



## Electronic Service Manuals

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2011 N. High St. -- Lansing, Michigan -- 48906

Fax: (517) 484-9836

Email: [CustServe@Michco.com](mailto:CustServe@Michco.com)

Web site: [www.Michco.Com](http://www.Michco.Com)

Parts Web site: [www.FloorMachineParts.Com](http://www.FloorMachineParts.Com)

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**[www.FloorMachineParts.Com](http://www.FloorMachineParts.Com)**

Directly to Parts & Service:

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By Fax: (517) 702-2041

By Voice: Use numbers above.

**Serving the Cleaning Industry Since 1922**

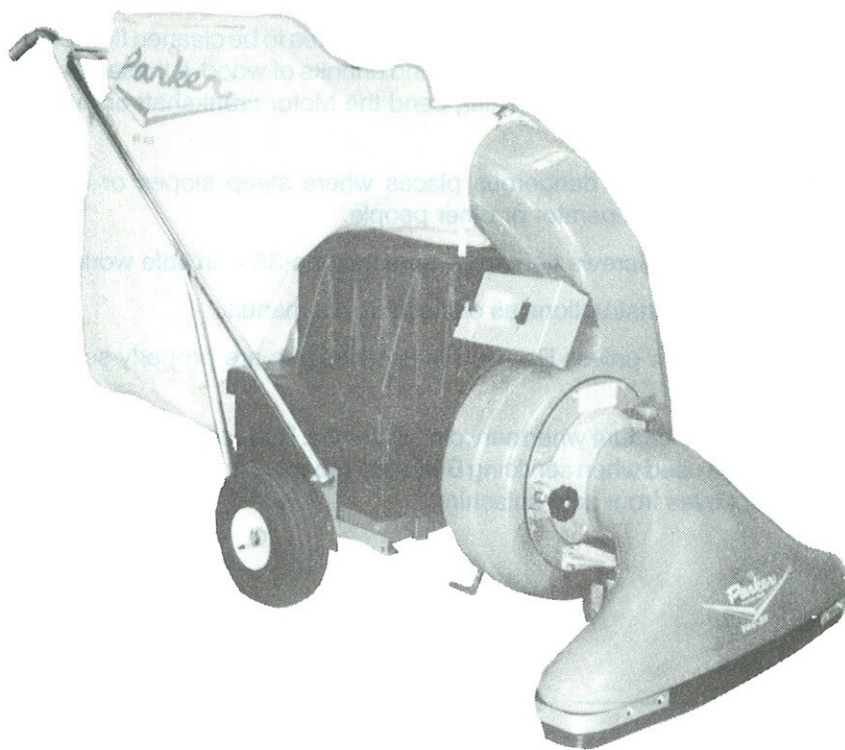
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# OWNER'S GUIDE



## VACUUM SWEEPER VAC-35

**MODEL NO. PV-8802-BP**



AF-763

**READ THESE INSTRUCTIONS  
BEFORE SETTING UP AND OPERATING MACHINE**

**BE SAFE. PROTECT YOUR FAMILY, YOUR FRIENDS, YOURSELF.**

**OBSERVE ALL SAFETY INSTRUCTIONS.**

**PARKER SWEEPER COMPANY**

**Box 1728**

**Springfield, Ohio 45501-1728**

## TO THE OWNER

These instructions were written to assist you in the assembly and operation of your Vac-35. **READ THE INSTRUCTIONS** thoroughly **BEFORE** attempting to assemble and operate the machine so that you are familiar with the complete procedure and the safety precautions.

### RULES FOR SAFE OPERATION



The following safety precautions are suggested to prevent damage to the equipment or injury to the operator or nearby persons.

1. Do not allow anyone to operate the Vac-35 without proper instructions.
2. Do not permit children to operate the Vac-35.
3. Do not sweep too close to fire. Ingesting hot ashes or cigarette butts will ignite the Bag.
4. Stop the Motor before removing the Intake Housing or Bag.
5. Stop the Motor before attempting to make any adjustment or performing any maintenance work on the Vac-35.
6. While machine is running, do not leave it unattended.
7. Before using the machine to pick up debris, police the area to be cleaned first, picking up any large objects such as glass, toys, dog bones and chunks of wood. If these pass through the machine, they could damage the impeller, bend the Motor crankshaft or put a hole in the Bag.
8. Avoid using the machine in dangerous places where steep slopes or loose debris will endanger the safety of the operator or other people.
9. Keep all Nuts, Bolts and Screws tight to be sure the Vac-35 is in safe working condition.
10. Follow the maintenance instructions as outlined in this manual.
11. Do not start or run Motor unless Bag and Intake Housing are properly secured as injury may result.
12. Use standard safety procedure when servicing Batteries. Rubber gloves, apron, leg and foot protection should be used when servicing Batteries. Goggles or other eye protection should be worn to protect eyes from acid splashing.

#### IMPORTANT

**ALWAYS GIVE THE FOLLOWING INFORMATION WHEN  
ORDERING REPAIR PARTS:**

- |                               |                        |
|-------------------------------|------------------------|
| 1. Part Number (Not Ref. No.) | 3. Description of Part |
| 2. Quantity Needed            | 4. Model No. of Vac-35 |

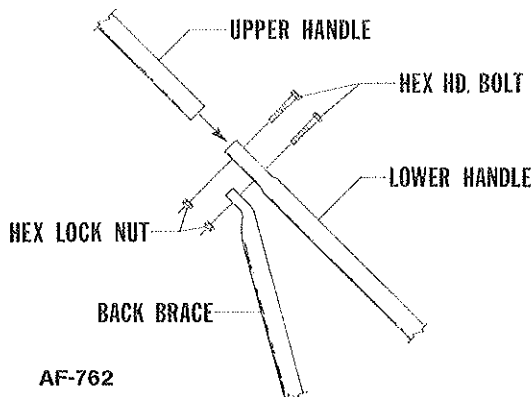
**If unable to obtain parts locally, write down above information and send to:  
PARKER SWEEPER CO., BOX 1728, SPRINGFIELD, OHIO 45501**

Your unit is right hand (R.H.) or left hand (L.H.) as you stand behind it.

# ASSEMBLY INSTRUCTIONS

**YOUR SAFETY IS OUR CONCERN. READ ALL SAFETY RULES AND OPERATING INSTRUCTIONS BEFORE ATTEMPTING TO OPERATE THIS EQUIPMENT. FAILURE TO FOLLOW SAFETY RULES AND OPERATING INSTRUCTIONS MAY RESULT IN SERIOUS INJURY.**

1. The unit is shipped complete in one Carton.
2. Unpack Intake Housing, Spin-Pak®, Handle Assembly, Bag, and Carton Inserts.
3. Remove unit from Carton.
4. DO NOT discard the Carton or any of the Inserts until the unit is completely assembled.
5. All hardware is on the unit in it's proper location. If something is missing, notify the dealer/distributor where unit was purchased. If unable to purchase parts locally, contact the Parker Sweeper Company.
6. Whenever the terms left or right hand, or "L" and "R" are used, it means from a position standing behind the unit facing forward.



## HANDLE ASSEMBLY

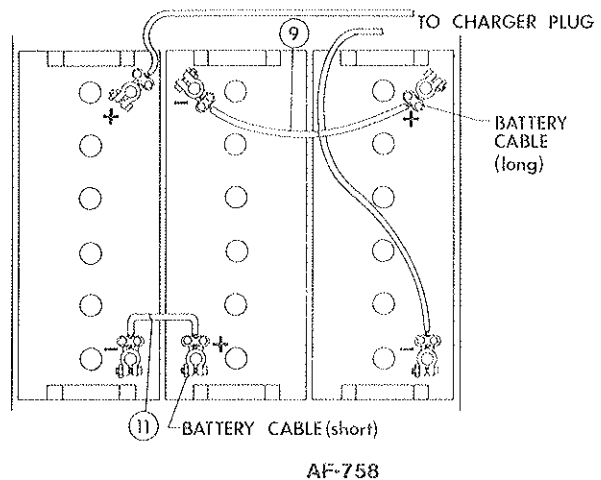
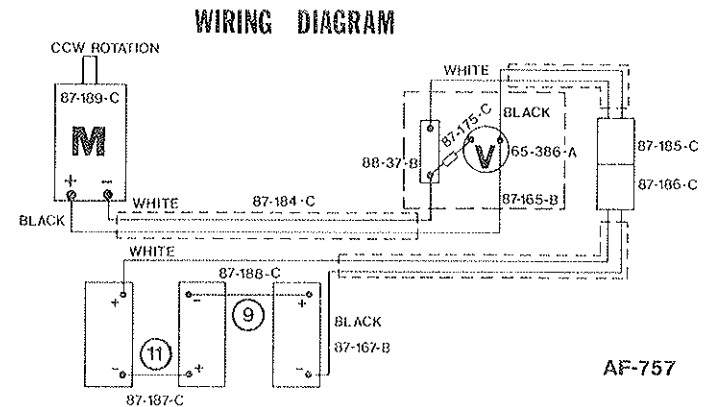
1. Remove Hex Hd. Bolts and Hex Lock Nuts from the bottoms of the Upper Handle.
2. Place Upper Handle Assembly over the ends of the Lower Handle Assembly.
3. Align the lower holes in both the Upper and Lower Handle Assemblies. Replace one Hex Hd. Bolt, removed in step 1, to each of the lower holes.
4. Lift Handles until Back Braces can be assembled to the Bolts assembled in step 3. Assemble Hex Lock Nuts. **Do Not Tighten.**
5. Assemble the remaining two Hex Hd. Bolts and Hex Lock Nuts. **Do Not Tighten.**
6. The Hex Lock Nuts have been left loose to allow movement between the holes and the Bolts. Do not bend Tubing to accomplish proper alignment. Align handle assembly by shifting within the bolt clearance of the holes. Once Handles are aligned tighten all Hex Lock Nuts.

7. Nuts should be tightened enough that at least two of the Bolt threads extend through the Nut. It may be necessary to collapse the tubing SLIGHTLY to accomplish this.

## TO INSTALL BATTERIES

1. Place Batteries in the Trays in the positions shown in AF-758.
2. Coat Terminals with a thin application of petroleum jelly or other corrosion protection.
3. Thoroughly tighten all terminal connections.

NOTE: Be sure the positive and negative posts are in the proper location. All Wires and Battery Cables have been attached except 87-188-C (9) and 87-187-C (11) which can be identified by their lengths. (See AF-757 wiring diagram and AF-758.)



**OBSERVE SAFETY RULES AT ALL TIMES. DON'T TAKE CHANCES!**

# ASSEMBLY INSTRUCTIONS (Cont.)

## TO ASSEMBLE SPIN-PAK®

1. Remove the Hex Hd. Bolts, Lock Nuts, and Flatwashers, from the three upper holes used to secure the Retaining Ring to the Blower Housing. DO NOT remove the bottom Bolt or the Retaining Ring from Blower Housing.
2. Align the holes in Spin-Pak® with the three upper holes in the Retaining Ring and Blower Housing. Replace hardware removed in Step 1 and tighten.

## ATTACHING DUST BAG

1. Place Bag Hooks into lower Bag Straps (front).
2. Place Loops of rear Bag Straps over upper Handles.
3. Slip the neck of the Dust Bag over the Spin-Pak® and Retaining Ring until the tie strap can be pulled tight around the housing neck just over the bead on the Retaining Ring. Retaining Ring must be covered.
4. Attach Hooks in lower Bag Straps to Lower Handles.

## ATTACHING INTAKE HOUSING

1. Insert the hinge bosses, on Collar of Intake Housing, behind the hinge extension on Front Cover Assembly.

2. Swing Intake Housing to lay flat against Front Cover Assembly.
3. Secure by placing Flatwasher and Adjusting Knob, on Pivot Bolt, over the Collar of Intake Housing and tighten Adjusting Knob.

## WARNING

Make a thorough inspection to see that all fastenings are tight and all parts are properly installed. DO NOT start motor without Intake Housing and Dust Bag in place.

If motor is started without Intake Housing attached, serious injury may result by drawing clothing or parts of the body into the fan.

If motor is run without Dust Bag, small stones or other objects may be picked up and propelled at operator or bystanders through the unprotected opening causing serious injury.

# OPERATING INSTRUCTIONS

Before starting the motor read and understand the following:

1. Spin-Pak® is in place.
2. Dust Bag or Discharge Hose is in place.
3. Intake Housing or Hose Kit is attached to the Fan Housing.

## TO START MOTOR

1. Turn switch to the "on" position.
2. To shut off Unit reverse step 1.
3. If Unit does not start, check all Battery Cable Connections.

## OPERATING NOTES

1. The efficiency of this unit depends on the breathing capacity of the Dust Bag. Under extremely dusty conditions the bag should be emptied and cleaned frequently. Always empty and clean bag before storing after use. Debris allowed to remain in the bag may cause spontaneous combustion, resulting in an explosion or fire.

2. Heavy concentrations of sand and gravel should be avoided. These materials are extremely abrasive, and while the Vac-35 will handle moderate amounts of these materials, it was not designed for heavy applications. Treat the Vac-35 with the reasonable care and it will provide long, trouble-free service.
3. The Vac-35 will handle most common kinds of debris found around industrial plants, commercial buildings, homes, and farms. Acid contaminated materials, magnesium, dust and other DANGEROUS DEBRIS should not be handled with the Vac-35 unless approved by a regulating authority expert in the handling of such hazardous materials.
4. The Vac-35 is equipped with a front adjustable Caster which provides any height adjustment of Intake Housing that may be needed.

**DANGER:** Improper use of this equipment may result in serious injury.

**NOTE: FAILURE TO OBSERVE SAFETY INSTRUCTIONS MAY RESULT IN SERIOUS INJURY.**

# BATTERY SELECTION AND CARE

**CAUTION:** In handling storage Batteries remember that Battery electrolyte is composed of water and H<sub>2</sub>SO<sub>4</sub> or sulfuric acid. If Battery acid should contact any part of the body, wash immediately with clean cold water. Seek medical aid if any discomfort continues. The charging of these Batteries creates explosive hydrogen and oxygen gases. Personnel should be properly instructed in the care and handling of this equipment before being permitted to do so (see Charging Instructions).

The Meter Box is located on the side of the Blower Housing equipt with Volt Meter, and ON/OFF Switch. When Volt Meter indicator needle reaches the red zone, the Batteries should be recharged. The Unit will still sweep efficiently at this point; however if Batteries are continually discharged beyond this point, their life will be shortened considerably.

## BATTERY CHARGER SPECIFICATIONS

Use Charger No. 87-153-A. 36 Volts DC, 115 Volts AC, 1 PH, 60 HZ (Anderson SB-5Q 2 Pole, 50 AMP Box Mounted Plug). Available thru the Parker Distributors.

Warranted by:

Motor Appliance Corporation  
555 Spirit of St. Louis Blvd.  
P.O. Box 22  
St. Louis, MO 63017

## BATTERY SPECIFICATIONS

714 Crown Battery  
Deep Cycle  
12 Volts (3 required)

Parker Sweeper No. 87-167-B (Size 18 x 7 1/4 x 9 5/8).

NOTE: See last page of Owner's Manual.

## BATTERY TERMINAL ADAPTERS

Battery Terminal Adapter 87-182-B

## SELECTION OF BATTERIES

See last page of Owner's Manual.

## SPECIFIC GRAVITY AND WATER LEVEL

A new Battery specific gravity reading should be 1275 corrected to 80° F. Always remember to correct hydrometer readings for temperature if accuracy is desired. When checking water level, allow the electrolyte to come up to normal room temperature before checking and filling. The electrolyte level in very cold Batteries will be lower than normal. In the absence of level indicators, the proper electorlyte level is about 1/2" above the top of the separators at 80°F or at the bottom of ring, if provided.

## OUT OF SERVICE STORAGE

1. When Batteries are removed from service they must be fully charged, inspected monthly for specific gravity readings and recharged when specific gravity drops to 1210 (corrected at 80°F).
2. Idle Batteries will self-discharge at the following rates:  
At 100°F they will lose 3 points of specific gravity daily.  
At 80°F they will lose 2 points of specific gravity daily.  
At 50°F they will lose 1/2 points of specific gravity daily.  
At 30°F they will lose 1/10 points of specific gravity daily.

## CHARGING INSTRUCTIONS

1. Proper water levels must be maintained at all times. **CAUTION:** Never add acid to batteries. Bring to proper level with water. Use only fully distilled water in Batteries.
2. When operating Battery Chargers, always follow manufacturers' instructions.
  - A. Do not recharge Batteries until volt meter reaches the red area. Recharging of partially discharged deep cycling Batteries will result in short life.
  - B. Do not overcharge. If Battery temperatures reach 124°F or begins to blow out liquid while charging, lower the charging rate immediately (or discontinue charging until Battery temperatures drop to room temperature, then resume charging).
  - C. Have your Charger checked periodically to determine if it is operating efficiently. This will eliminate the possibility of Batteries being returned to service in an undercharged state.

The cell caps should be removed to allow Battery gases to easily escape during the charging process. **GASES ISSUING FROM A CHARGING BATTERY ARE HIGHLY EXPLOSIVE! KEEP FLAMES AND SPARKS AWAY FROM VENT OPENINGS AND PROVIDE ADEQUATE VENTILATION TO SURROUNDING AREA!**

**SAFETY IS IMPORTANT!  
DO NOT IGNORE IT — OBSERVE IT!  
BE SAFE!**

**OBSERVE SAFETY RULES AT ALL TIMES. DON'T TAKE CHANCES!**

# MAINTENANCE INSTRUCTIONS

## BATTERY MAINTENANCE

Good Battery servicing should include the following points:

1. Use caution to protect the sweeper from acid damage.
2. Batteries should be kept dry and clean at all times. Excess moisture will develop corrosion between connectors and terminal posts resulting in self-discharge and voltage loss.
  - A. With vent caps in place, clean Battery tops with a mild solution of baking soda and brush. Flush with clear water and dry thoroughly.
  - B. Thoroughly clean and tighten all terminal connections. Coat with a thin application of petroleum jelly.
3. Batteries should be maintained in a full state of charge at all times. **THIS APPLIES TO BATTERIES WHETHER IN OR OUT TO SERVICE.** Make hydrometer test, to assure charge connection.

If Battery is not in good state of charge or if it uses an excessive amount of water, check charging system. If charging system is O.K., consult a good Battery service station which has testing equipment to determine cause of Battery problems.
4. Add water if necessary (never add acid).
5. Make load test by starting sweeper. Recharge Battery if voltmeter is registering in red range. New Batteries must be fully charged before being placed in service. For top performance, all Batteries in the sweeper should be of the same age and capacity. Never replace just one Battery in a set. In other words do not mix new and used Batteries. This results in inefficient operation and charging.

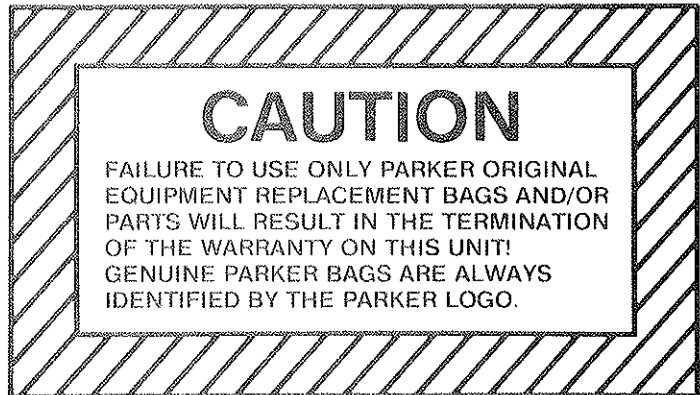
## LUBRICATION

1. Grease fittings are located in the hubs of the rear wheels. Fresh grease should be added periodically to assure proper lubrication of Wheels.

NOTE: Check all items once a week if unit is used daily.

## DUST BAG CARE

1. Keep the Dust Bag clean at all times.
2. To clean the Dust Bag, turn the Bag inside out and reattach to the sweeper, in a well ventilated area, preferably out doors.
3. Start the motor and run. Lightly tap the bag to release the dust trapped in the weave.
4. When the bag is clean, remove it and turn it right side out again. Reattach to the sweeper and resume sweeping.
5. The Dust Bag may be washed to clean.



**NOTE: FAILURE TO OBSERVE SAFETY INSTRUCTIONS MAY RESULT IN SERIOUS INJURY.**

# WARRANTY INFORMATION

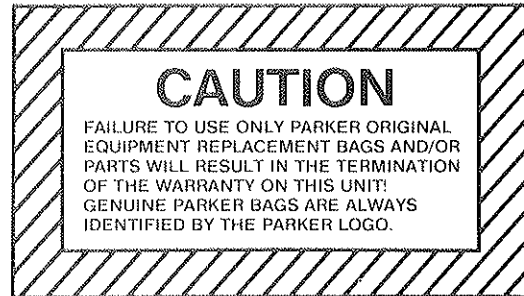
Parker Sweeper Company warrants each new piece of equipment manufactured under its name except engines, transmissions, differentials and regulators where applicable to be free from defects in materials and workmanship under normal use and service. Parker Sweeper Company's obligation is limited to repair or replacement, at its option for one (1) year (ninety (90) days for commercial service) from date of purchase.

If trouble should occur, please contact the companies listed, giving them all information: Name of unit purchased from company (Parker VAC PV-8802-BP) problem with part; when unit was purchased; model number of engine, etc., and your complete return address complete with zip code. Failure to provide complete information will result in unnecessary delay of repair and return of unit. Please contact the following companies that supply Parker Sweeper Co. with parts. Contact the company directly at the address listed if any problems should occur.

All parts listed are under the manufacturer's name and part number. Replacement parts should be purchased directly from the company listed with a complete description of the part and part number.

Parts listed under the Standard Parts can be purchased from most hardware stores.

Proper assembly of replacement parts is the responsibility of the owner or mechanic doing the work. Parker Sweeper Company warranty only applies to the original purchased unit. Under no circumstances does the warranty extend beyond the original time specified from date of purchase.



## HOW TO ORDER REPAIR PARTS

**NOTE:** When ordering service parts for any model VAC, follow the instructions listed below. By so doing, you will be assured of receiving the correct part in the shortest possible time.

1. Give the model and serial number found on the back of fan housing or back of chassis on the unit.
2. Write the complete part number as well as the description of the part, and quantity of part required.
3. Whenever the terms "left and right, or L and R" are used herein, it should be understood to mean from a position facing in direction of forward travel.

### OPTIONAL ACCESSORIES

**NOTE:** Accessory No. and Price List can be obtained from a local distributor.

**24" Intake Housing:** For sweeping in narrow aisles or in areas where heavier objects are to be collected.

**36" Intake Housing:** Ideal for sweeping lighter weight debris and in larger, open areas.

**Discharge Hose Kit:** Attaches to exhaust port for leading debris into truck, container, etc.

**Dual Caster Assembly:** Wheel Kit with quick individual wheel adjustment. Makes for easy operation over uneven surfaces.

4. Give detailed shipping instructions, that is: whether shipment is to be parcel post, United Parcel Service, air express, freight or truck.

**NOTE:** Parker Sweeper Co. is continually striving to improve its products. We must, therefore, reserve the right to make improvements or changes, when it becomes practical and possible to do so, without incurring any obligation to make changes or additions to the equipment previously sold.

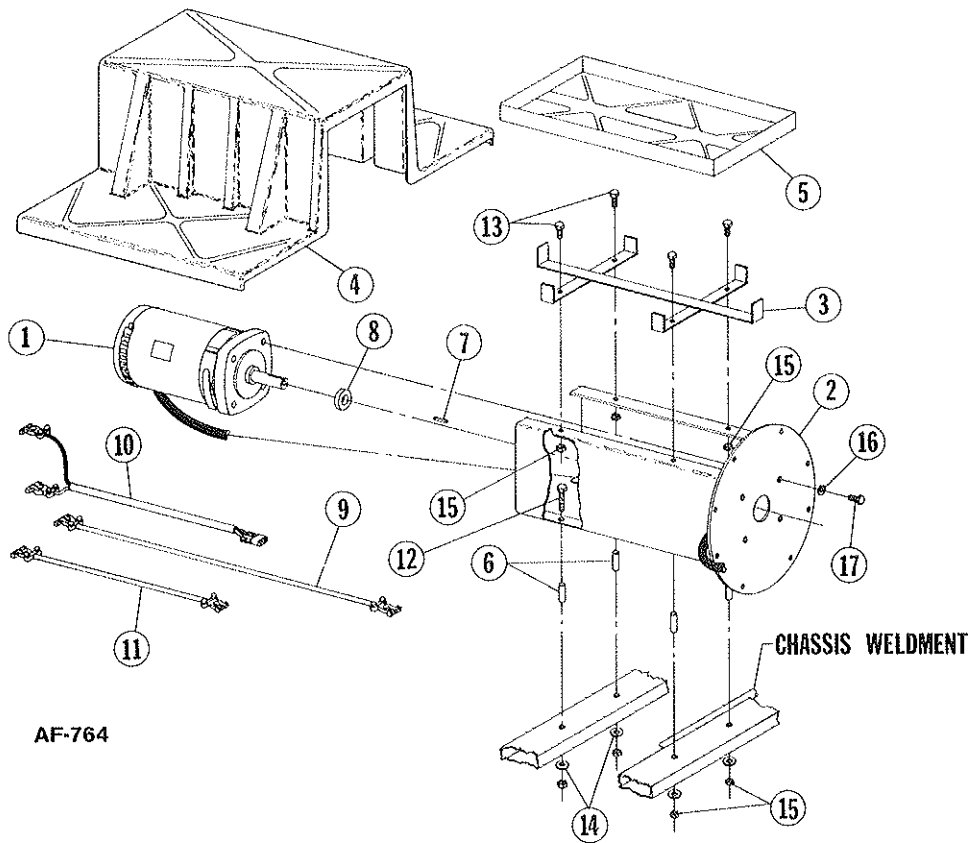
**Flip-Gate 30" Nose Cone:** Allows convenient and adjustable intake of larger debris and trash.

**Hose Attachment 6" Dia.:** 15 ft. length overall, fits all Vac-35 models. Attaches to impeller housing for cleaning debris from hard-to-reach areas.

**Hose Attachment 4" Dia.:** 15 ft. length overall, fits all Vac-35 models. Attaches to impeller housing for cleaning debris from hard-to-reach areas.

**READ SAFETY & OPERATING INSTRUCTIONS BEFORE OPERATING EQUIPMENT**

# MOTOR ASSEMBLY



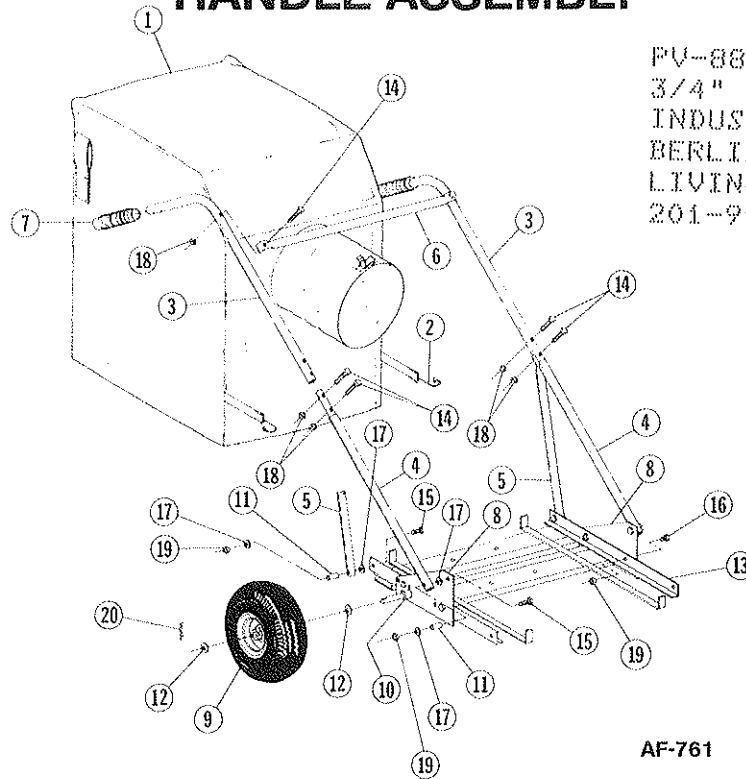
## PARTS LIST

| Ref. No. | Part No. | Qty. Per Unit | Description              |
|----------|----------|---------------|--------------------------|
| 1        | 87-189-D | 1             | Motor                    |
| 2        | 87-169-D | 1             | Motor Enclosure Weldment |
| 3        | 87-156-C | 1             | Battery Support Weldment |
| 4        | 86-103-D | 1             | Battery Cover            |
| 5        | 86-106-C | 3             | Tray                     |
| 6        | 80-238-A | 4             | Insert                   |
| 7        | 74-83-A  | 1             | Key                      |
| 8        | 84-186-A | 1             | Spacer                   |
| 9        | 87-188-C | 1             | Battery Cable Assembly   |
| 10       | 87-186-C | 1             | Connector Assembly       |
| 11       | 87-187-C | 1             | Battery Cable Assembly   |

Items listed below should be purchased through a local hardware store.

|    |           |   |                               |
|----|-----------|---|-------------------------------|
| 12 | 65-516-28 | 4 | Bolt, Hex Hd. 5/16-18 x 1 3/4 |
| 13 | 65-516-12 | 4 | Bolt, Hex Hd. 5/16-18 x 3/4   |
| 14 | 945-516   | 4 | Flatwasher Plain 5/16         |
| 15 | 365-516   | 8 | Nut, Hex Lock 5/16-18         |
| 16 | 935-616   | 4 | Lockwasher, Spring 3/8        |
| 17 | 65-616-12 | 4 | Bolt, Hex Hd. 3/8-16 x 3/4    |

# HANDLE ASSEMBLY



PV-8802-BP WHEEL BEARING  
3/4" BEARING # 015505  
INDUS NO. 2030216728  
BERLISS BEARING COMPANY  
LIVINGSTON NJ  
201-992-4242

AF-761

## PARTS LIST

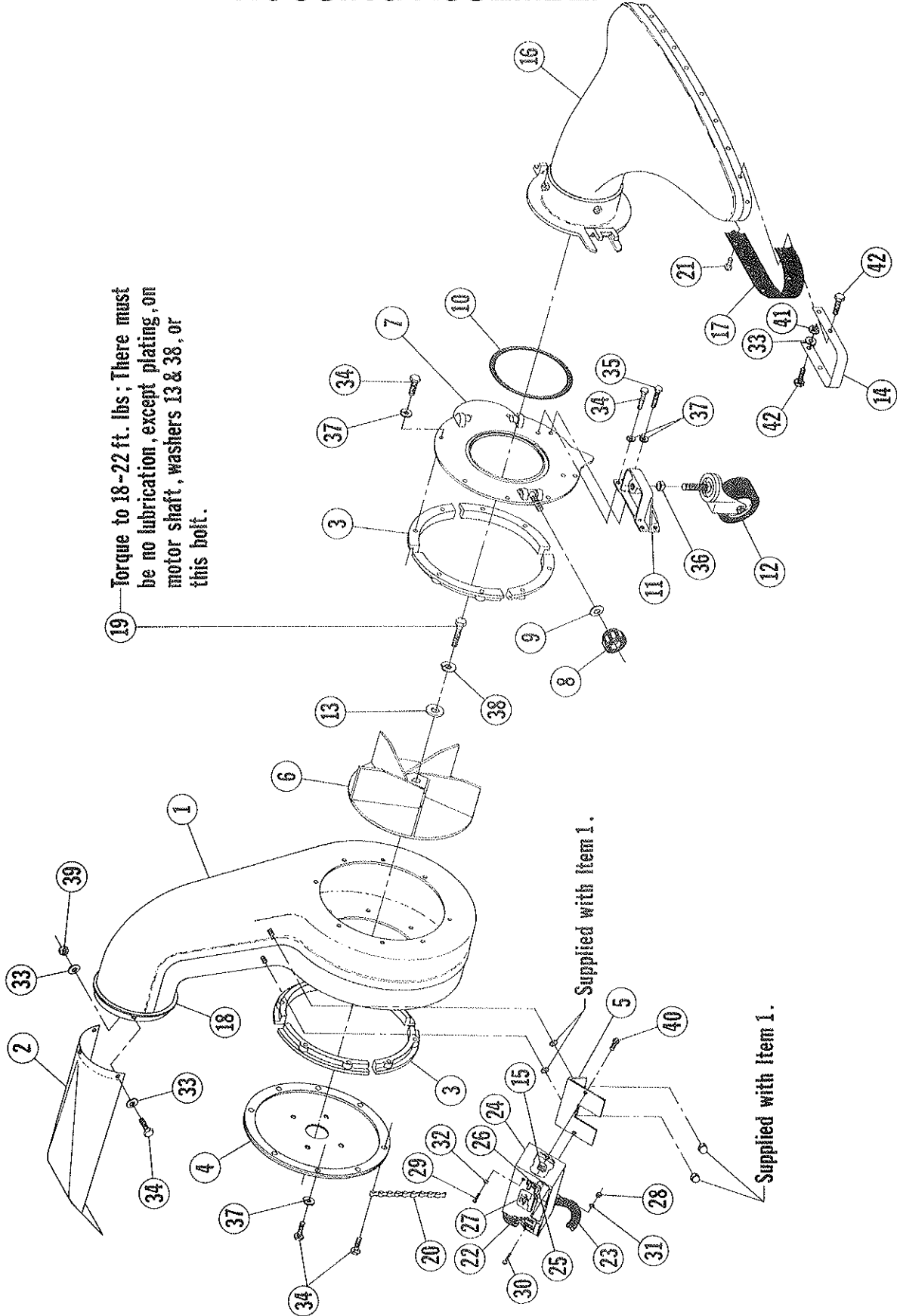
| Ref. No. | Part No.  | Qty. Per Unit | Description       |
|----------|-----------|---------------|-------------------|
| 1        | MA-419    | 1             | Dust Bag          |
| * 2      | 63-304-A  | 2             | Bag Hook          |
| 3        | 80-321-C  | 2             | Upper Handle      |
| 4        | 87-163-B  | 2             | Lower Handle      |
| 5        | 87-164-C  | 2             | Handle Back Brace |
| 6        | 80-313-B  | 1             | Cross Brace       |
| 7        | 80-232-A  | 2             | Handle Grip       |
| 8        | 73-362-C  | 2             | Handle Bracket    |
| 9        | SA-1496-C | 2             | Wheel Assembly    |
| 10       | 87-162-A  | 2             | Spacer            |
| 11       | 80-238-A  | 4             | Inserts           |
| 12       | 66-431-A  | 4             | Washer Special    |
| 13       | 87-157-D  | 1             | Chassis Weldment  |

Items listed below should be purchased through a local hardware store.

|    |            |   |                               |
|----|------------|---|-------------------------------|
| 14 | 65-416-24  | 6 | Bolt, Hex Hd. 1/4-20 x 1 1/2  |
| 15 | 65-516-28  | 4 | Bolt, Hex Hd. 5/16-18 x 1 3/4 |
| 16 | 65-516-12  | 4 | Bolt, Hex Hd. 5/16-18 x 3/4   |
| 17 | 960-516    | 8 | Flatwasher, Thick 5/16        |
| 18 | 365-416    | 6 | Nut, Hex Lock 1/4-20          |
| 19 | 365-516    | 8 | Nut, Hex Lock 5/16-18         |
| 20 | 380-432-24 | 2 | Cotter Pin 1/8-1 1/2          |

\*Item supplied with item 1, Dust Bag, but may be purchased separately.

# HOUSING ASSEMBLY



AF-759

## HOUSING ASSEMBLY

## PARTS LIST

| Ref. No. | Part No.   | Qty. Per Unit | Description                 |
|----------|------------|---------------|-----------------------------|
| 1        | 70-103-D   | 1             | Housing Assembly            |
| 2        | 85-110-B   | 1             | Spin-Pak®                   |
| 3        | 64-78-C    | 8             | Anti-Wrap Segment           |
| 4        | 87-216-C   | 1             | Back Plate & Gasket         |
| 5        | 87-166-C   | 1             | Box Bracket                 |
| 6        | 61-14-D    | 1             | Fan Wheel                   |
| 7        | SA-1389-D  | 1             | Front Cover Assembly        |
| * 8      | 80-29-A    | 1             | • Adjusting Knob            |
| * 9      | 945-816    | 1             | • Flatwasher, Plain 1/2     |
| *10      | 63-190-A   | 1             | • O-Ring Gasket             |
| 11       | 66-430-C   | 1             | Caster Bracket              |
| 12       | 64-71-A    | 1             | Caster, Stem Type           |
| 13       | 83-138-B-1 | 1             | Special Washer              |
| **14     | 62-98-C    | 2             | Guard                       |
| 15       | 87-192-A   | 2             | "U" Type Fastener           |
| 16       | MA-251-D   | 1             | 30" Intake Housing Assembly |
| **17     | 73-67-D    | 1             | Skirt                       |
| 18       | 85-59-C    | 1             | Retaining Ring              |
| ***19    | 60-516-16  | 1             | Bolt, Hex Hd. 5/16-24 x 1   |
| 20       | 47-219-A   | 2             | Chain, Drag 8" Lg.          |
| **21     | 80-232-A   | 15            | Fastener                    |
| 22       | 87-185-C   | 1             | Electric Cord Assembly      |
| 23       | 87-184-C   | 1             | Electric Cord Assembly      |
| 24       | 87-165-B   | 1             | Switch & Meter Box          |
| 25       | 87-175-C   | 1             | Resistor & Wire Assembly    |
| 26       | 88-37-B    | 1             | Switch On-Off               |
| 27       | 65-386-A   | 1             | Voltmeter                   |

Items listed below should be purchased through a local hardware store.

|    |           |    |                                   |
|----|-----------|----|-----------------------------------|
| 28 | 335-6     | 2  | Nut, Hex Plain #6-32              |
| 29 | 515-6-3   | 2  | Screw, Rd. Hd. Mach. #6-32 x 3/16 |
| 30 | 515-6-14  | 2  | Screw, Rd. Hd. Mach. #6-32 x 7/8  |
| 31 | 935-6     | 2  | Lockwasher, Spring #6             |
| 32 | 936-6     | 2  | Lockwasher, Int. Tooth #6         |
| 33 | 945-416   | 16 | Flatwasher, Plain 1/4             |
| 34 | 65-416-16 | 20 | Bolt, Hex Hd. 1/4-20 x 1          |
| 35 | 65-416-20 | 2  | Bolt, Hex Hd. 1/4-20 x 1 1/4      |
| 36 | 340-1216  | 1  | Nut, Hex Jam 3/4-10               |
| 37 | 935-416   | 16 | Lockwasher, Spring 1/4            |
| 38 | 935-516   | 1  | Lockwasher, Spring 5/16           |
| 39 | 365-416   | 4  | Nut, Hex Lock 1/4-20              |
| 40 | 515-6-6   | 2  | Screw, Rd. Hd. Mach. 6-32 x 3/8   |
| 41 | 364-416   | 8  | Nut, Hex Lock (Thin) 1/4-20       |
| 42 | 65-416-12 | 8  | Bolt, Hex Hd. 1/4-20 x 3/4        |

\*Items 8, 9, & 10 are supplied with Item 7, but may be purchased separately.

\*\*Items 14, 17 & 21 are supplied with Item 16, but may be purchased separately.

\*\*\*Item 19, Torque to 18 to 22 ft. lbs.

## SELECTION OF BATTERIES

Deep Cycle Batteries vary from 66 plates to 102 plates, with plates close together and some well separated. Clearance between the bottoms of the plates and the Battery Box is also important. The following is a listing of preferred batteries in descending order. Crown 714, Decca 90SS, Gould AP-105, Douglas 27DCM, Delco KM27MF and Crown 27T. Other deep cycle batteries may also work with varying efficiency. You may locate Batteries in your local area by looking under "Batteries" in the telephone book yellow pages or contacting your nearest Independent Battery Manufacturers Association Representative (IBMA) or the Association office at 100 Larchwood Drive, Largo, Florida 33540 U.S.A. or telephone 1-813-581-1393.

### LISTING OF IBMA MEMBERS

#### U.S.A. MEMBERS

##### ALABAMA

Birmingham.....Chloride Incorporated (BR)  
 Mobile.....Chloride Incorporated (BR)  
 Montgomery.....Ebco Battery Co. (BR)

##### ALASKA

Anchorage.....Alaska Husky Battery, Inc.

##### ARKANSAS

Hot Springs.....Red Diamond Battery Co.

##### CALIFORNIA

Los Angeles.....Estee Battery Co.  
 Rialto.....Norton Battery Mfg. Co.  
 San Francisco.....Amp King Battery Co.  
 San Francisco.....Pico Battery Mfg. Co.  
 Santa Ana.....Battery Systems, Inc.  
 Stockton.....Stockton Battery Mfg. Co., Inc.

##### COLORADO

Denver.....Car-Go Battery Company

##### DISTRICT OF COLUMBIA

Washington.....Leeth Brothers, Inc. (BR)

##### FLORIDA

Brandon.....Auto Aero Electric Co.  
 Fort Lauderdale.....Florida Battery Co.  
 Hialeah.....East Penn Mfg. Co., Inc. (BR)  
 Jacksonville.....Chloride Incorporated (BR)  
 Jacksonville.....Tropex Batteries, Inc. (BR)  
 Miami.....Chloride Incorporated (BR)  
 Miami.....Curtis Battery & Electric Corp.  
 Miami.....Tropex Batteries, Inc.  
 Miami.....Union Battery Co.  
 Orlando.....Chloride Incorporated (BR)  
 Orlando.....Tropex Batteries, Inc. (BR)  
 Pensacola.....Chloride Incorporated (BR)  
 St. Petersburg.....Electro Battery, Inc.  
 Tampa.....Bilt-Rite Battery Mfg. Co.  
 Tampa.....Chloride Incorporated  
 Tampa.....Deluxe Battery Co.  
 Tampa.....Tropex Batteries, Inc. (BR)

##### GEORGIA

Albany.....Ebco Battery Co. (BR)  
 Atlanta.....Ebco Battery Co. (BR)  
 Columbus.....Ebco Battery Co.  
 Decatur.....Chloride Incorporated (BR)  
 Doraville.....Automotive Storage Battery, Inc.

##### ILLINOIS

Belleville.....Bell City Battery Mfg. Co.  
 Chicago.....C.S. Battery Mfg. Co.  
 Chicago.....Illinois Battery Mfg. Co.  
 Chicago Heights.....Astron Manufacturing Co.  
 Cicero.....Central States Battery Co.  
 Mendota.....Electro Battery Mfg. Co. (BR)  
 Naperville.....Battery Builders Supply Co., Inc.  
 Naperville.....Storage Battery, Inc.  
 Peoria.....Red Diamond Battery Co. (BR)  
 Riverdale.....Dickson Battery Co  
 Springfield.....Staab Battery Mfg. Co., Inc.

##### INDIANA

Fort Wayne.....Crown Battery Mfg. Co. (BR)  
 Muncie.....Stout Storage Battery Corp.

##### IOWA

Corydon.....Voltmaster Corp.  
 Des Moines.....Voltmaster Corp. (BR)

##### KANSAS

Kansas City.....Chloride Incorporated (BR)

##### KENTUCKY

Baxter.....Electro-Lite Battery Co. (BR)  
 Louisville.....Far-Go Battery Co.

##### LOUISIANA

La Place.....Chloride Incorporated (BR)  
 New Orleans.....Reliable Battery Co. (BR)

##### MARYLAND

Baltimore.....The Best Battery Co., Inc.  
 Baltimore.....East Penn Mfg. Co., Inc. (BR)  
 Forestville.....The Best Battery Co., Inc. (BR)  
 Oxon Hill.....Leeth Brothers, Inc.  
 Parkville.....The Best Battery Co., Inc. (BR)

##### MASSACHUSETTS

Salem.....Surrette Storage Battery Co., Inc.  
 Watertown.....Atlantic Battery Co., Inc.

##### MICHIGAN

Detroit.....SGL Batteries Mfg. Co., Inc.  
 Detroit.....Crown Battery Mfg. Co. (BR)  
 Farmington.....C&W Lektra-Bat Co.  
 Flint.....ABC Battery, Inc.  
 Holly.....Detroit Battery Co.

##### MINNESOTA

St. Paul.....Standard Storage Battery Co.

##### MISSISSIPPI

Florence.....Chloride Incorporated (BR)

##### MISSOURI

Joplin.....Lead Products, Inc.  
 Maryland Heights.....Electro Battery Mfg. Co.  
 North Kansas City.....Farmland Industries, Inc.  
 Sikeston.....Electro Battery Mfg. Co. (BR)

##### NEW JERSEY

Atlantic City.....Landis Battery Co.  
 Edison.....Battery Systems, Inc. (BR)  
 North Bergen.....A & C Battery Co., Inc.

##### NEW MEXICO

Albuquerque.....Hubbard Corp.

##### NEW YORK

Cheektowaga.....East Penn Mfg. Co., Inc. (BR)  
 Lockport.....Crown Battery Mfg. (BR)

##### NORTH CAROLINA

Greensboro.....Chloride Incorporated (BR)  
 Thomasville.....East Penn Mfg. Co., Inc. (BR)

##### OHIO

Akron.....Crown Battery Mfg. Co. (BR)  
 Cleveland.....Battery Systems, Inc.  
 Cleveland.....Central States Battery Co. (BR)  
 Cleveland.....Crown Battery Mfg. Co. (BR)  
 Columbus.....Crown Battery Mfg. Co. (BR)  
 Fremont.....Crown Battery Mfg. Co.  
 Perrysburg.....Dynalite Corp.  
 Toledo.....Crown Battery Mfg. (BR)

##### OKLAHOMA

Tulsa.....Chloride Incorporated (BR)

##### OREGON

Beaverton.....Western Batteries, Inc.

##### PENNSYLVANIA

Erie.....Crown Battery Mfg. (BR)  
 Lancaster.....Lancaster Battery Co., Inc.  
 Lyon Station.....East Penn Mfg. Co., Inc.  
 New Castle.....New Castle Battery Mfg. Co.  
 Philadelphia.....East Penn Mfg. Co., Inc.  
 Pittsburgh.....Crown Battery Mfg. (BR)

##### RHODE ISLAND

Providence.....Mule Battery Mfg. Co.  
 Providence.....State Battery Co., Inc.

##### SOUTH CAROLINA

Columbia.....Chloride Incorporated (BR)

**TENNESSEE**

Chattanooga.....Electro-Lite Battery Co.  
 Knoxville.....Chloride Incorporated (BR)  
 Memphis.....Chloride Incorporated (BR)  
 Memphis.....Ramak Industries Div.  
 Nashville.....Chloride Incorporated (BR)

**TEXAS**

Dallas.....Continental Battery Mfg. Corp.  
 Dallas.....Reliable Battery Co. (BR)  
 El Paso.....El Paso Battery Factory, Inc.  
 Houston.....Reliable Battery Co. (BR)  
 Houston.....Texford Battery Co.  
 Longview.....Chloride Incorporated (BR)  
 San Antonio.....Reliable Battery Co.

**VIRGINIA**

Arlington.....Leath Brothers, Inc. (BR)  
 Lynchburg.....Hydrate Battery Corp.  
 Richmond.....The Best Battery Co., Inc. (BR)

**WASHINGTON**

Seattle.....Western Batteries, Inc. (BR)  
 Tacoma.....Sound Battery Co., Inc.

**WISCONSIN**

Glendale.....Central States Battery Co. (BR)

**INTERNATIONAL MEMBERS****AUSTRALIA**

Northmead, N.S.W.....John S. Drummond Batteries P/L  
 Victoria.....Dunlop Batteries Australia

**AUSTRIA**

Linz.....Banner Akkumulatorenfabrik

**BELGIUM**

Archennes.....Accumulateurs Tudor, S.A.  
 Brussels.....E.T.S. Daniel Doyen, S.A.

**BRAZIL**

Londrina.....Fabrica de Acumuladores Reifor, Ltda.  
 Recife.....Acumuladores Moura, S.A.  
 San Paulo.....Acumuladores Ajax, Ltda.

**CANADA**

Laprairie, Que.....Cegelec Batteries Corp.  
 Nanaimo, B.C.....Industrial Battery & Supply Ltd.  
 Richmond, B.C.....Canadian Battery Corp. Ltd.

**COLOMBIA**

Bogota.....Industria de Baterias Colombiana, Ltd.

**DENMARK**

Odense.....Moeller & Co. Odense A.S.

**ECUADOR**

Quito.....Baterias Ecuatorianas, S.A.

**EL SALVADOR**

San Salvador.....Baterias Superior de C.A.

**ENGLAND**

Essex.....Chloride Automotive Batteries, Ltd.  
 Liverpool.....Car Battery Service of Liverpool Ltd.  
 Manchester.....Oldham & Son Ltd.

**HONDURAS**

San Pedro Sula.....Acumuladores "Electra"

**INDIA**

Bangalore.....Amco Batteries Limited  
 Calcutta.....The Bharat Battery Mfg. Co. (Pvt.) Ltd.  
 Calcutta.....M/S P. Kishor & Co.  
 Julender.....Decro Batteries  
 New Delhi.....M/S Sahní Batteries (P) Ltd.

**INDONESIA**

Jakarta.....P.T. Sinar Stupa Elektro  
 Sumatera Utara.....P.T. Pabrik Acu "Andalas Jaya"

**ISRAEL**

Haifa.....Vulcan Batteries Ltd.

**JAMAICA**

Kingston.....Tropical Battery Co. Ltd.

**JAPAN**

Tokyo.....Shin-Kobe Machinery Co. Ltd.

**LEBANON**

Beirut.....Bacol Batteries Co. Ltd.

**MALAYSIA**

Kuala Lumpur.....Taman Batu Battery & Plates Mfg. Co.

**MEXICO**

Chihuahua.....Acumuladores Reno, S.A.  
 Guadalajara 8-Jalisco.....Acumuladores ACH, S.A.  
 Mexico, D.F.....Acumulador Insuperable, S.A.  
 Mexico, D.F.....Acumuladores Garco, S.A.  
 Mexico, D.F.....General Popo, S.A.  
 Mexico, D.F.....Industrial Technica Rayo, S.A.  
 Monterrey, N.L.....Electrica Automotriz Omega, S.A.  
 Monterrey, N.L.....Mo-Car Internacional, S.A.

**NETHERLANDS ANTILLES**

Aruba.....Leon Battery Shop  
 Willemstad.....Netherlands Antilles Bty. Co., N.V.

**NEW ZEALAND**

Christchurch.....Amalgamated Batteries Ltd.

**NICARAGUA**

Managua.....Baterias Hasbani

**NIGERIA**

Lagos.....Zerolas Batteries Co. Ltd.

**PAKISTAN**

Karachi.....Kohinoor Battery Mfrs., Ltd.  
 Lahore.....Grand Batteries (Pakistan) Ltd.

**PANAMA**

Panama.....Baterias Nacionales, S.A.  
 Panama.....Industrias Record, S.A.

**PAPUA NEW GUINEA**

Lae.....Automarine Industries Pty., Ltd.  
 Rabaul.....Automarine Industries Pty., Ltd.

**PERU**

Lima.....Baterias Rose, S.A.

**PHILIPPINES**

Manila.....Ramcar, Inc.

**SOUTH AFRICA**

Benoni.....Raylite Holdings (Pty.) Ltd.  
 Cape Town.....Battery King

**SUDAN**

Khartoum.....El Roubi Accumulator Co. Ltd.

**SWITZERLAND**

Boudry Neuchatel.....0-38-44-21-21.....Electrona, S.A.

**THAILAND**

Bangkok.....Battery Organization  
 Bangkok.....Siam Battery Industry Co., Ltd.

**TRINIDAD**

Arima.....Samton Metal (Caribbean) Ltd., Battery Div.

**URUGUAY**

Montevideo.....F.A.N.A.E.S.A

**VENEZUELA**

Caracas.....Acumuladores Duncan, C.A.  
 Caracas.....Acumuladores Padron, S.A.  
 Caracas.....Fabrica de Baterias Texco do Venezuela

