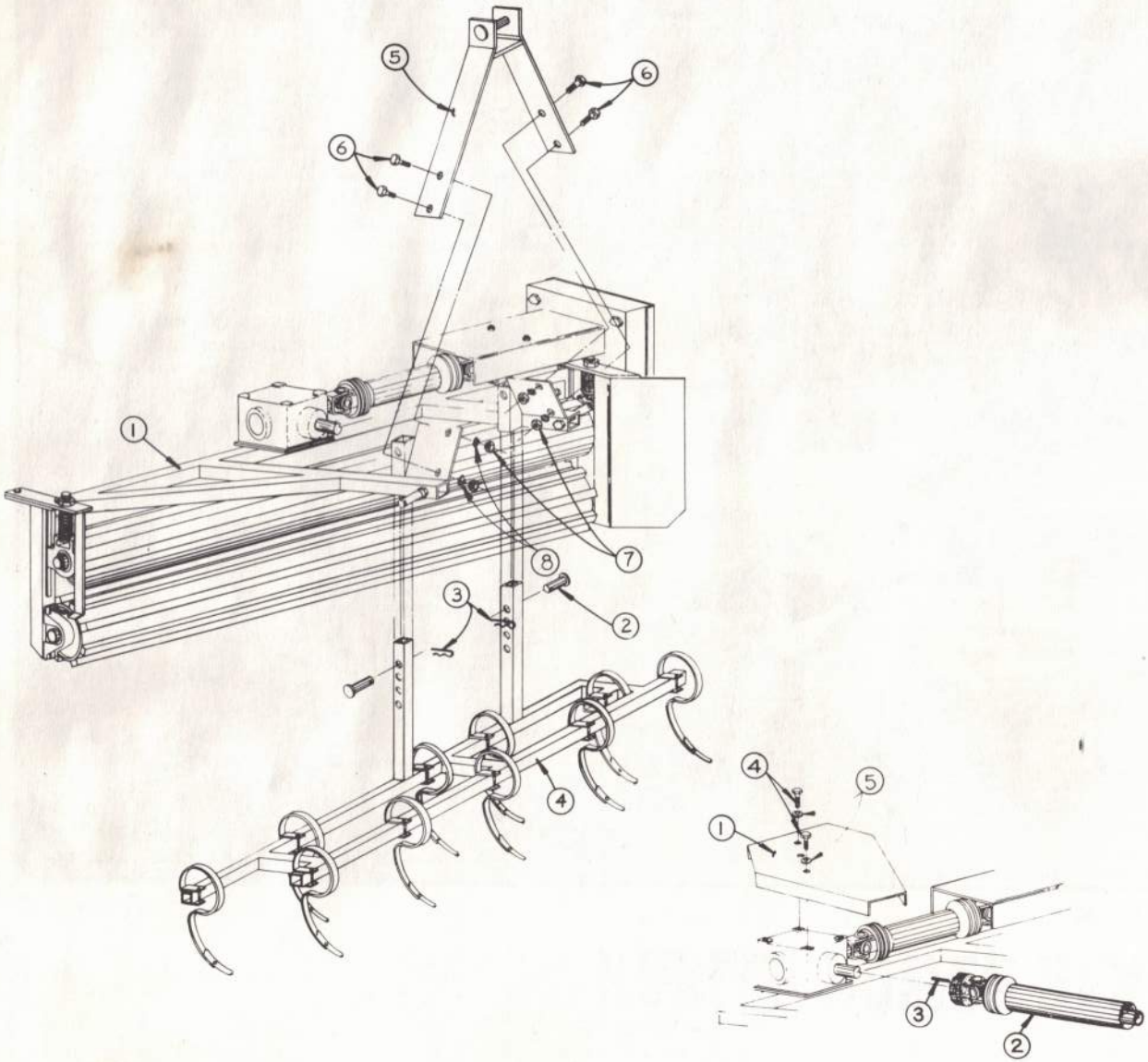
ASSEMBLY INSTRUCTIONS



Steps 1 & 2 - See Main Frame Illustration (left)

1. Attach top link hitch (#5) to main frame (#1) with ½''x1½'' hex bolts (#6), ½'' nuts (#7) and ½'' lockwashers (#8).
   Now rake can be hooked to 3 pt. tractor linkage and raised off the ground to allow hook-up of scarifier frame. On some tractors, clearance may not be sufficient and it may be necessary to install scarifier before top link hook-up by rolling rake on its back.
2. Insert scarifier frame (#4) into channels on main frame (#1). Line up at appropriate height to accommodate required digging depth and insert short pins (#2) and lock with cotter hairpins (#3).

Step 3 thru 6 - See driveline Illustration (below)

3. **Special Notice** — Rakes are shipped with dry gearboxes. **DO NOT** operate rake without adding two pints of #90 gear lube. This will fill gearbox one half to two-thirds and should not be over filled.
4. Attach front PTO (#2) to gearbox input shaft, securing with ¼''x1'' keystock (#3) and tighten with 3/16'' set screws in yoke.
5. Determine if PTO (#2) can be attached to tractor PTO drive without shortening. (Due to various tractor spacings, this PTO is extra long to ensure proper fit.) If cut down is necessary, determine total inches of reduction, separate PTO into two halves and cut that amount off **both** halves. **CAUTION:** Leave PTO long enough to give good over lap on shaft **but not too long** so as to jam yoke against gearbox as this will damage yoke and/or cross bearings.
6. Attach gearbox cover for safety using 3/8'' hex bolts (#4) and 3/8'' washers (#5).

Step 7 & 8 - See Caster Wheel Parts Illustration (Page 5).

7. Attach Caster fork frame (#17) to top of main frame with ½'' hex bolts (#22), ½'' lockwashers (#13) and ½'' nuts (#12).
8. Insert wheel fork assemblies (#18) into frame holes and set desired height and tighten turn-screws.

OPERATING INSTRUCTIONS

READ **BEFORE** OPERATING!

1. **POWER TAKE-OFF SPEED:** The operating speed of the PTO should be at or near 500 RPM. Engage PTO at slow RPM and then slowly increase speed. Lower rake with 3 pt. control to the ground slowly to avoid serve jars at high speed.

2. **GROUND SPEED:** The ground speed should be between 3 and 5 miles per hour under normal conditions. If the conditions are rocky and extremely thick it would be advisable to drive a slower 1 to 3 miles per hour.

3. **POWER ROLLERS:** The lower roller should be as level as possible with the ground. Adjustment and leveling of the rake is accomplished by adjusting the lower lift arms of 3 pt. hitch of the tractor. Gapping between the rollers is normally set for average conditions at about ¾''. This opening is adjustable, either wider or narrower, by adjusting the hex nuts (ref. #24 on pg. 6) on both sides that raise and lower the top roller assembly held in place by the RTU bearing (ref. #15). A wider open setting can be used to allow more dirt and rock to pass through into the seedbed behind, or if a finer raking is required a narrowing of the gap will close down the flow of materials causing more material to flow out to the side windrow. The opening between the rollers should be the same all the way across.

4. **SCARIFIER-DANISH TINES:** The function of the tines is to loosen rock and trash below the ground surface. They should be allowed to run 2'' to 4'' deep depending upon conditions. Adjustment of the depth is accomplished by changing the depth adjustment pins (ref. #3 on pg. 5) into the various holes on the scarifier frame (ref. #1). Danish tine shovels (ref. #9) are replaceable when worn. Extra tines can be added to the scarifier bar if necessary, or variations of sizes of shovels can be used. For example, a narrow spike tine is ideal for thatching grass, aerating and overseeding. (Spike tines available upon request to Glenmac or your local dealer.)

NOTICE

OPERATING PRECAUTIONS AND SAFETY TIPS!

DO NOT:

1. **DO NOT** forget to add transmission oil to to the gearbox before operating the PTO. See page 2.
2. **DO NOT** operate the PTO with the shaft too long and the yoke jammed against the gearbox seals. (See assembly cautions - page 2.)
3. **DO NOT** operate the PTO while raising the rake with the 3 pt. lift arms as this can cause damage to the PTO if the angle is changed severely.
4. **DO NOT** drop the 3 pt. severely to the ground with the PTO in operation and the rollers turning. Sudden high speed jolts multiply stress to the driveline and can cause breakage. Lift arms should be lowered slowly to the ground.
5. **DO NOT** engage PTO with engine RPM at high speed causing sudden jolt to the driveline.
6. **DO NOT** operate the rake without safety shields properly in place over u-joints, bearings and slip clutches.
7. **DO NOT** leave the tractor seat before turning off the power take off.
8. **NEVER** attempt to make adjustments or clean materials from rollers or chain while the PTO is in operation.

5. **OPERATING DEPTH:** When windrowing (raking) with the TR35, the depth is determined by how much dirt is carried ahead of the rollers. Depth control is by a combination of the down pressure of the 3 pt. hitch and the setting of the guage tires. Ideal operating depth will allow dirt to be completely covering the bottom roller and about half way up on the top roller. Windrows can be moved several times as long as the material can be maintained half way up on the top roller so that it does not overflow onto the clean area behind. (The TR35 allows fast raking by moving windrows several times depending upon the volume or density of materials being raked.) Sometimes moving the windrow back and forth in a given area will help to remove the amount of **dirt leaving a pure trash and rock windrow to pick up.**

6. **OPERATOR EXPERTISE:** Much of the success of operating more proficiently the Harley landscape rake will come with operator experience. Also the rake will perform better depending upon the various types of tractors it's used on. For example, a tractor with draft control and top link flowtation will allow for more independence and a better finish behind the rake. An operator that masters the technique of adjusting the level or angle of attack of the rollers will find ideal settings under various conditions to give the desired results. Depth control and angle control are maintained mostly by the top link control of the tractor 3 pt. hitch and by adjusting up or down the depth of the gauge tires behind the rake. Both depth **and angle of attack** to the rollers can be changed by these adjustments.

   Attention should also be given to control digging depth. Watching the roller depth to avoid running too deep and creating a plowing effect, or the other extreme of running too shallow and allowing trash to pass underneath will also be beneficial in obtaining an ideal seedbed. **Ideal depth** will vary with conditions anywhere from **2'' to 4''.**

MAINTENANCE

PRELIMINARY CHECK: The best maintenance is a preventive check occasionally, and particularly when the machine is new, to see that all nuts and bolts are tight, and that driveline PTO's are tightened down to drive shafts and properly positioned. Also, check under the chain case to be sure that chains are properly tightened and running straight on sprockets without uneven side wear.

CHAIN LINK MAINTENANCE: Drive chain should be inspected in a periodic manner depending upon conditions of operation, including soil types and weather. For example, sand is generally much more abrasive then soft dirt. Wet weather, and especially if it's ocean salt air conditions, are more detrimental than dry conditions. Therefore, chains should be inspected periodically and under adverse conditions as often as every 10 hours, and especially if the machine has been allowed to set and not be operated for a few days or weeks to see if the links are stiffening. Links should be left limber and loose and if necessary sprayed with a lubricant such as WD40. When being retired for a long period or at the end of the season an application of a grease coating will help to maintain chain life. New chain has a tendency to stretch and it may be necessary on occasion to remove a link or one half link to maintain proper tension between the sprockets and the idler spring assembly.

DRIVE SPROCKETS: Drive sprockets should be maintained in proper alignment with the drive chain so that uneven wearing on the sides does not occur. Also, to prevent sprocket wandering, periodically check to see that the sprocket is not moving on the shaft and that the set screws are tightened.

BEARINGS: Highest quality Fafnir bearings are used on all Harley rakes with only TAK (triple seal) bearings used on low areas operating in the dirt. Lubrication of bearings will vary considerably with conditions and operator preferences. Generally, as a rule, bearings should be under lubricated rather than over lubricated and risking the blowing out of the seals. Under average conditions light lubrication at approximately 200 hours will be sufficient. **NOTICE:** Replacement bearings should be maintained at the same high quality Fafnir, triple seal level if at all possible for longer life. (Contact Glenmac or your local dealer for best quality replacement parts).

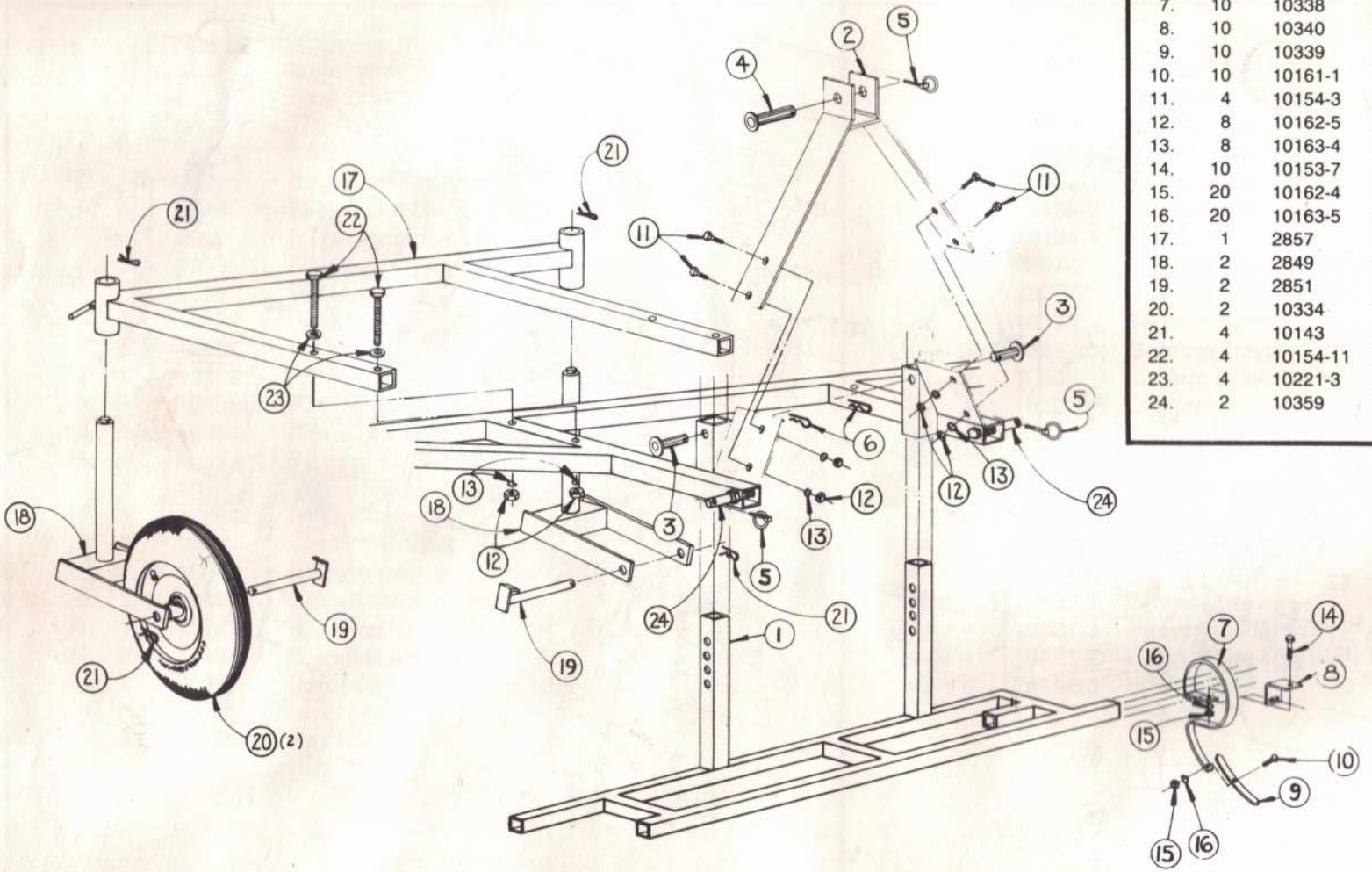
PTO DRIVELINES: Periodically check the yoke of the drive shaft and its attachment to the drive shaft and keyway to make sure set screws are tight and the yoke is not moving on the shaft. PTO shafts and u-joints should be greased every few days depending upon dust conditions.

GEAR BOX: The gear box is almost maintenance free and should be checked seasonally to see that oil level is maintained high enough to just cover the shafts so the proper lubrication is maintained. As long as seals are intact and leaking does not occur oil level will maintain with little fluctuation. **CAUTION:** Remember a new machine is delivered with the oil box dry, you must add approximately 2 pints of #90 gear lube before operating.

CLUTCH: The on-line spring/ratchet clutch is found at the gear box attachment end of the gear box to tractor PTO (ref. #13 pg. 5). This is a spring tension clutch with no maintenance required. As long as it performs properly no adjustments are required. If driveline damage occurs and a tight clutch is suspected, spring tension can be reduced by removing some of the springs. For assistance in adjusting clutch, call Glenmac or your local dealer.

PARTS IDENTIFICATION

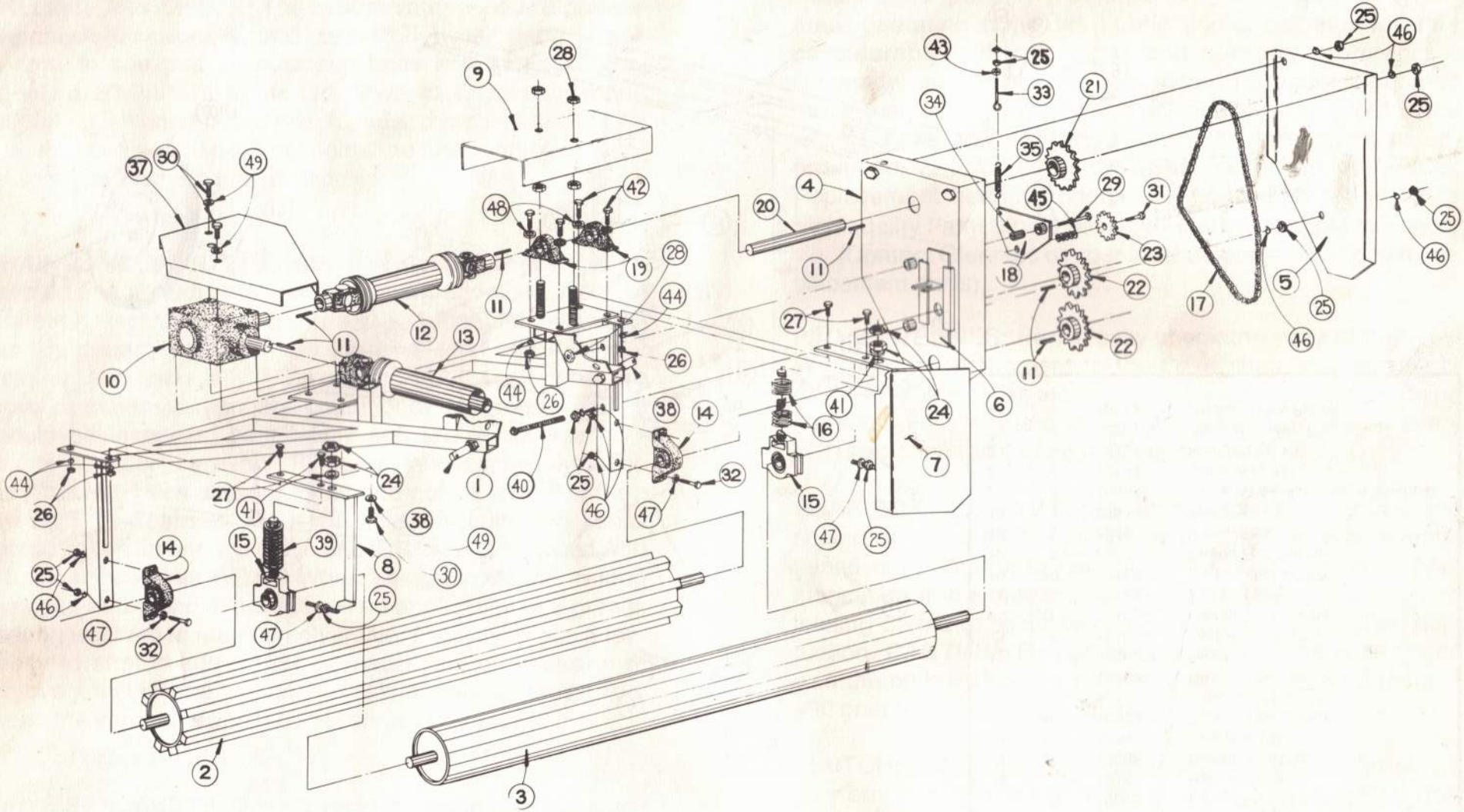
SCARIFIER PARTS/CASTER WHEEL PARTS



Ref. No.	Qty. Req.	Part No.	Description
1	1	2852	Scarifier Frame
2.	1	2871	Hitch-Top Link
3.	2	2198	Depth Adjustment Pin
4.	1	2870	Top Link Pin ¾''x4½''
5.	3	10315	Lynch Pin 7/16''x1¾''
6.	2	10131	Hairpin-Cotter
7.	10	10338	Danish Mini Digger Tine
8.	10	10340	Tine Bracket
9.	10	10339	Danish Tine Shovel
10.	10	10161-1	Plow Bolt 7/16''
11.	4	10154-3	Hex Bolt ½''x1½''
12.	8	10162-5	Hex Nut ½''
13.	8	10163-4	Lockwasher ½''
14.	10	10153-7	Hex Bolt 7/16''x3½''
15.	20	10162-4	Hex Nut 7/16''
16.	20	10163-5	Lockwasher 7/16''
17.	1	2857	Caster Fork Frame
18.	2	2849	Wheel Fork
19.	2	2851	Axel Pin
20.	2	10334	Tire & Wheel Assembly 4.80-400-8
21.	4	10143	Cotter Key Pin
22.	4	10154-11	Hex Bolt ½''x5''
23.	4	10221-3	Washer-Heavy, Flat ½''
24.	2	10359	Lift Arm Draw Pin 7/8''

PARTS IDENTIFICATION

MAIN FRAME AND PTO DRIVE LINE PARTS



PARTS IDENTIFICATION

MAIN FRAME AND PTO DRIVE LINE PARTS

Ref. No.	Qty. Req	Part No.	Description
1.	1	2841	Mainframe
2.	1	2839	Bar Roller
3.	1	2840	Top Roller
4.	1	2846	Chain Shield
5.	1	2847	Chain Shield Cover
6.	1	2848	Sliding Dirt Shield
7.	1	2836	RTU Bearing Holder — Left
8.	1	2859	RTU Bearing Holder — Right
9.	1	2855	Bearing Cover
10.	1	10337	Gearbox
11.	6	10169	Keystock ¼''x1''
12.	1	10333	PTO Shaft-side 1''x1-1/8'' Round
13.	1	10332	PTO Shaft-front with Clutch 1-3/8'' QC
14.	2	10353	Bearing-pillowblock 1-3/8'' Tak
15.	2	10354	Bearing 1-3/8'' RTU
16.	2	10123	Compression Spring
17.	1	10351	Drive Chain
18.	1	2807	Chain Tightener
19.	2	10061	Bearing-pillowblock 1-1/8'' Rak
20.	1	2845	Drive Shaft 1-1/8''x15-½''
21.	1	10049	Sprocket 60B 20''x1-1/8''
22.	2	10355	Sprocket 60B 15''x1-3/8''
23.	1	10045	Sprocket-idler 60B 11''x5/8''
24.	4	10162-8	Hex Nut ¾''
25.	13	10162-5	Hex Nut ½''
26.	8	10162-4	Hex Nut 7/16''
27.	4	10153-2	Hex Bolt 7/16''x1-½''
28.	5	10162-7	Hex Nut 5/8''
29.	1	10155-10	Hex Bolt 5/8''x6''
30.	6	10152-1	Hex Bolt 3/8''x1''
31.	1	10155-2	Hex Bolt 5/8''x2''
32.	2	10134-4	Hex Bolt ½''x1-¾''
33.	1	2807-2	Eyebolt ½''x3-½''
34.	1	2807-3	Bushing
35.	1	10126	Tension Spring
37.	1	2853	Gearbox Cover
38.	2	10359	Lift Arm Draw Pin 7/8''
39.	1	10128	Compression spring 1-¼'' id, ¼'' wire, 5-½'' long
40.	1	2872	Redi-bolt ½''x7-½''
41.	2	10172	Washer ¾'' 10 ga. Machine Bushing - wide
42.	4	10153-3	Hex Bolt 7/16''x1-¾''
43.	1	10164-5	Washer ½''
44.	8	10163-5	Lockwasher 7/16''
45.	5	10164-6	Washer 9/16''
46.	8	10163-4	Lockwasher ½''
47.	4	10221-3	Heavy Washer ½''
48.	4	10221-2	Heavy Washer 7/16''
49.	6	10164-3	Washer 3/8''

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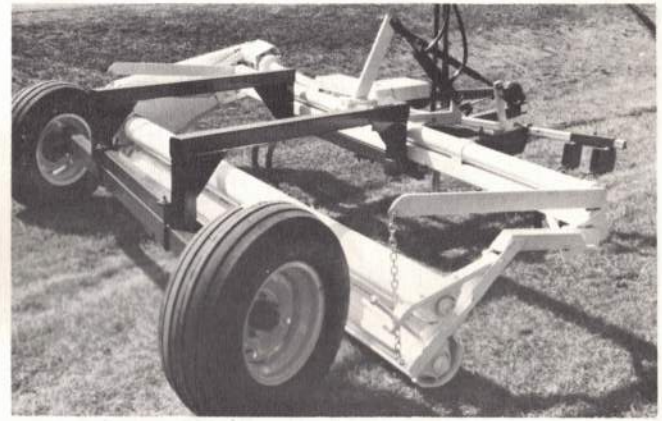

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