

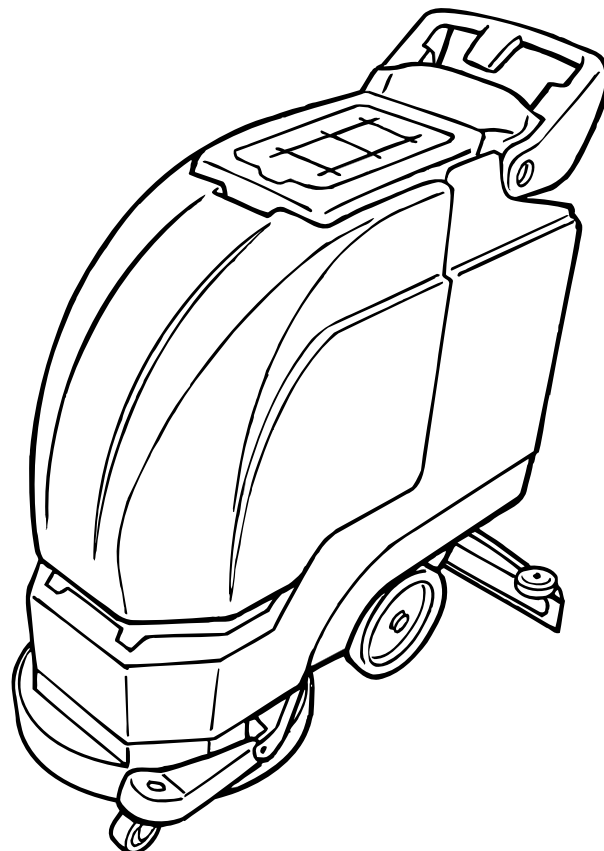


# Speed Scrub<sup>TM</sup> 1701 Plus

Automatic Scrubber  
Battery

**Model No.:**  
608336  
608337 – Pac  
609245 – Can. Pac  
611393  
611394 – Pac

**Operator and Parts Manual**



**NOBLES**  
12875 RANSOM STREET  
HOLLAND MI 49424 U.S.A.

**CUSTOMER SERVICE: 1-800-365-6625**  
**FAX: 1-800-678-4240**

**608362**  
**Rev. 02 (12-00)**

# OPERATION

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

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

When ordering replacement parts use the parts lists section 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.

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 maintenance instructions provided.

- The machine is maintained with manufacturer supplied or equivalent parts.

## MACHINE DATA

Please fill out at time of installation for future reference.	
Model No.-	_____
Install. Date -	_____
Serial No.-	_____

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Speed Scrub is a United States trademark of Tennant Company.

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## SAFETY PRECAUTIONS

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This machine is intended for commercial use. It is designed to scrub hard floors in an indoor environment and is not constructed for any other use. Use only recommended pads, brushes and cleaning solutions.

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

The following safety alert symbols 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.**


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

### FOR SAFETY:

1. **Do not operate machine:**
  - Unless trained and authorized.
  - Unless operation manual is read and understood.
  - In flammable or explosive areas unless designed for use in those areas.
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.
  - Always follow safety and traffic rules.
  - Report machine damage or faulty operation immediately.
  - Follow mixing and handling instructions on chemical containers.
4. **Before leaving or servicing machine:**
  - Stop on level surface.
  - Turn off machine.

5. **When servicing machine:**
  - Avoid moving parts. Do not wear loose jackets, shirts, or sleeves.
  - Block machine tires before jacking machine up.
  - Use hoist or jack of adequate capacity to lift machine.
  - Disconnect battery connections before working on machine.
  - Wear protective gloves when handling batteries or battery cables.
  - Avoid contact with battery acid.
  - Use manufacturer supplied or approved replacement parts.

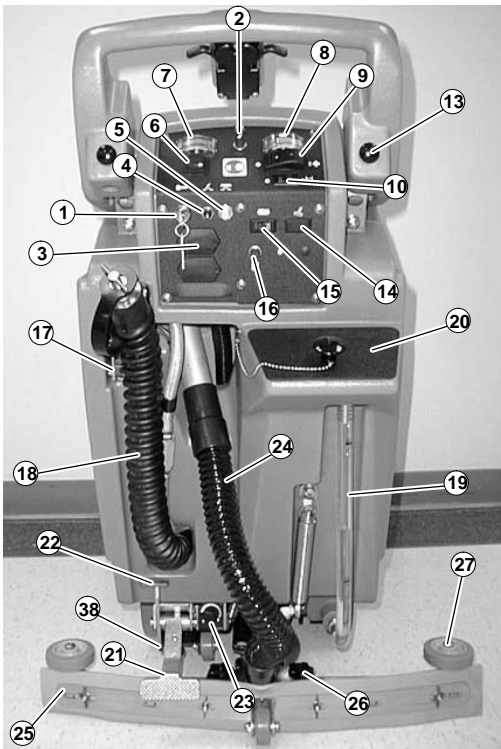
 **WARNING: Batteries emit hydrogen gas. Explosion or fire can result. Keep sparks and open flame away. Keep battery compartment open when charging.**

 **WARNING: Flammable materials can cause an explosion or fire. Do not use flammable materials in tank(s).**

 **WARNING: Flammable materials or reactive metals can cause explosion or fire. Do not pick up.**









# OPERATION

## MACHINE COMPONENTS



- |  |   |  |
|--|---|--|
| <ul style="list-style-type: none"> <li>1. Key Switch</li> <li>2. Power ON/OFF Indicator Light</li> <li>3. Hour Meter (Opt.)</li> <li>4. Main Circuit Breaker</li> <li>5. Brush Circuit Breaker</li> <li>6. Brush Release Button</li> <li>7. Brush Pressure Meter</li> <li>8. Battery Meter</li> <li>9. Vacuum ON/OFF Switch</li> <li>10. Solution ON/OFF Switch</li> <li>11. Squeegee Lift Knob</li> <li>12. Control Handle</li> <li>13. Control Handle Height Adjustment Knobs</li> </ul> | <ul style="list-style-type: none"> <li>14. Wand Kit ON/OFF Switch (Opt.)</li> <li>15. ES ON/OFF Switch (ES™ Model)</li> <li>16. Pump On Light (ES™ Model)</li> <li>17. Charger Plug</li> <li>18. Recovery Tank Drain Hose</li> <li>19. Solution Tank Drain Hose With Level Indicator</li> <li>20. Solution Fill Port Cover</li> <li>21. Scrub Head Lift Pedal</li> <li>22. Scrub Head Release Lift Pedal</li> <li>23. Solution Flow Adjustment Knob</li> <li>24. Squeegee Vacuum Hose</li> <li>25. Squeegee Assembly</li> <li>26. Squeegee Thumb Knobs</li> <li>27. Wall Rollers</li> </ul> | <ul style="list-style-type: none"> <li>28. Brush Trigger</li> <li>29. Recovery Tank Lid</li> <li>30. Recovery Tank</li> <li>31. Battery Compartment Hood</li> <li>32. Scrub Head</li> <li>33. Scrub Head Skirt</li> <li>34. Transport Caster</li> <li>35. Main Wheels</li> <li>36. Wand Kit Solution Hose Coupler (Opt.)</li> <li>37. Solution Tank</li> <li>38. Pad Pressure Adjustment Knob</li> </ul> |
|--|---|--|

## CONTROL PANEL SYMBOLS

- |   |                            |   |                 |   |                                 |   |                              |
|---|----------------------------|---|-----------------|---|---------------------------------|---|------------------------------|
|  | Main Power Indicator Light |  | Vacuum Switch   |  | Brush Motor 35A Circuit Breaker |  | Battery Charge Meter         |
|  | Key Switch                 |  | Solution Switch |  | Main Power 20A Circuit Breaker  |  | Read Manual Before Operating |

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## MACHINE INSTALLATION

---

### UNCRATING MACHINE

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

To uncrate your machine, remove shipping straps and carefully lift or make a ramp to remove machine from pallet.

Raise scrub head to transport position before maneuvering machine. Step down firmly on scrub head lift pedal to raise (*Figure 1*).

**NOTE:** To prevent scrub head skirt damage, always keep machine in transport position when pad driver is not installed.



FIG. 1

**ATTENTION:** Do not roll machine off pallet, damage may occur.

Squeegee assembly is packaged with machine.

Batteries, battery charger, brush, pad driver and pads must be purchased separately.

**ATTENTION:** Battery installation must be accomplished **AFTER** removing machine from shipping pallet.

---

### INSTALLING BATTERIES

**⚠ WARNING:** Batteries emit hydrogen gas. Explosion or fire can result. Keep sparks and open flame away. Keep battery compartment open when charging.

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

### Battery Specifications:

Two 12 volt, deep cycle batteries. Consult with an Authorized Distributor for specific batteries. Maximum battery dimensions are 178mm (7 in) W x 330mm (13 in) L x 254mm (10 in) H.

1. Park machine on a level surface, turn off all switches, and remove key.
2. Remove battery hood to access battery compartment. Then remove metal battery tray and loose battery cable from compartment.
3. Disconnect vacuum hose from recovery tank snout. Carefully install bottom battery into compartment with battery posts positioned towards rear of machine (*Figure 2*).



FIG. 2

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

4. Connect red battery cable coming from machine to positive (+) post of bottom battery. Then connect black jumper cable to negative (-) post (*Figure 4*).
5. After connecting cables to bottom battery, carefully hang metal battery tray on studs located above bottom battery. Place top battery into tray with posts positioned towards rear of machine. Secure top battery with strap (*Figure 3*).



FIG. 3

# OPERATION

6. Connect black battery cable coming from machine to negative (-) post of top battery. Then connect opposite end of black jumper cable to positive (+) post (Figure 4).

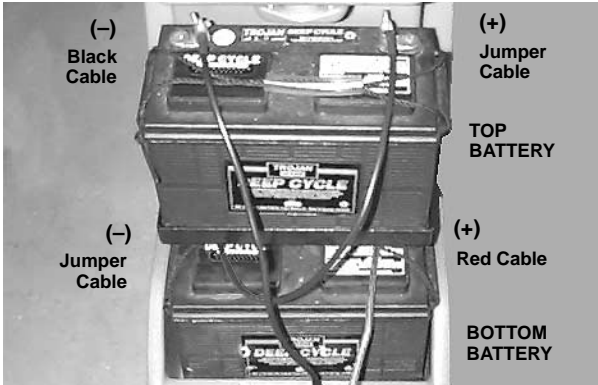


FIG. 4

7. Reconnect vacuum hose to recovery tank snout as shown (Figure 5).



FIG. 5

8. After batteries are properly installed, turn on key and vacuum switch and check battery meter charge level. Charge if necessary (See BATTERY CHARGING) (Figure 6).

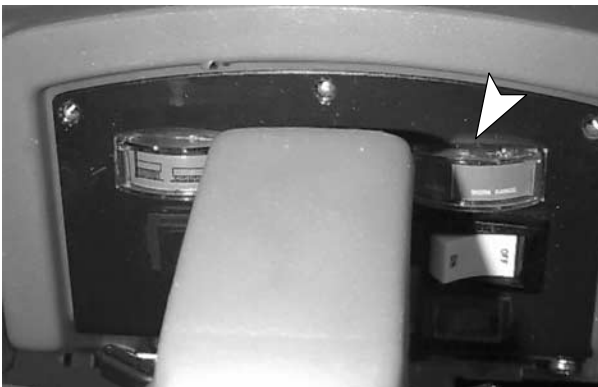


FIG. 6

## MACHINE SETUP

### ATTACHING SQUEEGEE ASSEMBLY

1. Raise squeegee mount bracket by moving squeegee lift knob to the left (Figure 7).



FIG. 7

2. Loosen two thumb knobs on squeegee assembly and slide squeegee into slots on squeegee mount bracket (Figure 8).

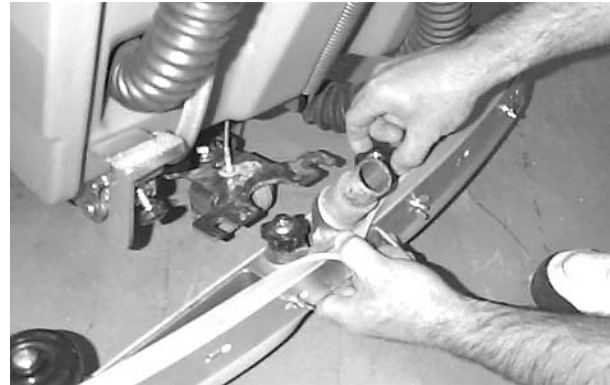


FIG. 8

3. Tighten thumb knobs securely.
4. Connect vacuum hose from machine to squeegee assembly (Figure 9).

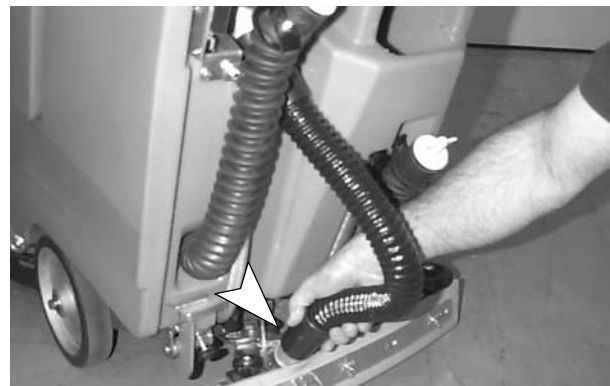


FIG. 9

## INSTALLING PAD DRIVER OR BRUSH

1. Raise scrub head to transport position. Step down firmly on scrub head lift pedal to raise (Figure 10).

**NOTE:** To prevent scrub head skirt damage, keep machine in transport position when pad driver or brush is not installed.



FIG. 10

2. Select a recommended pad or brush that best meets your cleaning needs.

**IMPORTANT:** Consult an authorized distributor to assist you in choosing the correct pad or brush for your specific cleaning need.

3. Attach pad to pad driver before mounting driver to motor hub. Secure pad with plastic centerlock ring (Figure 11).



FIG. 11

4. Turn on key switch (Figure 12).

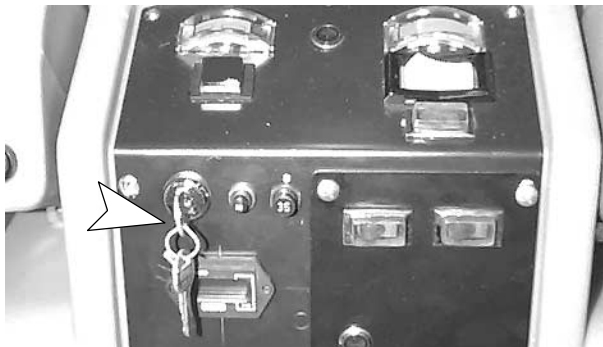


FIG. 12

5. Place pad driver or brush on floor in front of machine. While tilting the machine backwards, center the scrub head down over the pad driver (Figure 13).



FIG. 13

6. Release the brush lift pedal from transport position while holding scrub head off pad driver (Figure 14).



FIG. 14

7. Gradually lower scrub head down on pad driver or brush, you will feel motor hub fall into position. Pull the brush triggers until motor hub engages the driver/brush. If pad driver/brush doesn't engage within a few seconds, realign scrub head down over pad/brush and try again (Figure 15).

**NOTE:** Pad driver/brush will not engage motor hub with machine in transport position.



FIG. 15

**NOTE:** Before installing pad driver or brush make sure mounting surface is clean. A clean surface will ease pad driver removal later.

# OPERATION

## REMOVING PAD DRIVER OR BRUSH

1. Raise scrub head to transport position. Step down firmly on scrub head lift pedal to raise (*Figure 16*).



FIG. 16

2. Turn on key switch.
3. Tilt machine backwards.
4. While pressing the “brush release button”, pull and release the brush trigger quickly. The pad driver/brush will automatically spin off motor hub. If it doesn't release, repeat step (*Figure 17*).

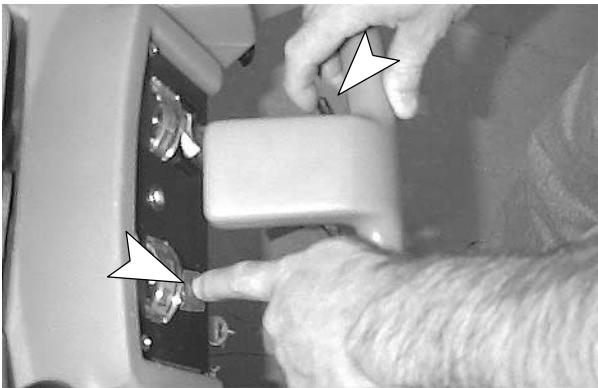


FIG. 17

**NOTE:** To prevent scrub head skirt damage, always keep machine in transport position when pad driver or brush is not installed.

**NOTE:** When changing just the pad it's easiest to remove pad driver from machine.

## FILLING SOLUTION TANK

1. Transport machine to filling station. Raise squeegee and scrub head when transporting.
2. Turn off key switch.
3. Remove solution tank fill port cover.
4. Fill solution tank with 28L (7.5 gal) of clean water, 60°C (140°F) maximum temperature. To fill with bucket, use a bucket with a spout (*Figure 18*).



FIG. 18

**NOTE:** If filling with a bucket be certain that bucket is clean. This will prevent possible solution line clogs.

5. Add cleaning chemical. See proper dilution ratio instructions on chemical container.
6. Replace solution tank fill port cover.

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

**⚠ WARNING: Flammable materials can cause an explosion or fire. Do not use flammable materials in tank(s).**

7. If machine is equipped with ES™ (Extended Scrub) Option, the recovery tank can be partially filled to extend scrub time.
  - a. Remove recovery tank lid and fill tank with 13L (3.5 gal) of clean water, 60°C (140°F) maximum temperature. Close lid.
  - b. Make sure ES™ switch is turned on when operating machine (*Figure 19*).



FIG. 19

- c. The ES™ light will glow when the ES™ pump is recycling.



## ADJUSTING CONTROL HANDLE HEIGHT

The control handle has three height settings to accommodate a comfortable operating height.

1. Locate two control handle height adjustments knobs on handle (*Figure 20*).
2. Pull both knobs and raise or lower handle, release knobs to lock (*Figure 20*).



FIG. 20

## MACHINE OPERATION

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

### PRE-OPERATION CHECKS

- Sweep and dust mop floor to remove particles and other debris.
- Check battery meter charge level to ensure batteries are fully charged (*See BATTERY CHARGING*).
- Check condition of pad or brush.
- Check condition of squeegee blades.

### SCRUBBING WITH MACHINE

1. Release brush lift pedal from transport position by stepping down on scrub head release pedal (*Figure 21*).



FIG. 21

2. Lower squeegee assembly by moving squeegee lift knob to the right (*Figure 22*).



FIG. 22

3. Turn on key, vacuum and solution switches (*Figure 23*).

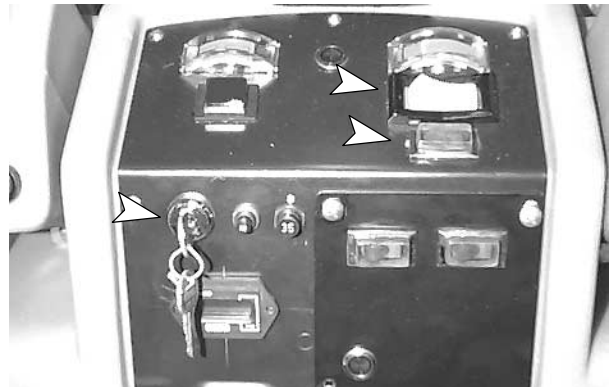


FIG. 23

**NOTE:** The solution flow and brush will not start until brush triggers are pulled.

4. Pull brush triggers and begin walking with machine. The brush will propel the machine forward allowing little effort maneuvering the machine (*Figure 24*).



FIG. 24

**NOTE:** On rough surfaces it may be necessary to reduce brush pressure.

5. Check the brush meter pressure when scrubbing. Only operate machine in green zone. Never operate machine in red zone (Figure 25).

**NOTE:** If brush pressure adjustment is required, see MACHINE ADJUSTMENTS.



FIG. 25

**ATTENTION:** To prevent possible floor damage and brush circuit breakers from tripping, do not operate brush pressure meter in red zone.

6. To operate machine in reverse, simply pull the machine backwards while pulling triggers.
7. To stop scrubbing, release brush triggers, turn off all switches, and raise scrub head and squeegee.

## OPERATING EXTENDED SCRUB OPTION

ES™ (Extended Scrub) Option allows extended scrub time by reusing recovered water. The recovered water is filtered and recycled back into the solution tank for reuse.

1. Fill recovery tank with 13L (3.5 gal) when filling solution tank for operation.
2. Turn on ES™ switch. During operation the ES™ pump will automatically start recycling when ES™ pump on light turns on (Figure 26).

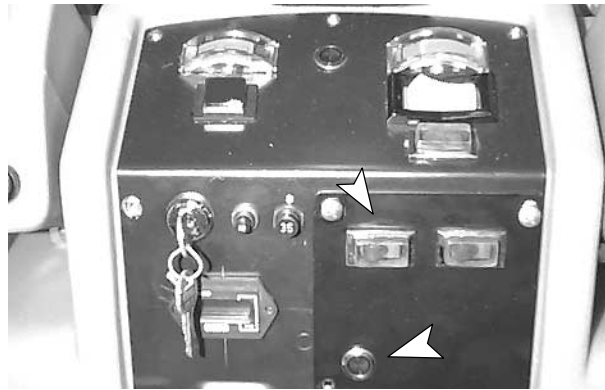


FIG. 26

3. When finished scrubbing, drain and rinse solution tank and clean ES™ filter (See DRAINING TANKS).

## WHILE OPERATING MACHINE

**⚠ WARNING:** Flammable materials or reactive metals can cause explosion or fire. Do not pick up.

1. Observe amount of solution flow on floor. If solution flow adjustment is needed, see MACHINE ADJUSTMENTS.
2. Periodically check for foam buildup in recovery tank (look through clear lid). If excessive foam is developing, pour a recommended foam control solution into recovery tank.

**ATTENTION:** Do not allow foam or water to enter ball float screen, vacuum motor damage will result. Foam will not activate ball float. Vacuum motor damage due to foam or water is not covered by warranty.

3. Always operate with caution when scrubbing around walls or obstacles.
4. If squeegee leaves streaks, raise and wipe blades with a cloth. Pre-sweep area to prevent streaking. If squeegee adjustment is necessary, see MACHINE ADJUSTMENTS.
5. Overlap each pass by 50mm (2 in).
6. Change or turn over pads when dirty.
7. Stay clear of floor obstructions, such as electrical plates or grates, they will destroy pads.
8. During brief stops, you do not have to turn off any switches, the brushes and solution flow will automatically stop when triggers are released.
9. Periodically check battery meter discharge level. When needle drops to the red zone, recharge batteries.

**ATTENTION:** Do not continue to operate machine when battery meter is in the red zone, battery damage will result.

10. On last scrubbing pass, turn off solution switch just prior to stopping machine. This will allow total recovery pick up.
11. When solution tank runs dry, drain recovery tank. (See *DRAINING TANKS*).

## CIRCUIT BREAKERS

The machine is equipped with two circuit breakers to protect machine from damage. The Main (20amp) and Brush (35amp) circuit breakers.

If circuit breakers should trip, the breakers will not reset immediately upon tripping. Determine reason why breaker tripped, wait a few minutes and reset (See *TROUBLE SHOOTING*).

Brush motor circuit breakers will trip due to excessive overload on pad. Reduce pad pressure or replace pad if breaker trips. Circuit breakers are located on control console (Figure 27).

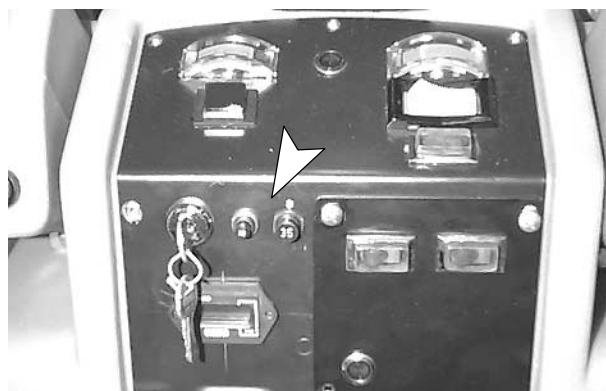


FIG. 27

## MACHINE ADJUSTMENTS

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

### ADJUSTING SOLUTION FLOW

To increase or decrease the maximum solution flow, turn adjustment knob. Adjustment knob is located near brush lift pedal (Figure 28).

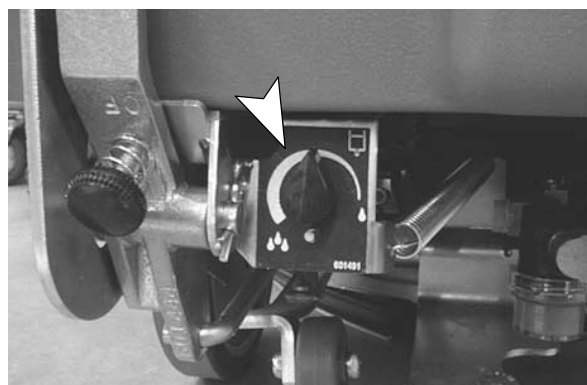


FIG. 28

### ADJUSTING PAD PRESSURE

**NOTE:** On rough surfaces it may be necessary to reduce brush pressure.

To adjust pad pressure, turn adjustment knob clockwise to decrease or counterclockwise to increase pad pressure. Adjustment knob is located below brush lift pedal (Figure 29).

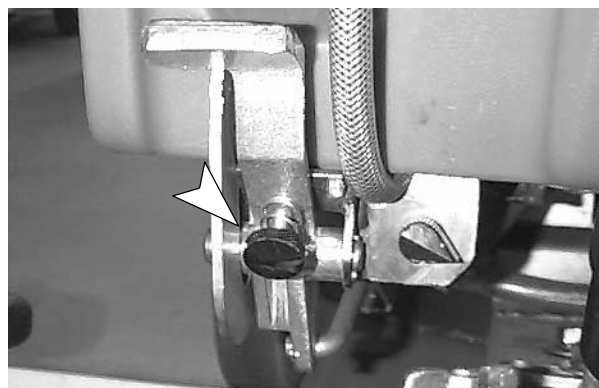


FIG. 29

### ADJUSTING SQUEEGEE LIFT CABLE

To adjust squeegee lift cable, loosen lock nuts and turn adjustment stem on squeegee cable. Retighten lock nuts after adjusting (Figure 30).

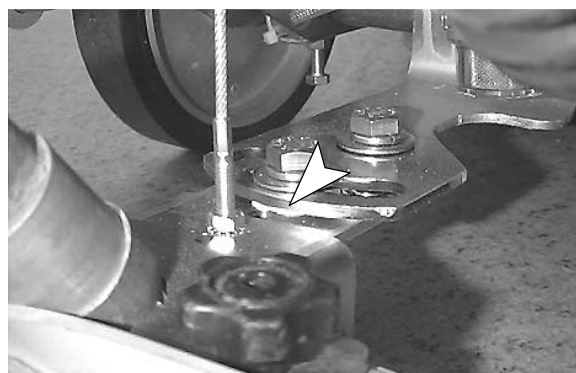


FIG. 30

# OPERATION

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## DRAINING TANKS

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### When to drain recovery tank:

- After each use.
- Between solution tank fill ups.
- When solution flow stops during operation.
- When ball float screen is activated.
- When squeegee starts trailing water.

**NOTE:** If using the ES™ recycling system, be certain to drain and rinse both tanks after each use.

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

---

### DRAINING RECOVERY TANK

**ATTENTION:** Drain recovery tank when refilling solution tank. Foam or water may enter ball float screen and damage vacuum motor. Vacuum motor damage due to foam or water is not covered by warranty.

1. Push machine to floor drain and turn off all switches. Remove left side drain hose from holder, position hose over drain, twist loose, and remove drain hose plug (Figure 31).



FIG. 31

**NOTE:** If using a bucket to drain machine, do not use same bucket for filling, or be certain to rinse it out before refilling machine.

2. Open clear recovery tank lid and rinse tank, ball float screen and ES™ filter if equipped. Remove and rinse ball float screen and ES™ filter if they are excessively dirty. Replace screen and filter securely.
3. Replace drain hose plug securely when empty.

---

### DRAINING SOLUTION TANK

To drain unused cleaning solution or recycled solution from solution tank, follow steps below:

1. Remove clear drain hose from hose barb, position hose over drain (Figure 32).



FIG. 32

2. Rinse out solution tank and solution flow system with clean water to prevent clogging due to chemical buildup.
3. Replace drain hose securely on hose barb when empty.

## BATTERY CHARGING

The following charging instructions are intended for the 24V charger supplied with the machine. Only use a charger with the following specifications to prevent battery damage.

### CHARGER SPECIFICATIONS:

- OUTPUT VOLTAGE - 24 VOLTS
- OUTPUT CURRENT - 25 AMPS MAXIMUM
- AUTOMATIC SHUTOFF CIRCUIT
- FOR DEEP CYCLE BATTERY CHARGING

**NOTE:** For optimum machine operation, keep batteries charged at all times. Never let batteries set in a discharge condition.

**⚠ WARNING:** Batteries emit hydrogen gas. Explosion or fire can result. Keep sparks and open flame away. Keep battery compartment open when charging.

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

1. Transport machine to a flat, dry surface in a well-ventilated area for charging.
2. Turn off all switches and key.

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

3. Remove battery compartment hood.
4. Check electrolyte level (A) in each battery cell. Do not charge batteries unless electrolyte is slightly covering battery plates (B). If needed, add just enough distilled water to slightly cover plates. DO NOT overfill. Batteries can overflow during charging due to expansion. Replace cell caps securely and wipe off the top of batteries with a clean cloth.

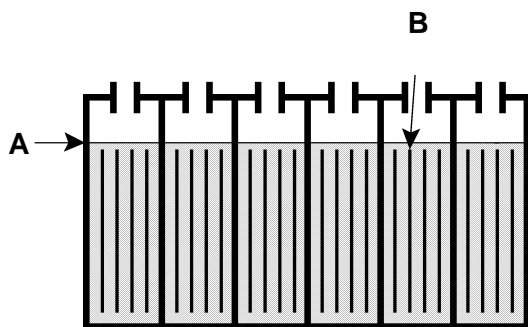


FIG. 33

5. With charger's power supply cord unplugged, connect charger to machine (Figure 34).

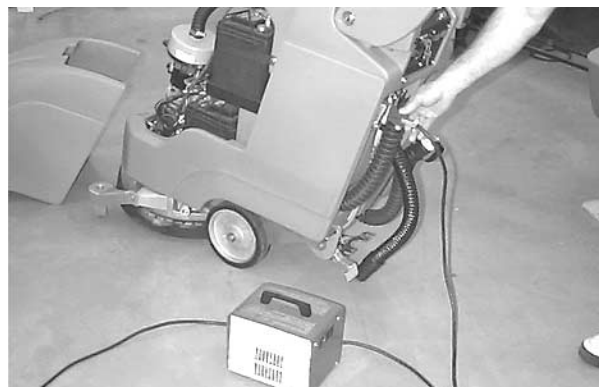


FIG. 34

**NOTE:** Once charger is connected to machine, machine becomes inoperable.

6. Then plug charger's power supply cord into a grounded wall outlet (Figure 35).

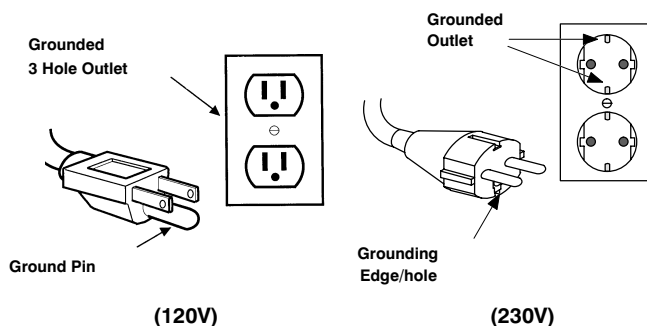


FIG. 35

7. Charger will automatically begin charging and automatically shut off when fully charged.
8. After charger has turned off, unplug charger from machine then disconnect charger from wall outlet.
9. Recheck battery electrolyte level after charging. If needed, add distilled water to bring level to bottom of sight tubes. Replace cell caps securely and wipe off the top of batteries with a clean cloth.

# OPERATION

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## MACHINE MAINTENANCE

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

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

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

**ATTENTION: Contact an Authorized Service Center for machine repairs. Machine repairs performed by other than an authorized person will void your warranty.**

**NOTE: If equipped with optional hour meter, record machine hours when service was performed.**

## DAILY MAINTENANCE (Every 4 Hours of Operation)

1. Remove and clean pad or brush. Never use soiled pads when cleaning. Replace pad when it becomes worn or loaded with residue.
2. Drain and rinse both tanks thoroughly.
3. Open clear lid, remove and clean the ball float screen. Replace screen securely (*Figure 36*).



FIG. 36

4. Open clear lid, remove and clean ES™ filter, if equipped. Replace filter securely.
5. Raise squeegee and wipe it off with a dry cloth. Store squeegee in the up position to prevent squeegee damage.
6. Clean machine housing with a nonabrasive, nonsolvent cleaner.
7. Recharge batteries if needed.

## WEEKLY MAINTENANCE (Every 20 Hours of Operation)

1. Flush out tanks and solution lines. Pour 750mL (24 oz) of an acetic acid solution with 11.3L (3 gal) of hot water into solution tank. Over a floor drain, activate solution flow briefly to fill solution line. Shut off power and let machine set over night. Rinse with clean water afterwards.
2. Remove inline strainer filter and rinse out. Before removing filter, be certain solution tank is empty. Filter is located under machine at rear (*Figure 36*).



FIG. 37

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 Operation)

1. Lubricate wheel grease fittings with a water resistant grease.
2. Lubricate all linkage pivot points with silicone spray then coat with a water resistant grease to maintain a smooth operation.
3. Check machine for water leaks and loose nuts and bolts.

## QUARTERLY MAINTENANCE (Every 250 Hours of Operation)

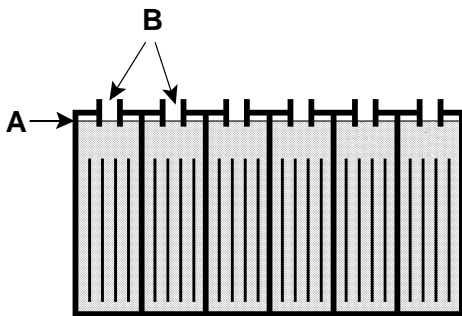
Check vacuum and brush motors for carbon brush wear, replace brushes if worn to a length of 10 mm (0.38 in) or less.

**BATTERY MAINTENANCE**

**⚠ WARNING: Batteries emit hydrogen gas. Explosion or fire can result. Keep sparks and open flame away. Keep battery compartment open when charging.**

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

1. Always follow proper charging instructions (See *BATTERY CHARGING*).
2. Each week **after** charging, check fluid level (A) in each battery cell of all batteries. The level should reach bottom of sight tubes (B). If needed, add just enough distilled water to reach bottom of sight tubes. **DO NOT** overfill (*Figure 38*).



**FIG. 38**

3. Keep battery tops and terminals clean and dry. To clean batteries:
  - a. Mix a strong solution of baking soda and water.
  - b. Brush solution sparingly over battery tops, terminal and cable connectors.

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

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

**TRANSPORTING MACHINE**

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

1. Remove squeegee from machine and raise scrub head. Leave pad or brush installed.
2. Load machine using a recommended loading ramp.
3. Position front of machine up against front of trailer of truck. Once machine is positioned, lower brush head.
4. Place a block behind the wheels.
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.

**STORING MACHINE**

1. Before storing machine, be certain to rinse tanks and drain machine of all water.
2. Store machine in a dry area with squeegee removed and scrub head in the raised position.
3. Remove recovery tank lid to promote air circulation.

**ATTENTION: If storing machine in freezing temperatures, be certain to drain machine of all water. Damage due to freezing temperatures is not covered by warranty.**

**ATTENTION: Do not store outdoors and avoid getting wet.**

**RECOMMENDED STOCK ITEMS**

Refer to Standard Parts 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	701103	ASM.,STANDPIPE	1
2	180613	●FLOAT, SHUTOFF	1
3	230187	NIPPLE	1
4	101714	●GASKET	1
5	210240	NUT, FLANGED	1

# OPERATION

## TROUBLE SHOOTING

PROBLEM	CAUSE	SOLUTION
No power, nothing runs.	Faulty key switch.	Contact Service Center.
	Batteries need charging.	See CHARGING BATTERIES.
	Faulty battery(s).	Replace battery(s).
	Loose battery cable.	Tighten loose cable.
	MAIN circuit breaker has tripped.	Determine cause and reset circuit breaker button.
Brush motor does not run.	Faulty brush trigger switch.	Contact Service Center.
	Brush triggers not pulled.	Pull brush triggers.
	Brush circuit breaker has tripped.	Clean or replace pad and reset brush circuit breaker button.
	Faulty brush motor or wiring.	Contact Service Center.
	Worn carbon brushes.	Contact Service Center.
	Faulty brush solenoid.	Contact Service Center.
Vacuum motor does not run.	Faulty vacuum switch.	Contact Service Center.
	Main circuit breaker has tripped.	Remove obstruction and reset circuit breaker button.
	Faulty vacuum motor or wiring.	Contact Service Center.
	Worn carbon brushes.	Contact Service Center.
Little or no solution flow.	Solution switch is not activated.	Turn on solution switch.
	Solution line or solution tank filter is clogged.	Remove hose and blow compressed air through it. Flush solution tank after each use.
	Solution valve or solenoid is clogged.	Remove valve or solenoid and clean. Do not scratch inside of valve.
	Faulty solution switch or solenoid.	Contact Service Center.
	Solution flow adjustment knob needs adjusting.	Turn solution flow adjustment knob to desired setting.
	ES™ Option: ES™ filter is clogged.	Remove and clean ES™ filter.
	ES™ Option: Faulty ES™ pump.	Contact Service Center.
Short run time.	Batteries not fully charged.	Charge batteries.
	Bad cell in one or more batteries.	Replace battery.
	Batteries need maintenance.	See BATTERY MAINTENANCE.
	Faulty charger.	Repair or replace battery charger.
Poor water pick up.	Recovery tank is full and ball float has been activated.	Empty recovery tank.
	Ball float screen inside recovery tank is clogged.	Remove screen and clean.
	Clogged squeegee.	Clean squeegee.
	Worn squeegee blades.	Replace squeegee blades.
	Loose squeegee thumbscrews.	Tighten thumbscrews.



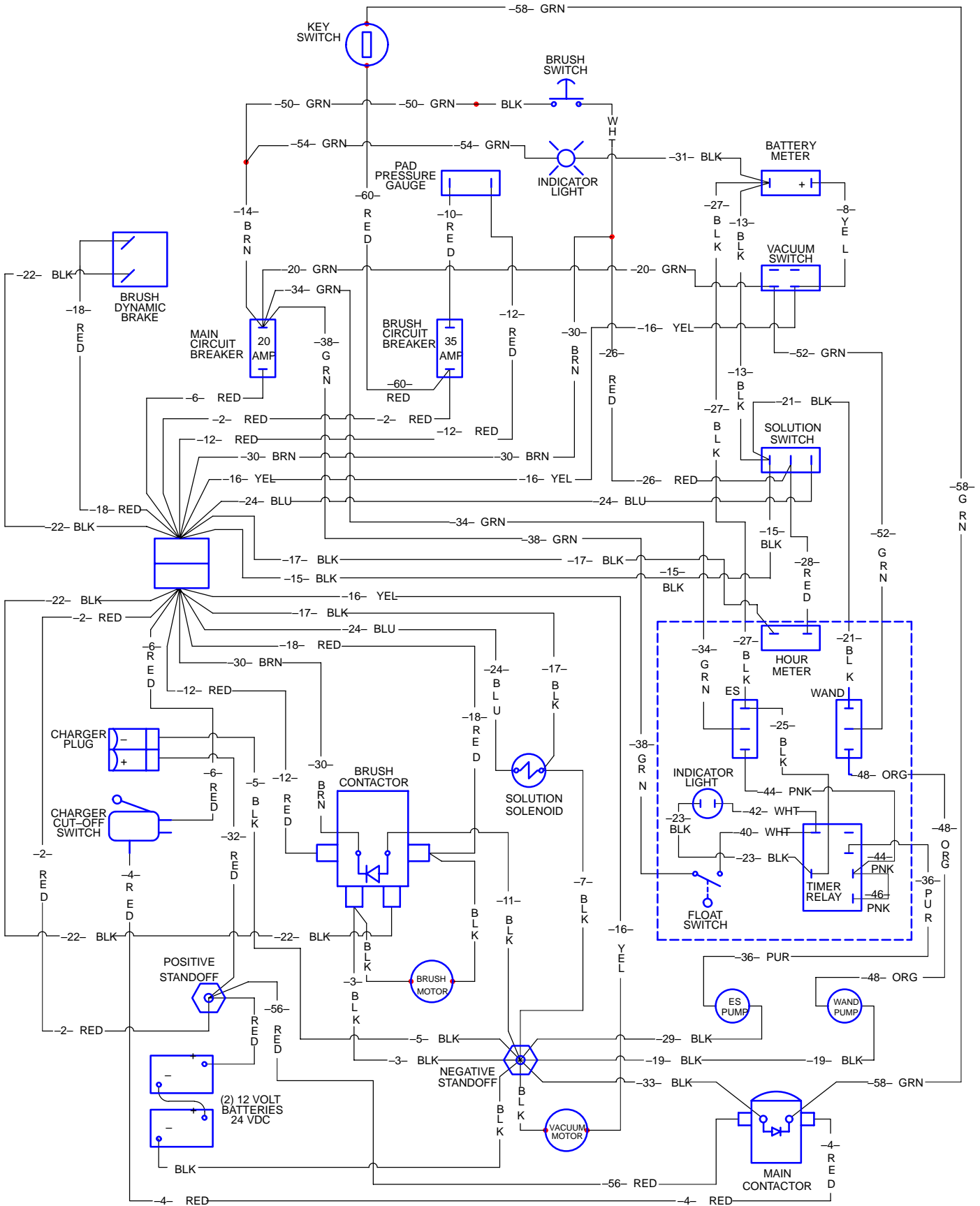
**TROUBLE SHOOTING – Continued**

<b>PROBLEM</b>	<b>CAUSE</b>	<b>SOLUTION</b>
Poor water pick up. – <i>continued</i>	Vacuum hose connections are loose or hose has a hole.	Push hose cuffs firmly on connections. Replace hose if damaged.
	Clogged vacuum hose.	Remove clogged debris.
	Recovery tank inlet hole is obstructed.	Empty recovery tank and tilt tank sideways to access inlet hole, remove obstruction.
	Defective tank gasket.	Replace gasket.
	Loose drain hose plug.	Tighten drain plug.
	Recovery tank lid not in place.	Properly position lid.
	Loose vacuum motor.	Contact Service Center.
	Battery charge level is low.	Charge batteries. Do not run machine when battery meter is in the red zone.

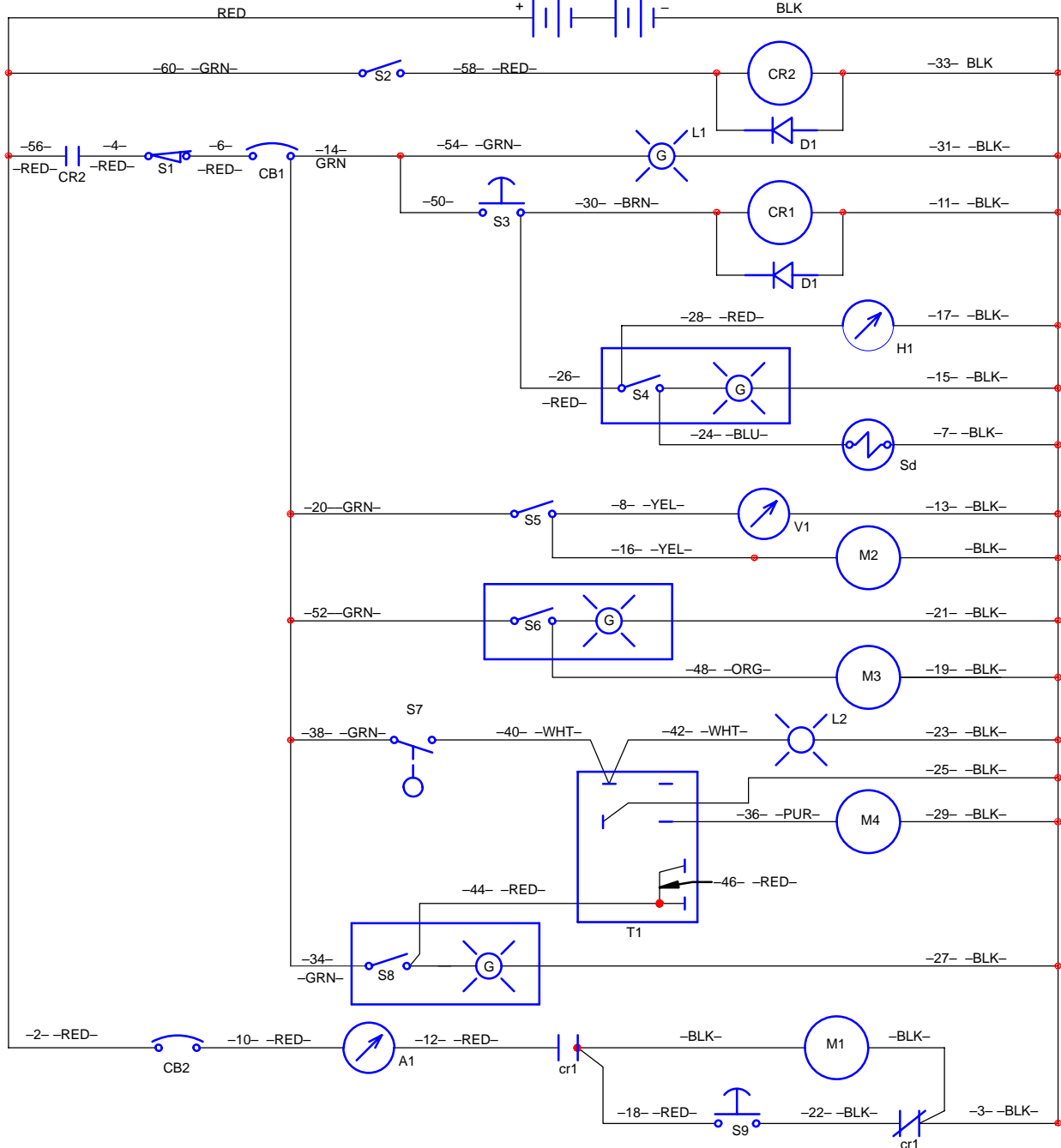
**SPECIFICATIONS**

<b>MODEL</b>	<b>Speed Scrub™ 1701 Plus</b>
LENGTH	990 mm (39 in)
WIDTH	495 mm (19.5 in)
HEIGHT	910 mm (36 in)
WEIGHT	71Kg (158 lbs), 131Kg (290 lbs) with batteries
RECOVERY TANK CAPACITY	28.5L (7.5 gal)
SOLUTION TANK CAPACITY	28.5L (7.5 gal)
ES OPTION SOLUTION FILL CAPACITY	42.5L (11.25 gal)
DRIVE SYSTEM	Brush driven
CLEANING RATE	1375m <sup>2</sup> per hour (14,800 sq. ft.)
CLEANING PATH WIDTH	430 mm (17 in)
PAD DIAMETER	430 mm (17 in)
PAD PRESSURE	Variable 30–44Kg/65–95lbs
SQUEEGEE WIDTH	670 mm (26.5 in)
TOTAL POWER COMSUMPTION	35A nominal
BRUSH MOTOR	.625 h.p., 185 rpm, 24V, 33A
VACUUM MOTOR	.75 h.p., 2–stage 5.7", 24V, 15A, 560W
WATER LIFT	1140 mm (45 in)
BATTERIES	2–12V, 130AH
RUN TIME PER CHARGE	Up to 3 hours
DECIBEL RATING AT OPERATOR'S EAR, INDOORS ON TILE.	69.5dB(A)

## WIRING DIAGRAM



## LADDER DIAGRAM



### REF LEGEND

RED= Red  
 BLK= Black  
 GRN= Green  
 WHT= White  
 ORG= Orange  
 BLU= Blue  
 BRN= Brown  
 PUR= Purple  
 YEL= Yellow  
 A1= Ammeter  
 CR1 = Contactor Coil  
 CR2 = Contactor Coil

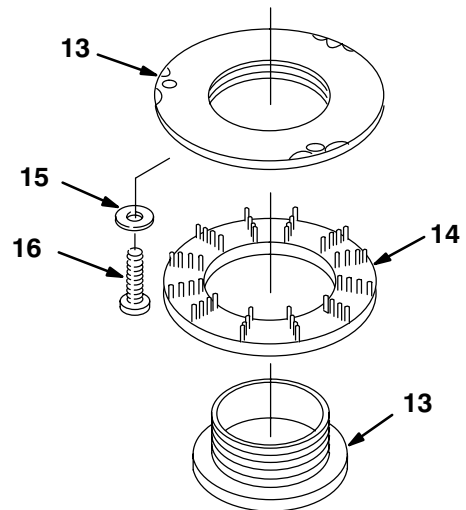
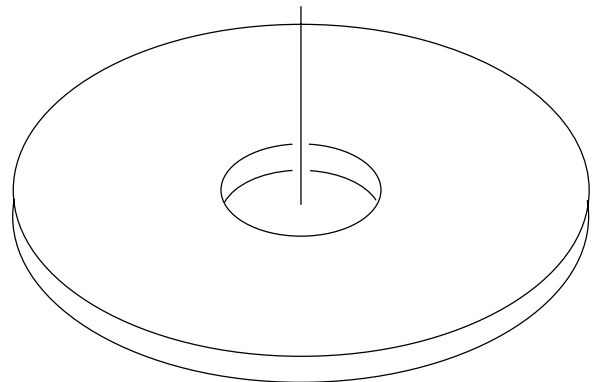
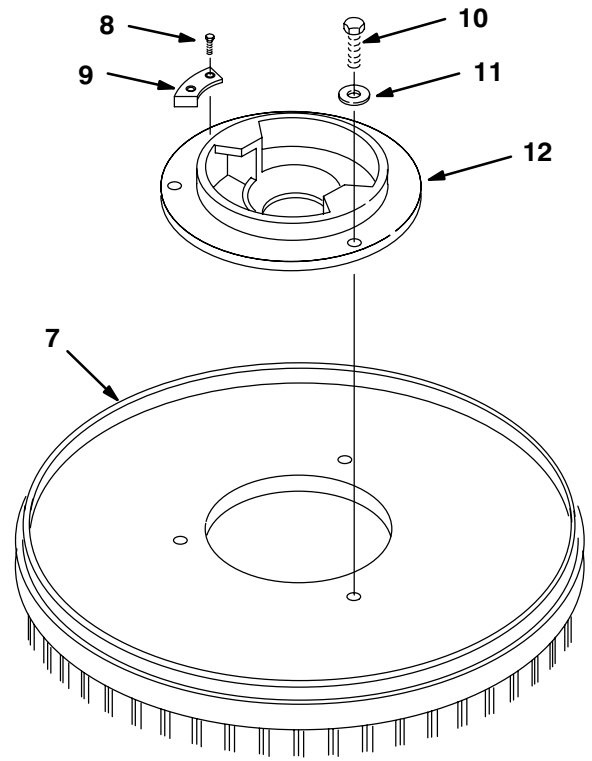
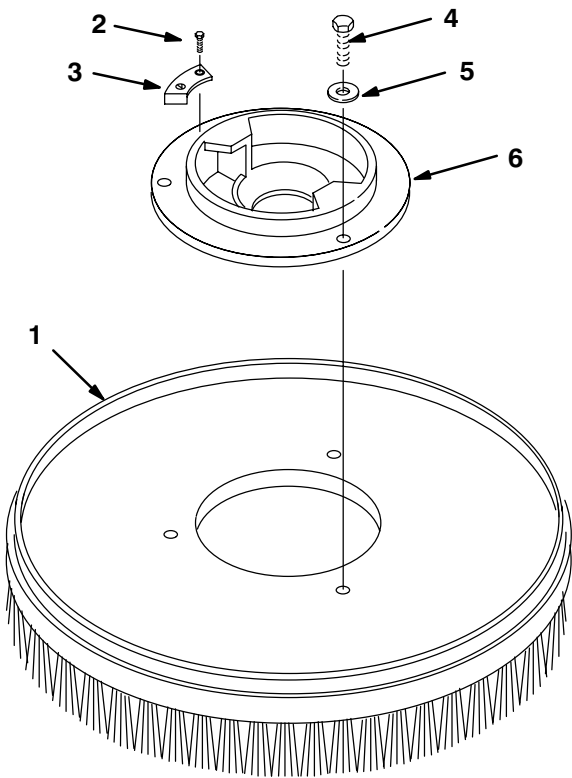
### REF LEGEND

cr1= Contactor Relay  
 CB1 = Circuit Bkr. Main 20A  
 CB2 = Breaker, Circuit 35A  
 D1= Diode  
 H1= Hourmeter  
 L1= Light, Indicator  
 L2= Light, Full Tank  
 M1= Motor, Brush  
 M2= Motor, Vacuum  
 M3= Motor, Wand  
 M4= Motor, Recycle  
 S1= Switch, Chg Cut-off

### REF LEGEND

S2= Switch, Key  
 S3= Switch, Brush  
 S4= Switch, Solution  
 S5= Switch, Vacuum  
 S6= Switch, Wand  
 S7= Switch, Float  
 S8= Switch, Recycle  
 S9= Switch, Brush Off  
 Sd= Valve, Solenoid  
 T1= Relay, Timer  
 V1= Voltmeter

REPLACEMENT BRUSHES AND PAD DRIVER GROUP



## REPLACEMENT BRUSHES AND PAD DRIVER GROUP

REF	PART #	DESCRIPTION	QTY.
▽1	370000	●ASM.,BRUSH 17" NYLON	1
	370002	●ASM., BRUSH 17" GRIT	1
	370007	●ASM., BRUSH 17" POLY	1
▲2	603439	SCREW, #6X5/16	4
▲3	603438	PLATE, WEAR	2
▲4	578580	SCREW, M06X35MM	3
▲5	140000	WASHER, FLAT	3
▲6	601453	●PLATE, CLUTCH	1

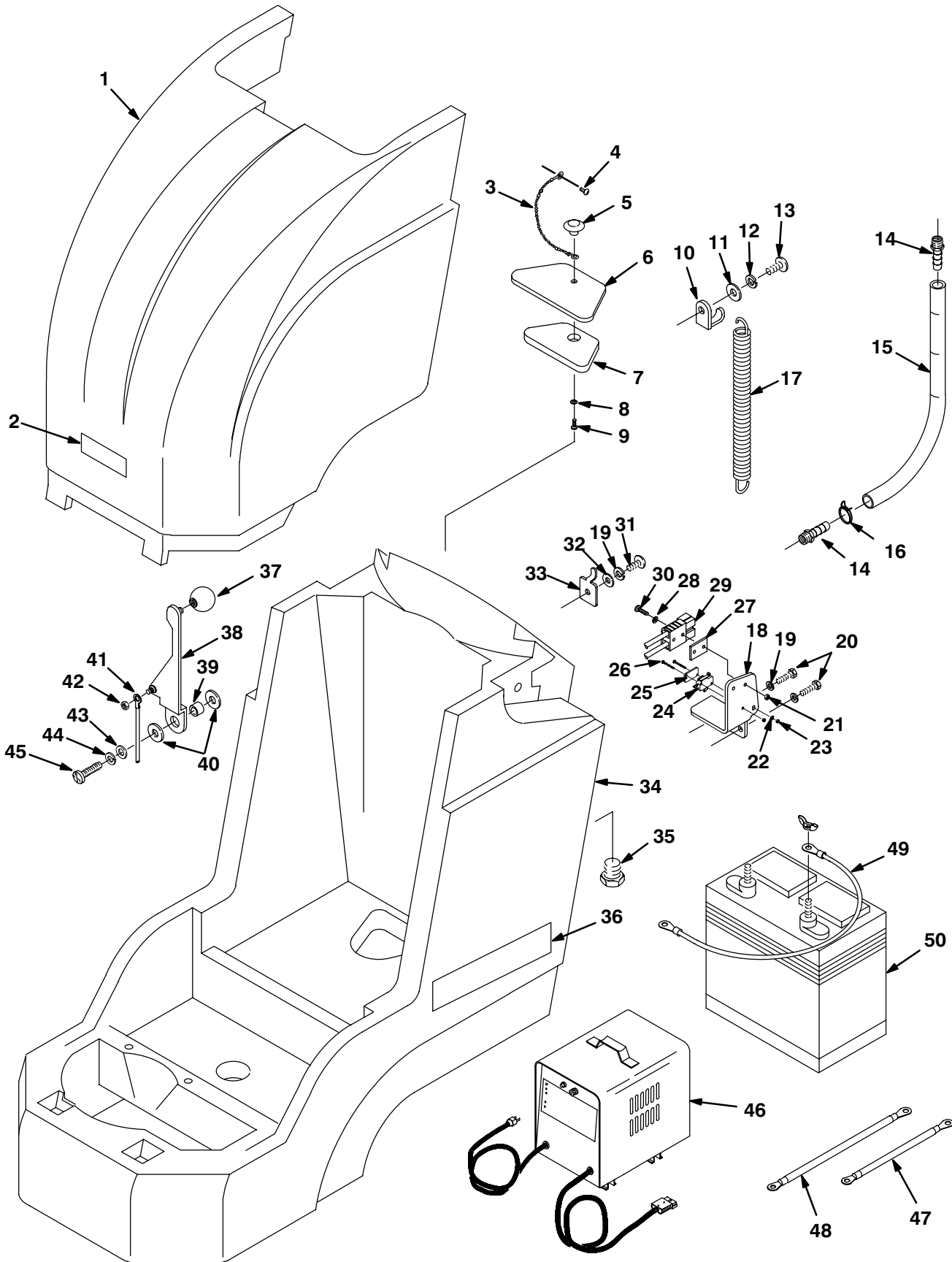
▽ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

● RECOMMENDED STOCK ITEMS

REF	PART #	DESCRIPTION	QTY.
▽7	606227	●ASM., PAD DRIVER 17"	1
▲8	603439	SCREW, #6X5/16	4
▲9	603438	PLATE, WEAR	2
▲10	578580	SCREW, M06X35MM	3
▲11	140000	WASHER, FLAT	3
▲12	601453	●PLATE, CLUTCH	1
▲13	630473	●CENTERLOCK	1
▲14	630472	RETAINER, BRUSH PAD	1
▲15	140007	WASHER, FLAT	3
▲16	200070351	SCREW, M4X.7X25MM	3

SOLUTION TANK GROUP



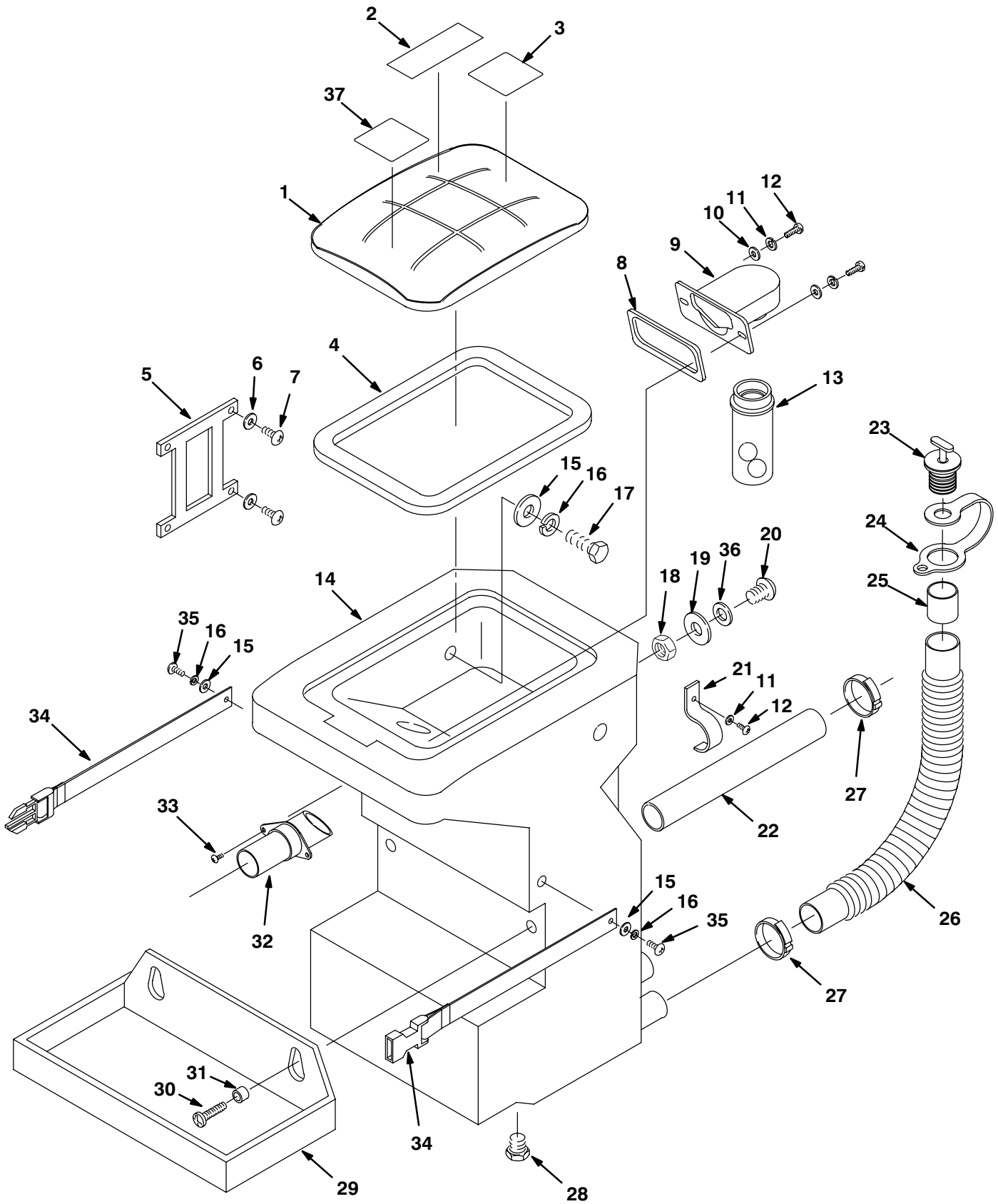
## SOLUTION TANK GROUP

REF	PART #	DESCRIPTION	QTY.
1	608358	COVER, BATTERY, GREEN	1
2	608188	DECAL, NOBLES LOGO	1
3	230513	CHAIN ASSEMBLY	1
4	140825	SCREW, #6X1/2	1
5	578301	KNOB, FILL COVER	1
6	610108	COVER, REAR FILL	1
7	610109	GASKET, COVER	1
8	140018	WASHER, #10 INT	1
9	578201000	SCREW 10-32X.5	1
10	610204	BRACKET, SPRING	1
11	140027	WASHER, FLAT	1
12	140015	WASHER, LOCK	1
13	630425	SCREW, M8X1.25X20	1
14	14884	FITTING 3/8MX1/2H BARB	1
15	610256	HOSE, DRAIN W/LEVEL INDICATOR	1
16	607776	CLAMP, HOSE 2 WIRE BLK	1
17	140423	SPRING, BRUSH PRESSURE	1
18	601466	BRACKET, CHARGE PLUG	1
19	140016	WASHER, LOCK	3
20	608322	SCREW, M6X1.0X16	2
21	140539	NUT	2
22	200301012	WASHER, FLAT	1
23	579211	NUT	2
24	600437	●SWITCH, ROLLER 15A	1
25	601359	PLATE, SWITCH BCKNG	1
26	578403000	SCREW, M3X.5X20	2

REF	PART #	DESCRIPTION	QTY.
27	603331	SPACER, CHARGER PLUG	1
28	140019	WASHER, LOCK	2
29	605387	●CONNECTOR, RED 50A WO/CONTACTS	1
30	140829	SCREW, 6-32X1	2
31	578187000	SCREW, M6X1.0X12	1
32	140000	WASHER, FLAT	1
33	601460	CLIP, DRAIN HOSE	1
34	610093	TANK, SOLUTION, GREEN	1
35	630146	PLUG	1
36	608361	DECAL, SPEED SCRUB 1701 PLUS	2
37	601425	KNOB, SQ. LEVER	1
38	601426	LEVER, SQUEEGEE	1
39	601427	SPACER	1
40	601437	WASHER, NYLON	2
41	601428	CABLE, SQUEEGEE	1
42	601476	NUT	1
43	140055	WASHER, FLAT	1
44	140015	WASHER, LOCK	1
45	630425	SCREW, M8X20MM	1
46	130948	CHARGER, 115V/24VDC 15A	1
47	603207	●CABLE, BATTERY, #6X12" RED	1
48	603208	●CABLE, BATTERY, #6X24" BLACK	1
49	602871	●CABLE, JUMPER	1
50	130869	BATTERY, 12V 130AH	2

● RECOMMENDED STOCK ITEMS

RECOVERY TANK GROUP





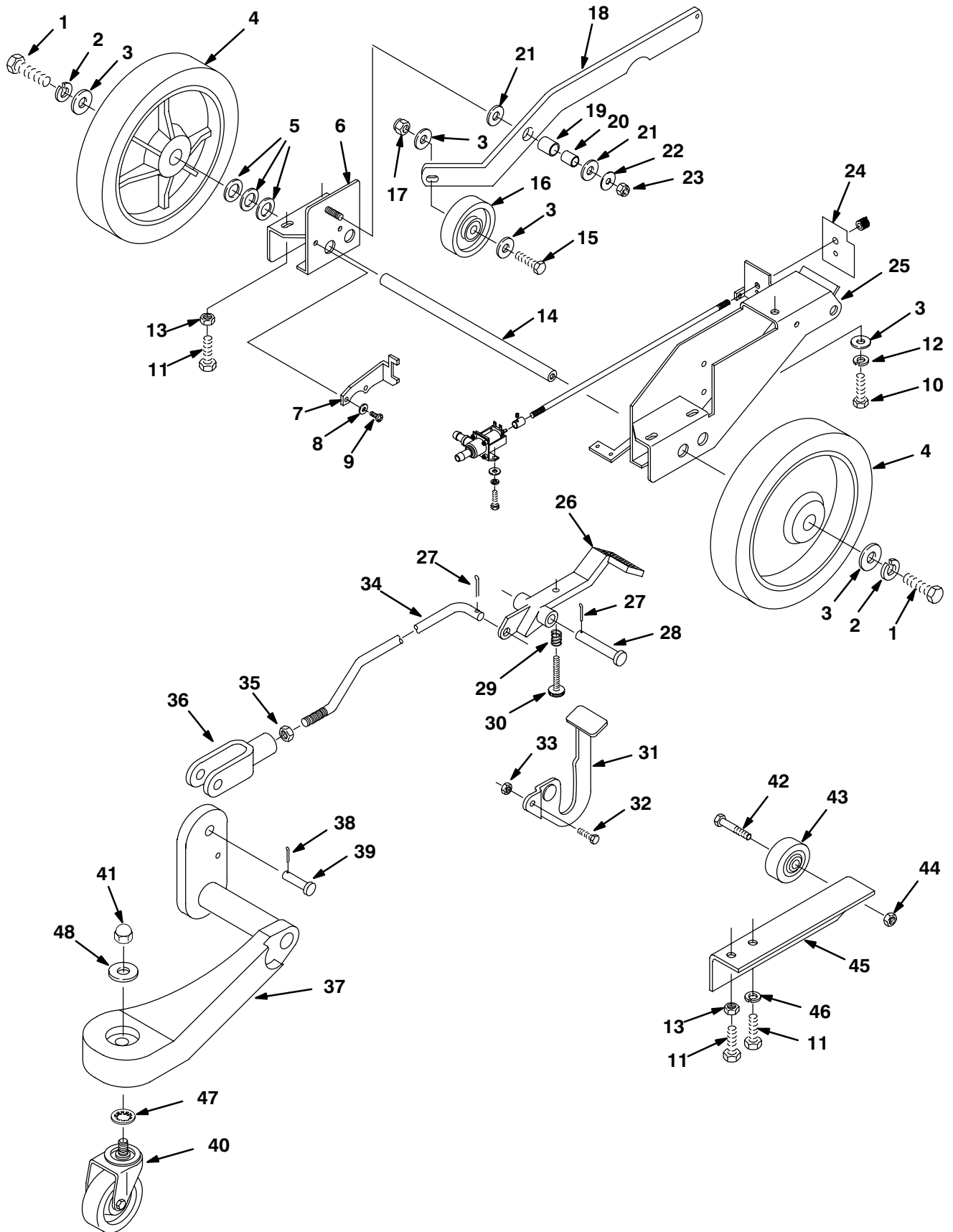
## RECOVERY TANK GROUP

REF	PART #	DESCRIPTION	QTY.
1	630055	●COVER, TANK	1
2	630422	DECAL, BATT. CHARGE	1
3	630420	DECAL, FLAMMABLE MAT'L	1
4	630367	●GASKET, REC. TANK	1
5	630056	STRAP, TANK COVER	1
6	630390	WASHER, FLAT	4
7	3701.6	SCREW, #6X3/8	4
8	630255	GASKET, FLOAT MOUNT	1
9	630053	MOUNT, FLOAT CAGE	1
10	140000	WASHER, FLAT	2
11	140016	WASHER, LOCK	3
12	600385	SCREW, M06X16MM	3
13	630052	●FLOAT CAGE W/BALL	1
14	608356	TANK, RECOVERY, GREEN	1
15	140027	WASHER, FLAT	4
16	140015	WASHER, LOCK	4
17	200607491	SCREW, M08X25MM	2
18	603418	NUT	1

● RECOMMENDED STOCK ITEMS

REF	PART #	DESCRIPTION	QTY.
19	605147	WASHER, RUBBER	1
20	609709	SCREW, 5/8-11X1"	1
21	601462	CLAMP	1
22	240177	TUBE, BASE INLET	1
23	621324	PLUG, EXPANSION	1
24	578441	STRAP, DRAIN HOSE	1
25	630394	SLEEVE, DRAIN HOSE	1
26	601459	HOSE, DRAIN 1 1/2X15"	1
27	140308	CLAMP	2
28	630147	PLUG, 3/4 NPT	1
29	601430	TRAY, BATTERY	1
30	601438	SCREW, 3/8-16X5/8	2
31	601439	SPACER	2
32	160485	●ADAPTER, HOSE	1
33	200070382	SCREW, M05X10MM	2
34	601431	STRAP, BATTERY	1
35	140275	SCREW, M08X1.25MM	2
36	601437	WASHER, NYLON	1
37	606105	DECAL, DO NOT SPRAY	1

WHEEL GROUP



## WHEEL GROUP

REF	PART #	DESCRIPTION	QTY.
1	140201	SCREW, 3/8-16X3/4	2
2	140017	WASHER, LOCK	2
3	140028	WASHER, FLAT	5
4	605970	●WHEEL	2
5	140047	WASHER	3
6	601447	MOUNT, AXLE	1
7	601474	BRACKET, FILTER	1
8	140016	WASHER, LOCK	2
9	608322	SCREW M6X1.0X16	2
10	140276	SCREW, M10X1.5X16MM	3
11	200607491	SCREW, M8X1.25X25MM	3
12	140333	WASHER, LOCK	3
13	200101017	NUT	2
14	601448	AXLE	1
15	140256	SCREW, 3/8-16X2 1/2	1
16	601469	●WHEEL	1
17	140515	NUT	1
18	601458	MOUNT, WHEEL BRUSH	1
19	630188	BEARING	1
20	630189	SLEEVE, BEARING	1
21	630447	WASHER, NYLON	2
22	140055	WASHER, FLAT	1
23	200160017	NUT, LOCK	1
24	601491	DECAL, SOLUTION CONTROL	1

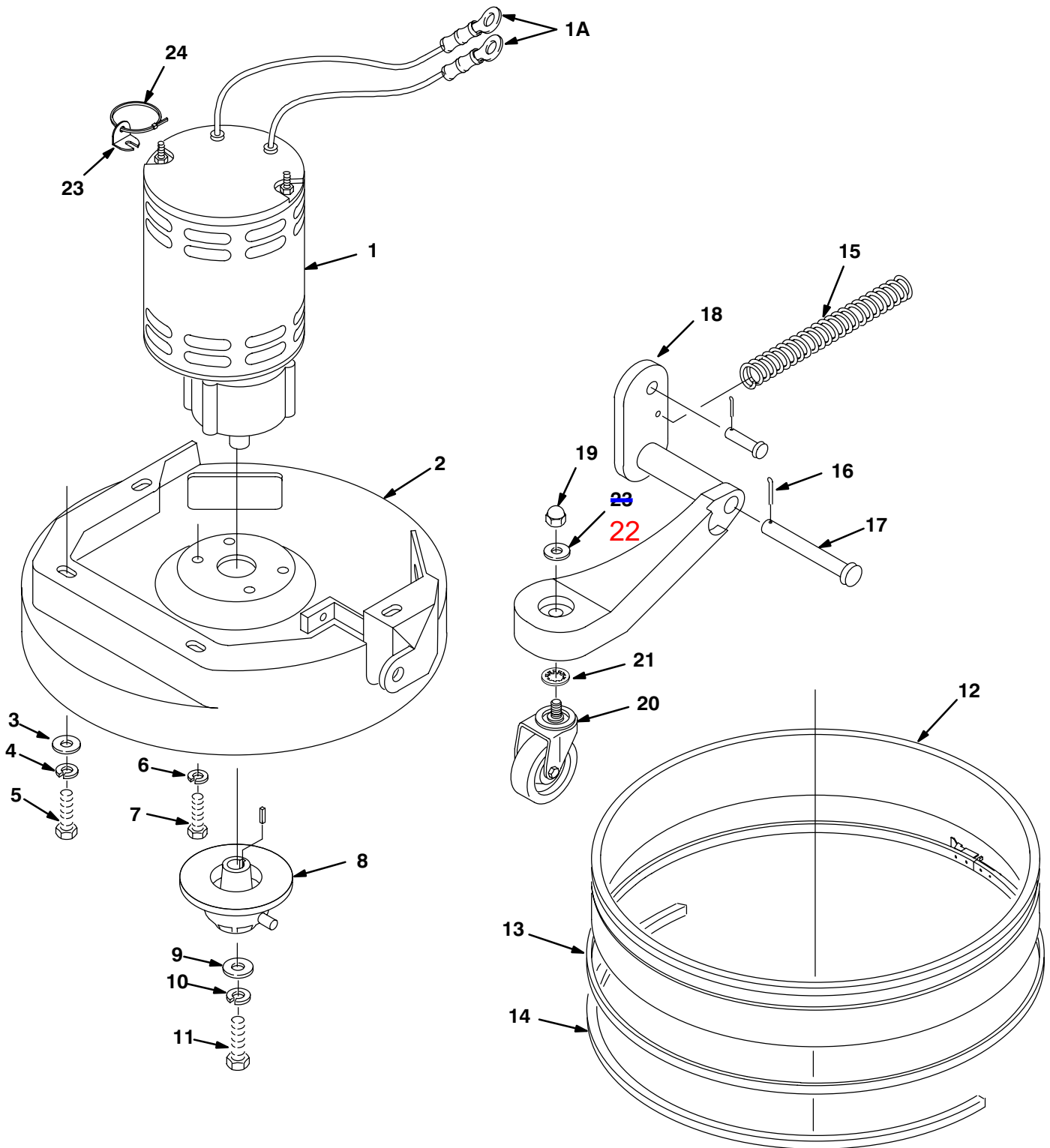
REF	PART #	DESCRIPTION	QTY.
25	601446	MOUNT, AXLE PEDAL	1
26	601444	PEDAL HEAD LIFT	1
27	140630	PIN, COTTER	2
28	601471	PIN, CLEVIS	1
29	578140000	SPRING	1
30	603145	KNOB	1
31	601445	PEDAL, LATCH RELEASE	1
32	140275	SCREW, M8X1.25X16MM	1
33	200160017	NUT	1
34	601442	ROD, CASTER MOUNT	1
35	578242000	NUT	1
36	578085000	YOKE, ADJUSTMENT	1
37	601441	MOUNT, CASTER	1
38	612254000	PIN, HAIRPIN	1
39	140608	PIN, CLEVIS	1
40	601443	●CASTER, SWIVEL	1
41	3058	NUT	1
42	630478	SCREW, SHOULDER	1
43	630477	●WHEEL, 2"	1
44	601108000	NUT, LOCK	1
45	604323	BRACKET, STOP	1
46	140015	WASHER, LOCK	2
47	140029	WASHER, INT. TOOTH	1
48	3148.816	WASHER, FLAT	1

▽ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

● RECOMMENDED STOCK ITEMS

SCRUB HEAD GROUP



## SCRUB HEAD GROUP

REF	PART #	DESCRIPTION	QTY.
▽1	601499	●MOTOR, BRUSH 24VDC	1
▲	603638	●CARBON BRUSH (4/PK)	4
▲	630609	GEARBOX	1
▲	140632	KEY	1
1A	130111	TERMINAL, RING	2
2	601440	HEAD CASTING	1
3	140028	WASHER, FLAT	4
4	140333	WASHER, LOCK	4
5	140276	SCREW, M10X1.5X16MM	4
6	140017	WASHER, LOCK	4
7	140202	SCREW, 3/8-16X1	4
8	601449	HUB, BRUSH DRIVE	1
9	069764631	WASHER, FLAT	1
10	140015	WASHER, LOCK	1

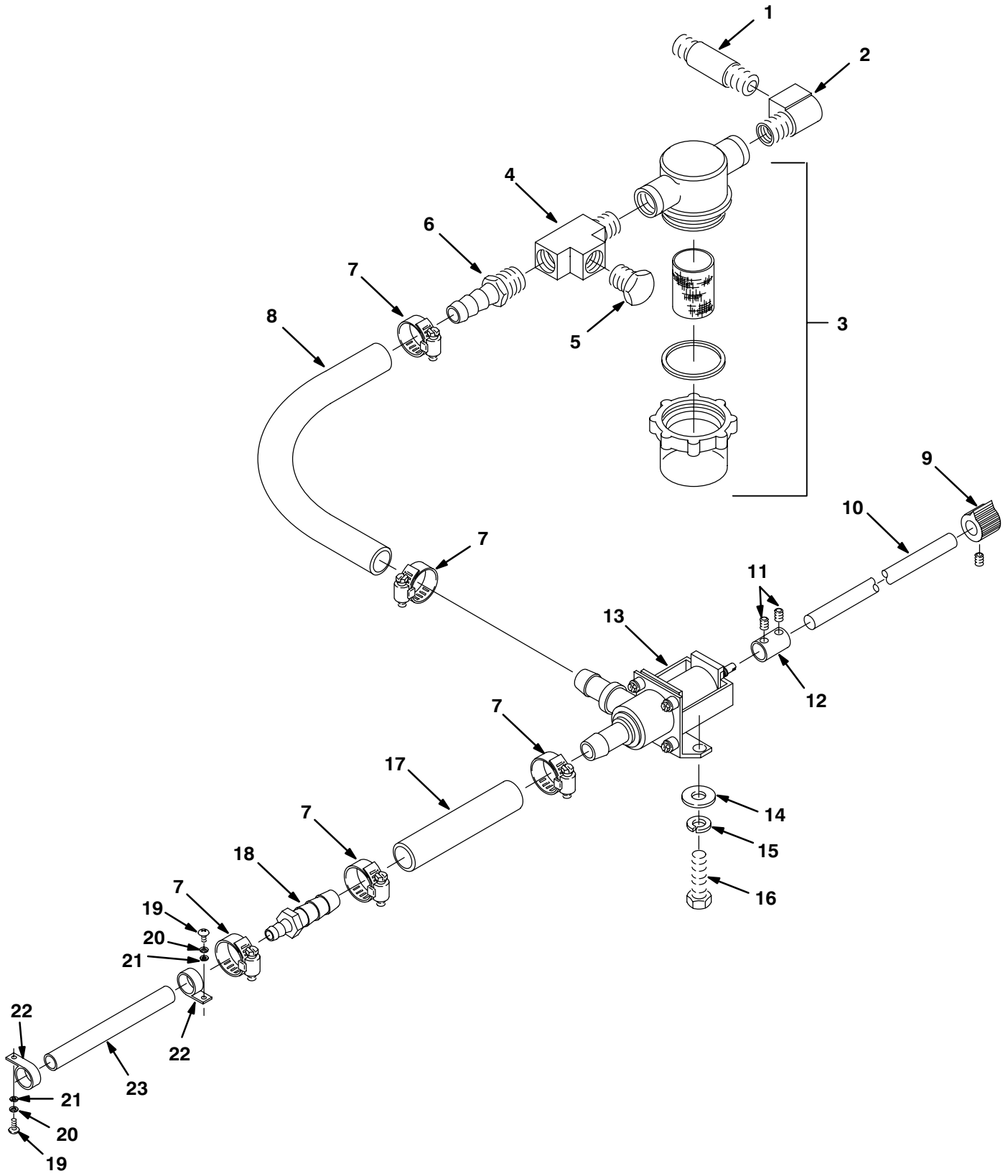
REF	PART #	DESCRIPTION	QTY.
11	140219	SCREW, 5/16-18X1	1
12	601493	●SKIRT, SPLASH GUARD	1
13	601495	ASM., SKIRT BAND	1
14	604744	BUMPER, EXTRUSION 30"	1
15	603148	SPRING	1
16	612254000	PIN, HAIRPIN	1
17	069764083	PIN, CLEVIS	1
18	606537	MOUNT, CASTER	1
19	3058	NUT	1
20	601443	CASTER, SWIVEL	1
21	140029	WASHER, INT. TOOTH	1
22	3148.816	WASHER, FLAT	1
23	608943	BRACKET, WIRE TIE	1
24	130041	WIRE TIE	1

▽ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

● RECOMMENDED STOCK ITEMS

PLUMBING GROUP



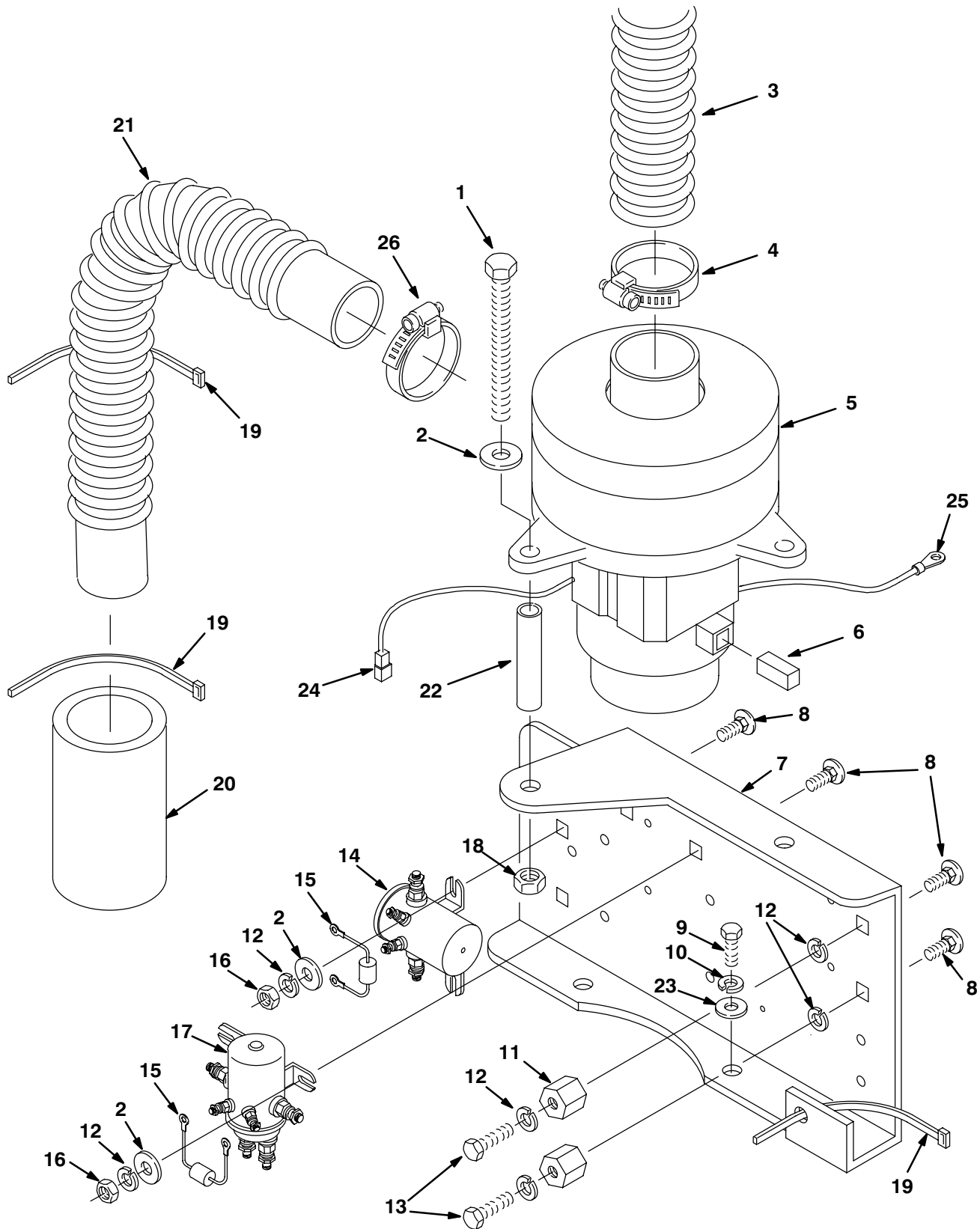
## PLUMBING GROUP

REF	PART #	DESCRIPTION	QTY.
1	601489	FITTING, NIPPLE	1
2	150420	ELBOW, STREET 3/8 90°	1
3	601475	●SCREEN, FILTER	1
4	601483	TEE, STREET 3/8 NPT	1
5	630146	PLUG, 3/8 NPT	1
6	14884	HOSE BARB	1
7	140310	CLAMP	5
8	630379	TUBING, VINYL, 1/2 ID X 8.25"	1
9	626121	KNOB, WATER VALVE	1
10	601473	ROD, WATER VALVE	1
11	069762095	SCREW, SET 10-24X.25	2
12	601472	COUPLING	1

REF	PART #	DESCRIPTION	QTY.
13	630022	●VALVE, SOLENOID 24VDC	1
14	140000	WASHER, FLAT	2
15	140016	WASHER, LOCK	2
16	140272	SCREW, M6X1.0X16MM	2
17	069760725	TUBING, VINYL, 1/2 ID X 3.25"	1
18	630164	FITTING, STREET	1
19	579259	SCREW, M04X12MM	2
20	140023	WASHER, LOCK	2
21	200301014	WASHER, FLAT	2
22	140328	CLAMP	2
23	578569	HOSE, 1/4 ID X 4.5"	1

## ● RECOMMENDED STOCK ITEMS

VACUUM MOTOR GROUP





## VACUUM MOTOR GROUP

REF	PART #	DESCRIPTION	QTY.
1	630432	SCREW, M06X50MM	2
2	140000	WASHER, FLAT	6
3	160426	●HOSE, VAC 1.5X15"	1
4	140307	CLAMP	1
▽5	601468	●MOTOR, VAC 24V 2-STG	1
▲6	190163	●CARBON BRUSH (2/PK)	2
7	601463	BRACKET, VAC MOTOR	1
8	069767164	SCREW, .25-20X.50	6
9	140272	SCREW, M6X1.0X16MM	2
10	140016	WASHER, LOCK	2
11	578427	TERMINAL, STANDOFF	2
12	140016	WASHER, LOCK	8
13	140259	SCREW, 1/4-20X5/8	2
14	605905	●CONTACTOR, MAIN 24V	1
15	606404	●DIODE, 400V/6.0A	2
16	140510	NUT	4

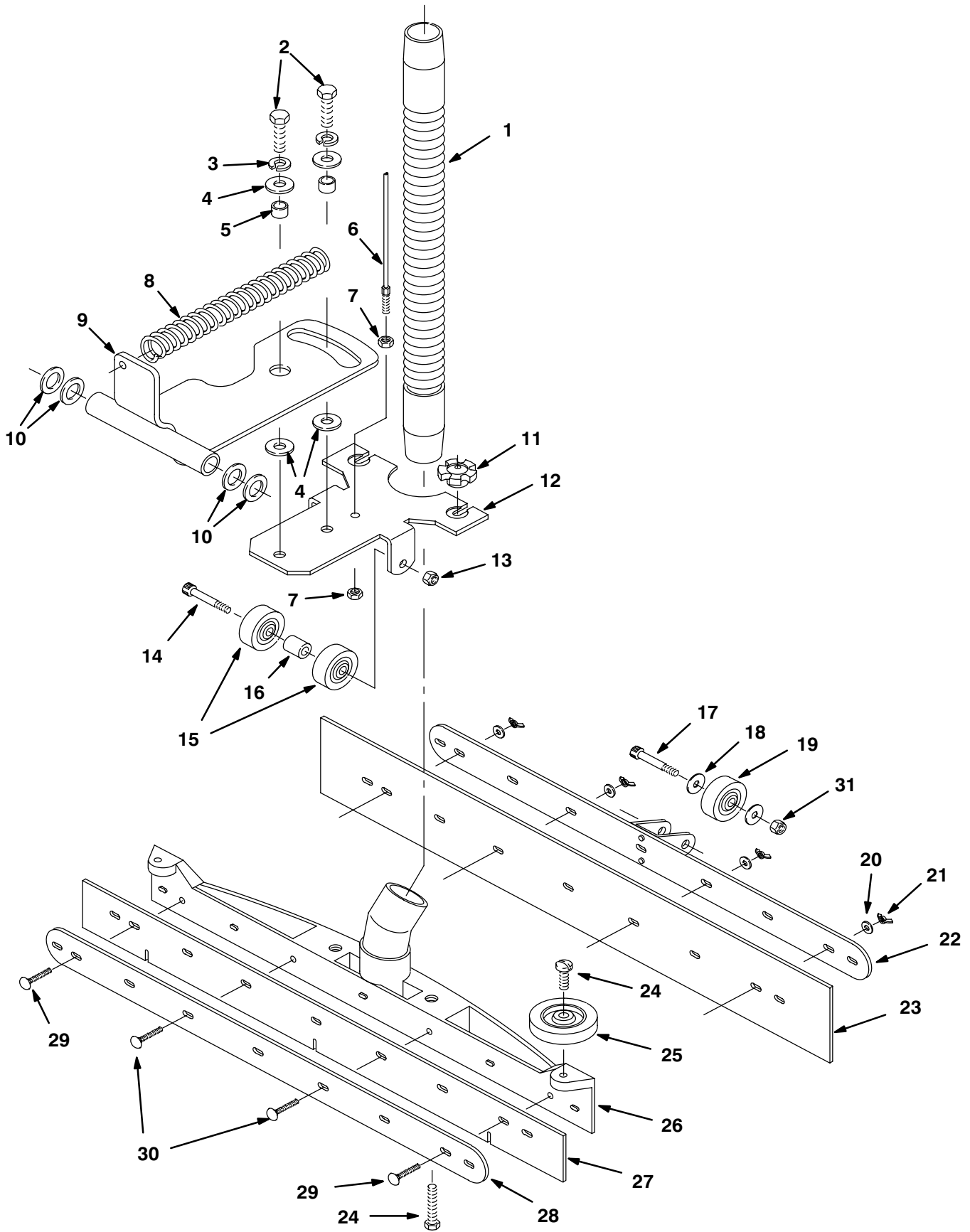
REF	PART #	DESCRIPTION	QTY.
17	610742	●CONTACTOR, BRUSH 24V	1
18	140284	NUT	2
19	130041	WIRE TIE	3
20	600009	MUFFLER, VAC EXHAUST	1
21	160459	●HOSE, VAC 1.5X16"	1
22	019686096	SPACER	2
23	140000	WASHER, FLAT	4
24	130096	TERMINAL	1
25	281001014	TERMINAL, RING	1
26	140308	CLAMP	1

▽ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

● RECOMMENDED STOCK ITEMS

SQUEEGEE GROUP



## SQUEEGEE GROUP

REF	PART #	DESCRIPTION	QTY.
1	160617	●HOSE, VAC W/CUFFS	1
2	140237	SCREW, 1/2-13X1	2
3	140024	WASHER, LOCK	2
4	140045	WASHER, FLAT	4
5	140139	BUSHING	2
6	601428	CABLE, SQUEEGEE	1
7	140524	NUT	2
8	603149	SPRING	1
9	601452	BRACKET, SQ. PIVOT	1
10	140047	WASHER, FLAT	4
11	605361	●KNOB	2
12	601451	BRACKET, SQ. MOUNT	1
13	601108000	NUT	1
14	603144	SCREW, 3/8X3	1
15	630477	●WHEEL	2
16	603368	SPACER	1
▽	605856	ASM., SQUEEGEE COMPLETE	1
▲17	600187	SCREW, 3/8X1 1/4	1

REF	PART #	DESCRIPTION	QTY.
▲18	140028	WASHER, FLAT	2
▲19	630477	●WHEEL	1
▲20	140000	WASHER, FLAT	4
▲21	140536	NUT, WING	4
▲22	601457	STRIP, REAR RETAINER	1
▲23	601455	●BLADE, SQ. REAR	1
	601486	●BLADE, SQ. LINATEX (OPTION)	1
	601488	●BLADE, SQ. URETHANE (OPTION)	1
▲24	140799	SCREW, 5/16-18X1 1/2	4
▲25	630450	●WHEEL	2
▲26	601450	CASTING, SQUEEGEE	1
▲27	601454	●BLADE, SQ. FRONT	1
	601485	●BLADE, SQ. LINATEX (OPTION)	1
	601487	●BLADE, SQ. URETHANE (OPTION)	1
▲28	601456	STRIP, FRONT RETAINER	1
▲29	612184000	SCREW, .25-20X1.5	2
▲30	612186000	SCREW, .25-20X2.5	2
▲31	601108000	NUT	1

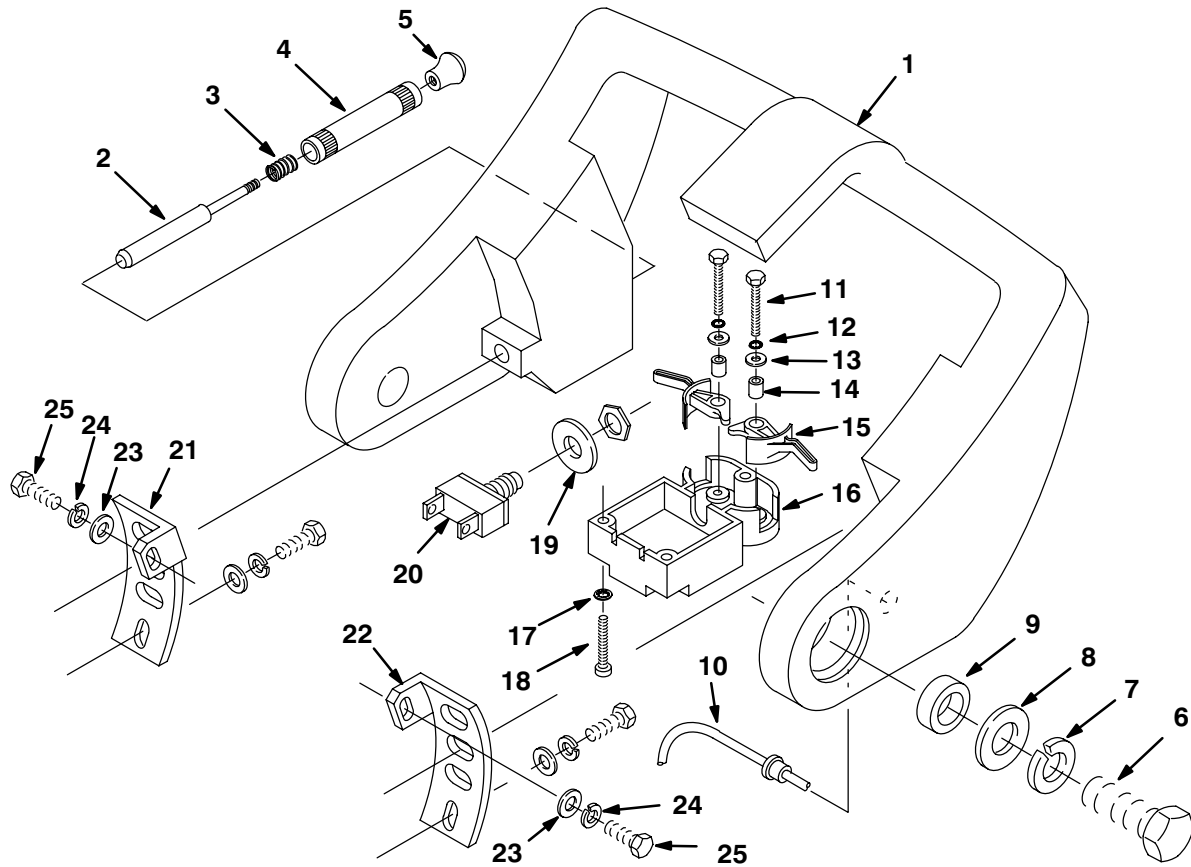
▽ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

● RECOMMENDED STOCK ITEMS

# PARTS LIST

## CONTROL HANDLE GROUP

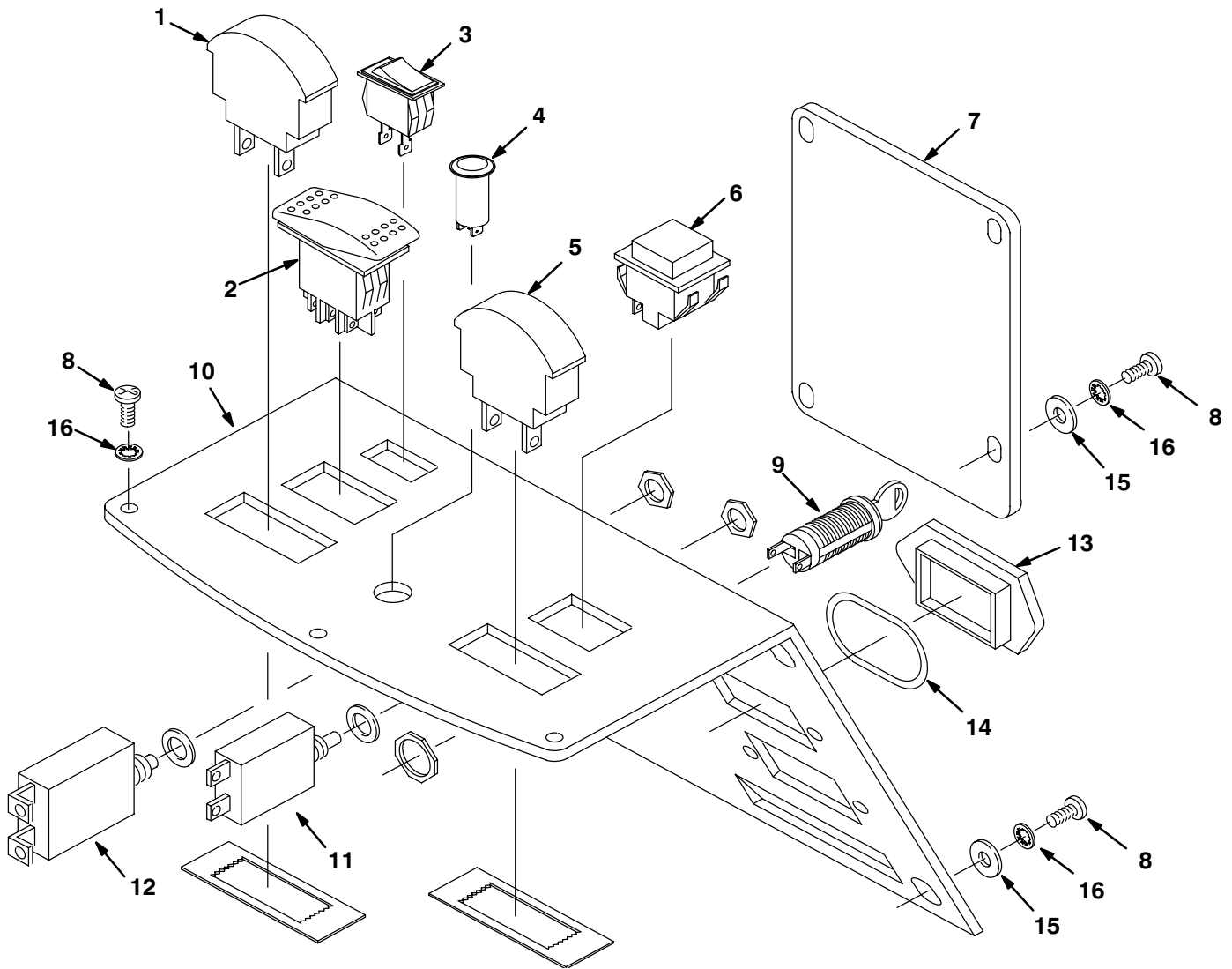


REF	PART #	DESCRIPTION	QTY.
1	608360	HANDLE, GREEN	1
2	601422	PIN, HANDLE LATCH	2
3	601470	SPRING	2
4	601421	TUBE, HANDLE LATCH	2
5	601424	KNOB	2
6	601435	SCREW, M12X30MM	2
7	140024	WASHER, LOCK	2
8	140045	WASHER, FLAT	2
9	601434	SPACER	2
10	607109	CORD, 18/2 SVTX24 3/8	1
11	069764190	SCREW, M03X16MM	2
12	200662012	WASHER, LOCK	2
13	578186000	WASHER, FLAT	2

REF	PART #	DESCRIPTION	QTY.
14	578082000	SPACER	2
15	578002000	ARM, TRIGGER	2
16	601429	CONSOLE, TRIGGER	1
17	140061	WASHER, LOCK	3
18	578193000	SCREW, M04X25MM	3
19	578430	WASHER, FLAT	1
20	130712	●SWITCH, PULSE	1
21	601423	BRACKET, LATCH RIGHT	1
22	601465	BRACKET, LATCH LEFT	1
23	140027	WASHER, FLAT	4
24	140015	WASHER, LOCK	4
25	630425	SCREW, M8X20MM	4

● RECOMMENDED STOCK ITEMS

CONTROL CONSOLE GROUP

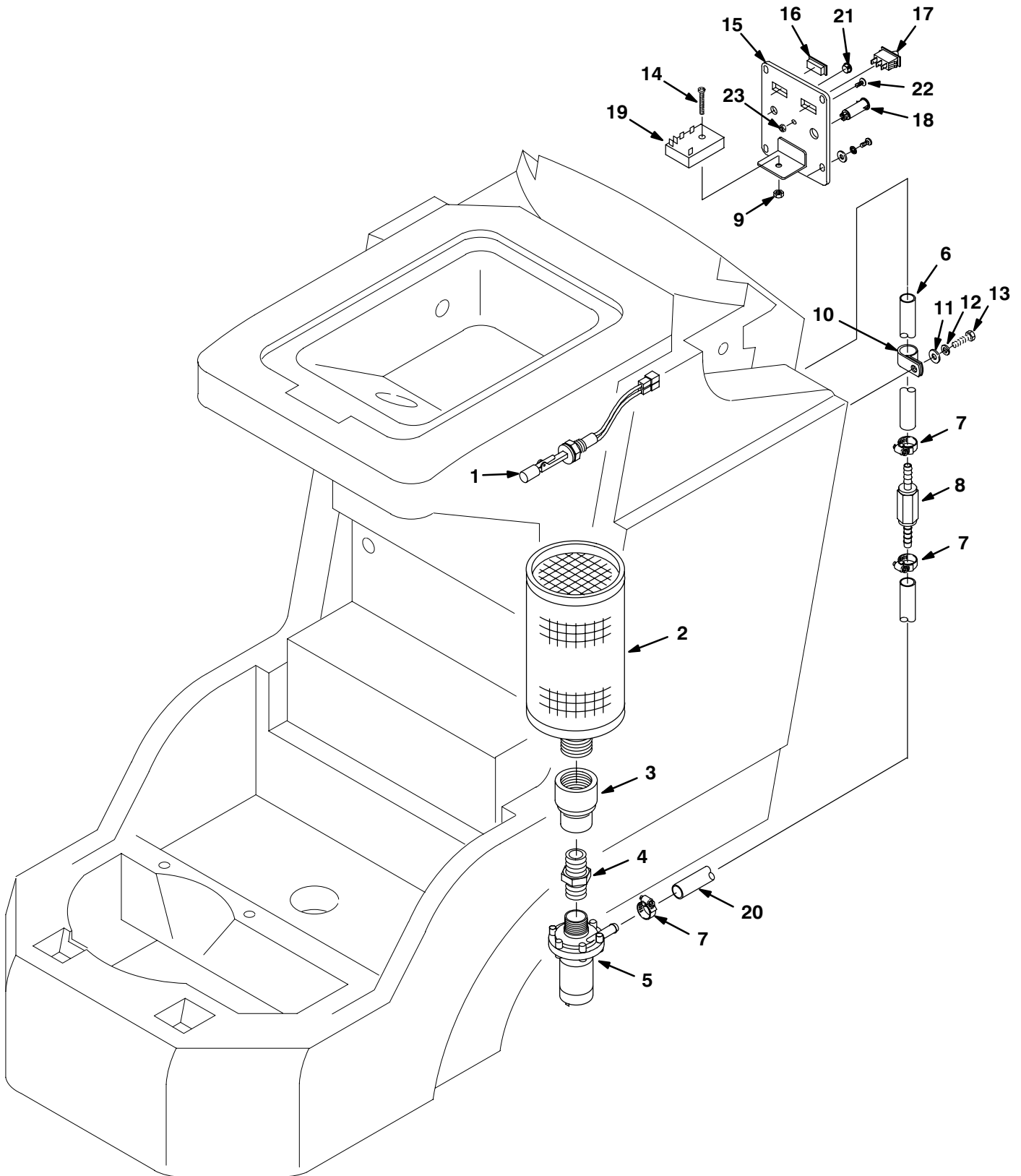


REF	PART #	DESCRIPTION	QTY.
1	130015	●METER, BATTERY VOLTAGE	1
2	608605	●SWITCH, ON/OFF	1
3	630419	●SWITCH, ROCKER SPST	1
4	130738	●LIGHT, GREEN INDICATOR	1
5	603212	●GAUGE, BRUSH PRESSURE	1
6	130441	●SWITCH, PAD RELEASE	1
7	601415	PANEL	1
8	578141000	SCREW, M5X10MM	9
9	607475	●SWITCH, KEYLOCK	1
	607821	●KEY, REPLACEMENT STEEL	1

REF	PART #	DESCRIPTION	QTY.
10	610723	PANEL, CONSOLE	1
11	130752	●BREAKER, CIRCUIT 20AMP	1
12	602951	●BREAKER, CIRCUIT 35AMP	1
13	609969	PLUG, HOUR METER	2
14	605823	O-RING	2
15	140011	WASHER, FLAT	6
16	140018	WASHER, LOCK	9
N/S	608942	HARNES, WIRE MAIN	1

● RECOMMENDED STOCK ITEMS

ES™ (EXTENDED SCRUB) GROUP



**ES™ (EXTENDED SCRUB) GROUP**

REF	PART #	DESCRIPTION	QTY.
	603171	●KIT, ES™ & WAND PUMP	1
▽	603172	●KIT, ES™	1
▲1	603166	●SWITCH, LIQUID LEVEL	1
▲2	578445	●FILTER, SCREEN	1
▲3	601484	FITTING, REDUCER	1
▲4	630385	FITTING, NIPPLE	1
▲5	630136	●PUMP, 24VDC	1
▲6	606363	TUBING, 3/8 ID X 13"	1
▲7	140310	CLAMP	3
▲8	210044	●VALVE, CHECK	1
▲9	140283	NUT	1
▲10	140316	CLAMP	1
▲11	140000	WASHER, FLAT	1

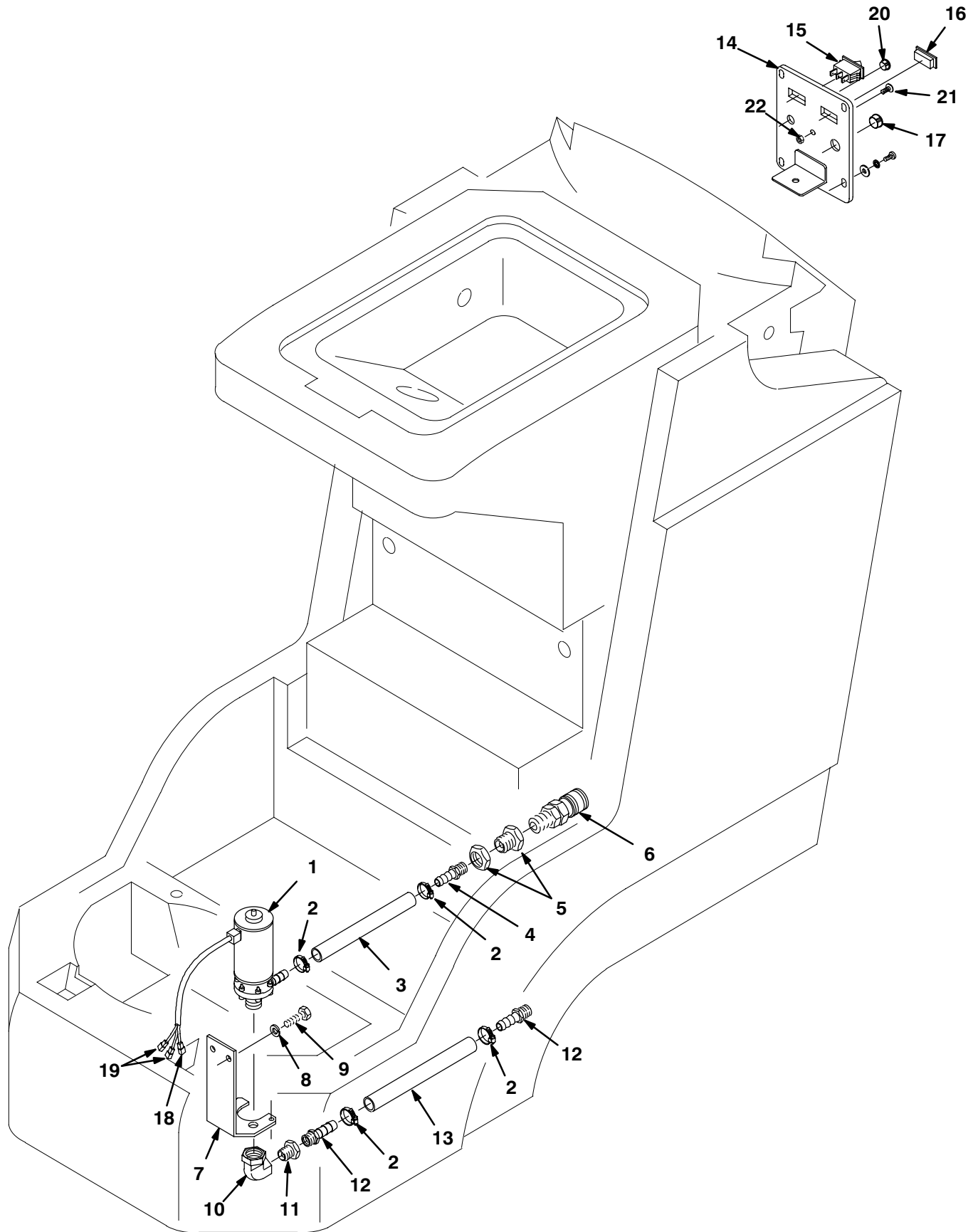
REF	PART #	DESCRIPTION	QTY.
▲12	140016	WASHER, LOCK	1
▲13	578321000	SCREW, M6X16MM	1
▲14	578008000	SCREW, M05X3.3	1
▲15	601416	PANEL, ACCESSORY	1
▲16	582150	PLUG, ACCESSORY	1
▲17	630419	●SWITCH, ROCKER	1
▲18	130738	LIGHT, INDICATOR	1
▲19	630145	●RELAY, TIMER 24V	1
▲20	606363	TUBING, 3/8 ID X 13"	1
▲21	130164	PLUG, DOME 3/8"	1
▲22	579259	SCREW, M04X12MM	1
▲23	200160014	NUT, HEX LOCK	1

▽ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

● RECOMMENDED STOCK ITEMS

WAND PUMP GROUP





WAND PUMP GROUP

REF	PART #	DESCRIPTION	QTY.
	603171	●KIT, ES™ & WAND PUMP	1
▽	603173	●KIT, WAND PUMP	1
▲1	630136	●PUMP, 24VDC	1
▲2	140310	CLAMP	4
▲3	575501000	TUBING, 3/8 ID X 8"	1
▲4	150516	HOSE BARB	1
▲5	150300	CONNECTOR, ANCHOR	1
▲6	608292	QUICK CONNECTOR	1
▲7	601479	BRACKET, WAND PUMP	1
▲8	140016	WASHER, LOCK	2
▲9	200031433	SCREW, M6X12MM	2
▲10	630251	FITTING, ELBOW 90°	1

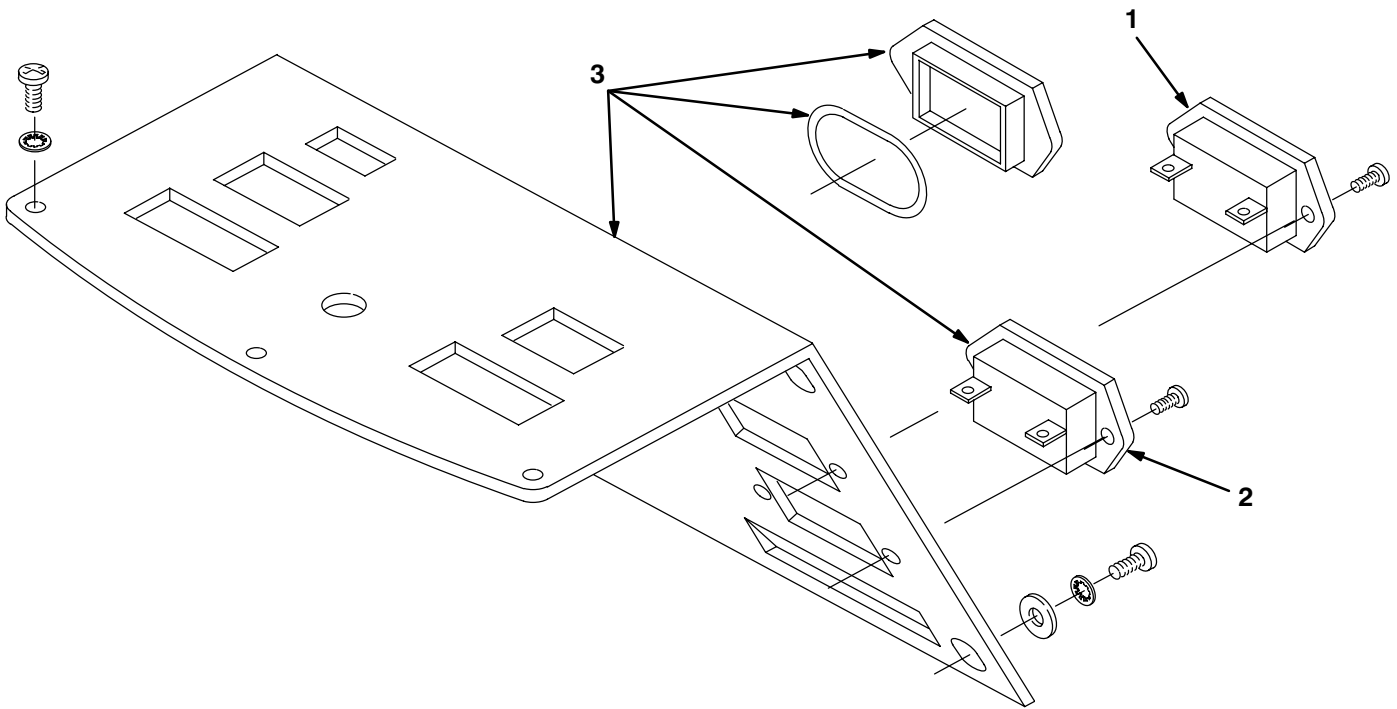
REF	PART #	DESCRIPTION	QTY.
▲11	630252	FITTING, BUSHING	1
▲12	150538	HOSE BARB	2
▲13	606325	TUBING, 3/8 ID X 24"	1
▲14	601416	PANEL, ACCESSORY	1
▲15	630419	●SWITCH, ROCKER	1
▲16	582150	PLUG, ACCESSORY	1
▲17	069764626	PLUG, HOLE	1
▲18	130125	RING, TERMINAL	1
▲19	130133	TERMINAL, MALE DISCONNECT	2
▲20	130164	PLUG, DOME 3/8"	1
▲21	579259	SCREW, M04X12MM	1
▲22	200160014	NUT, HEX LOCK	1

▽ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

● RECOMMENDED STOCK ITEMS

## HOUR METER AND LOW VOLTAGE INTERRUPTER GROUPS



REF	PART #	DESCRIPTION	QTY.
1	603174	●KIT, HOUR METER	1
▽2	610725	●KIT, LOW VOLTAGE INTERRUPTER	1
▲	603076	GUAGE, BATTERY 24V	1
▲N/S	603314	ASM., RELAY 24V	1
▲N/S	281004003	TERMINAL, FEMALE .19	1
▲N/S	281004001	TERMINAL, FEMALE .25	1
▲N/S	130133	TERMINAL, MALE .25	3
▲N/S	610848	ASM., WIRE #18 X 6"	1
▲N/S	610849	ASM., WIRE #18 X 8.5"	1
▲N/S	130040	WIRE TIE NYLON	1

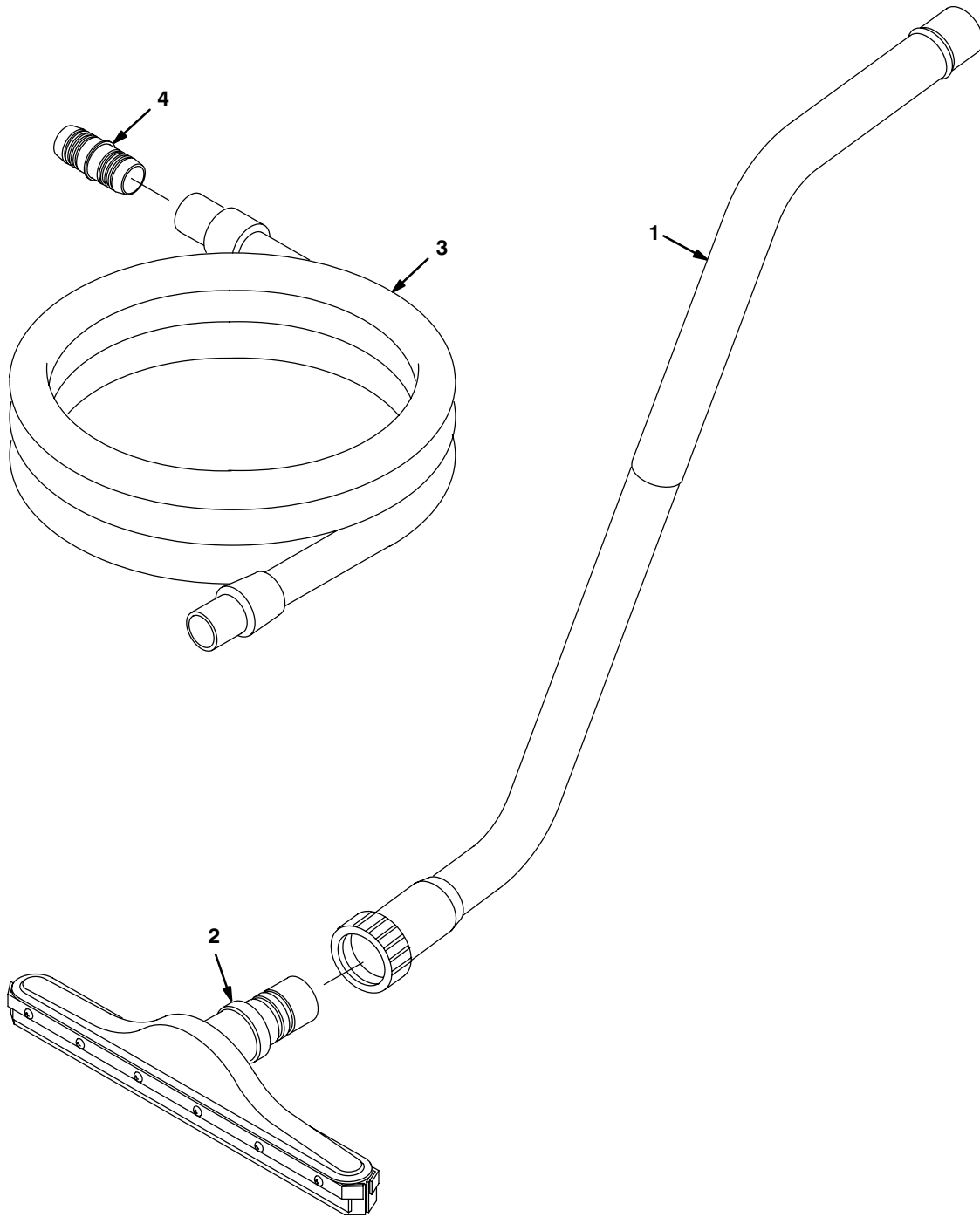
▽ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

● RECOMMENDED STOCK ITEMS

REF	PART #	DESCRIPTION	QTY.
▽3	610724	●KIT, LOW VOLTAGE INTERRUPTER (FOR MACHINES MANUFACTURED BEFORE AUG. 2000)	1
▲	603076	GUAGE, BATTERY 24V	1
▲	609969	PLUG, HOUR METER	1
▲	605823	O-RING	1
▲N/S	603314	ASM., RELAY 24V	1
▲N/S	281004003	TERMINAL, FEMALE .19	1
▲N/S	281004001	TERMINAL, FEMALE .25	1
▲N/S	130133	TERMINAL, MALE .25	3
▲N/S	610848	ASM., WIRE #18 X 6"	1
▲N/S	610849	ASM., WIRE #18 X 8.5"	1
▲N/S	130040	WIRE TIE NYLON	1
▲N/S	610723	PANEL, CONSOLE BLACK	1

SQUEEGEE WAND GROUP



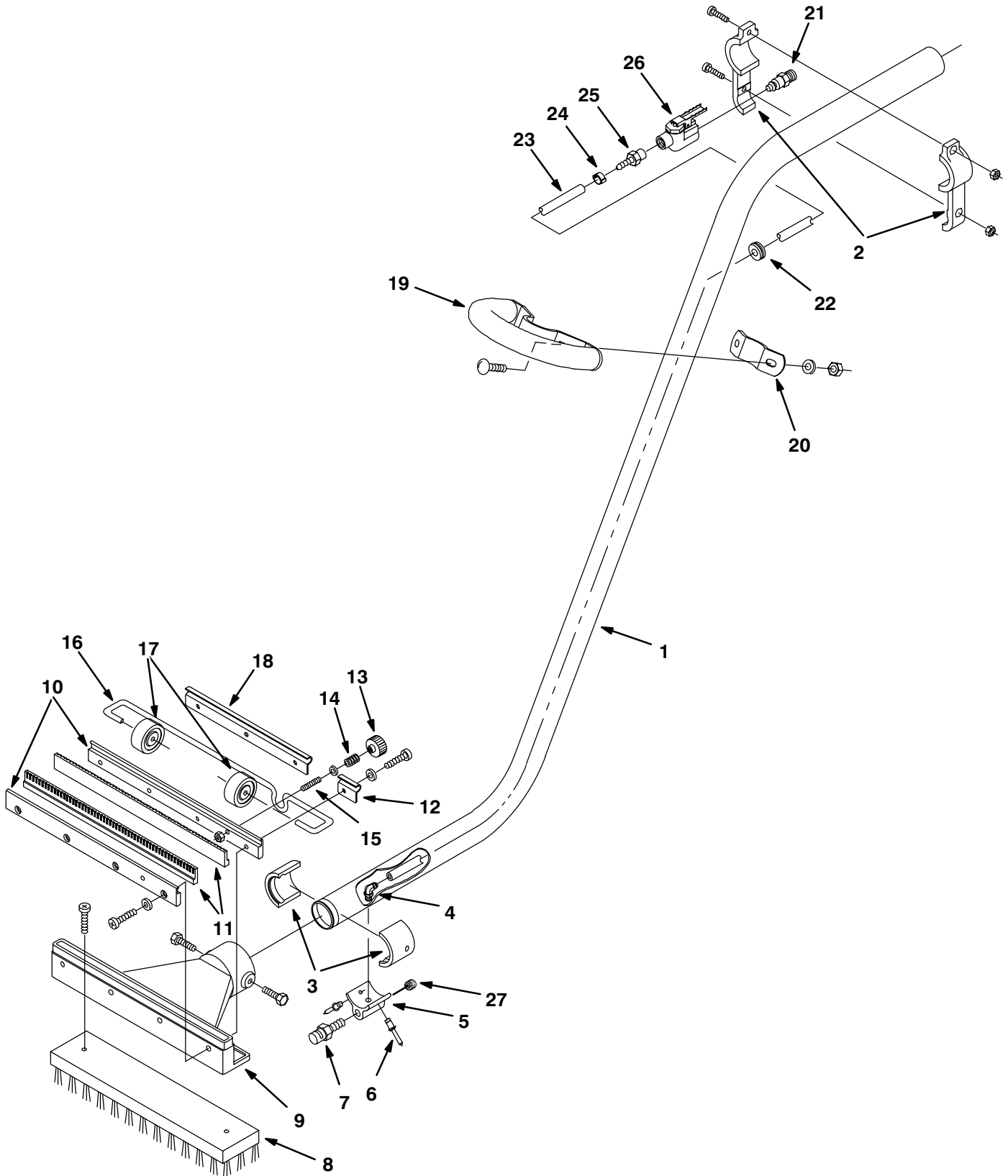
REF	PART #	DESCRIPTION	QTY.
▽	190928	WAND ASSEMBLY, DOUBLE BEND	1
▲1	6108.1	WAND, DOUBLE BEND	1
▲2	13840	SQUEEGEE ASM PUSH/PULL	1

REF	PART #	DESCRIPTION	QTY.
▲3	160481	HOSE, VAC 1-1/2X10'	1
▲4	160451	CONNECTOR, VAC HOSE	1

▽ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

DELUXE POWER WAND GROUP



**DELUXE POWER WAND GROUP**

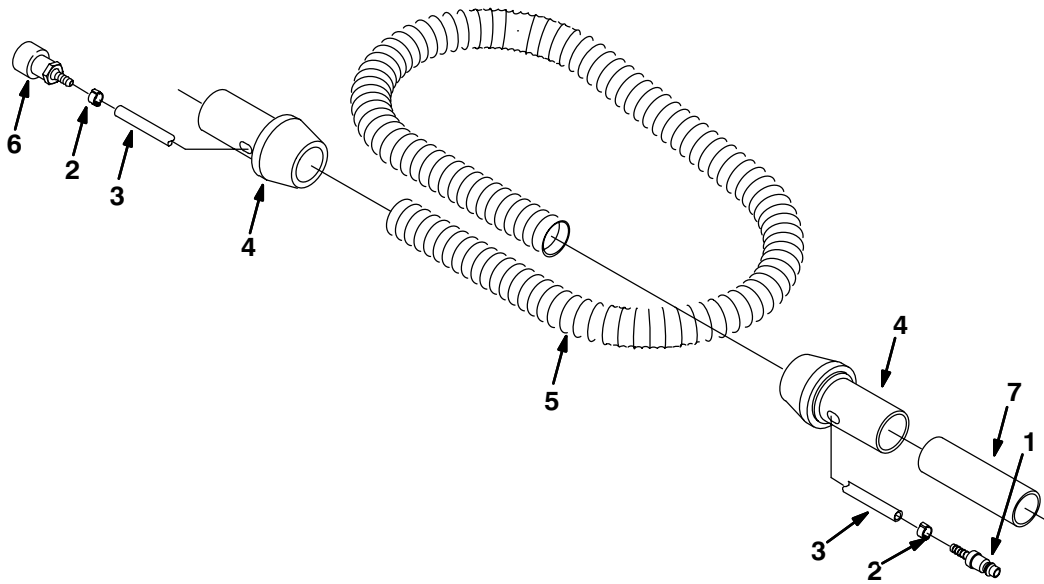
REF	PART #	DESCRIPTION	QTY.
▽	578905000	ASM., DELUXE POWER WAND	1
▲1	578060000	WAND, DOUBLE BEND	1
▲2	578077000	BRACKET, VALVE MOUNTING	1
▲3	578061000	ADAPTER, HEAD/WAND	2
▲4	578214000	FITTING, ELBOW	1
▲5	579112	ADAPTER, SPRAY NOZZLE	1
▲6	579198	RIVET, POP	2
▲7	578066000	SPRAY NOZZLE, 75 DEG.	1
▲8	578073000	BRUSH, DECK, POLYPRO BLOCK	1
▲9	578063000	HEAD, WAND	1
▲10	578078000	RETAINER, SQUEEGEE	2
▲11	578074000	BLADE, SQUEEGEE	2
▲12	578124000	BRACKET, AXLE	1
▲13	578439	NUT, THUMB	1

REF	PART #	DESCRIPTION	QTY.
▲14	578228000	SPRING, COMPRESSION	1
▲15	578143000	STUD, ADJUST.	1
▲16	578126000	AXLE, WAND	1
▲17	578125000	WHEEL, GUIDE	2
▲18	578123000	BRACKET, AXLE	1
▲19	578155000	HANDLE, WAND	1
▲20	578154000	BRACKET, HANDLE	1
▲21	578091000	PLUG, MALE QUICK-CONN	1
▲22	578164000	GROMMET	1
▲23	578821000	HOSE, SOLUTION	1
▲24	578161000	CLAMP, HOSE	1
▲25	578094000	FITTING, HOSEBARB 1/4NPT MALE	1
▲26	578064000	VALVE, WATER CONTROL	1
▲27	150208	PLUG, SCKT HD 1/8"	1

▽ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

POWER WAND HOSE GROUP



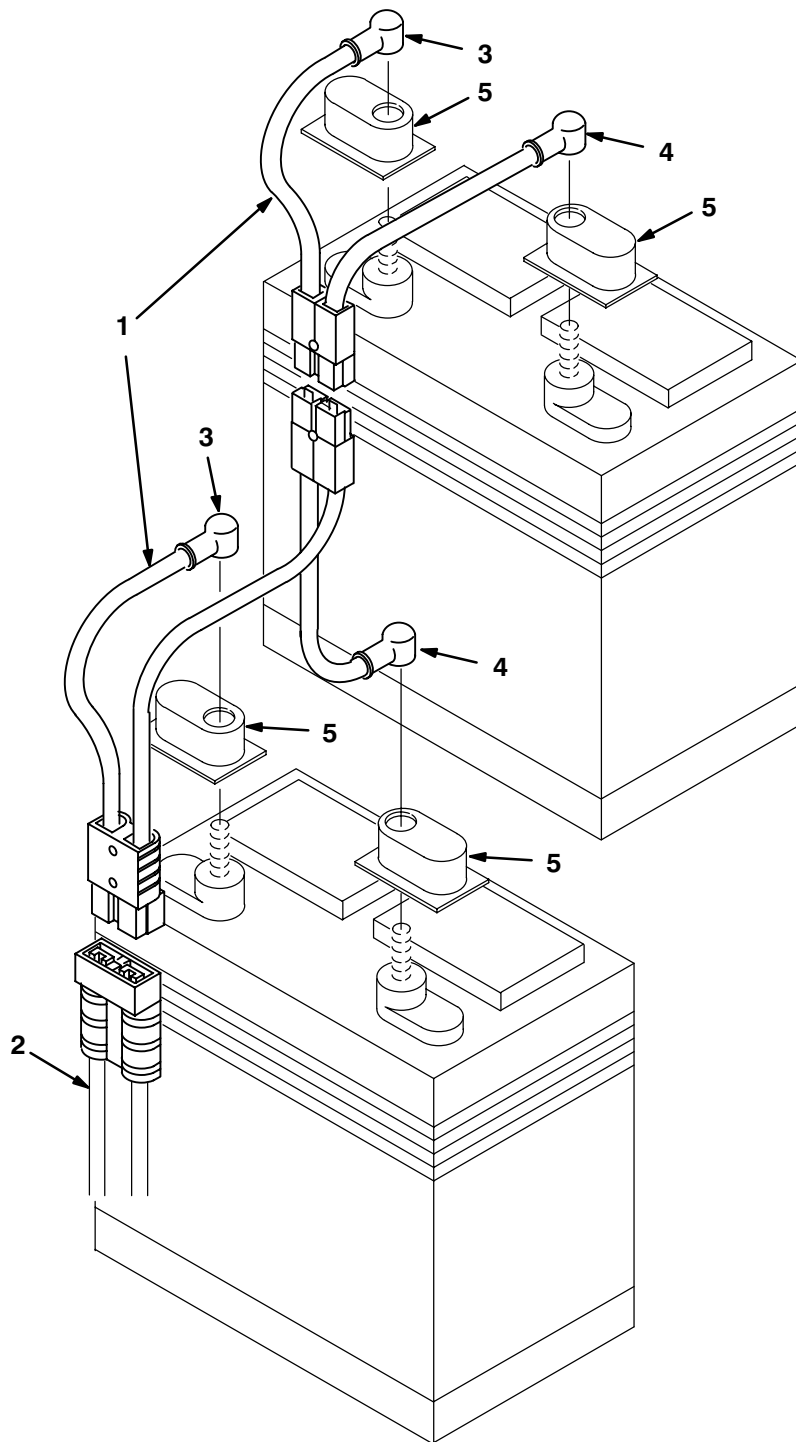
REF	PART #	DESCRIPTION	QTY.
▽	578903000	HOSE ASM., POWER WAND	1
▲1	578318000	FITTING, QUICK CONCT MALE	1
▲2	578160000	CLAMP, HOSE 11-13MM	2
▲3	578820000	HOSE, .25ID, .44OD, 4.0M LG	1
▲4	578072000	CUFF, SWIVEL, 1-1/2	2

REF	PART #	DESCRIPTION	QTY.
▲5	578276000	HOSE, VACUUM, 1-1/2 X 10' GRAY	1
▲6	578071000	CONNECTOR, QUICK CONCT FE-MALE	1
▲7	231031	SLEEVE, 1-1/2"DIA X 5"LG	1

▽ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

QUICK CHANGE BATTERY CABLE GROUP

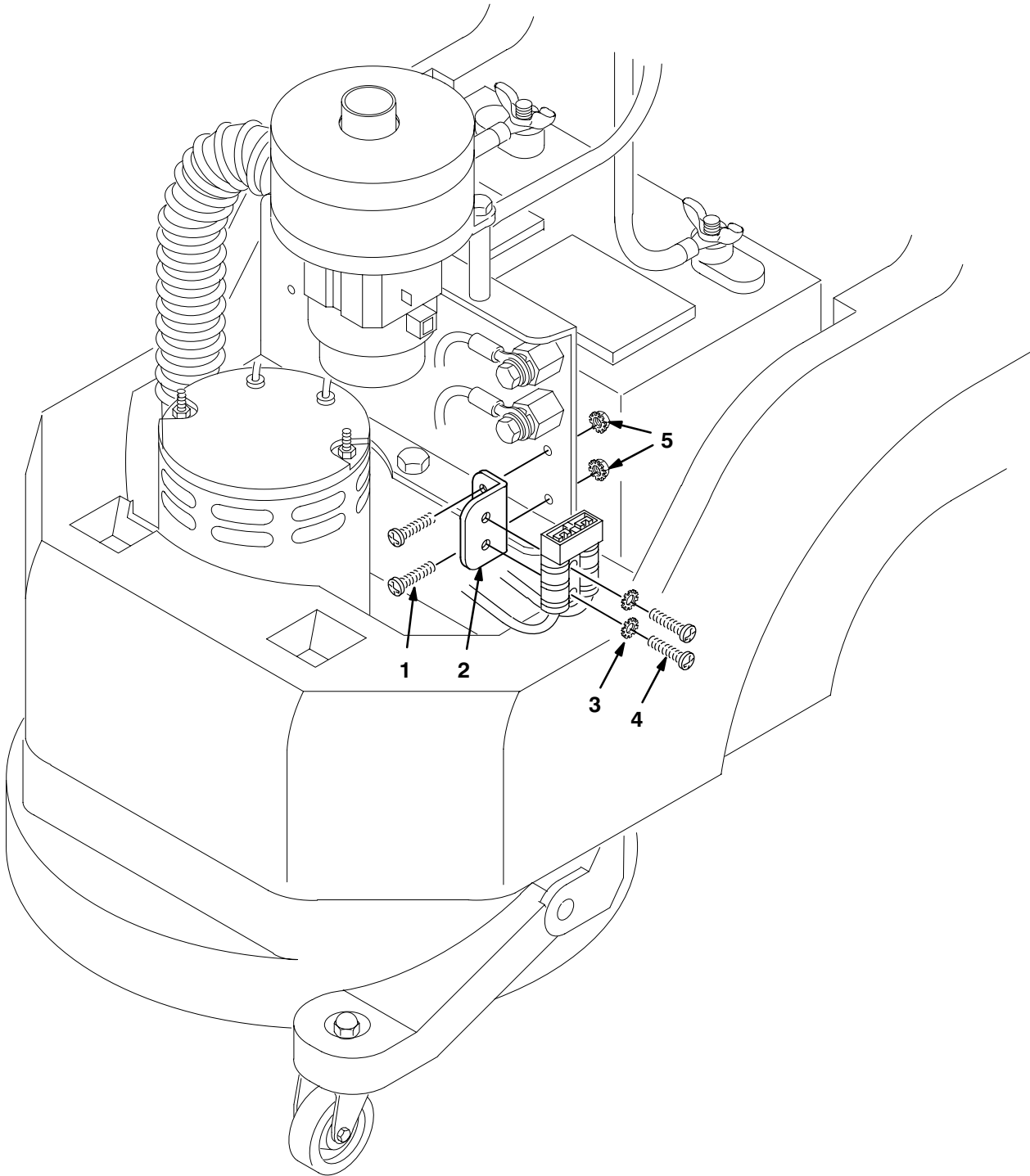


REF	PART #	DESCRIPTION	QTY.
	604341	●KIT, QUICK CHANGE BATTERY	1
1	603210	●ASM., CABLE W/RED QUICK CHANGE	2
2	603209	ASM., CABLE W/RED QUICK CHANGE	1

REF	PART #	DESCRIPTION	QTY.
3	611221	●BOOT, BATTERY CABLE TERMINAL BLK	4
4	611222	●BOOT, BATTERY CABLE TERMINAL RED	4
5	611223	●COVER, BATTERY TERMINAL	8

● RECOMMENDED STOCK ITEMS

BATTERY CONNECTOR MOUNT GROUP



REF	PART #	DESCRIPTION	QTY.
▽	606689	●KIT, BATTERY CONNECTOR MNT	1
▲1	140887	SCREW, 10-24X3/8	2
▲2	606688	BRACKET, BATT. CONNECTOR	1

REF	PART #	DESCRIPTION	QTY.
▲3	140019	WASHER, #6 EXT.	2
▲4	140831	SCREW, 6-32X5/8	2
▲5	140519	NUT, 10-24 KEP	2