Service Manual

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Gsix

SERVICE MANUAL 120 VT

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SECTION 5	**Service Details and Instructions**		25
	5.1	Use of This Section	25
	5.1.1	Warnings, Cautions, and Notes	25
	5.1.2	Arrangement of Illustrated Parts List and Exploded Views	25
	5.1.3	Relationship of Text to Theory Illustrations and Exploded Views	25
	5.2	Power Unit Checkout	26
	5.3	Power Unit Disassembly - General	26
	5.3.1	Cover Assembly Removal	26
	5.3.2	Fan Case Assembly and Wheel Shaft Main Assembly Removal	27
	5.3.3	Base Pan	29
	5.4	Drive System Assembly	29
	5.4.1	Drive System Assembly Removal	29
	5.4.2	Neutral/Drive Pedal Assembly Service	30
	5.4.3	Rear Axle Assembly Service	31
	5.4.4	Install Drive System Assembly	33
	5.5	Headlight Cap/Slide Bracket Assembly, and Handle Pivot Spring Removal	33
	5.6	Motor Unit Assembly Service	34
	5.6.1	Motor Unit Assembly Removal	34
	5.6.2	Fan Replacement	35
	5.6.3	Carbon Brush Cartridge Replacement	36
	5.6.4	Power Switch Replacement	36
	5.6.5	Armature Assembly and Front Bearing Replacement	37
	5.6.6	Field Assembly Replacement	37
	5.6.7	Assembly of Motor	37
	5.6.8	Install Motor Assembly	38

SECTIO 6	**Slide Bracket Service Instructions**		41
	6.1	Slide Bracket Assembly Service	41
	6.1.1	Slide Bracket Assembly Component Replacement	41
	6.1.2	Handle Pivot Spring Assembly	42
	6.1.3	Final Assembly Unit	43
SECTION 7	**Outer Bag Service Instructions**		45
	7.1	Outer Bag Assembly Service	45
	7.1.1	Bag Top Assembly Service	45
	7.1.2	Removal/Installation of Bag to Mini Emtor	45
SECTION 8	**Belt Lifter, Attachment Hose, and Headlight Service**		47
	8.1	Belt Lifter, Replacement	47
	8.2	Attachment Hose Swivel Tube or Suction Blower Replacement	47
	8.3	Headlight Lens and Bulb Service	48
	8.4	Frame Bracket Removal and Replacement	48
SECTION 9	**Illustrated Parts List and Exploded Views**		51

NOTES

2.3 TOOLS AND METERS

Tools required include:

- Screwdrivers - Flat - Assorted Sizes
- Screwdriver - Phillips - Assorted Sizes
- Pliers - Assorted
- Impact Screwdriver
- Bench Vice
- File - Round Rattail - 8" long
- File - 1/4" pillar - 6" long
- Tap Wrench
- Threading Tap 6 x 32
- Threading Tap 8 x 32
- Threading Tap 10 x 24
- Threading Tap 10 x 32

In addition, certain special tools and supplies available from the factory are:

Tools:

- Fan Locking Pin T104 S
- Torque Screwdriver Kit T167
- No. 0200 Snap Ring Expander Pliers T154
- No. 0300 Snap Ring Compressor Pliers T155
- Open End Wrench 11/32" T156
- Bearing/Slide Centering Gage TT-150
- Rear Bearing Puller - Universal T127A
- TX20 Torx Bit 1" T157
- Torx Bit Set - T166S (TX10 1", TX15 1", and TX20 1-15/16")

Supplies:

- Gsix™ Touch-up Paint 309299
- Sealant, Silicone, T117 Tube and T118 Cartridge
- Bearing Plate Eyelet Grease T159S
- Ratchet Lock and Ratchet Pedal Grease T159S
- Rear Axle Grease T160S
- Gasket Lubricant 289094S

Meters required for analysis and electrical safety testing are:

- Watt meter - with range to 5000 watts
- Ohmmeter or Battery - Powered Test Light
- Ohmmeter - 0.001 Ohm accuracy
- High Voltage Insulation Tester - range 500/2500 VAC

These meters should be available through electrical equipment or motor service and supply companies in your area. Follow the manufacturer's operating instructions when using these meters. Practice safe working habits at all times.

NOTES

4.1 USE OF THIS SECTION

4.1.1 Warnings, Cautions, and Notes

- Observe all Warnings, Cautions, and Notes in this section as well as those sections to which you will be referred.

4.1.2 Arrangement of the Troubleshooting Section

- The troubleshooting section is arranged in two parts, first, a matrix which deals primarily with mechanical problems, and second, an extensive electrical resistance test.
- The user will look up the problem in the table. This table lists the problem, provides probable cause(s) and a solution for each probable cause. Each solution is followed with a reference in parentheses. This reference is made to the service sections of this manual (sections 5, 6, 7, and 8).
- When the problem appears to be electrical in nature, and the solution(s) provided in the troubleshooting matrix do not alleviate the problem, the user is to proceed to the Open Circuit Isolation Sequence.
- Whenever a cleaner has experienced an electrical problem, the unit must undergo a high potential test (see paragraph 4.5) prior to being returned to service.

4.2 KIRBY Gsix™ TROUBLESHOOTING GUIDE

4.2.1 TROUBLESHOOTING MATRIX

The following matrix guides the user to the probable cause and a solution to problems which may occur with use.

When the problem appears electrical in nature, and the information contained in the following table does not correct the problem, proceed to paragraph 4.4 for information on conducting an electrical resistance check.

Troubleshooting Table

PROBLEM	PROBABLE CAUSE	SOLUTION
1. Motor does not run	1. No power supply 2. Defective power cord 3. Nozzle and Mini Emtor connection 4. Power switch defective 5. Carbon brush stuck in holder 6. Brush lead wire defective 7. Armature or field defective 8. Electrical short	1. Check household current 2. Replace power cord (5.2 E.-K.) 3. Verify nozzle and Mini Emtor lugs actuate the switch levers (5.2.A.-C.) 4. Replace power switch (5.6.4) 5. Replace carbon brush assembly (5.6.3) 6. Replace brush lead wire (5.6.3) 7. Replace armature (5.6.5) or field (5.6.6) 8. Conduct electronic resistance test (4.4.2, 4.4.3) and repair short
2. Motor only runs on one speed	1. Actuator lug broken off of nozzle or hose 2. Power switch defective 3. Field coil defective	1. Replace nozzle or hose suction blower 2. Replace power switch (5.6.4) 3. Replace field coil (5.6.5)
3. Motor continues to run with nozzle or Mini Emtor removed	1. Power switch defective	1. Replace power switch (5.6.4)
4. Motor runs briefly and stops or motor runs intermittently	1. Power cord defective or loose at the power switch 2. Power switch defective. 3. Carbon brush sticks in holder	1. Replace power cord (5.2 E.-K.) or power switch. (5.6.4) 2. Replace power switch (5.6.4) 3. Replace carbon brush assembly (5.6.3)

Troubleshooting Table		
PROBLEM	**PROBABLE CAUSE**	**SOLUTION**
5. Armature/carbon brushes spark	1. Motor binds	1. Replace motor (5.6.1) or defective motor component (5.6.2-5.6.7)
	2. Carbon brush stuck in holder	2. Replace carbon brush assembly (5.6.3)
	3. Defective armature or field coil	3. Replace armature (5.6.5) or field coil (5.6.6)
	4. Defective power switch	4. Replace power switch (5.6.4)
	5. Broken or cracked fan blade	5. Replace fan blade (5.6.2)
6. Motor vibrates	1. Fan blade chipped or worn 2. Fan pulley worn 3. Motor bearings defective	1. Replace fan blade (5.6.2) 2. Replace fan pulley (5.6.2 B) 3. Replace motor bearings (5.6.5 E., 5.6.5 G.)
7. Motor runs hot	1. Blocked exhaust duct 2. Defective armature or field coil	1. Clear exhaust duct (5.6.1D) 2. Replace armature (5.6.5) or field coil (5.6.6)
8. Motor bearing noise	1. Defective bearings	1. Replace front motor bearing (5.6.5 E.) or rear bearing (5.6.5.G)
9. Squeal noise from motor on wind down	1. Rubber seal creeps on bearing plate eyelet	1. Apply thin coat of T159S grease to eyelet under rubber seal (5.6.2.F.)
10. Clicking sound from motor area	1. Foreign object in fan chamber	1. Remove fan case then remove foreign object (5.3.2 A.)
	2. Excess fan case sealant	2. Remove fan case then scrape off excess fan case sealant and reseal fan case (5.3.2 A.)
	3. Damage to armature commutator bar	3. Replace armature (5.6.5)
	4. Motor bearing defective	4. Replace front motor bearing (5.6.5E.) or rear bearing (5.6.5 G.)
	5. Motor running backwards	5. Brush leads reversed. Correct brush lead routing (Fig. 30, 5.6.8 F)

Troubleshooting Table		
PROBLEM	**PROBABLE CAUSE**	**SOLUTION**
11. Base pan dirty inside.	1. Motor seal pinched/leaking 2. Horn gasket torn	1. Reset or replace motor seal (5.6.8 A.) 2. Replace horn gasket (5.3.3)
12. Headlight bulb does not work	1. Bulb defective 2. Loose wiring or incorrect connection 3. Break in wiring 4. Field coil defective	1. Replace bulb (8.3) 2. Reconnect wiring correctly (Fig. 30) 3. Replace defective wire (Fig. 30) 4. Replace field coil (5.6.6)
13. Drive system assembly has weak assist in forward and/or reverse	1. Tread worn on rear wheels 2. Slide sticks 3. N/D pedal and/or axle defect 4. Internal drive system assembly defect	1. Replace rear wheels (5.4) 2. Replace or clean defective slide components (6.1.1) 3. Rebuild N/D pedal (5.4.2) and/or axle (5.4.3) 4. Replace drive system assembly (5.4.1 and 5.4.4)
14. Unit creeps in forward and/or reverse	1. Slide sticks 2. Paper bag overfilled 3. Handle pivot spring assembly sticks 4. Excessive dirt built up inside cloth bag.	1. Replace or clean defective slide components (6.1.1) 2. Replace paper bag 3. Determine cause and repair 4. Determine cause of dirt leakage. Also clean or replace outer bag
15. Drive system assembly operates in opposite direction handle fork is pushed.	1. Motor wired backwards at power switch	1. Reconnect brush leads correctly (Fig. 30, 5.6.7 L.)
16. Unit hops, jumps, skips, or chatters.	1. Brush roll belt stretched or oversized 2. Rug plate clamped improperly or bent 3. Brush roll out of alignment 4. Improper slide adjustment 5. Drive system assembly defect	1. Replace belt 2. Reattach, repair, or replace rug plate (8.1.F) 3. Reposition brush roll (8.1 E) 4. Readjust slide (6.1.1) 5. Replace drive system assembly (5.4.1 and 5.4.4)

Troubleshooting Table		
PROBLEM	**PROBABLE CAUSE**	**SOLUTION**
17. Drive system assembly rattles on wind down	1. Primary drive belt tight 2. Primary drive sprocket loose	1. Adjust primary drive belt (5.4.4 F.1 and F.2) 2. Replace drive sprocket. Remove clip and sprocket off shaft
18. Drive system assembly grinds when pedal is in NEUTRAL	1. Cam cracked on N/D pedal 2. Bracket/lever assembly worn or bent 3. Overload clutch hangs up on axle 4. Bevel gear vibrates on axle shaft	1. Replace N/D pedal (5.4.2 A-E) 2. Repair or replace bracket/lever assembly (5.4.2 A-E) 3. Clean or replace axle components (5.4.3 A-O) 4. Replace clutch overload gear set or axle shaft (5.4.3)
19. Drive system assembly squeaks when rolling unit on floor in neutral with motor off.	1. Lack of lubrication on axle	1. Lubricate rear axle (5.4.3 G)
20. Clicking noise when unit changes direction.	1. Slide strikes the slide casting 2. Drive ball missing from axle 3. Worn axle end or wheel hub	1. Adjust slide assembly (6.1.1 E.3. to E.7.) 2. Rebuild axle assembly and install two new drive balls 5.4.3 D. and E.) 3. Replace axle or wheel assembly (5.4.3 C.-K.)
21. Unit pulls to right or left.	1. Rear wheels unevenly worn 2. Rug plate improperly installed or bent 3. Brush roll improperly installed 4. Front wheel shaft bent or broken 5. Base pan twisted 6. Fan case or nozzle defect 7. Only three wheels touching floor	1. Replace rear wheels (5.4 A.-C.) 2. Reattach, repair, or replace rug plate (8.1 F)) 3. Reposition brush roll (8.1 E) 4. Replace front wheel shaft assembly (5.3.2 B.) 5. Replace base pan (entails entire disassembly of unit) 6. Replace fan case (5.3.2A) or nozzle (5.3.1) 7. Loosen fan case and realign to base pan (5.3.2)

Troubleshooting Table		
PROBLEM	**PROBABLE CAUSE**	**SOLUTION**
22. Brush roll belt breaks.	1. Brush roll binds 2. Motor runs backwards	1. Remove brush roll ends to clean, or replace brush roll 2. Brush leads reversed. Correct brush lead routing (Fig. 30 5.6.7 L)
23. Does not pick up dirt/little or no suction	1. Stretched or broken belt 2. Brush roll out of adjustment 3. Brush roll binds 4. Fan blade broken or worn 5. Paper bag overfilled 6. Fill tube clogged 7. Fan chamber clogged 8. Nozzle clogged 9. Motor wired backwards	1. Remove brush roll to replace belt 2. Reposition brush roll (8.1 E.) 3. Remove brush roll ends to clean, or replace brush roll (8.1 E) 4. Replace fan (5.6.2) 5. Replace paper bag 6. Remove paper bag and unclog fill tube 7. Clean fan chamber (5.2.B) 8. Clean nozzle 9. Brush leads reversed. Correct brush lead routing (Fig. 30, 5.6.7 L.)
24. Handle fork leans too far forward.	1. Latch plate bent 2. Handle pivot assembly bent	1. Replace latch plate 2. Replace handle pivot assembly (6.1.2 B.)
25. Handle fork falls down.	1. Paper bag overfilled 2. Handle pivot assembly spring weak	1. Replace paper bag 2. Replace handle pivot assembly (6.1.2 B.)
26. Tilt latch lever failure	1. Tilt latch lever broken	1. Unscrew tilt latch shaft to replace lever
27. Bag latch broken	1. Replace bag latch	1. Cut off old latch (**do not cut strap**) and slide new latch onto strap (7.1.1)
28. Suction/blower connection or swivel tube defect	1. Broken connector or tube	1. Replace defective part (8.2)

4.2.2 Assembly of Unit and Paragraph References

Once the problem has been serviced, assemble the unit. Repair assembly references are given below.

1. Motor assembly (5.6.7)
2. Motor and exhaust installation (5.6.8)
3. Slide bracket casting installation (6.1.1 E.)
4. Axle and Neutral/Drive pedal assembly (5.4.3 P.-R.)
5. Drive system assembly installation (5.4.4)
6. Cover shell (6.1.3 A) and scuff plate installation (6.1.3 B.)
7. Power cord installation (6.1.3 B.)

4.2.3 Micron Magic HEPA Filtration System

The micron magic HEPA filtration system is comprised of the disposable paper bag, the outer cloth bag, and the fill tube/mini Emtor assembly.

4.2.4 Gsix™ Bag Top (7.1.1)

4.3 Electrical Guide-120 Volt-Kirby Model Gsix™ Cleaner

The following guide is intended to aid in the diagnosis of common Model Gsix™ electrical problems. This guide assumes that service is performed by qualified service people familiar with electrical service procedures and who follow safe practices.

4.3.1 Basic Electrical Design:

The Gsix™ Model is powered by a two speed universal motor. Basic circuit elements include a motor field, armature, and a switch. The headlight is powered by a motor field tap. Figure 2 is a block diagram of the cleaner in the low speed mode and Figure 1 represents a schematic diagram of the same circuit.

The Gsix™ has two safety interlock switches that prevent the cleaner from operating in an unsafe condition. For the motor to run:

1. There must be a floor nozzle, carpet shampoo nozzle, floor care system nozzle, air intake guard, or a hose attached to the front of the machine (to activate the front switch plunger).
2. There must be a bag, hose, or shampoo tank attached to the exhaust port (to activate the side switch lever).

If attachments are not seated properly and the switch levers are not activated, the motor will not come on when the on/off rear foot pedal is depressed.

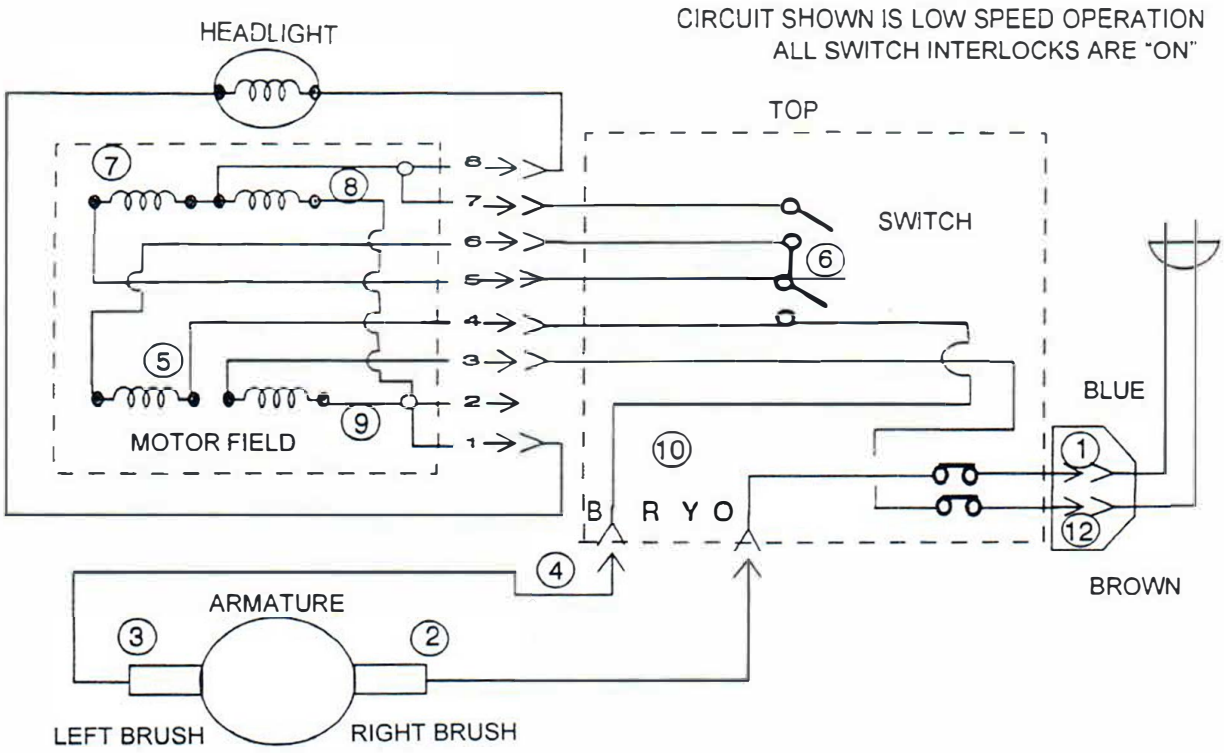

Figure 1. Schematic Diagram

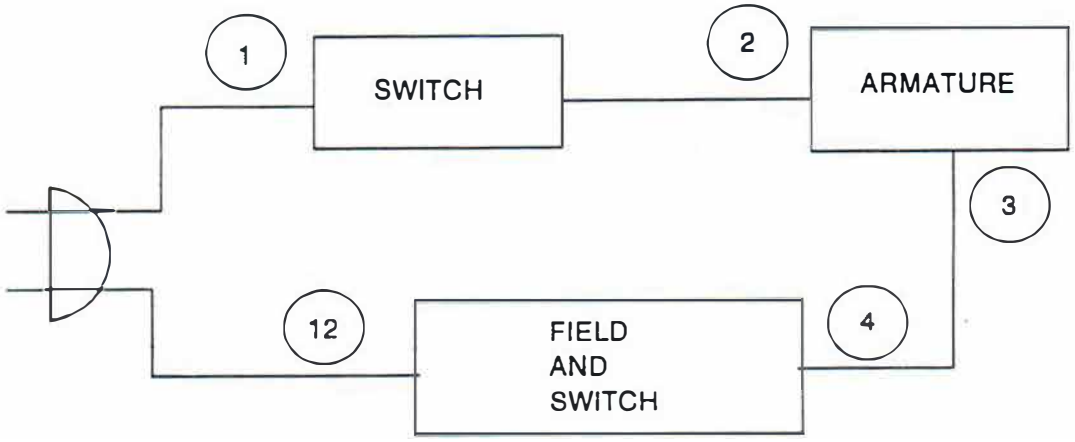

Figure 2. Block Diagram

4.4 Common Electrical Defects - Cause and Troubleshooting Guide

A troubleshooting video and this service manual are available through the Customer Service Center or the International Warehouse in your location.

4.4.1. Motor Will Not Run

The most common electrical defect is that the motor will not run, almost always because there is an open circuit point in the cleaner's electrical system. To check for an open circuit after the power supply and power cord have been eliminated as a cause of the problem:

1. Unplug the cleaner and remove the top cover.
2. Visually inspect the cleaner. Look for loose or missing wires, loose motor brushes, or brushes that are jammed in the holder and not making good contact with the armature.
3. In the following sequence: put the cleaner in neutral, carefully plug in the cord, release and attach the nozzle to the front, release and attach the bag to the exhaust port, depress the rear on-off switch *one time only*. The cleaner should come on. If it does not come on, *do not* depress the rear on-off switch and *do not* remove the nozzle or bag.

   Unplug the cord. The cleaner should be in the on condition and ready for the Open Circuit Isolation Check.

Equipment

Ohm-meter, 0.001 ohm resolution or better (Fluke Model 8012A digital multimeter).

Definition

Continuity is defined as an ohm-meter reading less than 50 ohms.

Procedure

Refer to Figure 1 and Figure 2 for a pictorial view of the Gsix™ circuit and block diagram of the circuit. When the motor works properly, the circuit should show continuity from point 1 to point 12. The most probable reason for a motor that will not run is that there is an incomplete circuit (open circuit) which will test as no continuity at the defect point.

The following Chart 4.4.1 gives a sequence for locating this open circuit point.

Chart 4.4.1 Open Circuit Isolation Sequence (120 Volt)		
Procedure	**Continuity (yes/no)**	**Comment**
Step 1: Attach one of the multimeter probes to point 1 (upper switch prong) and the other to point 12 (lower switch prong).	yes	Unit functions properly. Problem is in supply voltage, power cord, or an intermittent open circuit
	no	There is an open circuit in the unit. Go to step 2.
Step 2: Attach one of the multimeter probes to point 1 (upper switch prong) and the other to point 2 (brass brush holder by switch).	yes	Problem is between point 2 and point 12. Go to step 3
	no	Problem is in switch or the connecting wire See paragraph 4.4.5.
Step 3: Attach one of the multimeter probes to point 1 (upper switch prong) and to point 3 (brush holder away from switch).	yes	Problem is between point 3 and point 12. Go to step 4
	no	Problem is in the armature, brush holder assembly, or brush contact to armature. See paragraph 4.4.4 for armature test.
Step 4: Attach one of the multimeter probes to point 1 (upper switch prong) and the other to wire terminal, point 4 (remove wire from switch terminal marked B).	yes	Problem is between point 4 and point 12. Go to step 5.
	no	Problem is in the wire from point 3 to point 4 or the terminal connection.
Step 5: With the B switch wire still removed, put one probe on the switch exposed B terminal and the other probe on point 12 (the lower switch prong).	yes	Problem is intermittent, or the open circuit was missed. Retest from step 1.
	no	Problem is either the motor field or switch. See paragraph 4.4.3 and paragraph 4.4.5.

4.4.2 Defect in the Motor Field

A high resolution ohm-meter can be used to help find a motor field problem.

Equipment

Ohm-meter, 0.001 ohm resolution or better (Fluke Model 8012A Digital Multimeter with low ohm reading option, or equivalent).

Procedure

Field resistance measurements are made at the field terminals. Figure 3 provides a form for recording readings and comparing these readings to establish limits.

Perform these checks making sure all parts are kept at a temperature of 65-75°F (18-24°C) for several hours before and during the check.

4.4.3 Defects in the Motor Armature

If it is suspected that the motor armature has a defect, a resistance check with a high resolution ohm-meter can be used to help find the problem.

Equipment

Ohm-meter, 0.001 ohm resolution or better (Fluke Model 8012A Digital Multimeter with low ohm reading option, or equivalent). A four wire bridge circuit (usually expensive) can be used in place of the meter.

Procedure

Armature ohm readings are performed by measuring the resistance of the commutator bars 180 degrees apart. The ohm value for the 11 bar to bar readings, transversing 180 degrees (measure opposite bars) is from 0.9 to 1.25 ohms.

Check for the following resistance:

Motor Field Terminals	Resistor	Resistance	Reading
5 and 7	B	.444/.510	_____
7 and 8		0	_____
8 and 2	C	.200/.230	_____
2 and 1		0	_____
1 and 3	D	.200.230	_____
3 and 4		open	_____
4 and 6	A	.444/.510	_____
6 and 5		open	_____
1 and 6 with 3 and 4 connected		.644/.740	_____
3 and 4 with 5 and 6 connected		1.287/1.481	_____

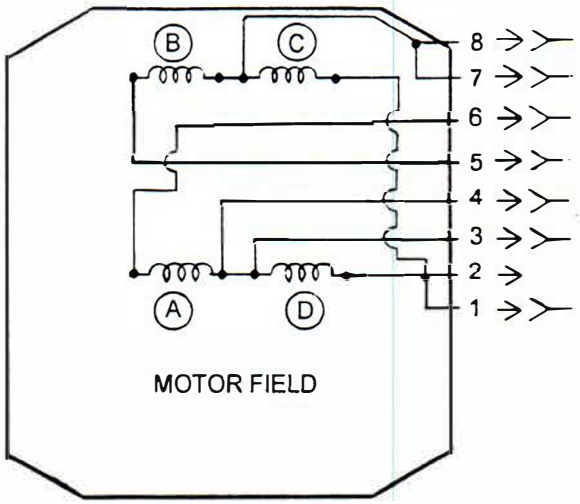

Figure 3. 120 Volt Motor Field Resistance

4.4.5 Defect in the Switch

See Figure 4. If it is suspected that the switch has a defect, a resistance check with a regular ohm-meter can be used to help find the problem.

Equipment

Ohm-meter, 0.001 ohm resolution or better (Fluke Model 8012A digital multimeter).

Procedure

For the switch to be on, the two safety interlocks must be in the proper position. In front of the switch are two movable plungers. The lower plunger must be pressed in to allow the on condition (continuity between field terminal #3 and point 12) of the switch. In a similar fashion, the side activation lever from the exhaust port safety interlock must be in the forward position to allow the switch to be on. Finally, the foot pedal activates the orange plunger in the back of the switch which switches the main contacts (between points 1 and 2) to the on position.

Main Contacts On Check

To test for the on condition, move the two interlocks to the on position noted above, then push the rear plunger once. Put a jumper wire between the switch prongs (points 1 and 12). With the ohm-meter across terminal O and field terminal #3 the ohm-meter should read continuity. If either of the safety interlocks are moved to the off position (rest condition), the ohm-meter should read an open circuit. Movement of the rear pluger should not allow the switch to come back on until both safety interlocks are in the on positon.

In addition to the main contacts, there are field contact terminals and a speed blade contact that could cause the lack of continuity.

Speed Selection Contacts On Check

To check the speed blade contact, use the following sequence:

1. Remove the switch. Attach one ohm-meter probe to switch field terminal 5 and the other probe to switch field terminal 6. The field terminals are located on the back side, enclosed in a plastic cover. Mounted on the cleaner, the top switch terminal mates with field terminal 7. In the off (rest) position, or with the lower front plunger pushed in, the ohm-meter should read continuity between field terminals 5 and 6.
2. Push in the upper front plunger (high speed activation). There should be no continuity between field terminals 5 and 6
3. Measure between fields 4 and 5. There should be no continuity between field terminals 4 and 5 when the high speed plunger is out (rest), and the ohm-meter should read continuity with the upper plunger in.
4. Measure between field terminals 6 and 7. There should be no continuity with the high speed plunger out, and there should be continuity with the plunger in.

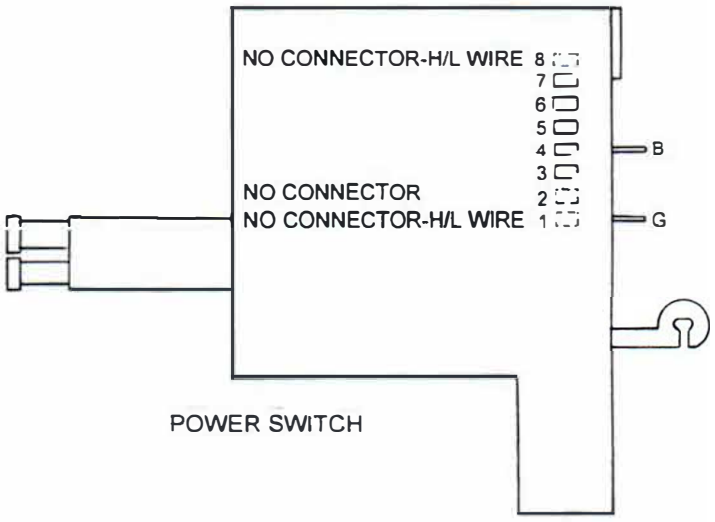

Figure 4. Switch Speed Selection Contacts

4.5 High Potential Test of Finished Units

Purpose:

The high potential test is one method of checking the electrical insulation characteristics of finished units. A high voltage potential is provided from the internal wiring of the cleaner and the exposed metallic case of the cleaner. Current that passes from the live internal wiring to the case is measured, and if the current is above a specified trip value, a fail indication is given by the test instrument. A pass reading indicates that the insulation is limiting the current to a safe value.

The high potential test might be performed on a cleaner in the shipping box or on the test table but if the cover is removed for any reason, the high potential test should be done after the unit is assembled and prepared for the customer.

The following procedure should be used to high potential test the finished units.

1. Record the following information:
   a. date
   b. location
   c. signature of the person making the check
   d. serial number of the cleaner being checked
   e. special comments regarding the particular test conditions or reasons
   f. results of check (to be recorded later in the procedure)
2. To perform the high potential test the cleaner must be in the on condition. There must be an accessory in the front mounting (like a nozzle) and an accessory on the side exhaust port (like a dust bag) for the cleaner to be on. One way to ensure the cleaner is on is to run the cleaner, and while running, pull out the plug.
3. With the cleaner in the on mode, the plug removed from the wall outlet, and the high potential tester off, attach one of the probes from the high potential tester to the cord prongs and the other probe to the exposed metal surface of the cleaner. The cleaner should pass with either cord prong or both prongs connected to the test probe.
4. NOTE: The Generation Series cleaners contain a circuit board with some elements that can be damaged by the sudden application of high voltage. When the high voltage for this test is applied, the voltage should be at zero volts initially, and then brought up to the test voltage in approximately three seconds.
5. The test voltage should remain on for 60 seconds, and there should be no indication of a failure. The present standards indicate that the test voltage should be 3750 VAC.
6. Record the results and turn the high potential tester down to zero voltage for the next test unit.

NOTES

5.1 USE OF THIS SECTION

5.1.1 Warnings, Cautions, and Notes

Observe all warnings cautions and notes.

5.1.2 Arrangement of Illustrated Parts List and Exploded Views

- The parts list and related exploded views are provided at the end of this section.
- Item numbers on the exploded views relate to the parts list contained in Tables 1 through 12.

5.1.3 Relationship of Text to Theory Illustrations and Exploded Views

Two types of illustrations are provided for clarifications of the procedural text contained within this section.

- Theory Illustrations

Throughout the text, line drawings of the Gsix™ Kirby appear that associate accompanying procedural steps with the unit. Text references, the location or the illustration and its title clarify its use.

- Exploded Views

An item number on the exploded views can be used to locate a part in the appropriate parts list. Using the item number, additional information, such as the part number, nomenclature, and assembly relationship can be found in the parts list and exploded views contained in Tables 1 through 12.

5.2 POWER U IT CHECKOUT

If a Gsix™ Kirby requires service. checkout as follows:

A. *See Figure 5.* Remove rug nozzle (or hose if attached) and Mini Emtor.

!CAUTION

Ensure cord is disconnected before disassembling unit.

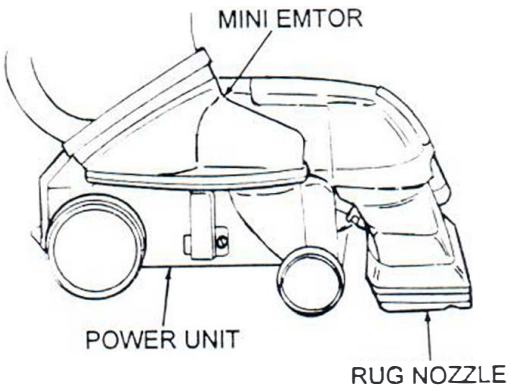

Figure 5. Power Unit

B. Inspect fan, fan chamber and hose for breakage or foreign material that could prevent fan rotation or interrupt air flow into bag.

!WARNING

Do not attempt to operate the motor without rug nozzle or hose and Mini Emtor properly installed. Interlock features of the switch will not permit motor operation unless the inlet and outlet are properly engaged to their mating parts. Any attempt to override the interlock could result in physical injury.

C. Install rug nozzle or hose and Mini Emtor.

D. Operate switch pedal and observe power unit operation.

E. If the power unit does not operate properly, inspect the power cord for damage or evidence of shorts or opens.

F. If the power cord is frayed or damaged, test unit with a known good power cord.

G. Check power unit operation as described above.

H. If the power unit does not operate properly, see power unit disassembly paragraph 5.3.

I. The unit will require removal of the cord cover and cover screw prior to power cord disconnect. Remove the cover hold down screw. Push the cover forward toward the front of the unit, then pull down to allow tab of cover to clear base pan.

J. Installation is the reverse of removal. Tighten cover screw to 5-8 in-lbs.

K. A T157 torx screw bit is required to remove and install the cord cover screw.

5.3 POWER UNIT DISASSEMBLY GENERAL

Access to the internal components of the power unit can be gained by using the following procedures. Disassemble only as required to identify a component that requires service or replacement.

5.3.1 Cover Assembly Removal

A. Remove rug nozzle, Mini Emtor, and handle with bag from power unit.

B. *See Figure 6.* Remove scuff plate by:

1. Remove screw at the top of the scuff plate for cord clip hold down.

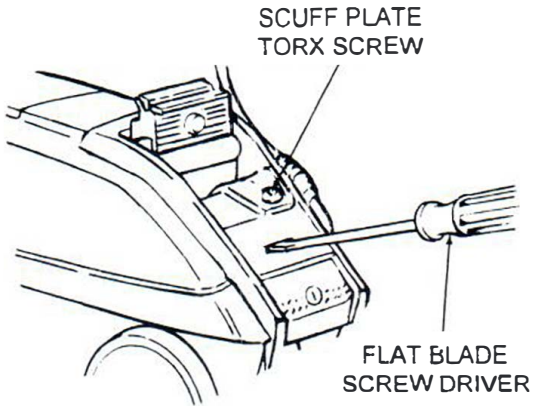

Figure 6. Scuff Plate Removal

2. Insert flat bladed screw driver in slot and lift.
3. Apply downward pressure to top of scuff plate and carefully slide to rear to disengage clips.

C. Remove cover casting by:

1. Raise headlight cap and remove two flat head screws at front of cover casting.
2. Remove two screws from both sides of the on/off switch on the back of cover. (These screws are exposed after the scuff plate is removed.)
3. Lift cover off and slide to rear to clear slide bracket assembly and headlight cap.

5.3.2 Fan Case Assembly, and Wheel Shaft Main Assembly Removal

!NOTE

Removal of the fan case is necessary only if replacement of the fan, nozzle lock, or fan case is required. For fan replacement see paragraph 5.6.2.

A. Fan Case Assembly:

1. *See Figure 7.* Remove one flat head screw from front of fan case assembly. This screw is located just below the power switch interlock.

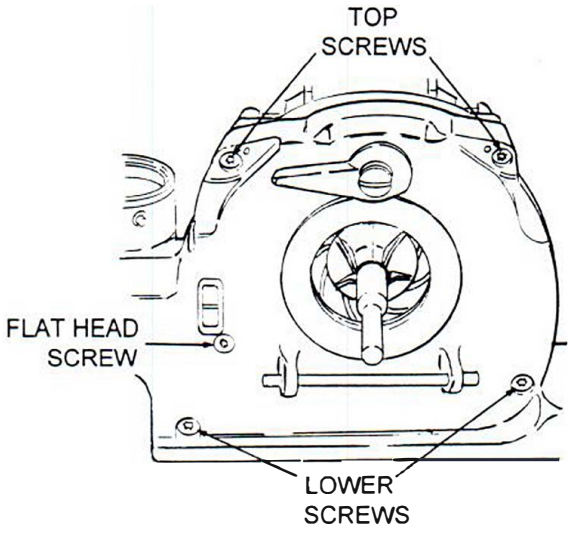

Figure 7. Fan Case Assembly Screw Removal

2. Remove two screws from top of fan case.
3. Remove two remaining screws from lower end of the fan case.
4. *See Figures 8 and 9.* Using one of the two methods shown, break seal between fan case and base pan and remove fan case.

!NOTE

Screwdriver method may be used with motor installed.

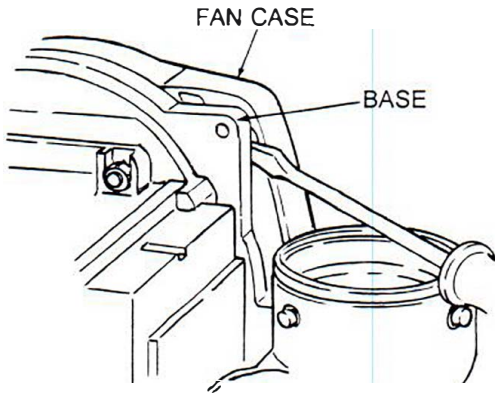

Figure 8. Insert flat bladed screwdriver in opening between fan case and base pan, then pry to break seal.

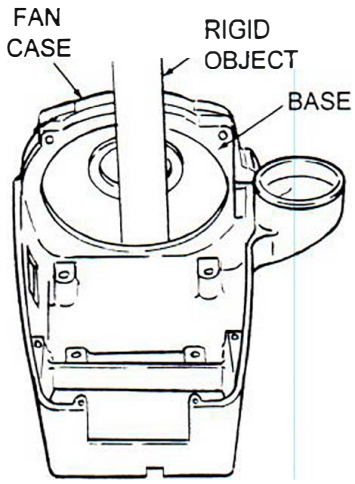

Figure 9. Place rigid object between fan case and base pan, then pry to break seal.

5. If the fan blade requires replacement, refer to section 5.6.2.

6. Prior to the re-assembly of fan case, clean old sealant from joining surfaces and apply new silicone sealant, P/N T117 or T118 as shown in Figure 10.
7. Assemble fan case assembly to base pan with screws and hand tighten.
8. Place fan case and base pan assembly with wheels on a flat surface.
9. Verify all wheels are touching flat surface and tighten screws to 24-32 in-lbs.

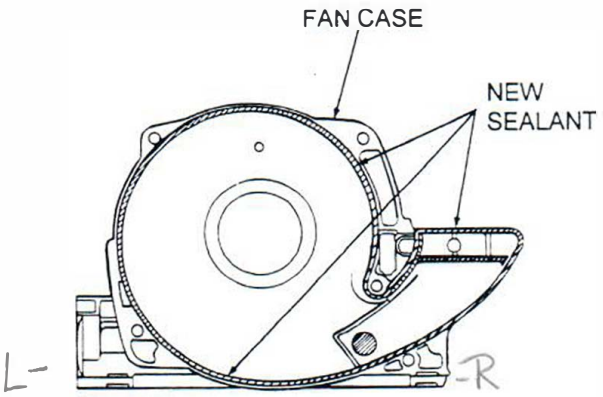

Figure 10. Fan Case Sealant Application

B. Wheel Shaft Main Assembly:
   1. *See Figure 11.* Remove two screws and shaft clamps from bottom of fan case.
   2. Remove wheel shaft main assembly, ratchet lock and spring from fan case.

C. Wheel Shaft and Ratchet Lock Service:
   1. Inspect wheel shaft components for breaks or cracks and center shaft for distortion. Replace wheel shaft assembly if any of these conditions exist.
   2. Inspect teeth area of ratchet lock and ratchet pedal for wear. Replace the ratchet lock or wheel shaft assembly or both components if height adjustment slippage occurs.

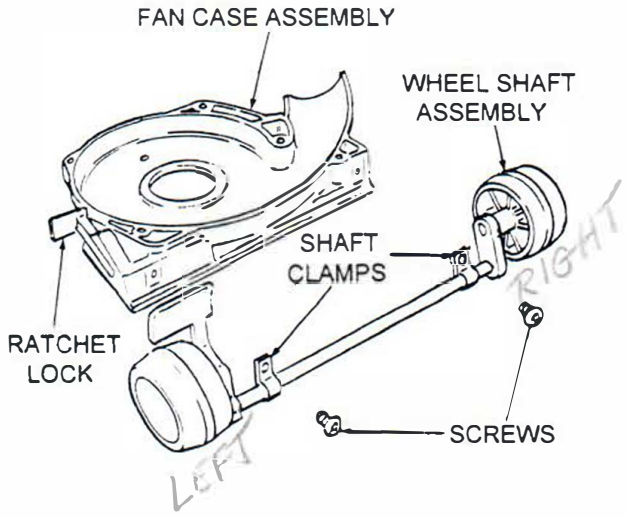

Figure 11. Ratchet Lock and Wheel Shaft Removal

3. Remove all debris from the fan case ratchet box, ratchet lock, spring and ratchet pedal teeth before installation to fan case.
4. Apply a thin layer of T159S grease to all inside surfaces of ratchet box and teeth area of ratchet pedal.
5. Insert spring into hole of ratchet lock. Then install both into ratchet box and compress.
6. While ratchet lock and spring are compressed, install wheel shaft to fan case by inserting teeth of ratchet pedal onto teeth of ratchet lock.
7. Align wheel shaft on fan case and install shaft clamps and screws. Tighten screws to 18-24 in. lbs.

When installing a new transmission containing the black 10/24 primary transmission gear, **make sure** to install the corresponding black motor sprocket gear.

When installing a new motor assembly containing the new 10/24 motor sprocket gear, **make sure** to install the corresponding black primary transmission gear.

5.3.3 Base Pan

If the O-ring horn adapter requires replacement:

A. *See Figure 12.* Remove the o-ring horn adapter using a flat bladed screw driver between the gasket and basepan. Twist the blade while prying the adapter upward.

!NOTE
Do Not remove or grind the rivets.

B. Remove all debris from the exhaust horn area of base pan. Check horn adapter rivets for excessive movement. Replace if necessary.

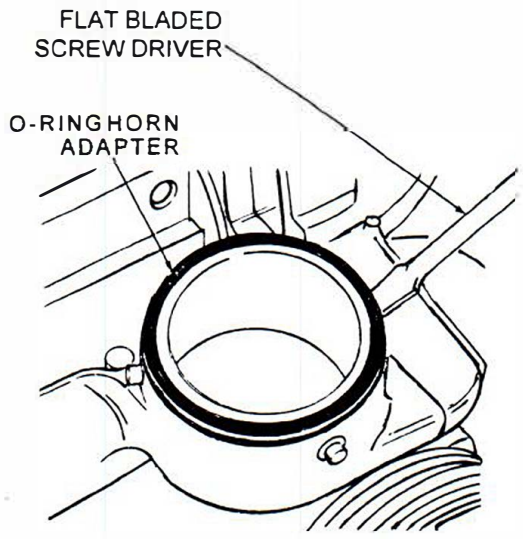

Figure 12. O-ring Horn Adapter Removal

C. Place o-ring horn adapter assembly into base pan, keeping assembly centered in horn. Apply force evenly (by hand) to top of assembly until it snaps into place. If assembly by hand is difficult place a smooth protective surface (preferably plastic) over entire assembly and tap until o-ring horn adapter assembly snaps into place.

! CAUTION
Never tap or strike gasket directly.

5.4 Drive System Assembly

The drive system assembly is a sealed unit and should only be serviced at Kirby. However, wheel covers and wheels may be replaced without removing drive system assembly from power unit as follows:

A. *See Figure 13.* Insert a thin flat bladed screwdriver through slots in back of wheel and gently twist to release spring tabs of wheel cover. Lift off wheel cover.

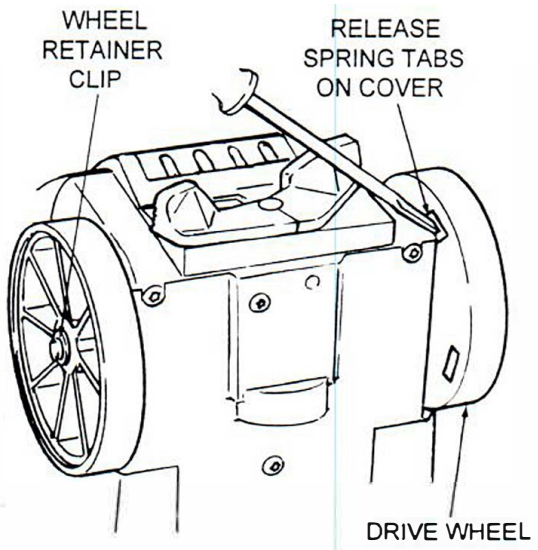

Figure 13. Drive Wheel Cover and Wheel Replacement

B. Use ring expander pliers, Tl 54, to remove retainer clip from axle.

C. Remove wheel and replace, then install retainer clip.

D. Install hub cap by inserting tabs through slots in wheel. Hub cap may be damaged if tabs are not located in wheel slots.

5.4.1. Drive System Assembly Removal
Remove the drive system assembly as described below. Detailed service information on the drive system assembly is provided in section 5.4.2.

A. *See Figure 14.* Using a thin flat bladed screwdriver, carefully pry the pivot points of the power switch foot pedal off the pivot pins formed in the drive system housing.

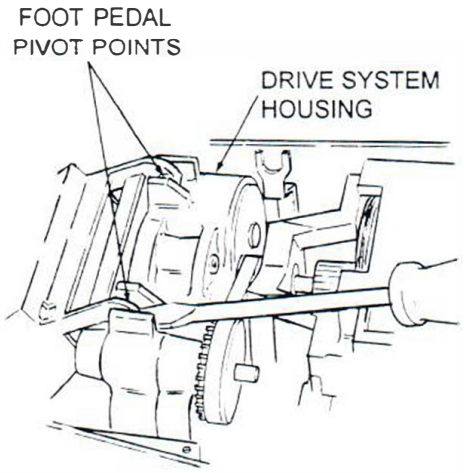

Figure 14. Foot Pedal Removal

B. Carefully lift power switch foot pedal up and out of power unit until sufficient clearance is available to slide power switch actuating rod out of foot pedal. Leave actuating rod connected to power switch.

C. Turn the power unit over as shown in Figure 15.

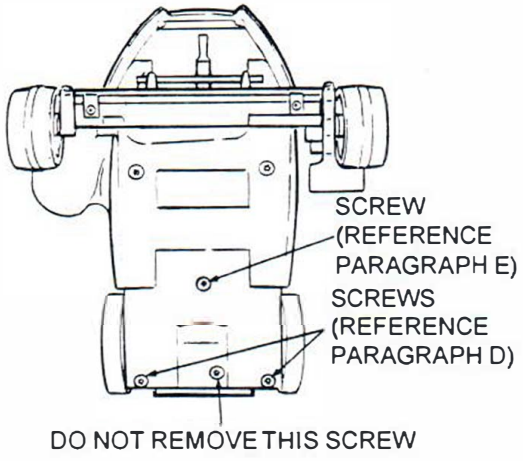

Figure 15. Bottom of Drive System Assembly Housing

D. Remove the two screws closest to the drive wheels.

E. Remove the screw from the center of the drive system assembly. Do not remove the screw at the center rear of the drive system assembly at this time.

F. While supporting drive system assembly, turn the power unit over. Position power unit as shown in Figure 16.

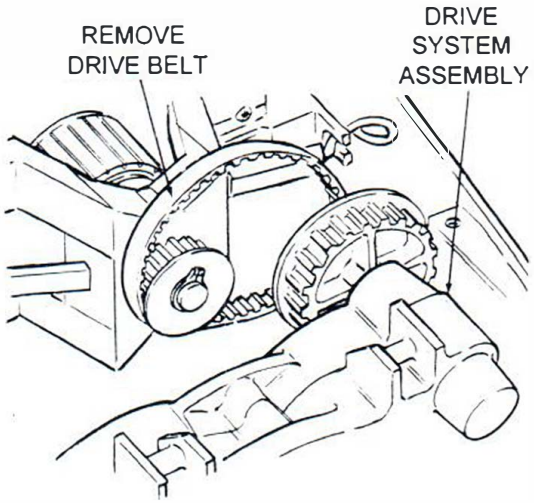

Figure 16. Drive Belt and Drive System Assembly Removal

G. Set N/D pedal in drive mode.

H. Lower the drive system assembly to get some slack in the drive belt. Then remove drive belt.

I. Make sure power switch actuating rod is pointing upward, then remove the drive system assembly from the power unit.

5.4.2 Neutral/Drive Pedal Assembly Service

Refer to section 5.4.1 for drive system assembly removal and section 9, Figure 44 for exploded view of N/D pedal and rear axle assembly

A. After drive system removal, test N/D pedal assembly for proper shifting into both neutral and drive modes. Also check the break-

away pedal pivot for freedom of movement. Shifting malfunction or extremely tight breakaway pedal will require replacement of N/D pedal, bracket cam or rear axle components.

B. Remove N/D pedal assembly by removing screw in bottom of the drive system assembly, and lifting up and pulling out.

C. Remove bracket cam assembly from N/D pedal assembly shaft by raising bracket cam frame from pedal body, then pulling off.

D. *See Figure 17.* Inspect finger of bracket cam assembly for breaks or wear and for a bent or twisted frame. Finger should move back and forth freely. If these conditions exist, bracket cam assembly needs replacement. These conditions may result from clutch half overload gear hang up on drive balls of rear axle. Refer to section 5.4.3 for rear axle service.

E. *See Figure 17.* Inspect cam of N/D pedal assembly for cracks or loose fit on shaft knurling. Replace N/D pedal assembly if either condition exists.

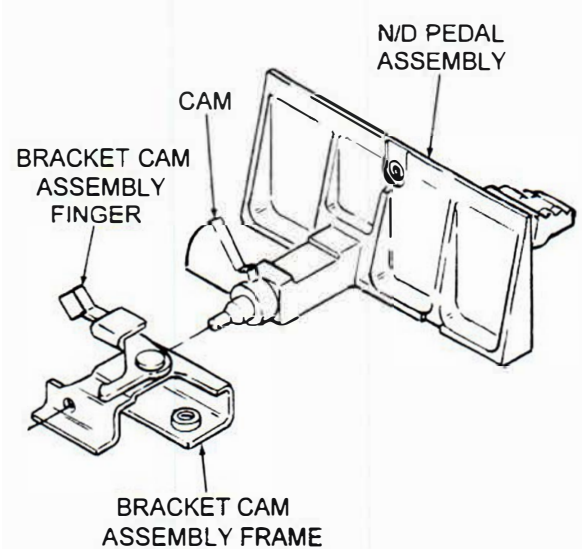

Figure 17. Bracket Cam Assembly and N/D Pedal

5.4.3 Rear Axle Assembly Service

A. After N/D pedal and bracket cam assemblies are removed from drive system, loosen both axle retainer screws and position both left and right axle retainers away from axle bushings.

B. Grasp one or both rear wheels and pull complete axle assembly from back of drive system.

C. Remove both wheel hub caps, wheels and wheel retainer clips as described in section 5.4.

D. Left side of axle consists of one axle bushing, one bearing, one drive bevel gear and one clutch half overload gear. Right side of axle consists of one axle bushing, one bearing, one spring and one ball drive retainer. One drive ball rests in each of the two recessed holes in axle. Two drive balls are required for proper operation. When removing components, keep in the same order and position as noted.

E. If drive ball recess holes in axle are misaligned, replace axle. Test this condition by sliding clutch half overload gear over the drive balls. If there is any resistance or hang up, replace axle.

F. If drive system assembly makes a ratcheting noise and there is no evidence of gear shavings on inside base of drive system assembly, replace drive bevel gear and clutch half overload gear. If gear shavings are evident, replace drive system assembly.

G. If there is a growling noise in neutral mode inspect axle surface for wear. If worn, replace rear axle. If there is no evidence of damage or wear, clean off debris and apply a thin layer of T160S grease on axle just to right of drive bevel gear. Slide bevel gear across grease three times to ensure that axle is lubricated where drive bevel gear rides.

H. If there is a bearing noise from the drive system assembly, replace axle bearing(s). If bearing does not spin freely, replace.

I. *See Figure 18.* Position axle so that left side of axle has the greatest distance from the axle drive balls to the end of axle.

J. From the left side of axle, install the clutch half overload gear with the slotted end over the axle drive balls, then install the drive bevel gear with teeth facing teeth of clutch half overload gear. Install bearing with washer side against drive bevel gear. Install axle bushing with longer shoulder toward bearing. Install wheel with flat side toward axle bushing, then install wheel retainer clip and hub cap. *See Figure 18.*

K. From right side of axle, install ball drive retainer against clutch half overload gear with cup side toward gear, install spring against ball drive retainer. Install bearing with washer side against spring. Install axle bushing with longest shoulder toward bearing. Install wheel with flat side toward axle bushing, then install wheel retainer clip and hub cap. *See Figure 18.*

L. *See Figure 18.* After the rear axle is completely assembled, move the left bearing to the right toward the clutch half overload gear assembly. Insert left axle bushing into the left bushing sleeve of the drive system casting, with tab pointing up, and right side of axle angled away from drive system assembly.

M. Place the left bearing just to the right of the left bearing tabs and the clutch half overload gear assembly aligned with its pocket in rear of drive system casting.

N. With the right side of the axle still angled away from the drive system assembly, compress the spring with the right bearing so that the right bearing is positioned just to the left of the right bearing tabs, then press the axle assembly into the drive system assembly. The right axle bushing must rest in the right bushing sleeve of the drive system casting with tab pointing up.

O. Position the axle retainers so that the curved portion rests over the round surface of the axle bushing and points toward the outside edge of the drive system casting. Tighten screws to 18-24 in-lbs.

P. Install bracket cam assembly to the N/D pedal assembly. Depress the N/D pedal to the drive side. Rotate lever on bracket cam assembly counter clockwise until it stops, slide the N/D pedal shaft through the hole in the bracket cam frame, then align notch in bracket cam frame on N/D pedal body.

Q. Install the N/D pedal and bracket cam assemblies on the drive system assembly by positioning the bracket cam finger between the drive bevel gear and the clutch half over load gear and placing the tab on

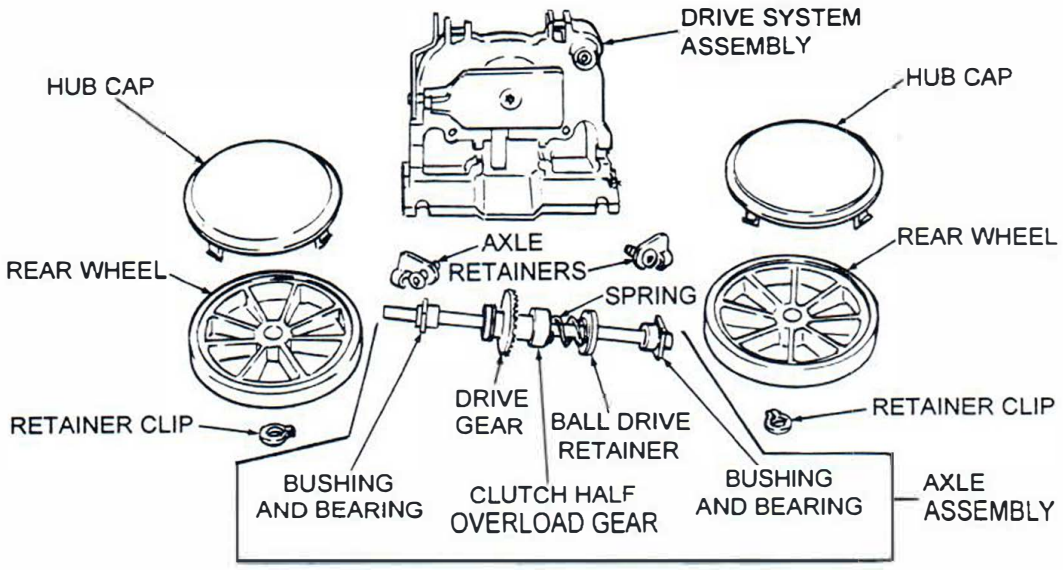

Figure 18. Drive System Assembly and Axle Assembly Components

the bottom of the N/D pedal body into the hole in the bottom of the drive system casting.

R. Align the threaded hole in the N/D pedal body with the hole in bottom of the drive system casting located to the left of the tab hole, then install the N/D pedal hold down screw with washer attached. Tighten screw to 12-16 in-lbs.

5.4.4 Install Drive System Assembly

A. Place drive belt on the drive system pulley.

B. Put drive system assembly in drive and hold in left hand. Hold switch actuator rod against right side of base pan pointing upward.

C. Insert drive system assembly through the bottom of the base pan.

D. Place rivet on left side of handle pivot spring assembly into yoke of drive system linkage.

E. Install drive belt on motor pulley.

F. Align drive system assembly and secure in the base pan with three screws, tightening the front center screw first. Tighten screws to 22-26 in-lbs.

1. If belt is too tight, loosen screws and shift drive system assembly to left (ratchet side) and re-tighten screws.
2. Using moderate downward pressure, belt should deflect 3/8" to 1/2" between gears.

G. Install on/off pedal.

1. *See Figure 14.* Apply a thin layer of T159S grease to both tabs at top of housing.
2. Use a flat bladed screwdriver to move actuator rod left to clear slide bracket casting leg.
3. Place actuating rod in foot pedal hole and firmly press both pedal pivot points onto drive system tabs.

5.5 Headlight Cap/Slide Bracket Assembly, and Handle Pivot Spring Removal

For detailed service information on the components of these assemblies, see paragraphs 6.1.1, 6.1.2, and 6.1.3. Remove this assembly as follows:

!NOTE

All three of these components are assembled to the slide bracket casting. This casting is attached to the base pan with two screws at its rear legs and two screws through the top front of fan case housing.

A. *See Figure 19.* One of the headlight leads has an in-line connector covered by a clear piece of insulating tubing.

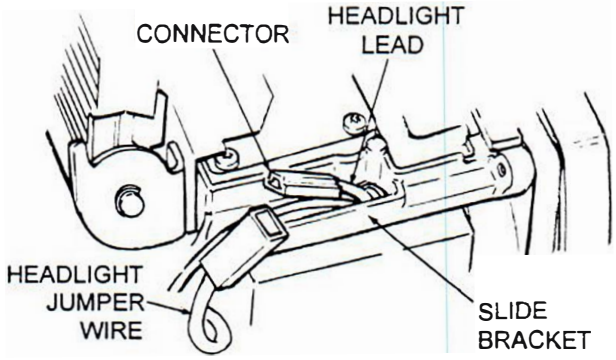

Figure 19. Separation of In-line Connector of Headlight Leads

B. If the light wire assembly, jumper wire or slide bracket casting need to be replaced, cut and remove tie wrap from headlight leads. Slide clear insulated tubing from in-line connector and separate connection. When reinstalling connector, insulated tubing must extend at least 1/8 inch past either end of the connector.

C. Disconnect remaining headlight cap electrical lead from the power switch.

D. Remove two screws from rear legs of the slide bracket casting.

E. *See Figure 20.* Remove two screws at the top of the fan case. These screws pass through the fan case assembly and base pan and thread into the slide bracket casting. Remove headlight cap/slide bracket assembly and handle pivot assembly as a complete unit.

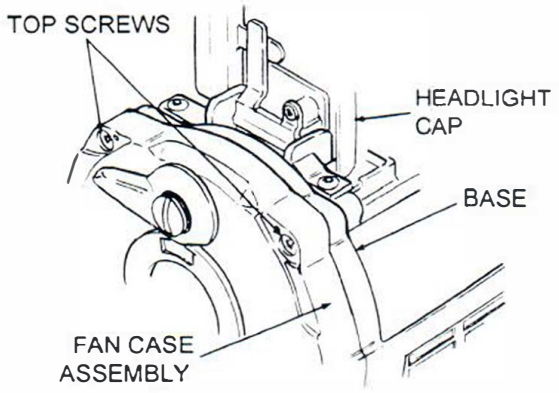

Figure 20. Headlight Cap/Slide Bracket Assembly/Handle Pivot Assembly

F. If the slide bracket casting requires replacement, remove tie wrap and black insulation from right leg of slide bracket casting.

On new slide bracket casting, wrap black insulation around upper portion of right leg of casting and secure with a tie wrap to prevent chafing of headlight lead wires.

Make sure black insulation does not contact primary drive gear of drive system after slide bracket casting is installed on base pan.

Tighten front screws to 24-32 in-lbs.

Tighten rear screws to 16-20 in-lbs.

5.6 MOTOR UNIT ASSEMBLY SERVICE

5.6.1 Motor Unit Assembly Removal

Remove the motor unit assembly as follows:

A. *See Figure 21.* Turn the power unit over and remove the two screws from the recessed holes in power unit. (See CAUTIO at end of this section).

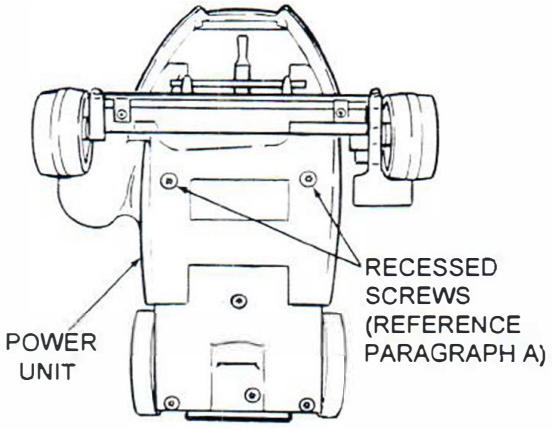

Figure 21. Motor Unit Assembly Removal (Bottom)

B. *See Figure 22. Turn* the power unit over and remove the two screws from rear of motor unit assembly. (See CAUTION at end of this section).

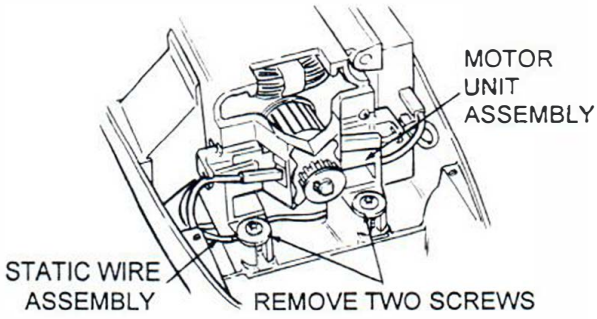

Figure 22. Motor Unit Assembly Removal (Top)

C. Remove static wire assembly from the left rear motor hold-down screw.

D. *See Figure 23.* Remove exhaust duct screw. Then place flat bladed screw driver in slot. While prying exhaust duct away from motor, lift from underneath to remove.

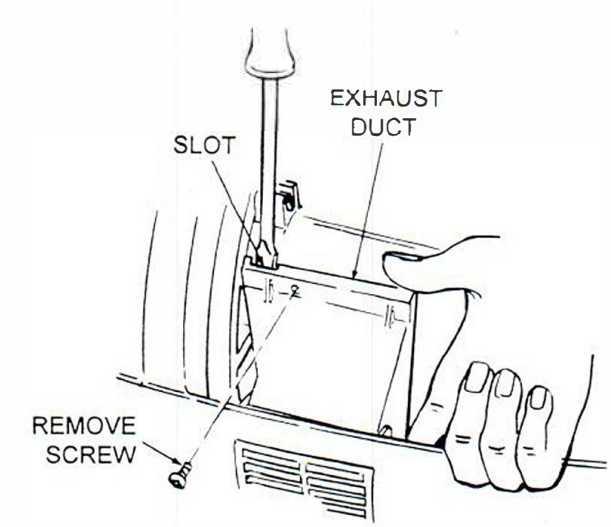

Figure 23. Exhaust Duct and Grill Removal

E. While holding base pan down, remove motor assembly by gently lifting up and out on rear of motor unit assembly.

F. The motor seal must be retained in the bearing plate groove before installing motor into the base pan. Refer to section 5.6.8 for motor assembly installation.

!CAUTION

When reinstalling motor unit assembly, rear screws (paragraph B above) must be tightened before front screws (paragraph A above). Tighten screws to 22-26 in-lbs.

!NOTE

All work conducted on the motor should be done with the switch actuating rod removed.

5.6.2 Fan Replacement

A. *See Figure 24.* Place T156, 11/32 inch open end wrench on flats machined in armature shaft near rear bearing to prevent rotation of armature shaft during fan removal.

B. Insert fan locking tool T104 S into hole in fan pulley; remove fan pulley by rotating clockwise.

C. Remove fan washer.

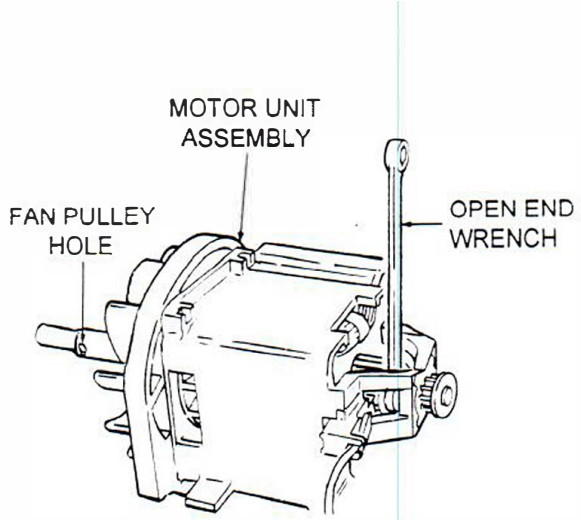

Figure 24 Fan Removal

D. Remove fan blade. Remove mylar washer.

E. Remove spacer/seal assembly.

F. Install fan.

1. After removing all debris from bearing plate top surface, apply a thin, visible layer of T159S grease to bearing plate eyelet.

2. *See Figure 25.* Install spacer/seal assembly with flat side of seal toward spacer shoulder and tapered side of seal toward bearing plate.

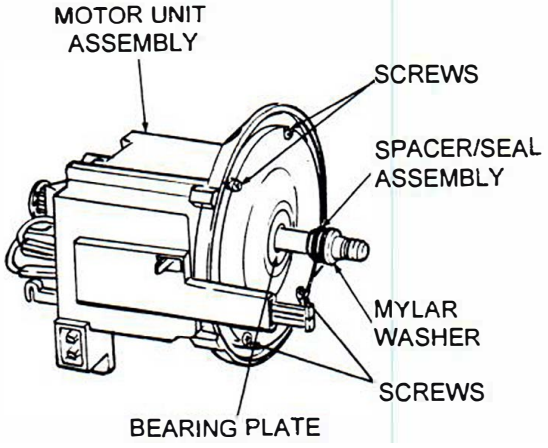

Figure 25. Spacer/Seal Assembly

3. Install mylar fan washer.
4. Install fan blade.
5. Install fan washer.
6. Install pulley and tighten.
   a. Place T156, 11/32 inch open end wrench on armature flats near rear bearing.
   b. Insert fan locking tool T104 S into hole in fan pulley; tighten by rotating counter-clockwise
   c. Do not over tighten pulley

5.6.3 Carbon Brush Cartridge Replacement

A. *See Figure 26.* If carbon brushes are to be reused, mark the brush holder assembly that is closest to the power switch with an "S". Reinstall brush holder assemblies in same positions from which they were removed.

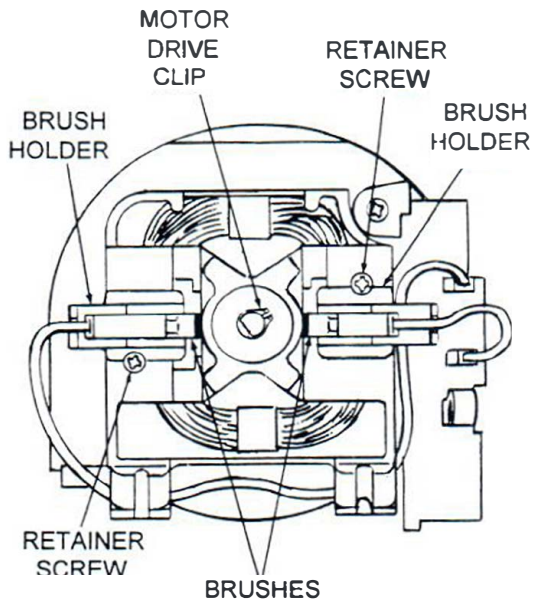

Figure 26 Carbon Brush Cartridge Replacement

B. Remove brush holder retainer screw. With screw removed, tilt brush holder away from screw hole to avoid breaking tab during removal.

C. If carbon brushes are not to be reused, detach leads and discard complete brush holder assemblies.

D. Installation is the reverse of removal. Tighten screws to 4-6 in-lbs.

!CAUTION

Refer to section 5, Figure 30 for proper electrical wire routing of 120 VT motor.

5.6.4 Power Switch Replacement

A. *See Figure 27.* If any leads remain attached to the switch, remove them.

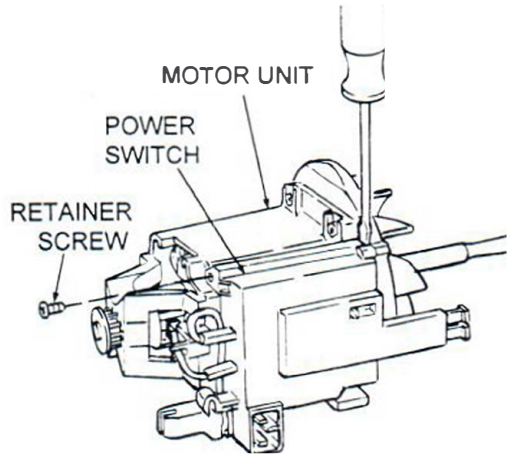

Figure 27. Power Switch Replacement

B. If present, carefully remove switch actuating rod from power switch arm.

C. Remove the retainer screw from rear end of the switch housing.

D. Using a thin flat bladed screwdriver, gently pry the switch to the rear in a straight line. This will disengage the terminal block connections from the field terminal block and prevent damage to the field terminals.

E. Check to make sure that all field terminals are present and properly aligned.

F. **A non-operating power switch should be returned to Kirby for warranty consideration.**

G. When installing a new power switch, align edge of power switch with edge of motor housing. Press gently in a downward motion, making sure that all field terminals align properly to power switch terminals.

Excessive force may cause breakage of field terminals.

H. Tighten power switch screw to 4-6 in-lbs. when installing.

5.6.5 Armature Assembly and Front Bearing Replacement

A. *See Figure 26.* Using T154, snap ring expander pliers No. 0200, remove motor drive clip at rear of armature shaft.

B. Remove motor sprocket gear from rear of armature shaft.

C. *See Figure 25.* Remove four bearing plate screws and nuts from motor unit assembly.

D. Remove bearing plate assembly.

E. *See Figure 28.* If required, the retainer ring clip and front bearing can be removed from the bearing plate assembly by using T155 snap ring compressor pliers No. 0300.

F. Remove armature. It is not necessary to remove static washer, finger spring, or tolerance ring from motor housing rear bearing well.

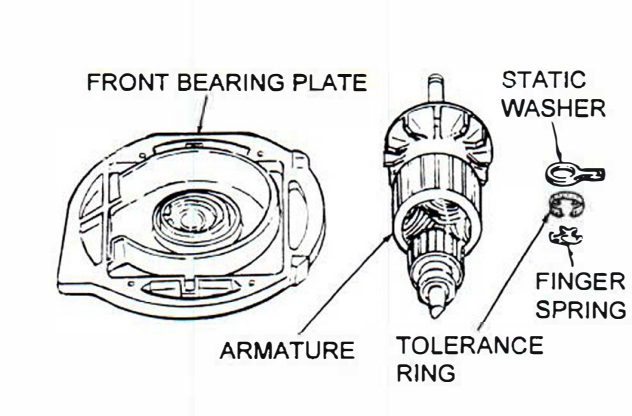

Figure 28. Front Bearing Plate, Armature Assembly, Static Washer, Tolerance Ring, and Finger Spring

G. To replace rear bearing, remove bearing using rear bearing puller, part no T127A. To install bearing, press or lightly tap on the inner bearing race. Bottom end of armature shaft must be flush with bottom end of rear bearing.

5.6.6 Field Assembly Replacement

A. Remove fan, brush holder assemblies, power switch, bearing plate assembly, and armature assembly as described in above paragraphs 5.6.2, 5.6.3, 5.6.4, and 5.6.5.

B. Remove two motor field screws and nuts from motor housing.

C. Remove field assembly from motor housing.

5.6.7 Assembly of Motor

A. Install field coil with terminal block side positioned in open side of motor housing with terminals pointing toward rear bearing well.

B. Install two field screws and nuts. Tighten screws to 16-20 in-lbs.

C. Install static washer in motor housing rear bearing well. **The static washer must be installed before the tolerance ring.**

D. Install tolerance ring in rear bearing well oriented so the tabs are at the bottom of the pocket.

E. Install finger spring in rear bearing well with fingers toward bearing.

F. Install armature assembly.

G. *See Figure 29.* Install bearing plate assembly.

1. Place bearing plate on motor housing with two extruded bosses on underside aligned toward power switch side of motor housing.
2. Rotate until ribs on motor housing align with slots in bearing plate.
3. Install four bearing plate screws and nuts. Tighten screws to 16-20 in-lbs.

H. Install motor sprocket gear with raised lip toward drive system assembly and teeth toward motor.

I. Install retainer clip. Do not over stretch clip.

J. When installing a power switch, align edge of power switch with edge of motor housing. Press gently in a downward motion,

making sure that all field terminals align properly to power switch terminals. Excessive force may cause breakage of field terminals.

K. Tighten power switch screw to 4-6 in-lbs. when installing.

!NOTE

All screws threaded into a used motor housing should initially be turned counterclockwise to find the threads before tightening. This will avoid stripping the threads. Tighten screws to 4-6 in-lbs.

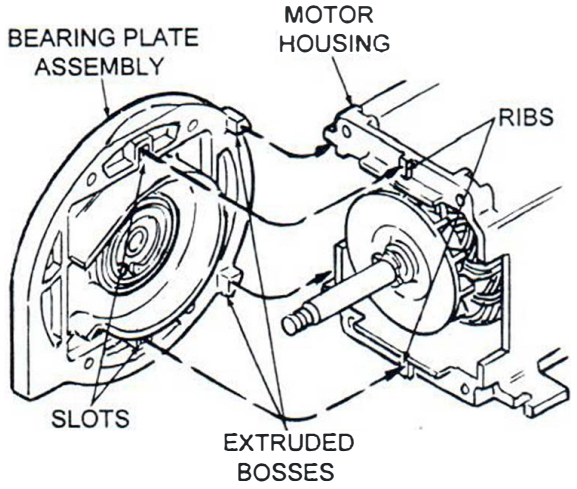

Figure 29 Aligning Bosses On Motor Housing and Slots in Bearing Plate

!NOTE

Refer to Figure 30, pictorial schematic, for proper wire routing, and section 5.6.3. and Figure 26, for carbon brush cartridge assembly positioning and wire routing.

L. Install the left brush cartridge assembly. Tilt brush cartridge and insert cartridge tab into slot in motor housing. Seat cartridge securely in channel. Tighten brush cartridge screw to 4-6 in-lbs.

M. Install long brush lead wire from left brush holder, designated with "B" on the motor housing, around bottom of motor housing to upper switch terminal noted "B" on power switch. Lead wire must be snapped into wire slots on motor housing to secure.

Do not install right brush cartridge assembly and lead wire at this time. These parts should be installed after both headlight lead wires have been installed.

O. Install fan.

1. Make sure top surface of bearing plate is clean. Apply thin, visible layer of T159S grease to bearing plate eyelet.
2. *See Figure 25.* Install spacer/seal assembly with flat side of seal toward spacer shoulder and tapered side of seal toward bearing plate.
3. Install mylar fan washer.
4. Install fan blade.
5. Install fan washer.
6. Install pulley and tighten.
   a. Place T156, 11/32 inch open end wrench on armature flats near rear bearing.
   b. Insert fan locking tool T104 S into hole in fan pulley; tighten by rotating counter-clockwise.

5.6.8 Install Motor Assembly

A. Check motor seal for damage. If undamaged, install motor seal in seal channel of front bearing plate. If damaged, install a new motor seal. To reduce risk of improper installation, apply an approved sealant to entire motor seal channel of bearing plate prior to placing motor seal in channel. Approved sealants include:

- Perma Bond #102
- Loctite Superbond #414

B. Install motor assembly unit in base pan.

1. Position motor unit into base pan. Make sure motor seal is not kinked or twisted and seals completely to base pan surface.
2. Install motor mount screws.
   a. Install rear motor mount screws first. Be sure that static discharge wire is connected to left screw, ahead of wheel well and won't interfere

with drive system linkage.Tighten screws to 22-26 in-lbs.

b. Install the static discharge wire connector end to the static washer tab at bearing well of motor housing.

c. Install front motor mount screws through bottom of base pan. Tighten to 22-26 in-lbs.

3. Install exhaust duct and grill. Fasten exhaust duct to motor housing with screw. Tighten screw to 4-6 in-lbs.

C. Install power switch actuator rod to power switch.

1. Raise on/off pedal end of actuator rod to a 90^{O} angle and fit switch end of actuator into switch arm.

D. Install headlight lead wires to field coil terminals. Start by resting slide bracket and headlight cap assembly on its right side on top of exhaust horn.

!NOTE

Both headlight lead wires must be routed around outside of slide bracket casting leg.

1. Route the headlight jumper lead wire between right brush lead wire and switch, through lower hole to field terminal behind the power switch and nearest to the right brush holder.

2. Connect the other headlight lead wire to field terminal through a hole behind the power switch, nearest the switch hold down screw.

E. Now install the right brush cartridge assembly. Tilt brush cartridge and insert cartridge tab into slot in motor housing. Seat cartridge securely in channel. Tighten brush cartridge screw to 4-6 in-lbs.

F. Install right brush lead wire from brush cartridge to lower switch terminal noted "O" on power switch. Refer to Figure 30, pictorial schematic, for proper wire routing, and section 5.6.3 and Figure 26, for carbon brush cartridge assembly positioning.

G. Lay slide bracket and headlight cap assembly into position on base pan.

H. Test switch connections.

1. Lubricate o-ring horn adapter. Install Mini Emtor or dirt meter and rug nozzle.

2. Install cord to switch.

3. Plug cord in to power source.

4. Keep hands clear of motor and rug nozzle and push actuator rod forward to activate switch.

5. Disconnect cord from power source.

a. Disconnect cord from switch.

I. Install four slide bracket casting screws.

1. Insert two screws at top of fan case on front of unit. Tighten screws to 24-32 in-lbs.

2. Insert two screws into rear legs of slide bracket casting to base pan in front of rear wheel wells. Tighten screws to 16-20 in-lbs.

3. Refer to section 5.5.F. Install tie wrap around top right slide bracket casting leg to secure headlight lead wires against tube insulation.

4. Refer to section 5.4.4 for drive system assembly installation.

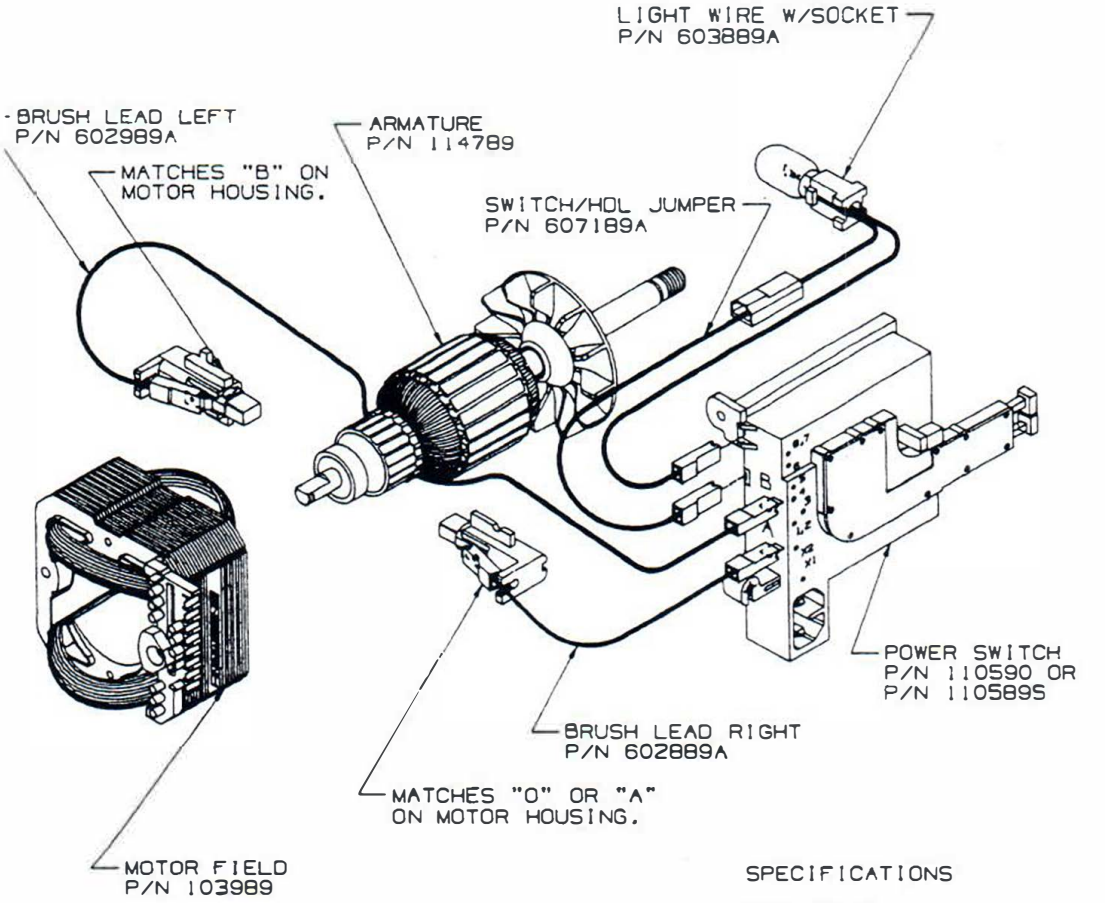

Figure 30. Pictorial Schematic

6.1 SLIDE BRACKET ASSEMBLY SERVICE

6.1.1 Slide Bracket Assembly Component Replacement

Service is limited to disassembly and replacement of damaged components.

A. Remove handle pivot spring assembly by removing two screws from bracket tab. Lift handle pivot assembly from slide.

B. *Refer to Figures 31 and 32.* Remove the single screw from the slide adjusting wedge.

C. Remove four screws from the two guide blocks.

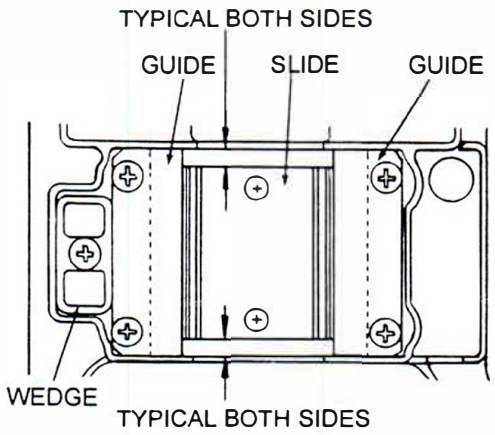

Figure 31. Assembled View of Slide Bracket Assembly

D. Remove guide blocks, slide adjusting wedge, roller bearing assemblies, and slide.

E. *Refer to Figures 31 and 32 as needed to assemble.* Assembly is as follows:

1. If new roller bearing assemblies are to be installed, bend along score line so that flat surface of cage will be positioned against the slide.

! NOTE

- The slide adjusting wedge has a tapered side to allow for minor tension adjustments.
- Guide blocks are reversible and interchangeable.
- Slide is equipped with a centering spring. Install with spring facing downward, toward slide bracket casting. When assembled, the spring should rest in the rectangular shaped cut-out in the slide bracket casting.
- If slide or guide blocks show wear on roller bearing mating surfaces, replace.
- If needle rollers are worn or loose in cage, replace bearing assembly.

2. *See Figure 31.* Assemble the two roller bearing assemblies, two guide blocks and slide. Place them, as a unit, into the slide bracket casting.

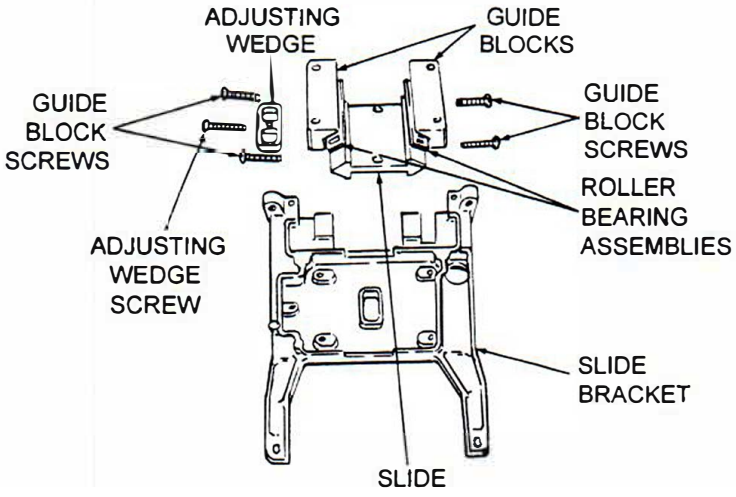

Figure 32. Disassembled View Of Slide Bracket Assembly

3. Position slide as shown in Figure 31. Install TT-150 tool with "**FACE UP TO CENTER SLIDE**" (no front or rear orientation) facing up to align bearing assemblies and slide. *See Figures 33 & 34.*

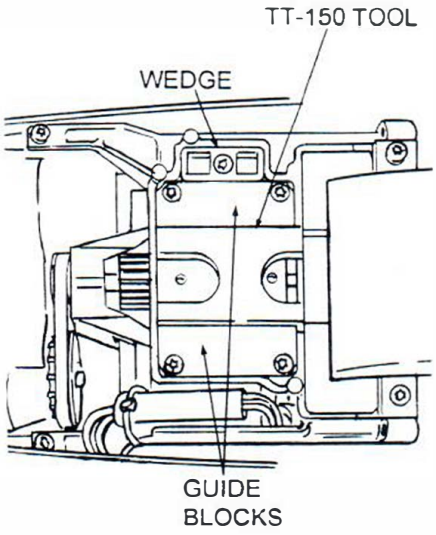

Figure 33. Use of Alignment Tool TT-150 During Slide/Guide Assembly

4. Install two screws into right side guide block. Tighten screws to 27-30 in.-lbs.
5. Install wedge (tapered side of wedge against taper in casting wall) and single screw into left side of casting pocket. Using a torque screwdriver, tighten screw in wedge to 3-5 in.-lbs. Remove TT-150 tool.
6. Install and tighten two screws on left side guide block to 27-30 in.-lbs.
7. Check operation of slide by pushing forward and back with finger. Slide should not stick or hang up.

6.1.2 Handle Pivot Spring Assembly

Service is limited to replacement of the handle pivot assembly only.

A. Do not remove handle boot from handle pivot spring assembly unless replacement is required.

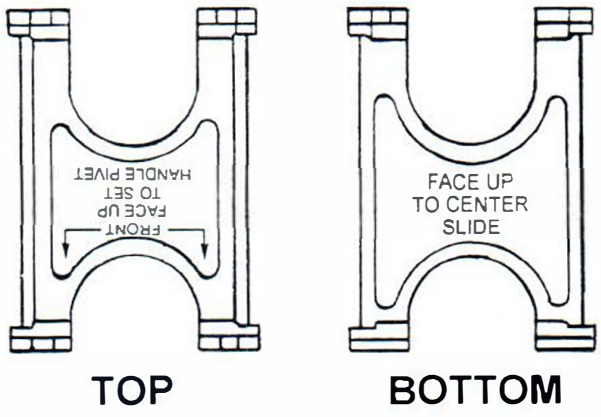

Figure 34. TT-150 Tool

B. *See Figure 35.* Remove two screws from bracket tab. Remove handle pivot assembly.

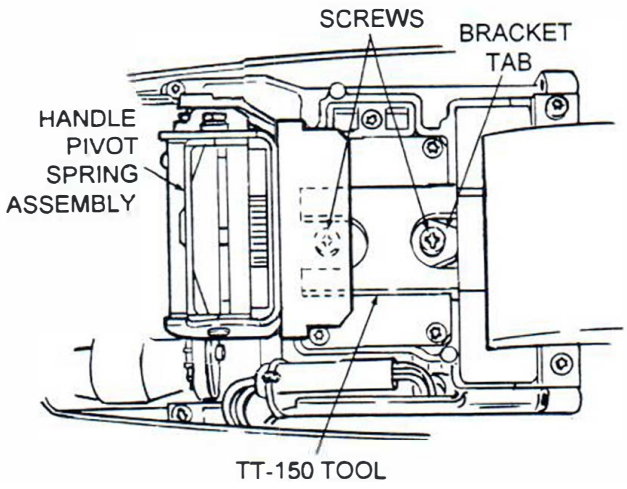

Figure 35. Use of Tool TT-150 During Handle Pivot Spring Assembly

C. Check that bearing cages and slide are centered in casting by inserting TT-150 tool with "**FACE UP TO CENTER SLIDE**" facing up.

D. Remove TT-150 tool. Install handle pivot spring assembly so the tongue lies flat on the slide and the rivet rests in the yoke of the drive system linkage. Linkage should

be as far forward as possible without exerting pressure on the linkage.

!CAUTION

Installation of handle pivot spring assembly must be done with slide bracket assembly and drive system assembly mounted in the unit. The following adjustment procedure is required to ensure proper forward and reverse actuation of the drive system.

E. Using other side of the TT-150 tool, install tool to position handle pivot spring assembly with "**FACE UP TO SET HANDLE PIVOT**" facing up. *See Figures 34 and 35.*

! NOTE

Do not put pressure on drive system linkage arm when installing handle pivot spring assembly. Any pressure applied may cause improper forward or reverse operation of drive system.

! CAUTION

No other adjustments should be attempted on the drive system. Internal clearances have been factory set. Any disassembly of the drive system will void warranty.

F. Install handle pivot assembly to slide and tighten screws to 27-30 in.-lbs.

G. Remove TT-150 tool.

H. Check the setting by moving the handle pivot assembly back and forth. The slide should not contact the slide bracket casting when moderate force is applied in both directions.

6.1.3 Final Assembly Unit

A. Install cover shell.

1. Assure proper assembly of trim strips to cover before installation.
2. Apply inward pressure on trim strips at rear of cover shell while tightening rear screws. Tighten screws to 12-16 in.-lbs.
3. Fasten cover to fan case with two flat head screws. Tighten screws to 28-30 in. lbs.

B. Install scuff plate, cord, and cord cover.

1. Place scuff plate over handle pivot spring assembly and push down and forward on front of scuff plate to engage front scuff plate tabs.
2. Install cord to power switch.
3. Place bottom tab of cord cover in base pan opening.
4. Push cord cover toward nozzle until side tab clears base pan.
5. Install cord cover screw. Tighten screw to 5-8 in.-lbs.
6. Position cord clip under scuff plate and into notch on right side of scuff plate.
7. Press down on scuff plate above on/off pedal to engage rear tab.
8. Install cord clip retainer screw into scuff plate. Tighten screw to 7 - 11 in.-lbs.
9. Install scuff plate screw positioned below on/off pedal screw to 5-7 in.-lbs.

NOTES

7.1 OUTER BAG ASSEMBLY SERVICE

7.1.1 Bag Top Assembly Service

A. *See Figure 36.* Remove the bag top cover by lifting it straight up off the bag latch.

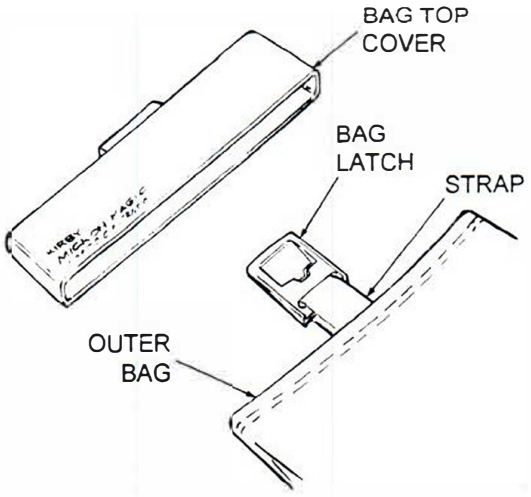

Figure 36. Bag Top Assembly Service

B. To remove the bag top latch, it is necessary to cut the latch from the bag strap. Do not cut the strap.

C. When installing new latch, insert bag strap through the hole in bottom of latch, making sure that the raised tab is facing toward the back of the bag.

D. Insert latch through the top cover with raised tab facing toward back of bag. Position top cover with lettering toward the front of the bag.

! NOTE

Do not cut the bag strap when replacing a bag top latch.

Replacement slotted bag top latches are available as a service item.

7.1.2 Removal/Installation of Bag to Mini Emtor

A. To remove outer bag assembly from Mini Emtor, cut through all bars of the lock on bag clamp strap located at the inside wall of the Mini Emtor, then remove the outer bag from the Mini Emtor.

B. To install outer bag to Mini Emtor, unzip the bag, unfold rubber seal at bottom of bag so that wide lip is pointing toward top of bag and stitching securing bag to rubber collar is exposed.

C. Install bag to Mini Emtor with bottom edge of rubber collar extending past ribbed groove in Mini Emtor with narrow groove of rubber collar seated uniformly in ribbed groove of Mini Emtor.

D. Position bag with the front side toward front of Mini Emtor. Center bag zipper with back side of Mini Emtor.

E. Fold wide flap of rubber collar down onto Mini Emtor so that top lip of rubber seal fits uniformly into groove of Mini Emtor and covers stitching.

F Install a bag clamp strap around and into the groove of Mini Emtor at lower edge of rubber collar. Raised cross bar lock of strap must face away from Mini Emtor. Lock connection must be positioned on the inside center wall of Mini Emtor and face right side of motor. *See Figure 37.*

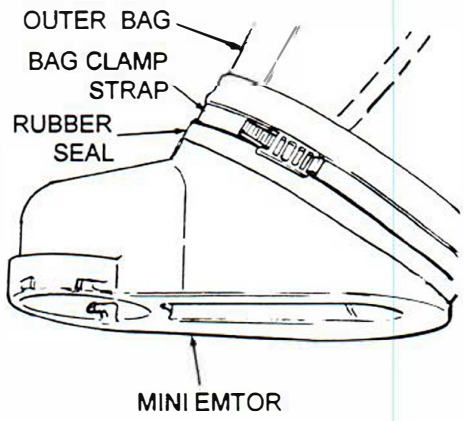

Figure 37. Bag Clamp Strap Position

G. Lock the strap and ensure that all the teeth on the end opposite the cross bar lock are secured by the ribs of the lock. This can be accomplished by using channel lock pliers or a wide flat bladed screw driver while applying pressure behind the raised tab just behind the teeth area.

NOTES

SECTION 8 - 120 VT
BELT LIFTER, ATTACHMENT HOSE, AND HEADLIGHT SERVICE

8.1 Belt Lifter Replacement

A. Remove rug nozzle assembly from power unit.

B. Remove rug plate, brush roll and belt from nozzle.

C. Disassemble belt lifter

1. Remove belt lifter label.
2. Remove belt lifter screw.
3. Remove belt lifter body, flat washer, and spring washer from front of nozzle.
4. Remove belt lifter hook and bearing from inside nozzle.

D. Reassemble belt lifter.

1. From inside nozzle, place belt lifter bearing through hole, with tabs toward front of nozzle and flange against inside front of nozzle.
2. Position spring washer over bearing tabs on outside of nozzle.
3. Place flat washer over spring washer.
4. Insert screw into belt lifter body. Place belt lifter body over flat washer. The top of belt lifter body should be closest to the bottom of nozzle.
5. Position belt lifter hook inside nozzle with hook pointing at the nine o'clock position when viewed from the rear of the nozzle. Hook will fit into slots in belt lifter body.
6. Tighten belt lifter screw to 16 in.-lbs.
7. Test assembly to see that position indicators correspond and that the stop rivet functions.
8. Hook should point toward top of nozzle when belt lifter is turned counter clockwise to its fullest extent.

E. Re-install brush roll and belt.

1. Position belt at the center of the brush roll between brush strips.
2. Slide brush roll into guides in nozzle casting with smaller end cap in left side of casting when viewed from the rear of the nozzle.
3. Turn brush roll end caps so both are at the same setting. Normal bristle setting is when two notch side of both end caps are facing toward the rug plate.

F. Re-install rug plate.

1. Position rug plate so front tabs fit into slots in nozzle bumper and rest above tabs in nozzle casting. Make sure ends of rug plate fit contour of bumper. Press rear of rug plate down over bumper.
2. Turn the two latch assemblies so they lock the rear tabs of rug plate. If they do not lock the tabs in place, the rug plate or nozzle bumper is not properly positioned. Repeat steps 1 & 2.

8.2 Attachment Hose Swivel Tube Or Suction Blower Replacement

!NOTE

Repair method described in paragraphs A and B below is the preferred method. If hose is too cold, repair as described in C and D may be improbable. Let hose assembly reach normal room temperature before using methods described in C and D below. Care is required to prevent damage to hose.

A. Heat vinyl cuff with heat lamp or by placing cuff in hot water. When cuff becomes soft, twist and pull to remove tube or suction blower.

B. Assemble replacement part in the same manner as in disassembly.

or

C. If heat is not available, carefully place a flat bladed screwdriver inside suction blower connector between vinyl cuff and suction blower. Deform cuff by prying with screwdriver. Pull suction blower at an angle to remove.

D. To replace without heat, apply inward force to a small section of cuff until it is deformed sufficiently to allow suction blower to slide over cuff.

8.3 Headlight Lens and Bulb Service

A. *See Figure 38.* Raise headlight cap to its full extent.

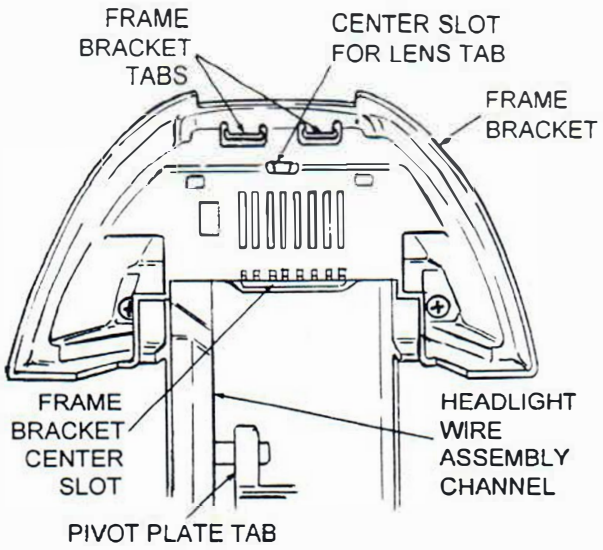

Figure 38. Headlight Bulb Replacement

B. Remove lens by placing a thin flat bladed screw driver into center slot of frame bracket (noted with an arrow on the underside) and push downward. Lift plastic lens up and out of casting.

C. Pull bulb from socket and install new bulb.

D. Place headlight lens into casting and snap in place.

8.4 Frame Bracket Removal and Replacement

!NOTE

Headlight lens must be removed prior to removing frame bracket.

A. Raise headlight casting to its full extent.

B. Remove two torque screws from frame bracket and three torque screws from pivot plate.

C. Place a thin flat bladed screw driver in center slot at bottom edge of frame bracket. Gently pry in an upward motion to disengage tab.

D. Gently pull backside of frame bracket away from casting and push down on two tabs of frame bracket at front edge of casting.

E. Re-install frame bracket by placing headlight wire assembly in frame bracket.

F. Position channel tab of frame bracket under tab of headlight pivot plate.

G. Insert two front tabs of frame bracket into slots of casting, making sure entire casting bottom edge is positioned properly in groove of frame bracket.

H. Press front edge of frame bracket into casting to snap in two front tabs, then snap rear tab into place.

I. Reinstall three torque screws to pivot plate and two torque screws to frame bracket.

J. Place headlight lens into casting and snap in place.

NOTES

NOTES

Figure 39	Base Pan Assembly and Cord Set	52
Table 1	Base Pan Assembly and Cord Set	53
Figure 40	Motor Assembly w/EMI	54
Table 2	Motor Assembly w/EMI	55
Figure 41	Fan Case Assembly	56
Table 3	Fan Case Assembly	57
Figure 42	Headlight Cap/Slide Bracket/Handle Pivot Spring Assembly	58
Table 4	Headlight Cap/Slide Bracket/Handle Pivot Spring Assembly	59
Figure 43	Cover Shell Assembly	60
Table 5	Cover Shell Assembly	61
Figure 44	Power Drive Assembly	62
Table 6	Power Drive Assembly	63
Figure 45	Floor Nozzle Assembly	64
Table 7	Floor Nozzle Assembly	65
Figure 46	Handle Fork and Grip Assembly	66
Table 8	Handle Fork and Grip Assembly	67
Figure 47	Cloth Bag and Mini Emtor Assembly	68
Table 9	Cloth Bag and Mini Emtor Assembly	69
Figure 48	Attachments	70
Table 10	Attachments	71
Figure 49	Carpet Shampoo System	72
Table 11	Carpet Shampoo System	73
Figure 50	Floor Care Kit w/Miracle Waxer	74
Table 12	Floor Care Kit w/Miracle Waxer	75

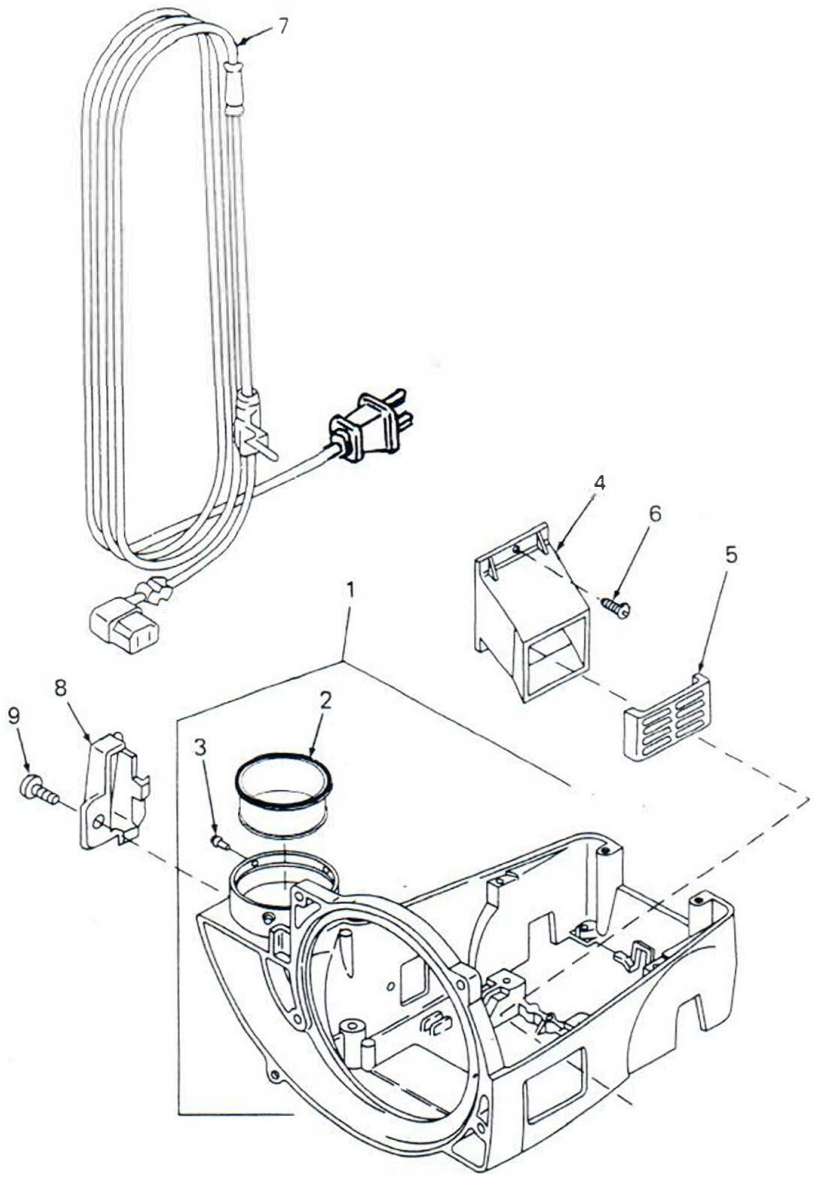

Figure 39. Base Pan Assembly and Cord Set

Table 1. Base Pan Assembly and Cord Set

1	604399S	Base Pan Assembly
2	601996S	O - Ring - Horn Adapter (5 pack)
3	100689S	Rivet - Horn Adapter (25 pack)
4	106393	Exhaust Duct
5	104199S	Grill - Exhaust Duct (5 pack)
6	605989S	Screw - Exhaust Duct (25 pack)
7	192099	Cord Set w/ Clip (120 VT)
8	196099S	Cover - Cord Set (5 pack)
9	232497S	Screw (Torx) - Cord Cover (10 pack)

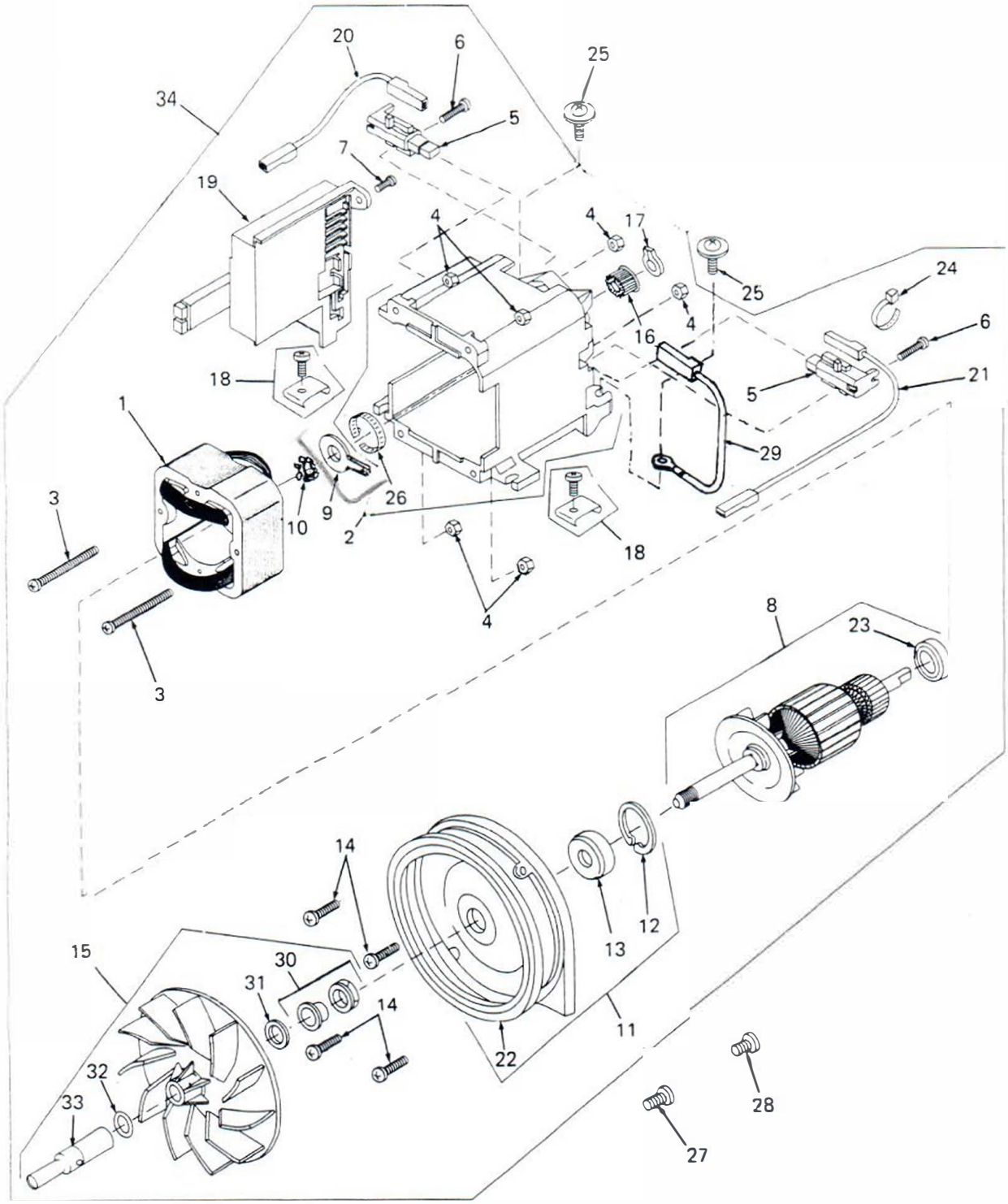

Figure 40. Motor Assembly

5.6.7 Assembly of Motor

A. Install field coil with terminal block side positioned in open side of motor housing with terminals pointing toward rear bearing well.

B. Install two field screws and nuts. Tighten screws to 16-20 in-lbs.

C. Install static washer in motor housing rear bearing well. **The static washer must be installed before the tolerance ring.**

D. Install tolerance ring in rear bearing well oriented so the tabs are at the bottom of the pocket.

E. Install finger spring in rear bearing well with fingers toward bearing.

F. Install armature assembly.

G. *See Figure 29.* Install bearing plate assembly.

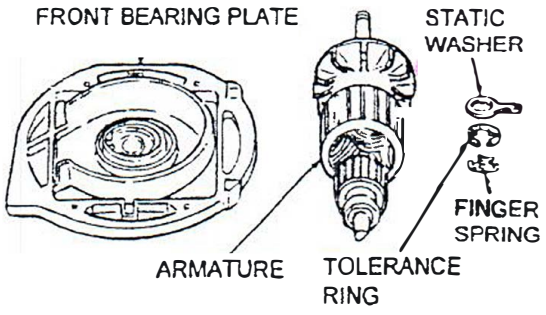

Figure 28. Front Bearing Plate, Armature Assembly, Static Washer, Tolerance Ring, and Finger Spring

Table 2. Motor Assembly

1	103989	Field Coil - 120 VT
2	100196S	Motor Housing w/Tolerance Ring
3	104689S	Screw - Motor Field (10 pack)
4	600589S	Nut - Field Screw and Bearing Plate (25 pack)
5	107189A	Brush Holder w/Brush (10 pack)
6	107989S	Screw - Brush Cartridge (25 pack)
7	605989S	Screw - Power Switch to Motor Housing (25 pack)
8	114789	Armature (with Rear Bearing) - 120 VT
9	601889S	Static Washer (25 pack) - 120 VT
10	314890S	Finger Spring (10 pack)
11	105793S	Bearing Plate Assembly w/Motor Seal
12	101076S	Ring Retainer - Bearing Plate to Motor Housing (25 pack)
13	116073	Front Bearing
14	600189S	Screw - Bearing Plate (25 pack)
15	119096S	Fan Assembly w/Spacer Seal
16	550689S	Sprocket Gear - (5 pack)
17	601689S	Clip - Motor Drive (25 pack)
18	231194A	Clip and Screw - Front Motor Mount (10 pack)
19	110590	Power Switch - 120 VT
20	602889A	Brush Lead Assembly - Right (5 pack) - 120 VT
21	602989A	Brush Lead Assembly - Left (5 pack) - 120 VT
22	600389S	Motor Seal (5 pack)
23	115589	Rear Bearing
24	608089S	Tie - Left Brush Lead (25 pack)
25	231995S	Screw (Torx) - Rear Motor Mount (10 pack)
26	612795S	Tolerance Ring, Bearing Well (5 pack)
27	609390S	Oversized Screw, Power Switch (10 pack)
28	609490S	Oversized Screw, Brush Holder (10 pack)
29	603589A	Wire Assembly - Static Discharge (5 pack)
30	602192S	Spacer/Seal Assembly (10 pack)
31	611392S	Mylar Washer, Fan- (10 pack)
32	118879S	Fan Washer- (25 pack)
33	119189S	Fan Pulley- (5 pack)
34	101396G	Motor Assembly - 120 VT

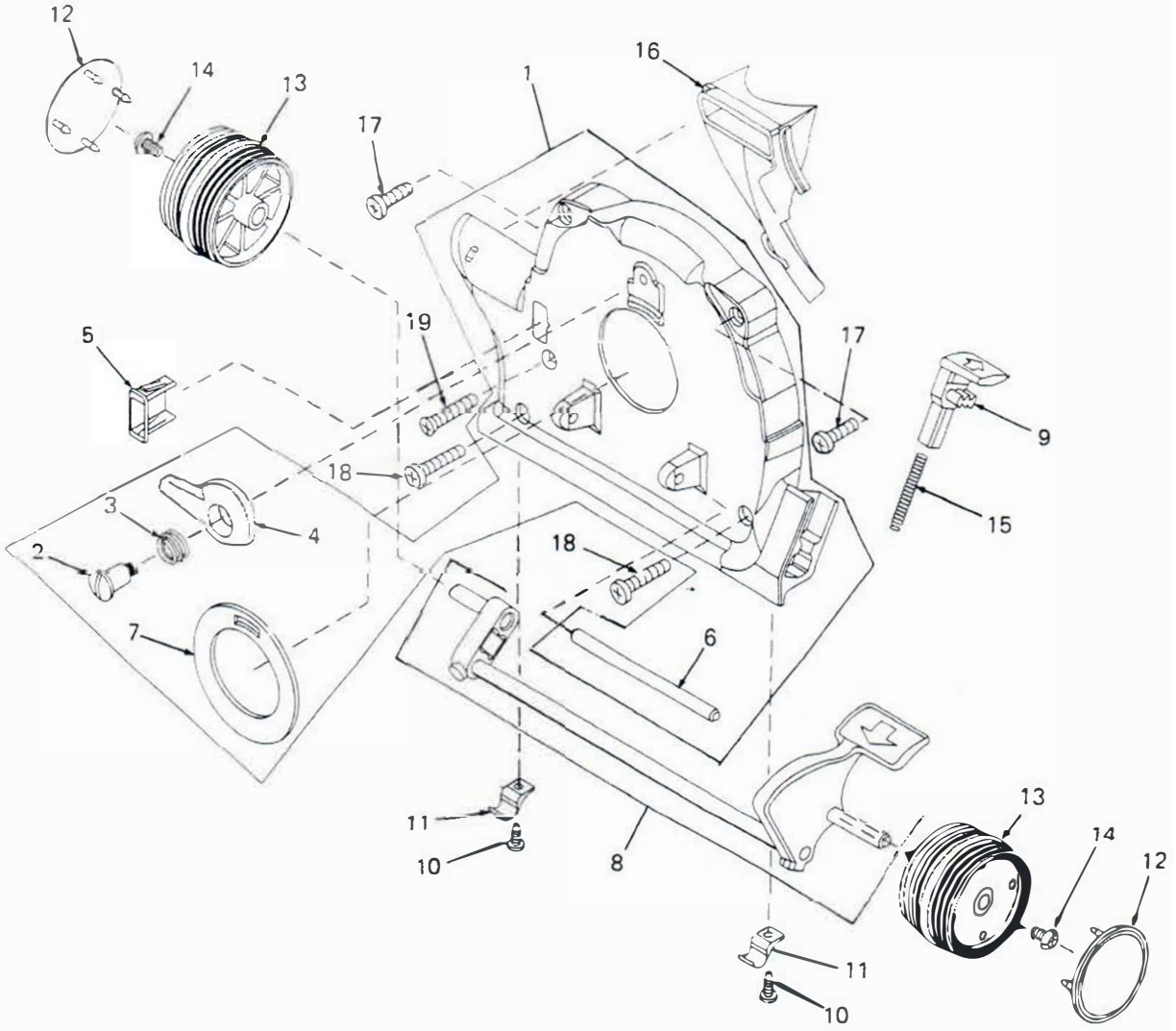

Figure 41. Fan Case Assembly

Table 3. Fan Case Assembly

1	119797S	Fan Case Assembly
2	1211S	Screw - Nozzle Lock (10 pack)
3	121247S	Spring - Nozzle Lock (10 pack)
4	125297A	Lever - Nozzle Lock (2 pack)
5	610099S	Bezel - Power Switch (5 pack)
6	121689S	Nozzle Attaching Shaft (5 pack)
7	122097S	Unigasket - Fan Case (5 pack)
8	131694S	Wheel Shaft Assembly
9	631589A	Ratchet Lock (5 pack)
10	231294S	Screw (Torx) - Front Shaft Clamp (25 pack)
11	134073S	Clamp - Front Shaft (25 pack)
12	131899S	Hubcap - Front Wheel (10 pack)
13	131999	Front Wheel
14	231695S	Screw (Torx) - Fan Case/Slide Bracket (Top) (10 pack)
15	1331S	Spring - Ratchet Lock (25 pack)
16	125489	Volute Deflector
17	231595S	Screw (Torx) - Fan Case/Slide Bracket (Top) (10 pack)
18	234898S	Screw (Torx) - Fan Case/Base Pan (Bottom) (10 pack)
19	234998S	Screw (Torx) - Fan Case/Base Pan (Flat HD) (10 pack)

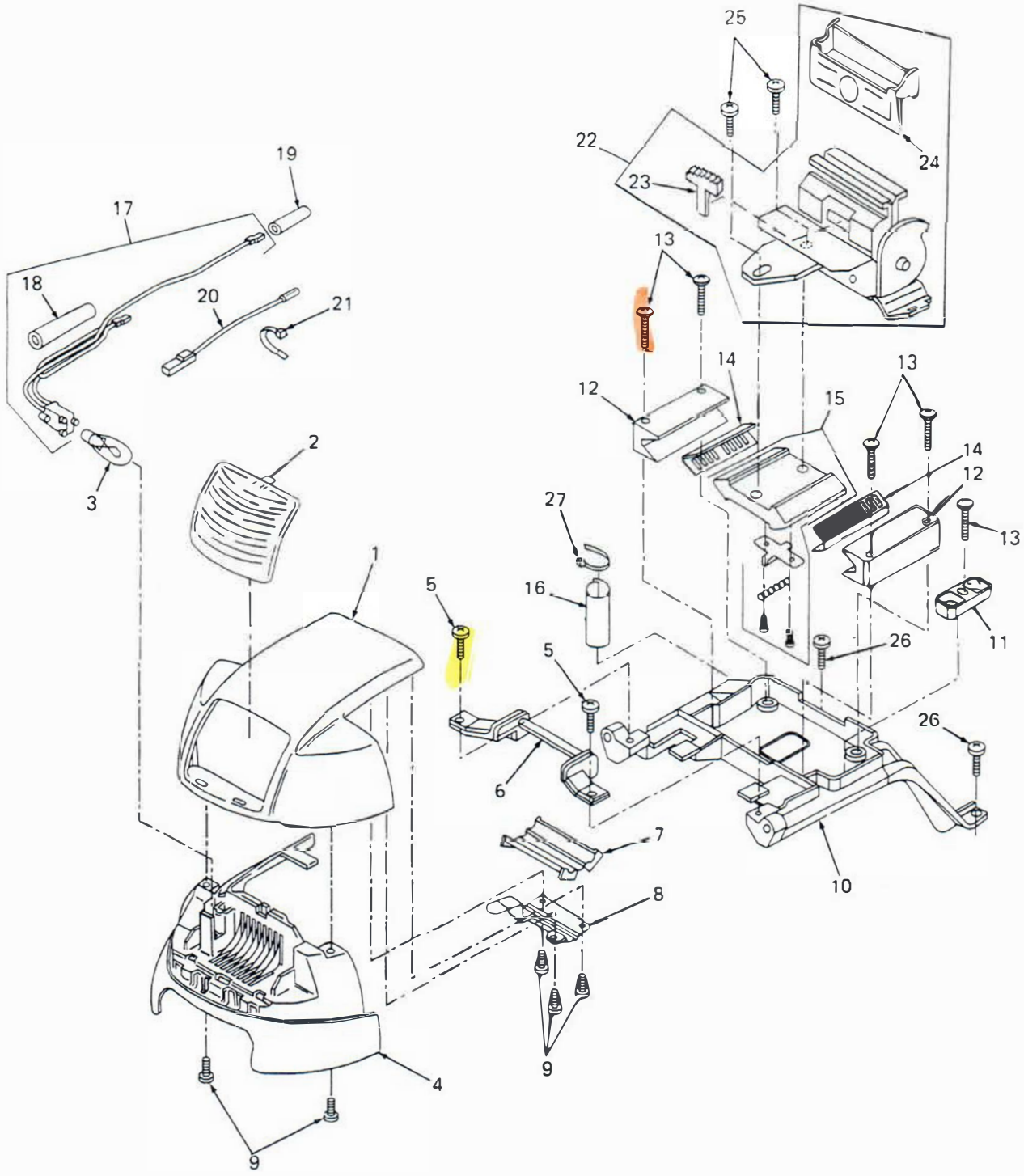

Figure 42. Headlight Cap/Slide Bracket/Handle Pivot Spring Assembly

Table 4. Headlight Cap/Slide Bracket/Handle Pivot Spring Assembly

1	160097	Headlight Cap - Casting
2	108597	Lens - Headlight Cap
3	109289S	Light bulb (10 pack) or 109292S (10 pack)
4	161799	Headlight Frame Bracket
5	232497S	Screw (Torx) - Headlight Pivot to Slide Bracket (10 pack)
6	161389	Headlight Pivot Casting
7	161689S	Bushing - Headlight Pivot (5 pack)
8	162889S	Plate - Headlight Pivot (5 pack)
9	102168S	Screw (Torx) - Plate to Headlight Pivot (25 pack)
10	170196	Slide Bracket Casting
11	179489S	Wedge - Slide Adjustment (5 pack)
12	178789S	Guide Block - Slide Bracket (2 pack)
13	234397S	Screw (Torx) - Guide and Wedge to Slide Bracket (10 pack)
14	178989S	Roller Bearing Assembly (10 pack)
15	676595S	Slide with Centering Spring Assembly
16	611192S	Tuble Insulation (Right Leg of Slide Bracket Casting) (5 pack)
17	603889A	Headlight Harness Assembly (5 pack) - 120 VT
18	660589S	Insulator Sleeve - Black (5 pack)
19	606889S	Insulator Sleeve - Clear (5 pack)
20	607189A	Headlight Jumper Wire (5 pack) - 120 VT
21	608089S	Cable Tie - Headlight Lead Wires (25 pack)
22	671999G	Handle Pivot Spring Assembly w/Boot
23	677599S	Tilt Latch Knob (5 pack)
24	178699S	Boot - Handle Pivot (5 pack)
25	233897S	Screw - Handle Pivot/Slide (10 pack)
26	232497S	Screw (Torx) - Slide Bracket Casting - (Rear) (10 pack)
27	230093S	Cable Tie - Insulation Tube/Slide Bracket (25 pack)

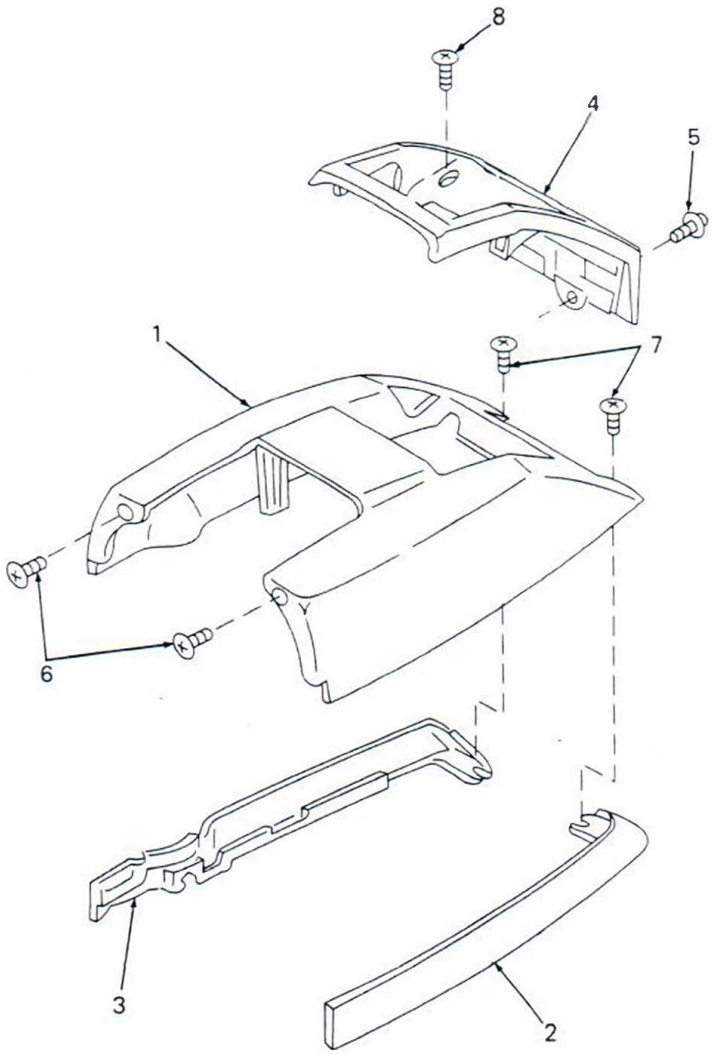

Figure 43. Cover Shell Assembly

Table 5. Cover Shell Assembly

1	135689A	Cover Less Trim Strips
2	630999S	Left Trim Strip - Cover (5 pack)
3	630899S	Right Trim Strip - Cover (5 pack)
4	111299	Scuff Plate - 120 VT
5	233497S	Screw (Torx) - Scuff Plate - Rear (10 pack)
6	232395S	Screw (Torx) - Cover to Fan Case (Front) (10 pack)
7	232497S	Screw (Torx) - Cover to Base Pan (Rear) (10 pack)
8	233597S	Screw (Torx) - Cord Clip (10 pack)

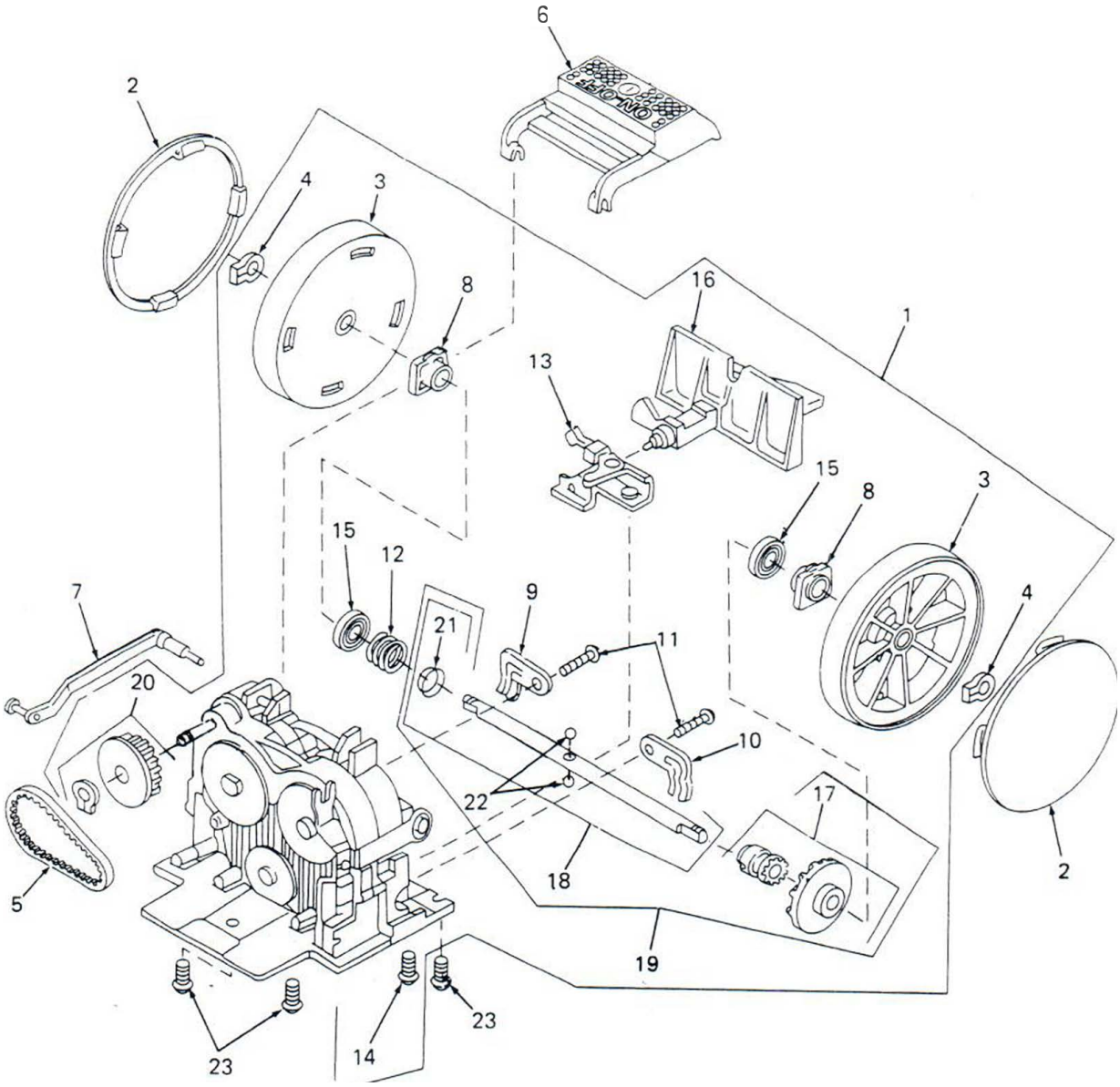

Figure 44. Power Drive Assembly

Table 6. Power Drive Assembly

1	552399G	Power Drive Assembly w/Rear Wheels
2	555999S	Hubcap - Rear Wheel (10 pack)
3	556299	Rear Wheel
4	601689S	Clip - Rear Wheel (25 pack)
5	554189S	Primary Drive Belt (5 pack)
6	110399S	Foot Pedal (5 pack)
7	608789	Actuating Rod - Foot Pedal to Power Switch
8	550889S	Bushing - Rear Axle (10 pack)
9	555489S	Right Retainer - Axle (10 pack)
10	555589S	Left Retainer - Axle (10 pack)
11	556592S	Screw (Torx) - Axle Retainer (25 pack)
12	556689S	Spring - Rear Axle (10 pack)
13	557689A	Bracket Cam Assembly - Neutral/Drive Pedal (5 pack)
14	234097S	Screw - Neutral/Drive Pedal (10 pack)
15	557889S	Bearing - Rear Axle (2 pack)
16	558499S	Neutral Drive Pedal Assembly
17	559892S	Clutch Overload Gear Assembly
18	102095S	Rear Axle with Balls and Retainer
19	102095G	Rear Axle Assembly with Overload Gear Assembly
20	550589S	Primary Gear with Clip (5 pack)
21	561892S	Retainer - Axle Ball (10 pack)
22	561491S	Ball - Rear Axle (25 pack)
23	230693S	Screw (Torx) - Drive System/Base Pan (25 pack)

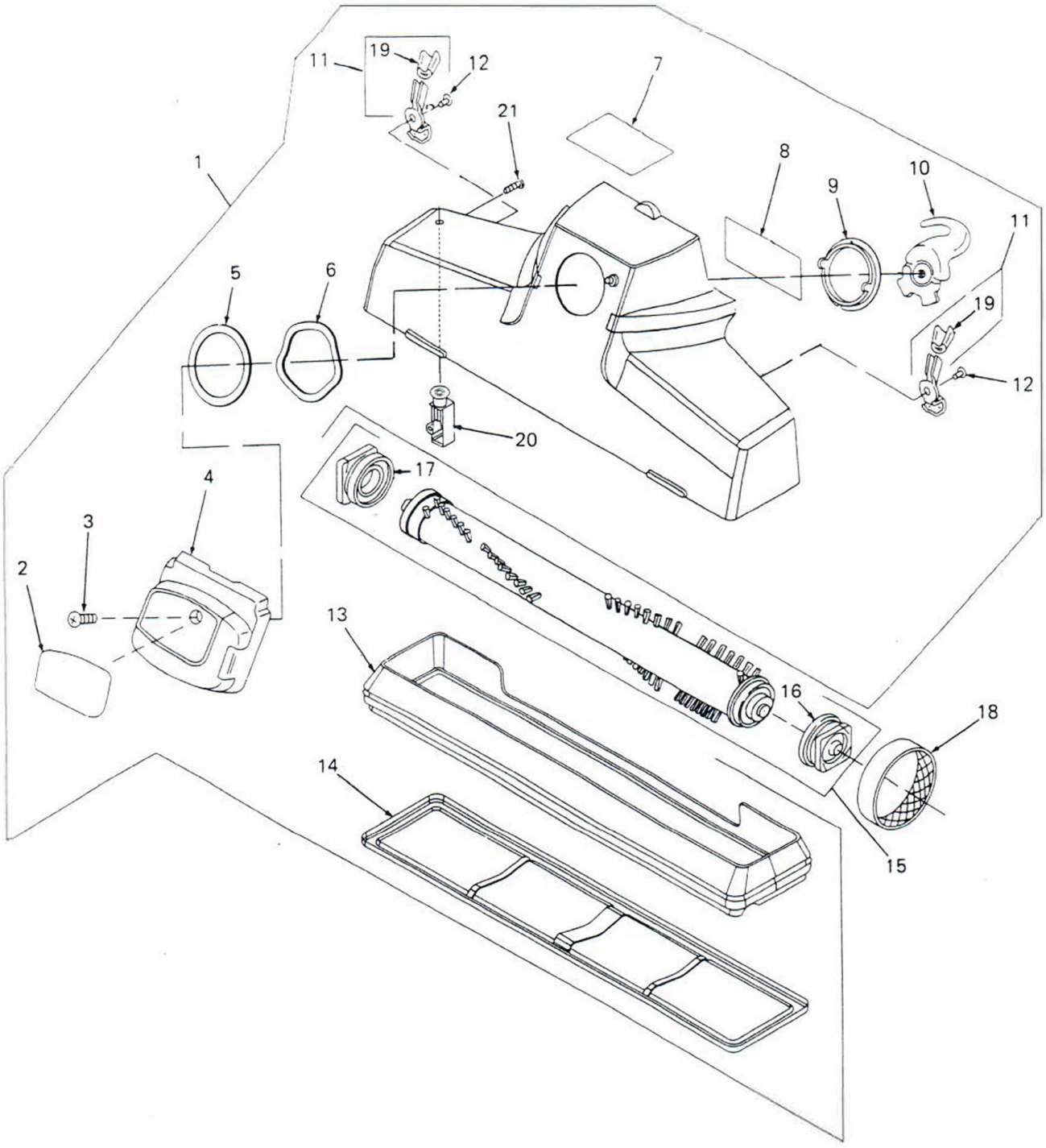

Figure 45. Floor Nozzle Assembly

Table 7. Floor Nozzle Assembly

1	141699G	Nozzle Assembly (Less Brush and Belt)
2	673699S	Label - Belt Lifter (5 pack)
3	232596S	Screw (Torx) - Belt Lifter (10 pack)
4	159299S	Belt Lifter Body Assembly
5	144681S	Flat Washer - Belt Lifter (10 pack)
6	31490S	Spring Washer - Belt Lifter (10 pack)
7	146699S	Label - Belt Lifter Instructions (5 pack)
8	149899S	Label - Brush Adjustment (5 pack)
9	145481S	Bearing - Belt Lifter (10 pack)
10	144291	Hook - Belt Lifter
11	640689A	Rug Plate Latch Assembly (2 pack)
12	141381S	Rivet - Latch Assembly (25 pack)
13	140499	Nozzle Bumper
14	152697	Rug Plate
15	152599	Brush Roll Assembly
16	156397S	Brush End Cap - Small (5 pack)
17	156497S	Brush End Cap - Large (5 pack)
18	301291A	Belt Knurled - Brush Roll (25 pack)
19	640589S	Sleeve/Rug Plate Latch (25 pack)
20	640393	BPI Assembly
21	605989S	Screw (25 pack)

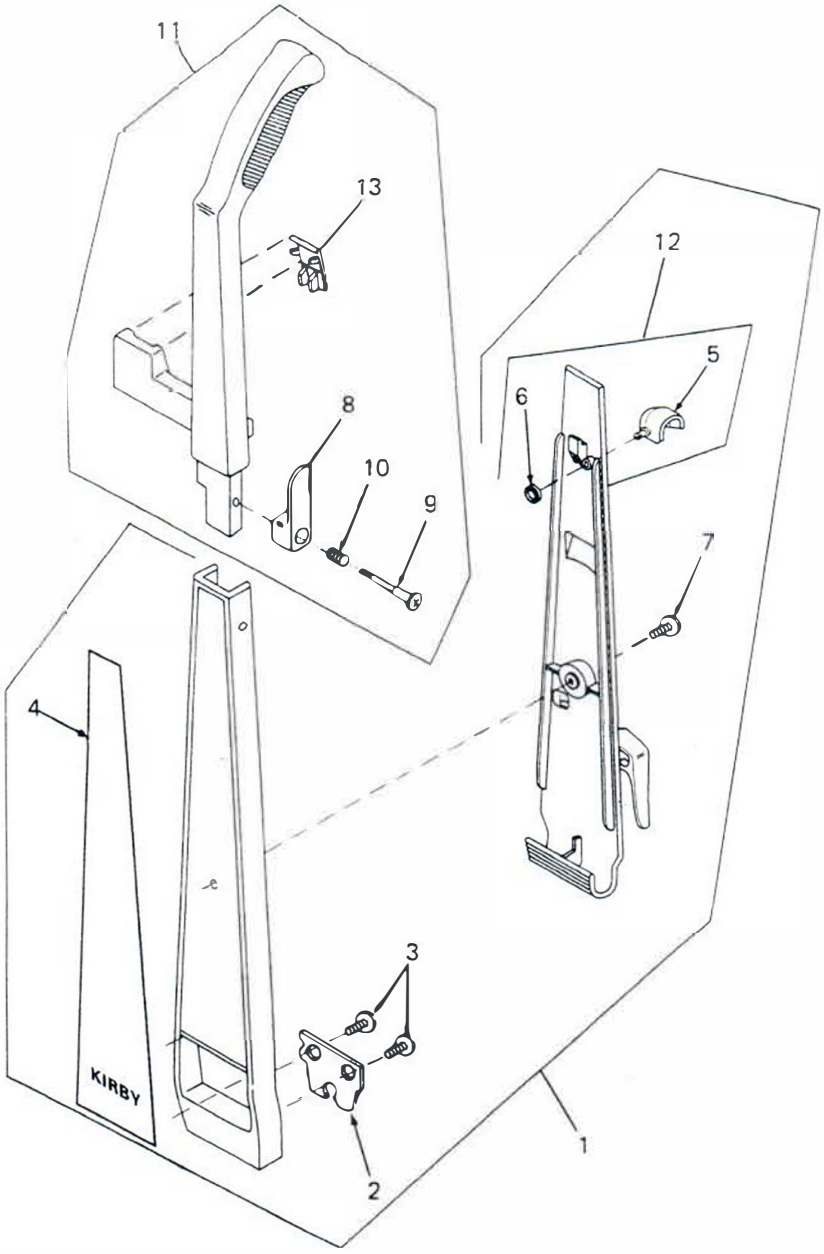

Figure 46. Handle Fork and Grip Assembly

Table 8. Handle Fork and Grip Assembly

1	175099G	Handle Fork Assembly
2	672189	Latch Plate
3	233797S	Screw - Latch Plate (10 pack)
4	174399S	Label - Handle Ford (5 pack)
5	170599S	Strain Relief - Rear Cover (5 pack)
6	675189S	Retainer Ring - Strain Relief (25 pack)
7	174999S	Metal Screw - Bank Retainer (5 pack)
8	173899S	Cord Hook Swivel (5 pack)
9	174091S	Screw - Cord Hook Swivel (25 pack)
10	174167S	Spring - Cord Hook Swivel (25 pack)
11	675799	Handle Grip Assembly
12	673799S	Rear Cover Assembly
13	672099S	Bag Release Button - Handle Grip (5 pack)

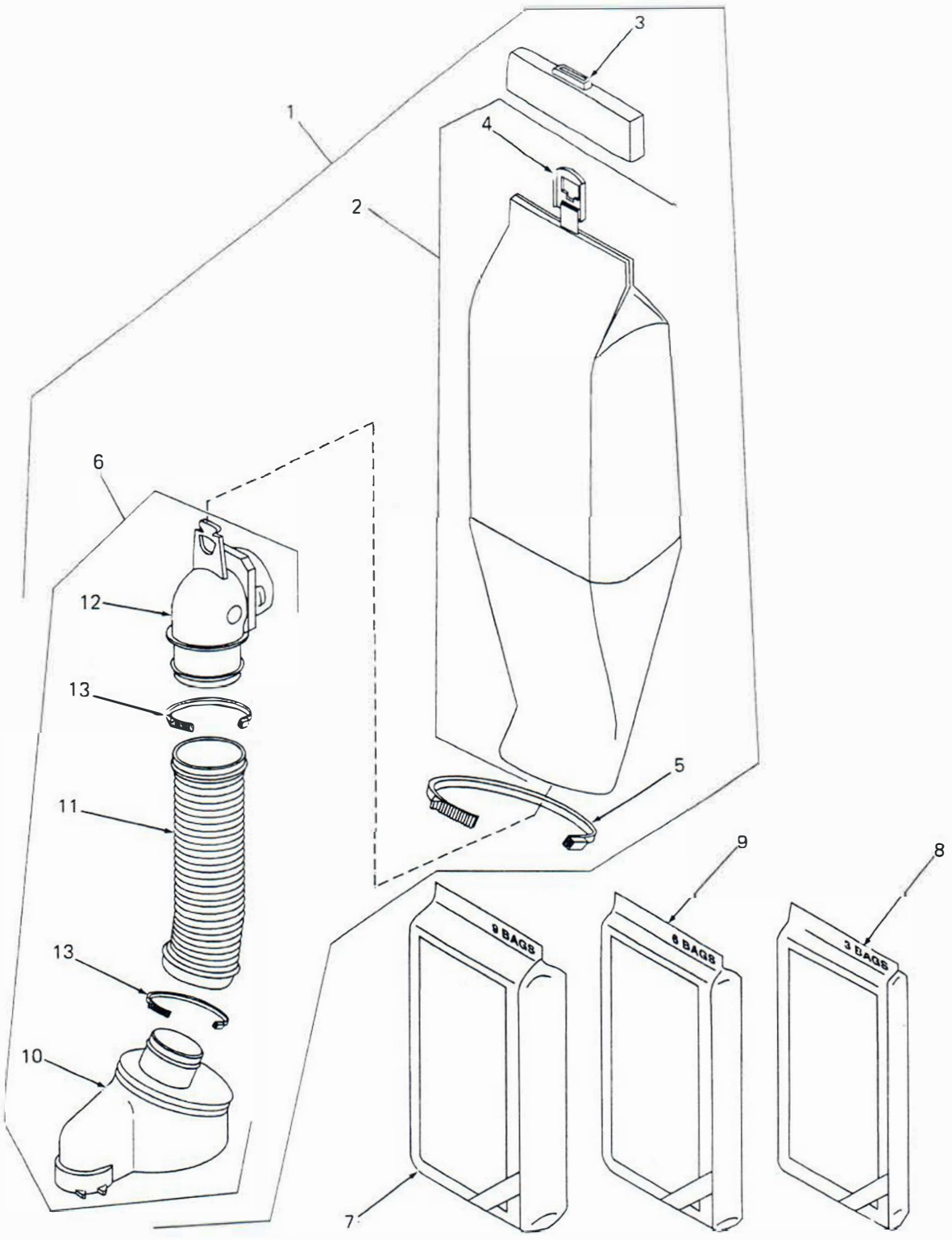

Figure 47. Cloth Bag and Mini Emtor Assembly

Table 9. Cloth Bag and Mini Emtor Assembly

1	187999G	Bag/Mini Emtor Assembly
2	190099	Bag Assembly (w/Latch Only)
3	191899	Bag Top Cover
4	196499S	Latch - Cloth Bag (5 pack)
5	196599S	Bag Clamp Strap (5 pack)
6	185899S	Fill Tube/Mini Emtor Assembly
7	197394	Micron Magic HEPA Bag (9 pack)
8	197294	Micron Magic HEPA Bag (3 pack)
9	696999	Micron Magic HEPA Bag (6 pack)
10	188999	Mini Emtor
11	190399	Snap Fill Tube
12	190499	Snap Top Adapter
13	191182S	Fill Tube Tie

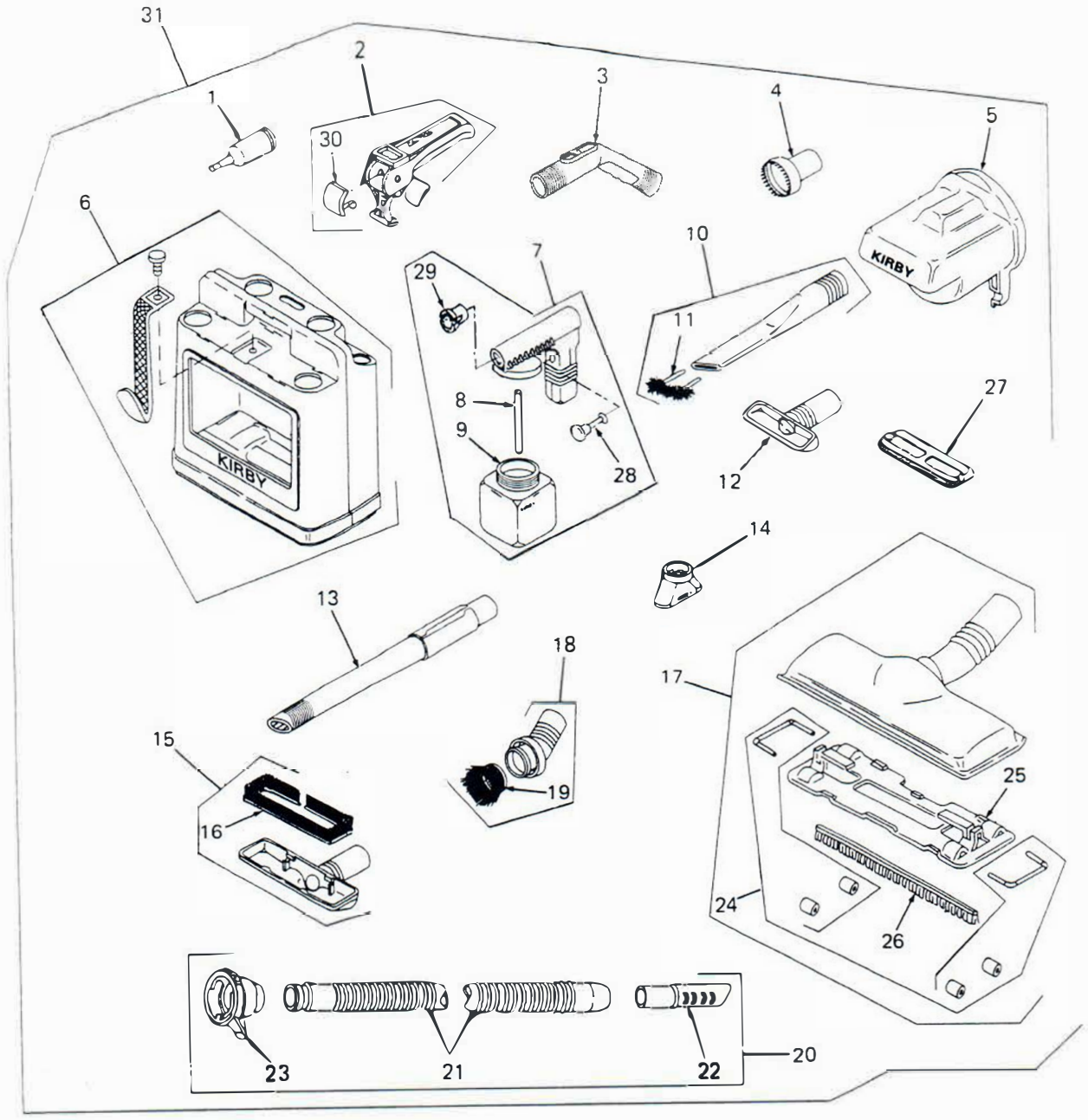

Figure 48. Attachments

Table 10. Attachments

1	213899	Inflator
2	201099S	Portable Handle Assembly
3	225199	Attachment Grip
4	214199	Massage Cup
5	224299	Intake Guard Assembly
6	286999S	Kaddy Assembly
7	250299S	Spray Gun Assembly
8	250689S	Supply Tube - Spray Gun (10 pack)
9	251089	Jar - Spray Gun
10	225799S	Crevice Tool Assembly
11	226157S	Brush - Crevice Tool (5 pack)
12	218099	Upholstery Tool
13	224099	Extension Wand
14	252099S	Suds - O - Cap (5 pack)
15	210899S	Wall/Ceiling Brush Assembly
16	218190	Brush Strip - Wall/Ceiling
17	215499	Surface Nozzle Assembly
18	218499S	Duster Brush Assembly
19	220189	Duster Brush Ring
20	223699S	Attachment Hose Assembly
21	223099	Molded Hose Only
22	223399	Tube - Swivel Connector
23	210099	Suction/Blower Connector
24	216897S	Wheel/Axle Assembly - Surface Nozzle (2 pack)
25	216299S	Polymer Plate - Surface Nozzle (5 pack)
26	219197S	Brush Strip - Surface Nozzle (5 pack)
27	215899S	Suction Relief - Upholstery Tool (5 pack)
28	251399S	Trigger - Spray Gun (5 pack)
29	256699S	Venturi - Spray Gun (5 pack)
30	200799S	Cover - Portable Handle (5 pack)
31	207099S	Gsix Attachment Set - Service
	* 270899A	Gsix™ Kirby Carton Top (20/cs)

* Not Illustrated

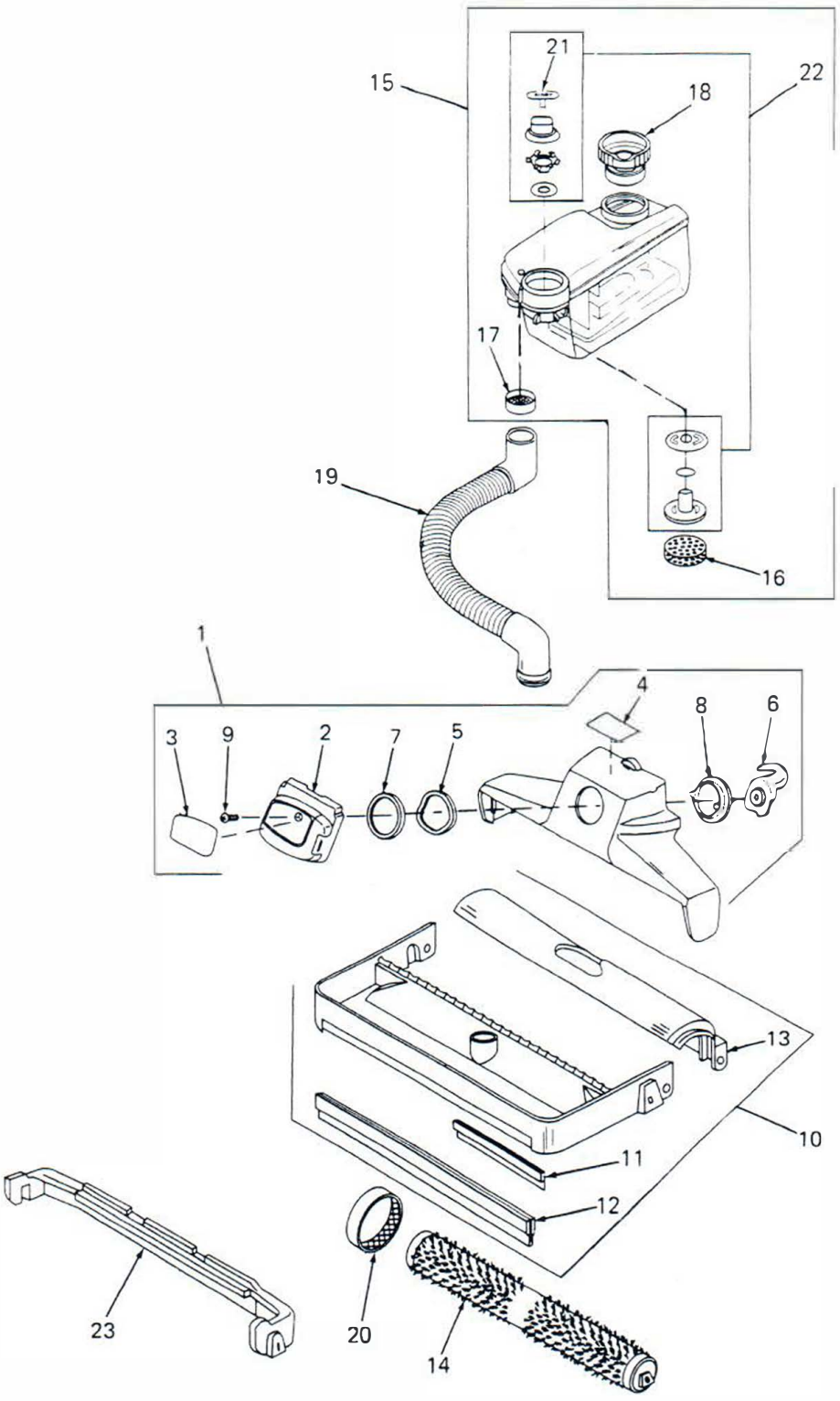

Figure 49. Carpet Shampoo System

Table 11. Carpet Shampoo System

1	303199S	CSS Nozzle Assembly-Export
2	159299S	Belt Lifter Body Assembly
3	673699S	Label - Belt Lifter (5 pack)
4	304299S	Warning Label, CSS (5 pack)
5	314890S	Spring Washer (10 pack)
6	144291	Belt Lifter Hook
7	144681S	Flat Washer (10 pack)
8	145481S	Bearing - Belt Lifter (10 pack)
9	232596S	Screw (Torx) - Belt Lifter (10 pack)
10	304799S	Tray Assembly w/Shield
11	305299S	Belt Baffle, CSS Tray (5 pack)
12	305499S	Suds Leveler, CSS Tray (5 pack)
13	304499	Shield, CSS Tray
14	305789S	Brush Roll Assembly w/Axle and Retainers
15	306799S	CSS Tank Assembly
16	307389S	Filter Sponge - CSS Tank (10 pack)
17	316299S	Suds Screen, CSS Tank (5pack)
18	308999S	Cap - CSS Tank (5 pack)
19	308099S	Hose Assembly, CSS
20	301291A	Belt (25 pack)
21	316399S	CSS Wedge (5 pack)
22	300399S	Valve Assembly, CSS Tank (5 pack)
23	313599	Carpet Fluffer Shield
	* 316197S	CSS Moisture Tray (5 pack)
	* 303899A	CSS Carton (20/cs)

* Not Illustrated

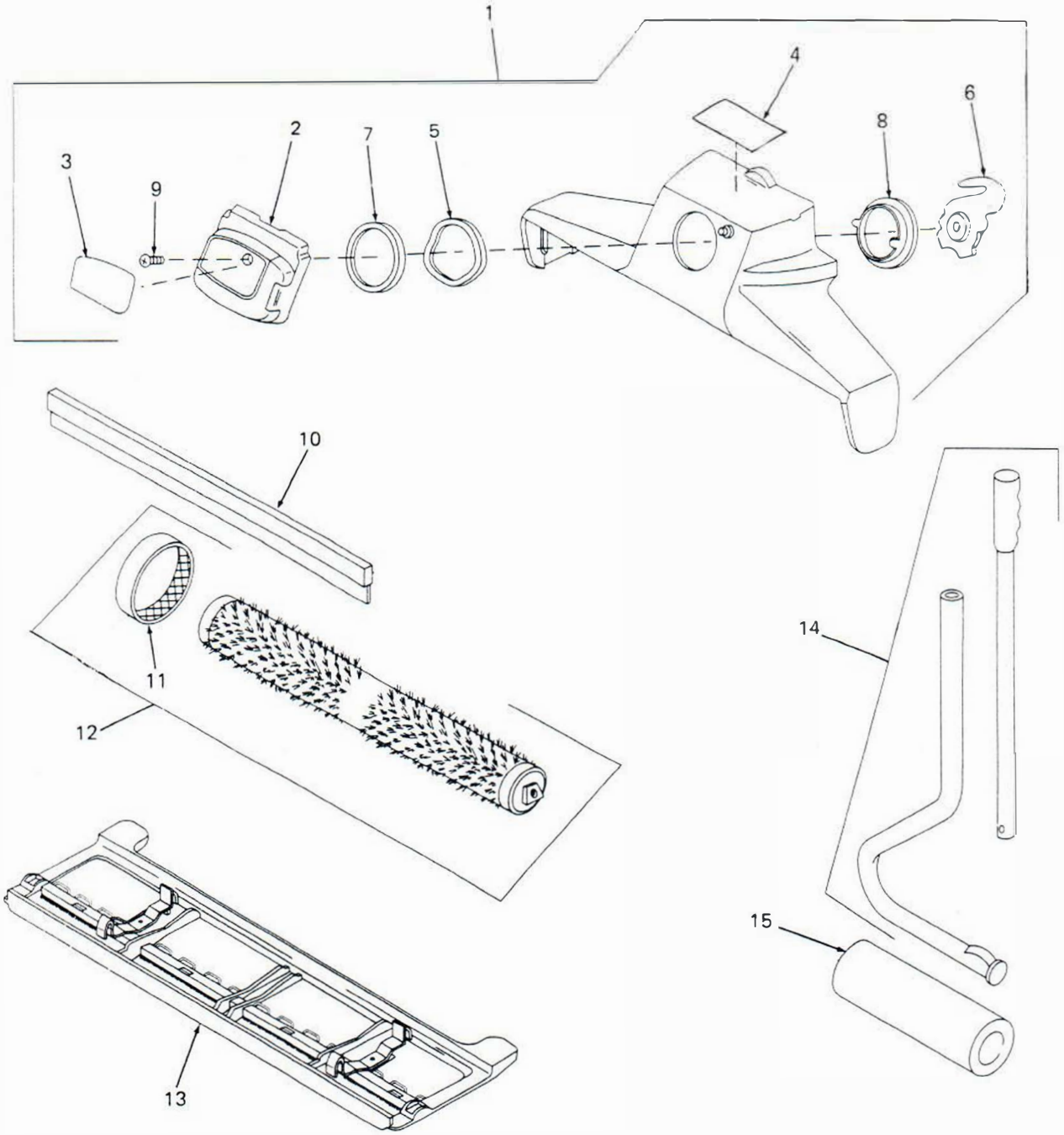

Figure 50. Floor Care Kit w/Miracle Waxer

Figure 12. Floor Care Kit w/Miracle Waxer

1	312999S	Floor Care Kit Nozzle Assembly - Export
2	159299S	Belt Lifter Body Assembly
3	673699S	Label - Belt Lifter (5 pack)
4	313499S	Warning Label - Floor Care Kit (5 pack)
5	314890S	Spring Washer (10 pack)
6	144291	Belt Lifter Hook
7	144681S	Flat Washer (10 pack)
8	145481S	Bearing - Belt Lifter (10 pack)
9	232596S	Screw (Torx) - Belt Lifter (10 pack)
10	301099S	Baffle Strip (5 pack)
11	301291A	Brush Belt (25 pack)
12	313292S	Brush Belt (25 pack)
13	205999S	Bare Floor Duster Pad
14	480495S	Miracle Waxer Handle Assembly (6/cs)
15	480896G	Miracle Waxer Roller - English (12/cs)
	*312199S	Floor Care Kit/Miracle Waxer Carton and Insert (20/cs)

*Not Illustrated

NOTES