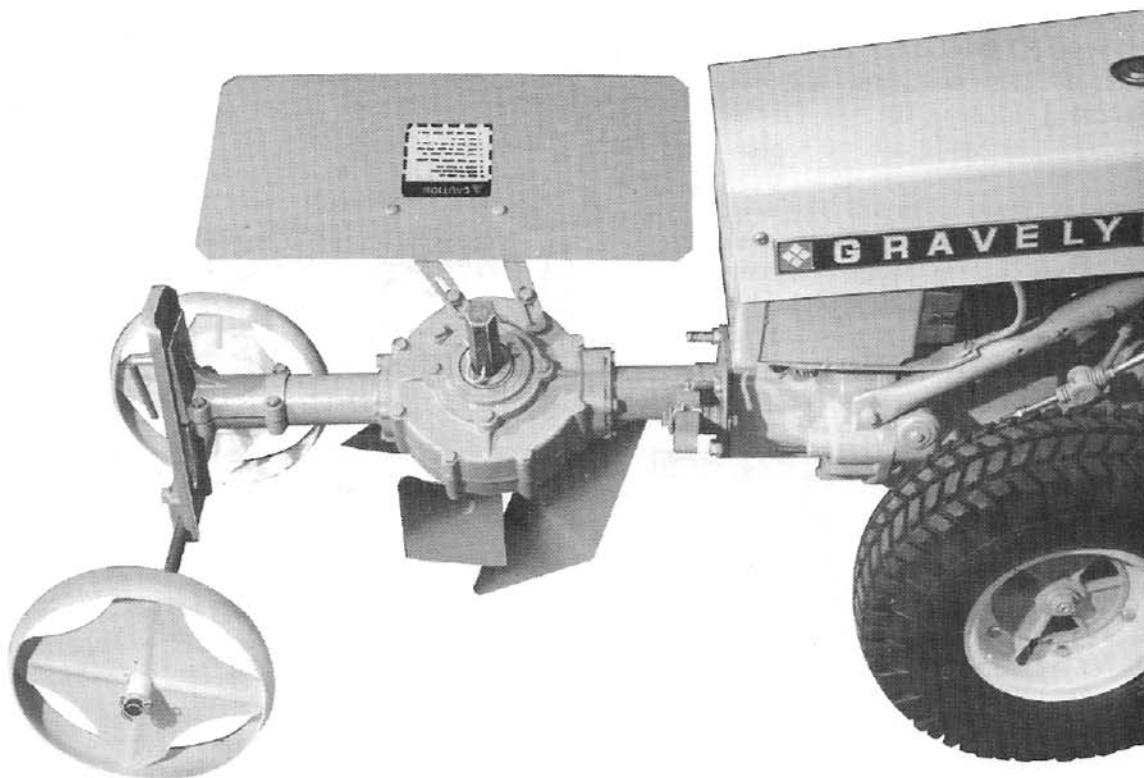


# GRAVELLY OWNERS MANUAL

To continue its program of quality and design improvement, the manufacturer reserves the right to change specifications, design or prices without notice and without incurring obligation.

ROTARY PLOW  
NO. 15578E1  
FORM NO. 20829 (7/74)



**ROTARY PLOW WITH CONVERTIBLE TRACTOR**

## GENERAL

1. The Rotary Plow is a front-mount unit designed and built to give many years of excellent service. The plow is recommended for all soil conditions in which a conventional moldboard plow would operate. The unit has all gear drive from the engine to the ground, variable width and depth, and is used with both convertible and riding tractors.
2. The Owners Manual includes parts list, set up, safety, operation, and maintenance instructions. Use the parts list for reference to individual part numbers. Contact the Gravely Dealer for further information.
3. Cutting Width: 10" effective maximum  
Overall Length: 36 inches  
Weight: 118 lbs.  
Purpose: One step seedbed preparation.  
Drive: Overload clutch, right angle bevel gears, roller bearings, cast iron housing  
Blades: Hi-strength carbon steel  
Features: Variable width and depth of furrow.

### Recommended Tractors:

- All convertible tractors
- All riding tractors except 408, 450 and 816

### Additional Equipment Required:

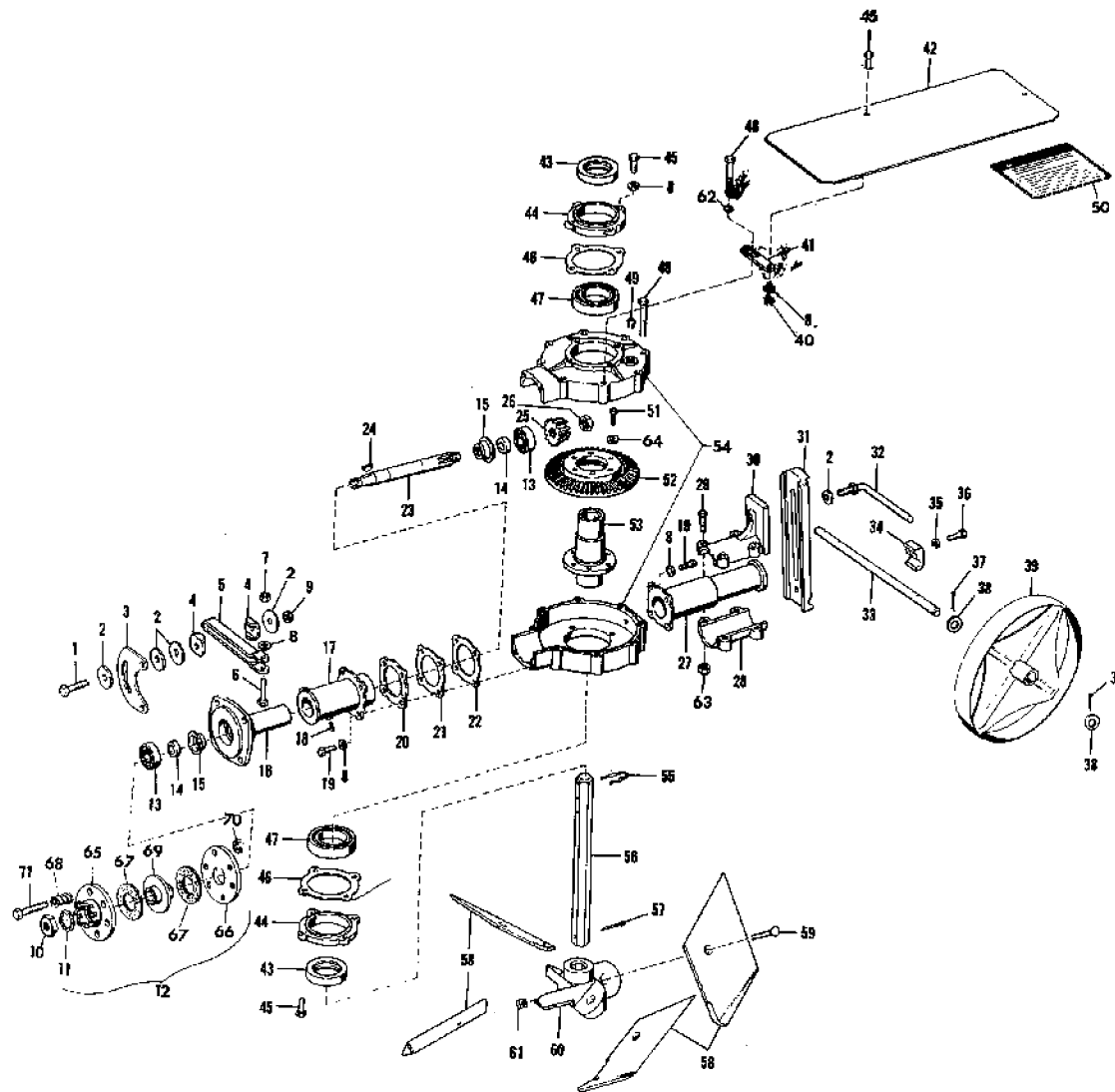
- Convertibles - none
- Riders - Front Drive Kit  
Front Adapter Kit

### Recommended Additions:

- Convertibles - none
- Riders - Wheel Brakes, 800 series  
Front Wheel Weights

### Remark:

Tractors may be difficult to steer when plowing the first furrow or on rocky ground but not otherwise if properly adjusted and if the ground is plowable. Also, the rear wheels of riders should be in the inboard position.



ITEM NO.	PART NO.	DESCRIPTION	ITEM NO.	PART NO.	DESCRIPTION
1	180190	Bolt, Hex 1/2-13 x 3	36	180177	Bolt, Hex 1/2-13 x 1-1/2
2	120390	Washer, Flat 9/16 x 1-3/8 x .109	37	137253	Pin, Cotter 3/16 x 1-5/8
3	12523P1	Bracket, Adjusting	38	131017	Washer, Flat 13/16 x 1-15/32 x .134
4	13407P1	Washer, Adjusting	39	5327A1	Wheel, Depth
5	12524P1	Handle, Adjusting	40	120377	Nut, Hex 3/8-16
6	180132	Bolt, Hex 3/8-16 x 2-1/4	41	13430P1	Brace, Front
7	120377	Nut, Hex 3/8-16	42	5324P1	Shield, Dirt
8	138542	Washer, Lock 3/8 Int Tooth	43	13593P1	Seal, Oil
9	120238	Nut, Jam 1/2-13	44	5308P1	Cap, Bearing
10	13419P1	Nut, Flywheel	45	180120	Bolt, Hex 3/8-16 x 3/4
11	138557	Washer, Lock 5/8 Int Tooth	46	5317P1	Shim .005
12	10104A1	Clutch, Attachment Assembly	47	14230P1	Shim .020
13	13594P1	Bearing, Roller, Cone	48	13421P1	Bearing, Roller, Cone
14	13595P1	Bearing, Roller, Race	49	13422P1	Bearing, Roller, Race
15	12987P1	Seal, Oil	50	180134	Bolt, Hex 3/8-16 x 2-1/2
16	3151P1	Retainer, Oil Seal	51	13408P1	Plug, 1/2 Sq. Hd.
17	12747P1	Housing, Drive Shaft	52	19479P1	Decal, Caution
18	12748P1	Casting, Swivel	53	180121	Bolt, Hex 3/8-16 x 7/8
19	9411027	Fitting, Lube 1/4-28	54	5315P1	Gear, Bevel
20	180122	Bolt, Hex 3/8-16 x 1	55	5306P1	Hub, Bevel Gear
21	12770P1	Gasket, Gear Housing	56	10441A1	Gear, Housing Assembly
22	12758P1	Shim .005	57	13466P1	Pin, Depth Adjusting
23	13887P1	Shim .020	58	5310P1	Axle
24	13082P1	Shaft, Drive	59	103422	Pin, Cotter 1/4 x 2
25	124549	Key, Woodruff 3/16 x 3/4 Hard No. 9	60	13468P1	Spade Blade
26	5309P1	Gear, Bevel	61	11709P1	Bolt, Plow 1/2-13 x 1-1/2
27	13412P1	Nut, Lock Esna 5/8-18 Light Thin	62	13467P1	Hub, Rotor
28	5331P1	Extension, Gear Housing	63	125536	Nut, Square 1/2-13
29	5328P1	Cap, Bracket	64	120394	Washer, Flat 13/32 x 13/16 x .065
30	180132	Bolt, Hex 3/8-16 x 2-1/4	65	456004	Locknut, 3/8-16 Washer Insert
31	5326P1	Swivel, Wheel Bracket	66	120382	Washer, Lock 3/8 Sp
32	5303P1	Bracket, Wheel	67	12867P1	Plate, Dog
33	5325P1	Screw, Wheel Bracket Clamp	68	12868P1	Plate, Back
34	5311P1	Axle	69	12870P1	Washer Friction
35	5304P1	Clamp, Axle	70	12871P1	Spring
	120384	Washer, Lock 1/2 Sp.	71	12872P1	Plate, Drive
				18277P1	Nut, Lock Esna 5/16-24 Light Thin
				181518	Bolt, Hex 5/16-24 x 1-3/4

fig 1 ILLUSTRATED PARTS LIST

## ASSEMBLY

1. Install a cotter pin in each inside hole at both ends of the gauge wheel axle, fig 1, Items 33 and 37.
2. Slide on a washer, wheel and washer to each side (wheel cap hub to the inside). Fasten them with cotter pins, fig 1, Items 37, 38 and 39.
3. Clamp the axle to the wheel bracket with the axle clamp, fig 1, Items 31, 34, 35 and 36. The axle goes in the groove of the wheel bracket. Center the axle.
4. Adjust the wheel bracket swivel; see ADJUSTMENT paragraph 4.
5. Fasten the wheel bracket to the wheel bracket swivel with the clamp screw and washer, fig 1, Items 2, 30, 31 and 32. Lock it all the way to the top of the wheel bracket.
6. Fasten the blades to the hub with the plow bolts and square nuts as in fig 1, Items 58, 59, 60 and 61. The curved blunt ends go down.
7. Install the big cotter pin in the plow axle at the end with only one hole, fig 1, Items 56 and 57.
8. Slide the plow axle up through the bottom of the rotor hub (the curved tip side of the blades is the bottom).
9. Turn the drive on its side. Slide the plow axle (with blades through the drive from the bottom side (the top side has a fill plug)).
10. Turn the plow drive right side up (plow blades down) and put the depth adjusting pin in the third hole from the end (easiest for transportation), fig 1, Items 55 and 56.
11. Fasten the braces to the dirt shield with the bolts, lockwashers and nuts as in fig 1, Items 8, 40, 41, 42 and 45 Use the holes, not the slots in the braces, Item 41. The decal is on the top, the braces go on the bottom of the shield.
12. Remove the 2 right side bolts from the gear box, fig 1, Items 48 and 54. Slide a flatwasher on each bolt and then put the bolts through the slots in the braces and fasten the shield to the drive (decal up) with the bolts, fig 1, Items 48 and 62.

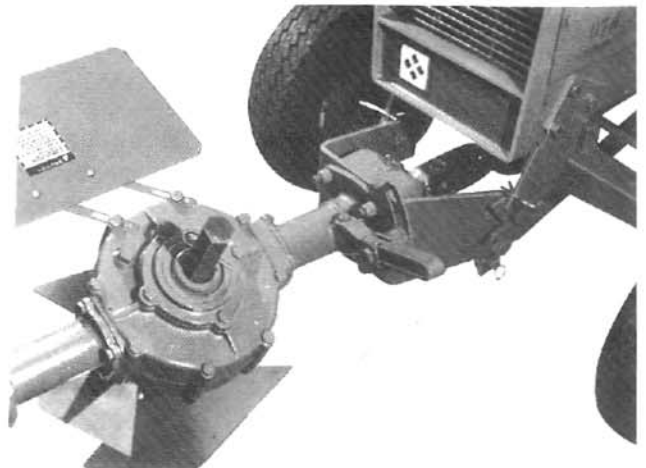
13. Loosen the adjusting handle bolts, fig 1, Items 1 and 6. The unit is now ready for lubrication.

## LUBRICATION

1. Pour 1 1/2 pints of SAE 90W or 140W gear lubricant into the gear housing assembly through the fill hole, fig 1, Items 49 and 54. Replace the fill plug.
2. Lubricate the drive shaft casting through the grease fitting on the swivel casting with general purpose grease, fig 1, Items 16, 17 and 18. Continue to add grease until it comes out between the mating surfaces of the two castings.

## INSTALLATION

1. Before attaching or detaching the unit, STOP the engine and put the PTO (power take-off) in the OUT position.
2. Convertible Tractors:  
The unit connects to the advance casting of the tractor with the 2 nuts and bolts supplied with the tractor. Fasten the adjusting bracket on the left side of the drive shaft housing with a nut and bolt, fig 1, Items 3 and 16. Run up all nuts and bolts before tightening. Do not damage the threaded studs.



3. Riding Tractors: **fig 2**  
The unit connects to the Front Adapter Kit of the tractor with 2 nuts and bolts supplied with the kit. Fasten the adjusting bracket on the left side of the drive shaft housing with a nut and bolt, fig 1, Items 3 and 16. Run up all nuts and bolts before tightening. Do not damage the threaded studs, fig 2.

## ADJUSTMENTS

Note: All references to right and left are made from the operators position (at the handles of the tractor).

1. **DEPTH OF CUT:** Put the depth adjusting pin in the top hole of the axle for maximum depth, fig 1, Items 55 and 56. Put the pin in the third hole for minimum depth.
2. **WIDTH OF CUT:** Move the right gage wheel (the one in the furrow) closer to the wheel bracket assembly to make the width of the cut less, fig 1, Items 31 and 39. Loosen the axle clamp to slide the axle and then re-tighten, fig 1, Items 34 and 36.
3. **PLOW ANGLE:** Move the adjusting handle down to increase the plow angle and up to decrease the angle, fig 1, Items 5. Loosen the nut and bolt to adjust and then re-tighten, fig 1, Items 1 and 9.
4. **GAUGE WHEEL SWIVEL:** Tighten the nuts and bolts fastening the wheel bracket swivel to the bracket cap to decrease the freedom of the swivel action, fig 1, Items 28, 29, 30 and 63. Loosen to increase the freedom of swivel. Tighten or loosen each nut and bolt the same amount to maintain proper fit-up. The wheel assembly should be free enough to follow ground contour but tight enough not to pivot under its own weight when lifted off the ground.
5. **FRONT TO REAR LEVELING:** Move the gear housing extension assembly up or down on the wheel bracket to make the gear housing level (front to rear) with the furrow, fig 1, Items 27, 28, 30 and 31. Loosen the clamp screw to adjust and then retighten, fig 1, Item 32.
6. **DIRT SHIELD:** Position the shield down (by bending the braces) to direct the discharge dirt toward the just plowed furrow. Position it up to discharge the dirt away from the just plowed furrow.
7. **OVERLOAD CLUTCH:** Loosen all 6 nuts. Tighten the bolts (into the threaded back plate) until the springs are fully compressed; the bolts cannot be tightened further without excessive tightening. Back off each bolt 1/2 turn. Lock each bolt in position with the nuts, fig 1, Items 66, 70 and 71.

## SAFETY

1. **READ THE TRACTOR OWNERS MANUAL.** Be familiar with all controls and follow the safety precautions outlined in the manual.
2. **DO NOT ALLOW PASSENGERS** to accompany the operator at any time.
3. **DO NOT ALLOW CHILDREN** to operate the equipment, **nor allow adults** to operate it without proper instructions.
4. **INSPECT WORK AREA** for rocks, glass, metal, bones, and any other foreign objects. Stay alert for holes and other hidden hazards.
5. **DO NOT OPERATE** equipment except from proper operator position.
6. **KEEP SAFETY** devices and shields in place at all times.
7. **DISENGAGE POWER** to attachment and stop engine prior to making any adjustment or clearing the unit.
8. **DO NOT WEAR LOOSE** fitting clothing.
9. **KEEP HANDS,** feet, hair, clothing, etc. away from moving parts.
10. **KEEP BYSTANDERS** and pets removed and away from the work area.
11. **DIRECT DISCHARGE** so as not to endanger life or property; such as people, pets, structures, cars, etc.

## OPERATING TIPS

Note: See the ADJUSTMENTS section for the procedures to make the adjustments.

1. A few trial adjustments may be necessary before the plow is "tuned" (adjusted) to soil conditions.
2. Use the tractors lowest ground speed.
3. Operate the tractor at full throttle.
4. When plowing with convertible tractors, walk behind the tractor handles - not between them.

5. Allow the tractor to "float" over uneven ground. Let the plow and tractor do all the work.
6. Pivot convertible tractors by bearing down on the handles (raising the plow out of the ground) until the tractor is balanced. Hold back on the right handle and the engine will pivot the tractor around to the right.
7. Increase the plow angle if the plow "pulls" to the left.
8. Decrease the plow angle if the plow "pulls" to the right.
9. Adjust for less width of cut when plowing deep in hard soil.
10. After adjusting the width of cut, the plow angle may need adjusting to maintain good handling.
11. Adjust the front to rear leveling when the right gauge wheel and tractor wheel are in the furrow.
12. Adjust for less depth and/or less width of cut when plowing in very hard soil.
  - A. If maximum depth is necessary, adjust for less width of cut.
  - B. If intermediate depth is satisfactory adjust for as wide a cut as possible.
13. Use the dirt shield to direct the discharge and to help break up the soil.
14. Use the minimum depth adjustment and raise the front of the gear housing for transporting with convertible tractors.
15. Adjust the overload clutch if the plow stalls under moderate load while the engine and tractor wheels keep running.
16. Use the suggested plowing route as in fig 3. Reverse the route every 3rd or 4th plowing season.
17. Steering may be difficult in hard ground not previously turned.
18. Soil conditions determine the depth, width and forward speed that ground can be plowed.

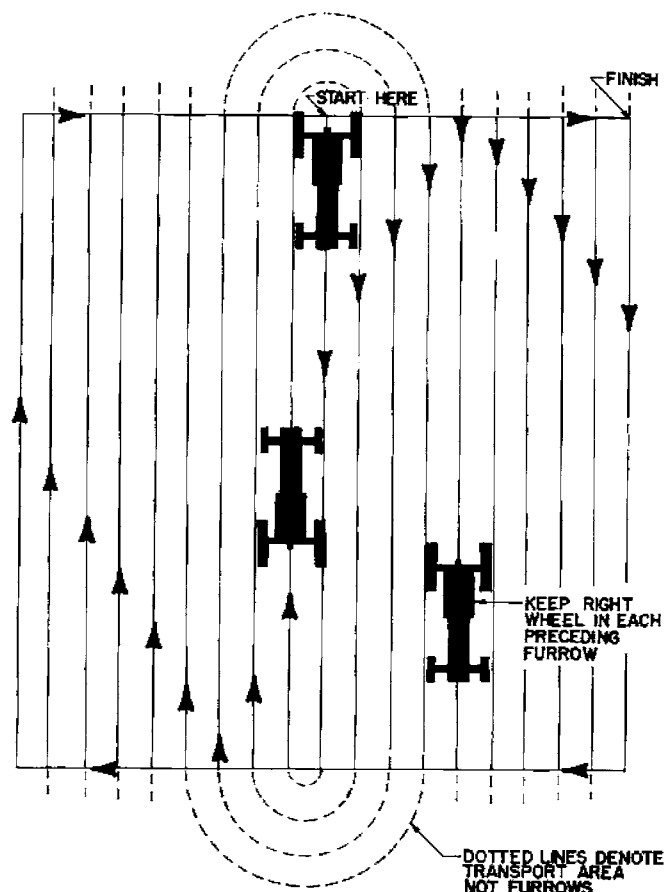


fig 3

### OPERATION

1. Refer to the Tractor Owners Manual for safety and operating instructions to engage and disengage the PTO (power take-off). Read the ADJUSTMENTS and OPERATING TIPS section of this manual before attempting to plow.
2. Observe the ground to be plowed. Plan the procedure for plowing (starting point, turns, etc.) before beginning. Before starting, mark the point where the first furrow should end to provide a guide for maintaining a straight furrow. Other furrows are plowed with the right gauge wheel in the previously plowed furrow.
3. Preliminary Setup for the First Furrow:
  - Depth of cut: maximum
  - Plow Angle: half way in the slot
  - Front to Rear Leveling: slight front down
  - Dirt Shield: down
  - Width of Cut: center the axle
4. At the point of beginning the first furrow, raise the plow off the ground, engage the PTO, and (with engine at full throttle) lower the plow into the ground; no ground speed (forward motion) at this time.

5. After the plow has made a hole and is no longer discharging, start forward motion. Use the tractor's lowest ground speed and full engine throttle.
6. If the ground is so hard that it stalls the plow, adjust for less depth.
7. At the end of the first furrow, pivot the tractor and start the second furrow by setting the right gage wheel in the just plowed furrow; use the same starting technique as in paragraph 4 if necessary.
8. With the gauge wheel and the tractor in the furrow, the plow will cut deeper on the second and remaining furrows than on the first.
9. If the ground is so hard that it stalls the plow, adjust for less width and/or depth of cut.
10. When 4 or 5 furrows away from the first furrow, raise the dirt shield to allow a smooth spread of discharge.
11. A few trial adjustments may be necessary before the plow is "tuned" (adjusted) to soil conditions.

#### ROUTINE MAINTENANCE

1. Relubricate the drive shaft casting once a year; see LUBRICATION, paragraph 2.

2. Between plowing operations, apply a light coat of general purpose grease to the plow blades to prevent rust.
3. Periodically, inspect the gear housing oil level especially if signs of leakage are present, fig 1, Item 54. With the gear housing level (plow shaft perpendicular to level ground, fig 1, Item 56) the oil should be above the bevel gear, fig 1, Item 52. View through the fill hole.
4. Periodically, check all nuts and bolts to insure tightness.
5. Clear the unit of dirt and debris.

#### REMOVAL FROM TRACTOR

1. Reverse the procedure for attaching; see INSTALLATION, paragraphs 1, 2 and 3.

#### STORAGE

1. Clear the unit of dirt and debris.
2. Apply a light coat of oil to preserve the finish and appearance.
3. Apply a heavy coat of general purpose grease to the plow blades to prevent rust.

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