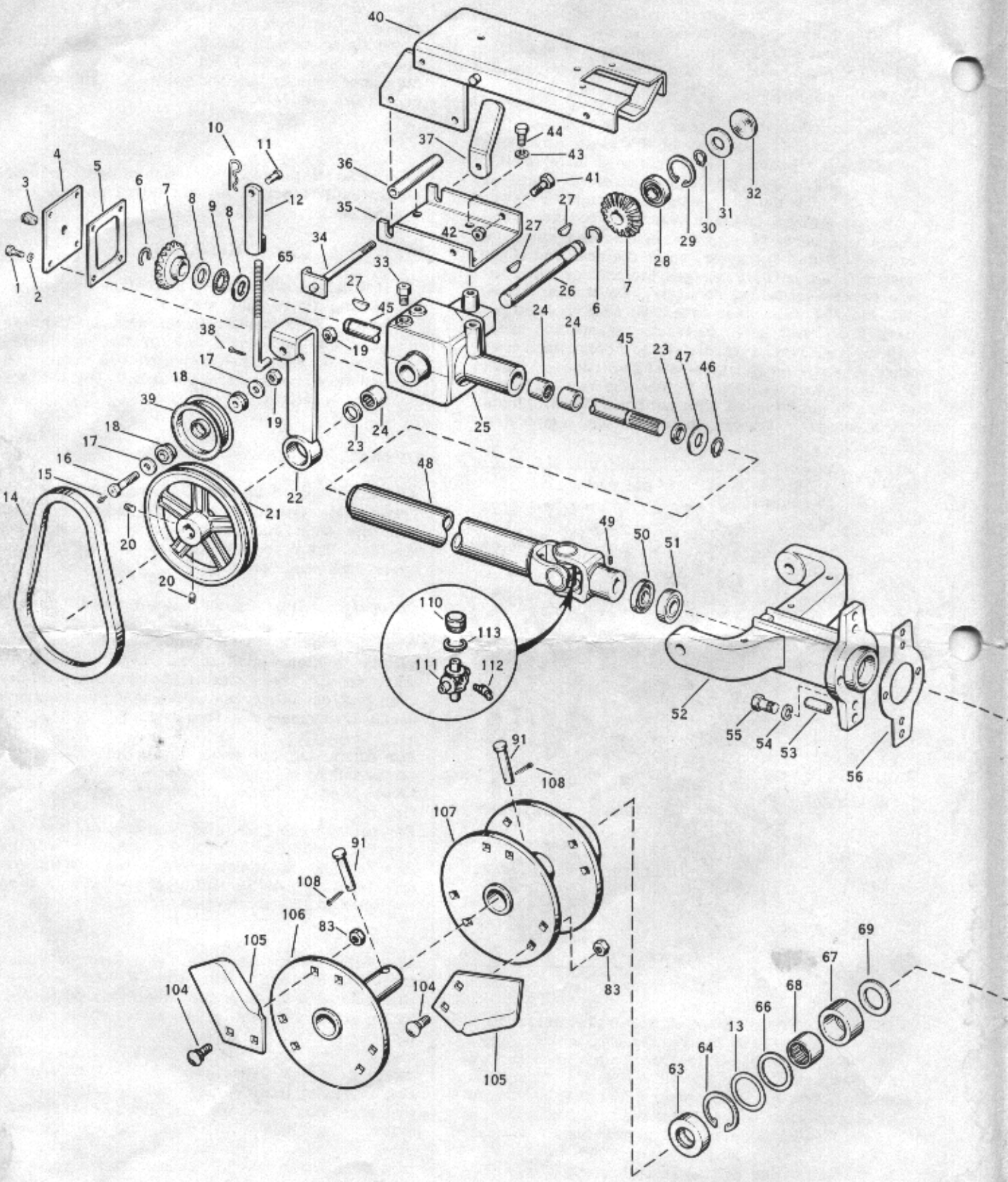
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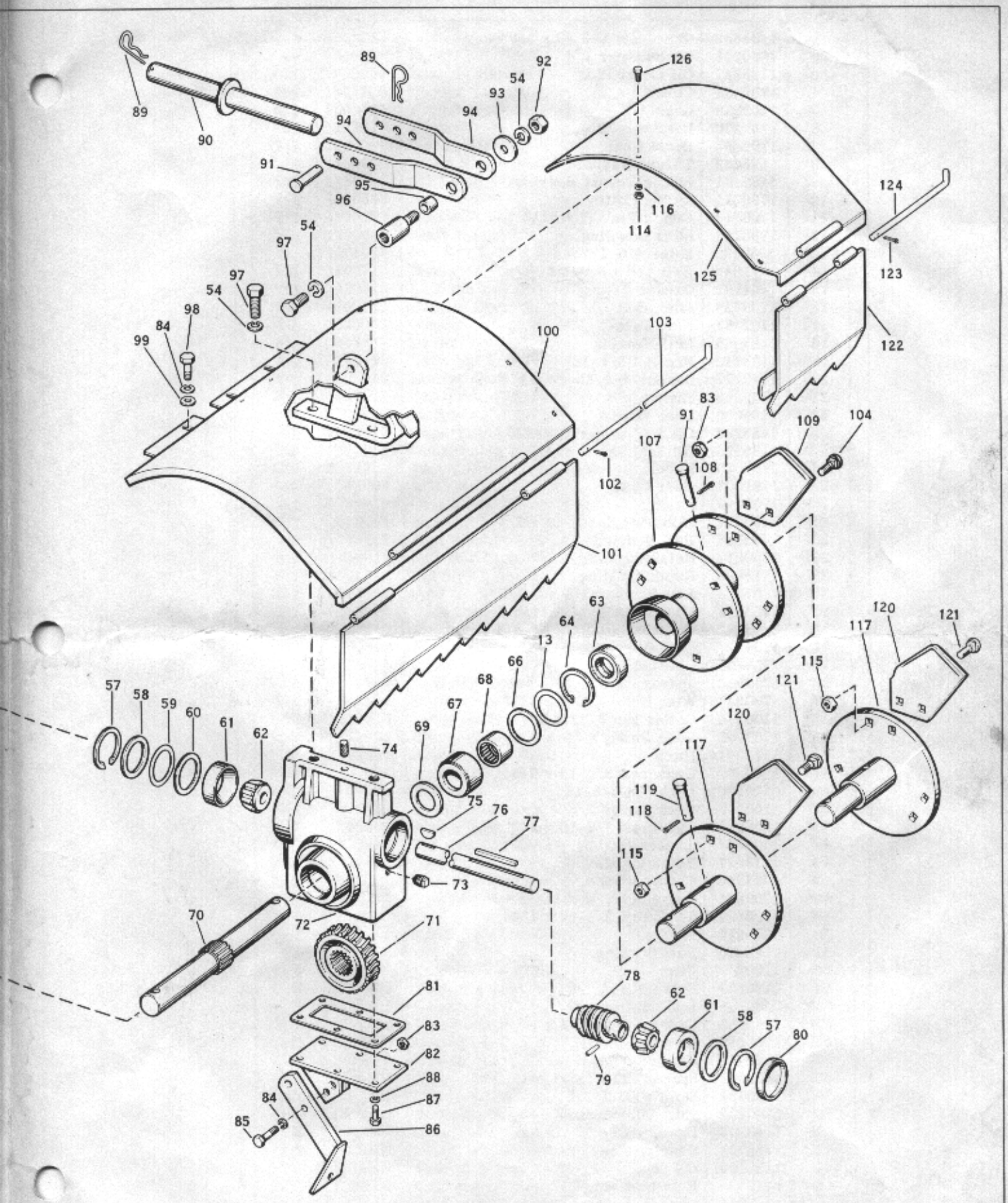
Figure 4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Ref. No.	Part No.	Description	No. Req'd.
1	1106832	Capscrew 1/4-20 x 5/8"	4
2	1100241	Lockwasher 1/4	4
3	1185247	Oil Level Plug	1
4	1709834	Cover	1
5	1709836	Gasket	1
6	1185430	Retaining Ring	2
7	1709835	Bevel Gear	2
8	1185432	Thrust Washer	2
9	1185431	Roller Thrust Bearing	1
10	1703011	Spring Cotter	1
11	1706743	Clevis Pin	1
12	1708123	Idler Coupling	1
13	1800333	Shim .005 Thick	As Req'd.
14	1711845	Belt 44" - Special 5/8 11	1
15	1104957	Grease Fitting	1
16	1703739	Idler Bolt	1
17	1107383	Flat Washer	2
18	1185045	Ball Bearing	2
19	1103840	Hex Nut 3/8-16	2
20	1110777	Set Screw 5/16-18 x 3/8"	2
21	1709842	Sheave	1
22	1709830	Idler Bracket	1
23	1185224	Oil Seal to Serial #1100	2
	1185296	Oil Seal Serial #1101 & up	2
24	1185010	Needle Bearing	3
25	1709207	Gear Case	1
26	1709840	Shaft	1
27	1100277	Woodruff Key 3/16 x 7/8"	3
28	1185064	Ball Bearing	1
29	1700012	Retaining Ring	1
30	1118808	Retaining Ring	1
31	1107374	Flat Washer 3/4 x 1-1/2"	1
32	1185350	Expansion Plug	1
33	1709822	Breather Plug	1
34	1709824	Bolt - Special	1
35	1709839	Channel	1
36	1709838	Spacer	1
37	1709837	Wing Nut	1
38	1100346	Cotter Pin 3/32 x 3/4"	1
39	1703081	Idler Pulley	1
40	1712291	Hitch	1
41	1106917	Capscrew 3/8-16 x 7/8"	4
42	1110108	Lock Nut 3/8-16	4
43	1100243	Lockwasher 3/8	3
44	1106915	Capscrew 3/8-16 x 3/4"	3
45	1709843	Shaft	1
46	1113527	Retaining Ring	1
47	1707546	Thrust Washer	1
48	1709844	Drive Shaft (incl universal joint)	1
49	1103494	Set Screw 3/8-16 x 1/2"	1
50	1709814	Oil Seal	1
51	1185270	Ball Bearing	1
52	1709209	Yoke	1
53	1185339	Drive Pin	2
54	1100245	Lockwasher 1/2	8
55	1106985	Capscrew 1/2-13 x 1"	4
56	1709815	Gasket	1
57	1118736	Retaining Ring	2
58	1800007	Spacer .110 Thick	2
59	1800752	Shim .003 Thick	As Req'd.
60	1800753	Shim .005 Thick	As Req'd.
61	1185202	Bearing Cup	2
62	1185201	Bearing Cone	2
63	1185204	Oil Seal	2
64	1118735	Retaining Ring	2
65	1708011	Idler Rod - Short (For 230 & 220 Tractors)	1
	1712095	Idler Rod - Long (For 231 & 232 Tractors)	1

Ref. No.	Part No.	Description	No. Req'd.
66	1800334	Shim .010 Thick	As Req'd.
67	1800059	Bearing Retainer	2
68	1187206	Needle Bearing	2
69	1800060	Thrust Washer	2
70	1709818	Shaft	1
71	1800002	Worm Gear	1
72	1709820	Rotor Housing	1
73	1185247	Oil Level Plug	1
74	1800339	Breather	1
75	1100277	Woodruff Key 3/16 x 7/8"	1
76	1709819	Shaft	1
77	1181011	Sq. Key 3/16 x 2-1/2"	1
78	1709817	Worm	1
79	1120210	Roll Pin 1/8 x 1"	1
80	1800146	Cupped Plug	1
81	1800003	Gasket	1
82	1709797	Cover	1
83	1185453	Lock Nut 3/8-16	32
84	1100243	Lockwasher 3/8	5
85	1106923	Capscrew 3/8-16 x 1-1/4"	2
86	1709976	Stripper	1
87	1106872	Capscrew 5/16-18 x 5/8"	6
88	1110645	Lockwasher 5/16	6
89	135035	Spring Cotter	2
90	1709804	Lift Bar	1
91	1706419	Clevis Pin	4
92	1103841	Hex Nut 1/2-13	1
93	1100257	Flat Washer 1/2	1
94	1709813	Lift Bar Link	2
95	1709812	Spacer	1
96	1709811	Stud	1
97	1106987	Capscrew 1/2-13 x 1-1/4"	3
98	1106919	Capscrew 3/8-16 x 1"	3
99	1107383	Flat Washer 3/8	3
100	1709806	Hood	1
101	1709799	Leveling Board	1
102	1100362	Cotter Pin 3/32 x 1/2"	1
103	1709816	Hinge Rod	1
104	1111286	Carriage Bolt 3/8-16 x 1-1/4"	30
105	1709387	Tine - Right Bend	9
106	1709796	Extension Hub	1
107	1709795	Tine Hub	2
108	1100350	Cotter Pin 1/8 x 1	3
109	1709388	Tine - Left Bend	6
110	1710470	Bearing and Seal	4
111	1710471	Journal	1
112	1100762	Grease Fitting	1
113	1710472	Retaining Ring	4
		TINE EXTENSION	
114	1103838	Hex Nut 1/4-20	4
115	1185453	Lock Nut 3/8-16	12
116	1100241	Lockwasher 1/4	4
117	1709796	Extension Hub	2
118	1100350	Cotter Pin 1/8 x.1"	2
119	1706419	Clevis Pin	2
120	1709388	Tine - Left Bend	6
121	1111286	Carriage Bolt 3/8-16 x 1-1/4"	12
122	1709980	Leveling Board Extension	1
123	1100362	Cotter Pin 3/32 x 1/2"	1
124	1709983	Hinge Rod Extension	1
125	1709987	Hood Extension	1
126	1106830	Capscrew 1/4-20 x 1/2"	4

ADDITIONAL INSTRUCTIONS FOR INSTALLATION OF

23609 TILLER ON MODEL 233 & 234 RIDE-A-MATIC TRACTOR

1. Remove belt shield (Part No. 1713097) from tractor.
2. Remove belt guide (Part No. 1712908) from tractor.
3. Mount idler adjusting coupling (Part No. 1708123) to pin on pivot assembly (Part No. 1712825) and secure with spring cotter. (Adjust idler pulley as outlined in manual.)