

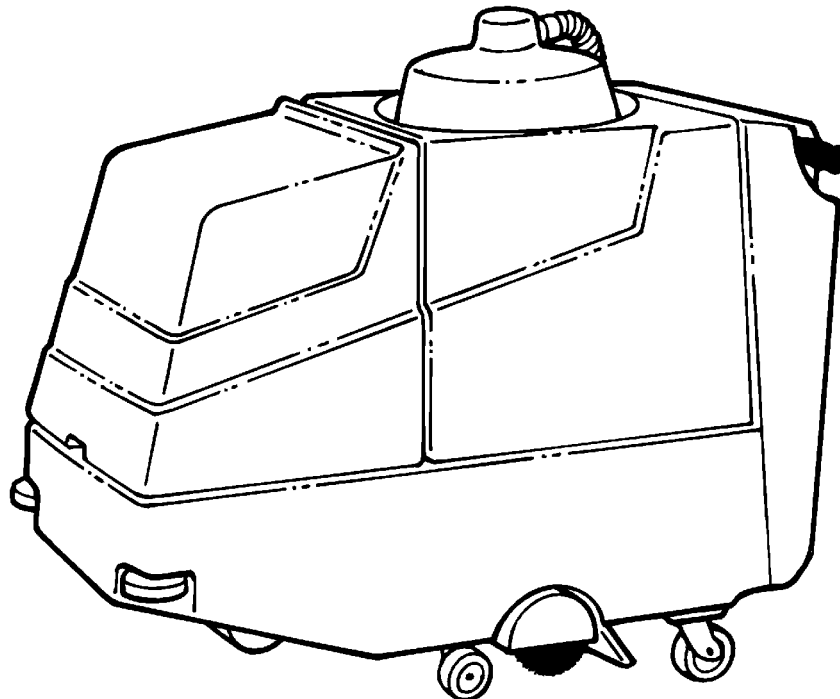


Model Part No.:  
608349  
608935 - PAC  
609256 - PAC CAN

# CONCORDE™ HP PLUS

AUTOMATIC CARPET EXTRACTOR

## OPERATOR AND PARTS MANUAL



# OPERATION

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This manual is furnished with each new model. It provides necessary operation and machine maintenance instructions and an illustrated parts list.

**Read this manual completely and understand the machine before operating or servicing it.**

This machine will provide excellent service. However, the best results will be obtained at minimum costs if:

- The machine is operated with reasonable care.
- The machine is maintained regularly - per the machine care instructions provided.
- The machine is maintained with manufacturer supplied or equivalent parts.

When ordering replacement parts, use the Parts Lists in this manual. Before ordering parts or supplies, be sure to have your machine model number and serial number handy. Parts and supplies may be ordered by phone or mail from any Authorized Service Center or Distributor.

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## MACHINE DATA

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Please fill out at time of installation for future reference.

Model No.- \_\_\_\_\_

Install. Date - \_\_\_\_\_

Serial No.- \_\_\_\_\_



### PROTECT THE ENVIRONMENT

Please dispose of packaging materials, old machine components such as batteries, hazardous fluids such as antifreeze and oil, in a safe environmentally way according to your local waste disposal regulations.



Always remember to recycle.

### Tennant Company

PO Box 1452

Minneapolis, MN 55440

Phone: (800) 553-8033 or (763) 513-2850

[www.nobles.com](http://www.nobles.com)

Specifications and parts are subject to change without notice.

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## SAFETY PRECAUTIONS

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This machine is intended for commercial use. It is designed exclusively to clean carpets and upholstery in an indoor environment and is not constructed for any other use. Use only recommended accessory tools and commercially available carpet cleaners intended for machine application.

All operators must read, understand and practice the following safety precautions.

The following warning alert symbol and the "FOR SAFETY" heading are used throughout this manual as indicated in their description:

 **WARNING:** To warn of hazards or unsafe practices which could result in severe personal injury or death.

**FOR SAFETY:** To identify actions which must be followed for safe operation of equipment.

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Failure to follow these warnings may result in: personal injury, electrocution, electrical shock, fire or explosion.

 **WARNING:** Do Not Use Flammable Liquids Or Operate Machine In Or Near Flammable Liquids, Vapors Or Combustible Dusts.

This machine is not equipped with explosion proof motors. The electric motors will spark upon start up and during operation which could cause a flash fire or explosion if machine is used in an area where flammable vapors/liquids or combustible dusts are present.

 **WARNING:** Do Not Pick Up Flammable Materials Or Reactive Metals.

 **WARNING:** Keep Sparks And Open Flame Away. Keep Battery Hood Open When Charging.

 **WARNING:** Disconnect Battery Cables Before Servicing Machine.

---

The following information signals potentially dangerous conditions to the operator or equipment:

### FOR SAFETY:

1. Do not operate machine:
  - With flammable liquids or near flammable vapors as an explosion or flash fire may occur.
  - Unless trained and authorized.
  - Unless operation manual is read and understood.
  - If not in proper operating condition.
2. Before starting machine:
  - Make sure all safety devices are in place and operate properly.
3. When using machine:
  - Go slow on inclines and slippery surfaces.
  - Use care when reversing machine.
  - Report machine damage or faulty operation immediately.
  - Never allow children to play on or around.
  - Follow mixing and handling instructions on chemical containers.
4. Before leaving or servicing machine:
  - Stop on level surface.
  - Turn off machine.
  - Pull out main circuit breaker button.
5. When servicing machine:
  - Avoid moving parts. Do not wear loose jackets, shirts, or sleeves.
  - Block machine tires before jacking up.
  - Jack machine up at designated locations only. Block machine up with jack stands.
  - Use hoist or jack that will support the weight of the machine.
  - Disconnect battery connections before working on machine.
  - Wear protective gloves and safety glasses when handling batteries or battery cables.
  - Avoid contact with battery acid.
  - Use manufacturer supplied or approved replacement parts.
  - All repairs must be performed by a qualified service person.
  - Do not modify the machine from its original design.

6. When transporting machine:





- Turn machine off.
- Get assistance when lifting machine.
- Do not lift machine when batteries are installed.

- Use a recommended ramp when loading/unloading into/off truck or trailer.
- Use tie-down straps to secure machine to truck or trailer.

**SAFETY LABEL**

The safety label appears on the machine in the location indicated. Replace label if it becomes damaged or illegible.

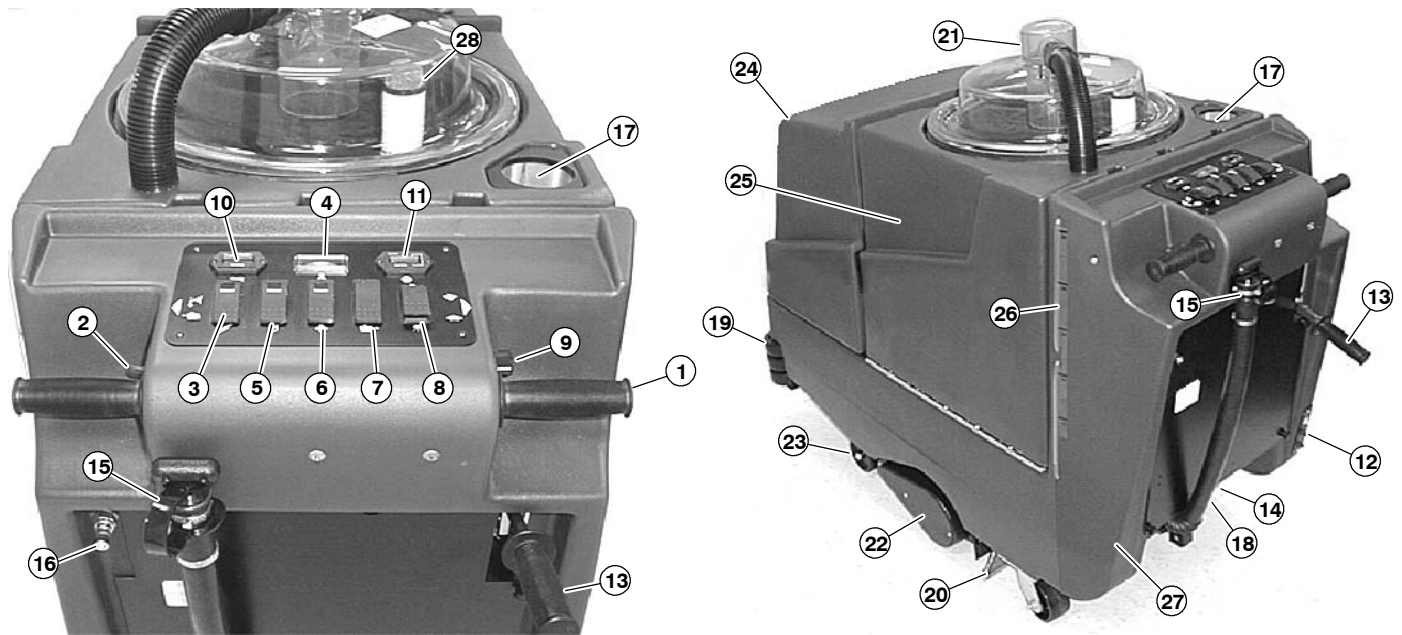
**WARNING LABEL -  
LOCATED ON THE RECOVERY TANK DOME**

⚠ WARNING	⚠ AVERTISSEMENT	⚠ ADVERTENCIA
 <p><b>EXPLOSION, FIRE AND SHOCK HAZARD. AVOID INJURY.</b></p> <ul style="list-style-type: none"> <li>• Do Not Use or Pick Up Flammable Materials.</li> <li>• Do Not Use Near Flammable Liquids, Vapors or Combustible Dusts.</li> <li>• Keep Sparks and Open Flame Away When Charging Batteries. Keep Battery Hood Open When Charging.</li> <li>• Disconnect Battery Cables and Charger Cord Before Servicing.</li> </ul>	 <p><b>RISQUE D'EXPLOSION, D'INCENDIE ET DE DÉCHARGE. ÉVITEZ LES BLESSURES.</b></p> <ul style="list-style-type: none"> <li>• N'utilisez Pas ou Ne Ramassez Pas de Matériaux Inflammables.</li> <li>• N'utilisez Pas Près de Liquides, Vapeurs ou Poussières Inflammables.</li> <li>• Eloignez les Sources d'Étincelles ou de Flamme Ouverte Lors du Chargement des Batteries. Laissez Ouvert le Capot du Compartiment des Batteries Lors de la Mise en Charge.</li> <li>• Débranchez les Câbles de Batterie et la Cordon du Chargeur Avant l'Entretien.</li> </ul>	 <p><b>PELIGRO DE EXPLOSIÓN, FUEGO, DESCARGA EVITE LESIONES.</b></p> <ul style="list-style-type: none"> <li>• No Use Ó Recoja Materiales Flamables.</li> <li>• No Use Cerca De Líquidos Flamables, Vapores Ó Materiales Combustibles.</li> <li>• Mantenga Chispas Y Fuego Alejados Mientras Carga Baterías. Mantenga Tapa De Batería Abierta Mientras Carga.</li> <li>• Desconecte Cable De Batería Y Cable Del Cargador Antes Del Mantenimiento.</li> </ul>
		1026386



# OPERATION










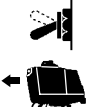


## MACHINE COMPONENTS






- 1. Control Grips
- 2. Reverse Drive Trigger
- 3. Main Power Switch
- 4. Brush Pressure Meter
- 5. Pump Switch
- 6. Vacuum Switch
- 7. Clean Mode/Transport Mode Drive Switch
- 8. Restorative Cleaning/Interim Cleaning Switch
- 9. Transport Speed Control Knob
- 10. Battery Meter
- 11. Hour Meter
- 12. Circuit Breaker Panel
- 13. Brush Lift Lever
- 14. Brush Height Adjustment Knobs

- 15. Drain Hose
- 16. Floor Tool Accessory/Bleeder Hose Coupler
- 17. Solution Tank Fill Port
- 18. Solution Tank Filter
- 19. Wall Roller Bumper
- 20. Vacuum Pickup Head
- 21. Recovery Tank Dome
- 22. Rotating Brush
- 23. Safety Wheels
- 24. Battery Compartment Hood
- 25. Recovery Tank
- 26. Solution Tank Gallon Marker
- 27. Solution Tank
- 28. Standpipe Screen

## CONTROL PANEL SYMBOLS

 Main Power	 Clean Mode	 Interim Cleaning	 Battery Charge Meter
 Pump	 Transport Mode	 Restorative Cleaning	 Brush Pressure Meter
 Vacuum	 Reverse	 Transport Fast Speed	 Transport Slow Speed

### CIRCUIT BREAKER PANEL

	Main Power Circuit Breaker
	Brush Motor Circuit Breaker
	Drive Motor Circuit Breaker

## MACHINE INSTALLATION

### UNCRATING MACHINE

Carefully check carton for signs of damage. Report damages at once to carrier.

Check carton contents list below. Contact your distributor for missing items.

- 1 - Recovery Dome (stored in battery compartment)
- 1 - Recovery Dome Vacuum Hose (stored in recovery tank)
- 1 - Battery Tray
- 2 - Battery Cables (stored in battery compartment)
- 1 - Pumpout Hose (stored in recovery tank)
- 1 - Standpipe Screen (stored in recovery tank)
- 1 - Solution Tank Fill Port Strainer (stored in recovery tank)
- 1 - Spray Bar (installed on machine)
- 1 - Battery Charger (included with Concorde™ HP Plus PAC 608935 & 609256) Packaged Separately
- 3 - 12V Batteries (included with Concorde™ HP Plus PAC 608935) Packaged Separately

**ATTENTION: Battery installation must be accomplished after removing machine from shipping crate.**

**ATTENTION: DO NOT roll machine off pallet or use a forklift, machine damage will occur. Use a hoist or ramp.**

### INSTALLING BATTERIES

**⚠ WARNING: Keep Sparks And Open Flame Away. Keep Battery Hood Open When Charging.**

**FOR SAFETY: When servicing machine, wear protective gloves and safety glasses when handling batteries or battery cables. Avoid contact with battery acid.**

#### Battery Specifications:

Three 12 volt, 215 Ah, deep cycle batteries. Consult with an Authorized Distributor for specific batteries. Maximum battery dimensions are 178mm (7 in) W x 380mm (15 in) L x 370mm (14.63 in) H.

1. Before installing batteries pull out the main circuit breaker button to shut off power to machine. Circuit breaker panel is located at rear lower right of machine (Figure 1).

**FOR SAFETY: Before leaving or servicing machine, stop on level surface, turn off machine and pull out main circuit breaker button.**



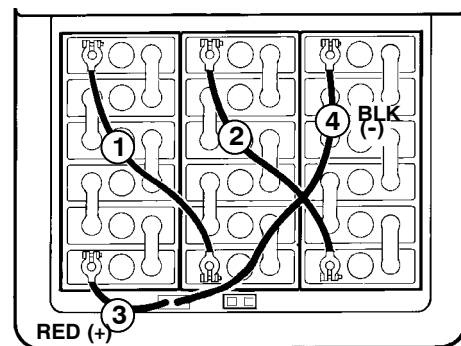
FIG. 1

2. Lift battery compartment hood off machine and remove loose battery cables (Figure 2).



FIG. 2

3. Carefully install batteries into battery tray with negative posts towards back of machine (Figure 3).



FRONT OF MACHINE

FIG. 3

# OPERATION

---

**ATTENTION: Do not drop batteries into compartment, battery and machine housing damage may result. This damage is not covered by warranty.**

4. Before connecting the battery cables, make sure the terminals and posts are clean. Use a post cleaner and wire brush if necessary.

**NOTE:** Apply a light coating of non-metallic grease or protective spray on the cable connections to prevent battery corrosion.

5. Connect cables to battery posts in numerical order as labeled (Figure 3), RED to POSITIVE & BLACK to NEGATIVE.
6. Double check cable connections before closing up battery compartment.
7. Replace hood and reset the main circuit breaker button.
8. Turn main power switch on, and check battery meter charge level to ensure batteries are fully charged. If batteries need charging, see CHARGING BATTERIES.

---

## MACHINE SETUP

---

### FILLING SOLUTION TANK

1. Transport machine to filling station (See MACHINE OPERATION).
2. Stop the machine on a level surface and turn off machine.

**FOR SAFETY: Before leaving or servicing machine, stop on level surface and turn off machine.**

3. Fill solution tank with 113.5 L (30 gal) of clean water at fill port, 60° C (140° F) maximum temperature. Use gallon markers on side of tank to indicate fill level (Figure 4).

**NOTE:** Check that the solution tank fill port filter is installed before filling.



FIG. 4

**NOTE:** When filling solution tank with a bucket, make sure that the bucket is clean. Do not use the same bucket for filling and emptying the machine.

4. Pour a recommended cleaning detergent into the solution tank according to the mixing instructions on the bottle.

**FOR SAFETY: When using machine, follow mixing and handling instructions on chemical containers.**

**⚠ WARNING: Do Not Use Flammable Liquids Or Operate Machine In Or Near Flammable Liquids, Vapors Or Combustible Dusts.**

**ATTENTION: Use only recommended cleaning chemicals, DO NOT use substitutes. Consult an authorized distributor to assist you with the recommended cleaning chemicals.**

---

### INSTALLING SPRAY BAR

1. Turn key off and pull out "MAIN" circuit breaker button. Circuit breaker panel is located at rear lower right of machine.

**FOR SAFETY: Before leaving or servicing machine, stop on level surface, turn off machine and pull out main circuit breaker button.**

2. From operators right side of machine, locate unused quick coupler under machine.
3. Connect quick coupler to spray bar connector.
4. Align end of spray bar to spring loaded pin on side bracket, push and position opposite end to other bracket (Figure 5).

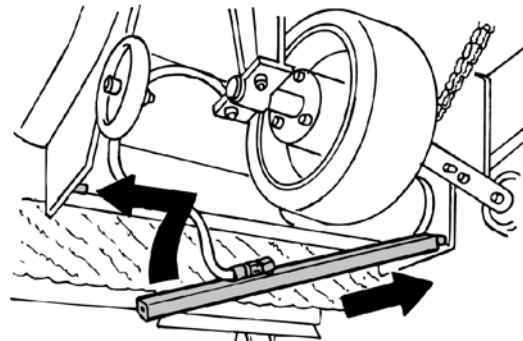


FIG. 5

**NOTE:** Be certain to position spray bar "FRONT" label facing forward.



---

**MACHINE OPERATION**

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**FOR SAFETY: Do not operate machine unless operator manual is read and understood.**

---

**PRE-OPERATION CHECKS**

1. Vacuum the floor and remove any debris.
2. Check battery meter charge level; machine should be fully charged prior to using. Do not operate machine if batteries are discharged below half (See CHARGING BATTERIES) (Figure 6).



**FIG. 6**

3. Check that the recovery tank standpipe screen is in place (Figure 7).



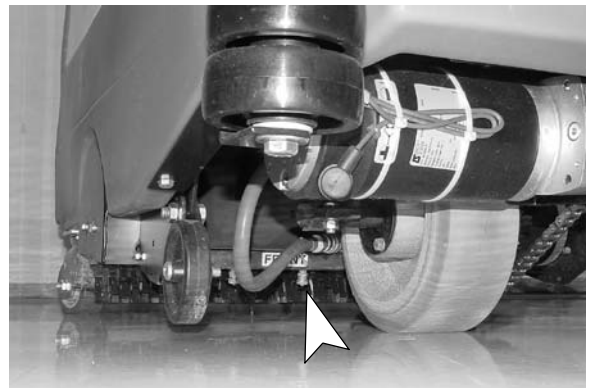
**FIG. 7**

4. Check that the solution tank filter is installed (Figure 8).



**FIG. 8**

5. Check that the spray bar is installed (Figure 9).



**FIG. 9**

6. Inspect the spray tips for proper spray pattern (See WEEKLY MAINTENANCE).

---

**TRANSPORTING MACHINE**

Operating machine without using cleaning functions.

1. Raise brush lift lever and engage lock block.
2. Activate main power switch.
3. Press drive switch towards transport mode symbol (Figure 10).



**FIG. 10**

# OPERATION

4. Turn speed control knob to slowest setting (Figure 11).



FIG. 11

5. Rotate control grips completely forward and slowly turn speed control knob to desired travel speed (Figure 12).



FIG. 12

**ATTENTION:** For first time users, operate at a slower speed until maneuvering becomes easy.

6. To transport machine in reverse, simply pull reverse drive trigger (Figure 13).



FIG. 13

7. To stop the machine, position the machine on a level surface and gradually release the control grips.

## CLEANING WITH MACHINE

1. Lower brush lift lever and engage lock block (Figure 14).

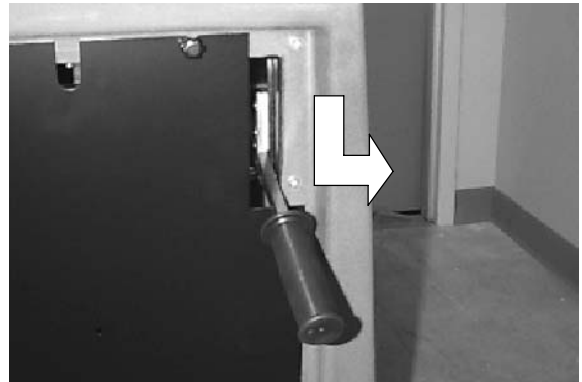


FIG. 14

2. Activate main power, pump and vacuum switches.
3. Press drive switch towards clean mode symbol (Figure 15).

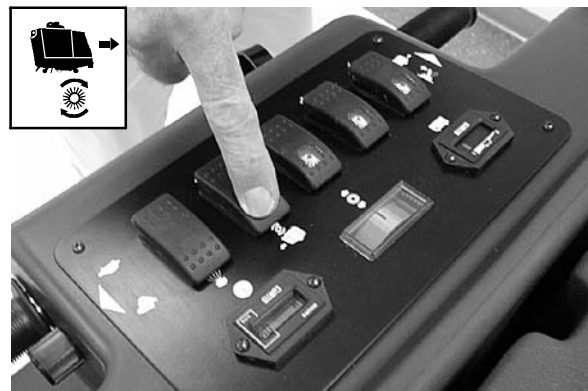
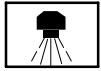


FIG. 15

4. Select cleaning mode by pressing the restorative/interim cleaning switch (Figure 16).



FIG. 16



**Restorative Cleaning Mode:** The machine operates at a slower set speed to restore heavily soiled carpet areas. The restorative cleaning mode must be performed on a regular basis in order for the interim cleaning mode to be effective.



**Interim Cleaning Mode:** Machine operates at faster set speed for routine light cleaning. The interim cleaning mode will be ineffective if the restorative cleaning mode is not performed on a regular basis.

- Rotate control grips completely forward to begin cleaning (Figure 17).

**⚠ WARNING: Do Not Pick Up Flammable Materials Or Reactive Metals.**

**NOTE:** The machine travel speed for the cleaning modes are set speeds.



FIG. 17

- View the brush pressure meter while operating. Meter should read center of green zone (Figure 18). If brush height adjustment is required, see ADJUSTING BRUSH HEIGHT.

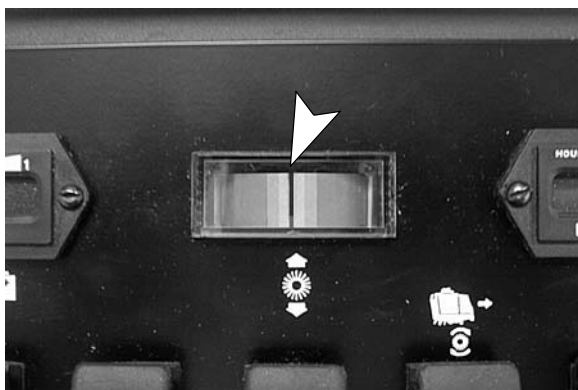


FIG. 18

- To operate machine in reverse, raise brush lever and pull reverse drive trigger (Figure 19).

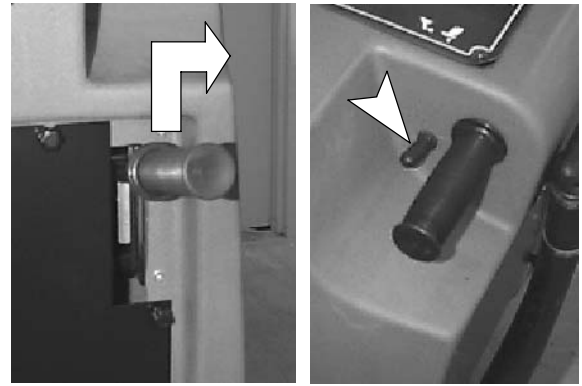


FIG. 19

- To stop cleaning, release control grips. Raise brush lever and turn off machine.
- After cleaning carpet, allow 3 to 4 hours for carpet to dry. Use air movers to reduce drying time.

## WHILE OPERATING MACHINE

**⚠ WARNING: Do Not Pick Up Flammable Materials Or Reactive Metals.**

- Periodically check for foam buildup in recovery tank (*look through clear dome*). If excessive foam buildup begins to develop, pour a recommended foam control solution into recovery tank.

**ATTENTION: Do not allow foam or water beyond "FULL LINE" label, located on standpipe, vacuum motor damage will result. Vacuum motor damage due to foam or water is not covered by warranty.**

- Overlap each pass by about 51 mm (2 in).
- Use a collapsing rectangle pattern when cleaning large rooms (Figure 20).

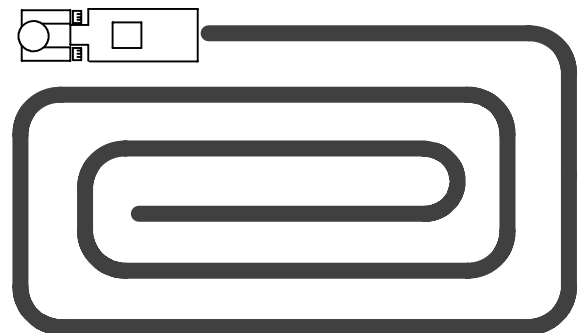


FIG. 20

- Keep machine within 152-203 mm (6-8 in) of baseboard.
- When turning, it may be necessary to turn pump switch off and raise brush lift lever.

## OPERATION

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6. Before reaching end of cleaning path, turn pump switch off and continue to drive machine forward to extract solution.
7. Drain recovery tank when recovered water reaches "FULL LINE" label, located on standpipe in recovery tank (See DRAINING TANKS).
8. Observe gallon marker for remaining cleaning solution.
9. Periodically check battery meter discharge level. Recharge batteries when discharged below half.
10. When solution tank runs dry, turn off pump and vacuum switches, raise brush and transport machine to draining area (See DRAINING TANKS).
11. If cleaning path leaves streaks, spray tip cleaning is required (See MONTHLY MAINTENANCE).
12. If machine is left unattended, turn off machine and pull out main circuit breaker button.

**FOR SAFETY: Before leaving or servicing machine, stop on level surface, turn off machine and pull out main circuit breaker button.**

---

### CIRCUIT BREAKER PANEL

The machine is equipped with (3) resettable circuit breakers to protect machine from damage, (labeled as brush, main and drive). They stop current flow when circuit overload occurs. Once a circuit breaker has tripped, determine problem, let motor cool down and manually reset breaker by pressing circuit breaker button. The vacuum motors are thermally protected and will automatically shut off when an overload occurs. The main and drive circuit breakers are designed so you can stop current flow by manually pulling out circuit breaker buttons. Pull out the main circuit breaker button when servicing machine or when machine is left unattended. Circuit breaker buttons are located at rear of machine as shown (Figure 21).



FIG. 21

---

### ADJUSTING BRUSH HEIGHT

1. Turn all switches off.

**FOR SAFETY: Before leaving or servicing machine, stop on level surface, turn off machine and pull out main circuit breaker button.**

2. Disengage brush lift lever from lock block (Figure 22).



FIG. 22

3. Locate adjustment knobs on adjustment shaft and loosen bottom knob (Figure 23).



FIG. 23

4. Turn upper knob clockwise to lower brush and counterclockwise to raise.
5. Tighten down bottom knob after adjusting.
6. Check brush pressure meter for correct reading.

---

### OPERATING ACCESSORY TOOLS (OPTIONAL)

The optional accessory tools allow you to clean upholstery and areas that the machine is unable to clean, such as alcoves, stairs, corners and small rooms.

For a complete list of accessory tools see the OPTIONS section in this manual.

**NOTE:** When cleaning upholstery, always check cleaning instructions sewn in the furniture by manufacturer.

1. Turn main power switch off.
2. Disconnect vacuum hose from recovery dome and replace with accessory vacuum hose (Figure 24).

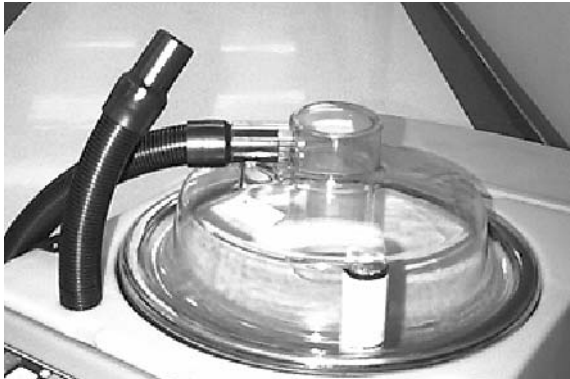


FIG. 24

3. Connect solution hose to accessory coupler at the rear of the machine (Figure 25).

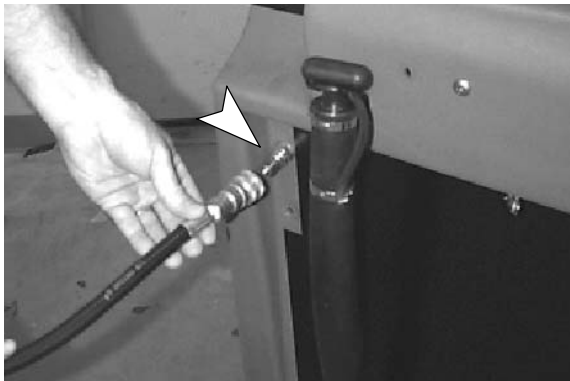


FIG. 25

4. Connect hoses to accessory tool.
5. Raise brush lift lever and engage lock block.
6. Turn main power, pump and vacuum switches on.
7. Place the accessory tool on the area to be cleaned. Squeeze the trigger on the accessory tool and slowly pull the tool backwards while applying downward pressure (Figure 26). Release the trigger 6 inches from end of stroke. When returning to the next stroke, push the tool forward over the same path with trigger released. Continue this pull and push method with a 2-4 inch overlap.

**⚠ WARNING: Do Not Pick Up Flammable Materials Or Reactive Metals.**



FIG. 26

8. After cleaning, relieve the water pressure from the accessory tool before disconnecting the solution hose. Squeeze trigger for five seconds after turning the power off.

## DRAINING TANKS

When finished cleaning, the recovery and solution tanks should be drained and cleaned.

### DRAINING RECOVERY TANK

1. Transport machine to draining site.
2. Turn all switches off.

**FOR SAFETY: Before leaving or servicing machine, stop on level surface and turn off machine.**

3. Remove drain hose from holder, position hose over drain site and twist off drain hose plug to drain (Figure 27).

**NOTE:** If using a bucket to drain machine, use a separate bucket for filling solution tank. This will prevent possible solution line clogs.



FIG. 27

## OPERATION

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4. Remove recovery tank dome and use a hose to rinse out recovery tank. Be careful not to spray water into standpipe screen.
5. Replace drain hose plug tightly when tank is empty.

---

### DRAINING SOLUTION TANK

To drain unused solution from solution tank, the pumpout hose is required (Supplied with machine - #700141).

1. Connect pumpout hose to accessory tool coupler at rear of machine (Figure 28).



FIG. 28

2. Hold hose over drain site or remove recovery tank dome and direct hose into recovery tank.
3. Activate main power and pump switch.

---

### CHARGING BATTERIES

---

**NOTE:** Recharge batteries *ONLY* after a total of 30 minutes of use or more. This will prolong battery life.

The following charging instructions are intended for chargers supplied with machine.

Use a battery charger with the following specifications to prevent battery damage.

#### CHARGER SPECIFICATIONS:

- OUTPUT VOLTAGE - 36 VOLTS
- OUTPUT CURRENT - 25 AMPS
- AUTOMATIC SHUT-OFF CIRCUIT
- FOR LEAD ACID DEEP CYCLE BATTERY CHARGING

**NOTE:** For optimum machine operation, keep batteries charged at all times. Never leave batteries discharged for lengthy periods.

**⚠ WARNING: Keep Sparks And Open Flame Away. Keep Battery Hood Open When Charging.**

**FOR SAFETY: When servicing machine, wear protective gloves and safety glasses when handling batteries or battery cables. Avoid contact with battery acid.**

1. Transport machine to a well-ventilated area for charging.
2. Stop the machine on a level surface and turn off machine.

**FOR SAFETY: Before leaving or servicing machine, stop on level surface and turn off machine.**

3. Remove battery compartment hood to access batteries (Figure 29).



FIG. 29

4. Before charging, check the electrolyte level (A) in each battery cell. If the battery plates (B) are exposed, add just enough distilled water to cover plates. **DO NOT OVERFILL.** Overfilled batteries can overflow during charging due to fluid expansion. Replace cell caps before charging (Figure 30).

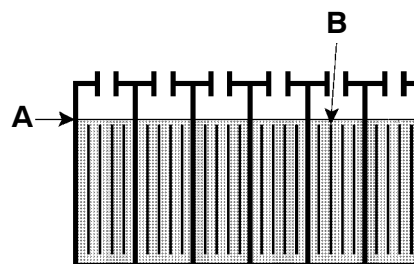


FIG. 30

- With the charger's power supply cord unplugged, connect the battery charger into the machine's charging receptacle as shown (Figure 31).



FIG. 31

- Plug the charger's power supply cord into a grounded wall outlet (Figure 32).

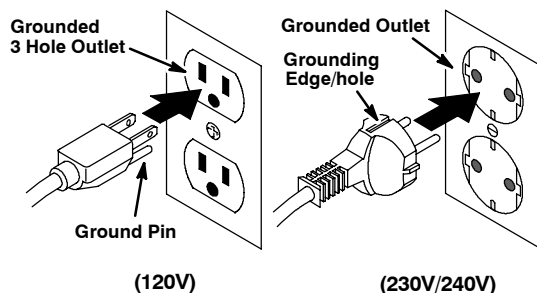


FIG. 32

**⚠ WARNING: Keep Sparks And Open Flame Away. Keep Battery Hood Open When Charging.**

**NOTE:** Once the charger is connected, the machine will become inoperable.

- Charger will automatically begin charging and automatically shut off when fully charged.
- When disconnecting charger, always unplug charger from wall outlet first.
- After charging, recheck the battery electrolyte level (A) in each battery cell. The level should be 1 cm (3/8 in) from the bottom of sight tubes (B) (Figure 33). Add distilled water if needed. **DO NOT OVERFILL.**

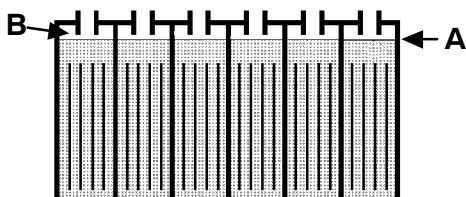


FIG. 33

## MACHINE MAINTENANCE

To keep machine in good working condition, simply follow daily, weekly and monthly maintenance procedures.

**FOR SAFETY: Before leaving or servicing machine, stop on level surface and turn off machine.**

**FOR SAFETY: When servicing machine, disconnect batteries before working on machine.**

## HOUR METER

The machine is equipped with an hour meter located on the control console. Use hour meter to determine recommended maintenance procedures and to record service history (Figure 34).



FIG. 34

## DAILY MAINTENANCE (Every 4 Hours of Use)

- Recharge batteries if needed (See CHARGING BATTERIES).

**NOTE:** Recharge batteries *ONLY* after a total of 30 minutes of use or more. This will prolong battery life.

- Drain and rinse tanks thoroughly.
- Remove any lint buildup from standpipe screen (Figure 35).

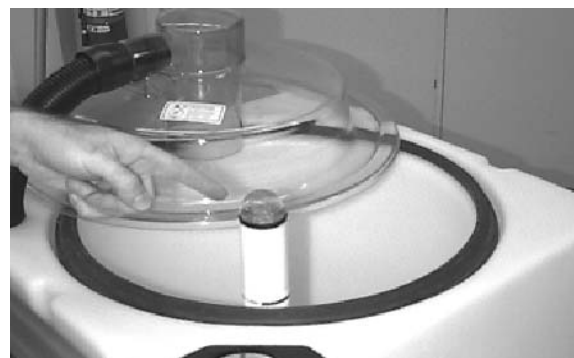


FIG. 35

# OPERATION

4. Remove and clean solution tank fill port filter (Figure 36).

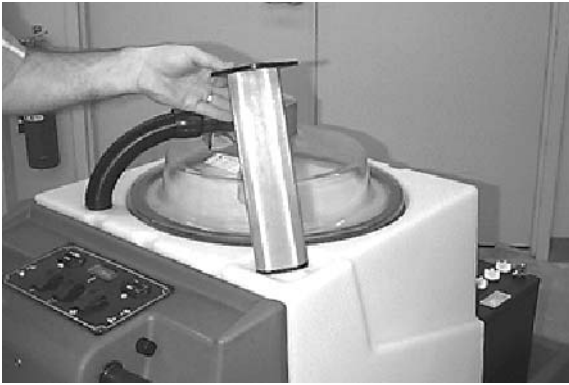


FIG. 36

5. Turn main power switch off, pull out main circuit breaker button and remove any obstruction (carpet strands, etc.) from brush.

**FOR SAFETY: Before leaving or servicing machine, stop on level surface, turn off machine and pull out main circuit breaker button.**

6. Remove lint buildup from splash guard, located behind brush (Figure 37).

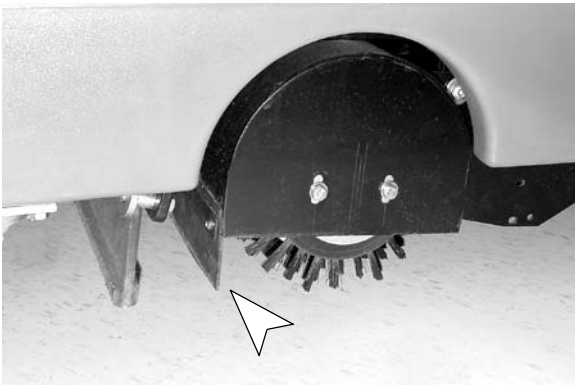


FIG. 37

7. Clean machine housing with an all purpose cleaner and damp cloth (Figure 38).



FIG. 38

**ATTENTION: Do not power spray or hose off machine. Electrical component damage due to water is not covered by warranty.**

## WEEKLY MAINTENANCE (Every 20 Hours of Use)

1. Inspect the spray tips for proper spray pattern.  
To inspect spray pattern:
  - a. Pull out (10A) drive circuit breaker to keep the machine from moving during inspection.
  - b. Remove the spray bar by shifting spray bar to operator's left side of machine and pulling down. Do not disconnect the spray bar from the quick-disconnect coupler (Figure 39).

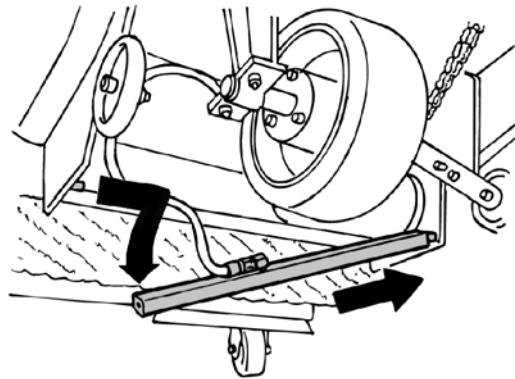


FIG. 39

- c. While holding the spray bar with spray tips pointing downward, briefly turn the control grips forward. Observe the spray pattern for any blockage (Figure 40).
- d. Clean or replace defective spray tips (See MONTHLY MAINTENANCE).



FIG. 40



2. Remove the solution tank filter from underneath the machine and clean the screens. Make sure the solution tank is empty before removing filter (Figure 41).



FIG. 41

3. Check fluid level in battery cells (See BATTERY MAINTENANCE).
4. Clean battery tops to prevent corrosion (See BATTERY MAINTENANCE).
5. Check for loose or corroded battery cables.

## MONTHLY MAINTENANCE (Every 80 Hours of Use)

1. Flush the pump system with an acetic acid solution to dissolve normal alkaline chemical buildup. Follow procedure below:
  - a. Position the machine over a floor drain.
  - b. Pour 11 liters (3 gal) of hot water into the solution tank, do not exceed 60°C (140°F). Pour 750 ml (24oz.) of an acetic acid into the solution tank.

### FOR SAFETY: When using machine, follow mixing and handling instructions on chemical containers.

- c. Pull out drive motor circuit breaker button to shut off power to drive motor.
  - d. Activate main power and pump switches.
  - e. Press drive switch towards clean mode symbol.
  - f. Rotate control grips completely forward and hold for 2 to 3 minutes.
  - g. Turn main power off and let machine sit overnight to allow acetic acid to break down alkaline buildup.
  - h. Next day, disperse the remaining acetic acid solution and rinse the solution system with 11 liters (3 gal) of clean water.
  - i. Reset drive motor breaker button.
2. Disconnect and remove the spray bar from the machine. Twist out the six quick-release spray tips. Soak the spray tips in an acetic acid solution for up to six hours. Do not use pointed objects to unplug tips, damage will occur (Figure 42).

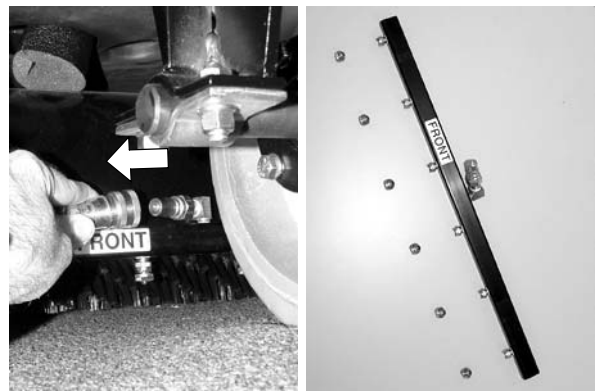


FIG. 42

3. Check brush belt for wear or excess slack. If belt flexes more than 12.7 mm (0.50 in) from center, belt should be tightened.

### FOR SAFETY: Before leaving or servicing machine, stop on level surface, turn off machine and pull out main circuit breaker button.

To Tighten Or Replace Brush Belt:

- a. Pull out main circuit breaker button to shut off power to machine.
- b. Remove belt guard, two screws (Figure 43).

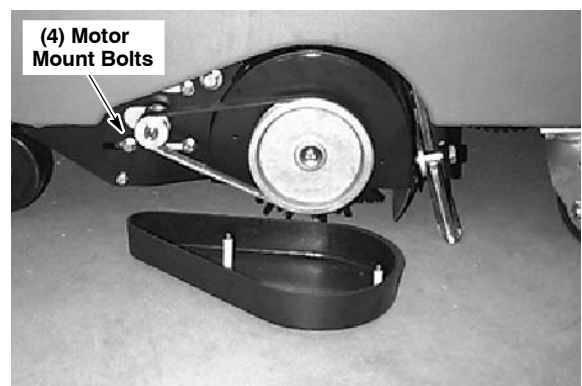


FIG. 43

- c. Remove any debris in pulley assembly.
  - d. Inspect belt for wear and for proper tension.
  - e. To tighten or replace belt, loosen 4 brush motor mount bolts. If worn, replace belt (Figure 43).
  - f. To tighten belt, pull back on motor until belt becomes tight, retighten mounting bolts.
  - g. Replace brush guard and reset main circuit breaker button.
4. Inspect drive chain for proper tension. Chain should flex between 6.35mm (0.25 in ) and 12.7mm (0.50 in) from center. If chain flexes more than 12.7mm (0.50 in), chain should be tightened.

### FOR SAFETY: Before leaving or servicing machine, stop on level surface, turn off machine and pull out main circuit breaker button.

# OPERATION

To Tighten Chain:

- a. Pull out main circuit breaker button to shut off power to machine.
- b. Loosen 4 motor mount bolts, do not remove bolts (Figure 44).

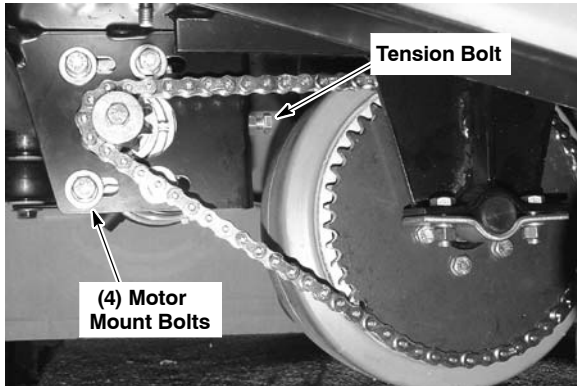


FIG. 44

- c. Loosen lock nut on tension bolt (Figure 44).
  - d. Turn tension bolt to tighten chain. Do not overtighten.
  - e. Retighten motor mount bolts and lock nut on tension bolt.
  - f. Lubricate chain with a water resistant oil.
  - g. Reset main circuit breaker button.
5. Lubricate the caster grease fittings with a water resistant grease (Figure 45).

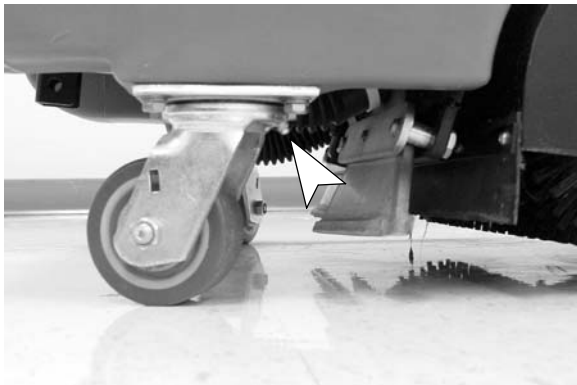


FIG. 45

6. Lubricate all linkage pivot points with silicone spray then coat with a water resistant grease to maintain a smooth operation.
7. Check machine for water leaks and loose nuts and bolts.

## QUARTERLY MAINTENANCE (Every 250 Hours of Use)

Check the drive, vacuum and brush motors for carbon brush wear, replace brushes when worn to a length of 10mm (0.38 in) or less.

Contact an Authorized Service Center for carbon brush inspection.

**FOR SAFETY: When servicing machine all repairs must be performed by a qualified service person.**

## BATTERY MAINTENANCE

The lifetime of the batteries is limited by the number of charges the batteries receive. To get the most life from the batteries, maintain the proper level of electrolyte and only recharge after a total of 30 minutes of use or more.

**⚠ WARNING: Keep Sparks And Open Flame Away. Keep Battery Hood Open When Charging.**

**FOR SAFETY: When servicing machine, wear protective gloves and safety glasses when handling batteries or battery cables. Avoid contact with battery acid.**

1. Always follow proper charging instructions (See CHARGING BATTERIES).
2. Check the electrolyte level (A) in each battery cell. The level should be 1 cm (3/8 in) from the bottom of sight tubes after charging. Add distilled water if needed. **DO NOT OVERFILL.** Overfilled batteries can overflow during charging due to fluid expansion (Figure 46).

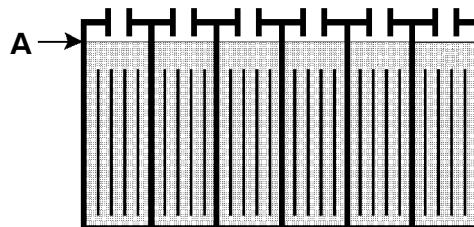


FIG. 46

3. After charging batteries, measure the specific gravity in each battery cell using a hydrometer (Figure 47). This will determine the charge level and condition of the batteries. If one or more of the battery cells test lower than the other battery cell (0.050 or more), the cell is damaged, shortened, or is about to fail.

**NOTE:** Do not take reading immediately after adding distilled water. The water and acid must be thoroughly mixed in order for accurate reading.



FIG. 47

SPECIFIC GRAVITY at 27° C (80° F)	BATTERY CHARGE
1.265	100% CHARGED
1.223	75% CHARGED
1.185	50% CHARGED
1.148	25% CHARGED
1.110	DISCHARGED

**NOTE:** Add or subtract 0.004 gravity reading for each 6° C (10° F) above or below 27° C (80° F).

4. Keep battery tops and terminals clean and dry.  
To clean batteries:
  - a. Mix a strong solution of baking soda and water (Figure 48).



FIG. 48

- b. Brush the solution sparingly over the battery tops, terminals and cable connectors.

**NOTE:** Do not allow baking soda solution to enter battery cells.

- c. Use a wire brush to clean the terminal posts and cable connections.
  - d. After cleaning, apply a coating of clear battery post protectant to the terminals and cable connections.
5. Check for loose or worn cables. Replace if worn.

## TO ACCESS INTERNAL COMPONENTS

1. Drain recovery and solution tank.
2. Turn main power switch off and disconnect batteries.
3. Remove vacuum hoses from vacuum the pickup heads.
4. Remove drain hose from holder and push hose halfway through U-bracket to allow hose slack.
5. Carefully hinge tank over (Figure 49).



FIG. 49

## TRANSPORTING MACHINE

When transporting machine by use of trailer or truck, be certain to follow tie-down procedures below:

**FOR SAFETY: When using machine, go slow on inclines and slippery surfaces.**

1. Raise brush.
2. Load the machine using a recommended loading ramp.
3. Position the front of the machine up against the front of the trailer or truck. Once machine is positioned, lower the brush and turn off machine.
4. Place a block behind the drive wheel and the rear casters to prevent machine from rolling.
5. Place tie-down straps over top of machine and secure straps to floor. It may be necessary to install tie-down brackets to the floor of your trailer or truck.

**FOR SAFETY: When transporting machine, use a recommended ramp when loading/unloading into/off truck or trailer, use tie-down straps to secure machine to truck or trailer.**

# OPERATION

## STORING MACHINE


1. Charge batteries before storing. Never store machine with discharged batteries.
2. Drain and rinse tanks thoroughly.
3. Store the machine in a dry area with the brush in the raised position.
4. Remove the recovery tank dome to promote air circulation.

**ATTENTION: If storing the machine in freezing temperatures, be certain to drain tanks, purge pump and remove the solution tank filter located under the machine at rear. Damage due to freezing temperatures is not covered by warranty.**

**ATTENTION: Do not expose machine to rain, store indoors.**

## RECOMMENDED STOCK ITEMS

Refer to the Parts List section for recommended stock items. Stock Items are clearly identified with a bullet preceding the parts description. See example below:



Ref.	Part No.	Description	Qty.
1	701100	ASIM., STANDPIPE	1
2	180618	● FLOAT, SHUTOFF	1
3	230187	NIPPLE	1
4	101714	● GASKET	1
5	210240	NUT, FLANGED	1

## TROUBLE SHOOTING

PROBLEM	CAUSE	SOLUTION
Machine does not operate.	Main circuit breaker button pulled out.	Push in main circuit breaker button.
	Faulty main circuit breaker.	Contact Service Center.
	Faulty main power switch.	Contact Service Center.
	Charger connected to machine.	Unplug charger from machine after complete charge cycle.
	Faulty master solenoid.	Contact Service Center.
	Loose battery connection.	Check battery connections.
	Loose connections at solenoid panel.	Contact Service Center.
	Batteries need charging.	See CHARGING BATTERIES.
	Faulty battery(s).	Replace battery(s).
	Battery connection is improper.	See INSTALLING BATTERIES.
Vacuum motor does not operate.	Vacuum thermal overload tripped.	Check air flow for obstructions, wait 20 minutes for motor to cool.
	Faulty vacuum switch.	Contact Service Center.
	Loose wiring.	Contact Service Center.
	Faulty vacuum motor.	Contact Service Center.
	Carbon brushes worn.	Contact Service Center.
Vacuum recovery is poor.	Vacuum pickup heads are not sealed to carpet.	Lock vacuum head lift lever under lock block.
	Carpet fibers are restricting air flow through vacuum shoes or standpipe screen.	Remove lint from vacuum shoes (use a coat hanger) or from standpipe screen in recovery tank.
	Vacuum hose(s) disconnected from vacuum shoes or recovery dome.	Connect hoses or call for service.
	Drain hose plug is not fully inserted into drain hose.	Insert drain hose plug and tighten.
	Loose or failed gasket(s).	Contact Service Center.

**TROUBLE SHOOTING - continued**

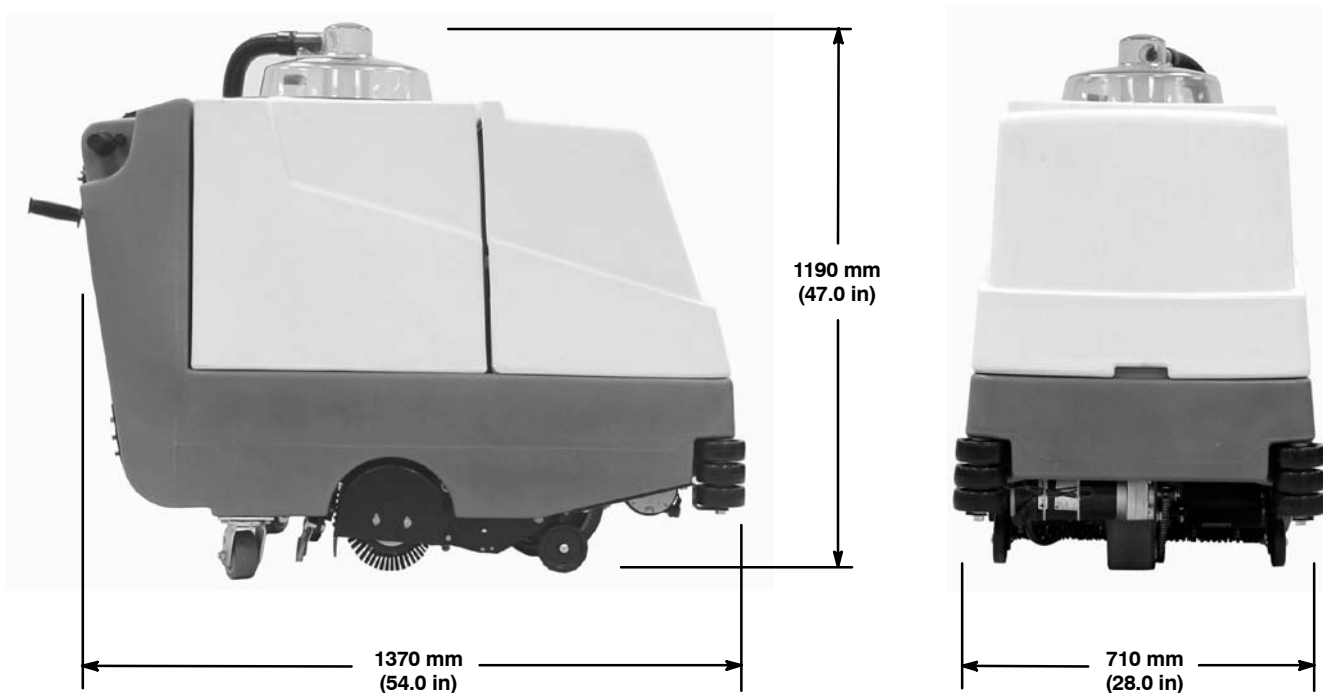
<b>PROBLEM</b>	<b>CAUSE</b>	<b>SOLUTION</b>
Uneven or no spray.	Solution tank filter is plugged.	Drain solution tank and remove filter and clean. Located under machine at rear.
	Spray tips are plugged.	Clean plugged spray tips.
	Faulty solution pump.	Contact Service Center.
	Pump switch is off.	Turn on pump switch.
	Control grips not rotated.	Control grips must be rotated to activate spray.
Brush motor does not operate.	Brush circuit breaker is tripped.	Remove any obstruction in brush and reset breaker.
	Loose wiring.	Contact Service Center.
	Faulty motor.	Contact Service Center.
	Loose or broken belt.	Replace or Contact Service Center.
	Carbon brushes worn.	Contact Service Center.
	Faulty solenoid.	Contact Service Center.
Drive motor does not run.	Drive motor circuit breaker is tripped.	Reset drive circuit breaker.
	Loose drive chain.	Adjust or call for service.
	Faulty wiring or drive switch.	Contact Service Center.
	Faulty motor.	Contact Service Center.
	Main circuit breaker has tripped or is pulled out.	Determine cause and reset breaker.
	Faulty speed control circuit board or connection.	Contact Service Center.
	Faulty solenoid.	Contact Service Center.
	Worn carbon brushes.	Contact Service Center.
	Faulty potentiometer or speed control board.	Contact Service Center.
Batteries will not take a charge.	Charger plug not connected correctly.	Connect plug correctly.
	Low battery fluid level.	See BATTERY MAINTENANCE.
	Charge cycle not completed.	Let charge until fully charged.
	Faulty charger.	Replace charger.
Short run time.	Batteries not fully charged.	Charge batteries.
	Bad battery cell(s).	Replace battery.
	Batteries need maintenance.	See BATTERY MAINTENANCE.
	Faulty charger.	Replace battery charger.

# OPERATION

## SPECIFICATIONS

MODEL	CONCORDE™ HP PLUS
LENGTH	1370 mm (54 in)
WIDTH	710 mm (28 in)
HEIGHT	1190 mm (47 in)
WEIGHT - WITH BATTERIES	306 Kg (675 lbs)
BATTERIES	3-12V Deep Cycle Lead Acid, 215 Amp hours
RUN TIME AT FULL CHARGE	Up to 3.5 hours
SOLUTION TANK CAPACITY	121 L (32 Gal)
RECOVERY TANK CAPACITY	68 L (18 Gal)
CLEANING RATE	INTERIM CLEANING: 1115 m <sup>2</sup> (12,000 sq. ft.) per hour RESTORATIVE CLEANING: 557 m <sup>2</sup> (6,000 sq. ft.) per hour
MAXIMUM SPEED	INTERIM CLEANING: 30.5 m (100 ft.) per minute RESTORATIVE CLEANING: 15.25 m (50 ft.) per minute TRAVEL: Up to 45.75 m (150 ft.) per minute
CLEANING PATH WIDTH	610 mm (24 in)
DRIVE MOTOR	.56 kW (.75 h.p.), 36V, 17A
BRUSH MOTOR	.37 kW (.5 h.p.), 1200 brush rpm, 36V, 13A,
VACUUM MOTOR	2 - .67 kW (.9 h.p.), 3-stage 5.7", 36V, 18.75A, 612W, 152 cfm
SEALED WATER LIFT	3420 mm (135 in)
SOLUTION PUMP	6.9 bar (100 psi), 36V
DECIBEL RATING AT OPERATOR'S EAR, INDOORS ON CARPET	76dB(A)
TOTAL POWER CONSUMPTION	36V, 50A max.

## MACHINE DIMENSIONS

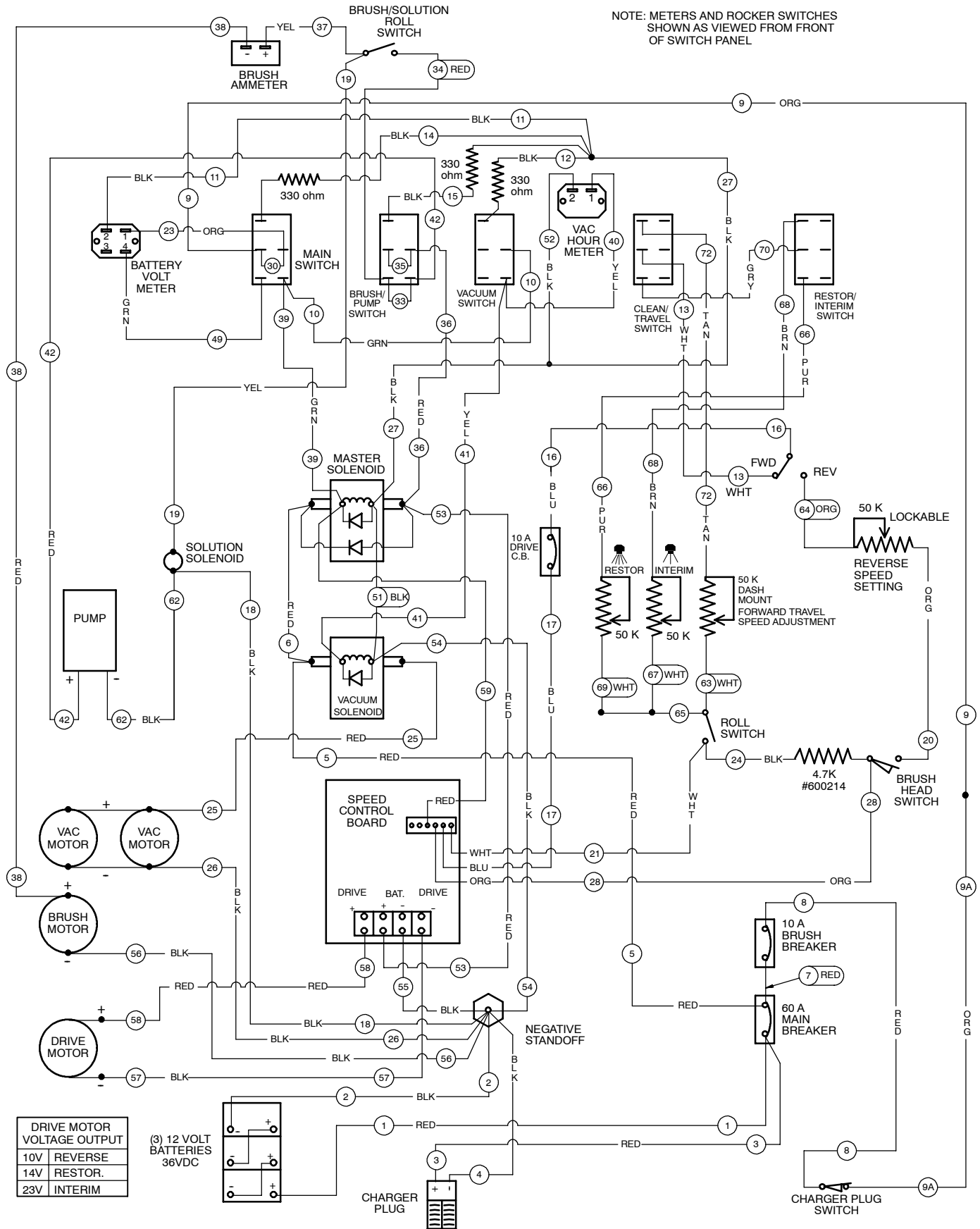




# ELECTRICAL DIAGRAMS

## WIRE DIAGRAM

NOTE: METERS AND ROCKER SWITCHES SHOWN AS VIEWED FROM FRONT OF SWITCH PANEL

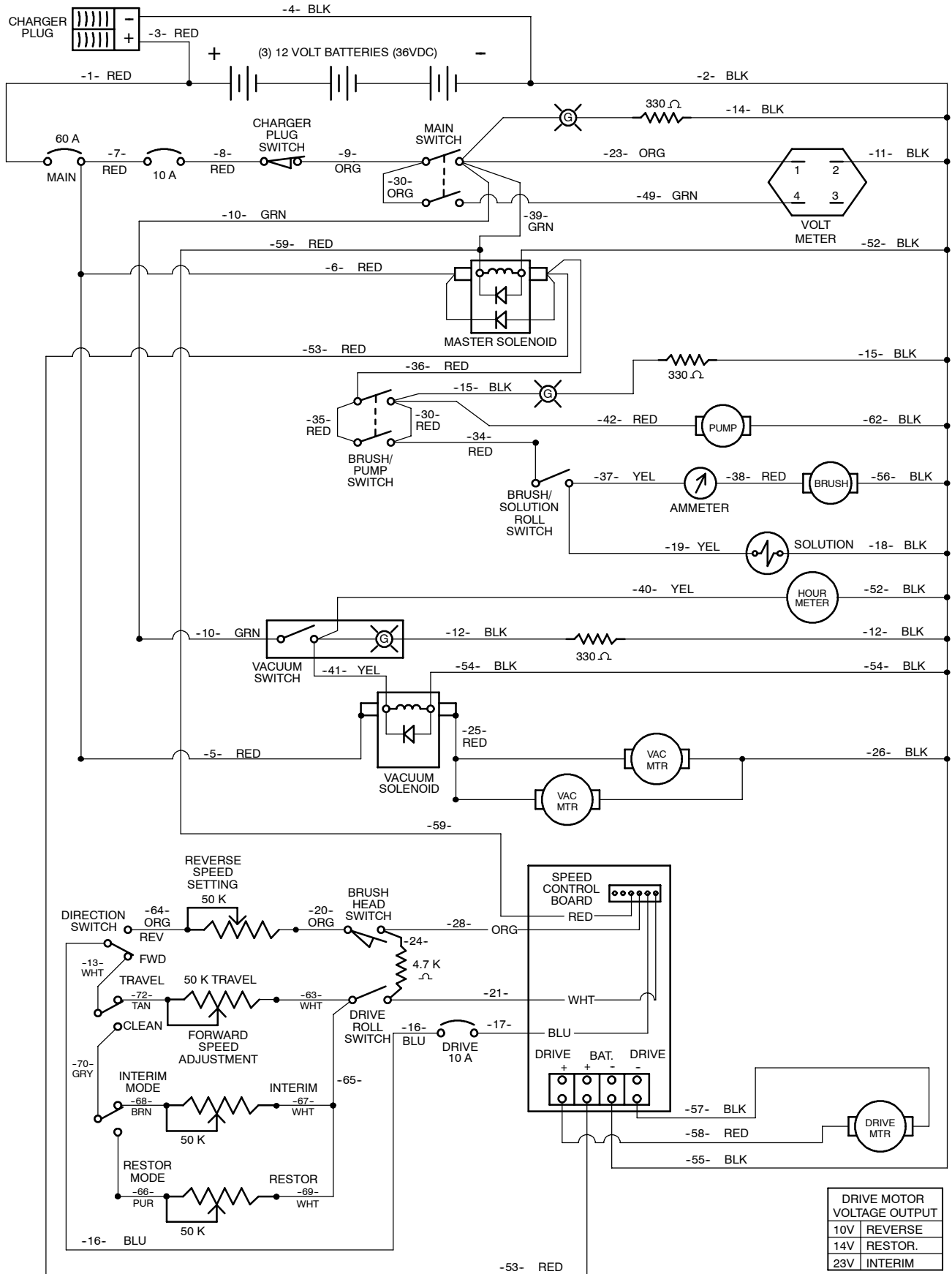


DRIVE MOTOR VOLTAGE OUTPUT	
10V	REVERSE
14V	RESTOR.
23V	INTERIM

(3) 12 VOLT BATTERIES 36VDC



LADDER DIAGRAM



DRIVE MOTOR VOLTAGE OUTPUT	
10V	REVERSE
14V	RESTOR.
23V	INTERIM



**UPPER HOUSING GROUP**

REF	PART #	DESCRIPTION	QTY.
1	608408	TANK, SOLTN, RM-SPG, TRIMMED (GREEN)	1
2	180610	●FILTER, SCREEN, 20 MESH	1
3	180612	●FILTER, SCREEN, 20 MESH	1
4	150303	●GASKET, INLET FLANGE (2 PC.)	1
5	603094	FITTING, INLET FLANGE W/FLATS	1
6	701225	ASSEMBLY, TUBE, VACUUM STANDPIPE	1
6a	606088	FITTING, 1-1/2 NIPPLE	1
7	101714	●GASKET, WASTE AIR CHAMBER	1
8	608410	TANK, RECOVERY, GREEN	1
9	240178	TUBE, INLET	1
10	140308	CLAMP, HOSE 1-5/16 TO 2-1/4	2
11	160846	●HOSE, 1-1/2X10-1/4	1
12	160430	●CUFF, HOSE 1-1/2X1-1/2	1
∇ 13	614125	COVER ASSY, CLR, W/ LABEL	1
▲ 14	100032	●GASKET, DOME & TANK	1
▲ 15	120246	LABEL, DO NOT ALLOW FOAM	1
▲ 16	1026386	LABEL, WARNING, [EXPL,FIRE,SHK EN/FR/ES]	1
17	608414	COVER, HOOD, RM-SPG, TRIMMED (GREEN)	1
∇ 18	611071000	●MOTOR, VAC 5.7D 3-STAGE, 36V	1
▲	190162	●BRUSH, CARBON (PK OF 2)	1
19	626092	●GASKET, VAC MOTOR	2

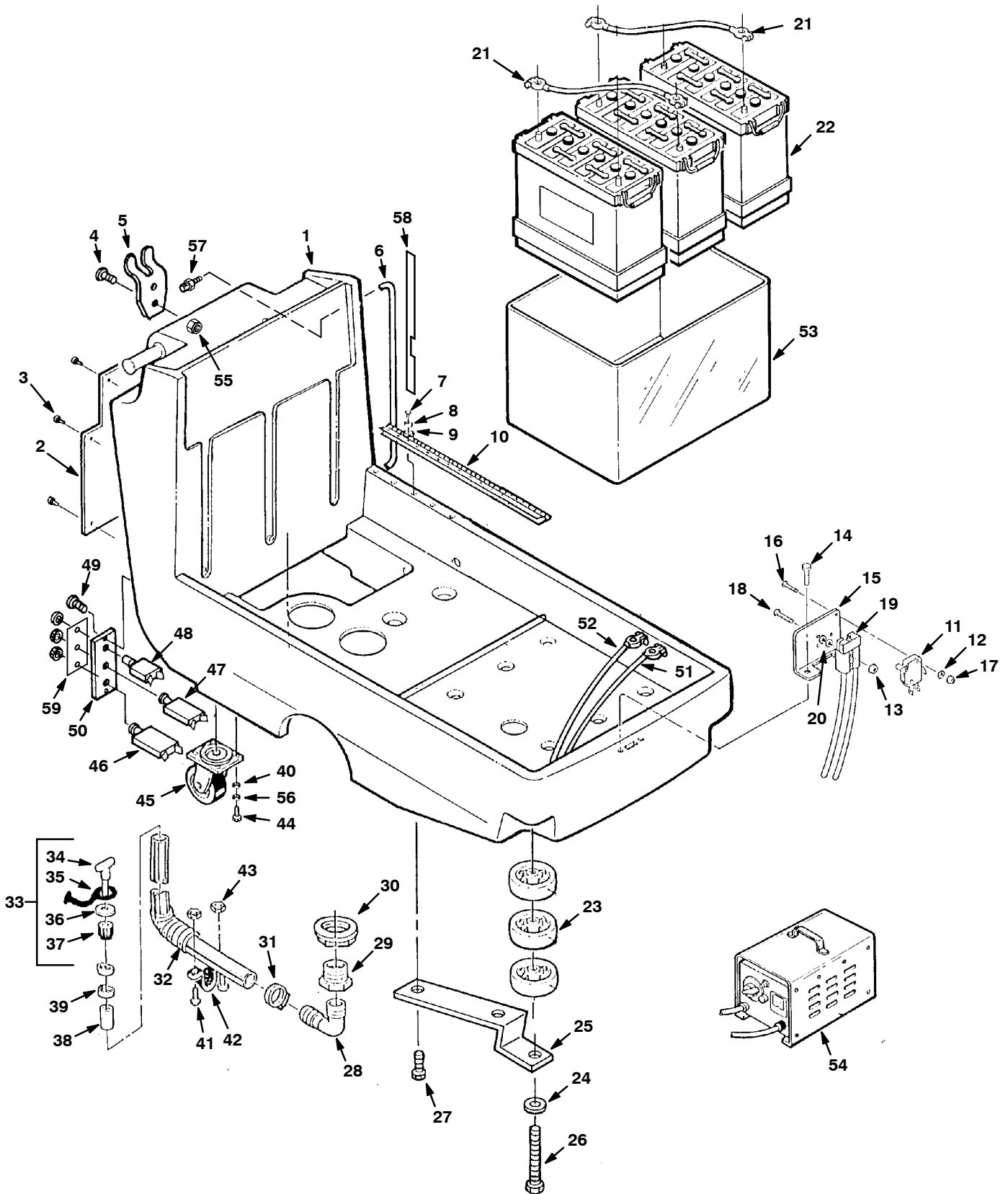
REF	PART #	DESCRIPTION	QTY.
20	230957	PLATE, VAC MOUNT	1
21	140227	SCREW, STUD, 1/4-20X5	6
22	140208	SCREW, 1/4-20X1 HXHDCP	2
23	613909	PLATE, CONNECTOR	1
24	140000	WASHER, 1/4 FLAT	12
25	140524	NUT, 1/4-20 KEP	5
26	140308	CLAMP, HOSE 1-5/16 TO 2-1/4	2
27	160631	●HOSE, VACUUM, 1-1/2X16"	1
∇ 28	398521	●MOTOR, VAC 5.7D, 3-STAGE, 36V	1
▲	398513	●BRUSH, CARBON (PK OF 2)	1
29	210240	NUT, 1-1/2 FLANGED	1
30	41169	NUT, 1/4-20 NYLCK	7
31	01697	SCREW, HEX, .25-20 X 0.62	2
32	140016	WASHER, 1/4 LOCK	2
33	600009	MUFFLER, EXHAUST	1
34	150524	FITTING, 1/8M X 1/8H	1
35	120247	DECAL, "FULL"	1
36	602637	LABEL, BATTERY CHARGE	1
37	1034637	LABEL, FRONT, 3.50 [NOBLES ICON]	1
38	1035596	LABEL, MODEL [NOBLES CONCORDE HP]	2
39	140322	CLAMP, VAC HOSE PICKUP TOOL	4
40	160456	●HOSE, VACUUM, PICKUP TOOL 16"	2

∇ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

● RECOMMENDED STOCK ITEMS

MAIN CHASSIS GROUP



## MAIN CHASSIS GROUP

REF	PART #	DESCRIPTION	QTY.
1	614122	CHASSIS, RM-SPG, TRIMMED (GREEN)	1
2	231023.BK	PANEL, REAR	1
3	240204	●KNOB, ROUND	5
4	140825	SCREW, #6X1/2	2
5	611978	BRACKET, DRAIN HOSE	1
6	613458	HOSE, 1/8ID CLR VYL (4.5 FT)	1
7	01696	SCREW, 1/4-20X1/2 HEXHD	9
8	140000	WASHER, 1/4 FLAT	9
9	140016	WASHER, 1/4 LOCK	9
10	140440	HINGE, SOLUTION TANK	1
11	600437	●SWITCH, SNAP ACTION	1
12	200301012	WASHER, M3 FLAT	2
13	140539	NUT, #6-32 KEP	2
14	140852	SCREW, #12X3/4 SHTMTL	2
15	231040.BK	PLATE, PLUG MOUNT	1
16	200070266	SCREW, M3X.5X16 PAN HD	2
17	579211	NUT, M3 LOCK	2
18	140829	SCREW, #6-32X1 PANPHL	2
19	130155	●CONNECTOR, GRAY 50A	1
20	140026	WASHER, #6 FLAT	4
21	130367	CABLE, BATTERY 15" BLK 6 GA	2
22	600394	BATTERY, 12V, 215AH	3
23	103026AM	WHEEL, BUMPER	6
24	140008	WASHER, 1/2 FLAT	2
25	230246.BK	BRACKET, BUMPER WHEEL (LEFT)	1
	230247.BK	BRACKET, BUMPER WHEEL (RIGHT)	1
26	140562	SCREW, 1/2-13X6-1/2 HXHDCP	2
27	140563	SCREW, 5/16X1 LAG	4
28	230832	FITTING, 1-1/4M X 1-1/4H 90°	1
29	230833	FITTING, ADAPTER, 1-1/4F X 1-1/2M	1

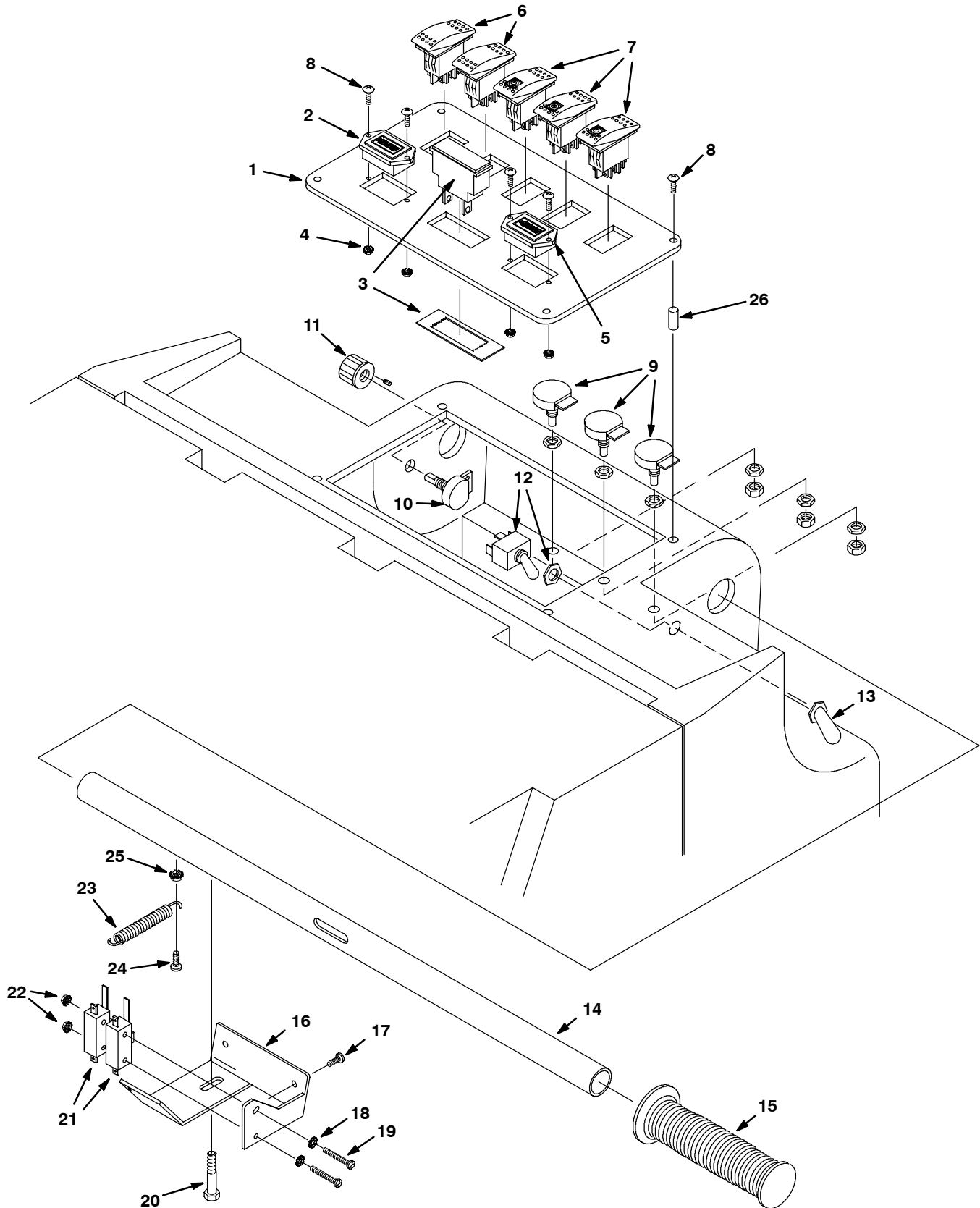
REF	PART #	DESCRIPTION	QTY.
30	603094	INLET FLANGE, W/FLATS	1
31	11531	CLAMP, HOSE, WORMDRIVE, 1.06-2.00D, .56W	1
32	160415	●HOSE DRAIN	1
▽ 33	701061	●ASSEMBLY, PLUG	1
▲ 34	230831	●KNOB, DRAIN HOSE	1
▲ 35	230882	●STRAP, PLUG	1
▲ 36	140056	WASHER, 3/8 FENDER	1
▲ 37	140955	FITTING, PLUG, DRAIN HOSE	1
38	140921	SLEEVE, DRAIN HOSE	1
39	140072	CLAMP, HOSE 1-9/16"	2
40	140036	WASHER, 3/8 FLAT	8
41	140823	SCREW, #10-24X5/8 TRSPHL	2
42	230109.BK	BRACKET, HOSE SUPPORT	1
43	140552	NUT, #10-24 NYLK	2
44	02994	SCREW, 3/8-16X3/4 HEXHD	8
45	103002	●CASTER, 4" SWIVEL	2
46	130755AM	●CIRCUIT BREAKER, DRIVE, 10A	1
47	130739	●CIRCUIT BREAKER, MAIN, 60A	1
48	130737AM	●CIRCUIT BREAKER, BRUSH, 10A	1
49	140887	SCREW, #10-24X3/8 PANPHL	2
50	231058.BK	PLATE, BREAKER MOUNT	1
51	600969	●CABLE, BATTERY, RED	1
52	600970	●CABLE, BATTERY, BLACK	1
53	100709	BOX, BATTERY	1
54	469760868	CHARGER, BATTERY (120V)	1
	600599	CHARGER, BATTERY (230V)	1
55	140539	NUT, #6-32 KEP	2
56	140017	WASHER, 3/8 LOCK	8
57	150524	FITTING, 1/8M X 1/8H	1
58	120243	DECAL, GALLON MARKER	1
59	120245	DECAL, CIRCUIT BREAKER	1

▽ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

● RECOMMENDED STOCK ITEMS

CONTROL CONSOLE GROUP



## CONTROL CONSOLE GROUP

REF	PART #	DESCRIPTION	QTY.
1	609177	PLATE, DASH	1
2	1010555	●METER, HOUR	1
3	130046	●METER, BRUSH PRESSURE	1
4	140539	NUT, #6-32 KEP	4
5	130779	●METER, BATTERY	1
6	602919	●SWITCH, ROCKER	2
7	601107	●SWITCH, ROCKER, LIGHTED	3
8	140810	SCREW, #6-32X3/8 RNDPHL	8
▽ N/S	609061	WIRE HARNESS, MAIN	1
▲ 9	130775	●POTENTIOMETER, LOCKABLE	3
▲ 10	130776	●POTENTIOMETER	1
11	606550	●KNOB, SPEED CONTROL	1
12	601108AM	●SWITCH, TOGGLE	1
13	130753	●BOOT, SWITCH	1

REF	PART #	DESCRIPTION	QTY.
14	601001	HANDLE, TUBE	1
15	200823	●GRIP, HANDLE	2
16	605814	BRACKET, SWITCH MOUNT	1
17	140864	SCREW, 1/4-20X3/4 TRSPHL	2
18	140019	WASHER, #6 LOCK	2
19	140830	SCREW, #6-32X1-5/8 PANPHL	2
20	605811	SCREW, 5/16-18X3 HXHDCP	1
21	614003	●SWITCH, SNAP ACTION	2
22	140539	NUT, #6-32 KEP	2
23	069764069	SPRING	1
24	140823	SCREW, #10-24X5/8 TRSPHL	1
25	140519	NUT, #10-24 KEP	1
26	140497	INSERT, #6-32X3/8	4

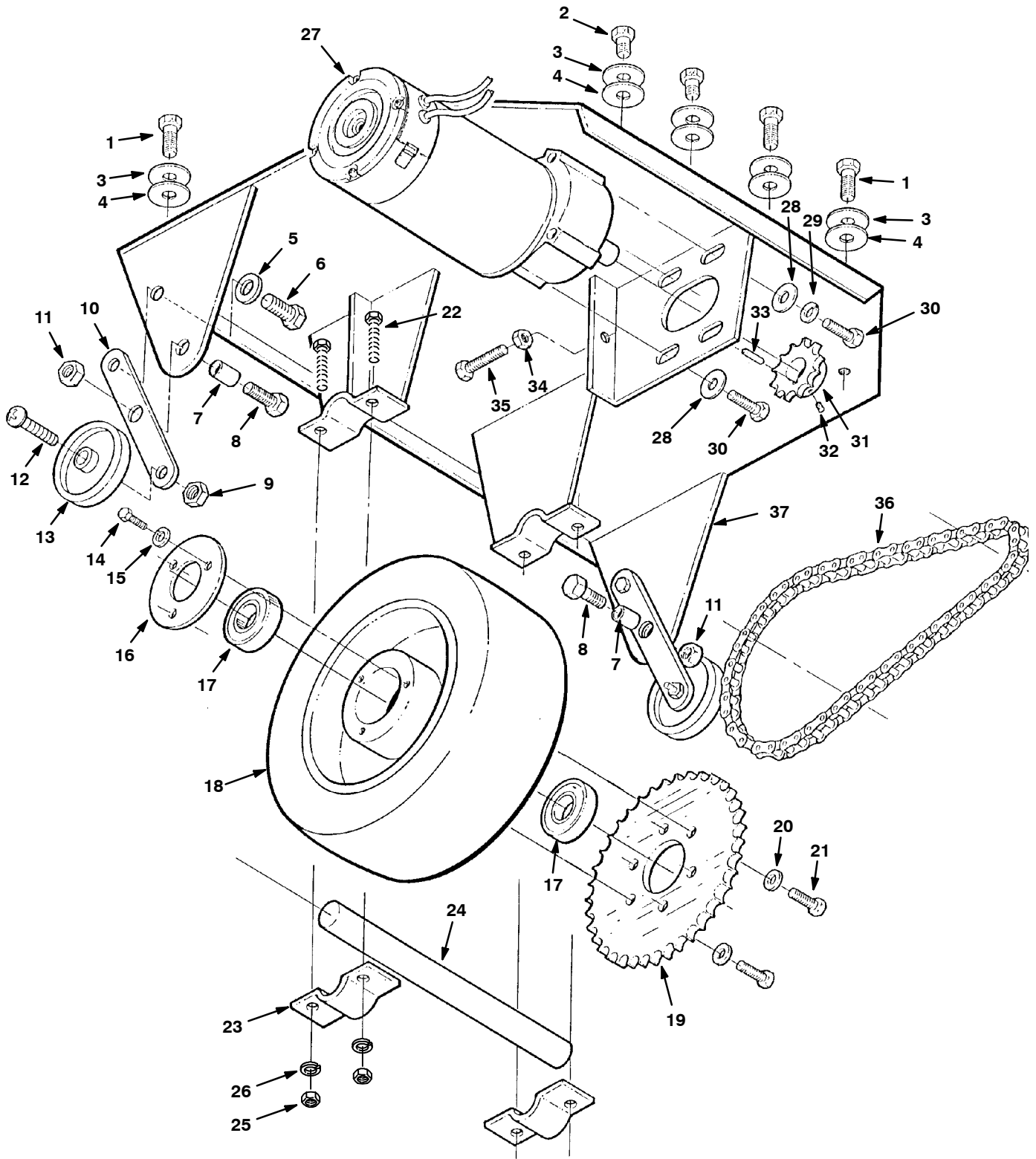
▽ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

● RECOMMENDED STOCK ITEMS

N/S - NOT SHOWN

DRIVE GROUP





**DRIVE GROUP**

REF	PART #	DESCRIPTION	QTY.
1	69225	SCREW, HEX, .38-16X1.00	6
2	02994	SCREW, 3/8-16X3/4 HEXHD	2
3	140028	WASHER, 3/8 FLAT	8
4	140008	WASHER, 1/2 FLAT	8
5	140015	WASHER, 5/16 LOCK	2
6	140559	SCREW, 5/16-18X1/2 HXHDCP	2
7	140911	SLEEVE, .50ID, .62OD, .68L	2
8	140204	SCREW, 1/2-13X1-1/2 HXHDCP	2
9	140545	NUT, 3/8-16 FINJAM	2
10	230645.BK	PLATE, SAFETY WHEEL	2
11	140509	NUT, 1/2-13 HXJM	2
12	140943	SCREW, 3/8-16X2 PANPHL	2
13	103007	●WHEEL	2
14	02991	SCREW, 5/16-18X3/4 HEXHD	3
15	140015	WASHER, 5/16 LOCK	3
16	220120.BK	RETAINER, WHEEL BEARING	1
17	140124	●BEARING, WHEEL	2
18	103027	●WHEEL, DRIVE 10" X 4"	1
19	240017	SPROCKET, WHEEL DRIVE	1

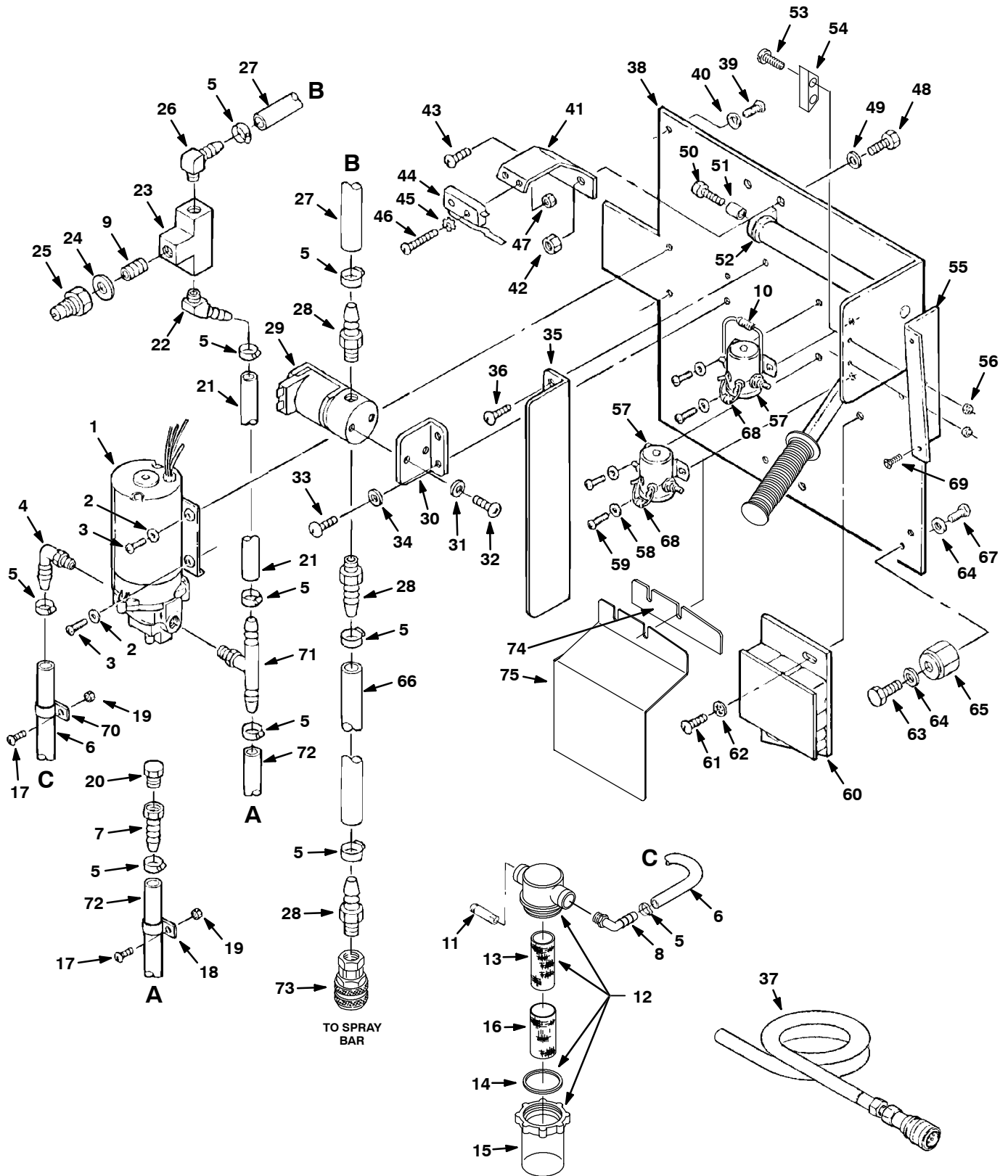
REF	PART #	DESCRIPTION	QTY.
20	140015	WASHER, 5/16 LOCK	6
21	140219	SCREW, 5/16-18X1 HEXHD	6
22	69225	SCREW, HEX, .38-16X1.00	4
23	611980	CLAMP, AXLE	2
24	230205	SHAFT, DRIVE WHEEL	1
25	140525	NUT, 3/8-16 HEX	4
26	140017	WASHER, 3/8 LOCK	4
▽ 27	130443	●MOTOR, DRIVE	1
▲	190153	●BRUSH, CARBON (SET OF 2)	1
28	140046	WASHER, 3/8 FLAT	4
29	140017	WASHER, 3/8 LOCK	3
30	611048	SCREW, 3/8-16X1-1/4 HEXHD	4
31	240071	SPROCKET, DRIVE MOTOR	1
32	140859	SCREW, 1/4-20X1/4 SET	2
33	605350	●KEY	1
34	140545	NUT, 3/8-16 FINJAM	1
35	140233	SCREW, 3/8-16X1-3/4 HXHDCP	1
36	240019	●CHAIN, DRIVE	1
37	220107.BK	BRACKET, WHEEL ASSEMBLY	1

▽ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

● RECOMMENDED STOCK ITEMS

PLUMBING SYSTEM GROUP



## PLUMBING SYSTEM GROUP

REF	PART #	DESCRIPTION	QTY.
1	601142	●PUMP, SOLUTION, 100PSI 36V	1
2	140000	WASHER, 1/4 FLAT	2
3	140881	SCREW, 1/4-20X1 TRSPHL	2
4	150412	FITTING, E90, PM06/BM06	1
5	54333	CLAMP, HOSE 5/16-7/8	10
6	613505	HOSE, 3/8 LP GRAY (6.66 FT)	1
7	150511	FITTING, 1/4F X 3/8H	1
8	150412	FITTING, E90, PM06/BM06	1
9	150615	FITTING, 04PM CLOSE	1
10	604486	DIODE	1
11	601106	FITTING, 3/8M X 3 NIPPLE	1
▽ 12	180615	●ASM., INLINE STRAINER FILTER	1
▲ 13	180616	●FILTER, SCREEN, 80-MESH, SS	1
▲ 14	180617	●GASKET, VITON	1
▲ 15	602000	●BOWL, CLEAR	1
16	180636	●FILTER, SCREEN, 125-MESH, NY	1
17	140804	SCREW, #10-24X1 TRSPHL	2
18	140916	CLAMP, CABLE 5/8	1
19	140552	NUT, #10-24 NYLOCK	2
20	150206	FITTING, PLUG, 04PM HEX	1
21	609432	HOSE, 3/8 LP GRAY (1.080 FT)	1
22	605394	FITTING, E45 BM06/PM04	1
23	150706	FITTING, 1/4F TEE	1
24	140058	WASHER, 1/2 FLAT	1
25	150933	FITTING, QDC/04PM	1
26	150419	FITTING, 1/4M X 3/8H 90° ELBOW	1
27	613481	HOSE, 3/8 LP GRAY (.916 FT)	1
28	150516	FITTING, 04PM/06BM	3
29	210046	●VALVE, SOLENOID 36V	1
30	600998	BRACKET, SOLENOID MOUNTING	1
31	140023	WASHER, #8 LOCK	2
32	140801	SCREW, #8-32X3/8 TRSPHL	2
33	140197	SCREW, #10-24X3/8 TRSPHL	2
34	140018	WASHER, #10 LOCK	2
35	230978	PLATE, DIVIDER	1
36	140887	SCREW, #10-24X3/8 PANPHL	2
37	700141	HOSE, SOLUTION TANK CLEAN-OUT	1
38	231029.BK	PLATE, CONTROL	1

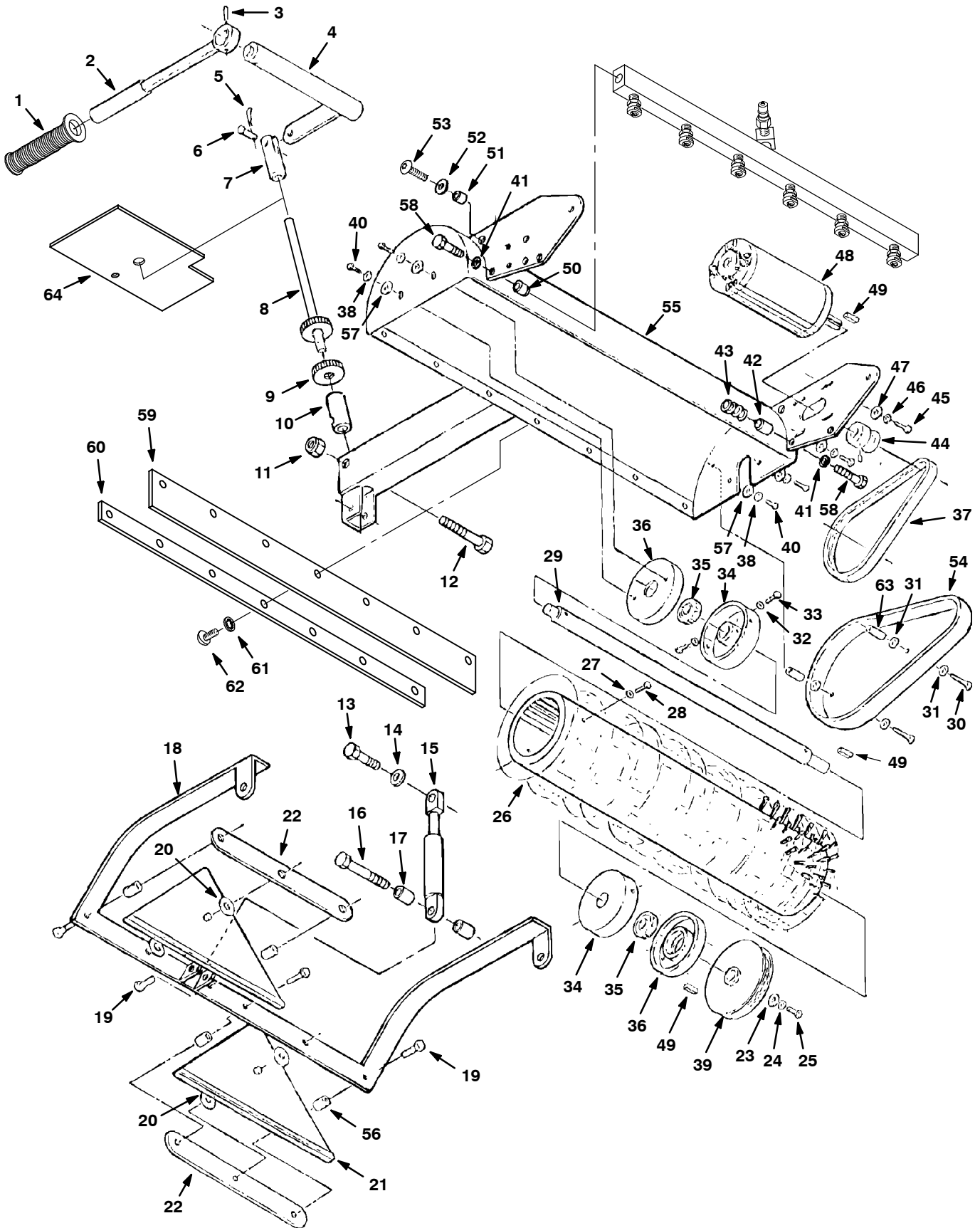
REF	PART #	DESCRIPTION	QTY.
39	02991	SCREW, 5/16-18X3/4 HEXHD	5
40	140015	WASHER, 5/16 LOCK	5
41	600975	BRACKET, REVERSE SAFETY SW.	1
42	140546	NUT, 5/16-18 NYLOCK	1
43	140197	SCREW, #10-24X3/8 TRSPHL	1
44	1013132	●SWITCH, LEVER, SNAP ACTION	1
45	140019	WASHER, #6 LOCK	2
46	140829	SCREW, #6-32X1 PANPHL	2
47	140066	NUT, #6-32 NYLCK	2
48	140219	SCREW, 5/16-18X1 HXHDCP	1
49	140015	WASHER, 5/16 LOCK	1
50	140237	SCREW, 1/2-13X1 HXHDCP	1
51	150116	BUSHING	1
52	140040	WASHER, POLY	2
53	140868	SCREW, 1/4-20X5/8 SKHDCP	2
54	100721	PLATE, LOCK	1
55	220115	BRACKET, SUPPORT	1
56	140524	NUT, 1/4-20 KEP	2
57	130733AM	●CONTACTOR, SOLENOID, SPNO 36V	2
58	140011	WASHER, 3/16 FLAT	4
59	140197	SCREW, #10-24X3/8 TRSPHL	4
60	602827	●BOARD, SPEED W/HEAT SINK	1
61	140887	SCREW, #10-24X3/8 PANPHL	2
62	140018	WASHER, #10 LOCK	2
63	140259	SCREW, 1/4-20X5/8 HEXHD	1
64	140016	WASHER, 1/4 LOCK	2
65	76062	TERMINAL, STANDOFF	1
66	613501	HOSE, 3/8 LP GRAY (5.00 FT)	1
67	24672	SCREW, 1/4-20X3/4 HEXHD	1
68	606404	DIODE ASSEMBLY	2
69	140861	SCREW, 1/4-20X1 FLTHD	2
70	140318	CLAMP, CABLE 7/8	1
71	150715	FITTING, 3/8M X 3/8H X 3/8H TEE	1
72	613493	HOSE, 3/8 LP GRAY (3.00 FT)	1
73	150913	COUPLER, QUICK FEMALE	1
74	1014770	GASKET, SHIELD	1
75	1014413	SHIELD, CONTROLLER BOARD	1

▽ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

● RECOMMENDED STOCK ITEMS

BRUSH HEAD GROUP



BRUSH HEAD GROUP

REF	PART #	DESCRIPTION	QTY.	
1	200823	●GRIP, HANDLE	1	
2	230210	ARM, LIFT, HEAD	1	
3	140618	●PIN, ROLL	1	
4	230207	SHAFT, LIFT	1	
5	140626	●PIN, HITCH	1	
6	140608	●PIN, CLEVIS	1	
7	230309	CLEVIS, LIFT ROD	1	
8	231038	ASSEMBLY, LIFT ROD	1	
9	231037	NUT, BRUSH ADJUST	1	
10	231036	ADAPTER, LIFT ROD	1	
11	02931	NUT, 1/2 NYLOCK	1	
12	140234	SCREW, 1/2-13X2-1/2 HXHDCP	1	
13	140216	SCREW, 5/16-18X1-1/2 HXHDCP	2	
14	140027	WASHER, 5/16 FLAT	2	
15	140446	SPRING, GAS CYLINDER	2	
16	140355	SCREW, 5/16-18X2-1/2 HXHDCP	2	
17	140140	BUSHING, .31 X .44 X .35	4	
18	230979.BK	BRACKET, PICKUP TOOL MOUNT	1	
19	140204	SCREW, 1/2-13X1-1/2 HXHDCP	4	
20	140040	WASHER, 1/2	4	
21	604958	TOOL, PICKUP	2	
22	100729	PLATE, PICKUP TOOL	2	
23	140003	WASHER, 1/4 FENDER	1	
24	140016	WASHER, 1/4 LOCK	1	
25	140259	SCREW, 1/4-20X5/8 HXHDCP	1	
▽	611844	●ASSEMBLY, BRUSH	1	
▲	26	611792	●BRUSH, CYLINDER	1
▲	27	140015	WASHER, 5/16 LOCK	4
▲	28	140221	SCREW, 5/16-18X1-1/4 HXHDCP	4
▲	29	230206	SHAFT, BRUSH	1
30	140869	SCREW, #10-24X1-3/4 PANPHL	2	
31	140011	WASHER, 3/16 FLAT	4	
▲	32	140016	WASHER, 1/4 LOCK	4

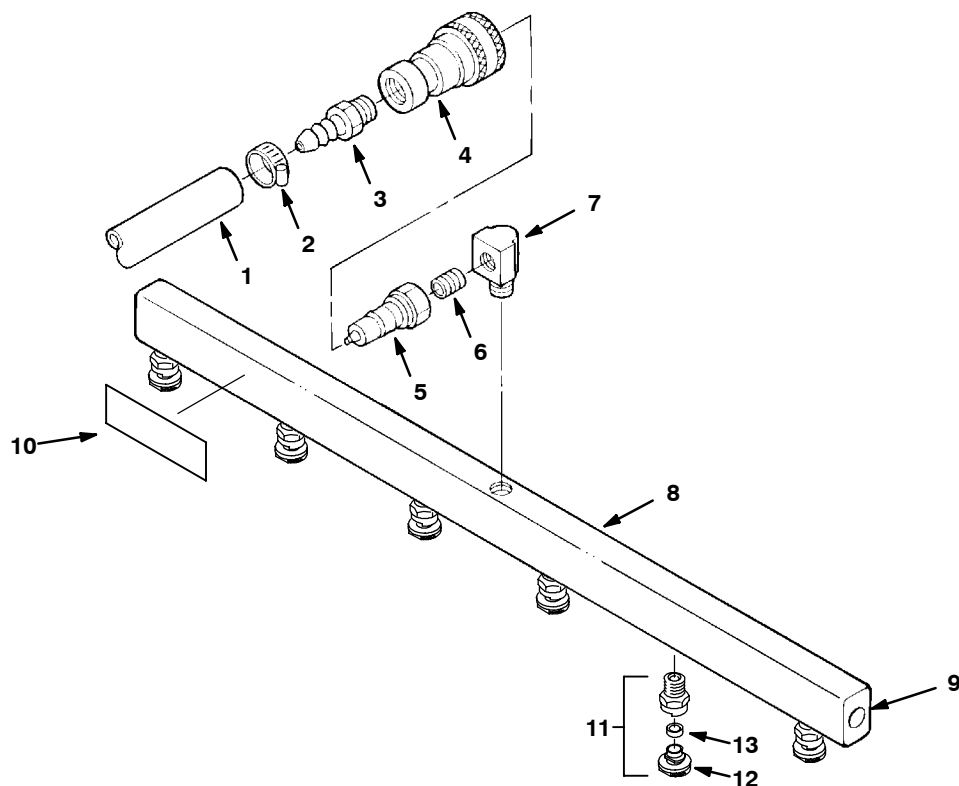
REF	PART #	DESCRIPTION	QTY.	
▲	33	140259	SCREW, 1/4-20X5/8 HEXHD	4
▲	34	240014	ADAPTER, MOUNT, BRUSH	2
▲	35	140123	●BEARING, BALL	2
▲	36	240015	CAP, BEARING	2
37	240126	●BELT, DRIVE, BRUSH	1	
38	140016	WASHER, 1/4 LOCK	4	
39	240013	SHEAVE, BRUSH SHAFT	1	
40	24672	SCREW, 1/4-20X3/4 HXHDCP	4	
41	140016	WASHER, 1/4 LOCK	2	
42	230993	PIN, MANIFOLD MOUNT	1	
43	578140000	SPRING	1	
44	240016	SHEAVE, BRUSH MOTOR	1	
45	140208	SCREW, 1/4-20X1 HXHDCP	4	
46	140016	WASHER, 1/4 LOCK	4	
47	140000	WASHER, 1/4 FLAT	4	
48	130444	●MOTOR, BRUSH 1/2 HP	1	
49	140628	●KEY, 3/16X3/16X1	2	
50	230992	PIN, MANIFOLD MOUNT	1	
51	140144	SLEEVE, .318 X .496	2	
52	140028	WASHER, 3/8 FLAT	2	
53	140847	SCREW, 3/8-16 X 1	2	
54	611717	COVER, DRIVE BELT	1	
55	230983.BK	HOUSING, BRUSH	1	
56	140911	SLEEVE, .50ID, .62OD, .68L	4	
57	140000	WASHER, 1/4 FLAT	4	
58	01696	SCREW, 1/4-20X1/2 HEXHD	2	
59	240038	GUARD, SPLASH	1	
60	100719.BK	●STRAP, SPLASH GUARD	1	
61	140018	WASHER, #10 LOCK	7	
62	140892	SCREW, #10-24X1/2 RNDPHL	7	
63	140917	SPACER, .19X.31X1.50 NYLON	2	
64	1014724	SHIELD, HOUSING, REAR	1	

▽ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

● RECOMMENDED STOCK ITEMS

## SPRAY BAR GROUP



REF	PART #	DESCRIPTION	QTY.	
1	613501	HOSE, 3/8 LP GRAY (5.00 FT)	1	
2	54333	CLAMP, HOSE 5/16-7/8	1	
3	150516	FITTING, 04PM/06BM	1	
4	150913	COUPLER, QUICK FEMALE	1	
▽	601143	ASSEMBLY, SPRAY BAR	1	
▲	5	150933	FITTING, QDC/04PM	1
▲	6	150615	FITTING, 04PM CLOSE	1
▲	7	150430	FITTING, 1/8M X 1/4F, 90° ELBOW	1

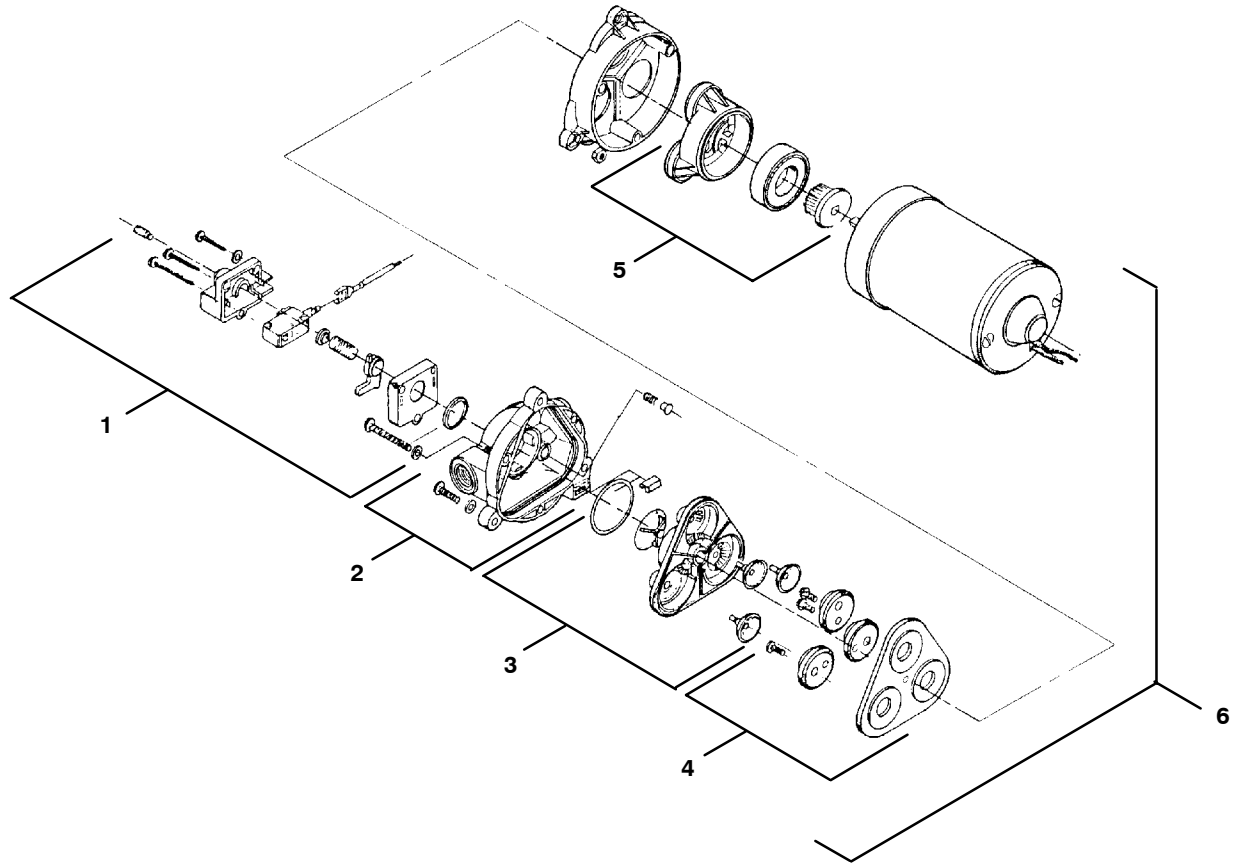
REF	PART #	DESCRIPTION	QTY.	
▲	8	230974	SPRAY BAR, 6-JET	1
▲	9	150208	FITTING, 1/8 PLUG	2
▲	10	120248	DECAL, FRONT	1
▲▽	11	201008	●FITTING, JET	6
▲	12	603092	●REPLACEMENT TIP 11002 FOR 201008	6
▲	13	201015	●SEAL, SPRAY TIP	6

▽ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

● RECOMMENDED STOCK ITEMS

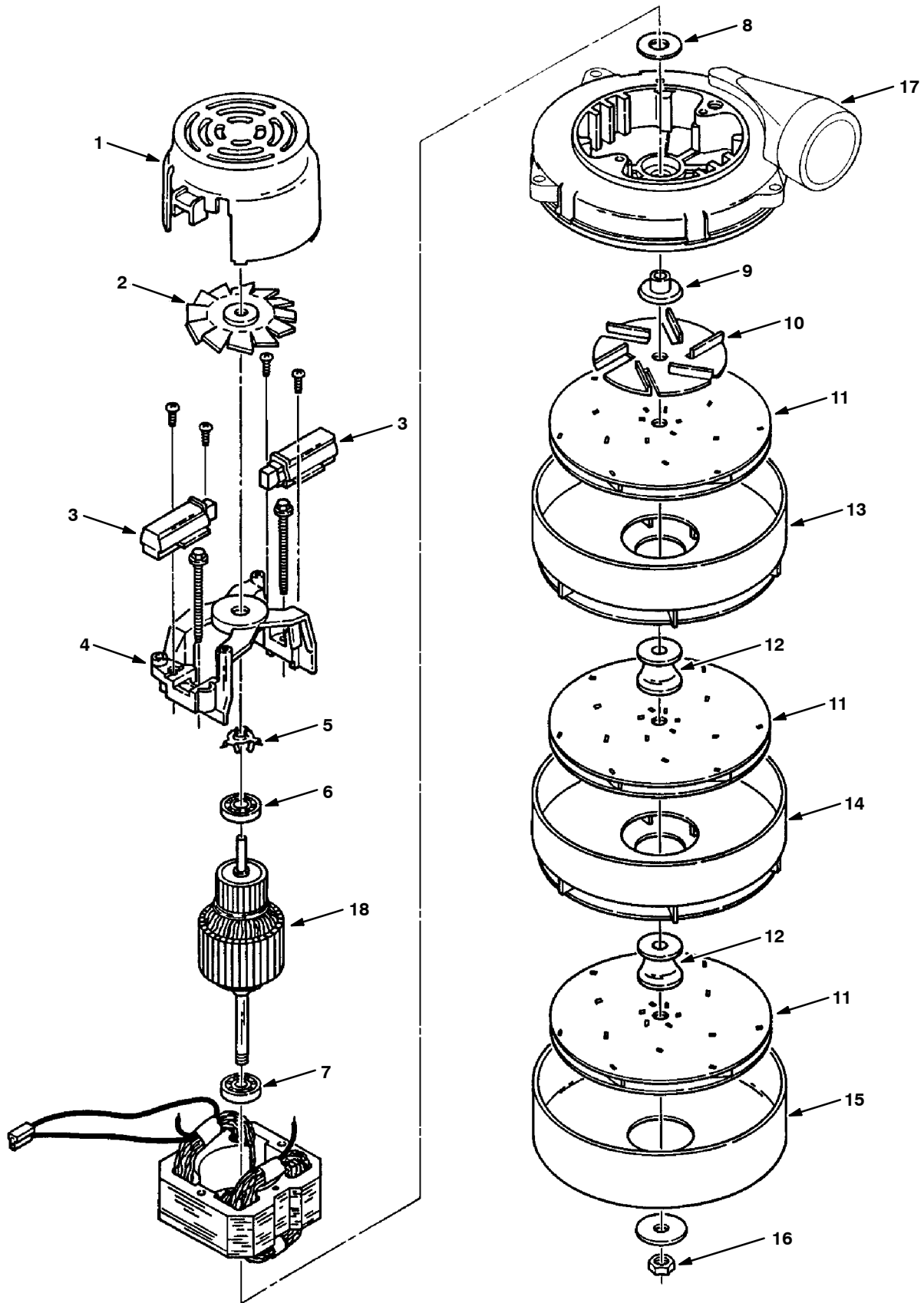
PUMP BREAKDOWN



REF	PART #	DESCRIPTION	QTY.
1	190129	KIT, PRESSURE SWITCH	1
	190172	KIT, PRESSURE SWITCH (VITON)	1
	190134	KIT, DIAPHRAGM ONLY	1
2	190128	KIT, UPPER PUMP HOUSING	1
	190124	KIT, CHECK VALVE ONLY	1

REF	PART #	DESCRIPTION	QTY.
3	190171	KIT, VALVE (VITON)	1
4	190131	KIT, SERVICE	1
5	190130	KIT, LOWER PUMP HOUSING	1
6	601142	PUMP, SOLUTION, 100PSI 36V	1

VACUUM MOTOR BREAKDOWN





## VACUUM MOTOR BREAKDOWN

REF	PART #	DESCRIPTION	QTY.
∇	398521	MOTOR, VAC 5.7D, 3-STAGE, 36V	1
▲ 1	398511	HOUSING	1
▲ 2	398512	FAN	1
▲ 3	398513	●BRUSH, CARBON (PK OF 2)	1
▲ 4	398514	BRACKET	1
▲ 5	01856	SPRING, BRG, MOTOR, VAC FAN	1
▲ 6	398515	BEARING	1
▲ 7	01837	BEARING, MOTOR, VAC FAN	1
▲ 8	37912	WASHER, NEOPRENE, VAC PAN	1
▲ 9	398516	SPACER	1

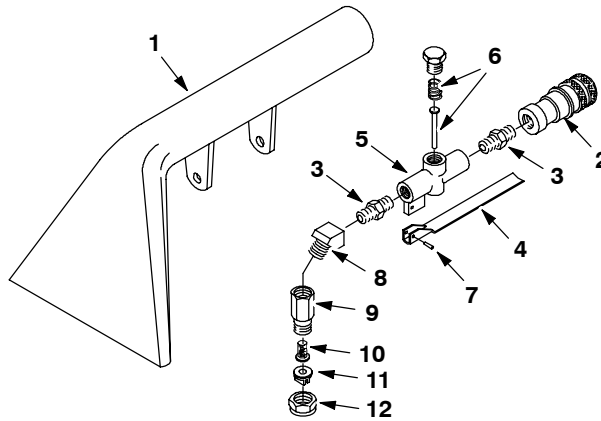
∇ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

● RECOMMENDED STOCK ITEMS

REF	PART #	DESCRIPTION	QTY.
▲ 10	01971	IMPELLER, VAC FAN	1
▲ 11	18628	IMPELLER, VAC FAN	3
▲ 12	398517	SPACER	2
▲ 13	61300	HOUSING, IMPELLER, VAC FAN	1
▲ 14	61297	HOUSING, IMPELLER, VAC FAN	1
▲ 15	398518	FAN SHELL	1
▲ 16	37929	NUT, IMPELLER, VAC FAN	1
▲ 17	60386	HOUSING, OUTLET, VAC FAN	1
▲ 18	398519	ARMATURE	1

127 mm (5 in) HAND TOOL



REF	PART #	DESCRIPTION	QTY.
∇	200505	●ASM., HAND TOOL 5"	1
▲ 1	200431.BK	TOOL, HAND	1
▲ 2	150913	FITTING, 1/4F QD FML COUPLER	1
▲ 3	150606	NIPPLE, CLOSE	2
▲ 4	200905	TRIGGER, HAND TOOL	1
▲ 5	210210	●VALVE, FLOW CONTROL	1
▲ 6	190600	VALVE PIN & SPRING	1

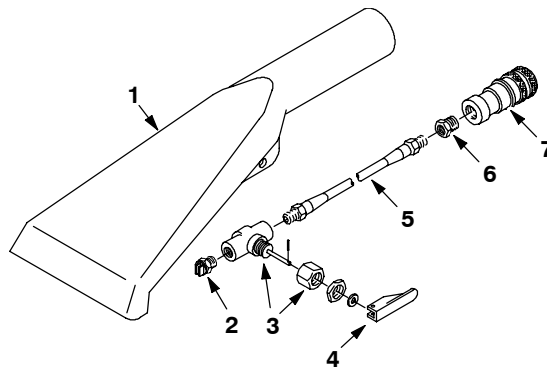
REF	PART #	DESCRIPTION	QTY.
▲ 7	140609	PIN, ROLL 3/16	1
▲ 8	150403	ELBOW, ST 1/4 45°	1
▲ 9	200992	BODY, SPRAY 1/4F	1
▲ 10	200996	SCREEN, SPRAY NOZZLE	1
▲ 11	200965	●TIP, SPRAY #8002	1
▲ 12	200994	CAP, SPRAY BODY	1

∇ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

● RECOMMENDED STOCK ITEMS

76 mm (3 in) CREVICE TOOL



REF	PART #	DESCRIPTION	QTY.
∇	200517	●ASM., CREVICE TOOL SER.60	1
▲ 1	200436.BK	TOOL, CREVICE BLACK	1
▲ 2	200975	●FITTING, TIP #5002 V-JET	1
▲ 3	210014	●VALVE, TOGGLE W/NUT	1

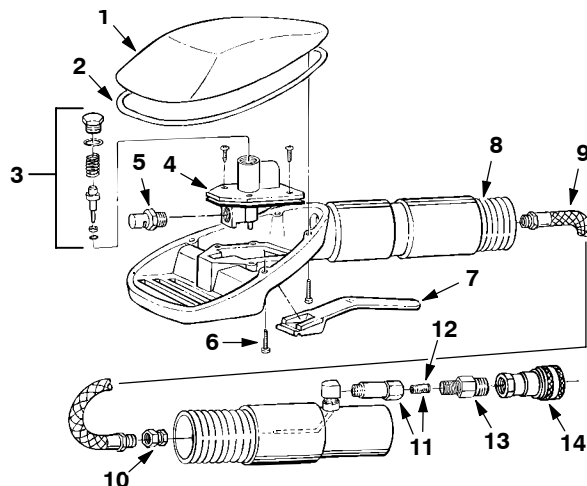
REF	PART #	DESCRIPTION	QTY.
▲ 4	210020	POSITIONER, VALVE HANDLE	1
▲ 5	160106	HOSE, SOLUTION	1
▲ 6	150100	FITTING, 1/4MX1/8F BUSHING	1
▲ 7	150913	FITTING, 1/4F QD FML COUPLER	1

∇ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

● RECOMMENDED STOCK ITEMS

LOW PRESSURE UPHOLSTERY TOOL



REF	PART #	DESCRIPTION	QTY.
∇	200540	●ASSEMBLY, UPHOLSTERY TOOL	1
▲ 1	200845	COVER	1
▲ 2	200843	GASKET	1
▲ 3	190631	●KIT, VALVE ASM.	1
▲ 4	210226	●VALVE, LP	1
▲ 5	200991	●NOZZLE	1
▲ 6	200838	SCREW	4
▲ 7	200840	TRIGGER	1

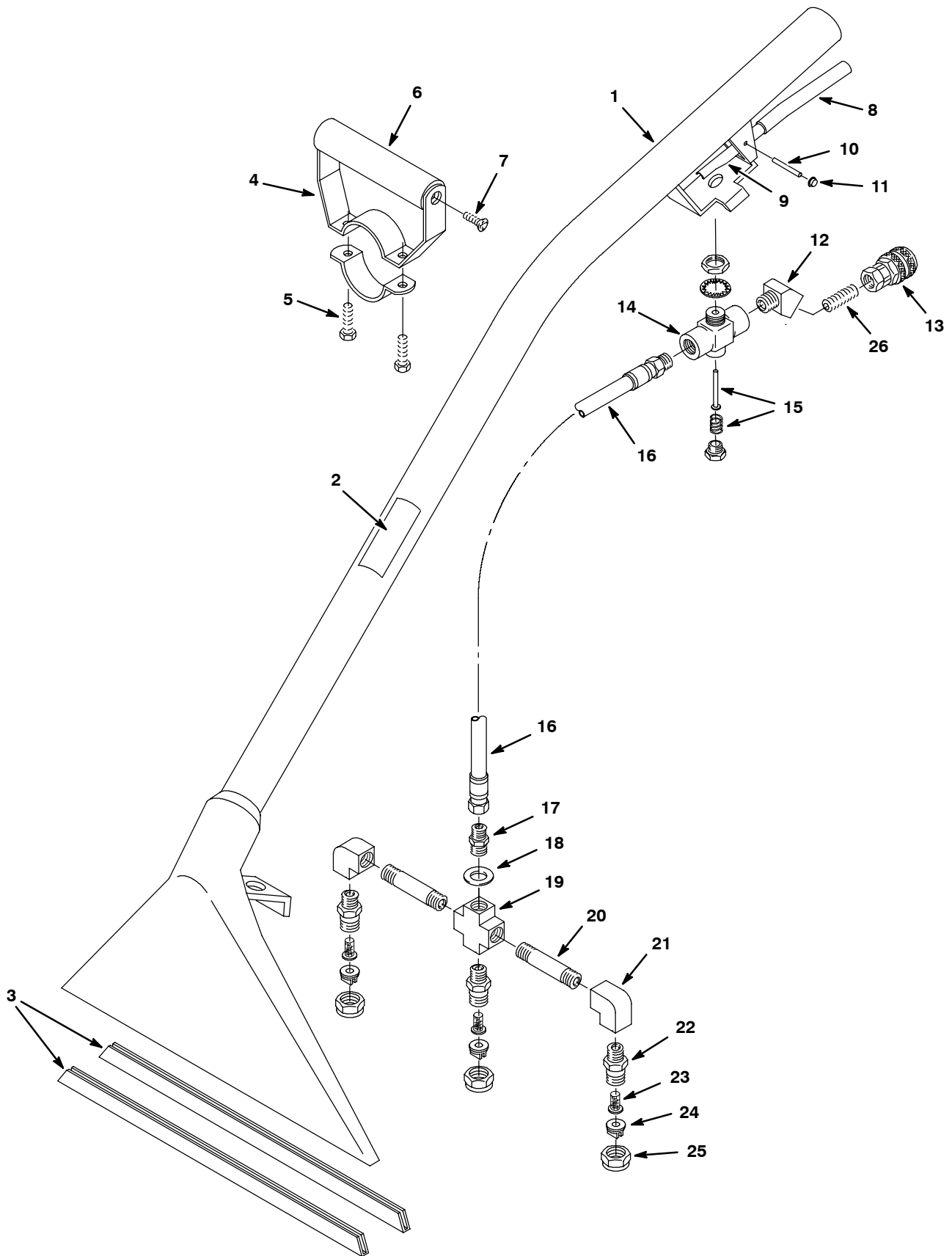
REF	PART #	DESCRIPTION	QTY.
▲ 8	200844	●HOSE, VACUUM	1
▲ 9	200837	●HOSE, SOLUTION	1
▲ 10	200848	FITTING	1
▲ 11	200842	FILTER	1
▲ 12	200841	SCREEN, FILTER	1
▲ 13	150606	FITTING, 1/4MX1/4M	1
▲ 14	150913	●COUPLER	1

∇ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

● RECOMMENDED STOCK ITEMS

330mm (13 in) LOW PRESSURE FLOOR TOOL



**330mm (13 in) LOW PRESSURE FLOOR TOOL**

REF	PART #	DESCRIPTION	QTY.
▽	600048	●ASM., WAND LOW PRESSURE	1
▲ 1	200403.BK	TOOL, FLOOR BLACK	1
▲ 2	120846	DECAL, LOW PRESSURE TOOL	1
▲ 3	200939	●SHOE, 330MM (13 IN) FLR TOOL	2
▲▽ 4	200927AM	GRIP, HAND ADJ. COMPLETE	1
▲ 5	01697	SCREW, HEX, .25-20 X .062	2
▲ 6	200912	GRIP, HANDLE FOAM	1
▲ 7	140834	SCREW, 1/4-20X5/8	2
▲ 8	200809	SLEEVE, HANDLE	1
▲ 9	200902	HANDLE, VALVE	1
▲ 10	140605	PIN, HANDLE	1
▲ 11	140520	NUT, 1/4 PUSH BLK	2
▲ 12	150403	FITTING, 1/4MX1/4F 45 STR	1
▲ 13	150913	●FITTING, 1/4F QD CPLR SER 60	1

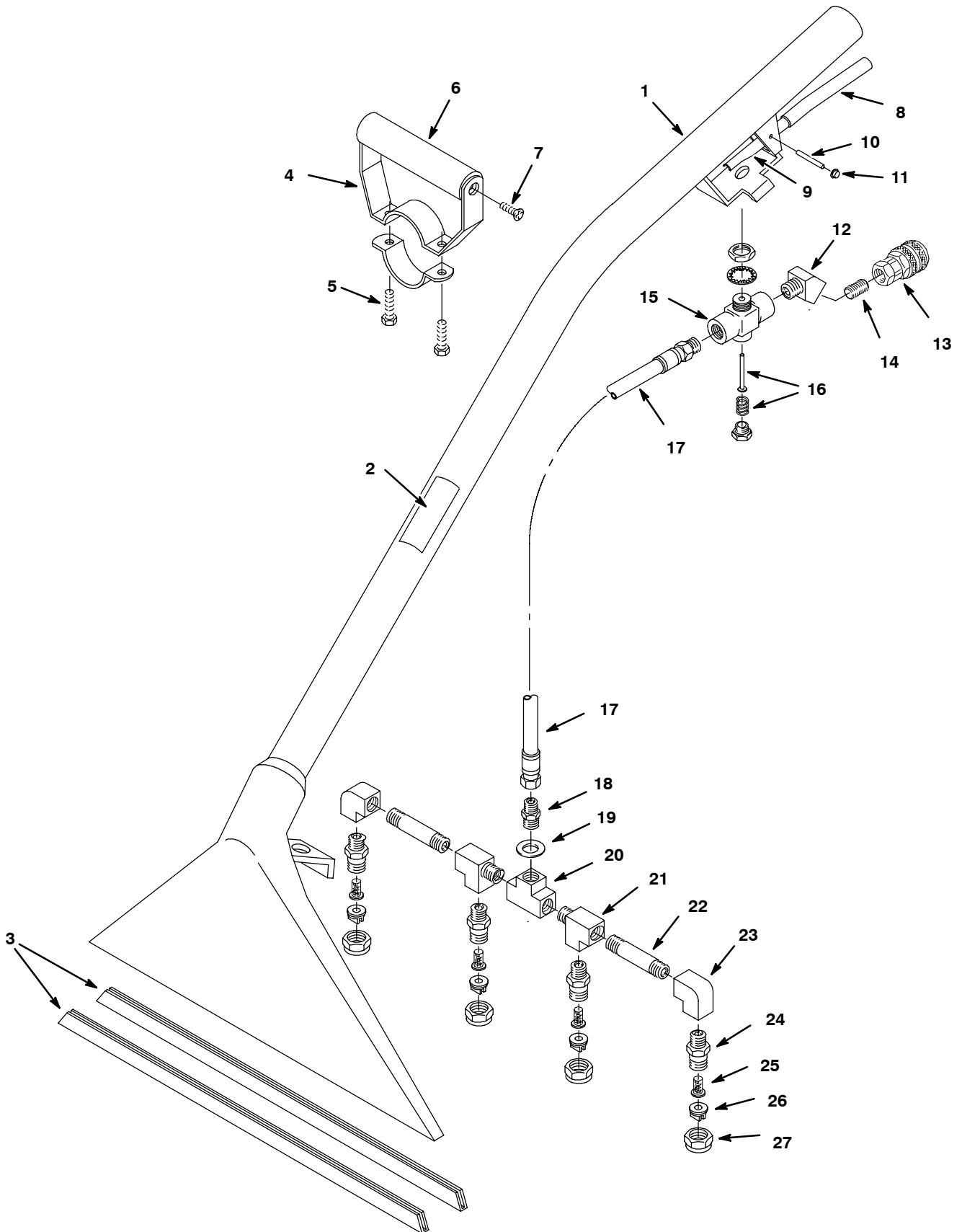
REF	PART #	DESCRIPTION	QTY.
▲▽ 14	210150	●VALVE, FLOW CONTROL	1
▲ 15	190603	●KIT, VALVE PIN AND SPRING	1
▲ 16	160170	ASM, HOSE LOW PRESSURE	1
▲ 17	150606	FITTING, 1/4MX1-3/8HEXNIP	1
▲ 18	140058	WASHER, .543X.875X.062 WAND	1
▲▽	700062	ASM., SPRAYBAR WO/TIPS	1
▲ 19	150700	CROSS, 1/4 FPT	1
▲ 20	150600	FITTING, 1/4MX2" NIPPLE	2
▲ 21	150401	FITTING, 1/4FX1/4F ELBOW 90	2
▲ 22	200993	SPRAY BODY, 1/4" MALE	3
▲ 23	200996	●FILTER, SCREEN 100 MESH	3
▲ 24	200964	●FITTING, TIP 11003 T-JET	3
▲ 25	200994	●CAP, SPRAY BODY	3
▲ 26	150615	FITTING, 1/4MX7/8 CLSNIP	1

▽ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

● RECOMMENDED STOCK ITEMS

406mm (16 in) LOW PRESSURE FLOOR TOOL



**406mm (16 in) LOW PRESSURE FLOOR TOOL**

REF	PART #	DESCRIPTION	QTY.
▽	200503	●ASM., FLOOR TOOL	1
▲ 1	200411.BK	TOOL, FLOOR 406MM (16 IN)	1
▲ 2	120846	DECAL, LOW PRESSURE TOOL	1
▲ 3	200956	●SHOE, 406MM (16 IN) FLR TOOL	2
▲▽ 4	200927AM	GRIP, HAND ADJ. COMPLETE	1
▲ 5	01697	SCREW, HEX, .25-20 X .062	2
▲ 6	200912	GRIP, HANDLE FOAM	1
▲ 7	140834	SCREW, 1/4-20X5/8	2
▲ 8	200809	SLEEVE, HANDLE	1
▲ 9	200902	HANDLE, VALVE	1
▲ 10	140605	PIN, HANDLE	1
▲ 11	140520	NUT, 1/4 PUSH BLK	2
▲ 12	150403	FITTING, 1/4MX1/4F 45 STR	1
▲ 13	150913	●COUPLER, SER. 60	1
▲ 14	150615	NIPPLE, CLOSE 1/4	1

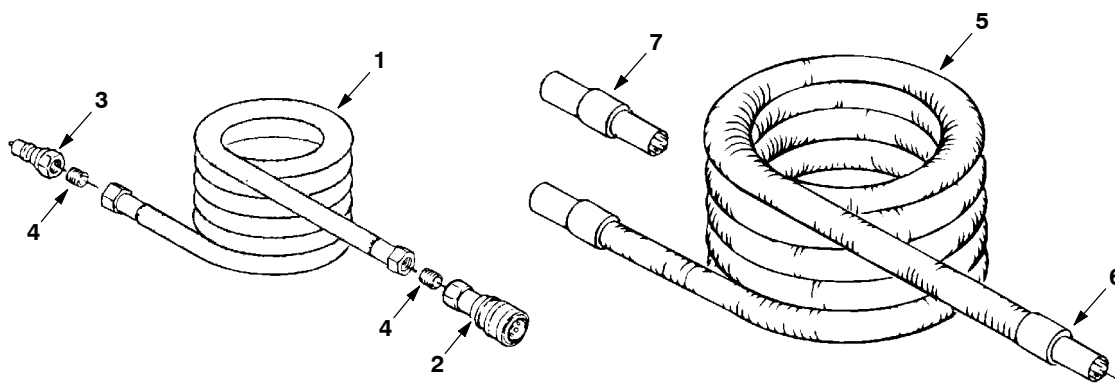
REF	PART #	DESCRIPTION	QTY.
▲▽ 15	210150	●VALVE, FLOW CONTROL	1
▲ 16	190603	●KIT, VALVE PIN AND SPRING	1
▲ 17	160170	ASM, HOSE LOW PRESSURE	1
▲ 18	150606	FITTING, 1/4MX1-3/8HEXNIP	1
▲ 19	140058	WASHER, .543X.875X.062 WAND	1
▲▽	700656	ASM., SPRAYBAR 16" WO/TIPS	1
▲ 20	150706	FITTING, 1/4F TEE	1
▲ 21	150709	FITTING, 1/4F X 1/4F X 1/4M	2
▲ 22	150600	FITTING, 1/4MX2" NIPPLE	2
▲ 23	150401	FITTING, 1/4FX1/4F ELBOW 90	2
▲ 24	200993	SPRAY BODY, 1/4" MALE	4
▲ 25	200996	●FILTER, SCREEN 100 MESH	4
▲ 26	200964	●FITTING, TIP 11003 T-JET	4
▲ 27	200994	●CAP, SPRAY BODY	4

▽ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

● RECOMMENDED STOCK ITEMS

## SOLUTION AND VACUUM HOSES



REF	PART #	DESCRIPTION	QTY.
∇ 1	160185	HOSE, SOLUTION 4.6M (15')	1
	610792	HOSE, SOLUTION 7.6M (25')	1
	160192	HOSE, SOLUTION 15.2M (50')	1
▲ 2	150913	●COUPLER, QUICK SER. 60	1
▲ 3	150933	PLUG, QUICK COUPLER	1
▲ 4	150615	NIPPLE	2

REF	PART #	DESCRIPTION	QTY.
∇ 5	160400	HOSE, VACUUM 4.6M (15')	1
	160401	HOSE, VACUUM 7.6M (25')	1
	160402	HOSE, VACUUM 15.2M (50')	1
▲ 6	160430	●CUFF, HOSE 1-1/2"	2
7	160451	●CONNECTOR, VAC HOSE 1-1/2"	1

∇ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

● RECOMMENDED STOCK ITEMS