

# Perma-Green Supreme, Inc.

## Turf CHEMmando Spray Equipment



## Operator's Manual

### Cavalry Ride-on Sprayer Spreader

#### Introduction

This manual contains information on how to operate the Cavalry Ride-on Sprayer/Spreader safely. Please read it carefully before beginning operation. If a problem should occur, or questions arise, please consult Perma-Green Supreme, Inc.

All information in this publication is based on the latest product information available at the time of printing. Perma-Green Supreme, Inc. reserves the right to make changes without notice and without obligation.

This manual should be considered a permanent part of the sprayer. Record the model number listed below for ordering parts and when making technical or warranty inquiries.

#### **CAV 60 A1B**

Direct all inquiries to:

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## Safety messages - Read Carefully

### WARNING!

A warning message alerts you to a potential hazard that can hurt you or others. Each warning message appears within a box like this.

### NOTICE!

A notice alerts you to potential hazards to your equipment, other property, or the environment. Each damage prevention message appears within a box like

## General Safety

1. Keep the hood in place. Replace it if it is damaged.
2. Keep hands and loose clothing away from all belts while the engine is running.
3. Wear proper clothing, shoes, and safety glasses.
4. Do not let children or untrained adults operate the machine.
5. Do not run the engine in an enclosed area. Exhaust fumes are hazardous and can kill.
6. When leaving the operating position, shift transmission into neutral. Turn engine off, and if on an incline, block the wheels.
7. Do not touch the hot engine or muffler.
8. If the equipment begins vibrating or making unusual noises, stop immediately, check for the cause, and repair.

### WARNING!

Careless operation or operator error can result in serious bodily injury or property damage. The Cavalry Ride-on Sprayer Spreader is only as safe as the operator! Improper maintenance can cause injury. To reduce the possibility of injury, read and follow all safety instructions. Be certain that any new operator fully understands and complies with the safety instructions before operating the equipment.

## Before Starting

1. Read this manual and familiarize yourself with all the controls.
2. Practice getting on and off the machine and operating the handle release, throttle, and brake.
3. Before starting the engine, refer to the Honda owner's manual for proper safety and operating instructions.
4. Always inspect the lawn first. Mark any ridges, ruts, holes, etc. and remove any debris or objects that may interfere with the operation of the Cavalry.
5. Plan your strategy for treating the lawn prior to beginning.
6. Before starting the engine, shift the transmission into neutral.

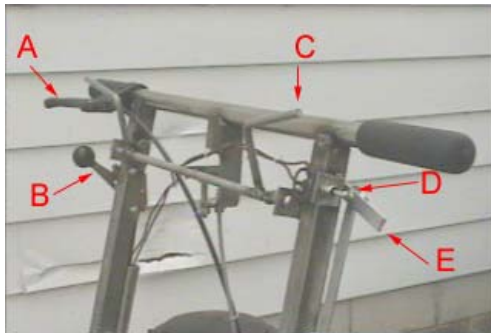
### WARNING!

#### To prevent loss of control and tipping

1. Operate only in daylight
2. Watch for holes or other hazards
3. Do not drive close to a drop off or other hazard,
4. Reduce speed when making sharp turns
5. Do not operate in slippery conditions
6. Keep a firm hold on the handles
7. On hillsides, exercise extreme caution
  - a. Don not make sudden starts, stops or turns
  - b. Do not go up and down hills
  - c. Treat slopes beginning at the bottom
  - d. Travel across the grade wherever possible
  - e. Reduce speed
  - f. Operate as a walk behind whenever necessary
  - g. Do not operate on slopes over 15 degrees.

## First 8 Hours of Break in

1. Test clutch disengagement. With transmission in neutral and the motor running, check to see that the transmission input pulley is not turning. Adjust belt guide or clutch engagement if necessary (see page 8).
2. Check and adjust belt tension every 2 hours during the first day's operation.
3. Check for loose hardware and tighten as needed.
4. Grease rear wheel bearings (2)
5. Lubricate the articulating rod ends (3) between the sulky and spreader. Use WD 40, light oil, or coat with grease.
6. Check tire inflation (approx. 15 psi). NOTE: All tires are filled with diluted RV antifreeze or water for balast. Dispose of in sanitary sewer or septic tank or according to local regulations.



**HANDLE VIEW (Diagram 3-1)**

A - Clutch	215520
B - Throttle	654120
C - Spreader on/off	432112
D - Pump Switch	344334
E - Handle Release Lever	



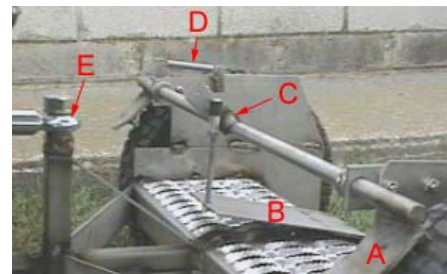
## Operating Instructions

1. Read and understand all the safety instructions prior to attempting to operate the machine.
2. Before starting
  - A. Check the oil level
  - B. Fill the tank with 87 or higher octane gas
  - C. Open fuel valve
  - D. Shift transmission into neutral
3. Start Engine - choke as necessary by pushing and holding the throttle lever forward. When started, slowly pull the throttle back to the detent run position. If the engine is warm, choking may not be necessary.
4. Shift into a low gear (reverse is farthest forward followed by the neutral and 6 forward gears) and step onto the sulky.

## WARNING!

To avoid serious bodily injury and transmission damage, the machine must be at a full stop before shifting from reverse to forward or from forward to

5. To go forward, pull and hold the clutch lever.
6. To turn right, pull the right handle toward you. Simultaneously shift your weight to the right side of the machine. To turn left, pull the left handle bar toward you and shift your weight to the left side of the machine. (continued on page 4)



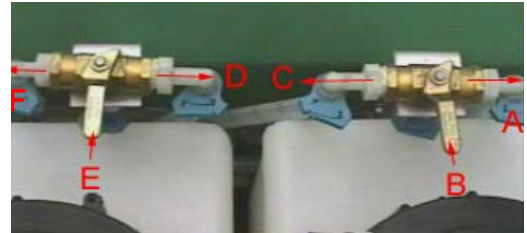
**Rear Brakes**

A - Brake Assembly
B - Peddle
C - Linkage Swivel
D - Return Spring
E - Articulating Joint

(continued from page 3)

7. To stop, release the clutch lever and step on the brake pedal.
8. To back up, come to a complete stop, shift into reverse, and pull the clutch lever.
9. To operate the machine as a walk behind, pull the handle release lever and step backwards off the sulky. Pull the handle down with you. NOTE: The handle does not lock in a down position.
10. To return to a riding position, step up on the sulky, pushing the handle forward until it locks in the up position.

1. Fill tanks with water. Note both tanks are connected together and act as one.
2. To spray up to 9 feet wide (full width broadcast), point the handle of the right spray control valve to



### SPRAY CONTROL VALVE SETTINGS

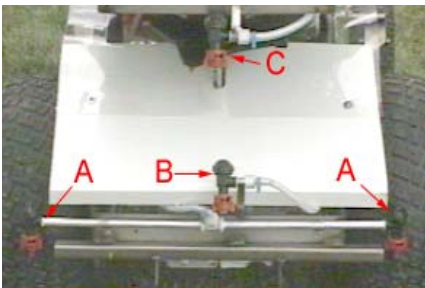
- A - Broadcast = 9' wide
- B - Off
- C - 1/2 Width = (4.5')
- D - Trim = (2.5')
- E - Off
- F - Wand

## Overview

Both 3 gallon tanks have common suction and return flow lines and act as one tank. The 12 volt pump is located under the hood. A generator driven by the motor directly supplies the electricity to the pump. The pump is turned on with a switch to spray and off to stop spraying. A pressure unloader valve automatically maintains a constant 10 psi, therefore a constant flow. To facilitate spraying, several spray widths can be selected with the two spray control valves located above and between the spreader hopper and tanks. The nozzles installed are sized to apply the proper application rate when set to spray 9 feet, 4.5 feet, and 2.5 feet respectively.

the right and point the left spray control handle to the rear. With the motor running, pull the spray switch toggle toward the hand grip to momentarily spray or push the toggle forward to spray continuously.

## Sprayer Operation



### FRONT NOZZLES

A - broadcast nozzles	465220
B - 1/2 width (4.5') nozzle	465128
C - trim (2.5') nozzle	465028

3. To spray 4.5 feet wide (half width broadcast), point the handle of the right spray control valve to the left and the handle of the left spray control valve to the rear. Operate the spray toggle switch as before.
4. To spray 2.5 feet wide (trim width), point the handle of the right spray control valve to the rear and the handle of the left spray control valve to the right. Operate the toggle switch as before.
5. To use the wand, point the handle of the right spray control valve to the rear and the handle of the left spray control valve to the left. Push the toggle switch forward and use the wand like a power back pack.

## Adjusting the spray pattern

### Broadcast Boom Nozzles

- 1) Rotate the 2 red turbo floodjet nozzles within the red caps on the black nozzle bodies on the boom until the spray pattern is generally forward with a slight angle to the outside, so there is less overlap in the center.
- 2) Rotate the entire nozzle body on the boom until the spray comes out slightly less than parallel to the ground and delivers the spray width desired. (Up to a maximum of 9-10 feet).

### Half Width Spray Nozzle (lower center nozzle)

- 1) Rotate the blue extended range TJet nozzle within the red cap until the spray pattern is level from right to left.
- 2) Rotate the entire black nozzle body until the spray pattern covers a distance that is about one half the width of the broadcast spray boom.

### Trim Nozzle (top center)

- 1) Rotate the green TJet nozzle within the red cap until the spray pattern is level from right to left.
- 2) Rotate the entire nozzle body until the spray pattern covers a distance of about the width of the front of the machine.

### Wand

- 1) Rotate the Tjet nozzle until the spray comes out at an angle that is comfortable.

### WARNING!

- Leaks may create a spray that can hurt you or the environment. Use water to test the system for leaks before adding chemicals.. Repair any leaks immediately.
- Exposure to chemicals can cause serious bodily injury or death. Always read and follow chemical label directions and wear the safety equipment mandated on the label.
- The spray may be difficult to see and be blown off target by the wind. It is the operator's responsibility to apply chemicals in a safe manor.

## Suggested Method of Spraying & Spreading

Use a double overlap spread. Turn so that on the next pass the fertilizer reaches approximately back to the center of your last wheel marks.

\*Refer to pages 6 and 7, for instructions

\*Set the spread rate dial so that you apply 1/2 rate with each pass.

\*Follow the Accuway instructions to center or equalize the spread pattern, and then:

- 1) Mark off a test course and fill tanks with water.
- 2) Measure the area. Ex:  $100' \times 100' = 10,000$  sq ft
- 3) Turn on your spray boom and adjust your spray pattern to the desired width of spray.
- 4) Fill the tanks with water to a marked line (mark both tanks)
- 5) Spray the test course at your normal speed and with your normal overlap (determined by your spreader settings).
- 6) Measure the ounces of water necessary to refill the tanks to the marks (allow adequate time for the tank level to equalize).
- 7) Divide the amount of water used by the number of 1,000 sq.ft. increments in your test course in Step 2. This equals your spray rate in ounces per 1000 sq ft. Locate that number in the left column of the MIX CHART.
- 8) Repeat the test a number of times to insure accuracy.
- 9) From your product label, find the recommended rate of chemical to apply per 1000 sq ft. Locate that number in the top line of the MIX CHART,
- 10) Read across from your spray rate number in the left column until it intersects with your chemical per 1000 sq ft column. That number is the amount of chemical needed to mix 1 gallon of spray solution.

EXAMPLE: Your calibrated spray rate is 16 oz. per 1,000 sq.ft. and your product label requires 1.5 oz. of chemical per 1,000 sq.ft. You would need 12 oz. of chemical to mix 1 gallon of solution.

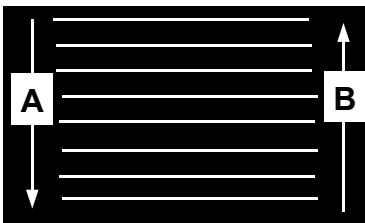
**MIX CHART - ounces of chemical to make 1 gallon of spray solution**

SPRAY RATE	.75 oz/1000	1.0 oz/1000	1.25 oz/1000	1.5 oz/1000
15	6.4	8.5	10.7	12.8
16	6	8	10	12
17	5.6	7.5	9.4	11.3
18	5.3	7.1	8.9	10.7
19	5.1	6.7	8.4	10
20	4.8	6.4	8	9.6
21	4.6	6.1	7.6	9.2
22	4.4	5.8	7.25	8.7
23	4.2	5.6	7	8.4
24	4	5.3	6.6	8
25	3.8	5.1	6.4	7.7
26	3.7	4.9	6.1	7.4
27	3.5	4.7	5.9	7.1
28	3.4	4.6	5.7	6.9
29	3.3	4.4	5.5	6.6
30	3.2	4.3	5.4	6.5

## To Spread

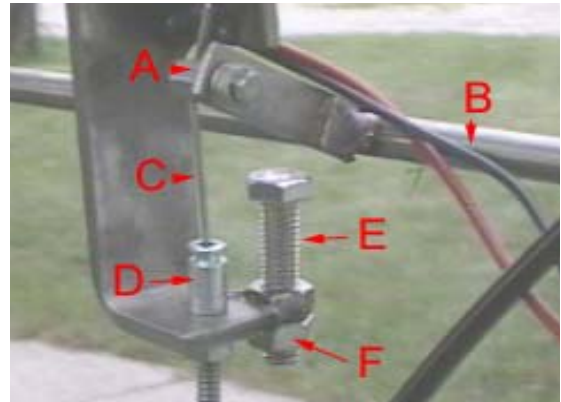
To avoid streaking the lawn, apply fertilizer at half rate and spread back to approximately the center of your wheel marks.

- 1) Set the rate dial and rate adjustment stop bolt (see diagram) to the proper setting to deliver 1/2 the rate of fertilizer with 1/2 the rate of fertilizer with each pass. (see page 7)



Spread headers across short ends (A and B) on diagram. Then cover ground as shown.

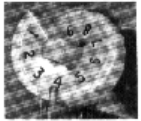
- 2) Equalize or balance the spread pattern with the Accuway control knob as described on page 7.
- 3) To begin spreading, pull the spreader control lever towards you. You may use either hand.
- 4) To stop spreading push the spreader control lever forwards.



SPREADER CONTROLS	
A - on/off swivel nut	652510
B - control lever	
C - on/off cable	05-98-0018
D - on/off sheath	
E - Adjustment stop bolt	
F - jamb nut	



Accuway Spread Pattern Equalizer puts the spread pattern - BULLS EYE - Dead to the Center of the spreader. All products. All spreading conditions. Skewing is eliminated. Does not change the spread width.



Take a few minutes to study Paul Speicher's "ALL ABOUT BROADCAST SPREADING." (Reverse side of this page.) Then you will understand why streaking is a common problem.

Spread Rate Dial ③ It's the variables that cause the problem. Because of the variables, adjustment must be trial and error.

A turn of the spread pattern shifter dial factors the variables. Shifts the product placement on the spreading spinner. This in turn shifts the spread pattern left to right or right to left as required.

Adjustment is very sensitive. (Note the very fine threads on the Equalizer adjustment stem.)

Moving the Equalizer only a few one thousandths of an inch can change the direction of spread.

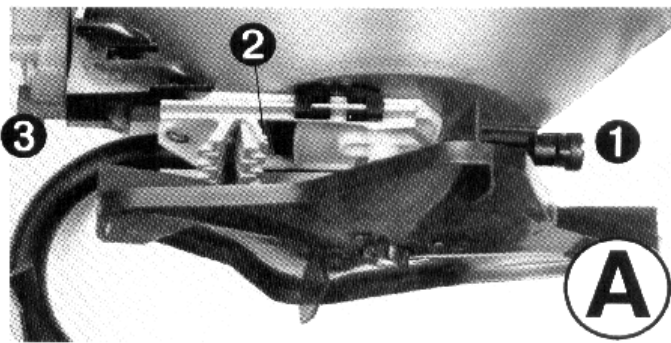
**CAUTION: Never, never, never use the Equalizer to split the product flow from the hopper to the spreading spinner.**

**The Equalizer has two ramps. -- A front side ramp and a back side ramp.**

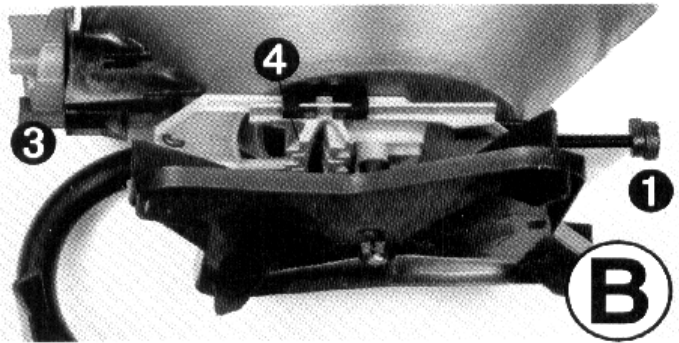
Viewed from the operators position.

The front side ramp ② is used to shift the spread pattern to the right.

The back side ramp ④ is used to shift the spread pattern to the left.



Note the relationship of the rate gate opening to the front side of the ramp.

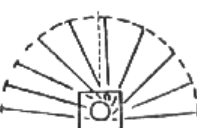


Note the relationship of the rate gate opening to the back side of the ramp.

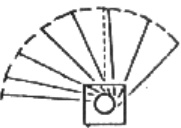

**First - set the spread rate dial ③. Now you are ready to adjust the Equalizing spread pattern shifter.**

**PROCEDURE: - see photo A**

**CONDITION** Turn clockwise the spread pattern shifter stem dial ①. Move the Equalizer all the way toward the back side of the spreader (toward the operator's position). ALL THE WAY.  
 Make a test spread. If spread pattern is centered to the spreader, Good. Do not make further adjustment.



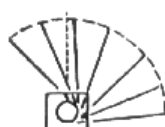
**CONDITION** Viewed from the operators position, spread pattern is long to the left of the center of the spreader.  
**PROCEDURE: - see photo A**  
 Turn clockwise the dial of the spread pattern shifter stem ①. Move the equalizer all the way toward the back of the spreader (toward the operator's position). ALL THE WAY.  
 To make spread centering correction, turn the dial ①, counter clockwise so the front side of the Equalizer ② just barely shunts the product toward the center as it falls on the spreading spinner.  
 Continue to move the Equalizer a very little at a time until a test spread shows the spread to be centered.

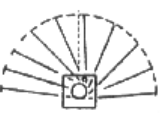
**THIS IS A VERY SENSITIVE ADJUSTMENT. Note the very fine threads on the adjustment shaft.**

**CONDITION**  
 Spread Pattern Skewed to the Right

Viewed from the operator's position, spread pattern is long to the right of the center of the spreader.



**PROCEDURE: - see photo B**  
 Turn counter clockwise the dial of the spread pattern shifter stem ①. Move the Equalizer all the way toward the center of the spreader (away from operator's position). ALL THE WAY.  
 To make spread centering correction, turn the dial ①, clockwise so the back side of the Equalizer ④ just barely shunts the product toward the outer side (toward the operator) as it falls on the spreading spinner.  
 Continue to move the Equalizer a very little at a time until a test spread shows the spread to be centered.



**THIS IS A VERY SENSITIVE ADJUSTMENT. Note the very fine threads on the adjustment shaft.**

## NOTICE!

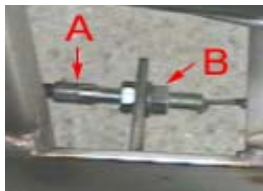
To avoid mis-application of product, streaking, or other imperfection:

- 1) Calibrate the spreader regularly.
- 2) Equalize or balance the pattern regularly
- 3) Keep spinner blades clean.
- 4) Replace rotary agitator if worn or bent.
- 5) Keep spreader clean and dry and well maintained (refer to page 10).
- 6) Test all products on non-valuable turf prior to treating desirable turf.
- 7) Use a double overlap (spread back to center) technique.
- 8) Never leave fertilizer in hopper - NEVER! Empty hopper, clean, and grease immediately after use.
- 9) Exercise extreme caution in windy conditions.

## WARNING!

To avoid serious bodily injury, turn off motor and remove the spark plug wire prior to performing any of the maintenance described on this page.

### To increase clutch engagement



#### Clutch Adjustment

- A - Clutch cable ferrel  
B - Jamb nut

1. Use a 12mm wrench to loosen the rear nut (B) on the lower clutch cable ferrel (A in diagram below).
2. Tighten the forward nut to pull the clutch bell crank arm (B) forward and tighten the rear nut.(B)
3. Test the clutch for proper operation and re-adjust

as necessary.

- A. With the transaxle in neutral, start themotor.
- B. Pull and release the clutch lever. NOTE: The transaxle input pulley MUST stop turning when the clutch lever is released (see belt guide adjustment).
- C. Shift into gear and test clutch operation. Readjust as necessary.

### Belt Guide Adjustment (see page 9)

The belt guide (C) in the diagram below helps disengage the drive belt (D) from the motor pulley (E). Improper adjustment will result in transmission damage.

1. With the clutch lever guide pulled, there must be a slight gap between the belt guide and the belt.
2. Release the clutch lever, the belt guide MUST contact the belt and push it away from the motor drive pulley.

To adjust:

- 1, With the clutch properly adjusted, loosen the bolt holding the V belt idler pulley (F) to the bell crank arm.
2. Pull and hold the clutch lever. Position the belt guide so that there is a slight gap between the belt guide and the belt. Tighten the idler pulley bolt.
3. Test and re-adjust as necessary.

### Spinner Generator Belt Adjustment

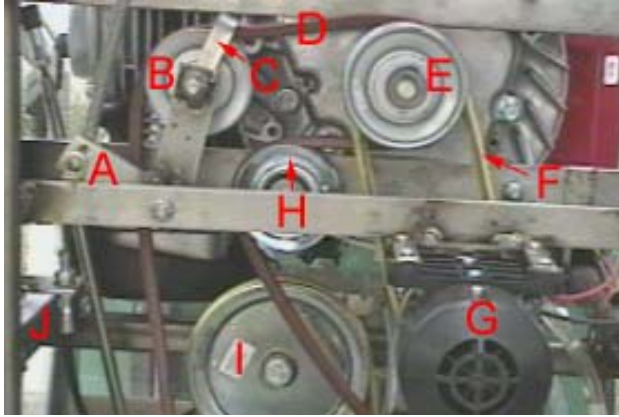
1. Remove the belt by stretching it while manually turning the pulley.
2. Using a wire cutter, cut a small section out of the belt at the connector. NOTE: Do not damage the connector.
3. Pull the excess off the connector and assemble the belt and reinstall.

(see Warning, page 9)



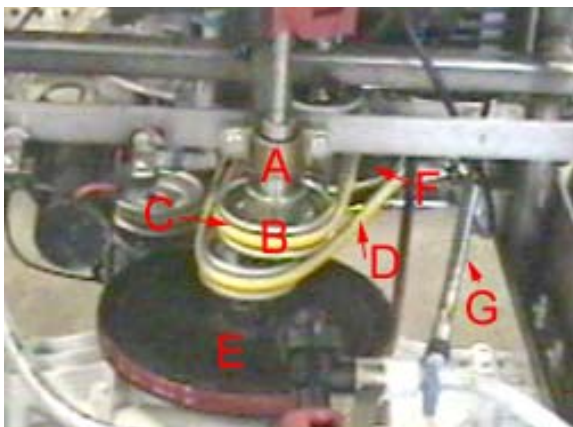
## WARNING!

Improper clutch and belt guide adjustment can result in a dangerous run-on situation, premature belt wear or transmission damage.



### BELTS & PULLEYS (above)

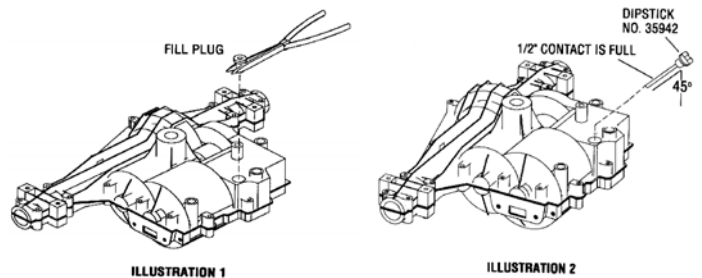
A - clutch bell crank	
B - Idler pulley, clutch	653610
C - clutch belt guide	
D - motor drive belt	653670
E - Motor drive pulley	653550
E1 - Generator drive pulley	653542
F - generator belt	653701
G - Generator	653740
H - Idler pulley, flat drive belt	653620
I - Idler pulley, spinner	653430
J - clutch adjustment ferrel	654130



### FRONT END PULLEYS (preceeding column)

A - Spinner lower bearing block	652120
B - Spinner pulley	653530
C - Upper spinner belt	653780
D - Lower spinner belt	653790
E - Transmissionn input pulley	653400
F - Spinner Idler pulley	653720
G - Shifter rod	

## Check Oil Level



1. Locate unit on a level surface.
2. Remove hood.
3. Locate the rubber fill plug next to the shift rod as it enters the transaxle cover.
4. With needle nose pliers or a neddle nose vise grip, work under the lip of the plug, rocking from side to side until the plug is removed (Illustration 1).
5. Insert diptick Part Number 35942. Insert the gauge at a 45 degree angle. Check for approximately 1/2 inch of oil when inserted. This is 16 ounces of EP90 gear oil (Illustration 2).
6. Reinstall the plug by lubricating it with WD40 oil or spray lubricant. An installation tool can be made by using a tool shown in Illustration 3.

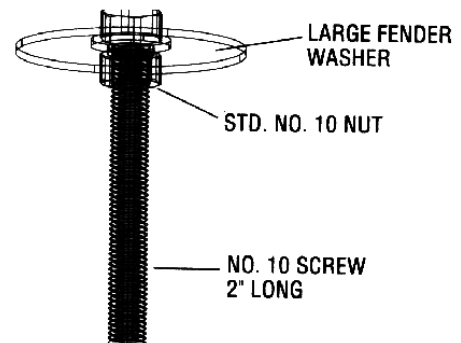


ILLUSTRATION 3

Break in	Daily	Weekly	Monthly	Scheduled Maintenance Procedure
X	X			Check engine oil level
X	X			Oil or grease articulating pivot joints
	X			Visual safety inspection of articulating joint area, looking for loose bolts, bending, or cracking of welds and metal braces
X	X			Check all hardware for tightness
		X		Grease rear wheel bearings
every 2 hrs		X		Check belt tension
		1st 20 hrs	every 50 hrs	Change engine oil (increase frequency in dusty conditions)
			every 50 hrs	Clean air filter (increase frequency in dusty conditions)
			X	Lubricate spinner bearings
			X	Lubricate clutch bell crank pivot
			every 300 hrs	Clean and adjust spark plug
		X		Grease spinner idler pulley
			X	Oil Spinner shaft lower bearing block
			X	Grease handle drop down latch mechanism

### Dry cleaning (preferred)

Use compressed air to remove fertilizer and residue from the machine. Then wipe with an oily rag. Pay particular attention to components under the hood.

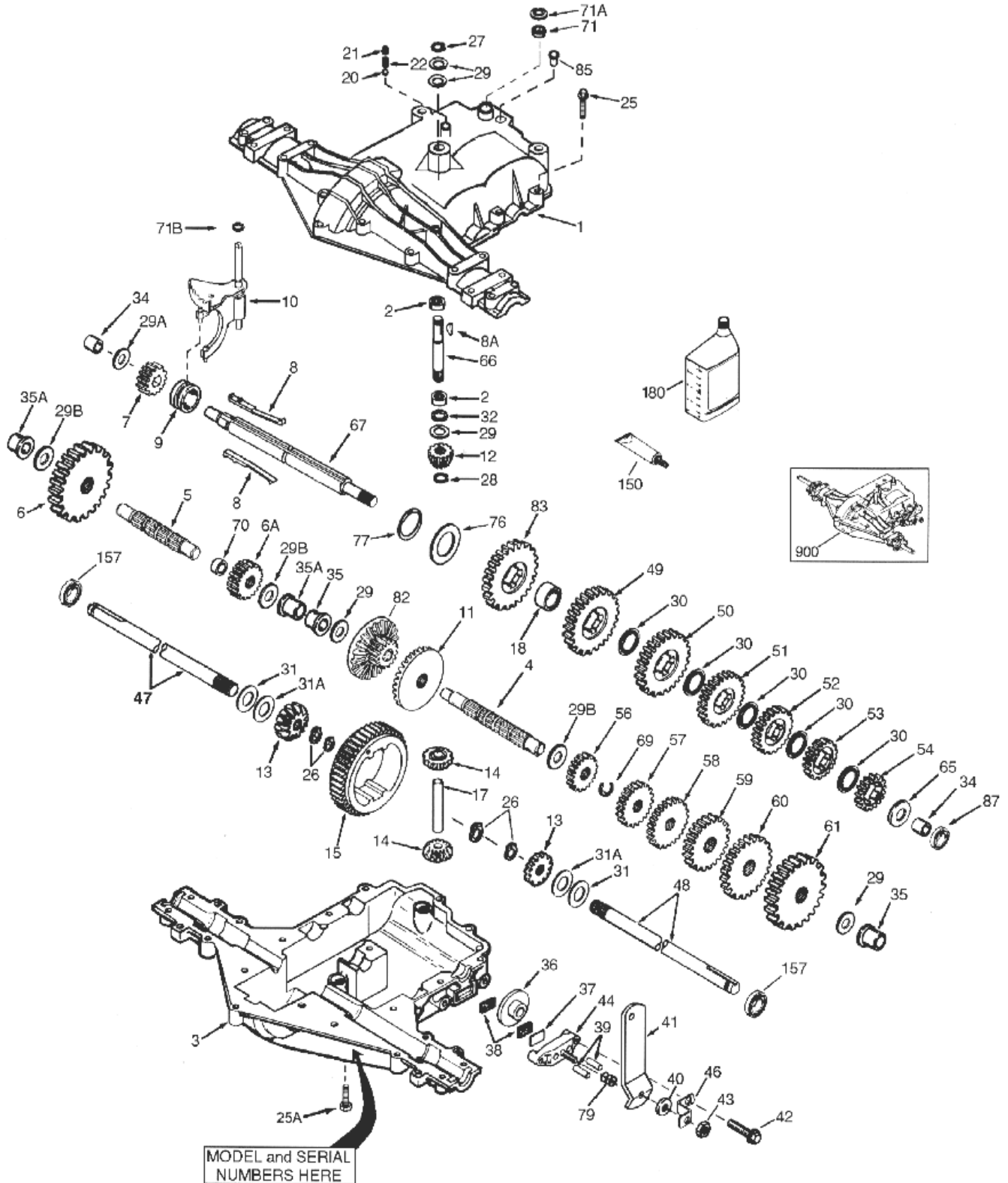
### Wet cleaning

When water is used, blow dry the spreader completely. Pay particular attention to drying the components under the hood and motor. NOTE: Good "dry cleaning" is preferable to a poor "wet cleaning".

## NOTICE!

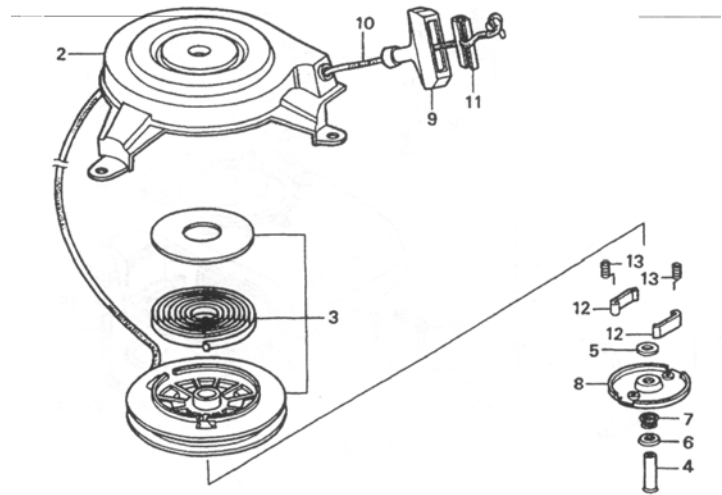
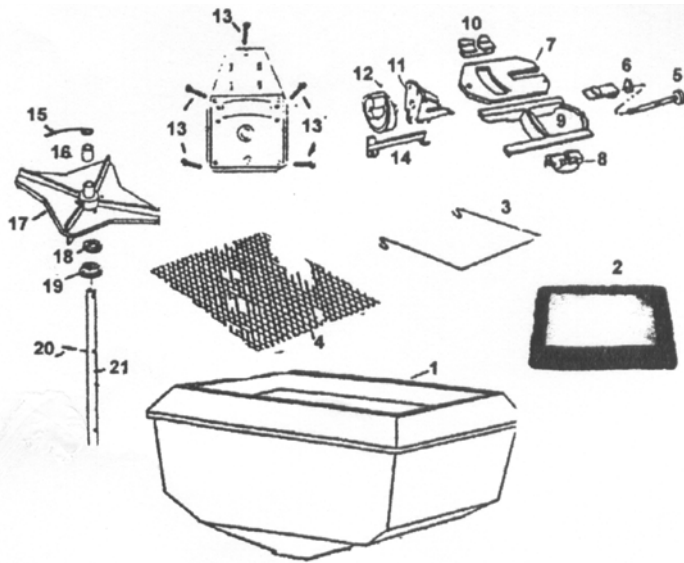
Keep the machine dry and clean. Fertilizer and water form an acid solution which will corrode the mild steel and aluminum components such as the transaxle, motor block, pulleys, and articulating joints.

Revised 4/99



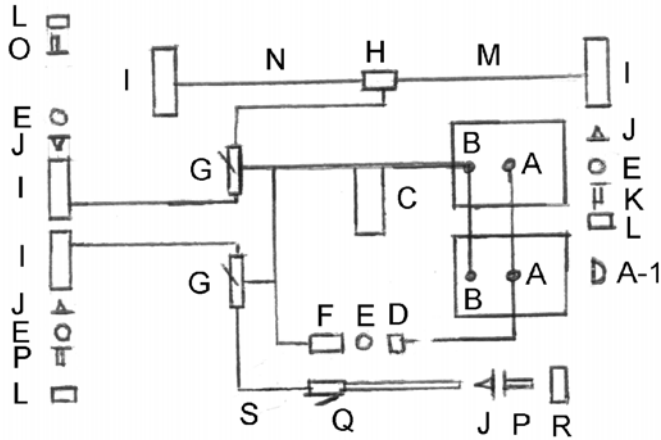
Ref.	Part #	Description	Qty
1	772147	Transaxle cover	1
2	780086A	Needle Bearing 5/8"	2
3	770128	Transaxle Case	1
4	776395	Countershaft	1
5	776409	Output Shaft	1
6	778364	Spur Gear (38 teeth)	1
6A	778369	Spur Gear (15 teeth)	1
7	778330	Spur Gear (11 teeth)	1
8	792180	Shift Key	2
8A	792047	Woodruff Key #9	1
9	784352	Shift Collar	1
10	784379	Shift Rod & Fork	1
11	778334	Bevel Gear (30 teeth)	1
12	778309	Input Bevel Pinion (13 teeth)	1
13	778368	Bevel Gear (13 teeth)(incl 14)	2
14	778368	Bevel Pinion (13 teeth)(incl 13)	2
15	778370	Ring Gear (43 teeth)	1
17	786188	Drive Pin	1
18	786102	Spacer 1.130	1
20	792077A	Ball 5/16" Dia	1
21	792078	Set Screw 3/8-16x3/8"	1
22	792079	Spring	1
25	792073A	Screw 1/4-20x1-1/4"	17
25A	792177	Screw 1/4-20x1-3/8"	2
26	792125	Retaining Ring (pkg of 2)	4
27	792035	Retaining Ring	1
28	788040	Retaining Ring	1
29	780072	Thrust Washer .627 ID	5
29A	780160	Thrust Washer .563 ID	1
29B	780051	Thrust Washer .762 ID	3
30	780108	Cup Washer 1.127 ID	5
31	780001	Washer (.056 wide) (Use as needed)	2
31A	780195	Flat Washer (.062 wide)	2
32	788083	Oil Seal 5/8"	1
34	780194	Bushing 9/16" ID	2
35	780193	Flanged Bushing 5/8" ID	2
35A	780197	Flanged Bushing 3/4"	2

Ref.	Part #	Description	Qty
47	774943	Axle (12-7/16" long)	1
48	774837	Axle (17" long)	1
49	778356	Spur Gear (29 teeth)	1
50/83	778338	Spur Gear (27 teeth)	1
51	778354	Spur Gear (23 teeth)	1
52	778352	Spur Gear (19 teeth)	1
53	778350	Spur Gear (16 teeth)	1
54	778346	Spur Gear (15 teeth)	1
56	778355	Spur Gear (11 teeth)	1
57	778337	Spur Gear (13 teeth)	1
58	788353	Spur Gear (17 teeth)	1
59	778351	Spur Gear (21 teeth)	1
60	778349	Spur Gear (24 teeth)	1
61	778345	Spur Gear (25 teeth)	1
65	780189	Flat Washer .563 ID	1
66	776442	Input Shaft	1
67	776396	Shifter & Brake Shaft	1
69	792170	Retaining Ring	1
70	786187	Spacer .890	1
71	788069	Seal	1
71A	792162	1/2" Washer	1
71B	788092	"O" Ring .426 ID	1
76	780090	Flat Washer 1.128 ID	1
77	788078A	Inverted Retaining Ring	1
79	792144	Spring	1
82	778333	Bevel & Spur Gear (30 & 13 teeth)	1
85	792154	Oil Fill Plug	1
87	788089A	Oil Seal 9/16"	1
150	788093A	Liquid Gasket RTV Silicone	1
157	788088A	Oil Seal 3/4"	2
180	730229A	Gear Oil 80W90	1



#	Description	Part Number
1	Hopper, Plastic	05-94-0054-5
2	Cover	05-94-0058
3	Screen Holder	05-98-0019
4	Screen	SS-96-0002
5	Adjustment Screw	05-94-0045
6	Jamb Nut	05-94-0087
7	Rate Gate	SS-94-0003
8	Gate Guide	05-94-0042
9	Diffuser	05-94-0043
10	Gate Guide	05-94-0042
11	Dial Mount	SS-97-0005
12	Dial	SS-94-0006
13	1/4-20x1/2 Screw	99-10-0205
14	Rate Gate Linkage	SS-94-0002
15	Rotary Agitator	SS-96-0003
16	Spinner Cam	05-94-0019
17	Spinner	SS-94-0012
18	Felt Washer	SS-92-0002
19	Hopper Bearing	SS-94-0007
20	Roll Pin 1/8x7/8	SS-90-0002
21	Spinner Shaft	05-97-0021
23	On/Off Cable	05-98-0018
24	Cable Jamb Nut	05-91-0009

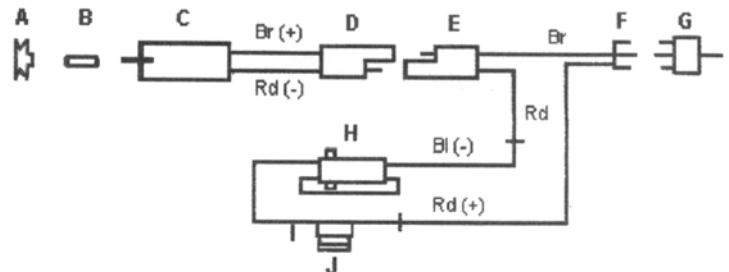
Description	#	Part Number
1. Starter Assembly	1	28400-ZG9-802
2. Housing Assembly	1	28402-ZG9-802
3. Pulley/Spring Assy.	1	28415-ZG9-802
4. Pin, Center	1	28419-ZG9-802
5. Plate A, Friction	1	28431-ZG9-802
6. Plate B, Friction	1	28432-ZG9-802
7. Spring, Friction	1	28441-ZG9-802
8. Retainer	1	28444-ZG9-802
9. Handle	1	28461-ZE6-T02
10. Rope, Recoil Starter	1	28462-ZG9-802
11. Handle, Reinforc...	1	28463-ZE6-T02
12. Ratchet, Starter	2	28485-ZE6-T02
13. Spring, Dog	2	28486-ZE6-T02



**PLUMBING PARTS**

A - 3 gal tank	204942
A1 - 3 gal tank lid	204943
B - in-tank strainer	451090
C - Pump	442072
D - QJ Nozzle cap 1/4 fpt	466446
E - QJ nozzle gasket	466626
F - 10 psi unloader	442427
G - Spray control valve, 3 way	480022
H - 1/4 tee	476022
I - QJ nozzle body, 8 psi	466441
J - 50 mesh strainer	464724
K - Nozzle, TF2VP	465220
L - QJ nozzle cap, red	466622
M - Boom arm, right	474321
N - Boom arm, left	474322
O - Nozzle, XR11003VS	465128
P - Nozzle, XR80015VS	465028
Q - Wand	372027
R - TJ nozzle cap	463819
S - 1/4 clear braid hose	363220
T - 3/8 id x 1/2 od tubing	362210

	pulsating flow	pump does not prime	pump does not turn on	pump does not turn off	pump over heats	low pressure or flow	
•	•				•		restriction in discharge line
	•				•		restriction in suction line
	•		•		•		debris in check valves
•				•			nozzle too small
	•						leak (air) in suction line
					•		leak (liquid) in discharge line
					•		leak in diaphragm
		•					on/off switch in off position
		•					loose wire connection
		•					thermal protector tripped
		•	•				defective pressure switch
		•					blown fuse
		•			•		defective motor
	•		•		•		supply tank empty
•				•			high voltage
	•		•		•		low voltage
	•		•		•		worn motor bearing
				•			pump not ventilated
				•			pump in direct sun
•	•			•	•		adjustable tip set too low



**WIRING**

A - Pulley, Generator	653530
B - Bushing, Generator pulley	652024
C = Generator	653740
D - Quick connect plug	
E - Quick connect plug	
F - Jumper wire	
G - Switch, SPDT mon..on/off/on	344324
H - Pump, cavalry	442070
I - Fuse holder	342430
J - Fuse, 7.5 amp mini	342440

## Bearings, Pulleys, Belts

Articulating 3/4 Rod End-female  
652470  
Articulating 3/4 Rod end-male  
652471  
Spinner Pillow Block  
652220  
Spinner Idler Bushing  
652120  
1/4 Tie Rod End  
652475  
1/4 Urethane Belting  
653700  
1/4 Urethane Belting connector  
653702  
Generator Bushing 652022  
Spinner Pulley Bushing  
652038  
Pulley, Spinner Idler assembly  
653720  
Pulley, Idler Bushing  
652024  
Pulley, Transaxle input  
653730

## Hardware

Spring, Brake Pull  
654502  
Spring, Return  
654504  
Brake Lever 654180  
Clutch Lever 215520  
Motor, 5.5hp Honda Vertical  
449026  
Cable, Clutch/Brake 654130  
Grips, Foam 654190  
Woodruff key, Motor shaft  
651610  
Cotter Pin 651600  
5/8 Shaft Collar, sintered

## Electrical

Generator 653740  
Fuse, 7.5 amp mini 342440  
SPST momentary on/off/on

## Tires

13/500x6 Tire, Rim, Hub  
654620  
13/500x6 2P TR  
654810  
13/500x6 Tube  
654930  
R64DN Rim 654680  
417-5/8 BB Hub  
654710

## Plumbing

1/4mpt x 1/4 hose barb  
452220  
1/4fpt x 1/4 hose barb  
454002  
1/4hb x 3/8hb elbow 454016  
3/8hb x 3/8hb elbow 456317  
1/4mpt x 1/4hb elbow  
454022  
1/4mpt x 3/8hb elbow  
454023  
50 mesh strainer  
464724  
1/4 hose clamp  
481238  
3/8 hose clamp  
481242  
3 Gallon Tank  
204942  
3 Gallon Tank Lid  
204943  
Tank Strainer  
451090  
Spray Control 3 way Valve  
480022  
Nozzle Body, 8 psi 466441  
Pressure Relief Valve

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**ONE EACH PER PACKAGE**

<b>PART #</b>	<b>DESCRIPTION</b>	<b>PRICE EA</b>
653701	Generator Belt	5.30
653780	Upper Spinner Belt	6.95
653790	Lower Spinner Belt	7.95
653670	Drive V Belt	14.79
653610	Bell Crank V idler Pulley	8.75
653620	Flat idler Pulley	8.75
432112	Hopper Control Cable	12.00
654130	Clutch Cable	10.00
215520	Clutch Lever	13.00
465220	Turbo Floodjet Nozzle	1.94
466622	Nozzle Cap & Gasket	1.39
464724	50 Mesh Strainer	.70
466441	Nozzle Body	8.37
449036	Honda Starter Kit	25.00
654148	Cable stop nut	.50
654506	Link shift, square hole	3.00
432142	Spyker agitator wire	1.20
432128	Spyker diffuser	4.80
432122	Spyker Rate gate diff guide (2)	1.82 ea
432055	Spyker rate gate linkage	.50
432052	Spyker dial mount	2.38
432054	Spyker dial, plastic	2.24
432057	Spyker jamb nut	.76
432126	Spyker adjustment screw assy	5.84
	TOTAL	129.99

**Perma-Green Supreme Inc** hereby warrants to the original purchaser that products manufactured by Perma-Green Supreme Inc. will be free from defects in material and workmanship FOR A PERIOD OF (1) ONE YEAR FROM THE DATE OF PURCHASE, EXCEPT AS NOTED BELOW.

***PROTECTION PLAN***

The Company will provide the replacement parts found to be defective. Such replacement will be free of charge to the purchaser for (1) one-year from the date of purchase.

*This Warranty is subject to the following exceptions and limitations:*

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Notification of need for warranty service  
Transportation to/from place of warranty repair

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30 Days on parts and normal wear items i.e., (belts and rubber components, bearings, cables, controls, clutches, etc.)

***ENGINES, ENGINE ACCESSORIES, & PEERLESS PRODUCTS***

Covered only by manufacturer's warranty

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No warranty is extended on any parts that are not genuine Perma-Green Supreme Inc. parts.

Perma-Green Supreme, Inc. reserves the right to incorporate any changes in design into its products without obligation to make such changes on products previously manufactured.

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