KIRBY

Generation 3™

SERVICE MANUAL FOR KIRBY GENERATION 3

KIRBY®

a Scott Fetzer company

Cleveland, Ohio 44102 U.S.A.

Form. No. 773689
Printed in USA

SECTION 2

2.3 TOOLS AND METERS

Tools required include:

- Screwdrivers - Flat - Assorted Sizes
- Screwdrivers - Phillips - Assorted Sizes
- Pliers - Assorted
- Impact Screwdriver
- Bench Vise
- File - Round Rattail - 8" long
- Torque Screwdriver (30 inch pounds)
- File - 1/4" pillar - 6" long
- Pliers - Snap Ring - Truarc No. 0300 and 02
- Tap Wrench
- Threading Tap 6 x 32
- Threading Tap 8 x 32
- Threading Tap 10 x 24
- Threading Tap 10 x 32
- Open End Wrench 11/32

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

- Rivet Tool – Exhaust Horn Gasket T145
- Fan Locking Pin T104
- Shim Tool (2 pieces) T147S
- Clear Sealer 134856
- For use of adhesive/lubricants and sealants, see Product Update Bulletin 88-86A dated 11-1-88

Meters required for analysis and electrical safety testing are:

- Wattmeter - with range to 5000 watts
- Ohmmeter - or battery-powered test light
- 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

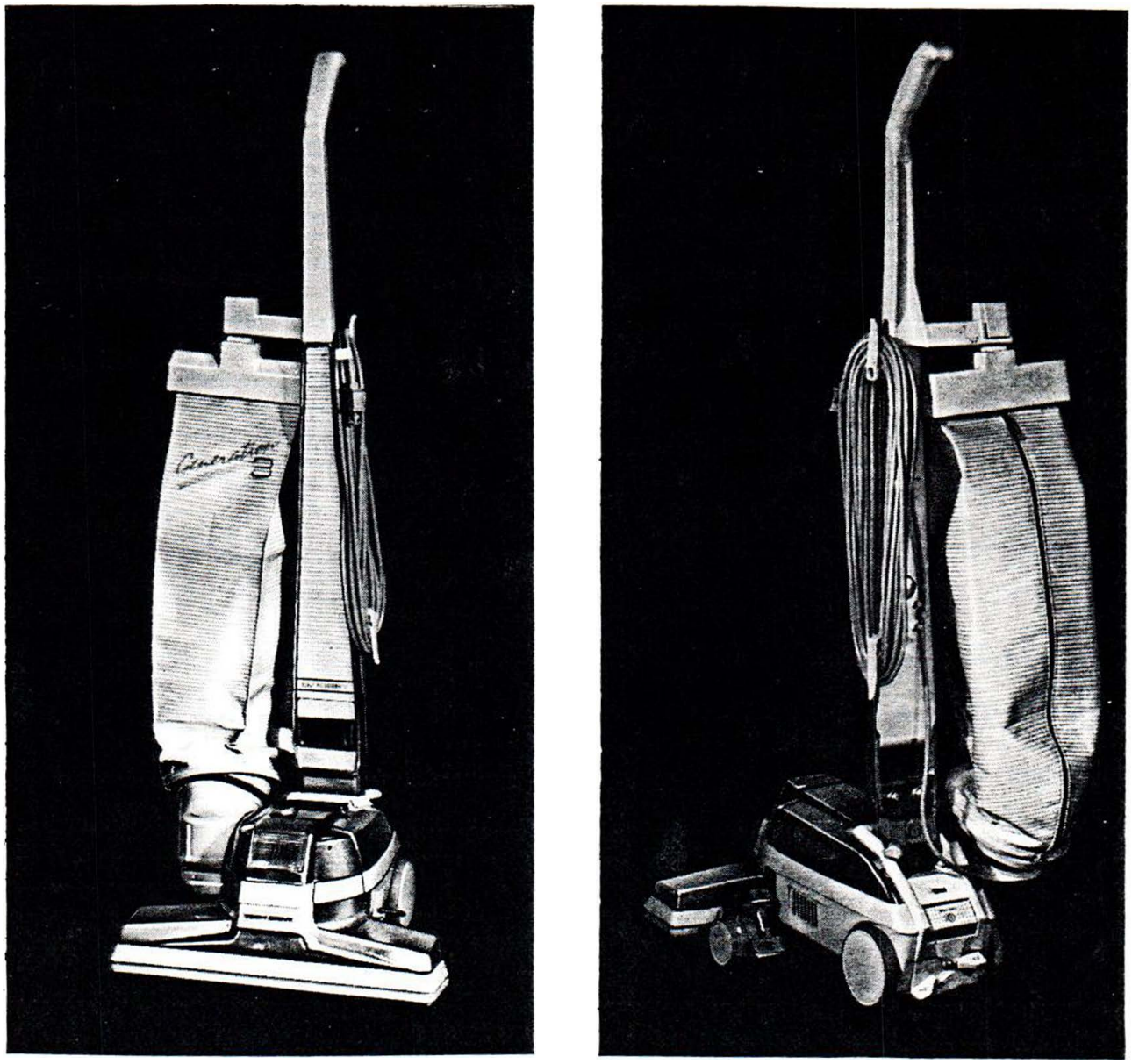


Figure 1. The Generation 3 Kirby

KIRBY®

a Scott Fetzer company

DATE: October 13, 1992

TO: All Distributors, Area Distributors, Service Center Personnel, and Warehouse Personnel

FROM: Lou Pamer - Director, Kirby Customer Service Center

SUBJECT: Gen. 3 Cord Retrofit

The retention properties of part #192091S cord with the part #196091 cord cover are far superior than the part #690090S cord with the boot. Therefore, Kirby engineering is recommending, whenever possible, to replace the #690090S cord with the #192091S cord and #196091 cord cover at your service center.

Because a hole must be drilled in the base pan to attach the cord cover, the cord must be changed at the service center either as a warranty replacement or when a customer purchases a new cord. Obviously, the customer must bring the Gen. 3 unit to your service center to facilitate the retrofit. Do not instruct the customer to perform the retrofit.

Sequential instructions will be provided to every service center to assure an accurate and effective retrofit of the cord assembly. Stub length drill bits, part #T128S are available for purchase at the Customer Service Center and at the Whitby Warehouse in Canada. The shorter drill bit will allow only 1/4 inch to extend beyond the drill chuck as recommended in the instructions.

The #130384 screw is used to attach the cord cover to the base pan.

The #690090S cord will remain available for sale only to customers that refuse to bring their unit to the service center for the retrofit.

If I may be of further assistance, please contact me at (216)267-1790.

1920 West 114th Street • Cleveland, Ohio 44102
Phone: 216-228-2400 • Fax: 216-221-3162

TECHNICAL BULLETIN FOR KIRBY FACTORY AUTHORIZED SERVICE CENTER USE ONLY

CORD RETROFIT PROCEDURE

The following procedure has been developed to upgrade the attachment method of the cord at the base. The old system includes a cord with a female plug boot - part No. 690090S. The new system includes cord 192091S, a cord cover 196091, and a screw 130384. The change from the old system requires the change of parts noted above, and the addition of a hole in the base to allow the proper mounting of the cord cover. The method of locating the additional hole is as follows:

1. Remove the old cord.

2. Insert new cord into power switch.

3. Install cord cover.

   a) Place bottom tab of cover in base opening.
   b) Push cover toward fancase until the side tab clears the base.

4. With the cord and cord cover in the assembled position, use the cord cover as a templet to mark the cord cover mounting hole position on the base.

5. Remove the new cord and cord cover, and using tool T-128, drill a hole in the base at the marked location. Care must be taken to make sure the drill does not penetrate more than 0.25 (1/4) inch into the base or damage to the switch might occur.

6. It is suggested that a vacuum pick-up be used when drilling to prevent metal chips from entering the motor compartment. Care should also be taken not to elongate the hole during the drilling operation. The self tapping screw can strip out if the hole is made oversize by a wobbling drill.

7. After drilling, add the cord and cover as in steps 2 and 3 above, and carefully thread the screw into the newly drilled hole. Drive screw to a torque of 9 inch-pounds or until the screw just bottoms on the base.

8. Start cleaner and look for any signs of arcing or looseness at the cord to switch connection.

SECTION 5. SERVICE DETAILS AND INSTRUCTIONS

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 7.

5.1.3 Relationship of Text to Theory Illustrations and Exploded Views

Two types of illustrations are provided for clarification of the procedural text contained within this section:

- Theory Illustrations
  - — Throughout the text, photographs of the **Generation 3 Kirby** appear that associate accompanying procedural steps with the unit.
  - — Text references, the location of 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 and nomenclature, can be found in the parts list contained in Tables 1 through 7.

5.2 POWER UNIT CHECKOUT

If a **Generation 3 Kirby** requires service, refer to Figure 2 and accomplish initial checkout as follows:

A. Remove rug nozzle or hose and mini emtor.

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

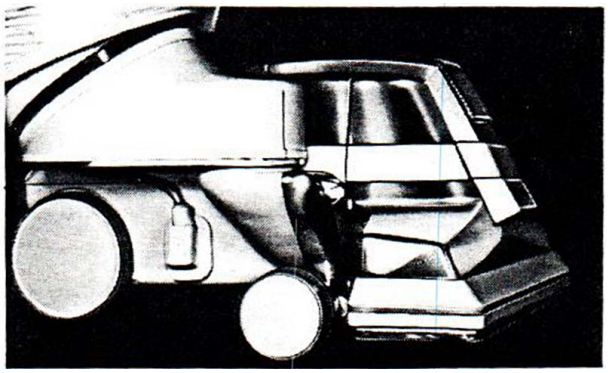


Figure 2. Rug Nozzle, Mini Emtor, and Power Cord

⚠ 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.

⚠ CAUTION

A power cord retaining clip is located on the right side of the scuff plate. Carefully remove the power cord from under the clip when changing power cords.

When removing the power cord connector from housing, pull straight out. Do not twist or turn connector.

F. If the power cord is frayed or damaged, then 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.

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 3. Remove scuff plate by:

1. Remove tilt knob by removing phillips head screw from handle.
2. Remove power cord retainer from scuff plate by removing phillips head screw.
3. Remove phillips head screw that attaches scuff plate at rear of power unit.
4. Place a slot head screw driver into opening in back of scuff plate and gently press inward to release internal plastic clip.
5. Remove scuff plate by sliding it to the rear to disengage internal plastic clip.

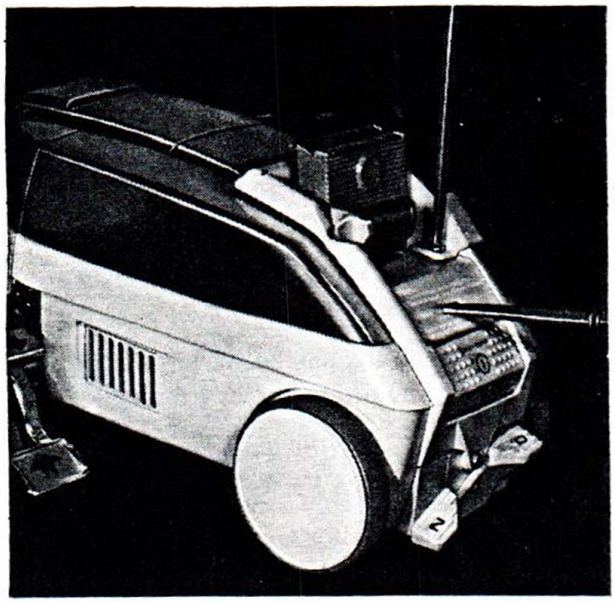


Figure 3. Scuff Plate Removal

C. See Figure 4. Remove cover assembly by:

1. Raising headlight and removing two flat head phillips screws.
2. Remove two phillips head screws from both sides of the on/off switch on the back of cover assembly. These screws are exposed after the scuff plate is removed.
3. Lift cover assembly off and slide to rear to clear slide bracket assembly and headlight cap.

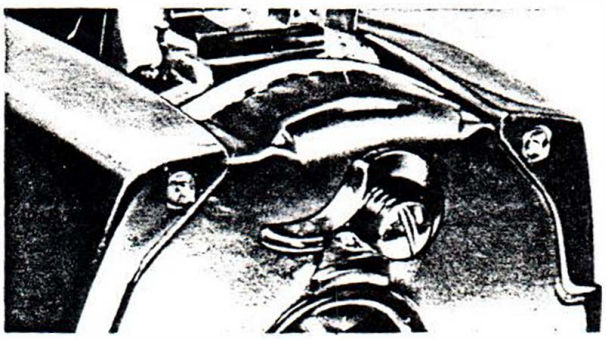


Figure 4. Cover Assembly Removal

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

For detailed service information on the components of these assemblies see paragraphs 5.4.1, 5.4.2, and 5.4.3. Remove this assembly as follows:

NOTE

All three of these components are assembled to the "Slide Bracket Casting." This casting is attached to the subassembly with two round head phillips screws at its rear legs and two round head phillips screws through the top front of fan case housing.

A. See Figure 5. One of the headlight leads has an in-line connector covered by a clear piece of insulating tubing.

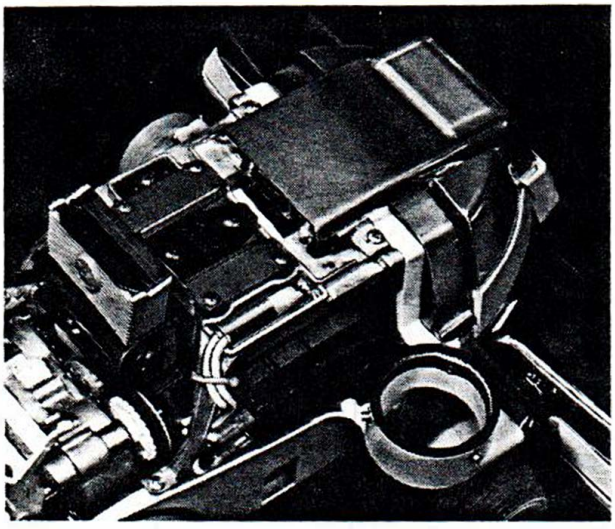


Figure 5. Headlight Cap/Slide Bracket Assembly and Handle Pivot Assembly (Rear)

B. See Figure 6. Cut and remove tie wrap from headlight leads. Slide clear insulated tubing from in-line connector and separate connection.

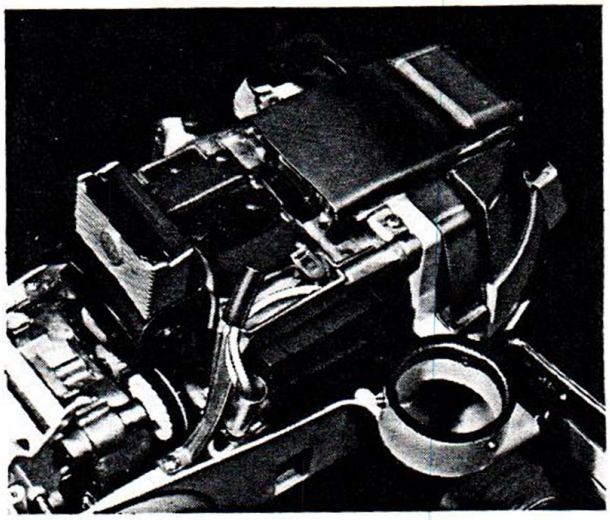


Figure 6. Separation of In-line Connector of Headlight Leads

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

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

E. See Figure 7. Remove two phillips head screws from the fan case assembly. These screws pass through the fan case assembly and base subassembly and thread into the slide bracket casting. Remove headlight cap/slide bracket assembly and handle pivot assembly.

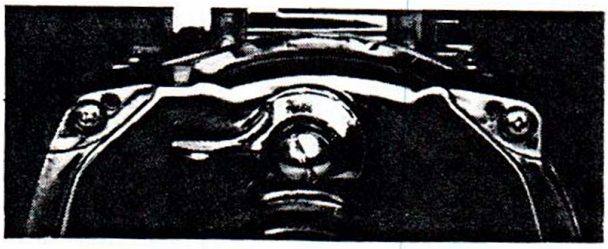


Figure 7. Headlight Cap/Slide Bracket Assembly and Handle Pivot Assembly (Front)

5.3.3 Drive System Assembly Removal

Remove the drive system assembly as described below. Detailed service information on the drive system assembly is provided in paragraph 5.4.4.

A. See Figure 8. Using a thin bladed screw driver, carefully pry the pivot points of the power switch foot pedal off the pivot pins formed in the drive system housing.

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

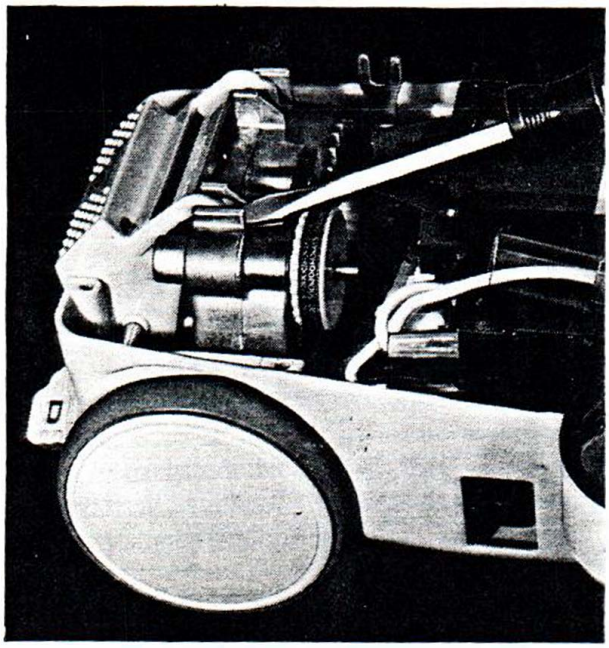


Figure 8. Foot Pedal Removal

C. Turn the still assembled components of the power unit over as shown in Figure 9.

D. Remove the two black phillips head screws, that are closest to the drive wheels, from the aluminum drive system assembly housing.

E. Remove the black phillips head screw from the centerline of the drive system assembly (toward fan end of power unit). Chromed phillips head screw remains in place during removal of drive system assembly.

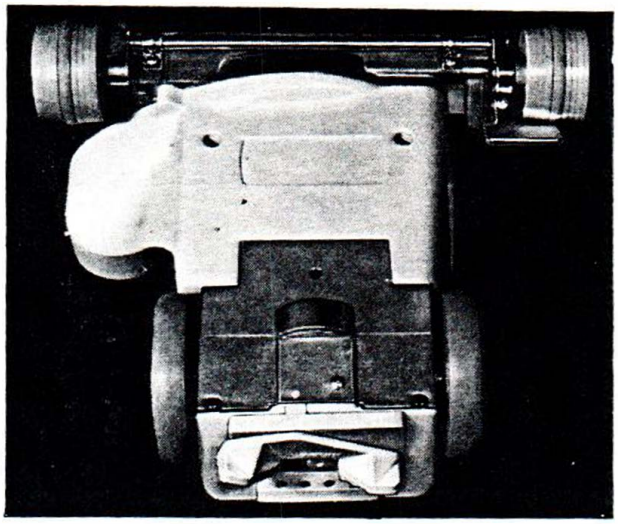


Figure 9. Bottom of Drive System Assembly Housing

F. While supporting drive system assembly, turn the still assembled components of the power unit over. Position power unit as shown in Figure 10.

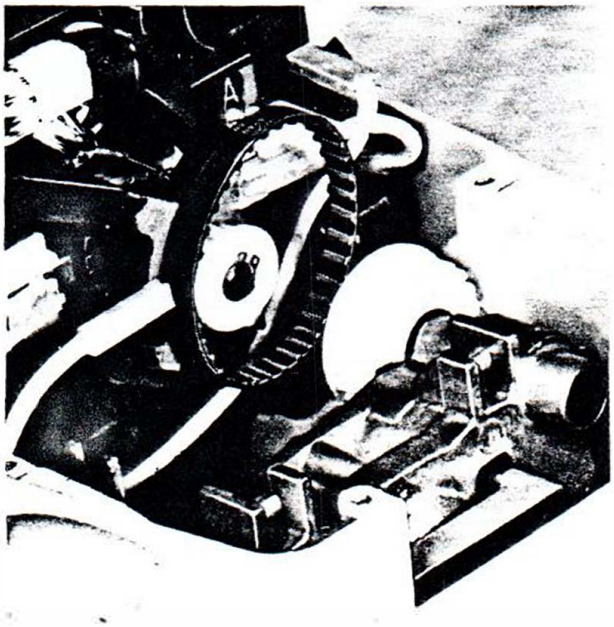


Figure 10. Drive Belt and Drive System Assembly Removal

⚠ CAUTION

Do not bend the drive belt during removal.

G. Move the drive system assembly down to get some slack in the drive belt and remove the drive belt.

H. Slide the drive system assembly down and out from under the power unit.

5.3.4 Motor Unit Assembly Removal

Remove the motor unit assembly as follows:

A. Turn the assembled portions of the power unit over as shown in Figure 11.

Figure 11. Motor Unit Assembly Removal (Bottom)

B. Remove two phillips head screws from the deeply recessed holes in power unit. (See CAUTION at end of this section.)

C. Turn the assembled portions of the power unit over as shown in Figure 12.

D. Remove two phillips head screws and washers from rear of motor unit assembly. (See CAUTION at end of this section.)

E. Remove static wire assembly from the top of the left side motor unit holddown.

F. See Figure 13. Remove screw from exhaust duct and lift out foam and grill. Remove exhaust duct from area between motor unit assembly and base subassembly.

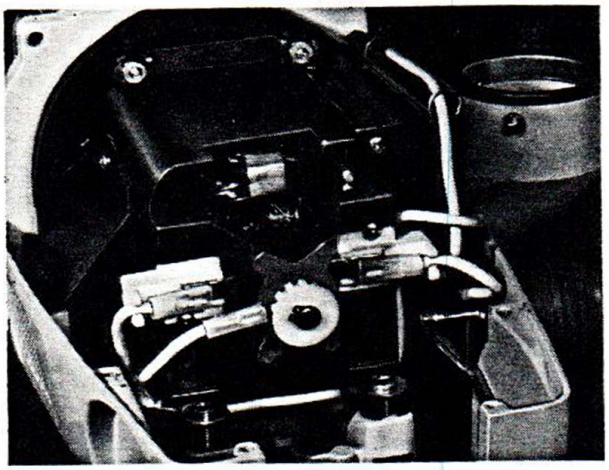


Figure 12. Motor Unit Assembly Removal (Top)

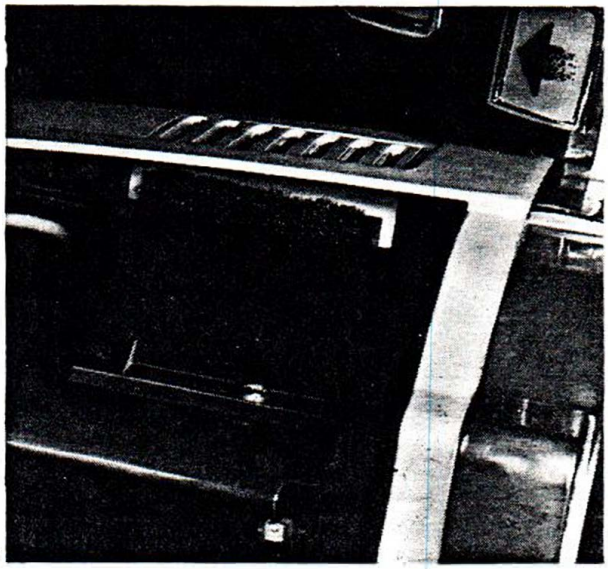


Figure 13. Exhaust Duct, Foam, and Grill Removal

G. While holding base subassembly down, gently lift up and out on rear of motor unit assembly.

H. Remove motor seal from motor unit assembly.

I. For further disassembly of the motor unit assembly see paragraph 5.4.5.

> **⚠ CAUTION**
>
> When reinstalling motor unit assembly, rear screws (paragraph D above) must be tightened before front screws (paragraph B above).

5.3.5 Fan Case Assembly, Wheels, and Wheel Shaft Main Assembly Removal

Remove fan case assembly, wheels, and wheel shaft assembly as described below:

> **NOTE**
>
> Removal of the fan case assembly shall only be accomplished if replacement of the components are required.

A. Fan Case Assembly:

1. See Figure 14. Remove one flat head phillips head screw from front of fan case assembly. This screw is located just below rug nozzle interlock.
2. Remove two remaining phillips head screws from lower end of the fan case assembly.

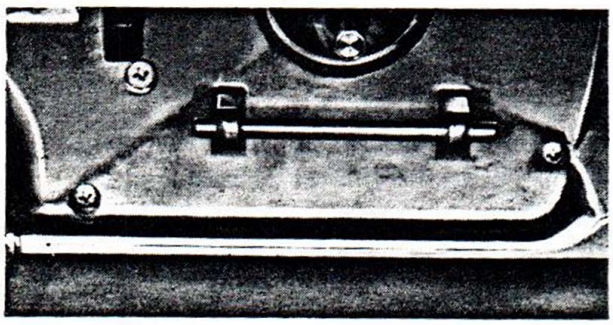
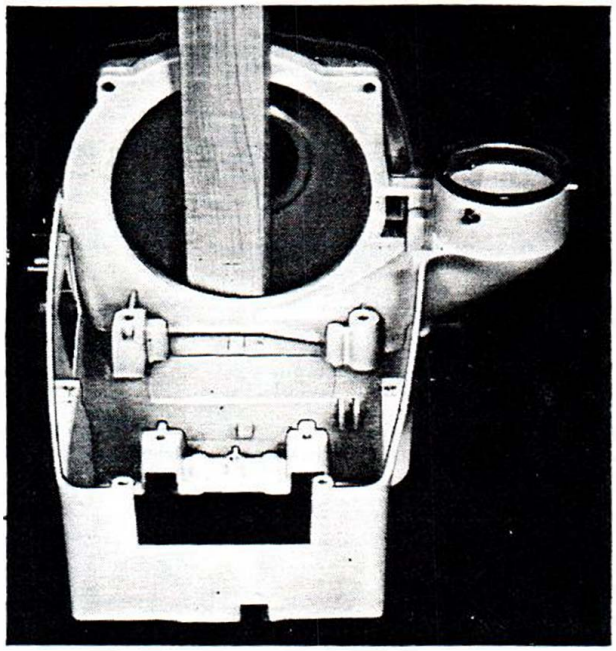


Figure 14. Fan Case Assembly Screw Removal

3. See Figure 15. Using one of the two methods shown in figure, break seal between fan case assembly and base subassembly and remove fan case assembly and attached components.



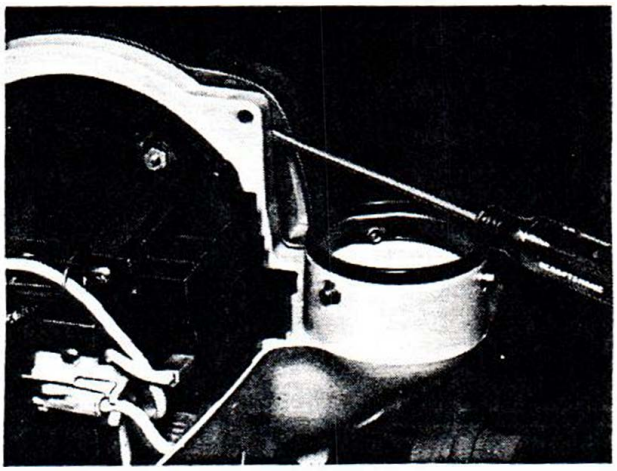


Figure 15. Fan Case Assembly and Wheel Shaft Main Assembly Removal (Two Methods)

NOTE

Screwdriver method may be used with motor installed.

4. Prior to reassembly of fan case, clean old sealant from joining surfaces and apply new sealant as shown in Figure 16.

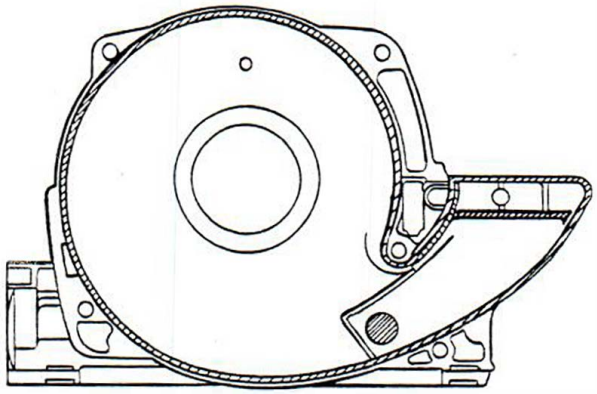


Figure 16. Fan Case Sealant Application

5. If the volute deflector is loose in fan housing, reattach using sealer 134856.

B. Wheel Shaft Main Assembly:

1. See Figure 17. Remove two phillips head screws from bottom of fan case assembly.
2. Remove shaft clamps and wheel shaft main assembly.
3. Remove ratchet lock casting and ratchet lock spring from cavity in fan case assembly.

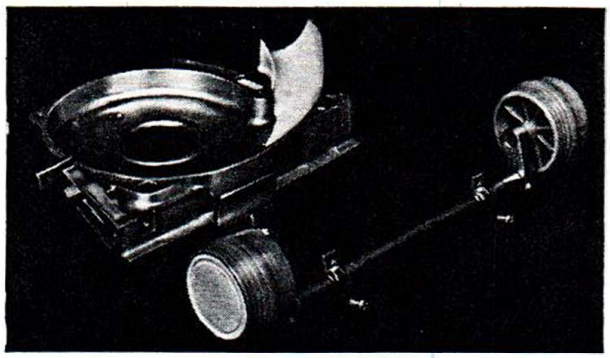


Figure 17. Ratchet Lock and Volute Deflector Removal

5.3.6 Base Subassembly

If the exhaust horn gasket requires replacement:

A. See Figure 18. Carefully grind or drill away three special holding rivets.

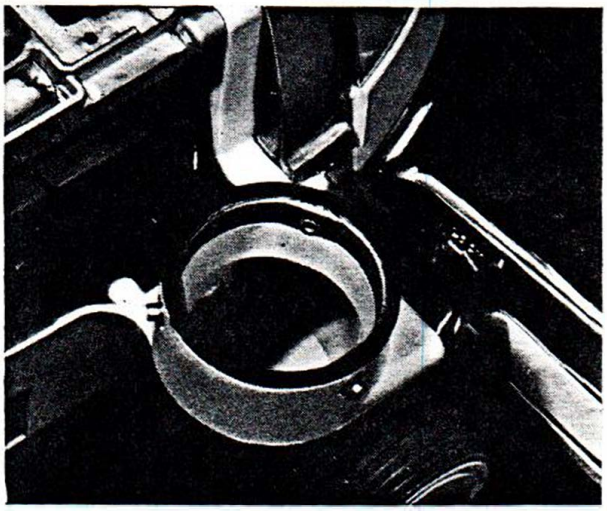


Figure 18. Exhaust Horn Gasket Removal

B. Remove and discard metal horn insert sleeve with gasket.

C. To install replacement sleeve and gasket, use special tool T145 to seat new rivets. (See Figure 19.)

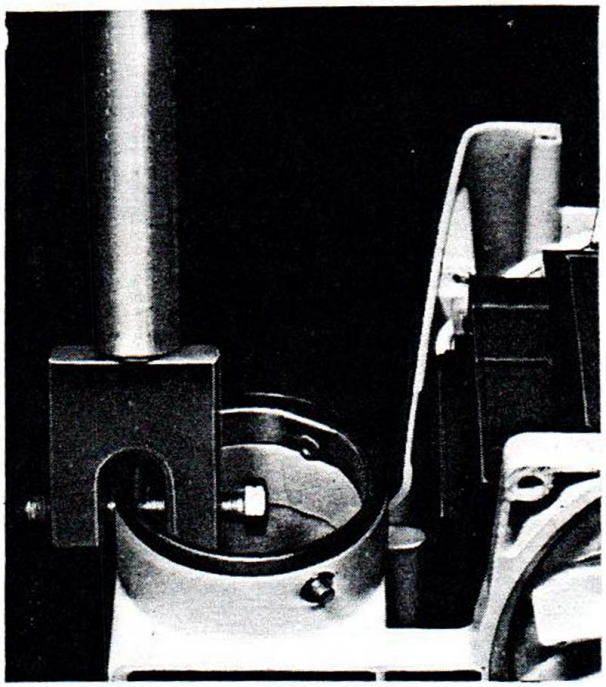


Figure 19. Exhaust Horn Gasket Installation

5.4 POWER SUBASSEMBLIES — DETAILED SERVICE

5.4.1 Headlight Service

A. See Figure 20. Remove two flat head phillips screws from bottom of headlight plastic lens.

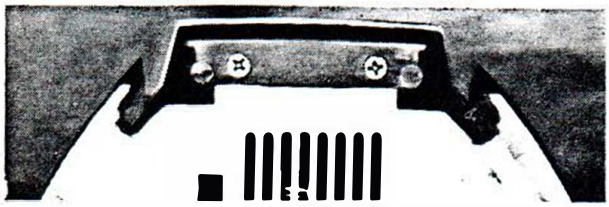


Figure 20. Headlight Bulb Replacement

B. Lift plastic lens up and out of casting.

C. Pull bulb from socket and install new bulb. Installation is the reverse of removal.

5.4.2 Handle Pivot Spring Assembly

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

A. Remove handle boot from handle pivot spring assembly only if replacement is required.

B. See Figure 21. Remove two phillips head screws from bracket.

⚠ 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.

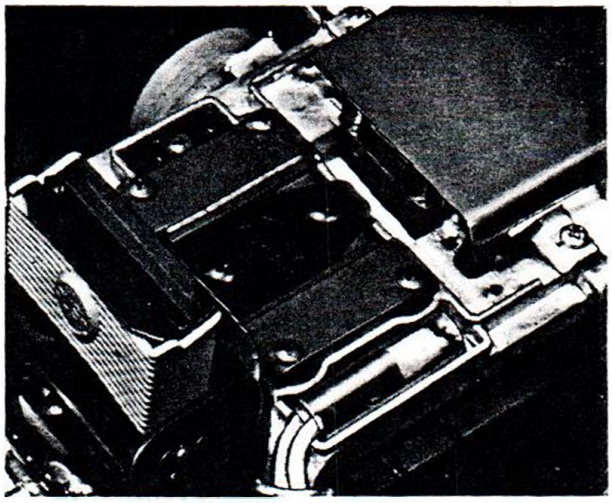


Figure 21. Handle Pivot Spring Assembly Replacement

C. Locate handle pivot spring assembly rivet into vertical lever fork of drive system and place tab of spring assembly in position on slide. See Figure 22.

D. Insert two-piece shim tool T147 at front and rear of slide to maintain centered position.

E. With shims in place in both ends of slide, push forward firmly on handle pivot spring assembly and hold while tightening two phillips head screws to 25 to 30 inch pounds.

F. Remove shims and push handle pivot spring assembly in both directions. Make certain slide does not strike slide bracket casting in either direction.

G. If slide strikes casting, loosen two phillips head screws and repeat steps D through F.

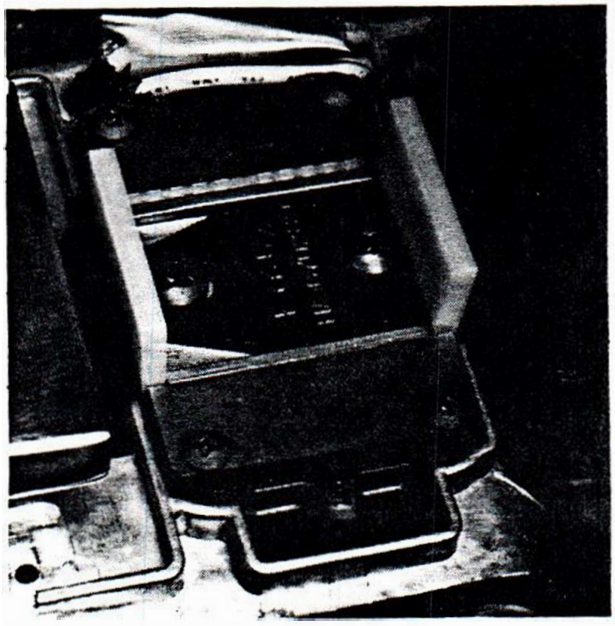


Figure 22. Handle Pivot Spring Assembly Shim Tool Use

⚠ 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.

5.4.3 Slide Bracket Assembly Component Replacement

Service is limited to disassembly and replacement of damaged components.

A. Refer to Figures 23 and 24. Remove the single phillips head screw from the slide adjusting wedge.

B. Remove four phillips head screws from the slide guide blocks.

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

NOTE

- The slide adjusting wedge has a tapered side to allow for minor tension adjustments.
- Guide blocks are reversible and interchangeable.
- Slide is reversible.
- If slide or guide blocks show wear on roller pin mating surfaces, replace.
- If needle rollers are worn or loose in cage, replace bearing assembly.

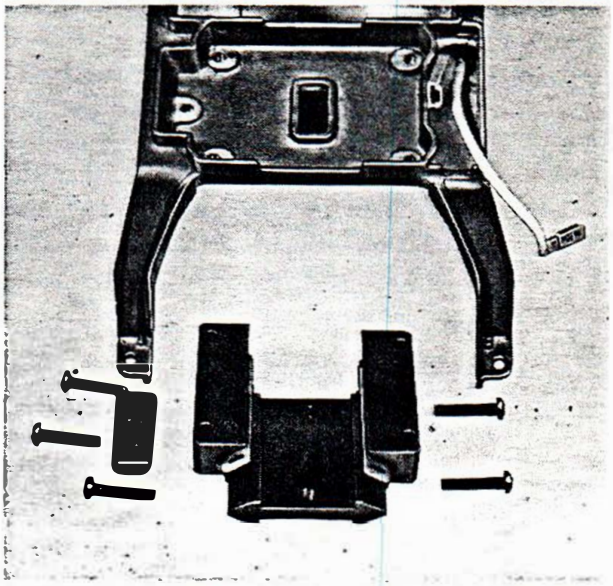


Figure 23. Disassembled View of Slide Bracket Assembly

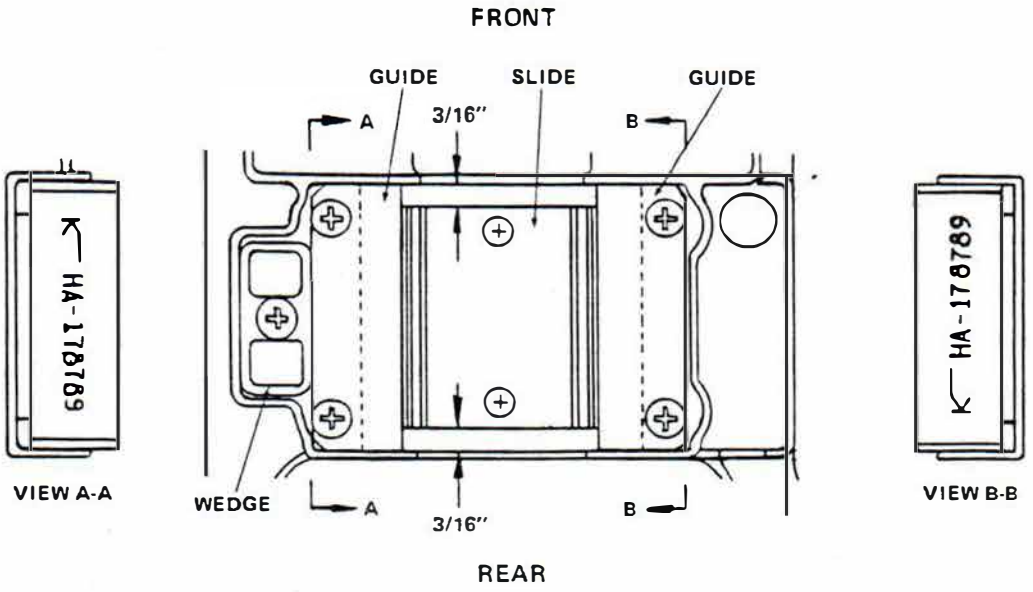


Figure 24. Assembled View of Slide Bracket Assembly

D. Refer to Figures 23 and 24 as needed to assemble. Assembly is as follows:

1. If new bearing assemblies are to be installed, bend along score line so that flat surface of cage will be positioned against the slide.
2. See Figure 24. Assemble the two bearing assemblies, two guides, and the slide. Place them, as a unit, into the slide bracket casting. Ensure that the Kirby part numbers and logo on the guides are oriented as shown in views A and B of Figure 24.
3. Position the right side guide against casting pocket wall. Install two phillips head screws into right side guide and while holding guide against wall torque screws to 25 to 30 inch pounds.
4. Position slide as shown in Figure 24 and hold in position. Align ends of bearing assembly to align with ends of slide. Install two phillips head screws handtight into left side guide.
5. Install wedge (tapered side of wedge against taper in casting wall) and phillips head screw into left side of casting pocket. Preload bearings to 25 to 30 pounds by torquing phillips head screw in wedge to 7.0 inch pounds.
6. Tighten the two phillips head screws on the left side guide to 25 to 30 inch pounds.

5.4.4 Drive System Assembly

This 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 25. Insert a thin bladed slot head screwdriver through slots in back of wheel and gently twist to release spring tabs of wheel covers. Lift off wheel covers.

B. Using a thin bladed slot head screwdriver, remove "D" ring from axle.

C. Remove wheel and replace with new one.

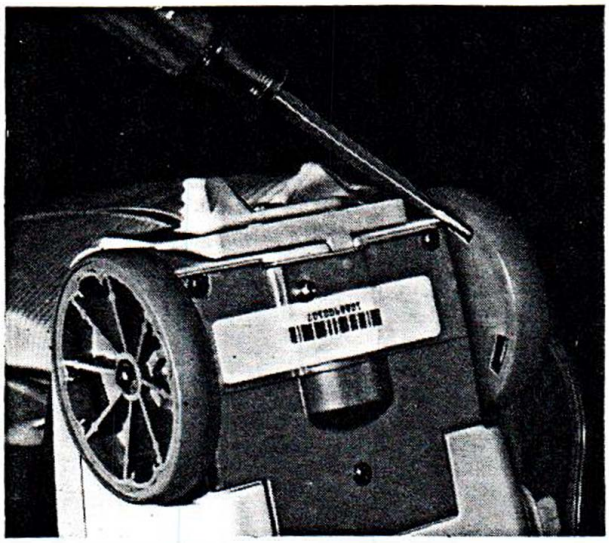


Figure 25. Drive Wheel Cover and Wheel Replacement

D. Installation is the reverse of removal.

5.4.5 Motor Unit Assembly Service

5.4.5.1 Fan Replacement

A. See Figure 26. Place an 11/32-inch open end wrench on flats machined in armature shaft near rear bearing.

B. Prevent rotation of armature shaft during fan removal.

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

D. Remove washer.

E. Remove fan.

F. Remove spacer/seal assembly.

G. Installation is the reverse of removal except that:

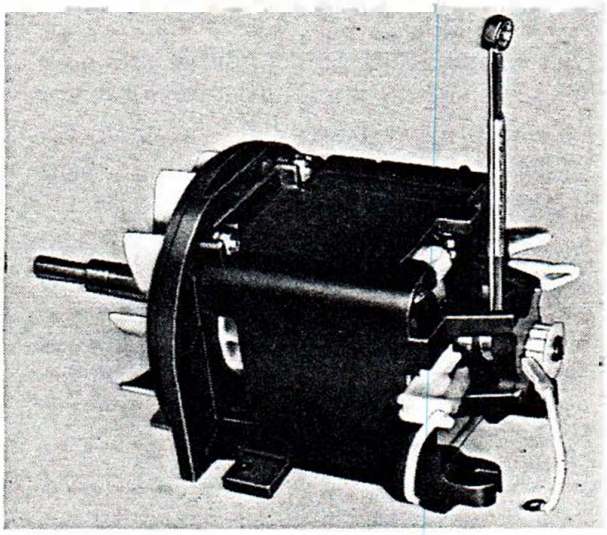


Figure 26. Fan Removal

- Spacer/seal assembly should be installed with the black rubber seal against motor housing as shown in Figure 27.
- Fan pulley threads on in a counterclockwise direction.

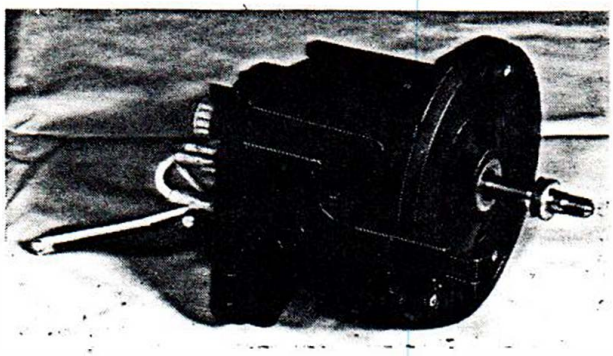


Figure 27. Spacer/Seal Position

5.4.5.2 Carbon Brush Cartridge Replacement

A. See Figure 28. 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.

B. From each brush holder assembly, remove a phillips head screw.

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

D. Installation is the reverse of removal.

⚠ CAUTION

Ensure that the wire routing for the brush holder assembly that is located opposite the power switch is positioned as shown in Figure 28.

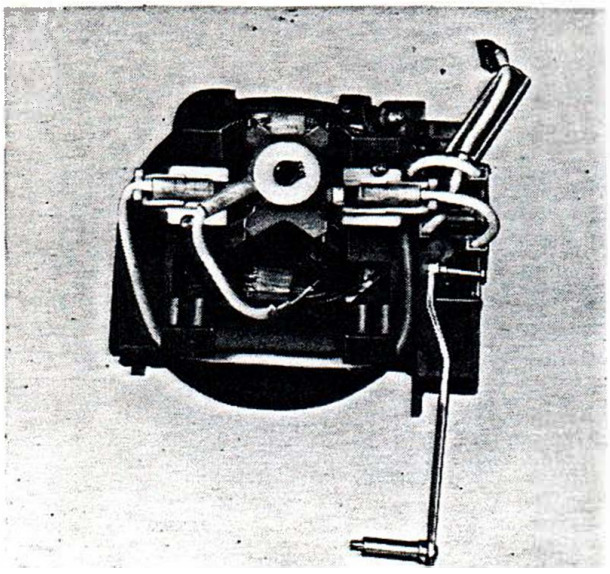


Figure 28. Carbon Brush Cartridge Replacement

5.4.5.3 Power Switch Replacement

A. See Figure 29. If any leads remain attached to the switch, remove them.

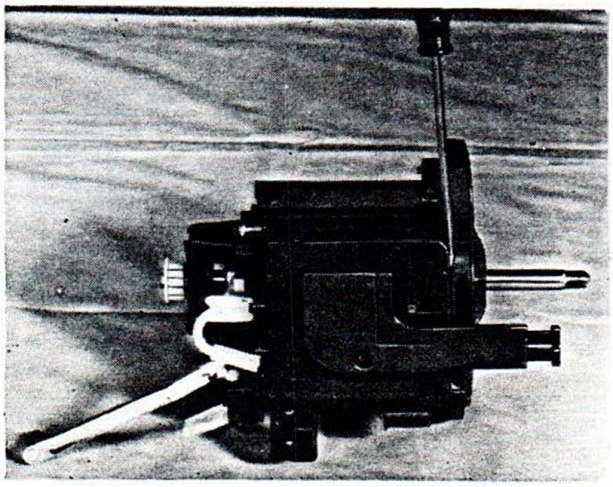


Figure 29. Power Switch Replacement

B. If present, remove switch actuating rod from power switch clips.

C. Remove one phillips head screw from rear end of the switch housing.

D. Using a thin bladed slot head screwdriver, gently pry the switch to the rear in a straight line. This will disengage the terminal block connections from the field terminal block.

E. Check to make sure that all terminal lugs remain in switch housing.

F. A nonoperating power switch should be returned to Kirby for service.

G. Installation is the reverse of removal.

5.4.5.4 Armature Assembly and Front Bearing Replacement

A. Using TRUARC snap ring tool No. 02, remove motor drive clip. See Figure 30.

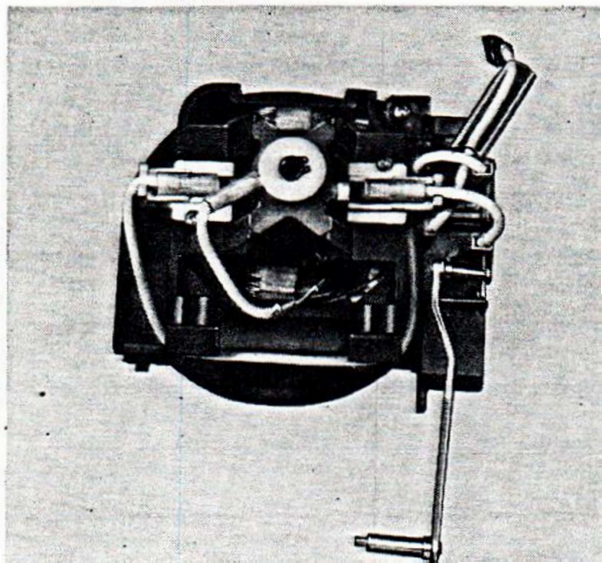


Figure 30. Motor Sprocket Removal

B. Remove motor sprocket from armature assembly shaft.

C. Remove four bearing plate screws and nuts from motor unit assembly. See Figure 31.

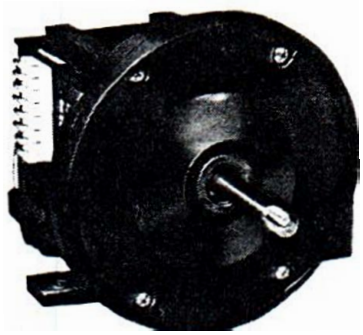


Figure 31. Bearing Plate Subassembly Removal

D. Remove bearing plate subassembly.

E. See Figure 32. If required, the retainer and front bearing can be removed from the bearing plate subassembly by using a TRUARC snap ring tool No. 0300.

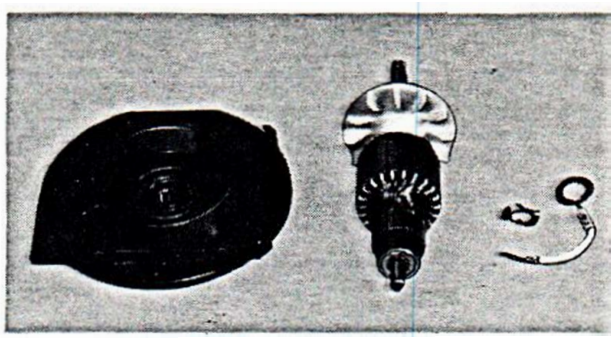


Figure 32. Front Bearing, Armature Assembly, and Static Wire

F. Press rear bearing off shaft if replacement is required.

G. Remove static wire assembly, static washer, and finger spring from motor housing rear bearing hole.

H. Installation is the reverse of removal.

5.4.5.5 Field Assembly Replacement

A. Remove fan, brush holder assemblies, armature assembly, and bearing plate subassembly as described in above paragraphs 5.4.5.1, 5.4.5.2, and 5.4.5.4.

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

C. Remove field assembly from motor housing.

D. Installation is the reverse of removal.

NOTES

SECTION 6. ILLUSTRATED PARTS LIST AND EXPLODED VIEWS

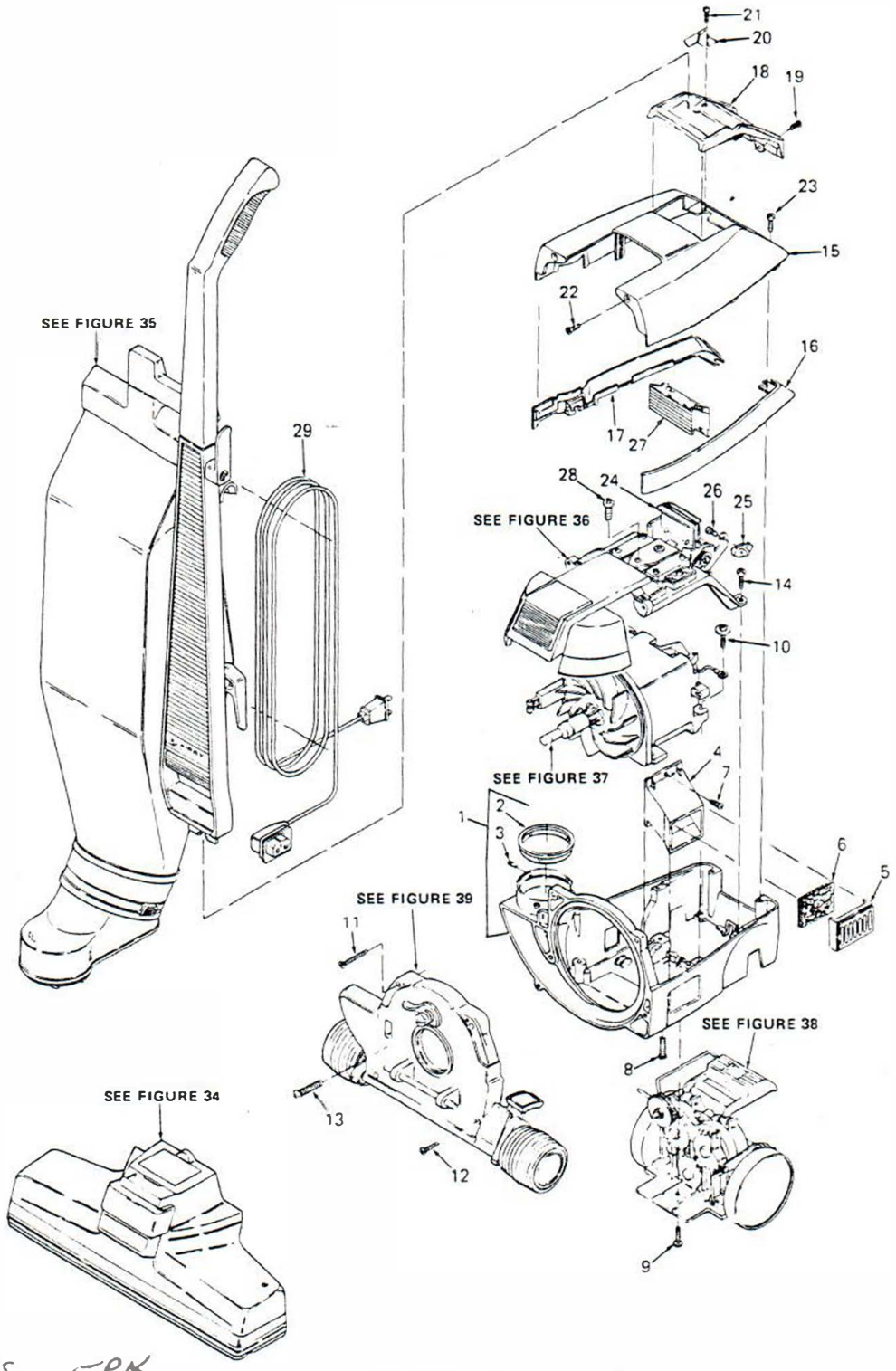


Figure 33. Kirby Generation 3

6 90190S 5PK

~~6 32189~~ CORD CLIP/~~SCUFF PLATE~~ STRAP

Table 1. Kirby Generation 3

1	BP604389S	Base Subassembly
2	BP601989	O-Ring – Horn Adapter
3	FA100689	Rivet – Horn Adapter
4	MO106389	Exhaust Duct
5	BP104189	Grill – Exhaust Duct
6	MO605789	Foam – Exhaust Duct
7	FA148985	Screw – Exhaust
8	FA555689	Screw – Base to Motor
9	FA555689	Screw – Power Drive to Base
10	FA600289	Screw – Motor to Base and Static Wire to Motor
11	FA134689	Screw – Fan Case to Base (Top)
12	FA125089	Screw – Fan Case to Base (Bottom)
13	FA125189	Screw – Fan Case Front (Flat Head)
14	FA631789	Screw – Slide Bracket to Base
15	CO631989	Cover (Less Trim)
16	CO630989	Trim Strip (Left)
17	CO630889	Trim Strip (Right)
18	CO111289	Scuff Plate
19	FA631689	Screw – Scuff Plate
20	CO632189	Cord Clip – Scuff Plate
21	FA130384	Screw – Cord Clip
22	FA125389	Screw – Cover to Fan Case (Front)
23	FA631789	Screw – Cover to Base (Rear)
24	HA671989S	Handle Pivot Spring Assembly
25	HA672489	Tilt Knob – Handle Pivot
26	FA673289	Screw – Tilt Knob
27	HA178689	Boot – Handle Pivot
28	FA672389	Screw – Pivot Assembly to Slide
29	EL192089	Cord Set

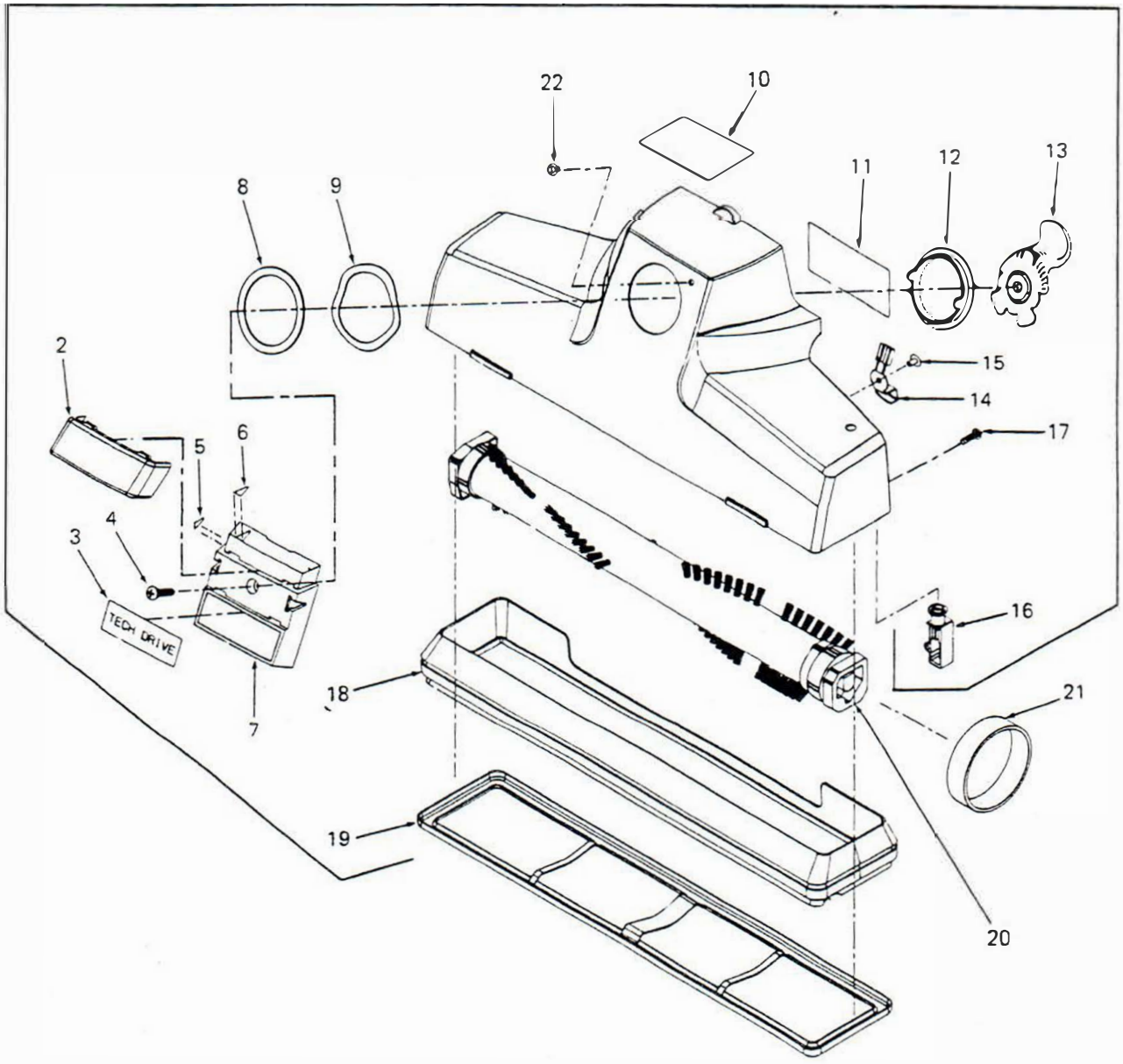


Figure 34. Floor Nozzle Assembly

Table 2. Floor Nozzle Assembly

1	NO141690S	Nozzle Assembly (Less Brush and Belt)
2	NO640189	Trim Strip – Belt Lifter
3	LA673689	Label – Tech Drive
4	FA640489	Screw – Belt Lifter
5	LA640989	Label – Arrow (Melon)
6	LA640889	Label – Arrow (Green)
7	NO144089	Belt Lifter Body
8	NO144681	Flat Washer – Belt Lifter
9	NO144181	Spring Washer – Belt Lifter
10	LA146689	Label – Instructions
11	LA149889	Label – Brush Adjustment
12	NO145481	Bearing – Belt Lifter
13	NO144281	Hook – Belt Lifter
14	NO640689S	Latch Assembly
15	FA141381	Rivet – Latch Assembly
16	NO640389	BPI Assembly
17	FA148985	Screw – BPI Assembly
18	NO140489S	Bumper Assembly – Nozzle
19	NO152689	Rug Plate
20	NO152889S	Brush Roll Assembly (Sleeve Bearing)
21	NO301289	Belt – Brush Roll
22	FA143081	Stop Rivet – Belt Lifter (Not Available)

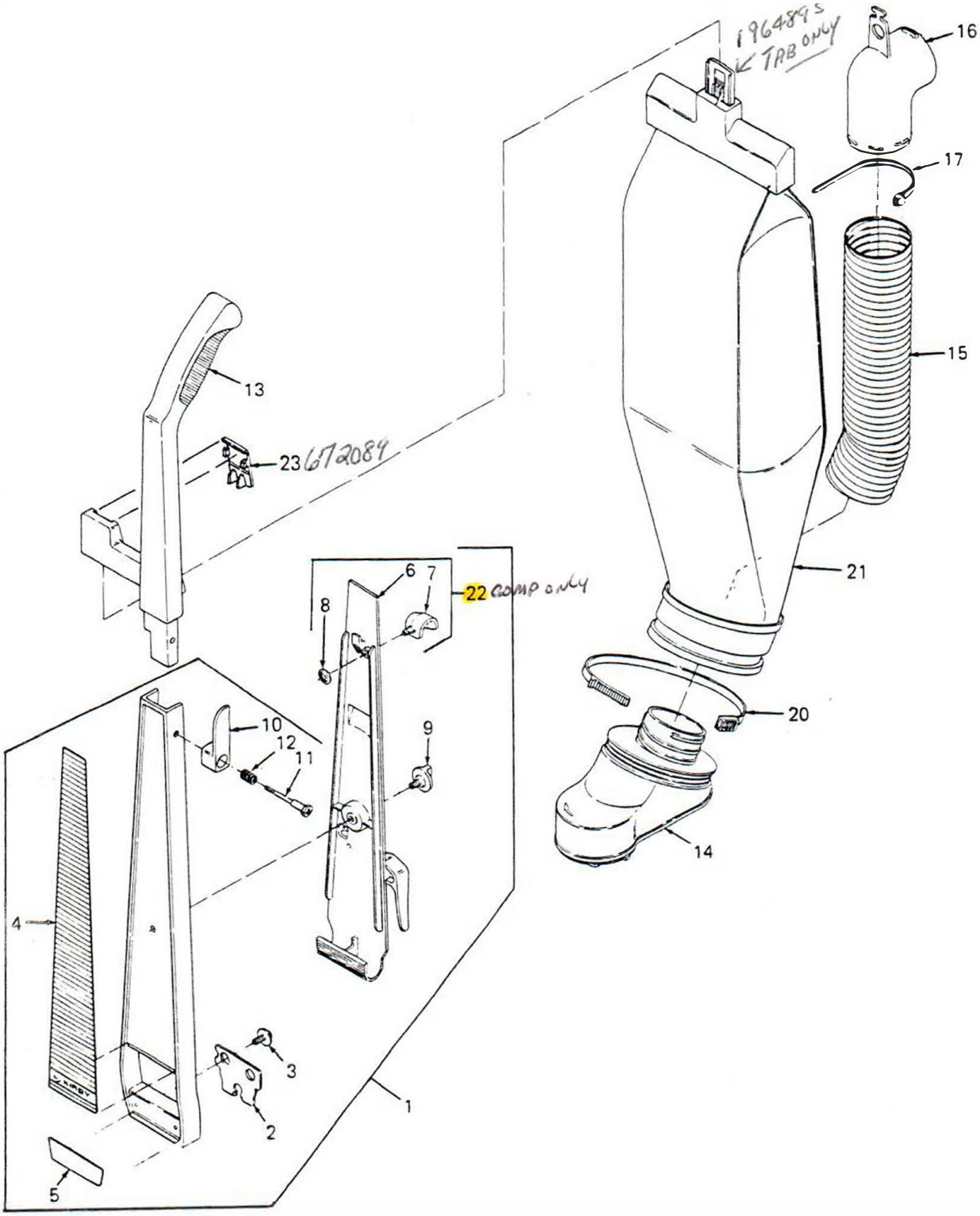


Figure 35. Handle Assembly, Mini Emtor, and Bag

Table 3. Handle Assembly, Mini Emtor, and Bag

1	HA175090G	Handle Fork Assembly
2	HA672189	Latch Plate
3	FA170489	Screw – Latch Plate
4	LA174390	Label – Handle Fork
5	LA673589	Lower Label – Handle Fork
6	HA174589	Rear Cover
7	HA170589	Strain Relief – Rear Cover
8	FA675189	Retainer Ring – Strain Relief
9	HA174989	Screw – Rear Cover
10	HA173889	Cord Hook Swivel
11	FA174089	Screw – Cord Hook Swivel
12	HA174167	Spring – Cord Hook Swivel
13	HA173389S	Handle Grip Assembly
14	BA186989	Mini Emtor Assembly
15	BA190384	Fill Tube
16	BA190489	Top Adaptor
17	BA191182	Tube Tie
18	BA19068903*	Paper Bag (3 pk)
19	BA19068909*	Paper Bag (9 pk)
20	BA196589	Bag Clamp – Mini Emtor
21	BA190089S	Bag Assembly (with Bag Top Cover Assembly)
22	HA673789S	Rear Cover Assembly
23	HA672089	Bag Release Button

* Not Illustrated

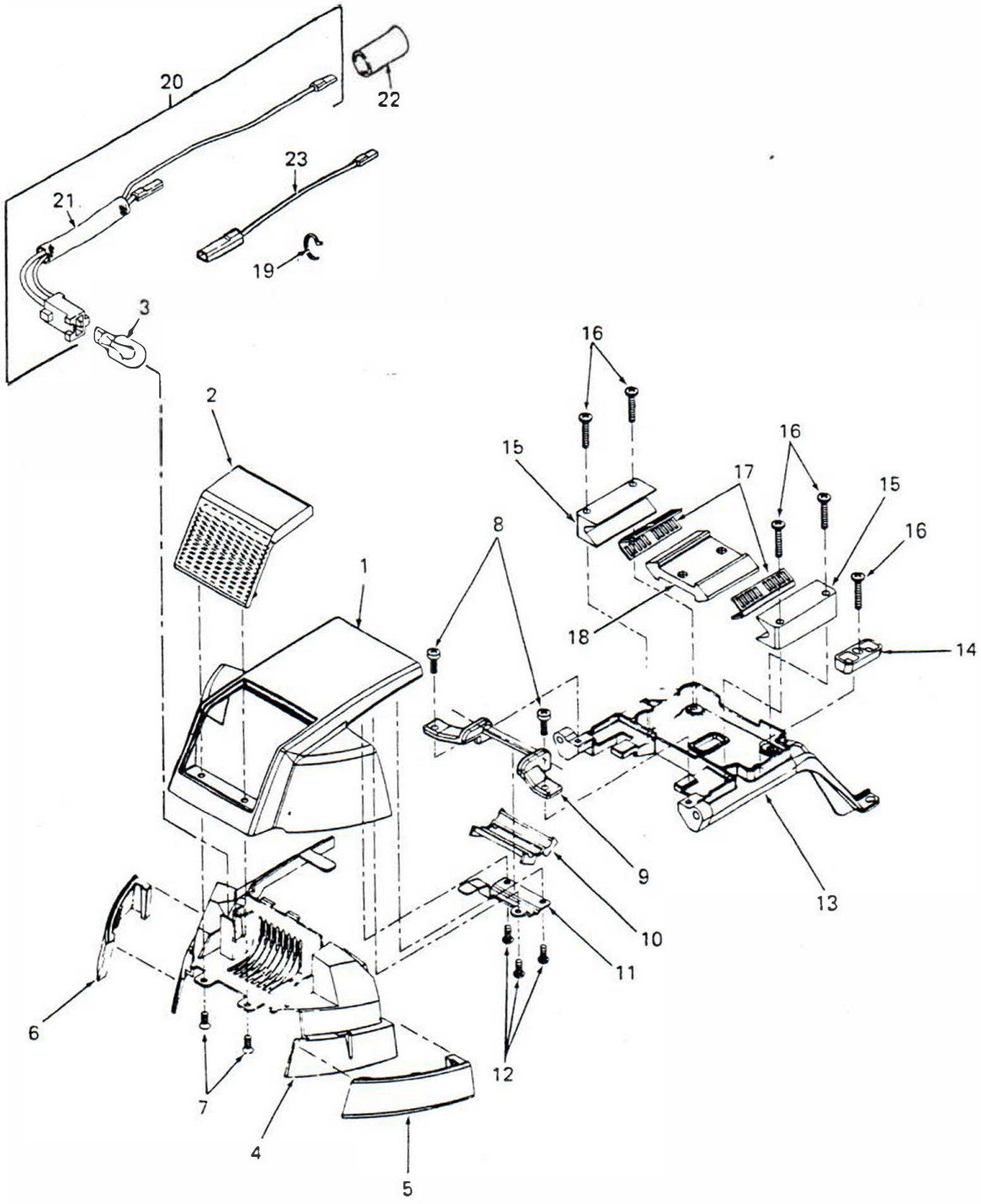


Figure 36. Headlight Cap/Slide Bracket

Table 4. Headlight Cap/Slide Bracket Assembly

1	HL160089	Headlight Cap
2	HL108589	Lens – Headlight Cap
3	EL109289	Light Bulb
4	HL161789	Headlight Frame Bracket
5	HL660089	Trim Strip – Left
6	HL660189	Trim Strip – Right
7	FA162689	Screw – Frame Bracket to Cap
8	FA130384	Screw – Headlight Pivot to Slide Bracket
9	CA161389	Headlight Pivot Casting
10	HL161689	Bushing – Headlight Pivot
11	HL161489	Plate – Headlight Pivot
12	FA102168	Screw – Plate to Headlight Pivot
13	HA170289	Slide Bracket Casting
14	HA179489	Wedge – Slide Adjustment
15	HA178789	Guide – Slide Bracket
16	FA670089	Screw – Guide to Slide Bracket
17	HA178989	Roller Bearing Assembly
18	HA178889	Slide – Slide Bracket Assembly
19	FA608089	Cable Tie
20	EL603889S	Headlight Harness Assembly
21	HL660589	Insulator Sleeve – Black
22	EL606989	Insulator Sleeve – Clear
23	EL607189S*	Headlight Jumper Wire

* Jumper wire must be attached to switch prior to assembly of switch to power unit.

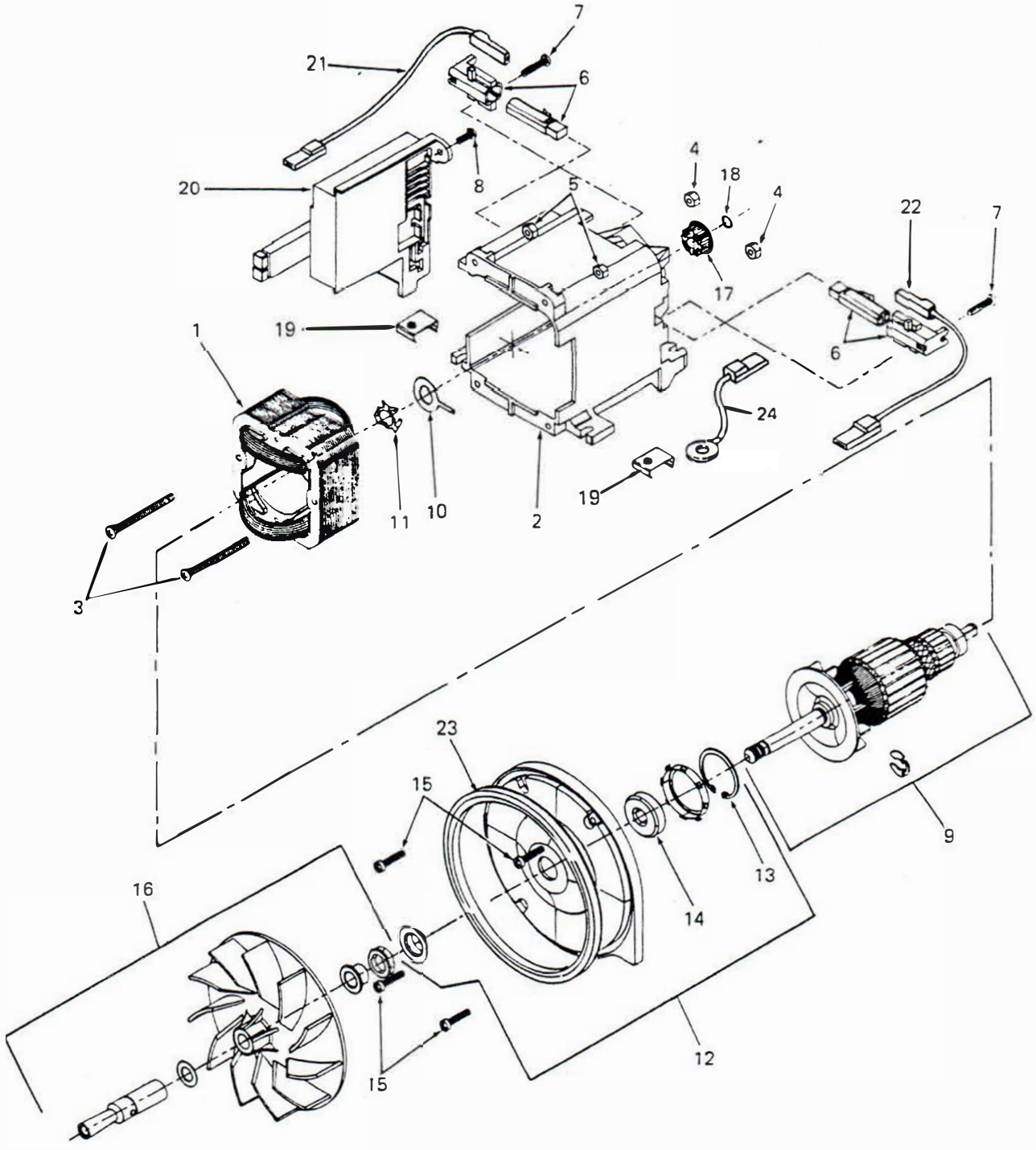


Figure 37. Motor Unit Assembly

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.

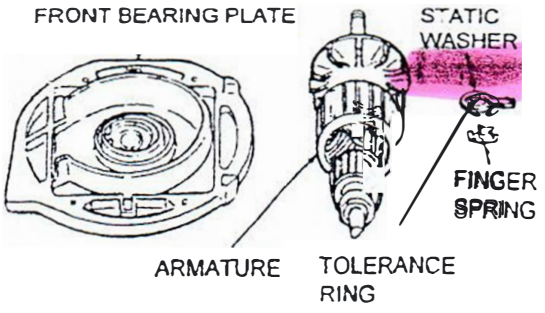
C. Install static washer in motor housing rear bearing well. **The static washer must be installed before the tolerance ring.***

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.



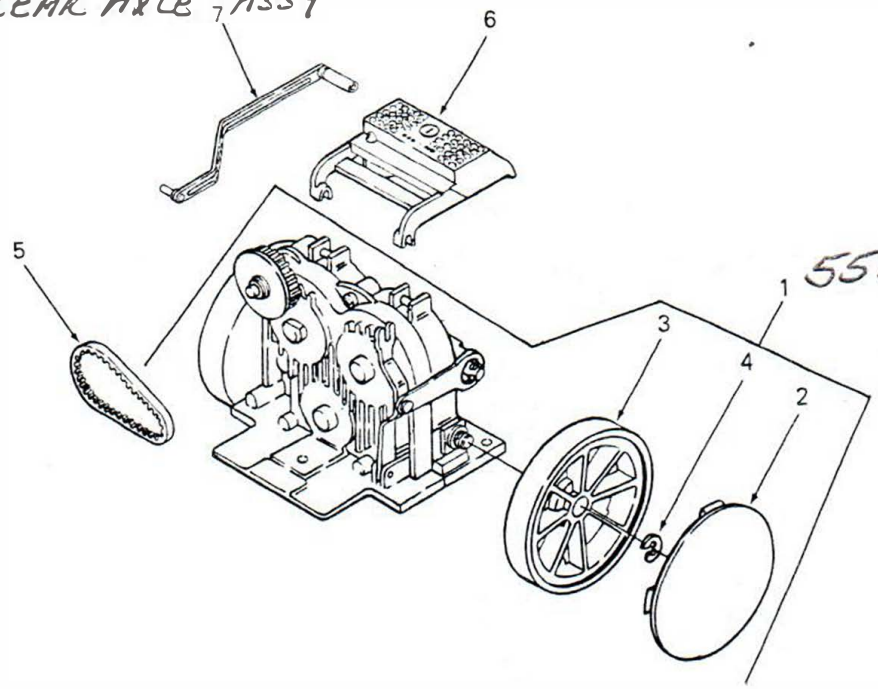
*** Must have new motor housing to install static washer.**

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

Table 5. Motor Unit Assembly

1	MO103989	Field
2	MO100189	Motor Housing
3	FA104689	Screw – Motor Field
4	FA600589	Nut – Field Screw
5	FA600589	Nut – Bearing Plate to Motor Housing
6	MO107189S	Brush Holder Assembly (with Carbon Brush)
7	FA107989	Screw – Brush Cartridge
8	FA605989	Screw – Power Switch to Motor Housing
9	MO114789	Armature (with Rear Bearing)
10	MO601889	Static Washer
11	MO115674	Finger Spring
12	MO105789S	Bearing Plate Assembly
13	FA101076	Ring Retainer
14	MO116073	Front Bearing
15	FA600189	Screw – Bearing Plate to Motor Housing
16	MO119089S	Fan Assembly
17	PD550689	Sprocket Gear – Motor
18	FA601689	Clip – Motor Drive
19	FA602289	Clip – Motor Housing
20	EL110589	Power Switch
21	EL602889S	Brush Lead Assembly (Right)
22	EL602989S	Brush Lead Assembly (Left)
23	MO600389	Motor Seal
24	EL603589S	Static Wire Assembly

5584895 PEDAL/CAM ASSY
5598905 OVER LOAD CLUTCH SVC. ASSY
5600905 REAR AXLE ASSY



5523 89 G DRIVE SYSTEM ASSY

Figure 38. Power Drive Assembly

Table 6. Power Drive Assembly

1	PD552389G	Power Drive Assembly (with Rear Wheels)
2	PD555989	Hub Cap – Rear Wheel
3	PD556289	Rear Wheel
4	PD556489	Clip – Rear Wheel
5	PD554189	Primary Drive Belt
6	EL110389	Foot Pedal
7	EL602389	Actuating Rod – Foot Pedal to Power Switch

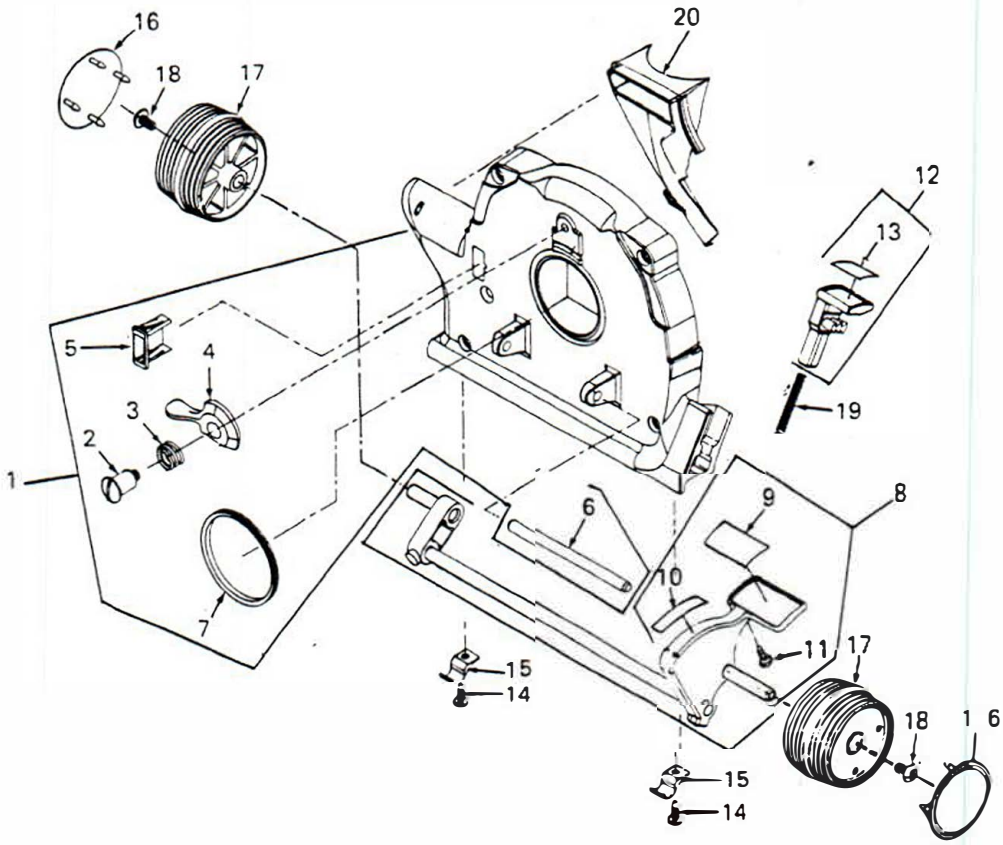
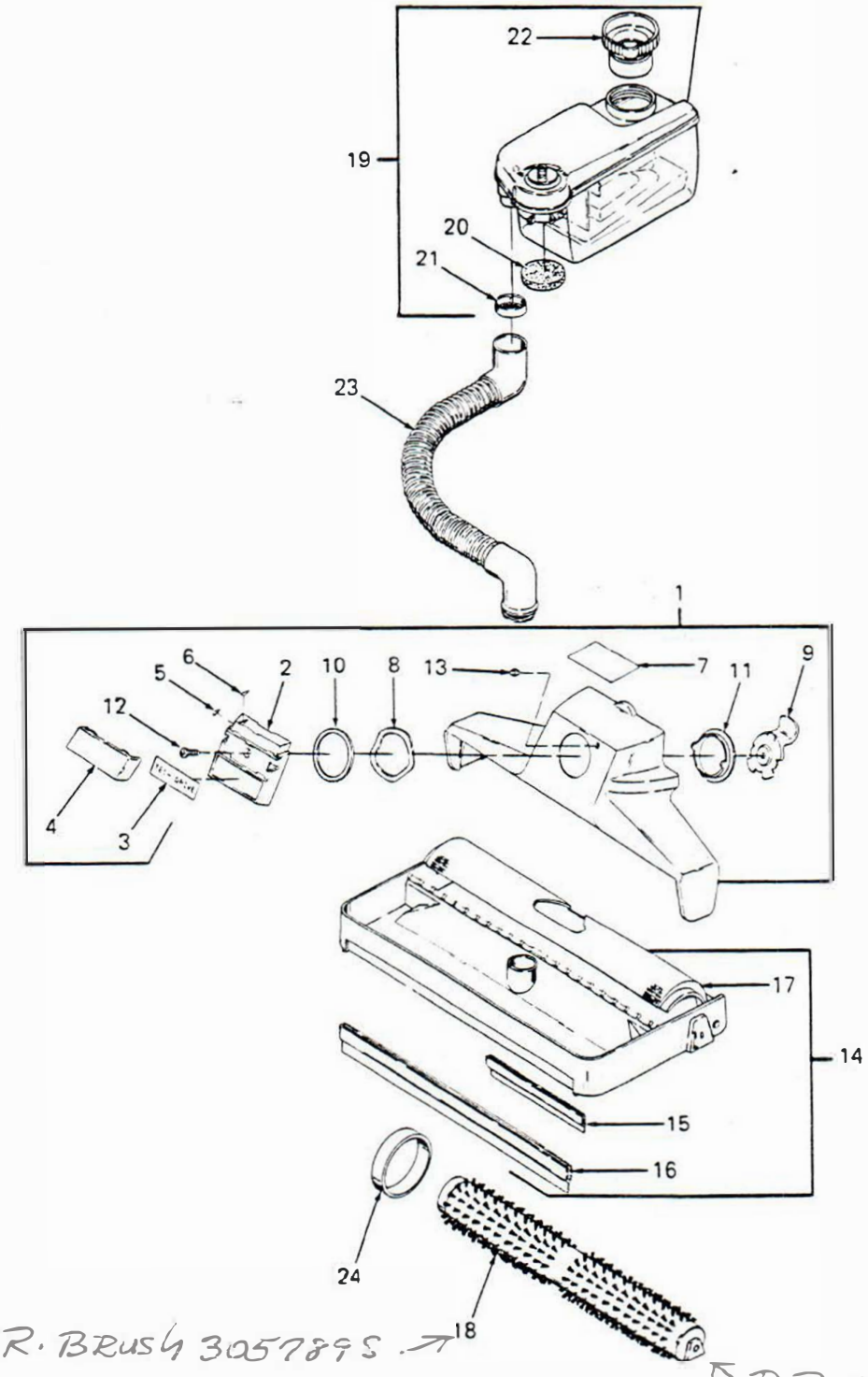


Figure 39. Fan Case Assembly

Table 7. Fan Case Assembly

1	FC119789S	Fan Case Assembly	11	FA130384	Screw – Micro Adjustment
2	FA1211	Screw – Nozzle Lock	12	FC631589G	Ratchet Lock Assembly
3	FA1212	Spring – Nozzle Lock	13	LA631889	Label - Ratchet Lock
4	FC125289G	Lever – Nozzle Lock	14	FA193281	Screw – Front Shaft Clamp
5	FC610089	Bezel – Power Switch	15	FC134073	Clamp – Front Shaft
6	FC121689	Nozzle Attaching Shaft	16	FC131889	Hub Cap – Front Wheel
7	FC122068	Seal Ring	17	FC131989	Front Wheel
8	FC131689S	Wheel Shaft Assembly	18	FA1321	Screw – Front Wheel Shaft
9	LA130789	Label – Ratchet Pedal	19	FC1331	Spring – Ratchet Lock
10	LA632089	Label – Height Adjustment	20	FC125489	Volute Deflector



R.R. Brush 3057895

P.P. Brush 3132895

Figure 40. Carpet Shampoo System

CARPET FLUFFER SHIELD
313589

Table 8. Carpet Shampoo System

1	RR303189S	Carpet Shampoo Nozzle Assembly
2	NO144089	Belt Lifter Body
3	LA673689	Label – Tech Drive
4	NO640189	Trim Strip – Belt Lifter
5	LA640989	Label – Arrow (Melon)
6	LA640889	Label – Arrow (Green)
7	LA304289	Label – Warning
8	NO144181	Spring Washer
9	NO144281	Belt Lifter Hook
10	NO144681	Flat Washer
11	NO145481	Bearing – Belt Lifter
12	FA640489	Screw – Belt Lifter
13	FA143081	Stop Rivet – Belt Lifter
14	RR304789S	Tray Assembly
15	RR305289	Belt Baffle Strip
16	RR305489	Suds Leveler Strip
17	RR304489	Shield
18	RR305789S	Brush Roll Assembly
19	RR306789S	Tank Assembly
20	RR307389	Filter – Tank
21	RR307589	Suds Screen Assembly
22	RR308989	Cap – Tank
23	RR308089S	Hose Assembly
24	RR301289	Belt
25	CT700989S*	Carton Assembly – Carpet Shampoo System

* Not Illustrated

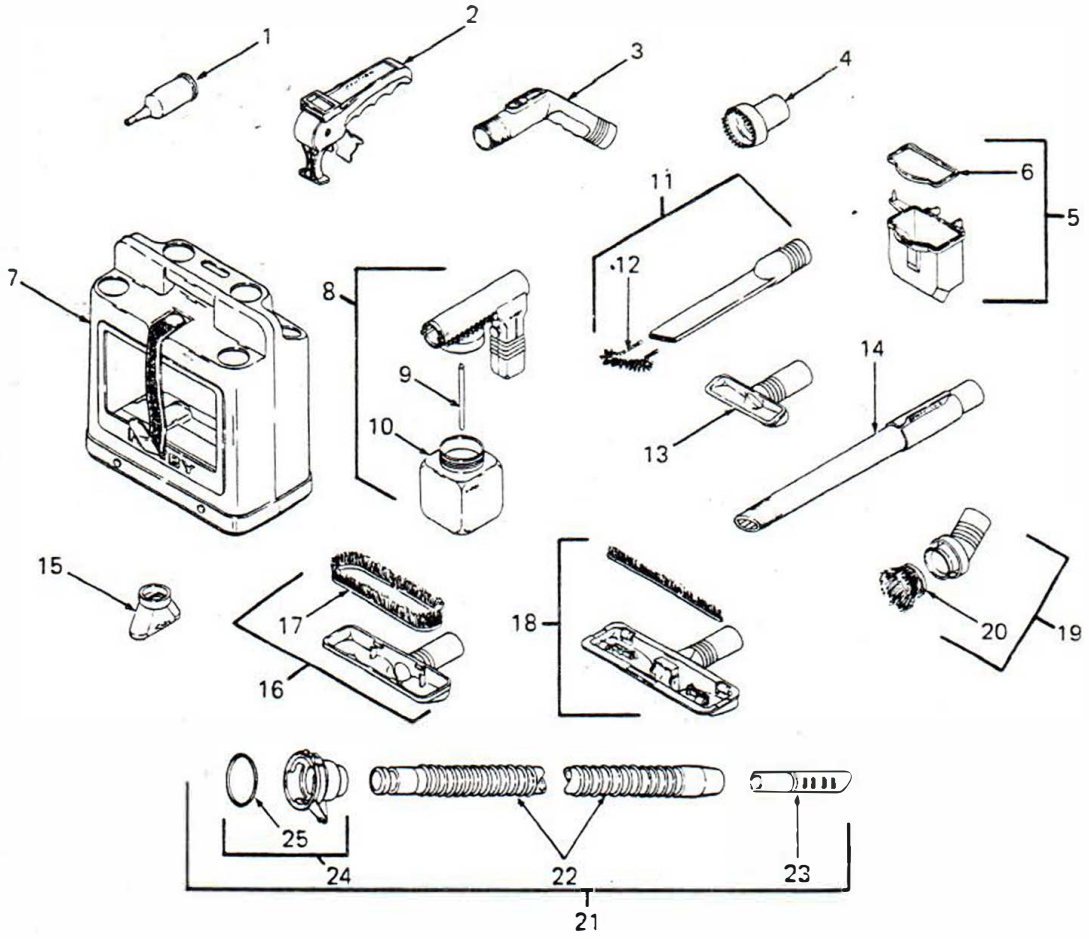


Figure 41. Attachments

Table 9. Attachments

1	AT213889	Inflator	14	AT224089	Extension Wand
2	AT201089S	Portable Handle Assembly	15	AT252089	Suds-O-Cap
3	AT225189	Attachment Grip	16	AT210889S	Wall/Ceiling Brush Assembly
4	AT214189	Massage Cup	17	AT2181	Brush Strip
5	AT224689S	Intake Guard Assembly	18	AT219789	Surface Nozzle Assembly
6	AT224489	Seal	19	AT218489S	Duster Brush Assembly
7	SP285489S	Kaddy Assembly	20	AT220189	Duster Brush Ring
8	AT250289S	Spray Gun Assembly	21	AT223689S	Hose Assembly
9	AT250689	Supply Tube – Spray Gun	22	AT223089	Molded Hose Assembly
10	AT251089	Jar – Spray Gun	23	AT223389	Tube – Swivel Connector
11	AT225989S	Crevice Tool Assembly	24	AT211089S	Suction/Blower Connector Assembly
12	AT226157	Brush	25	AT223881	Seal Ring
13	AT218089	Upholstery Tool			

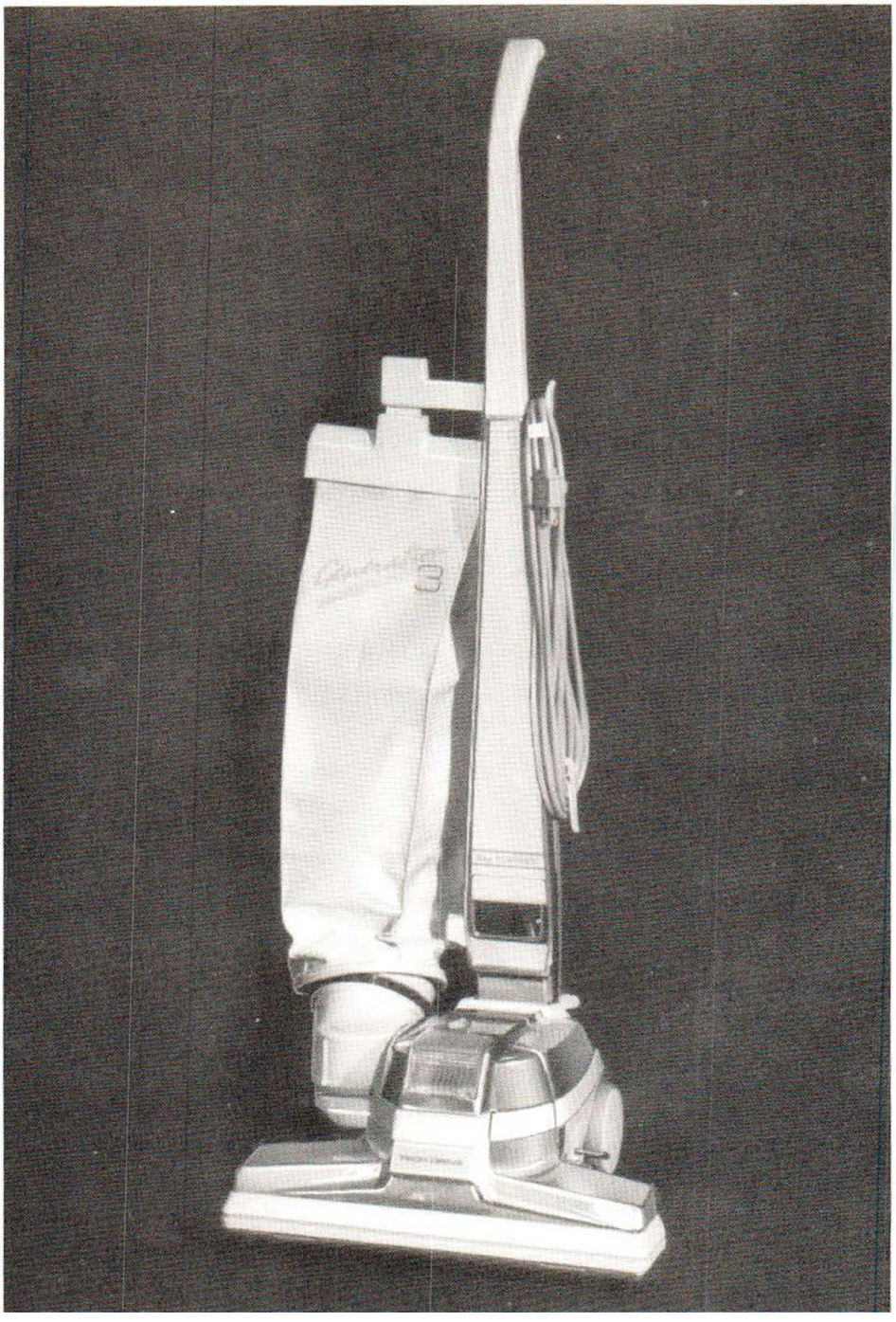


Figure 1. The Generation 3 Kirby

SECTION 5

SERVICE DETAILS AND INSTRUCTIONS

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 9.

5.1.3 Relationship of Text to Theory Illustrations and Exploded Views

Two types of illustrations are provided for clarification of the procedural text contained within this section:

- Theory Illustrations

  Throughout the text, photographs of the **Generation 3 Kirby** appear that associate accompanying procedural steps with the unit.

  Text references, the location of 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 and nomenclature, can be found in the parts list contained in Tables 1 through 9..

SECTION 5

SERVICE DETAILS AND INSTRUCTIONS

5.2 POWER UNIT CHECKOUT

If a Generation 3 Kirby requires service, refer to Figure 2 and accomplish initial checkout as follows:

A. Remove rug nozzle or hose and Mini Em-tor.

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

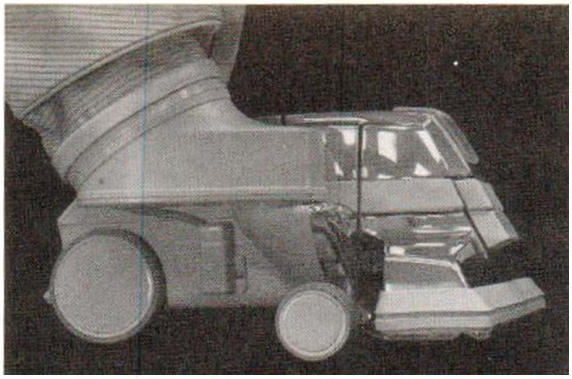


Figure 2. Rug Nozzle, Mini Em-Tor and Power Cord

! WARNING

Do not attempt to operate the motor without rug nozzle or hose and Mini Em-Tor 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 Em-Tor.

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.

! CAUTION

A power cord retaining clip is located on the right side of the scuff plate. Carefully remove the power cord from under the clip when changing power cords.

When removing the power cord connector from housing, pull straight out. Do not twist or turn connector.

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. Newer units will require removal of the cord cover and cover screw prior to power cord disconnect. Remove the cover holddown screw. Push the cover forward toward the front of the unit, then pull down to allow tab of cover to clear base sub-assembly.

J. Installation is the reverse of removal.

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 Em-Tor and handle with bag from power unit.

B. *See Figure 3.* Remove scuff plate by:

1. Remove tilt knob by removing Phillips head screw from handle lock.
2. Remove power cord retainer from scuff plate by removing Phillips head screw.
3. Remove Phillips head screw that attaches scuff plate at rear of power unit.
4. Place a flat bladed screw driver into opening in back of scuff plate and gently press inward and up to release internal plastic clip.
5. Remove scuff plate by sliding it to the rear to disengage internal plastic clip.

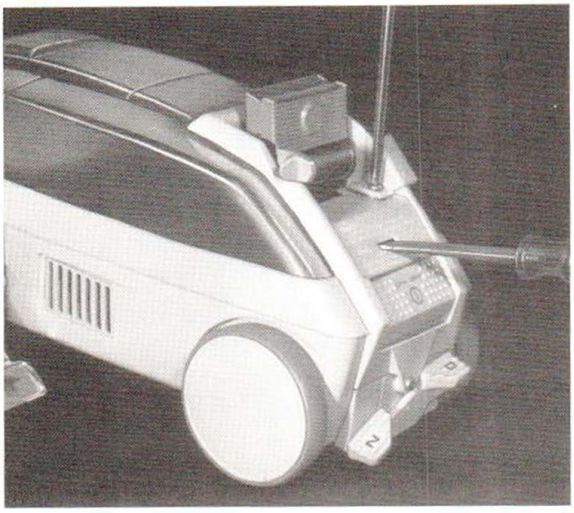


Figure 3. Scuff Plate Removal

C. *See Figure 4.* Remove cover assembly by:

1. Raising headlight and removing two flat head Phillips screws.
2. Remove two Phillips head screws from both sides of the on/off switch on the back of cover assembly. These screws are exposed after the scuff plate is removed.
3. Lift cover assembly off and slide to rear to clear slide bracket assembly and headlight cap.

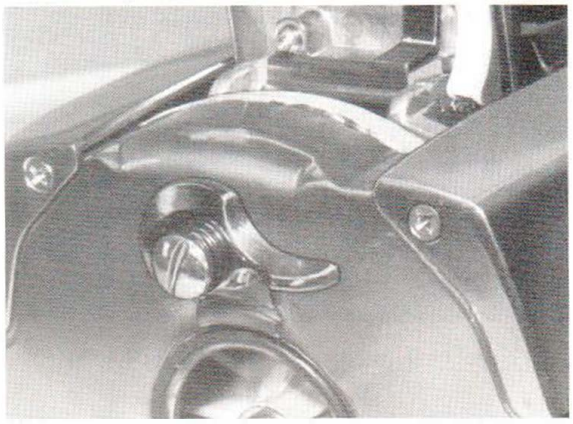


Figure 4. Cover Assembly Removal

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

For detailed service information on the components of these assemblies see paragraphs 5.4.1, 5.4.2 and 5.4.3. Remove this assembly as follows:

> **NOTE:**
>
> All three of these components are assembled to the "Slide Bracket Casting." This casting is attached to the sub-assembly with two round head Phillips screws at its rear legs and two round head Phillips screws through the top front of fan case housing.

A. *See Figure 5.* One of the headlight leads has an in-line connector covered by a clear piece of insulating tubing.

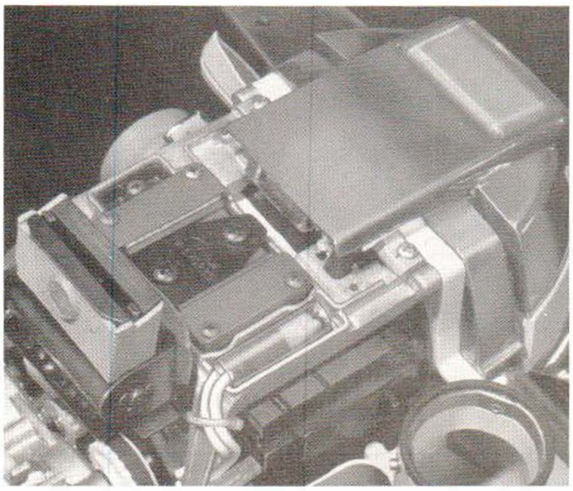


Figure 5. Headlight Cap/Slide Bracket Assembly/Handle Pivot Assembly (Rear)

B. *See Figure 6.* 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.

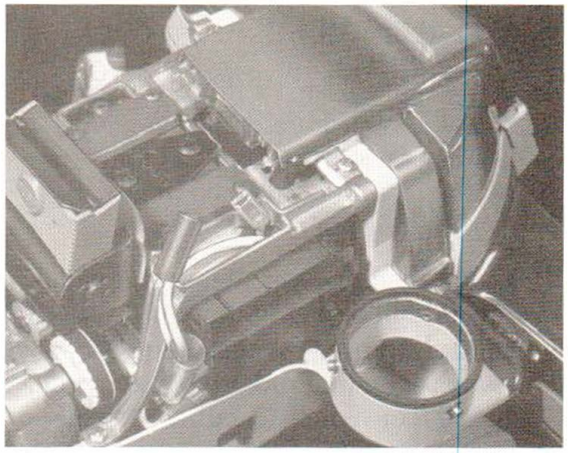


Figure 6. Separation of In-line Connector of Headlight Leads

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

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

E. *See Figure 7.* Remove two Phillips head screws from the fan case assembly. These screws pass through the fan case assembly and base sub-assembly and thread into the slide bracket casting. Remove headlight cap/slide bracket assembly and handle pivot assembly as a complete unit.

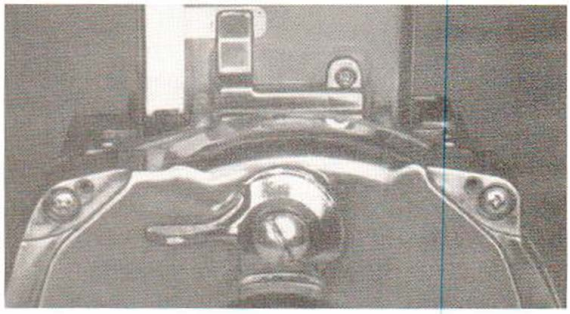


Figure 7. Headlight Cap/Slide Bracket Assembly/Handle Pivot Assembly (Front)

5.3.3 Drive System Assembly Removal

Remove the drive system assembly as described below. Detailed service information on the drive system assembly is provided in section 5.4.4.

A. *See Figure 8.* 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.

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

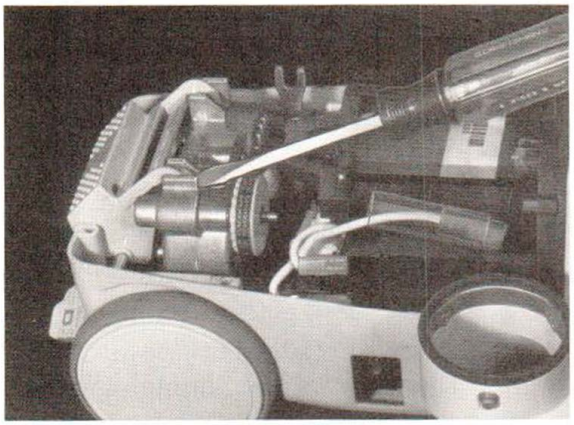


Figure 8. Foot Pedal Removal

C. Turn the still assembled components of the power unit over as shown in Figure 9.

D. Remove the two Phillips head screws (that are closest to the drive wheels) from the aluminum drive system assembly housing.

E. Remove the Phillips head screw from the centerline of the drive system assembly (toward fan end of power unit). The Phillips head screw at the center rear of transmission remains in place during removal of drive system assembly.

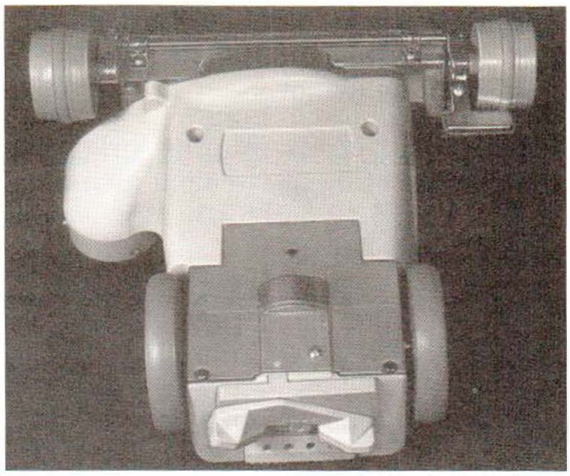


Figure 9. Bottom of Drive System Assembly Housing

F. While supporting drive system assembly, turn the still assembled components of the power unit over. Position power unit as shown in Figure 10.

G. Set N/D pedal in drive mode.

Figure 10. Drive Belt and Drive System Assembly Removal

! CAUTION

Do not bend the drive belt during removal.

H. Move the drive system assembly down to get some slack in the drive belt and remove the drive belt.

I. Make sure the foot switch actuating rod is pointing upward and then slide the drive system assembly down and out from under the power unit.

5.3.4 Motor Unit Assembly Removal

Remove the motor unit assembly as follows:

A. Turn the assembled portions of the power unit over as shown in Figure 11.

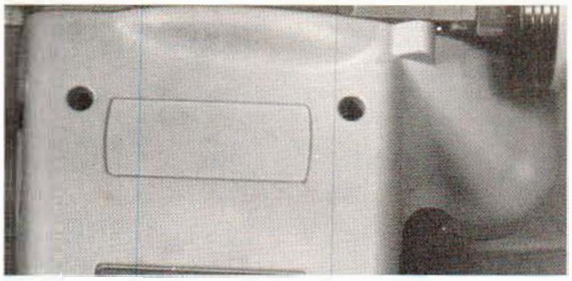


Figure 11. Motor Unit Assembly Removal (Bottom)

B. Remove two Phillips head screws from the deeply recessed holes in power unit. (See CAUTION at end of this section).

C. Turn the assembled portions of the power unit over as shown in Figure 12.

D. Remove two Phillips head screws and washers from rear of motor unit assembly. (See CAUTION at end of this section).

E. Remove static wire assembly from the top of the left side motor unit hold-down

F. *See Figure 13.* Remove exhaust duct screw, then remove exhaust duct and lift out grill. Remove exhaust duct from area between motor unit assembly and base sub-assembly.

Figure 12. Motor Unit Assembly Removal (Top)

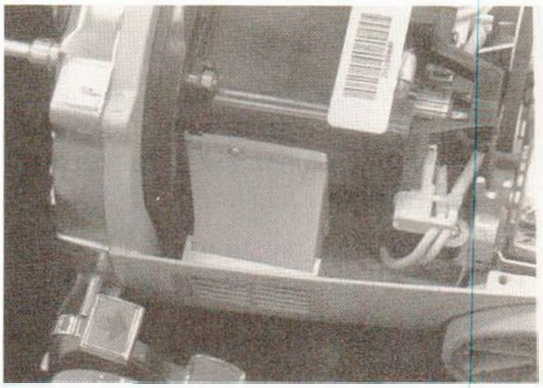


Figure 13. Exhaust Duct and Grill Removal

G. While holding base sub-assembly down, gently lift up and out on rear of motor unit assembly.

H. Remove motor seal from motor unit assembly. When reinstalling motor into base pan, attention needs to be given that the motor seal is retained in the bearing plate groove.

I. For further disassembly of the motor unit assembly see paragraph 5.4.5.

! CAUTION

When reinstalling motor unit assembly, rear screws (paragraph D above) must be tightened before front screws (paragraph B above).

5.3.5 Fan Case Assembly, Wheels and Wheel Shaft Main Assembly Removal

Remove fan case assembly, wheels and wheel shaft assembly as described below:

> **NOTE**
>
> Removal of the fan case assembly shall only be accomplished if replacement of the components are required.

A. Fan Case Assembly:

1. *See Figure 14.* Remove one flat head Phillips screw from front of fan case assembly. This screw is located just below rug nozzle interlock.
2. Remove two remaining Phillips head screws from lower end of the fan case assembly.

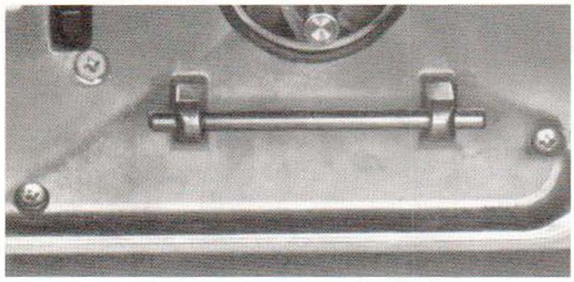
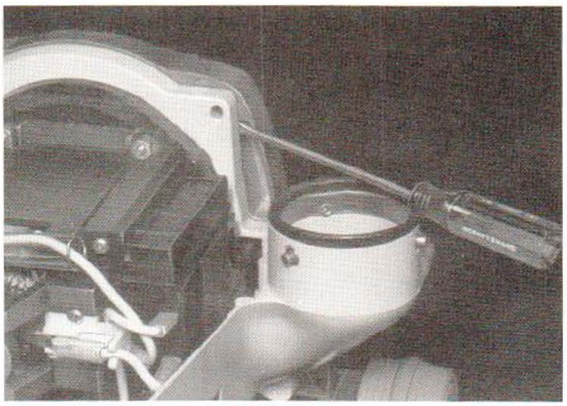


Figure 14. Fan Case Assembly Screw Removal

3. *See Figure 15.* Using one of the two methods shown, break seal between fan case assembly and base sub-assembly and remove fan case assembly and attached components.



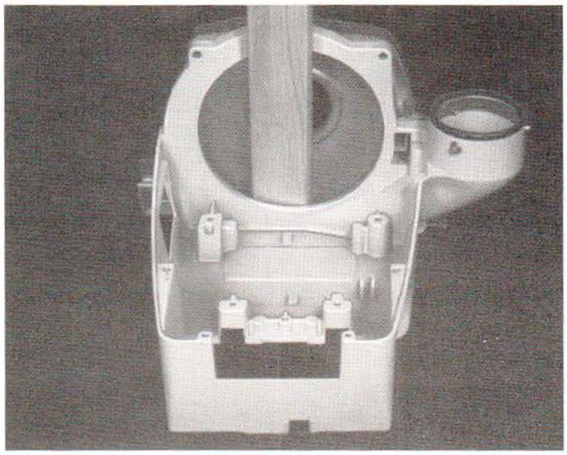


Figure 15. Fan Case Assembly and Wheel Shaft Main Assembly Removal (Two Methods)

> **! NOTE**
>
> Screwdriver method may be used with motor installed.

4. Prior to the re-assembly of fan case, clean old sealant from joining surfaces and apply new sealant using sealer 609990 as shown in Figure 16.

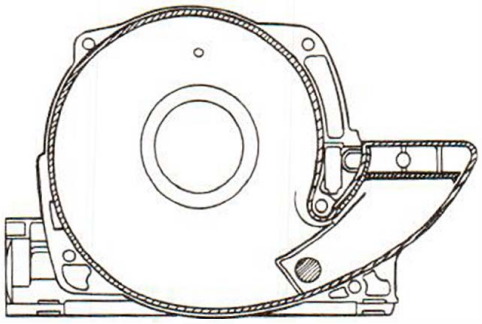


Figure 16. Fan Case Sealant Application

5. If the volute deflector is loose in fan housing, re-attach using sealer 609990.

B. Wheel Shaft Main Assembly:

1. *See Figure 17.* Remove two Phillips head screws from bottom of fan case assembly.
2. Remove shaft clamps and wheel shaft main assembly.
3. Remove ratchet lock casting and ratchet lock spring from cavity in fan case assembly.

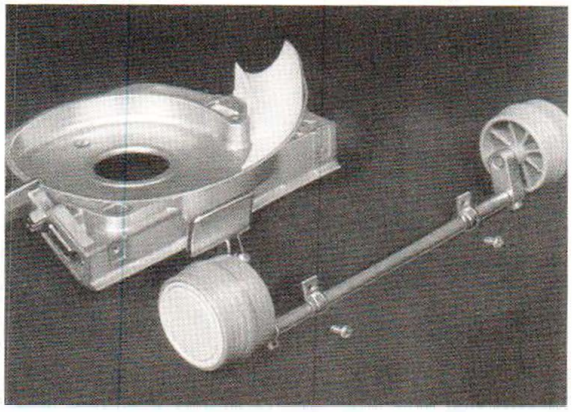


Figure 17. Ratchet Lock and Volute Deflector Removal

5.3.6 Base Sub-assembly

If the exhaust horn requires replacement:

A. *See Figure 18.* Remove the damaged exhaust horn gasket. Using a flat bladed screwdriver, pry the metal gasket ring toward the center of the exhaust horn. Remove bent ring by pulling up with pliers. Do not remove or grind the rivets.

Figure 18. Exhaust Horn Gasket Removal

B. Remove any debris and remaining sealant from the exhaust horn.

C. Apply a generous and uniform bead of Silaprene sealant to the outer upper joint of the new horn gasket ring between the joint of the rubber gasket and metal ring.

D. Install the new gasket with the holes and flat sides aligned with the rivets and flats on the inside of the exhaust horn. Wipe the excess sealant from the outside of the exhaust horn. Install a transition elbow or a Mini Em-Tor to clamp the gasket in place. Allow a minimum of 96 hours (4 days) before removing the transition elbow or Mini Em-Tor . You may use the machine while the sealant is curing, but do not remove the Mini Em-Tor before 96 hours.

E. Always apply gasket lubricant, part no. 7541, to horn gasket to avoid damage.

5.4 POWER SUB-ASSEMBLIES — DETAILED SERVICE

5.4.1 Headlight Service

A. *See Figure 19.* Remove two flat head Phillips screws from bottom of head light plastic lens.

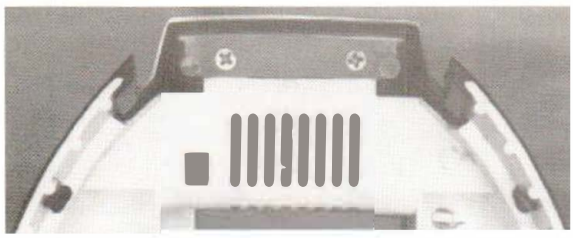


Figure 19. Headlight Bulb Replacement

B. Lift plastic lens up and out of casting.

C. Pull bulb from socket and install new bulb. Installation is the reverse of removal.

5.4.2 Handle Pivot Spring Assembly

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

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

B. *See Figure 20.* Remove two Phillips head screws from bracket tab.

C. Locate handle pivot spring assembly rivet into vertical lever fork of drive system and place tab of spring assembly in position on slide. *See Figure 21.*

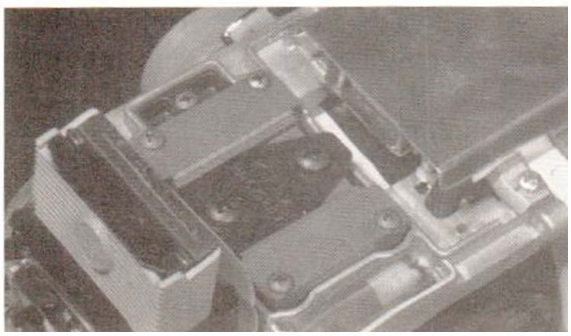


Figure 20. Handle Pivot Spring Assembly Replacement

! 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.

D. Insert two-piece shim tool T147 S at front and rear of slide to maintain centered position.

E. With shims in place in both ends of slide, tighten two Phillips head screws to 25 to 30 inch pounds.

F. Remove shims and push handle pivot spring assembly in both directions. Make certain slide does not strike slide bracket casting in either direction.

G. If slide strikes casting, loosen the two Phillips head screws and repeat steps D through F.

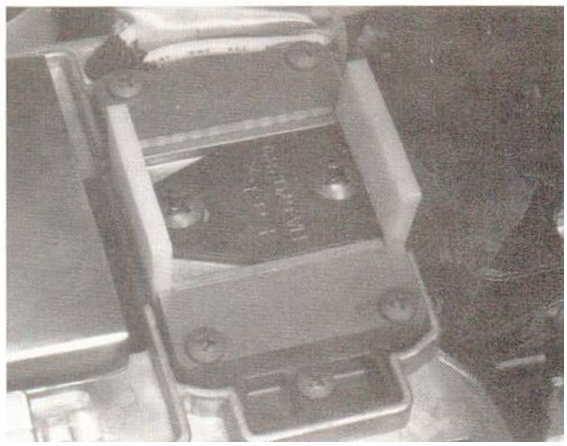


Figure 21. Handle Pivot Spring Assembly Shim Tool Use

! 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.

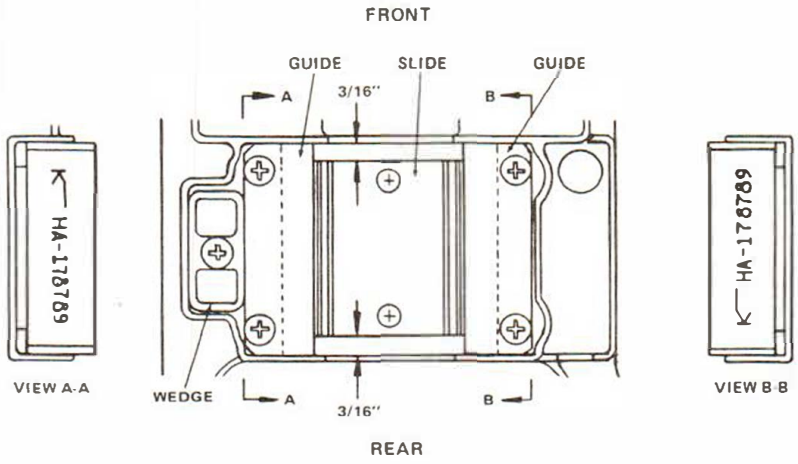


Figure 22. Assembled View of Slide Bracket Assembly

5.4.3 Slide Bracket Assembly Component Replacement

Service is limited to disassembly and replacement of damaged components.

A. *Refer to Figures 22 and 23.* Remove the single Phillips head screw from the slide adjusting wedge.

B. Remove four Phillips head screws from the two slide guide blocks.

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

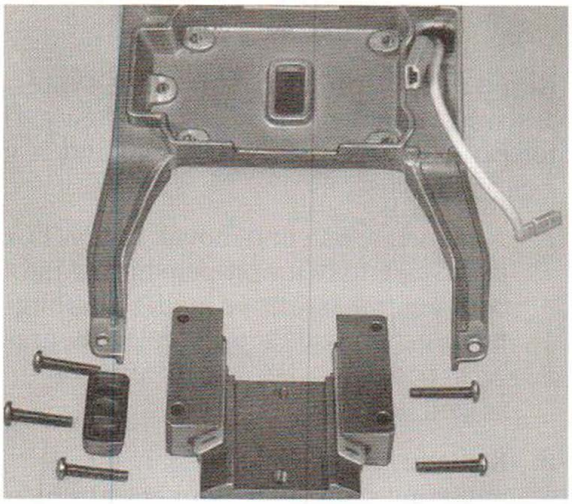


Figure 23. Disassembled View of Slide Bracket Assembly

D. *Refer to Figures 22 and 23 as needed to assemble.* Assembly is as follows:

NOTE

- The slide adjusting wedge has a tapered side to allow for minor tension adjustments.
- Guide blocks are reversible and interchangeable.
- Slide is reversible.
- If slide or guide blocks show wear on roller pin mating surfaces, replace.
- If needle rollers are worn or loose in cage, replace bearing assembly.

1. If new bearing assemblies are to be installed, bend along score line so that flat surface of cage will be positioned against the slide.
2. *See Figure 22.* Assemble the two bearing assemblies, two guides and the slide. Place them, as a unit, into the slide bracket casting. Ensure that the Kirby part numbers and logo on the guides are oriented as shown in views A and B of Figure 22.
3. Install two Phillips head screws into right side guide. While applying pressure of complete assembly toward the right pocket wall of slide bracket, torque screws to 20 to 25 inch pounds.

4. Position slide as shown in Figure 22 and hold in position. Align ends of bearing assemblies to align with ends of slide. Install two Phillips head screws handtight into left side guide.
5. Install wedge (tapered side of wedge against taper in casting wall) and Phillips head screw into left side of casting pocket. Pre-load bearings by torquing Phillips head screw in wedge to 5.0 inch pounds.
6. Tighten the two Phillips head screws on the left side guide to 20 - 25 inch pounds.

5.4.4 Drive System Assembly

This 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 24.* Insert a thin flat bladed screwdriver through slots in back of wheel and gently twist to release spring tabs of wheel covers. Lift off wheel covers.

B. Using a thin flat bladed screwdriver, remove retainer clip from axle.

C. Remove wheel and replace with new one.

D. Installation is the reverse of removal.

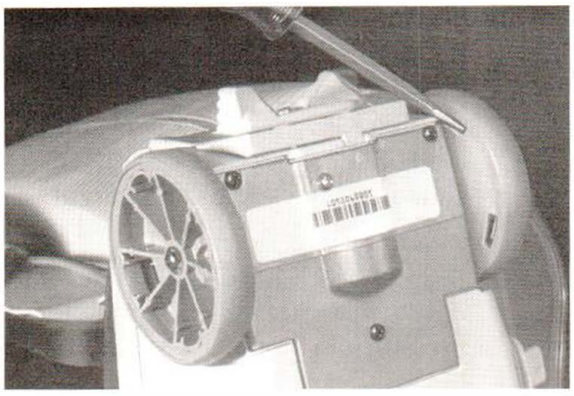


Figure 24. Drive Wheel Cover and Wheel Replacement

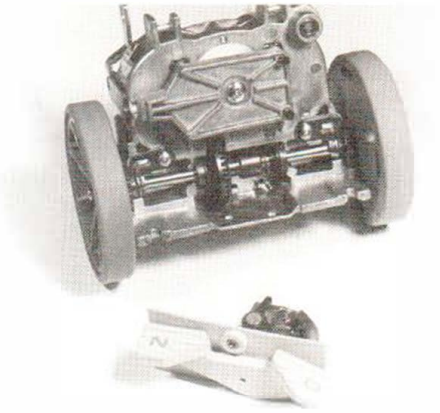


Figure 25. Rear View of Transmission

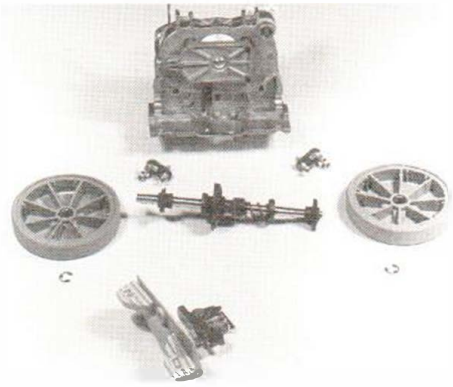


Figure 26. Transmission and Axle Assembly Components

5.4.4.1 Neutral/Drive Pedal Assembly Service

Refer to section 5.3.3 for drive system assembly removal and section 8, figure 41 for exploded view of N/D pedal and rear axle assemblies.

A. After drive system removal, test N/D pedal assembly for proper shifting into both neutral and drive modes. Shifting malfunction will require replacement of N/D pedal, bracket cam or rear axle assemblies.

B. Remove N/D pedal assembly by removing screw in bottom of transmission 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. Inspect finger of bracket cam assembly for breaks and insure that finger moves back and forth freely. If breakage, hang up of finger or bent frame exist, bracket cam assembly needs replacement. These conditions may result from clutch half overload gear hang up on pin of rear axle. Refer to section 5.4.4.2 for rear axle replacement.

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

F. Install bracket cam assembly to N/D pedal assembly by tilting finger down, sliding N/D pedal shaft throught the hole in the bracket cam frame, then aligning notch in bracket cam frame on N/D pedal body.

G. Install the N/D pedal and bracket cam assemblies on transmission by positioning bracket cam finger between the drive bevel gear and clutch half over load gear and placing tab on bottom of N/D pedal body into hole in bottom of transmission casting.

H. Align the threaded hole in the N/D pedal body with the hole in bottom of transmission casting located to the left of the tab hole, then install the N/D pedal hold down screw with washer attached.

5.4.4.2 Rear Axle Assembly Service

A. After N/D pedal and bracket cam assemblies are removed from transmission, 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 transmission.

C. Remove both wheel hub caps, wheels and wheel retainer clips as described in section 5.4.4.

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 and one spring. When removing components keep in the same order and position as noted.

E. If pin in rear axle is loose or misaligned replace axle. Test this condition by sliding clutch half overload gear over pin. If there is any resistance or hang up replace axle.

F. If transmission makes a ratcheting noise and there is no evidence of internal gear damage, gear shavings on inside base of transmission, replace drive bevel gear and clutch half overload gear.

G. If there is a growling noise in neutral mode apply a visual amount of grease on axle just to the right of drive bevel gear. Slide drive bevel gear across grease three times to insure that axle is lubricated where drive bevel gear rides.

H. If there is a bearing noise inside transmission replace axle bearing(s) or apply grease in bearing behind bearing seal. If bearing is dry it will turn on axle during operation and will make a metallic click when shaken.

I. Position axle so that left side of axle has the greatest distance from the axle pin 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 pin, then install the drive bevel gear with teeth facing teeth of clutch half overload gear. Install bearing with rounded side of casing toward drive bevel gear. A bearing with split case and washer must be installed with washer 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. *See Figure 26.*

K. From right side of axle install spring against clutch half overload gear, then bearing with rounded side of casing toward the spring. A bearing with split casing and washer must be installed with washer against spring. Install axle bushing with longest shoulder toward bearing. Install wheel with flat side toward axle bushing, then install wheel retainer clip. *See Figure 26.*

L. *See Figure 25.* After rear axle is completely assembled, move the left bearing to the right toward the clutch half overload gear assembly. Insert left axle bushing into left bushing sleeve of transmission casting, with tab pointing up, and right side of axle angled away from transmission.

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 transmission casting.

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

O. Position axle retainers so that curved portion rests over round surface of axle bushing and point toward outside edge of transmission housing.

P. Refer to section 5.4.4.1 for N/D pedal assembly installation.

5.4.5 Motor Unit Assembly Service

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

5.4.5.1 Fan Replacement

A. *See Figure 27.* Place T156, 11/32 inch open end wrench on flats machined in armature shaft near rear bearing.

B. Prevent rotation of armature shaft during fan removal.

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

D. Remove washer.

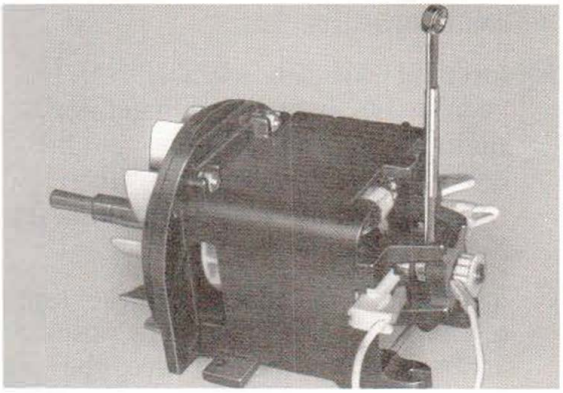


Figure 27. Fan Removal

E. Remove fan blade.

F. Remove spacer/seal assembly.

G. Installation is the reverse of removal except that:

- Clean bearing plate eyelet thoroughly, then apply very thin film of grease around eyelet surface.
- Spacer/seal assembly should be installed with flat side of rubber seal against spacer as shown in Figure 28.
- Fan pulley threads on in a counterclockwise direction. Do not over tighten pulley.

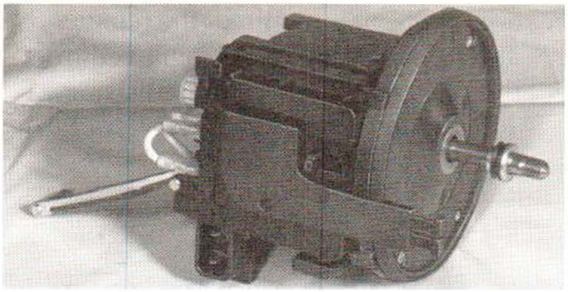


Figure 28. Spacer/Seal Position

5.4.5.2 Carbon Brush Cartridge Replacement

A. *See Figure 29.* 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.

B. From each brush holder assembly, remove a Phillips head screw. With screw removed, tilt brush holder toward 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.

! CAUTION

Ensure that the wire routing for the brush holder assembly that is located opposite the power switch is positioned as shown in Figure 29.

5.4.5.3 Power Switch Replacement

A. *See Figure 30.* If any leads remain attached to the switch, remove them.

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

C. Remove one Phillips head screw from rear end of the switch housing.

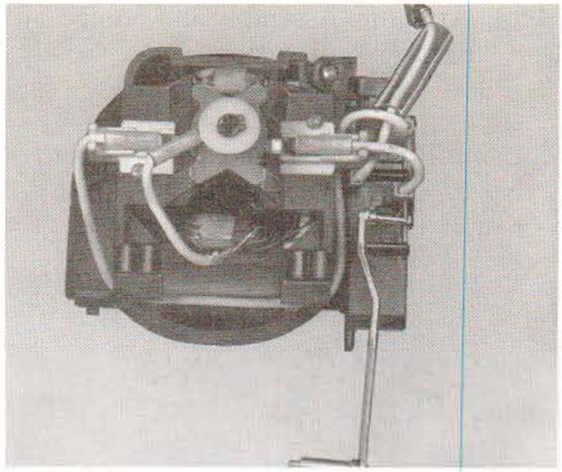


Figure 29. Carbon Brush Cartridge Replacement

Figure 30. Power Switch Replacement

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.

E. Check to make sure that all terminal lugs remain in switch housing.

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

G. Installation is the reverse of removal.

5.4.5.4 Armature Assembly and Front Bearing Replacement

A. Using T154, snap ring expander plier No. 0200, remove motor drive clip at rear of armature shaft. *See Figure 31.*

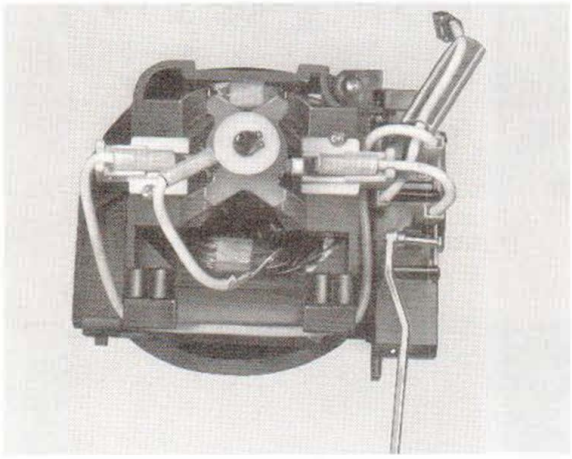


Figure 31. Motor Sprocket Removal

B. Remove motor sprocket gear from armature assembly shaft.

C. Remove four bearing plate screws and nuts from motor unit assembly. *See Figure 32.*

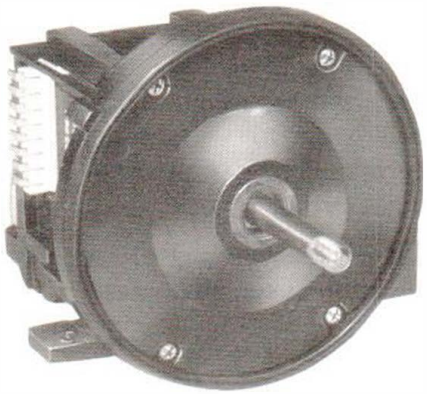


Figure 32. Bearing Plate Assembly Removal

D. Remove bearing plate assembly.

E. *See Figure 33.* If required, the retainer and front bearing can be removed from the bearing plate assembly by using T155, snap ring compressor plier No. 0300.

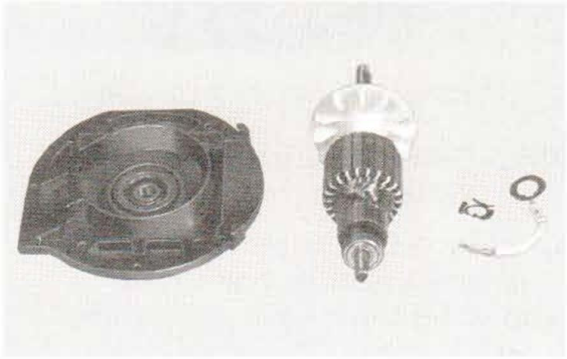


Figure 33. Front Bearing, Armature Assembly, Static Wire, and Finger Spring

F. Remove static wire assembly, armature, static washer, and finger spring from motor housing rear bearing well.

G. Installation is the reverse of removal. (Fingers of finger spring are toward the bearing).

H. Raised lip of motor sprocket gear must be toward transmission, with teeth against bearing well of motor housing.

5.4.5.5 Field Assembly Replacement

A. Remove fan, brush holder assemblies, power switch, bearing plate assembly, and armature assembly as described in above paragraphs 5.4.5.1, 5.4.5.2, 5.4.5.3 and 5.4.5.4.

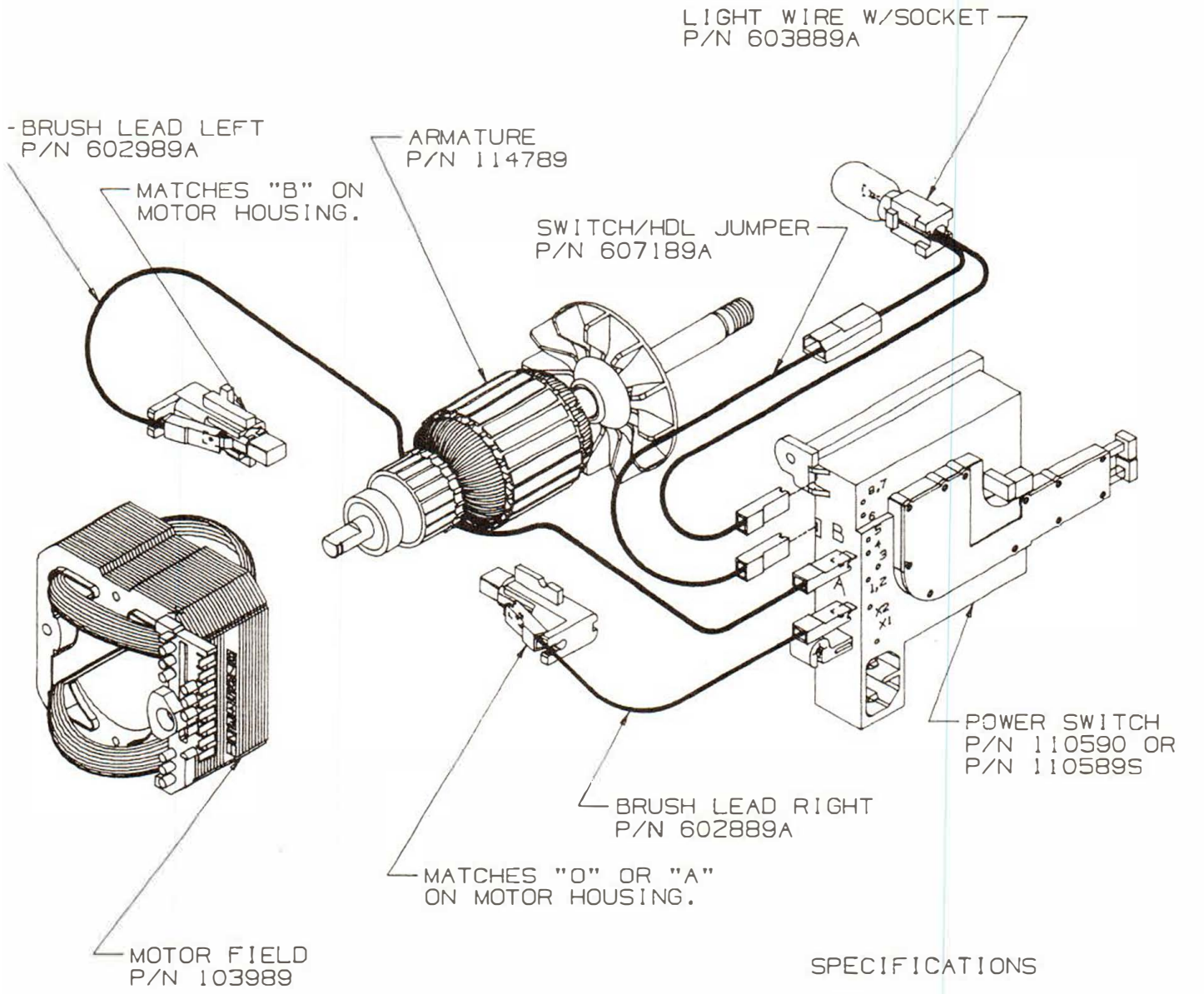
B. Remove two motor field screws and nuts from motor housing.

C. Remove field assembly from motor housing.

D. Installation is the reverse of removal.

SECTION 6

120 VOLT SCHEMATIC SERVICE



SPECIFICATIONS

LOW SPEED		
AMPS	(MAX)	- 6.0
WATTS	(MAX)	- 642
RPM		- 12,400
H.P.		- 0.52
HIGH SPEED		
AMPS	(MAX)	- 7.0
WATTS	(MAX)	- 780
RPM		- 16,400
H.P.		- 0.85

Figure 34. Pictorial Schematic

SECTION 7

OUTER BAG SERVICE INSTRUCTIONS

7.1 OUTER BAG ASSEMBLY SERVICE

7.1.1 Bag Top Assembly Service

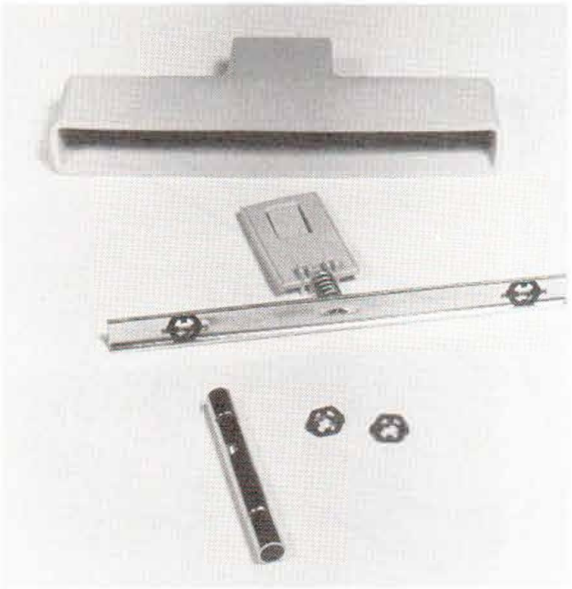


Figure 35. Bag Top Assembly

A. Use a flat bladed screwdriver to gently pry the bag top cover off the bag hanger bar. Take care not to damage the spring washers in the hanger bar and the tabs inside top cover. If tabs of top cover become damaged or break, top cover must be replaced. Spring washers are available as a service part.

B. To remove the bag top latch, twist the spring around the draw bar hook attached to the latch until hook is disconnected from spring. If hook will be replaced, cut off both feet of hook and pull out of spring.

C. When installing new latch, insert draw bar hook through the hole in bottom of latch, then thread the hook down through spring until both feet of hook wrap over bottom rung of spring. Needle nose pliers can also be used to compress hook and feed through spring.

D. To remove hanger bar, twist spring around draw bar hook attached to hanger bar until hook is disconnected from spring. If hook will be replaced, cut off both feet of hook and pull out of spring.

E. When installing hanger bar, insert draw bar hook through the eyelet in hanger bar, then twist spring around hook until both feet of hook wrap over top rung of spring. Follow directions in step C for installing latch to assembly.

F. Insert hanger bar into straps at top of bag so that gaps between straps match location of spring washers in hanger bar with ends of bar being equal distance from outside edges of bag.

G. Both feet of hook in latch must extend over bottom rung of spring and both feet of hook in hanger bar must extend over top rung of spring to keep bag top assembly together and bag from falling down.

H. Insert latch through the top cover with raised tab facing toward back of bag. Position top cover with higher side toward the back.

I. Position the holes in the hanger bar over the tabs inside top cover. Install hanger bar to the tabs by placing one end of a handle fork spring shaft, part no. 137173, over washer and tapping down until washer is secure to tab.

7.1.2 Removal/Installing of Bag to Mini Em-Tor

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

B. To install outer bag to Mini Em-Tor, unfold rubber seal at bottom of bag so that wide lip is pointing toward top of bag and stitching securing bag to rubber seal is exposed.

C. Install bag to Mini Em-Tor with bottom edge of rubber seal extending past ribbed groove in Mini Em-Tor with narrow groove of rubber seal seated uniformly in ribbed groove of Mini Em-Tor.

D. Position bag with the front side toward front of Mini Em-Tor. Line up front and back seam line of rubber seal with front and back seam line in Mini Em-Tor body.

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

F. Install a bag clamp strap around and into the groove of Mini Em-Tor at lower edge of rubber seal. Raised cross bar lock of strap must face away from Mini Em-Tor. Lock connection must be positioned on the inside center wall of Mini Em-Tor and face right side of motor.

G. Lock the strap and insure that all the teeth on the opposite end from 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. *See Figure 38, page 38.*

NOTES

SECTION 8

ILLUSTRATED PARTS LIST AND EXPLODED VIEWS

SECTION 8

ILLUSTRATED PARTS LIST AND EXPLODED VIEWS

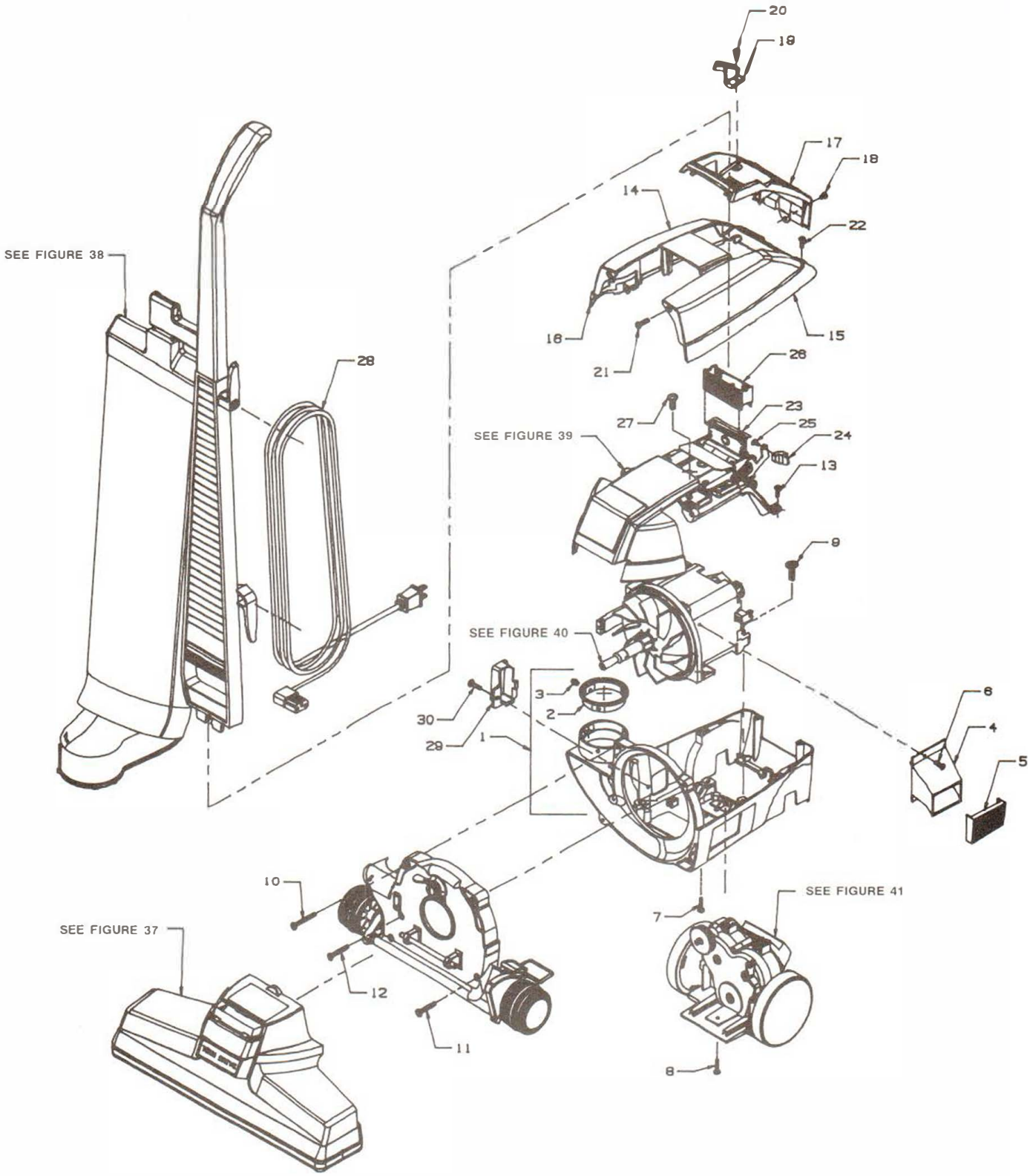


Figure 36. Kirby Generation 3

SECTION 8

ILLUSTRATED PARTS LIST AND EXPLODED VIEWS

Table 1. Kirby Generation 3

1	604389S	Base Sub-assembly
2	601989S	O-Ring — Horn Adaptor (5 pack)
3	100689S	Rivet — Horn Adaptor (25 pack)
4	106389	Exhaust Duct
5	104189S	Grill — Exhaust Duct (5 pack)
6	148985S	Screw — Exhaust Duct (25 pack)
7	500090S	Screw — Base to Motor (25 pack)
8	500090S	Screw — Power Drive to Base (25 pack)
9	600289S	Screw — Motor/Static Wire to Base (25 pack)
10	134689S	Screw — Fan Case to Base (Top) (25 pack)
11	125089S	Screw — Fan Case to Base (Bottom) (25 pack)
12	125189S	Screw — Fan Case Front (Flat Head) (25 pack)
13	631789S	Screw — Slide Bracket to Base (25 pack)
14	135689S	Cover w/Trim Strips
15	630989S	Cover Trim Strip — Left (5 pack)
16	630889S	Cover Trim Strip — Right (5 pack)
17	111289S	Scuff Plate w/Warning Label
18	631689S	Screw — Scuff Plate (25 pack)
19	690190A	Cord Clip & Tie (5 pack)
20	130384S	Screw — Cord Clip (25 pack)
21	125389S	Screw — Cover to Fan Case (Front) (25 pack)
22	631789S	Screw — Cover to Base (Rear) (25 pack)
23	671989S	Handle Pivot Spring Assembly
24	672489S	Tilt Knob — Handle Pivot (5 pack)
25	673289S	Screw — Tilt Knob (25 pack)
26	178689S	Boot — Handle Pivot (5 pack)
27	672389S	Screw — Pivot Assembly to Slide (25 pack)
28	690090S	Cord Set w/Clip & Tie (Early Style)
	192091S	Cord Set w/Clip & Tie (Less Boot)
29	196091S	Cover — Cord Set (5 pack)
30	130384S	Screw — Cord Cover (25 pack)

SECTION 8

ILLUSTRATED PARTS LIST AND EXPLODED VIEWS

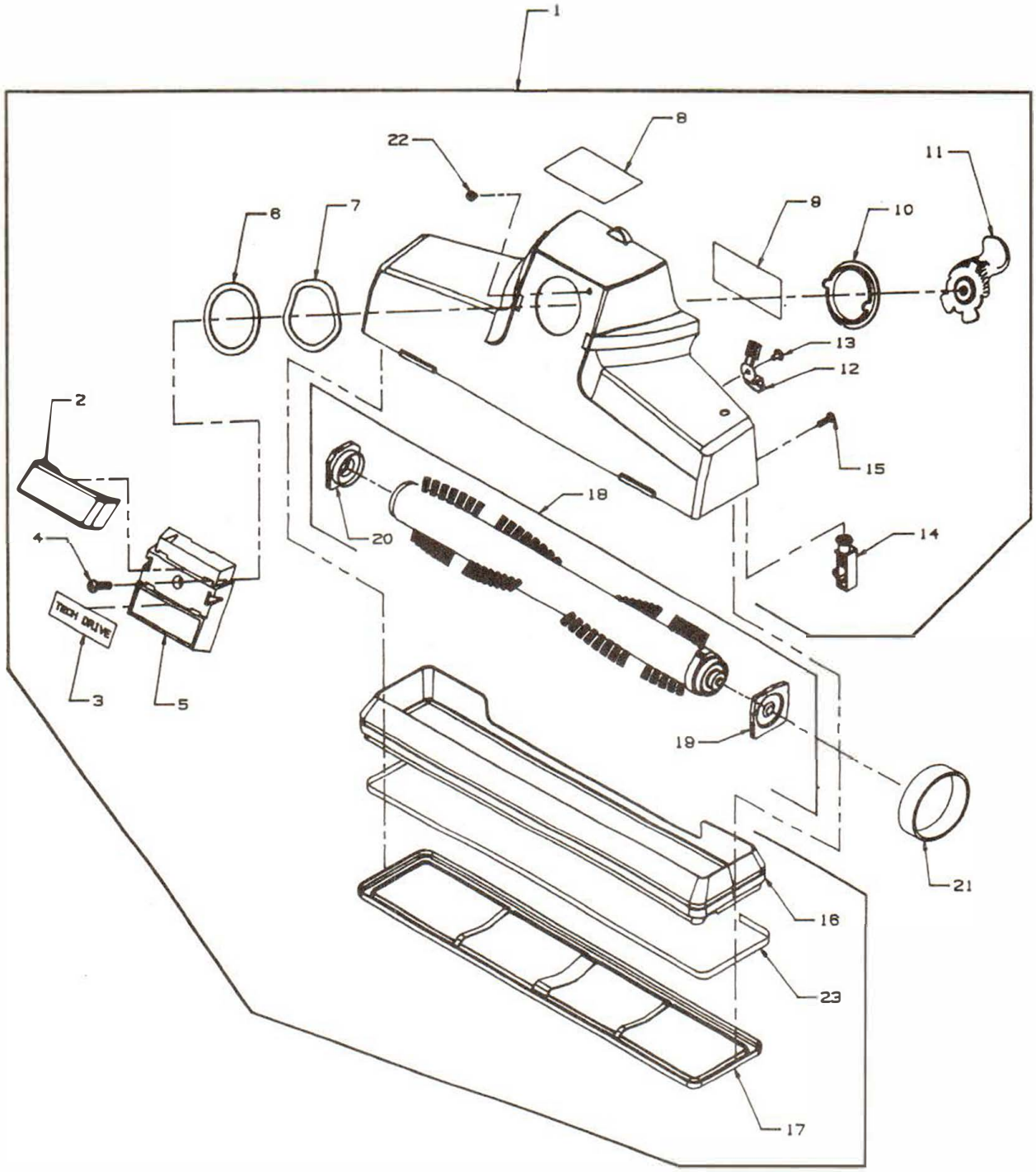


Figure 37. Floor Nozzle Assembly

SECTION 8

ILLUSTRATED PARTS LIST AND EXPLODED VIEWS

Table 2. Floor Nozzle Assembly

1	141690S	Nozzle Assembly (Less Brush and Belt)
2	640189S	Trim Strip — Belt Lifter (5 pack)
3	673689S	Label — Tech Drive (10 pack)
4	640489S	Screw — Belt Lifter (25 pack)
5	144089	Belt Lifter Body w/Arrow Labels
6	144681S	Flat Washer — Belt Lifter (10 pack)
7	144181S	Spring Washer — Belt Lifter (10 pack)
8	146689S	Label — Belt Lifter Instructions (10 pack)
9	149889S	Label — Brush Adjustment (10 pack)
10	145481S	Bearing — Belt Lifter (10 pack)
11	144281	Hook — Belt Lifter
12	640689A	Latch Assembly (2 pack)
13	141381S	Rivet — Latch Assembly (25 pack)
14	640389	BPI Assembly
15	148985S	Screw — BPI Assembly (25 pack)
16	140489	Nozzle Bumper less Trim Strip
17	152689	Rug Plate
18	152590S	Brush Roll Assembly Ball Bearing
19	156390S	Brush End Cap — Small (5 pack)
20	156490S	Brush End Cap — Large (5 pack)
21	301289A	Belt — Brush Roll (25 pack)
22	143081	Stop Rivet — Belt Lifter (Not Available)
23	640789S	Accent Strip — Bumper (10 pack)
	* 640989S	Label — Arrow (Melon) (10 pack)
	* 640889S	Label — Arrow (Green) (10 pack)

* Not Illustrated

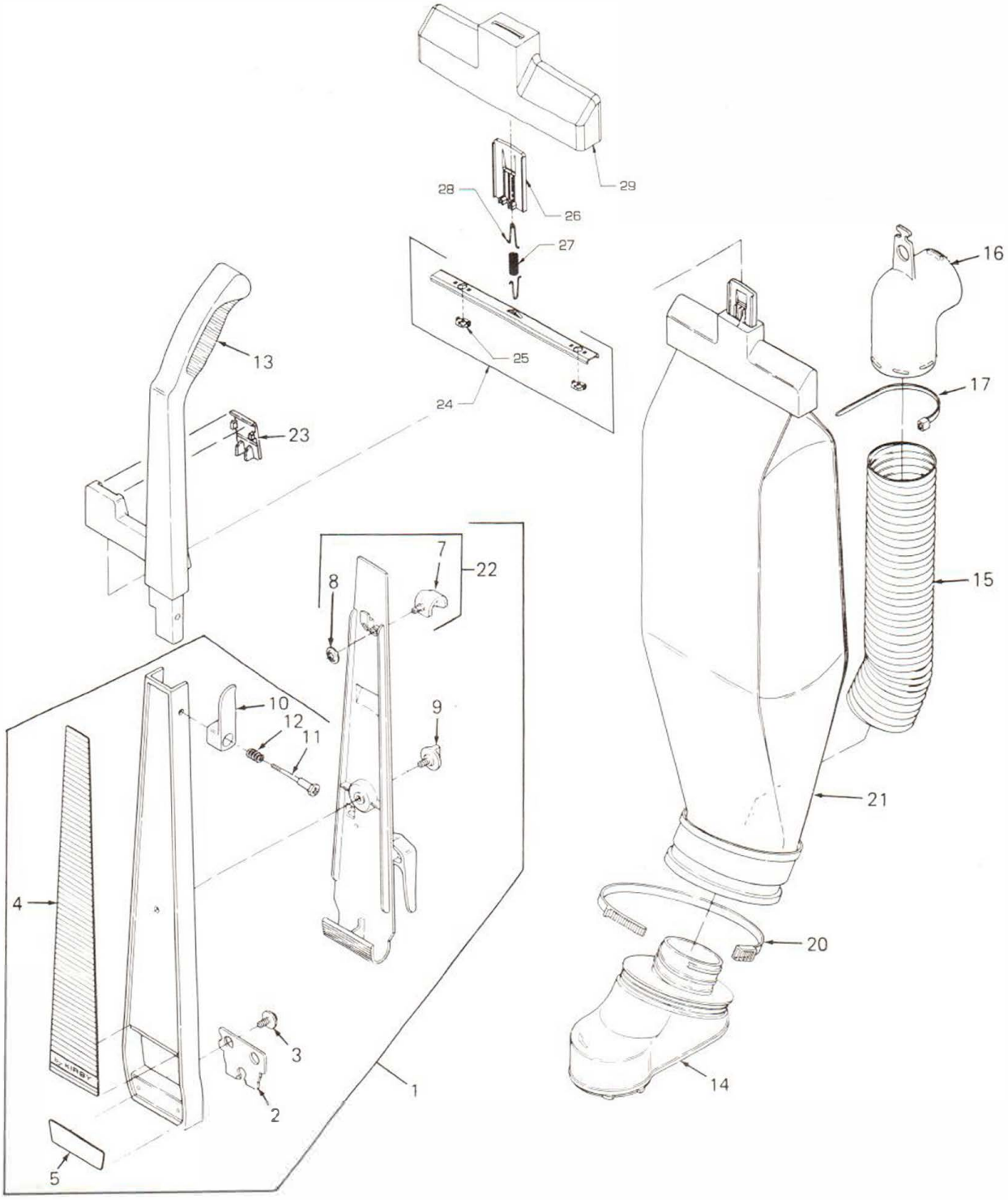


Figure 38. Handle Assembly, Mini Em-Tor and Bag

Table 3. Handle Assembly, Mini Em-Tor and Bag

1	175090G	Handle Fork Assembly
2	672189	Latch Plate
3	170489S	Screw — Latch Plate (25 pack)
4	174390S	Label — Handle Fork (5 pack)
5	673589S	Lower Label — Handle Fork (10 pack)
7	170589S	Strain Relief — Rear Cover (5 pack)
8	675189S	Retainer Ring — Strain Relief (25 pack)
9	174989S	Screw — Rear Cover (5 pack)
10	173889S	Cord Hook Swivel (5 pack)
11	174089S	Screw — Cord Hook Swivel (25 pack)
12	174167S	Spring — Cord Hook Swivel (25 pack)
13	173389	Handle Grip Assembly
14	186989	Mini Em-Tor Assembly
15	190384	Fill Tube
16	190484	Top Adapter — Fill Tube
17	191182S	Tube Tie (25 pack)
18	197289	Paper Bag (3 pack) Not shown
19	197389	Paper Bag (9 pack) Not shown
20	196589S	Bag Clamp — Mini Em-Tor (5 pack)
21	190089S	Bag Assembly (w/Bag Top Cover Assembly)
22	673789S	Rear Cover Assembly
23	672089S	Bag Release Button — Handle Grip (5 pack)
24	196189S	Bag Hanger Bar Assembly (5 pack)
25	196389S	Star Washer — Bag Hanger (10 pack)
26	196489S	Latch — Bag Top (5 pack)
27	196789S	Spring — Bag Top (10 pack)
28	196889S	Hook — Bag Top (10 pack)
29	191889	Bag Top Cover

1092925
109289

Bigger
160989 + 109289

smaller
160992 + 109292

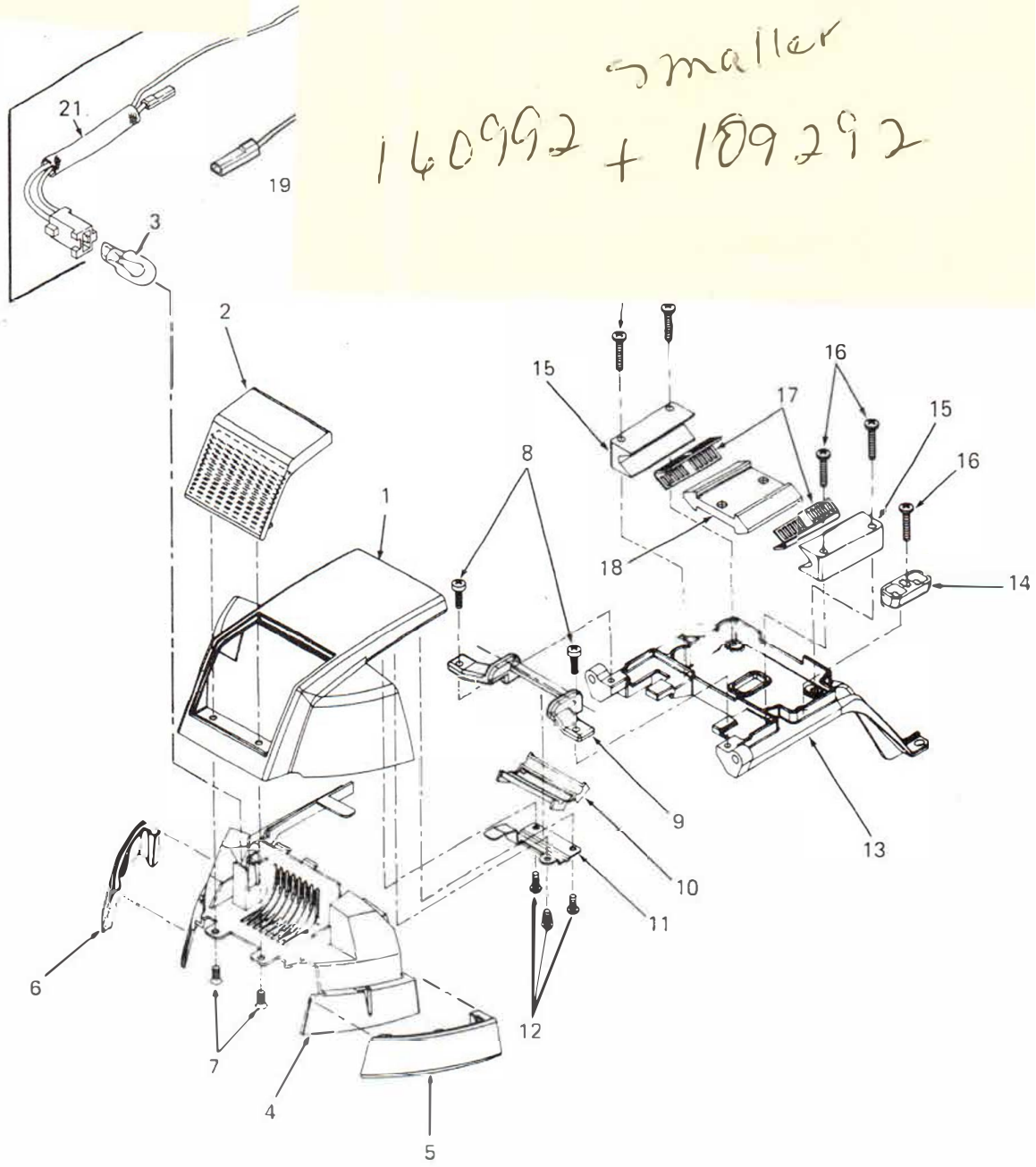


Figure 39. Headlight Cap/Slide Bracket

SECTION 8

ILLUSTRATED PARTS LIST AND EXPLODED VIEWS

Table 4. Headlight Cap/Slide Bracket Assembly

1	160089	Headlight Cap — Less Trim
2	108589	Lens — Headlight Cap
3	109289S	Lightbulb (10 pack)
4	161789	Headlight Frame Bracket
5	660089S	Headlight Trim Strip — Left (5 pack)
6	660189S	Headlight Trim Strip — Right (5 pack)
7	162689S	Screw — Frame Bracket to Cap (25 pack)
8	130384S	Screw — Headlight Pivot to Slide Bracket (25 pack)
9	161389	Headlight Pivot Casting
10	161689S	Bushing — Headlight Pivot (5 pack)
11	162889S	Plate — Headlight Pivot (5 pack)
12	102168S	Screw — Plate to Headlight Pivot (25 pack)
13	170189	Slide Bracket Casting
14	179489S	Wedge — Slide Adjustment (5 pack)
15	178789S	Guide Block — Slide Bracket (2 pack)
16	675590S	Screw — Guide and Wedge to Slide Bracket (25 pack)
17	178989S	Roller Bearing Assembly (2 pack)
18	178889	Slide — Slide Bracket Assembly
19	608089S	Cable Tie — Lead Wires (25 pack)
20	603889A	Headlight Harness Assembly (5 pack)
21	660589S	Insulator Sleeve — Black (5 pack)
22	606889S	Insulator Sleeve — Clear (5 pack)
23	607189A*	Headlight Jumper Wire (5 pack)

* Jumper wire must be attached to switch prior to assembly of switch to power unit.

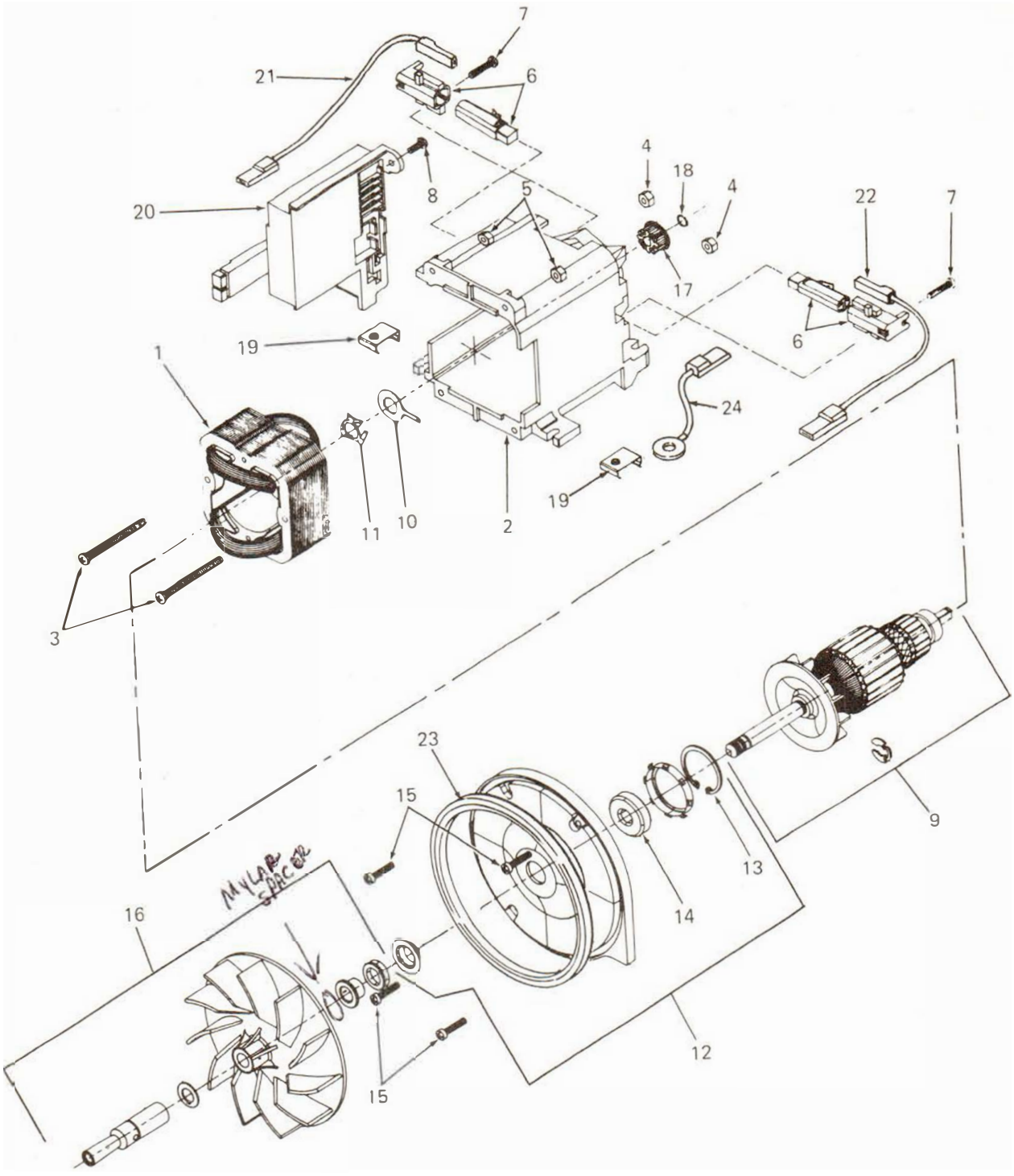


Figure 40. Motor Unit Assembly

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

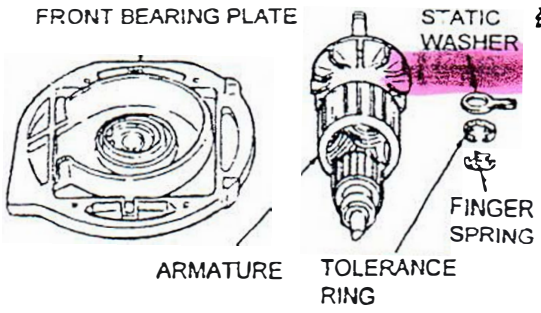
C. Install static washer in motor housing rear bearing well. **The static washer must be installed before the tolerance ring.**

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.



* MUST HAVE NEW MOTOR HOUSING TO INSTALL STATIC WASHER

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

Table 5. Motor Unit Assembly

1	103989	Field Coil
2	100189	Motor Housing
3	104689S	Screw — Motor Field (25 pack)
4	600589S	Nut — Field Screw (25 pack)
5	600589S	Nut — Bearing Plate to Motor Housing (25 pack)
6	107189A	Brush Holder w/Brush (2 pack)
7	107989S	Screw — Brush Cartridge (25 pack)
8	605989S	Screw — Power Switch to Motor Housing (25 pack)
9	114789	Armature (with Rear Bearing)
10	601889S	Static Washer (25 pack)
11	115674S	Finger Spring (25 pack)
12	105789S	Bearing Plate Assembly
13	101076S	Ring Retainer — Bearing Plate (25 pack)
14	116073	Front Bearing
15	600189S	Screw — Bearing Plate to Motor Housing (25 pack)
16	119089S	Fan Assembly
17	550689S	Sprocket Gear — Motor (5 pack)
18	601689S	Clip — Motor Drive (25 pack)
19	602289S	Clip — Motor Housing (25 pack)
20	110589S	Power Switch w/Shield
	110590	Power Switch
21	602889A	Brush Lead Assembly — Right (5 pack)
22	602989A	Brush Lead Assembly — Left (5 pack)
23	600389S	Motor Seal (5 pack)
24	603589A	Static Wire Assembly (5 pack)

SECTION 8

ILLUSTRATED PARTS LIST AND EXPLODED VIEWS

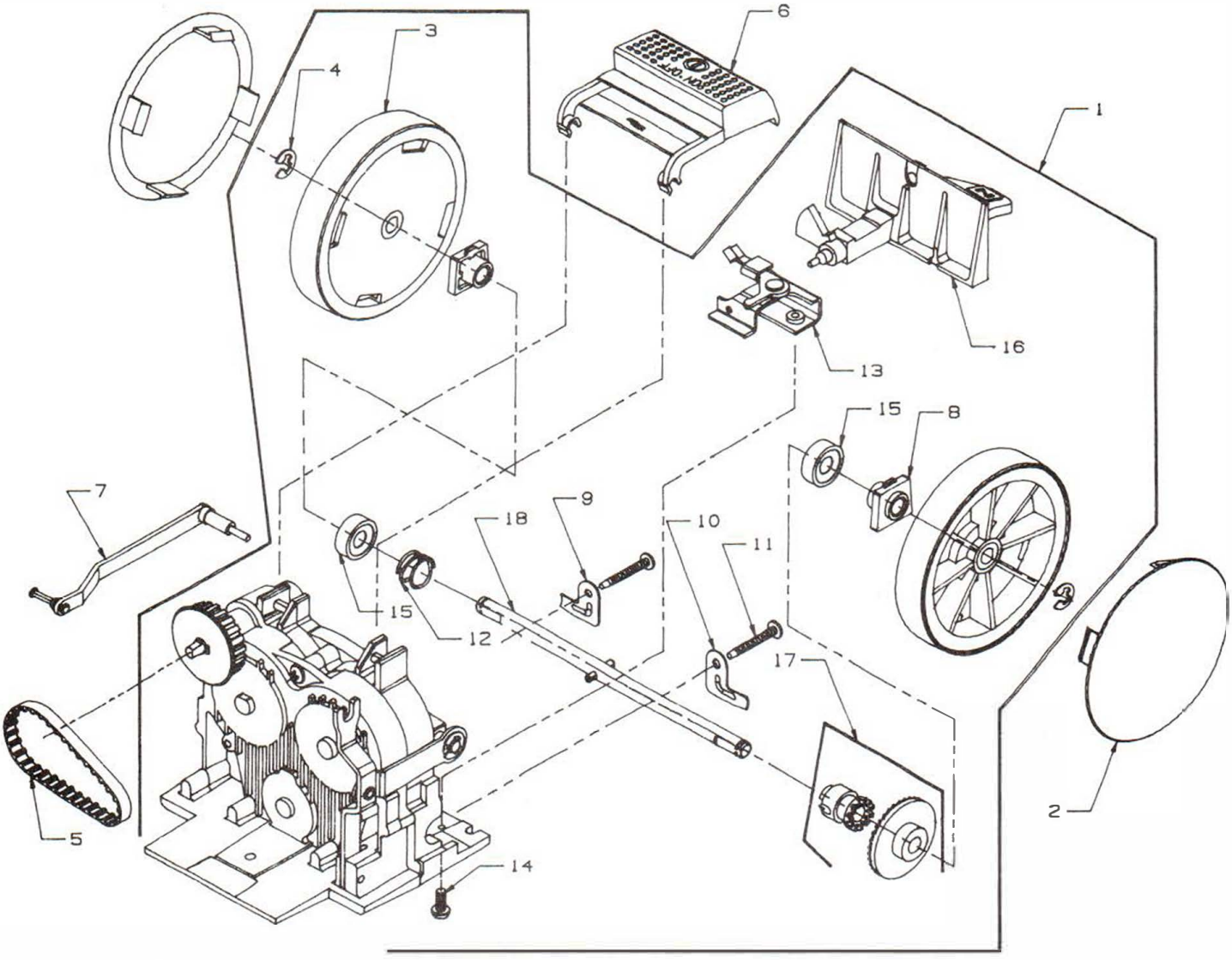


Figure 41. Power Drive Assembly

Table 6. Power Drive Assembly

1	552389G	Power Drive Assembly w/Rear Wheels
2	555989S	Hubcap — Rear Wheel (10 pack)
3	556289	Rear Wheel
4	556489S	Clip — Rear Wheel (25 pack)
5	554189S	Primary Drive Belt (5 pack)
6	110389S	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	556589S	Screw — Axle Retainer (25 pack)
12	556689S	Spring — Rear Axle (10 pack)
13	557689A	Bracket Cam Assembly — eutral Pedal (5 pack)
14	557789S	Screw — N eutral Pedal (25 pack)
15	557889S	Bearing — Rear Axle (2 pack)
16	558489S	eutral Pedal Cam Assembly
17	559890S	Clutch Overload Gear Assembly
18	560090S	Rear Axle w/Pin

SECTION 8

ILLUSTRATED PARTS LIST AND EXPLODED VIEWS

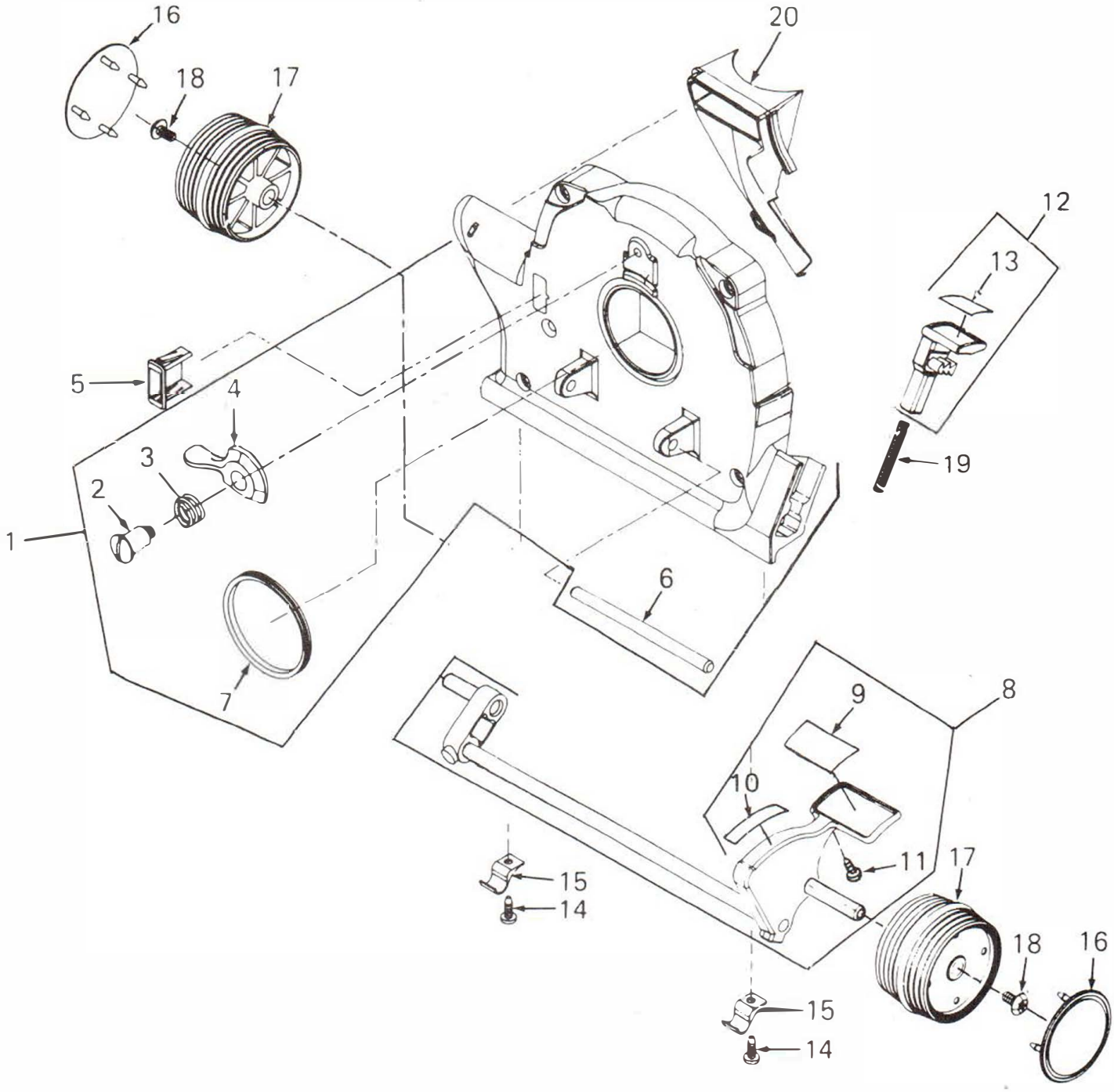


Figure 42. Fan Case Assembly

Table 7. Fan Case Assembly

1	119789S	Fan Case Assembly
2	1211S	Screw — Nozzle lock (10 pack)
3	1212S	Spring — Nozzle Lock (10 pack)
4	121056A	Lever — Nozzle Lock (5 pack)
5	610089S	Bezel — Power Switch (5 pack)
6	121689S	Nozzle Attaching Shaft (5 pack)
7	122068S	Seal Ring (25 pack)
8	131689S	Wheel Shaft Assembly
9	130789S	Label — Wheel Shaft Pedal (10 pack)
10	632089S	Label — Height Adjustment (12 pack)
11	130384S	Screw — Micro Adjustment (25 pack)
12	631589A	Ratchet Lock Assembly (5 pack)
13	631889S	Label — Ratchet Lock (10 pack)
14	193281S	Screw — Front Shaft Clamp (25 pack)
15	134073S	Clamp — Front Shaft (25 pack)
16	131889S	Hubcap — Front Wheel (10 pack)
17	131989	Front Wheel
18	1321S	Screw — Front Wheel (25 pack)
19	1331S	Spring — Ratchet Lock (25 pack)
20	125489	Volute Deflector

SECTION 8

ILLUSTRATED PARTS LIST AND EXPLODED VIEWS

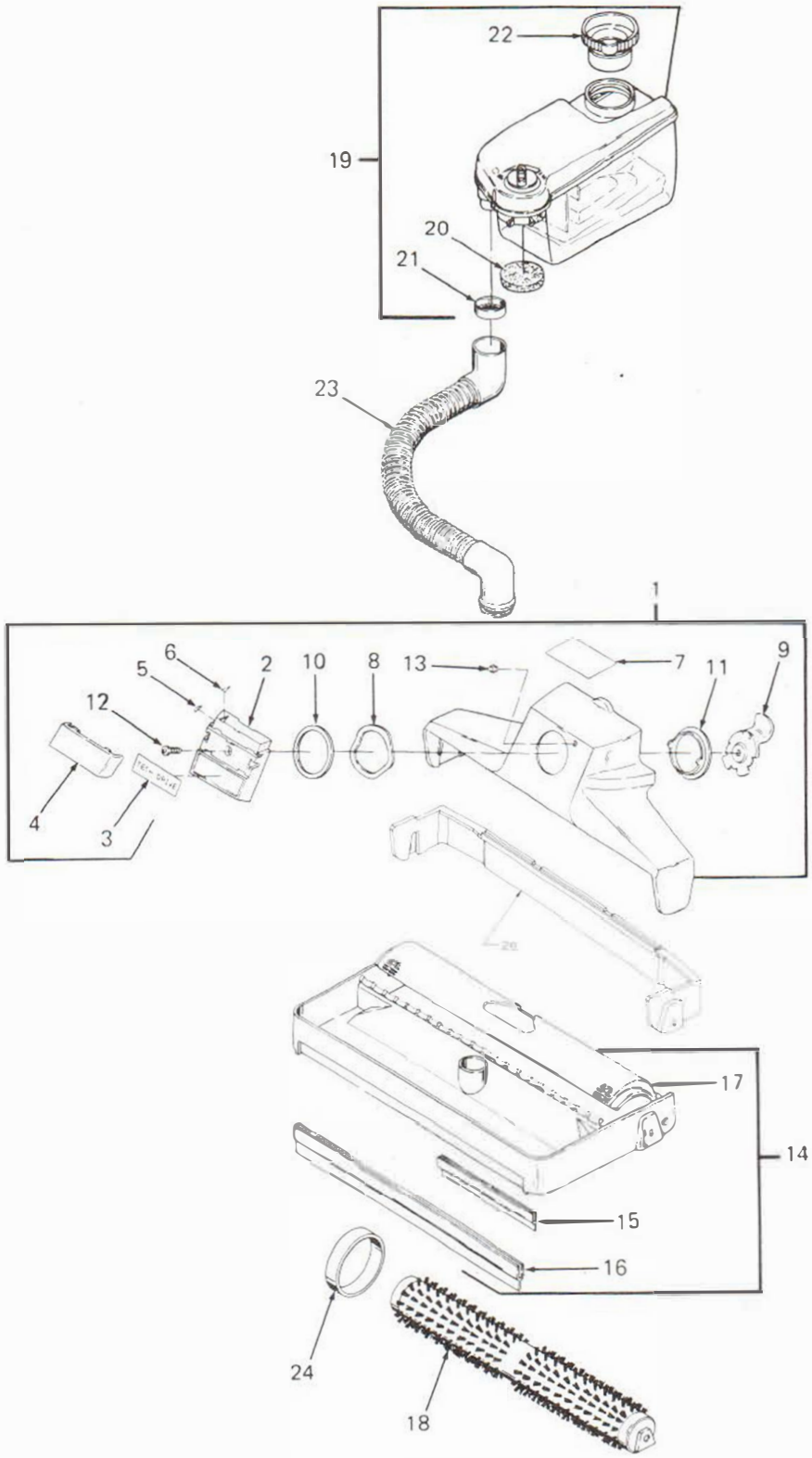


Figure 43. Carpet Shampoo System

Table 8. Carpet Shampoo System

1	303189S	Carpet Shampoo Nozzle Assembly
2	144089	Belt Lifter Body w/Arrow Labels
3	673689S	Label — Tech Drive (10 pack)
4	640189S	Trim Strip — Belt Lifter (5 pack)
5	640989S	Label — Arrow - Melon (10 pack)
6	640889S	Label — Arrow - Green (10 pack)
7	304289S	Label — Warning (10 pack)
8	144181S	Spring Washer (10 Pack)
9	144281	Belt Lifter Hook
10	144681S	Flat Washer (10 pack)
11	145481S	Bearing — Belt Lifter (10 pack)
12	640489S	Screw — Belt Lifter (25 pack)
13	143081	Stop Rivet — Belt Lifter (not available)
14	304789S	Tray Assembly
15	305289S	Belt Baffle Strip (5 pack)
16	305489S	Suds Leveler Strip (5 pack)
17	304489	Shield
18	305789S	Brush Roll Assembly w/ Axle and Retainers
19	306789S	Tank Assembly
20	307389S	Filter Sponge — Tank (10 pack)
21	307589S	Suds Screen Assembly (5 pack)
22	308989S	Cap — Tank (5 pack)
23	308089S	Hose Assembly
24	301289A	Belt (25 pack)
25	700989S*	Carton Assembly — Carpet Shampoo System
26	313589	Carpet Fluffer Shield

* Not illustrated.

SECTION 8

ILLUSTRATED PARTS LIST AND EXPLODED VIEWS

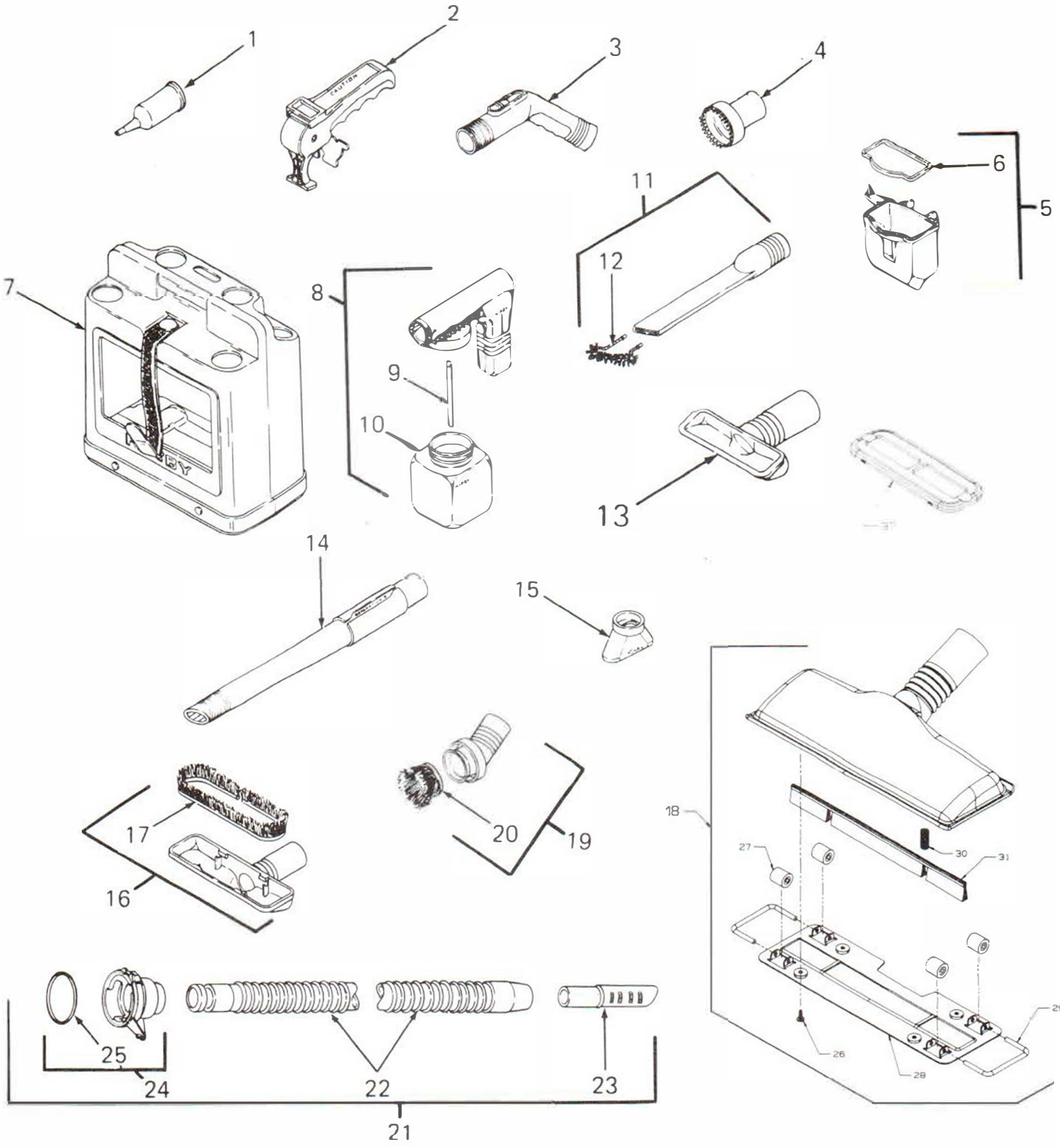


Figure 44. Attachments

Table 9. Attachments

1	213889	Inflator
2	201089S	Portable Handle Assembly
3	225189	Attachment Grip
4	214189	Massage Cup
5	224689S	Intake Guard Assembly
6	224489S	Seal — Intake Guard (10 pack)
7	285489S	Kaddy Assembly
8	250289S	Spray Gun Assembly
9	250689S	Supply Tube — Spray Gun (10 pack)
10	251089	Jar — Spray Gun
11	225989S	Crevice Tool Assembly
12	226157S	Brush — Crevice Tool (5 pack)
13	218089	Upholstery Tool
14	224089	Extension Wand
15	252089S	Suds-O-Cap (5 pack)
16	210889S	Wall/Ceiling Brush Assembly
17	218190	Brush Strip — Wall/Ceiling
18	219791	Surface Nozzle Assembly
19	218489S	Duster Brush Assembly
20	220189	Duster Brush Ring
21	223689S	Hose Assembly
22	223089	Molded Hose Only
23	223389	Tube — Swivel Connector
24	211089S	Suction/Blower Connector Assembly
25	223881S	Seal Ring Suction/Blower (10 pack)
26	210490S	Screw — Surface Nozzle Plate (25 pack)
27	210791S	Wheel Assembly — Surface ozzle (10 pack)
28	216291S	Plate — Surface Nozzle (5 pack)
29	216891S	Axle — Surface ozzle Wheels (10 pack)
30	217489S	Spring — Surface Nozzle Brush (10 pack)
31	219190S	Brush Strip — Surface ozzle (10 pack)
32	*251389S	Trigger — Spray Gun (10 pack)
33	*256689S	Venturi — Spray Gun (10 pack)
34	*285589S	Push Nut — Kaddy Strap (10 pack)
35	*285689S	Kaddy Strap (5 pack)
36	*285889S	Push Nut — Kaddy Bottom (10 pack)
37	215890S	Suction Relief — Upholstery Tool (5 pack)

*Not illustrated