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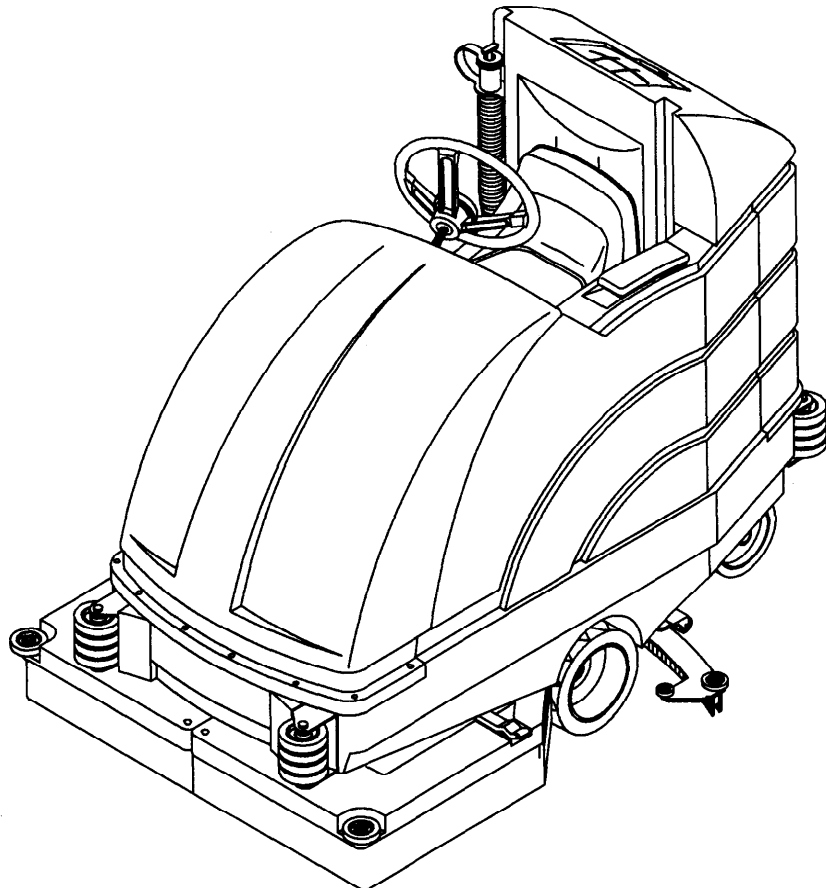


# Tuff Scrub™ 3300

Rider Scrubber

**Model No.:**  
**606993**  
**606994 - Pac**  
**609237 - Can. 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**

**608596**  
**Rev. 01 (06-00)**

# OPERATION

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

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

When ordering replacement parts, use the parts list section in this manual. Before ordering parts or supplies, be sure to have your machine model number and serial number available. 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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Tuff Scrub is a United States trademark of Tennant Company.

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## SAFETY PRECAUTIONS

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

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.
  - Check brakes and steering for proper operation.
3. **When using machine:**
  - Go slow on Inclines and slippery surfaces.
  - Use care when reversing machine.
  - Do not carry riders on machine.
  - Always follow safety and traffic rules.
  - Report machine damage or faulty operation immediately.
4. **Before leaving or servicing machine:**
  - Stop on level surface.
  - Set parking brake.
  - Turn off machine and remove key.

### 5. When servicing machine:

- Avoid moving parts. Do not wear loose jackets, shirts, or sleeves.
- Block machine tires before jacking machine up.
- Jack machine up at designated locations only. Block machine up with jack stands.
- Use hoist or jack of adequate capacity to lift machine.
- Wear eye and ear protection when using pressurized air or water.
- Disconnect battery connections before working on machine.
- Wear hand and eye protection 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.

 **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

## SAFETY LABELS

The safety labels appear on the machine in the locations indicated. Replace labels if they become damaged or illegible.

**BATTERY CHARGING LABEL** - Located on and underneath battery compartment cover.

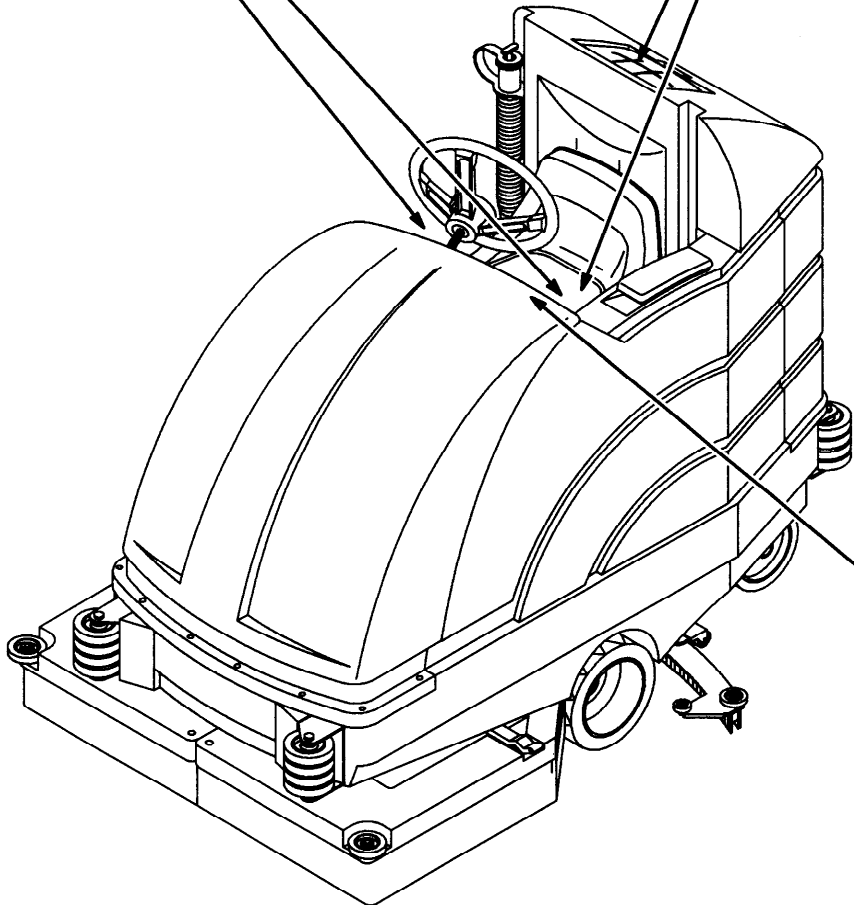


**WARNING:** Batteries emit hydrogen gas. Explosion or fire can result. Keep sparks and open flame away.

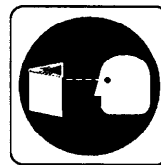


**FLAMMABLE MATERIALS/ SPILLS LABEL** - Located near solution tank fill port and on recovery tank lid.

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

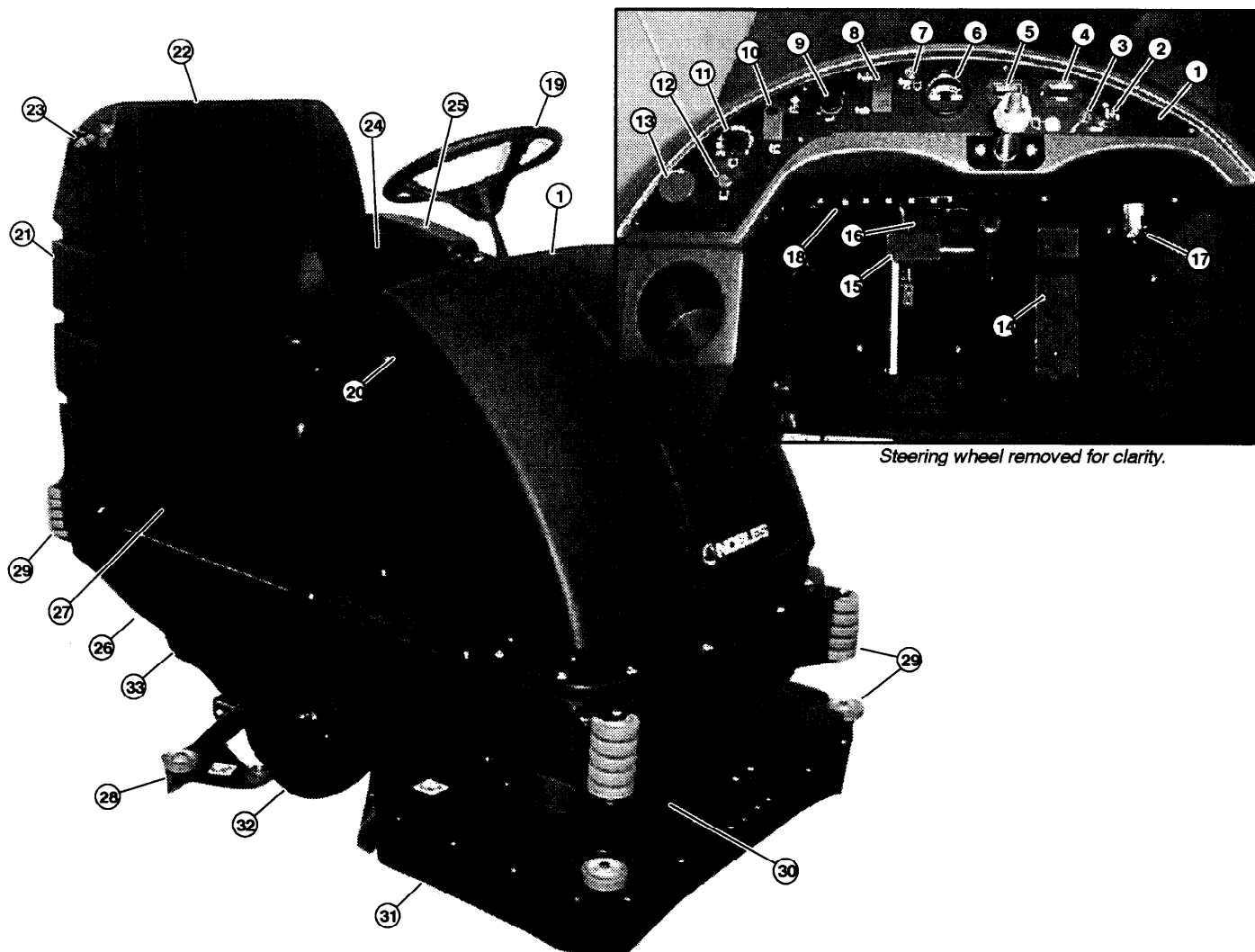


**FOR SAFETY LABEL** - Located on control console



**FOR SAFETY:** Read manual before operating machine.

MACHINE COMPONENTS


















Steering wheel removed for clarity.

- |  |                              |
|--|------------------------------|
| 1. Control Console                       | 20. Seat Adjustment Lever    |
| 2. Key Switch                            | 21. Recovery Tank            |
| 3. Main Power Indicator Light            | 22. Recovery Tank Lid        |
| 4. Battery Meter                         | 23. Recovery Tank Drain Hose |
| 5. Hour Meter                            | 24. Solution Tank            |
| 6. Brush Pressure Meter                  | 25. Solution Fill Port       |
| 7. Brush/solution ON/OFF Indicator Light | 26. Solution Tank Drain Hose |
| 8. Brush Switch                          | 27. Battery Compartment      |
| 9. Horn Button                           | 28. Squeegee Assembly        |
| 10. Squeegee/Vacuum Switch               | 29. Wall Rollers             |
| 11. Solution Control Knob                | 30. Scrub Head               |
| 12. Solution Low Indicator Light         | 31. Scrub Head Skirt         |
| 13. Power Kill Button                    | 32. Drive Wheels             |
| 14. Directional Pedal                    | 33. Rear Wheels              |
| 15. Brake Pedal                          |                              |
| 16. Parking Brake Pedal                  |                              |
| 17. Charger Plug                         |                              |
| 18. Circuit Breaker Panel                |                              |
| 19. Steering Wheel                       |                              |

# OPERATION

## CONTROL CONSOLE SYMBOLS

	Key Switch		Vacuum On/ Squeegee Lower		Main Power 10A Circuit Breaker
	Main Power Indicator Light		Squeegee Raise		Drive Motor 35A Circuit Breaker
	Brush Lower		Solution Flow		Vacuum Motor 30A Circuit Breaker
	Brush Raise		Solution Low Indicator Light		Brush Motor (RH) 30A Circuit Breaker
	Brush Down/ Solution On		Horn		Brush Motor (LH) 30A Circuit Breaker

## MACHINE INSTALLATION

### UNCRATING MACHINE

1. Carefully check crate and machine for signs of damage. Report damages at once to carrier.
2. Check Machine Contents list, contact distributor for missing items.

#### Machine Contents:

- 5 Battery Cables (stored in battery compartment)
- Squeegee Assembly (bolted on shipping pallet)
- 6 Batteries, 335A 6V (included with Pac 606994; not included with Pac 609237)
- Battery Charger (included with Pac 606994 & 609237)
- 2 Pad Drivers (included with Pac 606994 & 609237)

Scrub brushes and pads must be purchased separately (See PARTS LIST section).

3. To uncrate your machine:
  - a. Remove shipping straps.
  - b. Install batteries if not pre-installed (See INSTALLING BATTERIES)
  - c. Remove rear wheel block from pallet.
  - d. Position ramp (supplied) at rear of machine, release parking brake and carefully back machine off pallet (See MACHINE OPERATION).

**ATTENTION: Do not roll machine off pallet without using ramp, machine damage may occur.**

### INSTALLING BATTERIES

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

**FOR SAFETY: When servicing machine, wear hand and eye protection when handling batteries and battery cables. Avoid contact with battery acid.**

#### Recommended Battery Specifications:

Six 6 volt, deep cycle, 335 amp. hour batteries.  
 Maximum battery dimensions are 179 mm (7.00 in) W x 296 mm (11.66 in) L x 424 mm (16.69 in) H.

1. Turn key to the off position.

2. Set parking brake pedal. Press brake pedal completely forward then press parking brake pedal with toe to set (Fig. 1).



Figure 1

**FOR SAFETY: Before leaving or servicing machine, stop on level surface, set parking brake, turn off machine and remove key.**

3. Hinge seat away from machine to access battery compartment. Remove loose battery cables from compartment (Fig. 2).



Figure 2

4. Carefully install batteries into battery compartment and arrange battery posts as shown (Fig. 3).

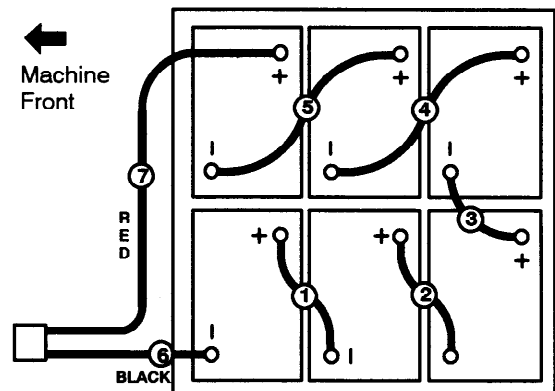


Figure 3

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

## OPERATION

5. Before connecting battery cables, make sure terminals and posts are clean. Use a post cleaner and wire brush to clean posts and terminals.
6. Connect cables to battery posts in numerical order as labeled, RED TO POSITIVE & BLACK TO NEGATIVE (Fig. 3).

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

7. Check battery meter charge level. Machine must be in full operation for correct reading (See MACHINE OPERATION). Charge batteries if necessary.

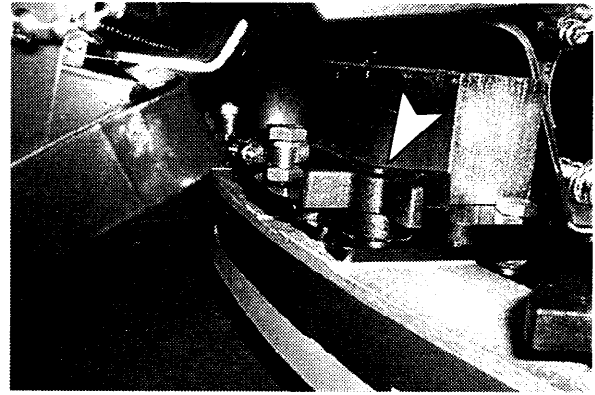


Figure 5

4. Attach vacuum hose to squeegee.

## MACHINE SETUP

### ATTACHING SQUEEGEE ASSEMBLY

1. Turn key to the on position and raise squeegee mount bracket by pressing vacuum/squeegee switch (Fig. 4).

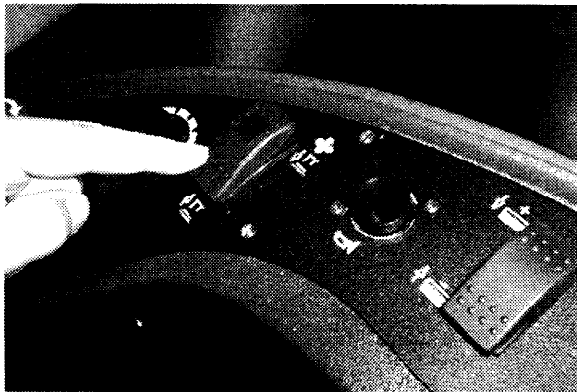


Figure 4

2. Turn key to the off position and set parking brake. Press brake pedal completely forward then press parking brake pedal with toe to set (Fig. 1).

**FOR SAFETY:** Before leaving or servicing machine, stop on level surface, set parking brake, turn off machine and remove key.

3. Loosen two thumb knobs on squeegee assembly. From underneath machine, slide squeegee assembly into slots of squeegee mount bracket. Tighten thumb knobs securely (Fig. 5).

### ADJUSTING SQUEEGEE ASSEMBLY

1. Lower squeegee to floor and drive machine slightly forward to deflect squeegee blade.
2. Leave squeegee down and turn machine off and set parking brake.
3. View squeegee blade deflection. Squeegee blade should slightly deflect evenly across the entire width of the squeegee as shown (Fig. 6).

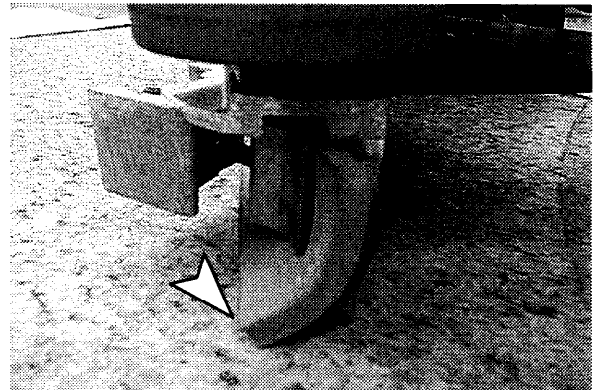


Figure 6

If squeegee needs adjusting, perform the following instructions to achieve proper squeegee operation.

**FOR SAFETY:** Before leaving or servicing machine, stop on level surface, set parking brake, turn off machine and remove key.

**To Adjust Squeegee Blade Deflection (Down Pressure):**

Turn the squeegee adjustment cams counter-clockwise to increase blade deflection or clockwise to decrease (Fig. 7).

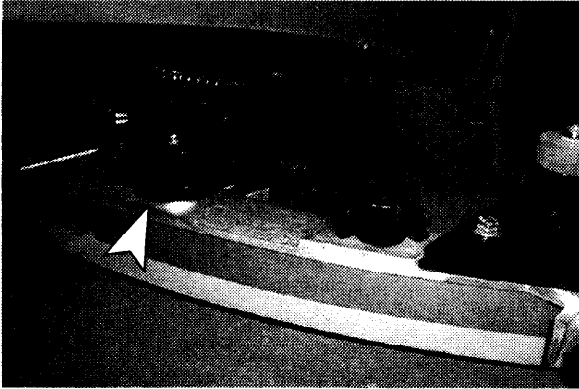


Figure 7

**To Level Squeegee Blade Assembly:**

Loosen the squeegee mount knobs and jam nuts on the leveling screws. Turn leveling screws counter-clockwise to increase blade deflection at the ends of squeegee or clockwise to decrease. Retighten knobs and jam nuts after leveling (Fig. 8).

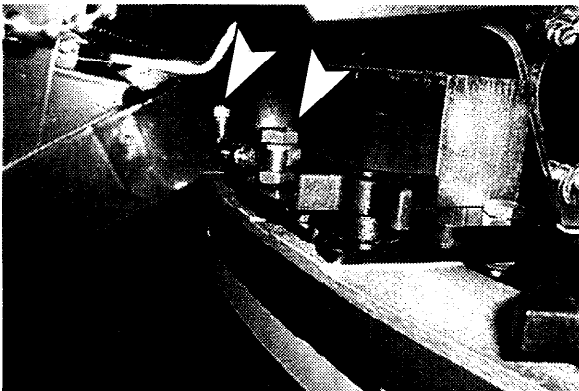


Figure 8

**INSTALLING BRUSHES/PAD DRIVERS**

**NOTE:** Consult an authorized distributor for brush/pad recommendations.

1. Turn key to the on position and press brush switch to raise scrub head (Fig 9).

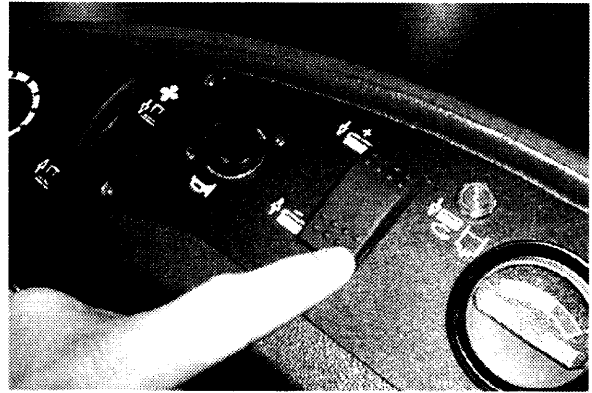


Figure 9

2. Turn key to the off position and set parking brake. Press brake pedal completely forward then press parking brake pedal with toe to set (Fig. 1).

**FOR SAFETY: Before leaving or servicing machine, stop on level surface, set parking brake, turn off machine and remove key.**

3. Unfasten two skirt latches and hinge open skirts to access motor hubs (Fig. 10).

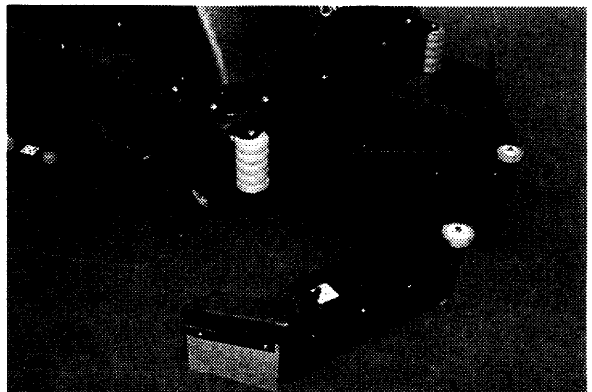


Figure 10

4. Attach pads to pad drivers before installing drivers. Secure pads with centerlock rings (Fig. 11).

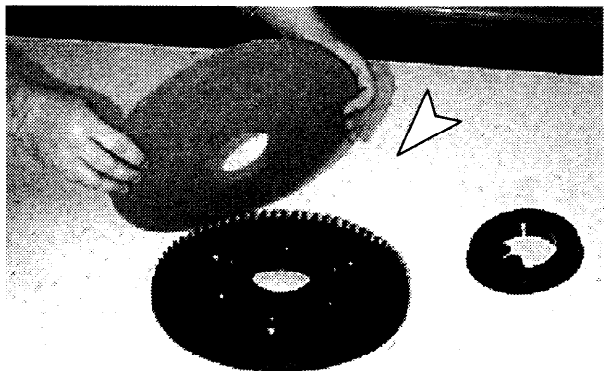


Figure 11

## OPERATION

- To attach pad driver to machine, insert pad driver's mounting studs into drive plate slots. Hold drive plate with thumb and give the driver a quick turn toward the spring clip. Be certain that all three mounting studs are engaged before operating machine (Fig. 12).

**NOTE:** Make sure pad driver and motor hub surfaces are clean before installing drivers. Keeping surfaces clean allows for easy removal.

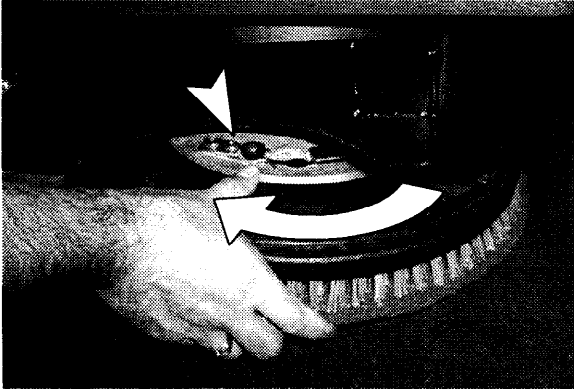


Figure 12

- Close skirts and refasten latches.

### FILLING SOLUTION TANK

- Drive machine to filling station. Raise squeegee and scrub head when traveling (See MACHINE OPERATION).
- Turn machine power off and set parking brake. Press brake pedal completely forward then press parking brake pedal with toe to set (Fig. 1)

**FOR SAFETY:** Before leaving or servicing machine, stop on level surface, set parking brake, turn off machine and remove key.

- Lift fill-port cover and fill solution tank with clean water, 60°C (140°F) maximum (Fig. 13). Solution tank capacity is 151 L (40 gal).



Figure 13

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

- Add a recommended cleaning detergent according to mixing instructions on bottle.

**ATTENTION:** Use only recommended cleaning detergents, DO NOT use substitutes. Consult an authorized distributor for cleaning detergent recommendations.

## MACHINE OPERATION

### PRE-OPERATION CHECKS

- Sweep and dust-mop floor.
- Check battery meter, machine must be in full operation for correct reading.
- Check that pads/brushes are installed.
- Lower pads/brushes to floor and check that scrub skirt touches floor all the way around.
- Check that squeegee is installed and blades are in good condition.

### OPERATING MACHINE

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

- Adjust operator seat to desired position. Move lever to the left and slide seat backward or forward to adjust (Fig. 14).

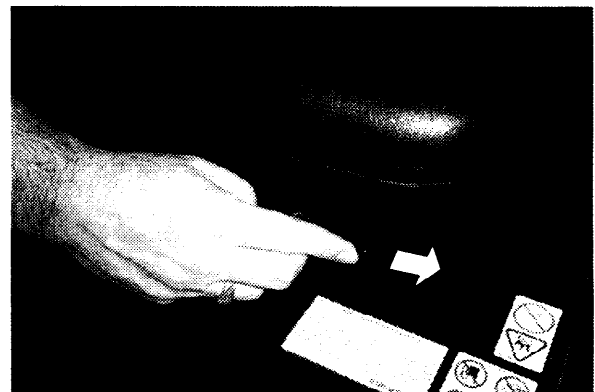


Figure 14

- Turn key to the on position.

**NOTE:** To operate machine without using cleaning functions move ahead to step 6.

3. Press brush switch to lower scrub head to floor. The brush/solution indicator light will turn on when scrub head reaches floor (Fig. 15).



Figure 15

**NOTE:** The brushes and solution flow are activated when directional pedal is pressed.

4. Press vacuum/squeegee switch to lower squeegee to floor. The vacuum motor will automatically turn on once squeegee is lowered (Fig. 16).



Figure 16

5. Turn solution control knob to maximum flow when starting out. Then adjust to a desired flow rate after scrubbing speed is determined (Fig. 17).

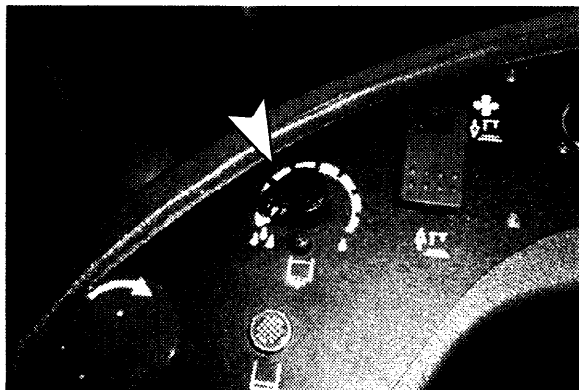


Figure 17

6. Press brake pedal to release parking brake pedal (Fig. 18).

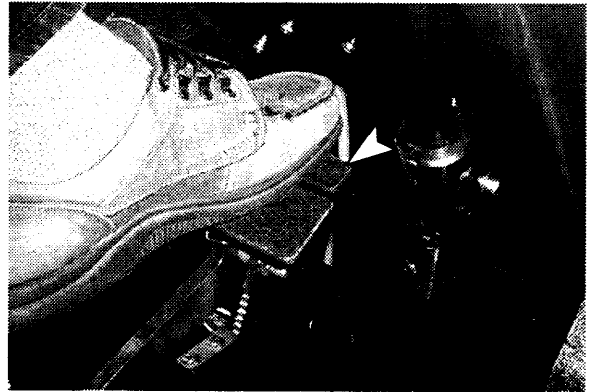


Figure 18

7. Press top of directional pedal to drive machine forward. Travel speed is controlled by the amount of pressure applied on pedal (Fig. 19).

**NOTE:** A safety switch is located under the seat. If the operator is not seated the machine will not move in either direction.

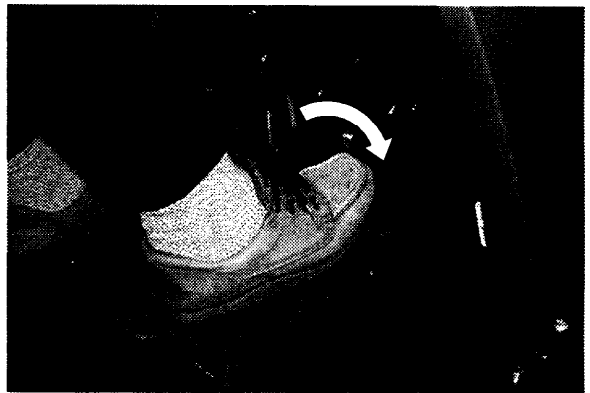


Figure 19

8. To operate machine in reverse, press bottom of directional pedal with heel of foot (Fig. 20).

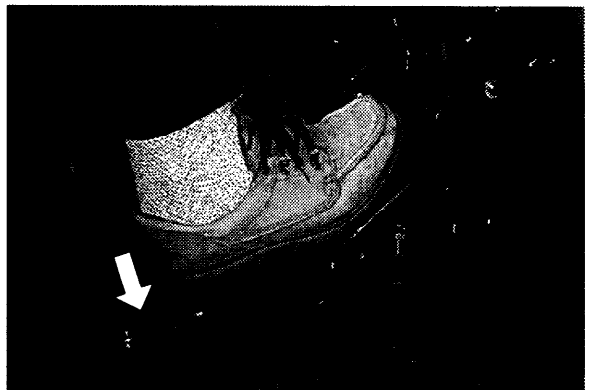


Figure 20

9. To stop machine, return directional pedal to the neutral position and/or press brake.

# OPERATION

## EMERGENCY STOPPING

In the event of an emergency while operating, strike the power kill button on the control console to halt the machine. Turn button clockwise to reset (Fig. 21).

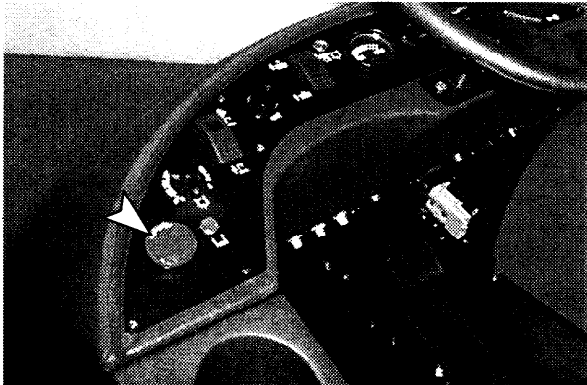


Figure 21

## WHILE OPERATING MACHINE

1. Observe brush pressure meter. Meter should read within the green zone, press brush switch to adjust pressure (Fig. 22).

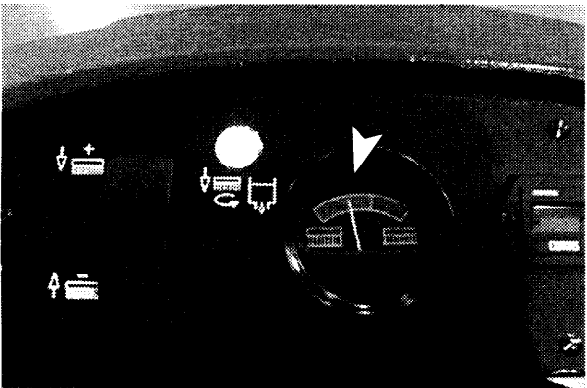


Figure 22

2. Scrub in straight paths overlapping each path by 50 mm (2 in).

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

3. Avoid bumping into walls or scraping the sides of machine.
4. Use caution when backing up and turning around corners.
5. Use horn button located on control console to alert people of on coming machine.
6. Drive machine slowly on inclines (See TRANSPORTING MACHINE for ramp climbing preparations).

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

7. Keep machine moving to prevent damage to finish or floor.
8. Periodically observe recovery tank for excessive foam. Pour a recommended foam control solution into recovery tank if excessive foam appears

**ATTENTION: Do not allow foam or water to enter float shut-off screen, vacuum motor damage will result; not covered by warranty. Foam will not activate float shut-off screen.**

9. Observe solution low indicator, located on control console. When indicator light turns on, solution level is low and is approaching time to refill solution tank and drain recovery tank (See DRAINING TANKS) (Fig. 23).

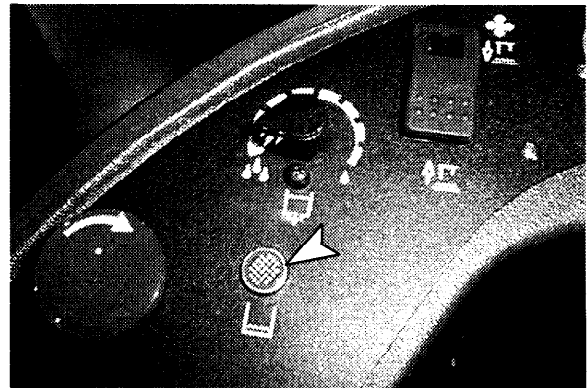


Figure 23

10. For heavily soiled areas, double scrubbing is recommended. First scrub area with squeegee up, let solution set for 15–20 minutes, then scrub area a second time with squeegee down.

**ATTENTION: Do not operate machine with pad pressure meter in red zone, circuit breakers will trip and floor damage may occur.**

11. If machine is scrubbing poorly, stop scrubbing and refer to the TROUBLE SHOOTING section in this manual.
12. Stay clear of floor obstructions, such as electrical plates or grates, brush/pad damage will occur.
13. If squeegee leaves streaks, raise and wipe blades with a cloth. Pre-sweep area to prevent streaking. If squeegee needs adjustment, refer to the ADJUSTING SQUEEGEE section in this manual.
14. Observe battery meter (See BATTERY METER).
15. After scrubbing, perform the Daily Maintenance procedures (See MACHINE MAINTENANCE).

## BATTERY METER

The battery meter displays charge level. The indicator light will move from right to left as the batteries discharge. When the left side indicator light begins to flash, discharge level is approaching time to recharge. When two indicator lights flash alternately, stop scrubbing and recharge batteries immediately (Fig. 24).

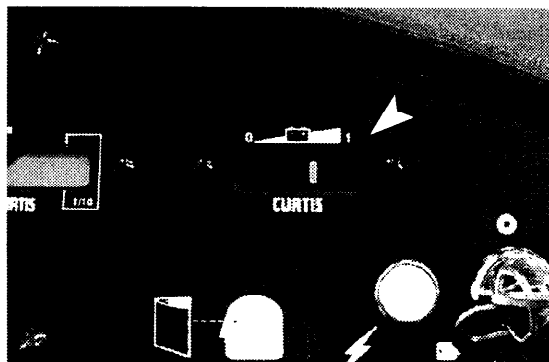


Figure 24

## MACHINE CIRCUIT BREAKERS

The machine is equipped with five resettable circuit breakers to protect machine from damage. If a circuit breaker should trip during operation, determine cause, allow motor to cool and then manually reset breaker. When replacing breakers, never substitute a higher breaker than specified. Circuit breaker panel is located below control console (Fig. 25).

- 10A Main Circuit Breaker
- 60A Drive Motor Circuit Breaker
- 30A Vacuum Motor Circuit Breaker
- 30A Brush Motor Circuit Breaker (2)

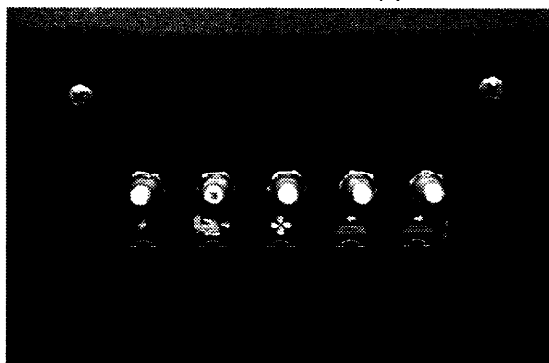


Figure 25

## HOUR METER

The hour meter records number of scrubbing hours the machine has performed. Use hour meter to determine when to perform recommended maintenance procedures and to record service history (Fig. 26).

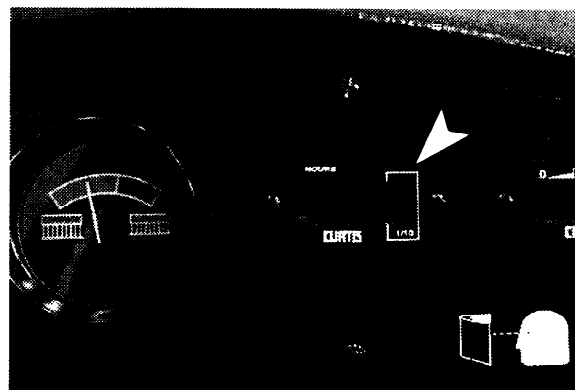


Figure 26

## DRAINING TANKS

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

### DRAINING RECOVERY TANK

Drain recovery tank:

- When solution tank is refilled.
- After each use.
- When squeegee starts trailing water.
- When float shut-off screen, located inside recovery tank, is activated.

1. Drive machine to floor drain.
2. Turn key to the off position and set parking brake.

**FOR SAFETY: Before leaving or servicing machine, stop on level surface, set parking brake, turn off machine and remove key.**

3. Remove drain hose from hose hook. Turn drain hose knob counter-clockwise and pull plug out while holding hose up. Then slowly lower hose to floor drain (Fig. 27).

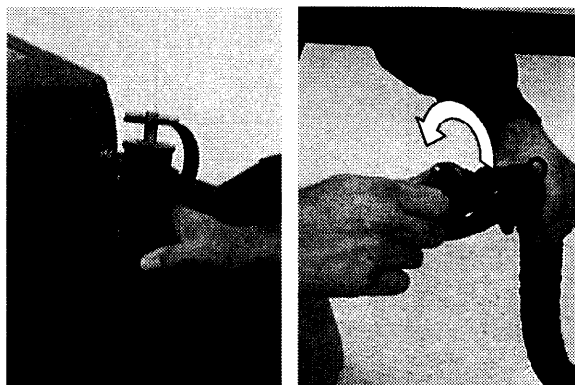


Figure 27

4. Remove recovery tank lid and flush tank out with clean water.

## OPERATION

5. Replace drain hose plug securely.
6. When finished scrubbing, perform the Daily Maintenance procedures (See MACHINE MAINTENANCE).

### DRAINING SOLUTION TANK

Drain unused solution after each use.

1. Drive machine to floor drain.
2. Turn key to the off position and set parking brake.

**FOR SAFETY: Before leaving or servicing machine, stop on level surface, set parking brake, turn off machine and remove key.**

3. Remove drain hose from hose clip located under right side of machine (Fig. 28).



Figure 28

4. Turn drain hose cap counter-clockwise to remove (Fig. 29).

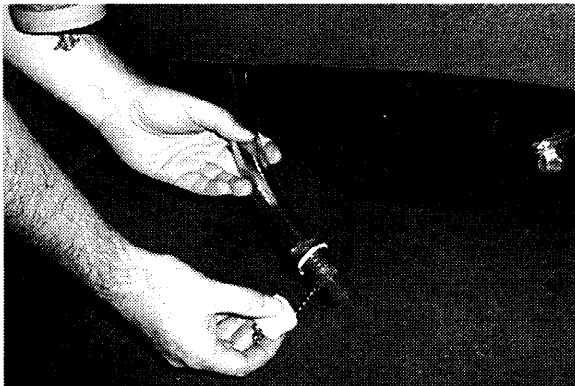


Figure 29

5. Flush out solution tank with clean water.
6. Replace drain hose plug securely and return hose in clip.
7. When finished scrubbing, perform the Daily Maintenance procedures (See MACHINE MAINTENANCE).

### REMOVING BRUSHES/PAD DRIVERS

Brushes should be replaced when bristles are worn to a length of 10 mm (0.38 in). Pads should be replaced or cleaned daily.

**NOTE: Always replace brushes and pads as a set. Never replace just one.**

1. Turn key to the on position and press brush switch to raise scrub head.
2. Turn machine power off and set parking brake.

**FOR SAFETY: Before leaving or servicing machine, stop on level surface, set parking brake, turn off machine and remove key.**

3. Unfasten two skirt latches and hinge open skirts to access motor hubs (Fig. 30).

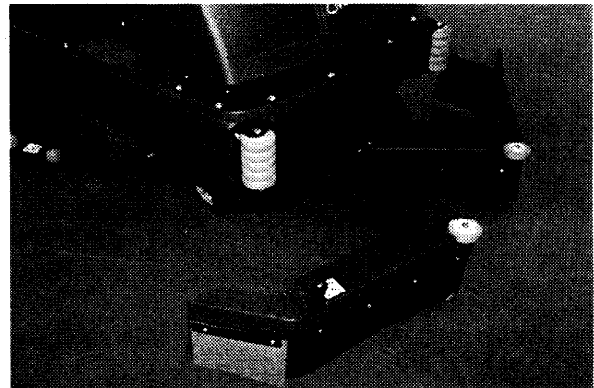


Figure 30

4. Grip brush/pad driver and give it a quick turn counter-clockwise to release from spring clip (Fig. 31).

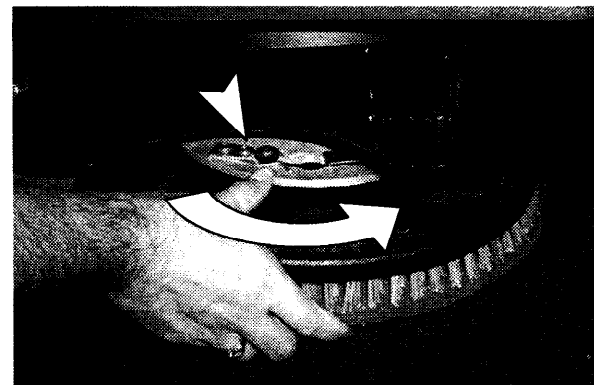


Figure 31

5. Install new brushes/pads (See MACHINE SETUP).

## 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. Only use a battery charger with the following specifications to prevent battery damage.

### BATTERY CHARGER SPECIFICATIONS:

- OUTPUT VOLTAGE - 36 VOLTS
- OUTPUT CURRENT - 36 AMPS
- AUTOMATIC SHUTOFF CIRCUIT
- FOR DEEP CYCLE BATTERY CHARGING

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

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

**FOR SAFETY:** When servicing machine, wear hand and eye protection when handling batteries and battery cables. Avoid contact with battery acid.

1. Drive machine to a well-ventilated area for charging.
2. Park machine on a level surface, turn key to the off position and set parking brake.

**FOR SAFETY:** Before leaving or servicing machine, stop on level surface, set parking brake, turn off machine and remove key.

3. Hinge seat away from machine to access battery compartment.
4. Check fluid level (A) in each battery cell before charging. If battery plates (B) are exposed, add just enough distilled water to cover plates by approximately 3 mm (0.13 in). DO NOT OVERFILL. Overfilled batteries will overflow during charging due to fluid expansion. Replace cell caps before charging (Fig. 32).

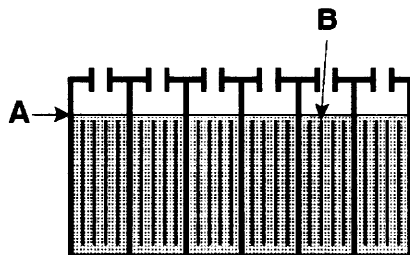


Figure 32

5. With charger disconnected from machine, plug charger's power cord into a grounded wall outlet (Fig. 33).

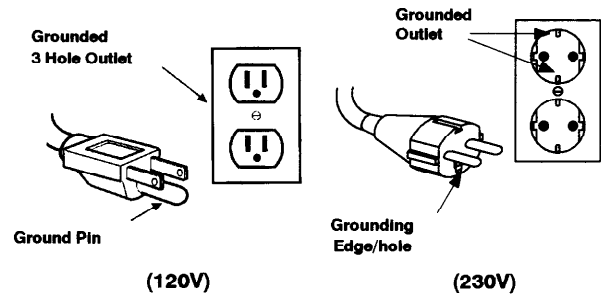


Figure 33

6. Connect battery charger to machine as shown (Fig. 34).

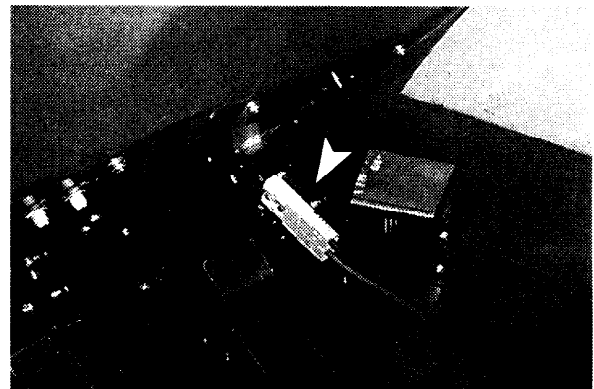


Figure 34

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

**NOTE:** The machine becomes inoperable once charger is connected.

7. Charger will automatically begin charging and shut off when fully charged.
8. When disconnecting charger, always unplug charger from wall outlet first.
9. After charging, check battery fluid level. Fluid level should be within 3 mm (0.13 in) of full level indicator. Add distilled water if needed. DO NOT OVERFILL.

# OPERATION

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## MACHINE MAINTENANCE

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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, set parking brake, turn off machine and remove key.**

**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.**

---

## DAILY MAINTENANCE (Every 4 Hours of Use)

1. Drain and flush out tanks with clean water (See DRAINING TANKS).
2. Remove and rinse float shut-off screen located in recovery tank (Fig. 35).

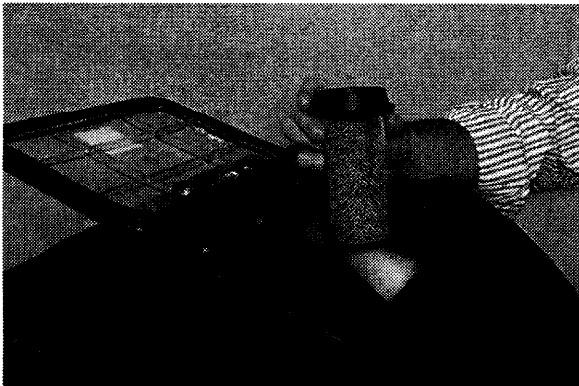


Figure 35

3. Check brushes for entangled debris.
4. Change pads or brushes, replace if worn or damaged (See REMOVING BRUSHES/PAD DRIVERS).
5. Check scrub head skirt(s) for wear and adjustment.
6. Raise squeegee and wipe it down with a dry cloth. Store squeegee in the up position to prevent squeegee damage.
7. Check machine for water leaks and loose nuts and bolts.
8. Clean machine housing with an all purpose cleaner and damp cloth.

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

9. Recharge batteries (See CHARGING BATTERIES).

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

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## WEEKLY MAINTENANCE (Every 20 Hours of Use)

1. Remove solution bowl filter and clean screen, filter is located behind scrub head under machine. Make sure solution tank is empty before removing filter (Fig. 36).

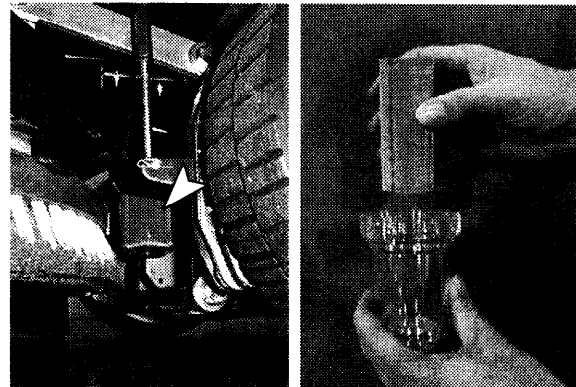


Figure 36

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

---

## MONTHLY MAINTENANCE (Every 80 Hours of Use)

1. Flush solution system. Pour 11.3 L (3 gal) of hot water into solution tank. Add an alkaline detergent according to mixing instructions. Position machine over a floor drain, turn travel speed knob to slowest setting and set parking brake. Now fully operate machine for 30 seconds. Turn key off and leave machine overnight. Next day, disperse remaining alkaline detergent and rinse solution system.
2. Lubricate skirt caster with a water resistant grease.
3. Lubricate all pivot points and rollers with silicone spray then coat with a water resistant grease to maintain smooth operation.

## QUARTERLY MAINTENANCE (Every 250 Hours of Use)

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

Contact an Authorized Service Center for motor maintenance.

2. Check steering chain tension (See STEERING CHAIN MAINTENANCE).

## BATTERY MAINTENANCE

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

**FOR SAFETY: When servicing machine, wear hand and eye protection when handling batteries and battery cables. Avoid contact with battery acid.**

1. Always follow proper charging instructions (See CHARGING BATTERIES).
2. After charging, check fluid level (A). Fluid level should be within 3 mm (0.13 in) of full level indicator. Add distilled water if needed. **DO NOT OVERFILL.** Overfilled batteries will overflow during charging due to fluid expansion (Fig. 37).

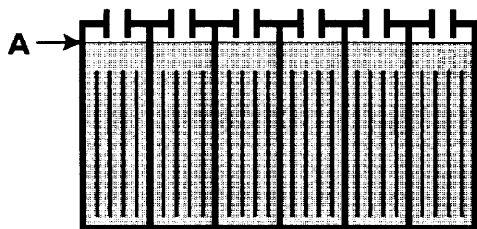


Figure 37

3. Keep battery tops and terminals clean and dry. To clean batteries:
  - a. Mix a strong solution of baking soda and water (Fig. 38).



Figure 38

- 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.

## STEERING CHAIN MAINTENANCE

The steering chain tension should be checked after the first 50 hours of operation and every 250 hours thereafter.

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

1. To access steering chain, remove five floor panels, 13 mm wrench and Phillips head screwdriver required (Fig. 39).

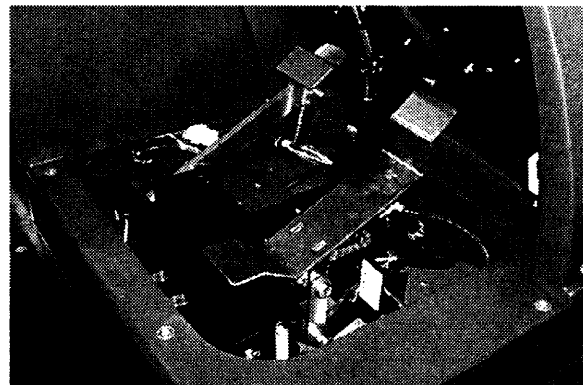


Figure 39

2. Measure amount of chain deflection at location shown below. Proper chain deflection should be approximately 25 mm (1.00 in) total (Fig. 40).

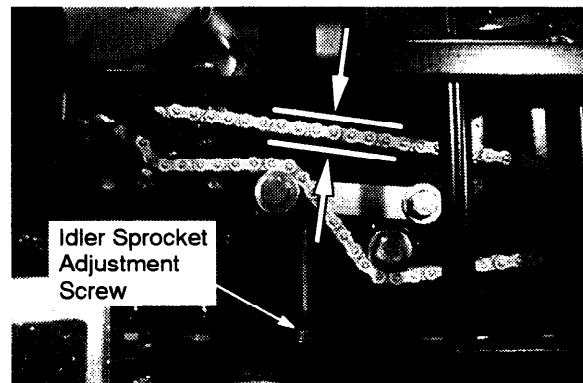


Figure 40

## OPERATION

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3. To adjust chain tension, loosen jam nut on the idler sprocket adjustment screw and turn screw clockwise to increase tension. Retighten jam nut after adjusting (Fig. 40).
4. Lubricate chain with a water resistant oil.

---

### BRAKE ADJUSTMENT

If machine pulls in either direction while braking or if machine does not stop immediately, brake adjustment may be required.

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

1. Hinge open skirts to access brakes (Fig. 41).

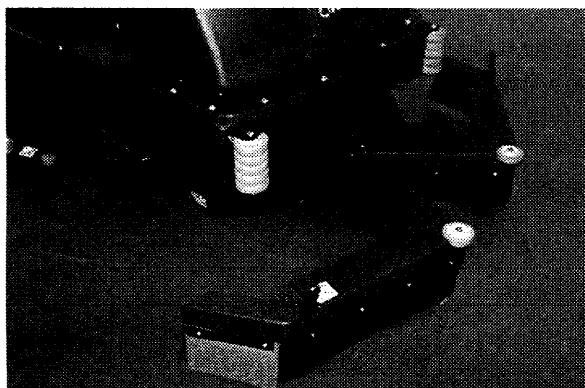


Figure 41

2. Locate hex link brake adjusters in front of each drive wheel (Fig. 42).

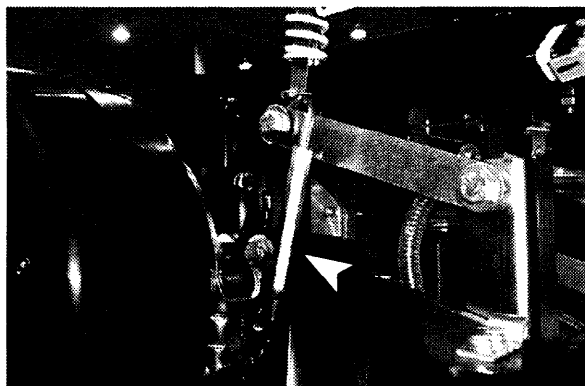


Figure 42

3. To adjust brakes, loosen jam nut and turn hex link adjuster as described below:

**RIGHT SIDE** - Turn hex link adjuster clockwise to increase or counter-clockwise to reduce brake pressure.

**LEFT SIDE** - Turn hex link adjuster counter-clockwise to increase or clockwise to reduce brake pressure.

**NOTE:** Brake adjustment should be made so that brake pads are loose; not rubbing disc. A .045" shim should be used for proper adjustment between pad and disc. Adjusting the brakes too tightly will create an extra load on the drive system and cause overloading problems.

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### JACKING MACHINE

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Empty tanks prior to jacking. Stop machine on a flat level surface and block machine tires before jacking up machine.

Use designated location for jacking up machine. Use a piece of wood to distribute machine weight (Fig. 43).

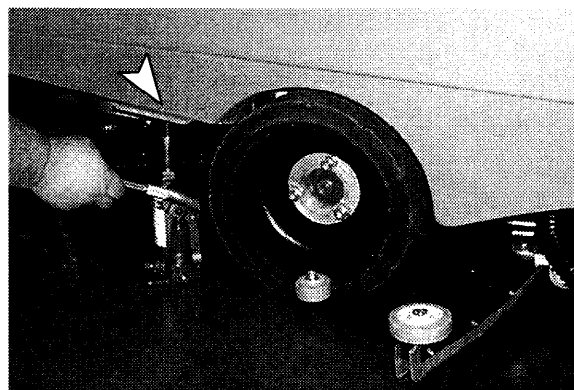


Figure 43

**FOR SAFETY: When servicing machine, block machine tires before jacking machine up.**

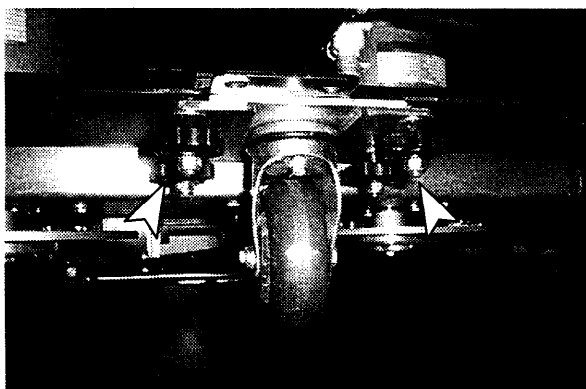
**FOR SAFETY: When servicing machine, jack machine up at designated locations only. Block machine up with jack stands.**

**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. Empty solution and recovery tanks.
2. Remove squeegee assembly, scrub head skirts and brushes/pads.
3. Raise scrub head.
4. Loosen (4) knobs holding front caster in place and remove caster (Fig. 44).



**Figure 44**

5. Load machine using a recommended loading ramp.
6. Position front of machine up against front of trailer of truck. Once machine is positioned, replace brushes/pads and lower scrub head to floor.
7. Set parking brake and place a block behind each drive wheel and steering wheel.
8. Place tie-down straps over top of bumper wheel brackets.

**STORING MACHINE**

1. Charge batteries before storing. Never store machine with discharged batteries.
2. Drain and rinse tanks thoroughly.
3. Store machine in a dry area with squeegee and scrub head in the raised position.
4. 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 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	701103	ASM., STANDPIPE	1
2	180613	•FLOAT, SHUTOFF	1
3	230187	NIPPLE	1
4	101714	•GASKET	1
5	210240	NUT, FLANGED	1

# OPERATION

## TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
Machine will not turn on	Faulty key switch	Contact Service Center
	Seat safety switch not activated	You must be seated
	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 breaker
	Power kill button activated	Turn button clockwise to reset
Brush motors will not turn on	Scrub head is not lowered	Lower scrub head to floor
	Directional pedal not pressed	Press pedal
	Faulty brush switch	Contact Service Center
	Brush circuit breaker has tripped	Replace pad or adjust pad pressure 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
	Faulty scrub head switch	Contact Service Center
Vacuum motor will not turn on	Faulty vacuum/squeegee switch	Contact Service Center
	Squeegee is raised off floor	Lower squeegee
	Main circuit breaker has tripped	Determine cause and reset circuit breaker button
	Vacuum motor circuit breaker has tripped	Determine cause and reset circuit breaker button
	Faulty vacuum motor or wiring	Contact Service Center
	Worn carbon brushes	Contact Service Center
	Faulty squeegee switch	Contact Service Center
Little or no solution flow	Scrub head is not lowered	Lower scrub head to floor
	Directional pedal not pressed	Press directional pedal
	Solution tank is empty	Fill solution tank
	Solution control knob not activated	Turn solution flow knob
	Loose set screw on solution control knob	Calibrate knob and tighten screw
	Clogged solution line or solution tank filter	Remove hose and blow compressed air through it. Flush solution tank after each use
	Clogged solution valve or solenoid	Remove valve or solenoid and clean. Do not scratch inside of valve
	Faulty solution solenoid	Contact Service Center
	Faulty scrub head switch	Contact Service Center

**TROUBLESHOOTING - Continued**

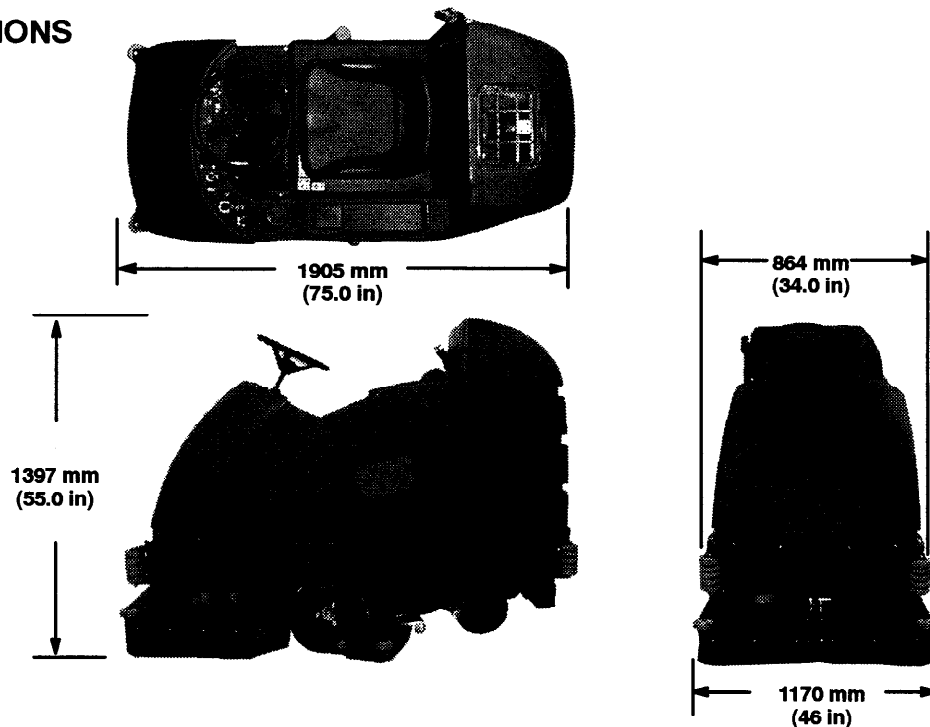
<b>PROBLEM</b>	<b>CAUSE</b>	<b>SOLUTION</b>
Poor Scrubbing Performance	Scrubbing speed too fast	Scrub at a slower speed
	Worn or improper brushes/pads	Replace or use proper brushes/pads
	Debris caught in brushes/pads	Remove debris
	Low battery charge	Charge batteries
	Incorrect brush/pad pressure	Readjust brush/pad pressure
Poor water pickup	Recovery tank is full and float shut-off screen has been activated	Empty recovery tank
	Float shut-off screen inside recovery tank is clogged	Remove screen and clean
	Clogged squeegee	Unclog squeegee
	Dirty squeegee blade	Clean squeegee blades, presweep floor
	Worn squeegee blades	Replace squeegee blades
	Loose squeegee thumbscrews	Tighten thumbscrews
	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 is obstructed	Empty recovery tank and tilt tank sideways to access inlet hole, remove obstruction
	Worn tank lid gasket	Replace gasket
	Loose drain hose plug	Tighten 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
	Scrubbing speed too fast	Reduce scrubbing speed
Short run time	Batteries not fully charged	Charge batteries
	Defective batteries	Replace battery
	Batteries need maintenance	See BATTERY MAINTENANCE
	Faulty charger	Repair or replace battery charger
	Heavy brush/pad pressure	Reduce brush/pad pressure

# OPERATION

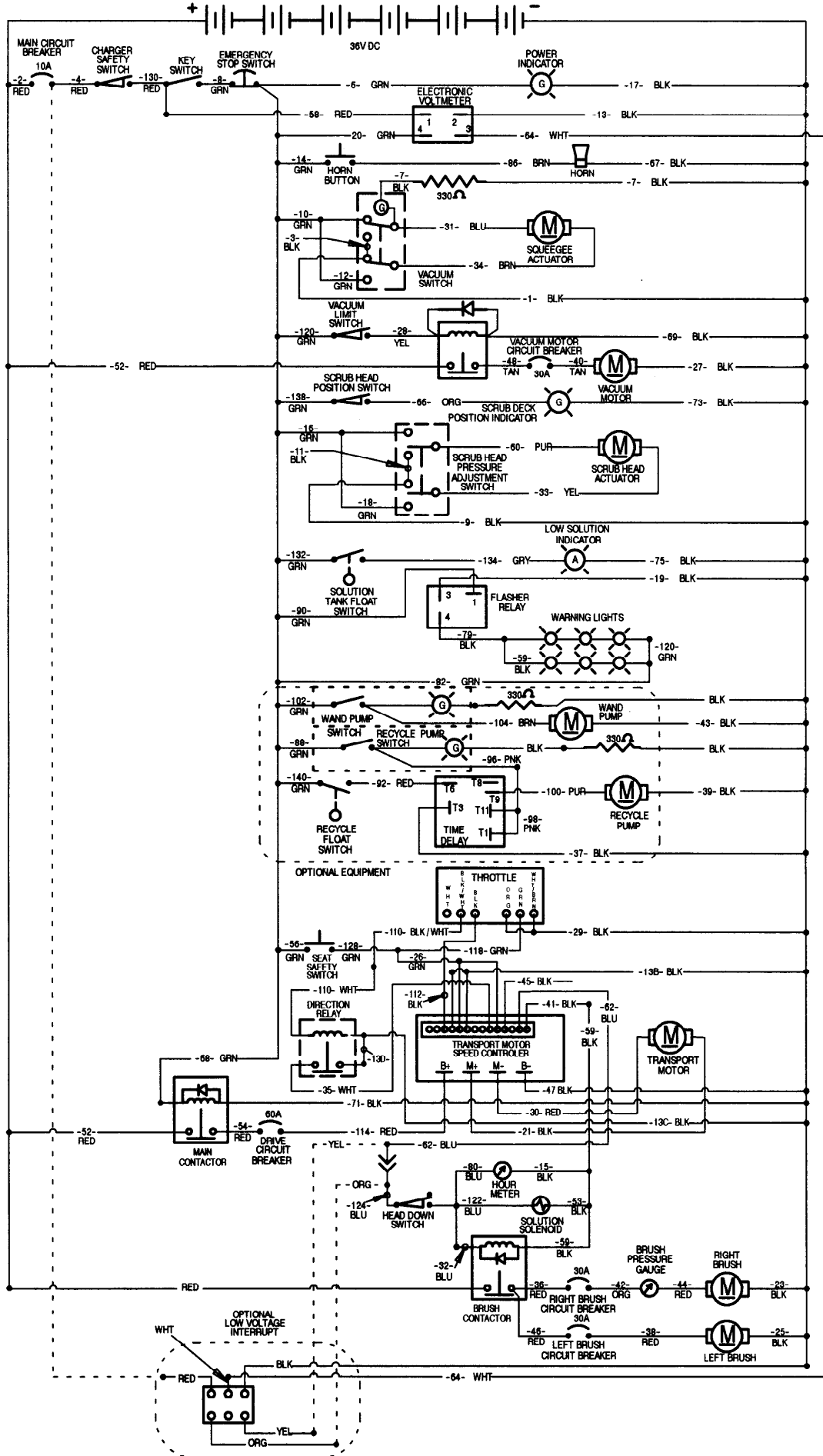
## MACHINE SPECIFICATIONS

<b>MODEL</b>	<b>Tuff Scrub™ 3300</b>
LENGTH	1905 mm (75 in)
WIDTH (without squeegee and skirts)	864 mm (34 in)
WIDTH (with squeegee and skirts)	1170 mm (46 in)
HEIGHT	1397 mm (55 in)
WEIGHT (with batteries)	680 Kg (1500 lb)
WEIGHT (w/ batteries, full solution tank and operator)	907 Kg (2000 lb)
CLEANING PATH WIDTH	838 mm (33 in)
RECOVERY TANK CAPACITY	189 L (50 Gal)
SOLUTION TANK CAPACITY	151 L (40 Gal)
SOLUTION FLOW RATE	3.8 L/min (1 Gal/min) nominal
DRIVE SYSTEM	Transaxle, 36 V, 0.56 kw (0.75 hp)
MAXIMUM RATED CLIMB OR DESCENT	Scrubbing: 4° Transporting: 12°
TURNING RADIUS	1295 mm (51 in)
SPEED	Forward - 6.4km/h (0-4.0mph) Reverse - 2.4km/h (0-1.5mph)
CLEANING RATE, MAX.	5400 m <sup>2</sup> (58,000 sq ft) per hour
PAD PRESSURE	Variable 52-97 kg (115-215 lb)
BRUSH MOTOR	Two - 0.56 kW (0.75 hp), 320 rpm (full load), 36 V, 21 A, 560 W
VACUUM MOTOR	0.67 kW (0.9 hp), three-stage 145 mm (5.7 in), 36 V, 21.2 A, 672 W
WATER LIFT	1880 mm (74 in)
BATTERIES	Six - 6 V, 335 AH
BATTERY CHARGER	36 VDC, 36 A, 120 VAC
CONTINUOUS RUN TIME (average machine load)	Up to 3.5 hours
TOTAL POWER CONSUMPTION (average machine load)	70 Amp
DECIBEL RATING AT OPERATOR'S EAR, INDOORS	76 dB(A)

## MACHINE DIMENSIONS



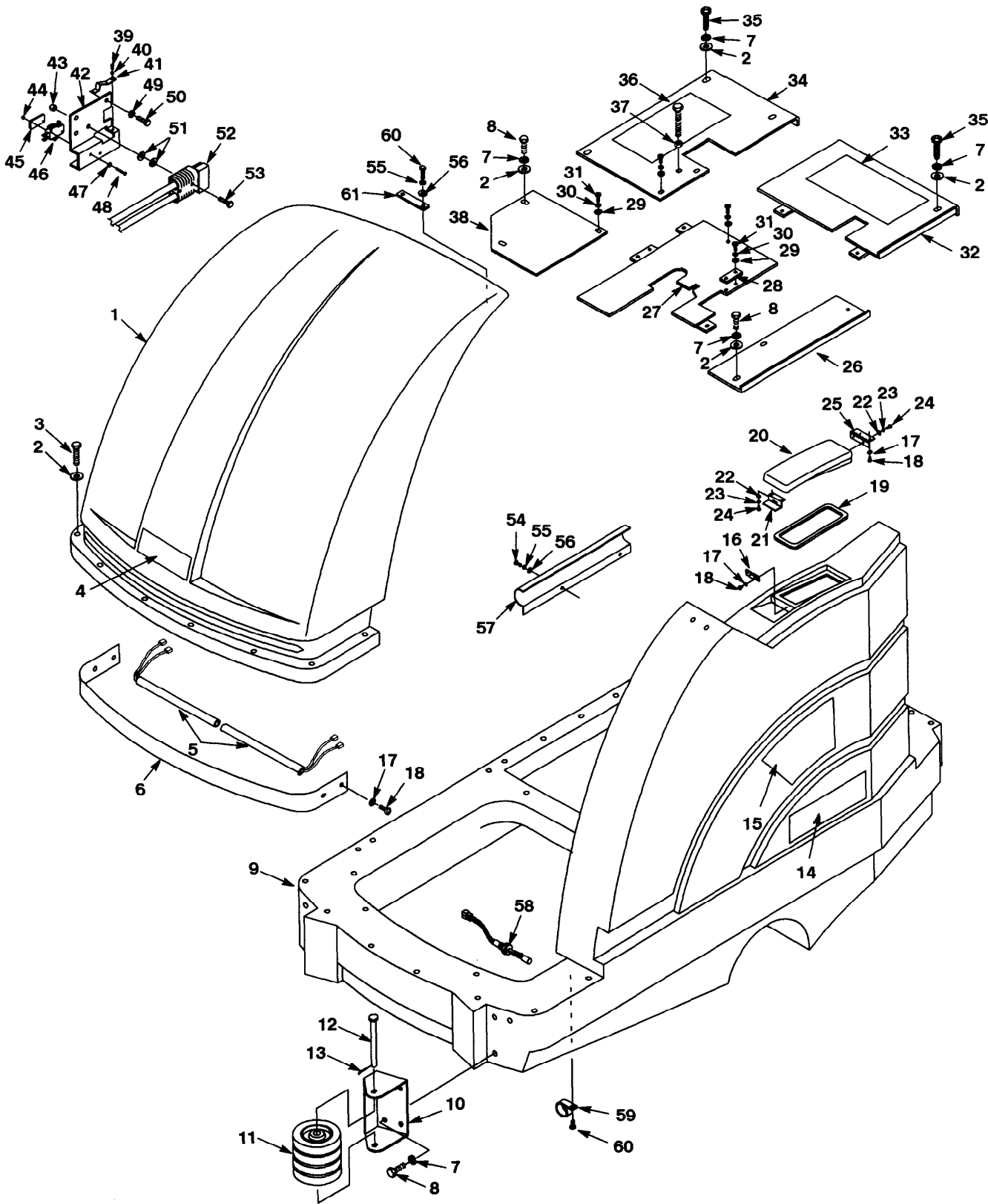
LADDER DIAGRAM







SOLUTION TANK GROUP



## SOLUTION TANK GROUP

REF	PART #	DESCRIPTION	QTY.
1	600859	HOUSING, FRONT	1
2	140027	WASHER, 5/16 FLT	15
3	605079	SCREW, M8X1.25X35	15
4	608184	DECAL, NOBLES 1.62" X 9.5"	1
5	603440	LIGHT, SAFETY 36VDC	2
6	601977	SCREEN, FRONT LIGHTS	1
7	140015	WASHER, 5/16 SPLTLCK	19
8	140275	SCREW, M8X1.25X16 HXHDCP	15
9	600857	TANK, SOLUTION	1
10	600881	BRACKET, BUMPER WHEELS	4
11	630450	WHEEL, RUBBER	20
12	600915	PIN, CLEVIS 7/16X6	4
13	578421	PIN, COTTER, .12"X1.00"LG	4
14	607404	DECAL, "TUFF SCRUB 3300"	1
15	607405	DECAL, CORE COVER	1
16	601979	CLIP, LATCH SOL COVER	1
17	140032	WASHER, #6 FLAT	8
18	140872	SCREW, #6X3/8	8
19	601978	GASKET, SOLUTION TANK COVER	1
20	601975	COVER, SOL TANK	1
21	601980	LATCH, SOL COVER	1
22	140007	WASHER, #8 FLT	4
23	140023	WASHER, #8 INT	4
24	20007034	SCREW, M4X.7X8	4
25	601981	HINGE, SOLUTION COVER	1
26	607033	PANEL, FLOOR LEFT FRONT	1
27	607036	PANEL, FLOOR CENTER FRONT	1
28	607070	PLATE, PARKING BRAKE LATCH	1
29	140000	WASHER, 1/4 FLT	8
30	140016	WASHER, 1/4 LCK	8
31	578187000	SCREW, M6X1.0X12	8

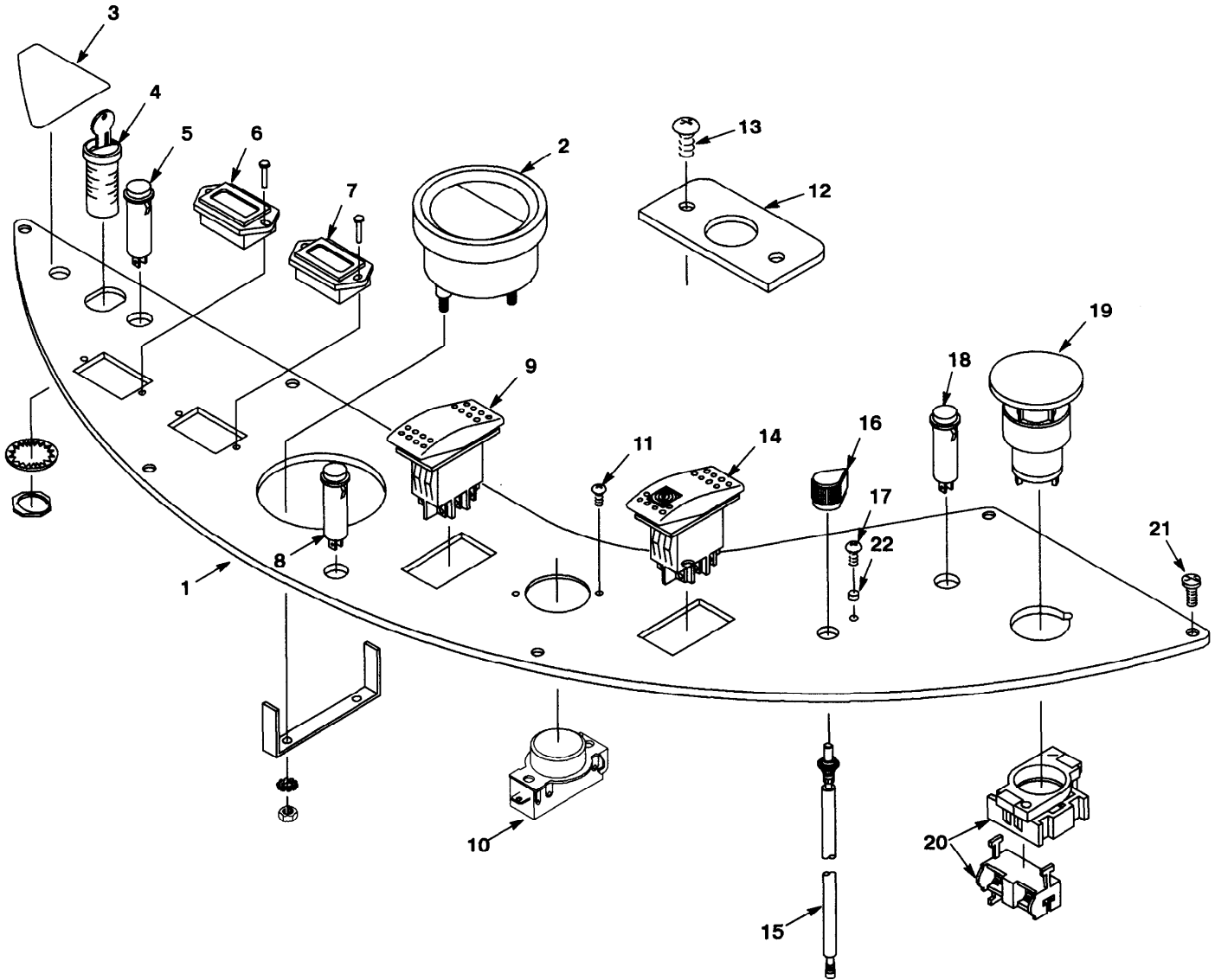
REF	PART #	DESCRIPTION	QTY.
32	607037	PANEL, FLOOR LEFT REAR	1
33	600993	PAD, NON SLIP SURFACING 4X10	2
34	607035	PANEL, FLOOR RIGHT REAR	1
35	575029000	SCREW, M8X1.25X20	4
36	140204	SCREW, 1/2-13X1-1/2	1
37	140509	NUT, 1/2-13 HXJM	1
38	607034	PANEL, FLOOR FRONT RIGHT	1
39	200630262	SCREW, M3X.5X10 FILPHL	1
40	140019	WASHER, #6 EXT	1
41	607131	SPRING, LEVER CHR9 SHUTOUT	1
42	607132	PLATE, CHARGE PLUG	1
43	140284	NUT, M6X1.0 NYLCK	2
44	579211	NUT, M3 HEXLCK	2
45	601359	PLATE, SWITCH BACKING	1
46	600437	SWITCH, ROLLER 15A	1
47	601127000	WASHER, FLAT	2
48	578403000	SCREW, M3X.5X20	2
49	140016	WASHER, 1/4 LCK	2
50	200031436	SCREW, M6X1.0X16	2
51	140000	WASHER, 1/4 FLT	4
V52	607141	ASM, CHARGE PLUG	1
▲	069764608	●PLUG	1
53	200031444	SCREW, M6X1.0X30	2
54	069760096	SCREW, M8X1.25X10	2
55	140015	WASHER, 5/16 SPLTLCK	4
56	140027	WASHER, 5/16 FLT	4
57	607136	COVER, WIRING	1
58	607825	SENSOR, LIQUID LEVEL	1
59	140314	CLAMP, INSULATED 3/4" ID	1
60	200607491	SCREW, M8X1.25X25	3
61	600958	PLATE, HOUSING TIE	1

▽ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

● RECOMMENDED STOCK ITEMS

CONTROL CONSOLE GROUP



## CONTROL CONSOLE GROUP

REF	PART #	DESCRIPTION	QTY.
1	607076	PANEL, DASH	1
2	607074	●GAUGE, BRUSH PRESSURE	1
3	610262	DECAL, TUFF SCRUB DASH	1
∇4	612462	●KEYSWITCH	1
▲	069762236	●KEY	1
5	626114	●LIGHT, PILOT 36V GREEN	1
6	600832	●GAUGE, BATTERY 36V	1
7	630143	METER, HOUR, 18-60VDC	1
8	626114	●LIGHT, PILOT 36V GREEN	1
9	603399	●SWITCH, BRUSH PRESSURE	1
10	626128	●SWITCH, PUSHBUTTON	1
11	140756	SCREW, 6-32X1/4	2
12	607104	COVER, STEERING BEARING	1

REF	PART #	DESCRIPTION	QTY.
13	578187000	SCREW, M6X1.0X12	2
14	607977	●SWITCH, VAC & SQUEEGEE	1
15	607406	CABLE, SOLUTION CONTROL	1
16	626121	KNOB, WATER VALVE	1
17	140809	SCREW, 6-32X7/16	1
18	611148000	LIGHT, PILOT 32V AMBER	1
19	630100	●SWITCH, PUSHBUTTON	1
20	630097	●SWITCH, CONTACT BLOCK	1
21	611226000	SCREW, 6-32X1/4 TRS	7
22	630452	SPACER	1
N/S	607106	HARNESS, MAIN	1

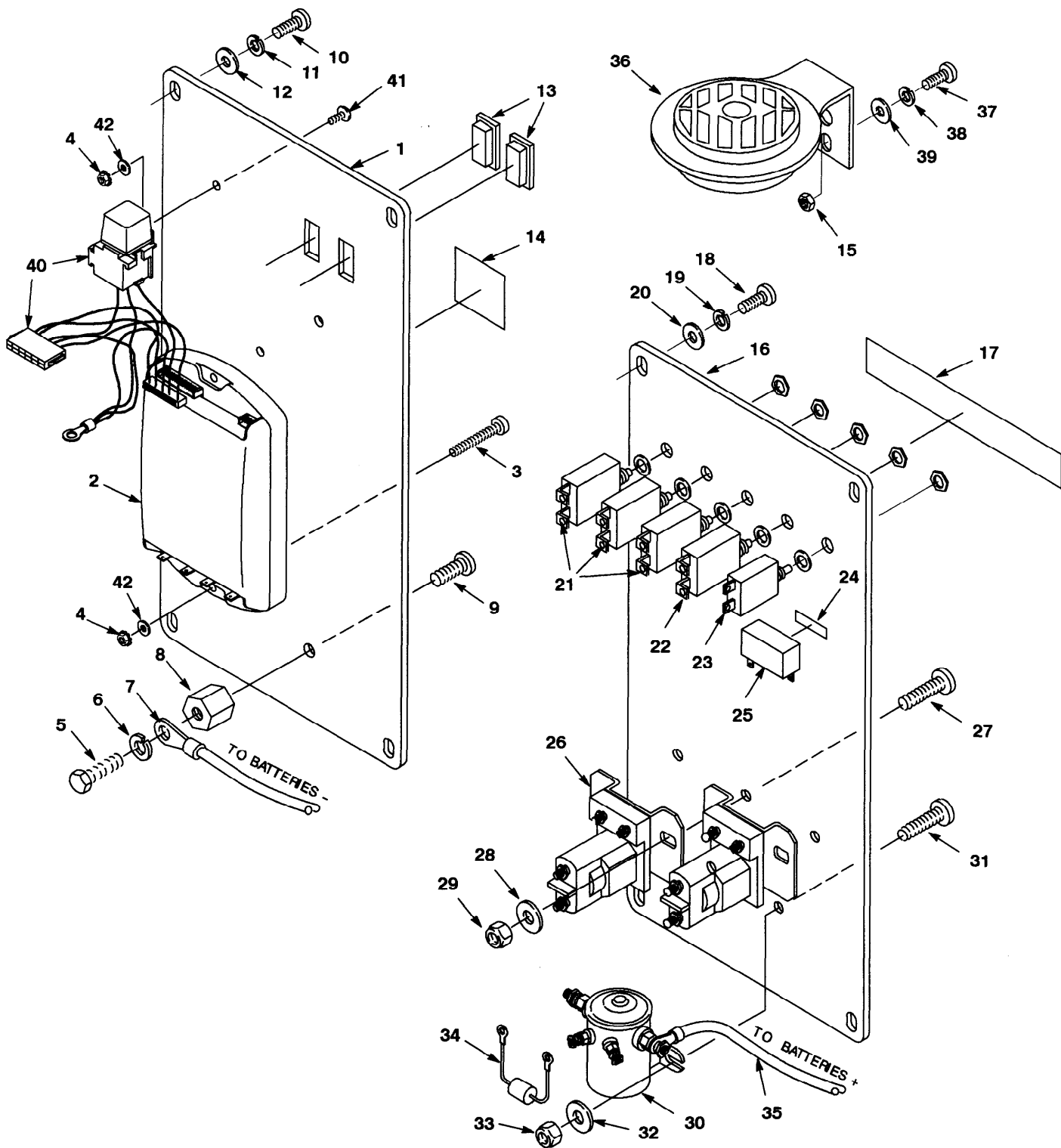
∇ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

● RECOMMENDED STOCK ITEMS

N/S NOT SHOWN

ELECTRICAL PANEL GROUP



## ELECTRICAL PANEL GROUP

REF	PART #	DESCRIPTION	QTY.
1	607069	PANEL, ELECTRICAL RH	1
2	610240	●CONTROLLER 36V 110A	1
3	140804	SCREW, 10-24X1	2
4	140519	NUT, 10-24 KEP	3
5	140553	SCREW, 1/4-20X1/2	1
6	140016	WASHER, 1/4 LOCK	1
7	607402	CABLE, #4 BLACK	1
8	578427	STANDOFF, TERMINAL	1
9	140195	SCREW, 1/4-20X1/2	1
10	578187000	SCREW, M6X1.0X12	4
11	140016	WASHER, 1/4 LOCK	4
12	140000	WASHER, 1/4 FLAT	4
13	582150	PLUG, ACCESSORY SWITCH	2
14	606105	DECAL, DO NOT SPRAY	1
15	140506	NUT, 5/16-18 HEX	2
16	601461	PANEL, ELECTRICAL LH	1
17	607836	DECAL, CIRCUIT BREAKERS RIDER	1
18	578187000	SCREW, M6X1.0X12	4
19	140016	WASHER, 1/4 LOCK	4
20	140000	WASHER, 1/4 FLAT	4
21	606780	BREAKER, CIRCUIT 30A	3
22	130739	BREAKER, CIRCUIT 60A	1
23	130737	BREAKER, CIRCUIT 10A	1

REF	PART #	DESCRIPTION	QTY.
24	100058	TAPE, ACRYLIC FOAM - 1" WIDE	.08ft
25	603839	FLASHER, 36VDC	1
26	611157000	●CONTACTOR, 36VDC 100A	2
27	578321000	SCREW, M6X1.0X16	3
28	140000	WASHER, 1/4 FLAT	3
29	140284	NUT, M6X1.0 NYLCK	3
30	130733	●SOLENOID, SPNO 36 VOLT	1
31	578321000	SCREW, M6X1.0X16	2
32	140000	WASHER, 1/4 FLAT	2
33	140284	NUT, M6X1.0 NYLCK	2
34	606404	●ASM, DIODE W/RING TERMINALS	3
35	607401	CABLE, #4 RED	1
36	369702	HORN, 36VDC	1
37	575029000	SCREW, M8X1.25X20	2
38	140015	WASHER, 5/16 SPLTLCK	2
39	140027	WASHER, 5/16 FLT USS	2
V40	610258	HARNESS, JUMPER ASM	1
▲	222111	RELAY, 36V	1
▲	57785	SOCKET, RELAY MODULE	1
41	140197	SCREW, 10-24X3/8	1
42	140011	WASHER, #10	3
N/S	607106	HARNESS, MAIN	1

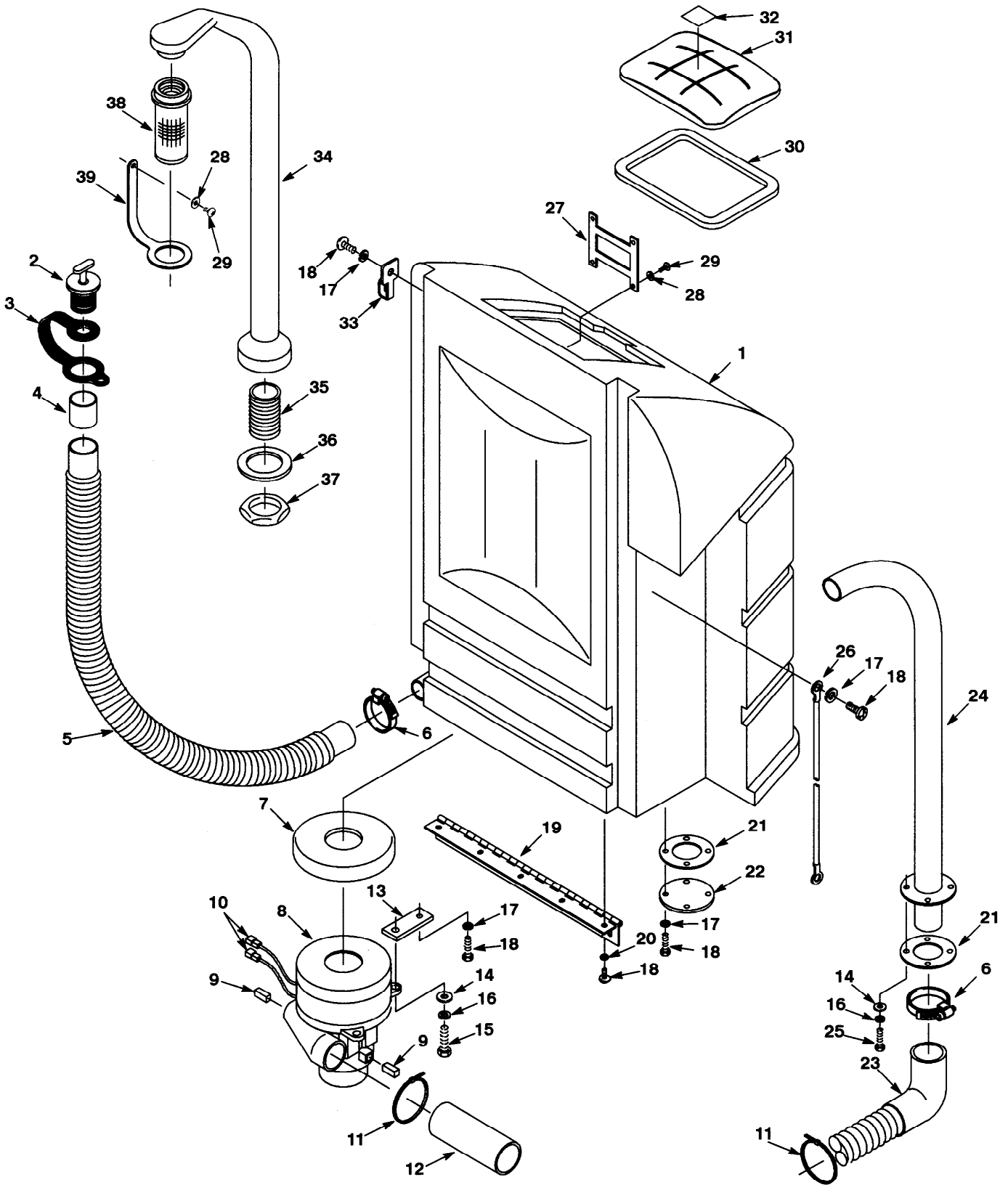
▽ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

● RECOMMENDED STOCK ITEMS

N/S NOT SHOWN

RECOVERY TANK GROUP



## RECOVERY TANK GROUP

REF	PART #	DESCRIPTION	QTY
1	600863	TANK, RECOVERY	1
2	621324	PLUG, EXPANSION 1-1/2"DIA	1
3	578441	STRAP, DRAIN HOSE	1
4	630394	SLEEVE, DRAIN HOSE 1.5"ID	1
5	630068	●HOSE, DRAIN 1.5ID X20"	1
6	140308	CLAMP, HOSE 1-5/16 TO 2-1/4	2
7	0174..10	SEAT, NEOPRENE MOTOR	1
▽8	130413	●MOTOR, VAC 5.7DIA 3 STG.36VDC	1
▲9	190162	●BRUSH, CARBON 2/PK	1
10	130096	TERMINAL, ML DSCNT 16-14 FI	2
11	130041	WIRE TIE, NYLON 11-1/2 X .190	2
12	600009	MUFFLER, VAC EXHAUST	1
13	607403	PLATE, VAC MOUNT	3
14	140000	WASHER, 1/4 FLAT	7
15	140212	SCREW, 1/4-20X1-1/2 HXHDCP	3
16	140016	WASHER, 1/4 LOCK	7
17	140015	WASHER, 5/16 SPLTLCK	9
18	140275	SCREW, M8X1.25X16 HXHDCP	18
19	600877	HINGE, RECOVERY TANK	1
20	140027	WASHER, 5/16 FLAT	9

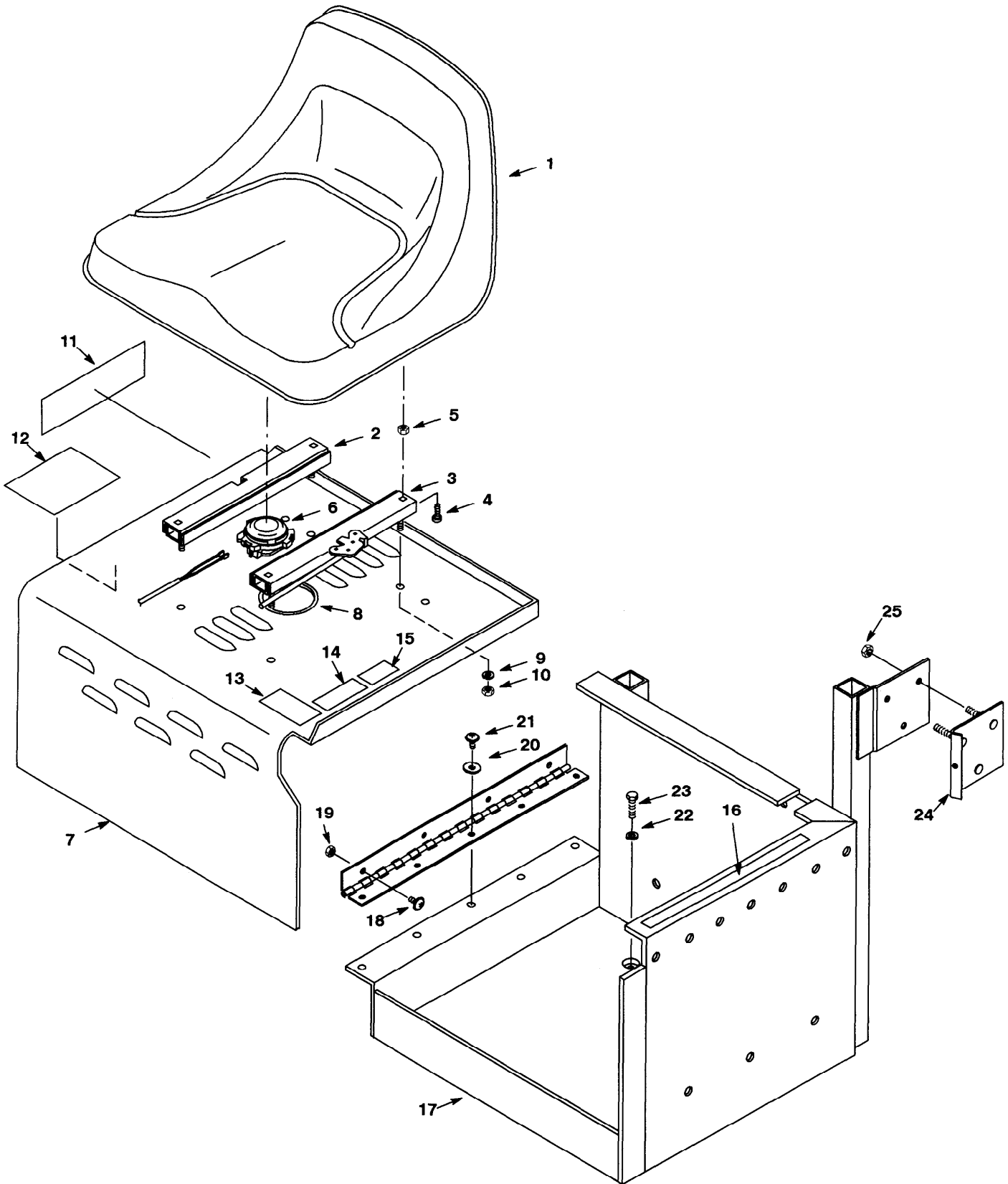
REF	PART #	DESCRIPTION	QTY
21	607072	GASKET	2
22	607130	COVER, ES	1
23	603259	●HOSE, 1.5X50" 90DEG CUFF	1
24	600872	TUBE, VAC INLET	1
25	200031441	SCREW, M6X1.0X25 HXHDCP	4
26	140960	CABLE, REC TANK SUPPORT	1
27	630056	STRAP, TANK COVER RETAINING	1
28	630390	WASHER, FLAT	5
29	140872	SCREW, #6X3/8 PANPHL	5
30	630367	●GASKET, REC TANK COVER	1
31	630055	COVER, TANK CLEANOUT	1
32	630420	DECAL, FLAMMABLE MATERIAL	1
33	222793	CLIP, HOSE HANGER	1
34	600871	STANDPIPE, RM-NAT	1
35	606088	FITTING, 1-1/2" NIPPLE	1
36	101714	GASKET	1
37	210240	NUT, 1-1/2 FPT FLANG	1
38	180613	●FLOAT, SHUT-OFF	1
39	231076	STRAP, FLOAT CAGE	1

▽ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

● RECOMMENDED STOCK ITEMS

SEAT GROUP



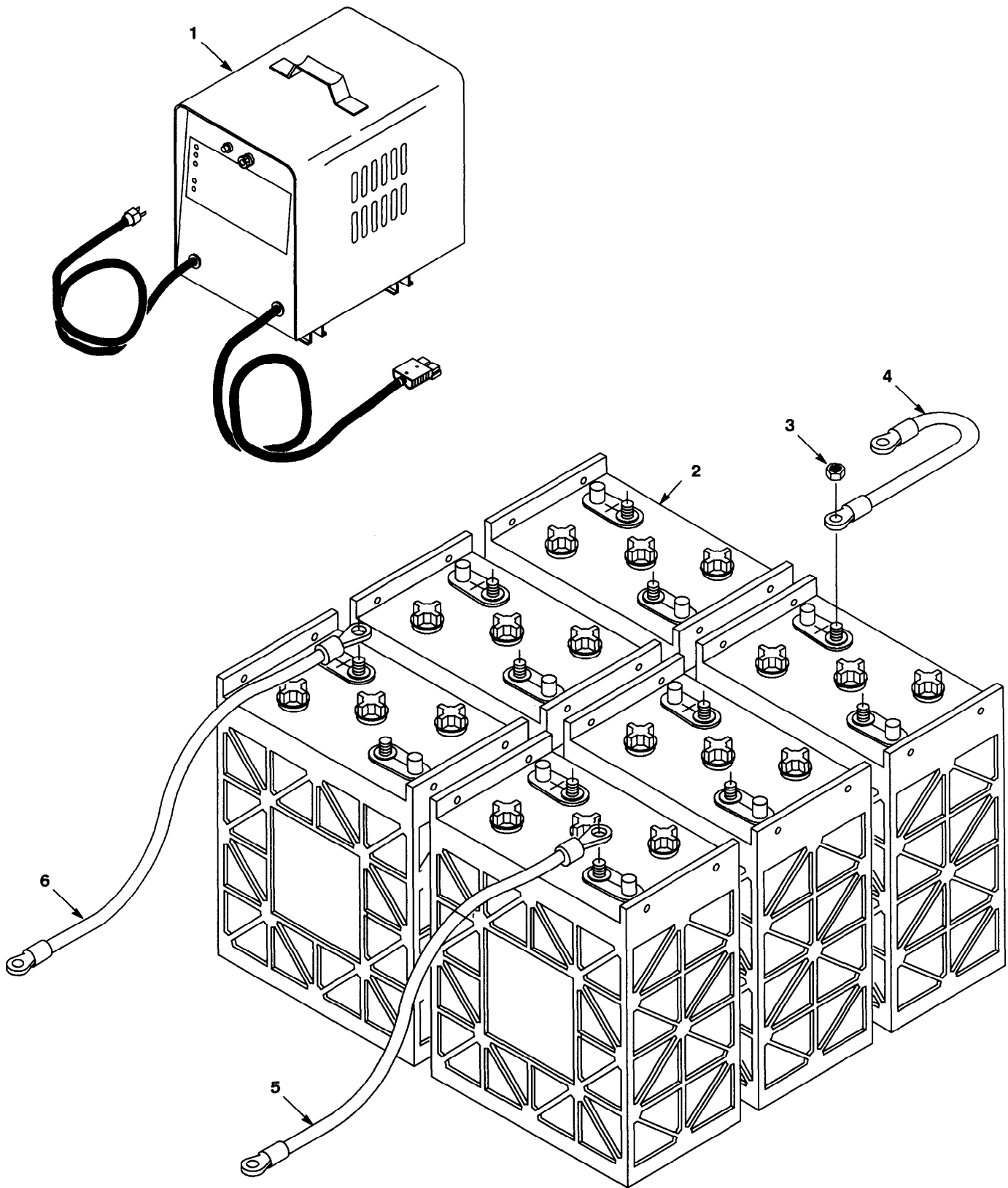
## SEAT GROUP

REF	PART #	DESCRIPTION	QTY.
1	223077	SEAT	1
2	360369	RAIL, SLIDE SEAT	1
3	360370	RAIL, SLIDE SEAT W/LATCH	1
4	140219	SCREW, 5/16-18X1	4
5	140594	NUT, HEX 7/16-14	4
6	223078	●SWITCH, SEAT	1
7	600869	COVER, BATTERY HOUSING	1
8	607842	EDGING, PLASTIC 1/8"	1
9	140015	WASHER, 5/16 SPLTLCK	4
10	140506	NUT, 5/16-18 HEX	4
11	607404	DECAL, "TUFF SCRUB 3300"	1
12	607834	DECAL, BATT HOOKUP	1
13	120649	DECAL, WARNING - BATTERY	1

● RECOMMENDED STOCK ITEMS

REF	PART #	DESCRIPTION	QTY.
14	630420	DECAL, WARNING - BATTERY	1
15	607835	DECAL, FLAMMABLE MAT'L TXTLS	1
16	630476	GASKET	1
17	600865	HOUSING, BATTERIES	1
18	140275	SCREW, M8X1.25X16 HX	4
19	200160017	NUT, M8 HXL	4
20	140027	WASHER, 5/16 FLT	5
21	140275	SCREW, M8X1.25X16	5
22	140024	WASHER, 1/2 LCK	4
23	140204	SCREW, 1/2-13X1-1/2	4
24	607039	PLATE, SOL TANK SUPPORT	1
25	140506	NUT, 5/16-18 HEX	3

CHARGER AND BATTERY GROUP



## CHARGER AND BATTERY GROUP

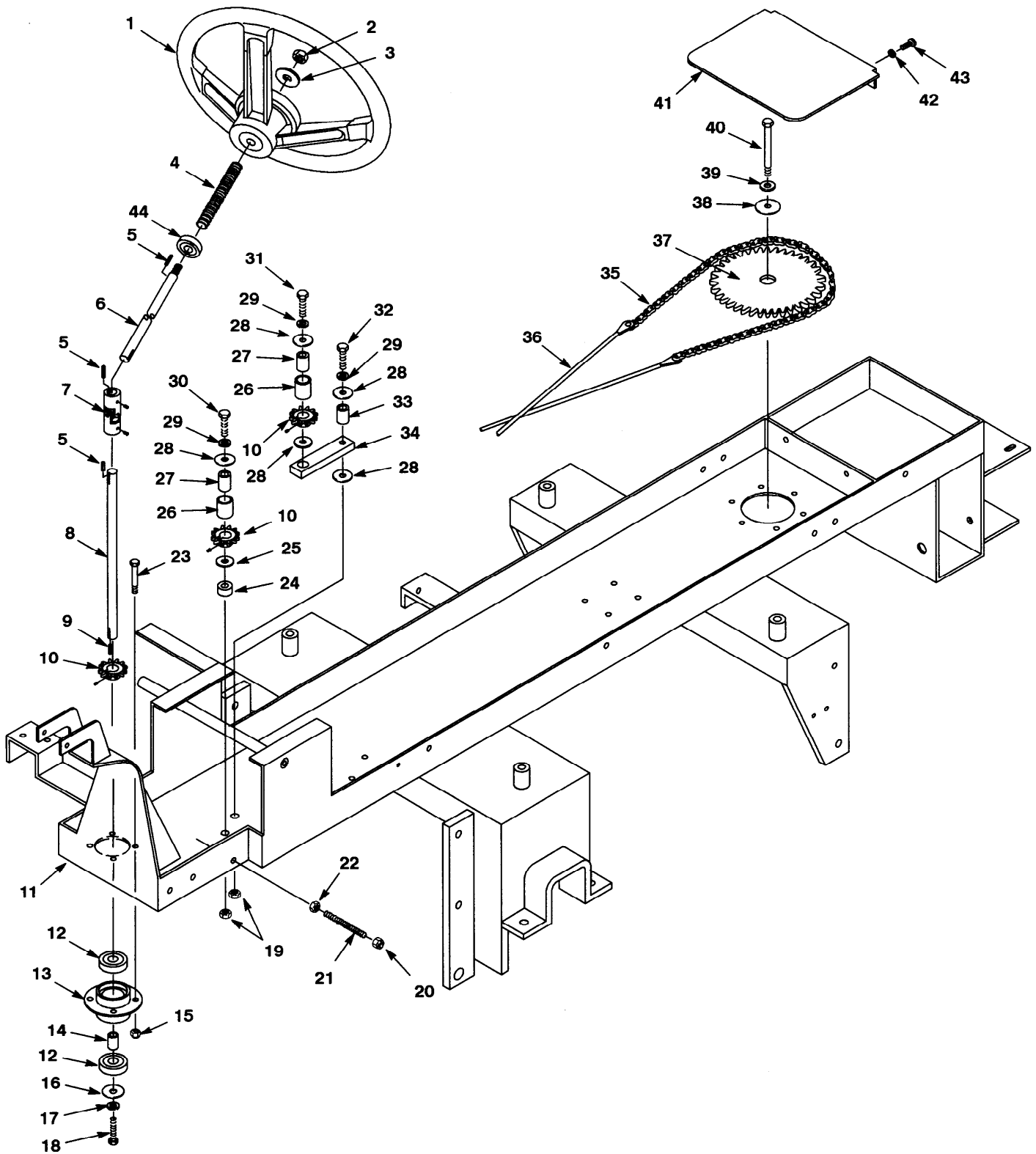
REF	PART #	DESCRIPTION	QTY.
1	602004	CHARGER, 36DC/36A/120V AC	1
▽2	601733	BATTERY, 6V 335AH	6
▲3	140506	NUT, 5/16-18 HEX	12

REF	PART #	DESCRIPTION	QTY.
4	611117000	CABLE, BATTERY	5
5	607402	CABLE, #4 BLACK	1
6	607401	CABLE, #4 RED	1

▽ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

STEERING GROUP



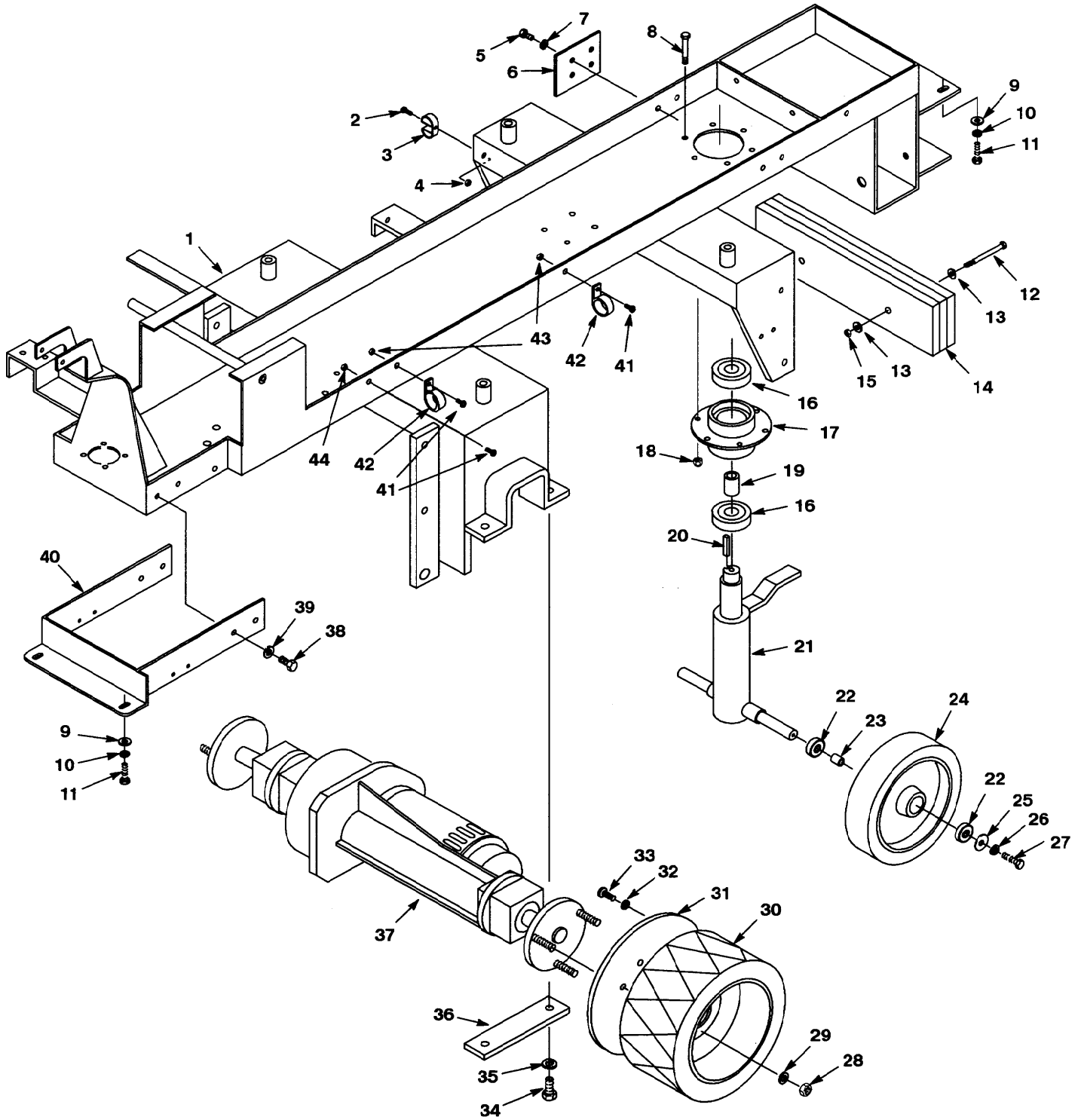
## STEERING GROUP

REF	PART #	DESCRIPTION	QTY.
1	223075	STEERING WHEEL, 14 IN. DIA.	1
2	200102019	NUT, HEX	1
3	140045	WASHER, .510X1.25X.06 FLT	1
4	130009	LOOM, .75 DIA	.38ft
5	140628	KEY, 3/16	3
6	223061	SHAFT, STEERING UPPER	1
7	223072	UNIVERSAL JOINT, 3/4ID	1
8	600898	SHAFT, STEERING LOWER	1
9	140632	KEY, 1/4 X 1"	1
10	240071	SPROCKET, DRIVE MOTOR	3
11	600864	CHASSIS, WELDMENT	1
12	140123	BEARING	2
13	600894	HOUSING, STEERING BEARING	1
14	600893	SPACER, BEARING	1
15	200160018	NUT, HEX LOCK	4
16	140028	WASHER, 3/8 FLT	1
17	140333	WASHER, M10 SPLTLCK	1
18	140276	SCREW, M10X1.5X16	1
19	140509	NUT, 1/2-13 JAM	2
20	140515	NUT, 3/8-16 NYLCK	1
21	607838	STUD, 3/8-16X4	1
22	140545	NUT, 3/8-16 FINJAM	1
23	200031541	SCREW, 10X25	1

REF	PART #	DESCRIPTION	QTY.
24	607071	SPACER	1
25	600924	WASHER, BEARING	2
26	605943	SLEEVE, BEARING	2
27	600896	BUSHING	2
28	140045	WASHER, 1/2 FLAT	4
29	140024	WASHER, 1/2 LCK	3
30	140234	SCREW, 1/2-13X2-1/2	1
31	600666	SCREW, 1/2-13X1-3/4	1
32	140204	SCREW, 1/2-13X1-1/2	1
33	140137	BUSHING	1
34	600897	ARM, IDLER SPROCKET	1
35	606426	KIT, CHAIN & LINKS	2
N/S	240021	LINK, CONNECT	2
N/S	607040	SPACER	4
36	600930	CABLE, STEERING LINKAGE	2
37	600885	SPROCKET, REAR STEERING	1
38	140056	WASHER, 3/8IDX1.50OD FNDR	1
39	140333	WASHER, M10 SPLTLCK	1
40	140277	SCREW, M10X1.5X20 HXHDCP	1
41	607837	COVER, REAR SPROCKET	1
42	140018	WASHER, #10 INT	2
43	140268	SCREW, M5X.8X12	2
44	223065	BEARING, FLANGE	1

N/S NOT SHOWN

MAIN FRAME AND DRIVE GROUP



## MAIN FRAME AND DRIVE GROUP

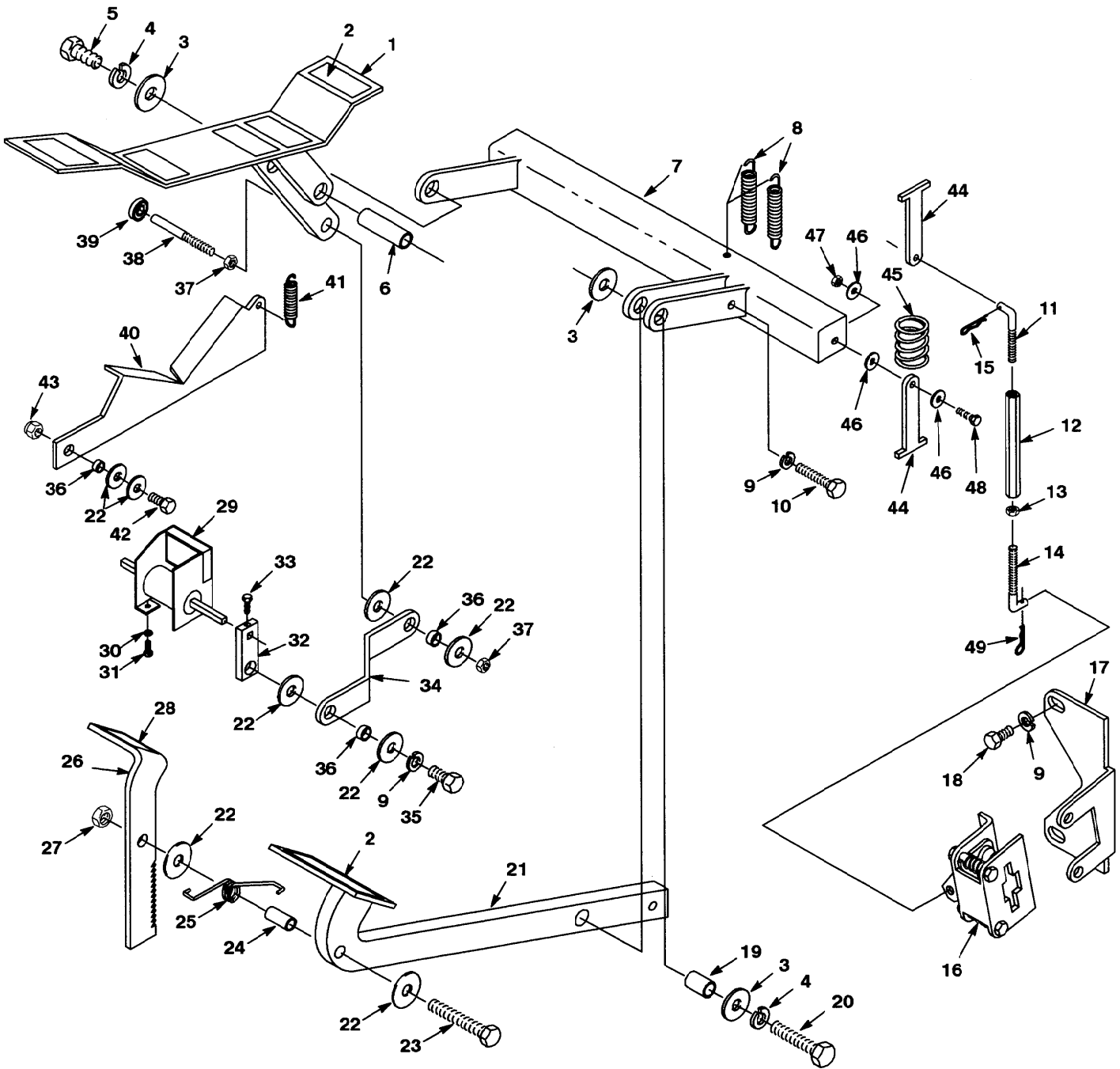
REF	PART #	DESCRIPTION	QTY.
1	600864	CHASSIS, WELDMENT	1
2	140823	SCREW, 10-24X5/8	1
3	573073	CLIP, WAND	1
4	140519	NUT, 10-24 KEP	1
5	140277	SCREW, M10X1.5X20	4
6	600909	PLATE, STEERING STOP	2
7	140333	WASHER, M10 SPLTLCK	4
8	200031541	SCREW, 10X25	6
9	140027	WASHER, 5/16 FLT	4
10	140015	WASHER, 5/16 SPLTLCK	4
11	140275	SCREW, M8X1.25X16	4
12	2949.30	SCREW, 3/8-16X2-1/2	2
13	140045	WASHER, .510X1.25X.06 FLT	4
14	607833	WEIGHT	3
15	140515	NUT, 3/8-16 NYLCK	2
16	600951	BEARING	2
17	600889	HOUSING, WHEEL BEARING	1
18	200160018	NUT, HEX LOCK	6
19	600892	SPACER, BEARING	1
20	140632	KEY, 1/4 X 1"	1
21	600873	SPINDLE, WHEEL WELDMENT	1
22	601148	BEARING	4
23	600985	SPACER	2
24	606985	WHEEL, 10" REAR STEERING	2
25	140028	WASHER, 3/8 FLT	2
26	140333	WASHER, M10 SPLTLCK	2

REF	PART #	DESCRIPTION	QTY.
27	140276	SCREW, M10X1.5X16	2
28	069767162	NUT, HEX	6
29	140024	WASHER, 1/2 LCK	6
30	606984	WHEEL, 12" DRIVE	2
31	600886	PLATE, BRAKE	2
32	140015	WASHER, 5/16 SPLTLCK	12
33	140275	SCREW, M8X1.25X16	12
34	140277	SCREW, M10X1.5X20	4
35	140333	WASHER, M10 SPLTLCK	4
36	605944	PLATE, TRANSAXLE RETAINER	2
∇37	609477	TRANSAXLE, W/MOTOR 36V	1
▲	609781	MOTOR FOR TRANSAXLE 609477	1
▲	610760	BRUSH, CARBON	4
▲	610761	SPRING, CARBON BRUSH	4
▲	610762	BEARING, BRUSH AND END DRIVE	2
▲	130111	TERMINAL RING 5/16	2
▲	610126	COUPLING W/URETHANE SPACER	1
▲	610128	SHEILD STEEL SPACER COUPLING	1
38	140277	SCREW, M10X1.5X20	4
39	140333	WASHER, M10 SPLTLCK	4
40	601984	BRACKET, SUPPORT FRONT	1
41	140823	SCREW, 10-24X5/8	4
42	140916	CLAMP, CABLE	3
43	140519	NUT, 10-24 KEP	3
44	140552	NUT, 10-24 NYLOCK	1

∇ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

CONTROL GROUP



## CONTROL GROUP

REF	PART #	DESCRIPTION	QTY.
1	600882	PEDAL, SPEED CONTROL	1
2	607827	PAD, NONSLIP SURFACE 1.38X2.75	6
3	140045	WASHER, 510X1.25X.06 FLT	3
4	140024	WASHER, 1/2 LCK	2
5	140292	SCREW, 1/2-13X3	1
6	607022	BUSHING .502X.624X2.060	1
7	600884	LIFT, WELDMENT BRAKE	1
8	605320	SPRING	2
9	140333	WASHER, M10 SPLTLCK	6
10	200031544	SCREW, 10X30	1
11	600906	ROD, BRAKE LINK LH THRD	2
12	600908	LINK, BRAKE ADJUSTER	2
13	140506	NUT, 5/16-18 HEX	2
14	610161	ROD, LINK LOWER BRAKE	2
15	578421	PIN, COTTER	2
∇16	610186	BRAKE, ASM	2
▲	610284	PAD, FRICTION BRAKE	4
17	610159	BRACKET, LH BRAKE MOUNT	1
	610160	BRACKET, RH BRAKE MOUNT	1
18	140276	SCREW, M10X1.5X16	4
19	607023	BUSHING, .502X.624X1.056	1
20	140235	SCREW, 1/2-13X2	1
21	600883	PEDAL, BRAKE	1
22	140028	WASHER, 3/8 FLT	8
23	200031552	SCREW, M10X1.5X55	1
24	579082	SPACER, .38X.50X1.00	1

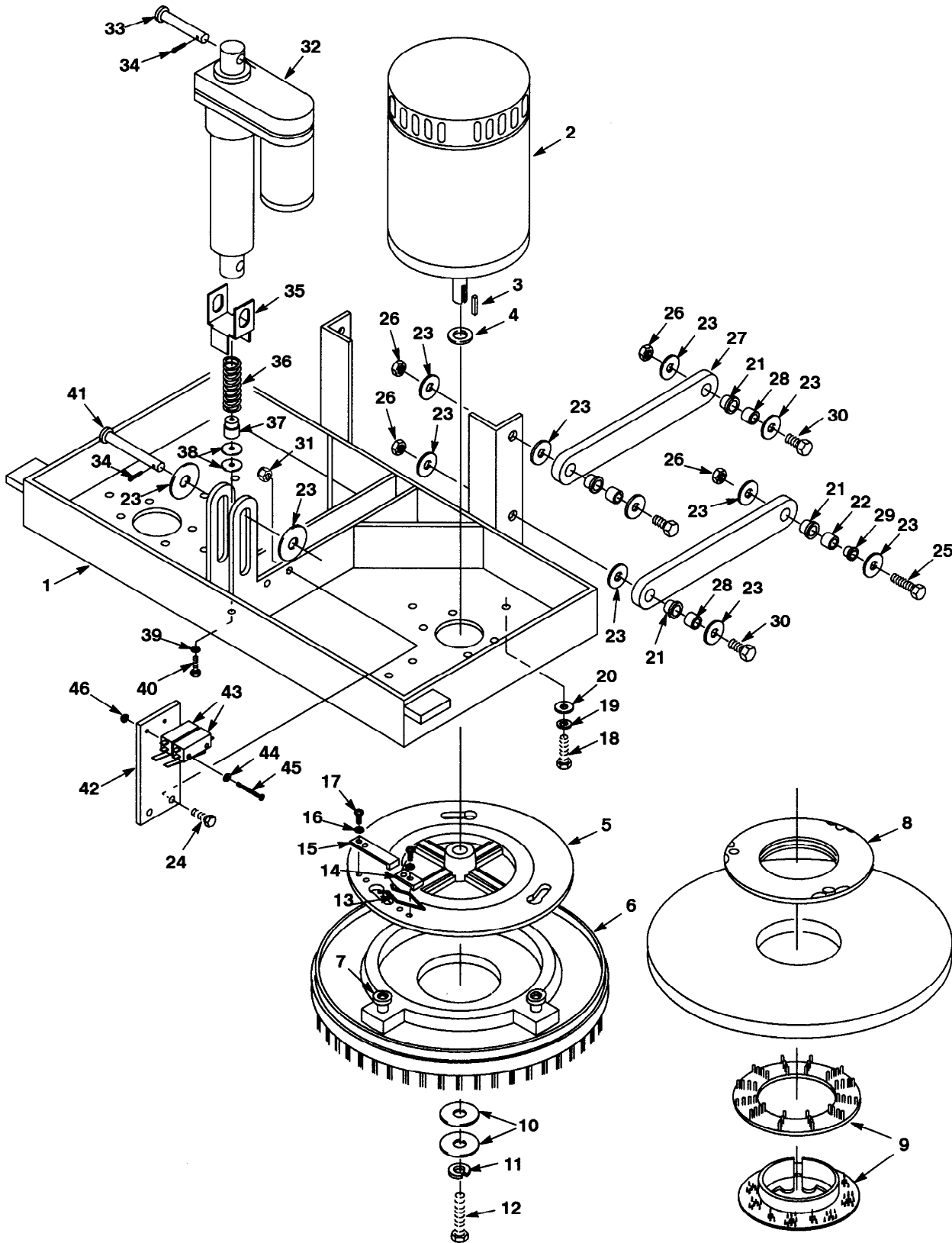
REF	PART #	DESCRIPTION	QTY.
25	604605	SPRING, TORSION 10#	1
26	610255	PEDAL, PARKING BRAKE	1
27	140285	NUT, HEX M10 X 1.5	1
28	600721	PAD, NON SLIP SURFACING	1
29	223094	●THROTTLE, ASM. ELECTRONIC	1
30	140018	WASHER, #10 INT	2
31	578141000	SCREW, M5X10	2
32	600927	ARM, THROTTLE CONTROL	1
33	200031436	SCREW, M6X1.0X16	1
34	600928	LINK, PEDAL CONTROL	1
35	140277	SCREW, M10X1.5X20	1
36	600929	BUSHING, .395X.499X.265	3
37	140525	NUT, 3/8-16 HEX	2
38	604495	SHAFT, THROTTLE CENTERING	1
39	140125	BEARING, BRUSH	1
40	607020	PLATE, THROTTLE CENTERING	1
41	578425	SPRING, EXT 0.63" 03.00 .063	1
42	140202	SCREW, 3/8-16X1	1
43	140515	NUT, 3/8-16 NYLCK	1
44	610237	PLATE, SPRING RETAINER	4
45	610238	SPRING	2
46	140027	WASHER, 5/16 FLAT	6
47	140546	NUT, 5/16-18 NYLOCK	2
48	140219	SCREW, 5/16-18X1	2
49	612254000	PIN, HAIRPIN	2

∇ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

● RECOMMENDED STOCK ITEMS

PAD DRIVER GROUP



## PAD DRIVER GROUP

REF	PART #	DESCRIPTION	QTY.
1	607409	BRACKET, BRUSH MOTOR MOUNT	1
▽2	069762432	●MOTOR, 36VDC .75HP, 320	2
▲	190970	●BRUSH, CARBON	4
▲	611283000	BRUSH, BOARD ASSY	1
3	140632	KEY, 1/4 X 1" (+.000/- .002)	2
4	621471	SPACER, .75X1.12	2
5	610288	PLATE, DRIVE	2
▽6	607824	●DRIVER, 17" PAD (PK/2)	1
▲7	240238	LUGS, W/SCREWS (SET OF 3)	2
▲8	100106	PLATE, PAD DRIVER BASE	2
▲9	100107	RING, PAD RETAINER SNAP-IN	2
10	25732	WASHER, 1.25X.359X.093 FLT ZN	4
11	140015	WASHER, 5/16 SPLITLOCK	2
12	140219	SCREW, 5/16-18X1	2
13	140417	CLIP, SPRING	2
14	230651	CLAMP, BRUSH PLATE	2
15	230697	STOP, DRIVER RELEASE	2
16	140018	WASHER, #10 INT	8
17	140887	SCREW, 10-24X3/8	8
18	140554	SCREW, 1/4-20X3/4	8
19	140016	WASHER, 1/4 LCK	8
20	140000	WASHER, 1/4 FLT	8
21	607451	BEARING, FLANGE	8
22	607826	BUSHING, .503X.624X.933	2
23	140045	WASHER, .510X1.25X.06 FLT	26
24	200031441	SCREW, M6X1.0X25	2
25	140234	SCREW, 1/2-13X2-1/2	2

REF	PART #	DESCRIPTION	QTY.
26	140516	NUT, 1/2-13 NYLOCK	8
27	600919	ARM, HEAD PIVOT	4
28	140137	BUSHING, .499IDX.624ODX.53LG	6
29	600923	BEARING	2
30	140235	SCREW, 1/2-13X2	6
31	140284	NUT, M6X1.0 NYLCK	2
32	069762436	●ACTUATOR, 36VDC	1
33	630448	PIN, CLEVIS 1/2DIA X2-1/4	1
34	578421	PIN, COTTER, .12"X1.00"LG	2
35	607990	BRACKET, PRESSURE SPRING	1
36	600957	SPRING, COMPRESSION	1
37	607038	RETAINER, PRESSURE SPRING	1
38	25732	WASHER, 1.25X.359X.093 FLT	2
39	140016	WASHER, 1/4 LCK	1
40	140554	SCREW, 1/4-20X3/4	1
41	607828	PIN, CLEVIS 1/2DIA X3-1/2	1
42	607823	PLATE, LIMIT SWITCH MOUNT	1
43	069764009	●SWITCH, SNAP-LEVER 25A	2
44	140032	WASHER, #6 FLT	2
45	140757	SCREW, 6-32X2-1/4	2
46	140539	NUT, 6-32 KEP	2
N/S	240237	BRUSH, 17" DYNASCUB (PK/2) OPTIONAL	1
N/S	240230	BRUSH, 17" POLYSCRUB (PK/2) OPTIONAL	1
N/S	240241	BRUSH, 17" STRATA GRIT SCRUB/ STRIP (PK/2) OPTIONAL	1

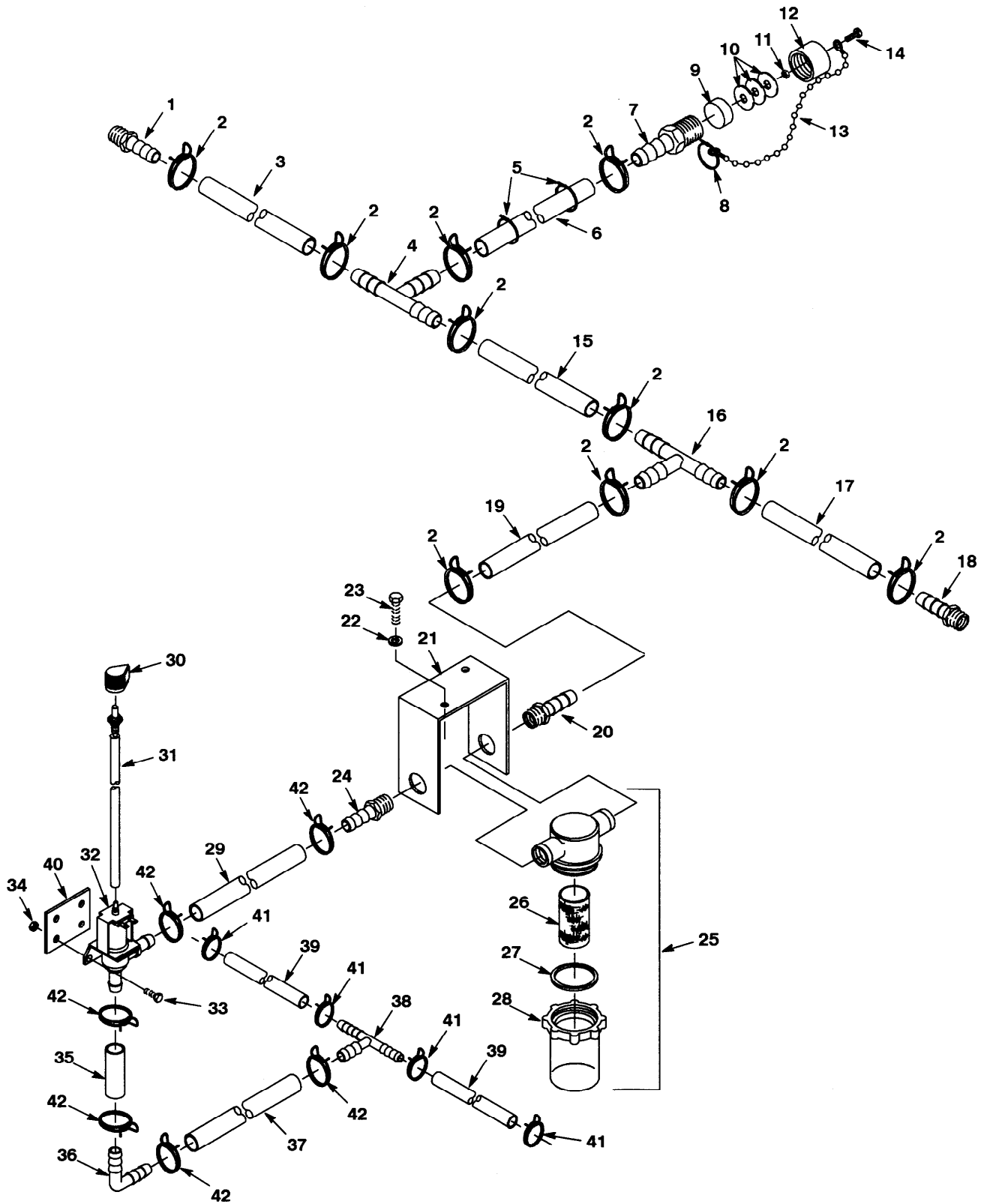
▽ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

● RECOMMENDED STOCK ITEMS

N/S NOT SHOWN

SOLUTION GROUP



## SOLUTION GROUP

REF	PART #	DESCRIPTION	QTY.
1	612146000	FITTING, 3/4M X 3/4H	1
2	608915	CLAMP, HOSE 1.03-1.09 2WIRE	10
3	160229	TUBING VINYL 3/4 ID X 1"OD	.40ft
4	607831	FITTING, 3/4H TEE BARB	1
5	130041	WIRE TIE, NYLON 11-1/2 X .190	2
6	160229	TUBING, VINYL 3/4 ID X 1"OD	4.0ft
7	612146000	FITTING, 3/4M X 3/4H	1
8	130041	WIRE TIE, NYLON 11-1/2 X .190	1
9	612145000	SEAL, DRAIN CAP	1
10	601076000	WASHER, FLAT PLASTIC	3
11	200160014	NUT, M4 HXLCK	1
12	612158000	CAP, 0.75"NPT PLASTIC W/HOLE	1
13	621443	CHAIN, DRAIN PLUG	1
14	200055343	SCREW, M4X.7X12	1
15	160229	TUBING VINYL 3/4 ID X 1"OD	.40ft
16	607831	FITTING, 3/4H TEE BARB	1
17	160229	TUBING VINYL 3/4 ID X 1"OD	.64ft
18	612146000	FITTING, 3/4M X 3/4H	1
19	160229	TUBING VINYL 3/4 ID X 1"OD	.75ft
20	607832	FITTING, 3/8MPT X 3/4H	1
21	607075	BRACKET, FILTER MOUNT	1

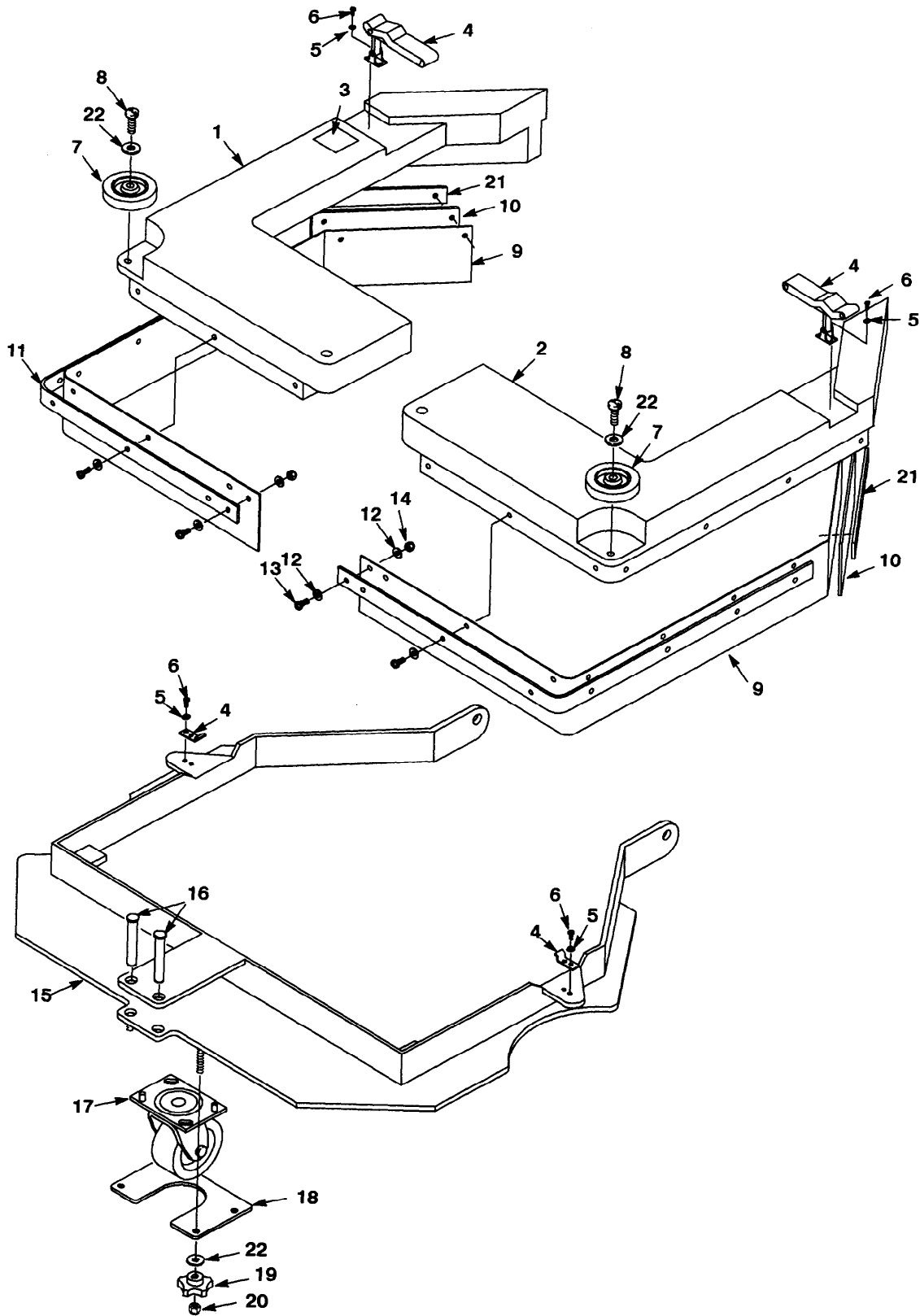
REF	PART #	DESCRIPTION	QTY.
22	140016	WASHER, 1/4 LCK	2
23	200031436	SCREW, M6X1.0X16	2
24	14884	FITTING, 3/8MX1/2H BARB	1
V25	180615	STRAINER, INLINE CLEAR BOWL	1
▲26	180616	SCREEN, REGULAR 80 MESH S/S	1
▲27	180617	GASKET, VITON	1
▲28	602000	BOWL, CLEAR	1
29	069764611	HOSE, CLEAR 1/2"ID X 15.44"	1
30	626121	KNOB, WATER VALVE	1
31	607406	CABLE, SOLUTION CONTROL	1
32	626100	●VALVE, LIQUID	1
33	200031436	SCREW, M6X1.0X16	2
34	140284	NUT, M6X1.0 NYLCK	2
35	606225	HOSE, 1/2ID X 1.79"	1
36	604317	ELBOW, 1/2"HB X 1/2"HB 90 DEG	1
37	578822000	HOSE, 1/2" ID X 16.84"	1
38	612149000	FITTING, 3/8HX3/8HX1/2H TEE	1
39	606667	HOSE, 3/8" ID X 10"	2
40	607822	PLATE, SOLUTION VALVE MOUNT	1
41	607775	CLAMP, HOSE .63-.66 2WIRE BLK	4
42	607776	CLAMP, HOSE .73-.77 2WIRE BLK	6

▽ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

● RECOMMENDED STOCK ITEMS

SKIRT GROUP



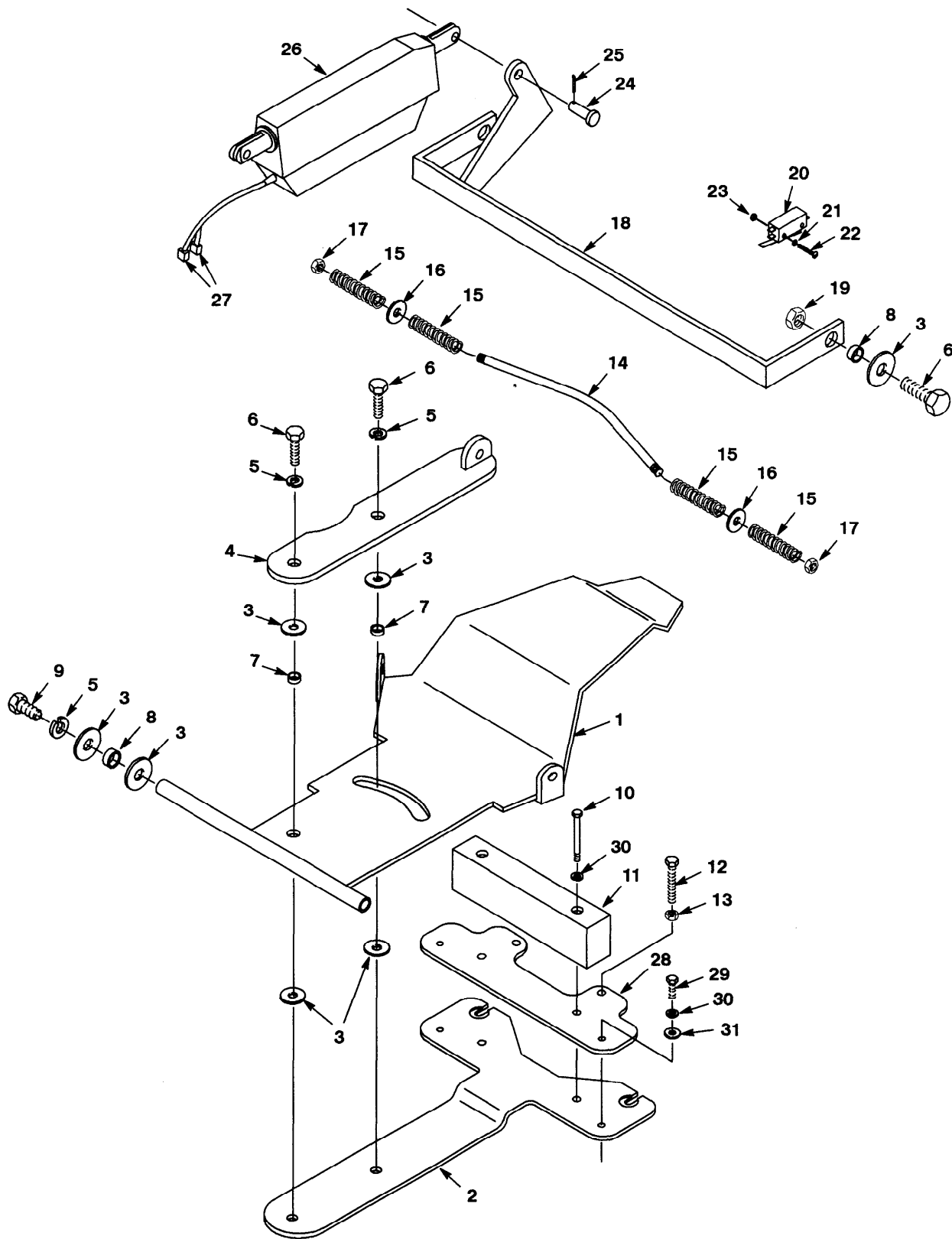
## SKIRT GROUP

REF	PART #	DESCRIPTION	QTY.
1	607008	SKIRT, HSG RIGHT	1
2	607007	SKIRT, HSG LEFT	1
3	607989	DECAL, NO STEP SYMBOL	1
4	140932	●LATCH, HOOD AND KEEPER	2
5	140023	WASHER, #8 INT	8
6	200070340	SCREW, M4X.7X8	8
7	630450	WHEEL, RUBBER	2
8	603154	SCREW, M8X1.25X40	2
9	607407	SPLASH GUARD, SKIRT	2
10	600911	BLADE, SKIRT SQUEEGEE	2
11	607408	STRAP, SPLASH GUARD	2

REF	PART #	DESCRIPTION	QTY.
12	140007	WASHER, #8 FLT	22
13	579237	SCREW, M4X.7X12 PANPHL	20
14	200633014	NUT, M4X.7 HEX	2
15	610187	FRAME, SKIRT SUPPORT	1
16	230943	●PIN, SKIRT	2
17	630002	CASTER, 4"DIA,1-3/8"W	1
18	610189	PLATE, CASTER RETAINER	1
19	605361	KNOB, 5/16-18 BLACK	4
20	140546	NUT, 5/16-18 NYLOCK	4
21	607830	STRAP, SPLASH GUARD REAR	2
22	140027	WASHER, 5/16 FLAT	6

● RECOMMENDED STOCK ITEMS

SQUEEGEE CONTROL GROUP



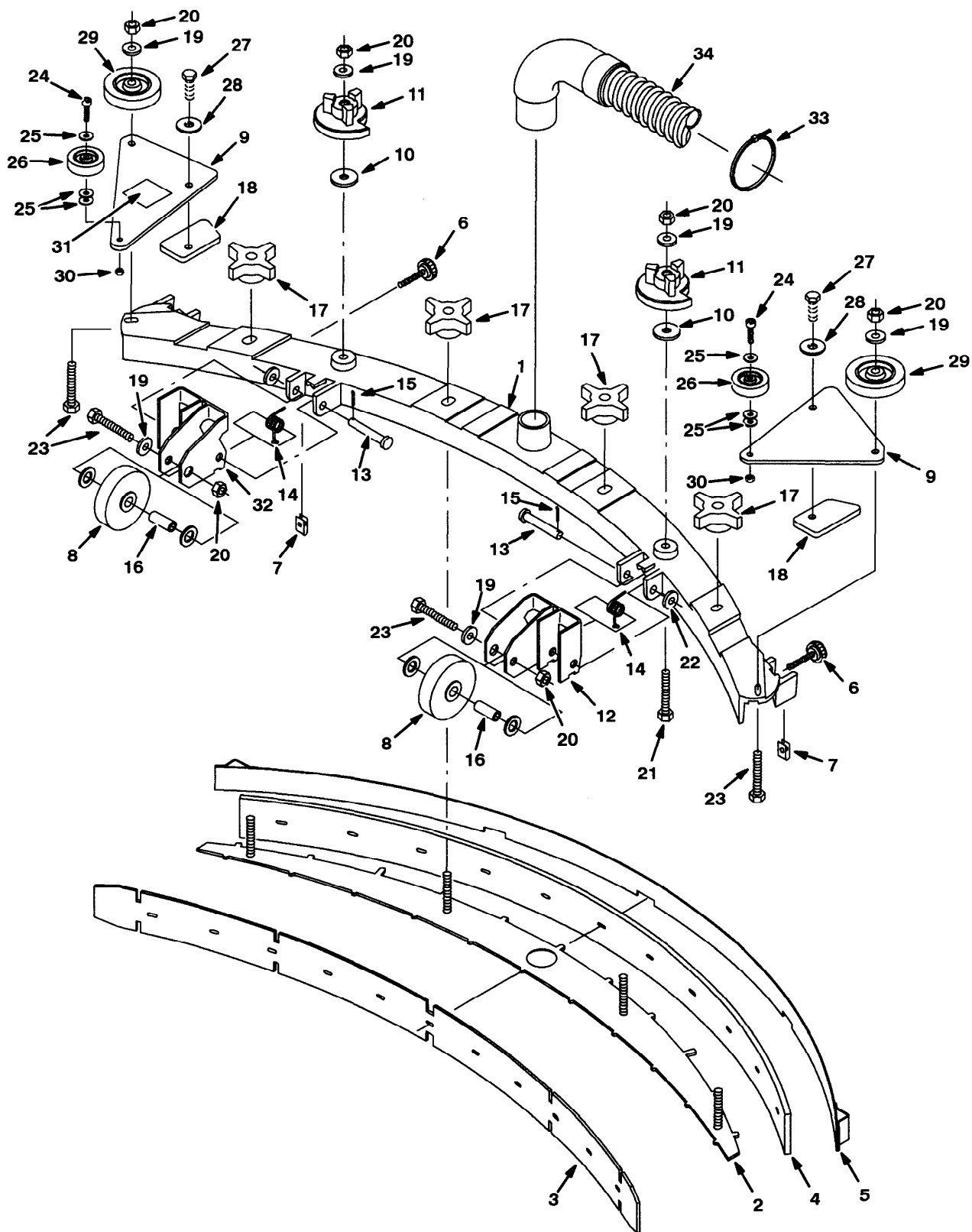
## SQUEEGEE CONTROL GROUP

REF	PART #	DESCRIPTION	QTY.
1	600879	PLATE, SQUEEGEE PIVOT	1
2	384465	PLATE, SQUEEGEE MOUNT	1
3	140045	WASHER, .510X1.25X.06 FLT	10
4	607125	BRACKET, CENTERING ROD	1
5	140024	WASHER, 1/2 LCK	4
6	140204	SCREW, 1/2-13X1-1/2	4
7	140139	BUSHING, BRUSH LIFT PEDAL	2
8	140137	BUSHING, .499IDX.624ODX.53LG	4
9	140237	SCREW, 1/2-13X1	2
10	140256	SCREW, 3/8-16X2-1/2 HXHDCP	2
11	230875	WEIGHT, 2X2.5X9.5	1
12	140232	SCREW, 3/8-16X1-1/4	2
13	140545	NUT, 3/8-16 FINJAM	2
14	607123	ROD, SQ CENTERING	1
15	607124	SPRING, COMP	4
16	140028	WASHER, 3/8 FLT	2

REF	PART #	DESCRIPTION	QTY.
17	140525	NUT, 3/8-16 HEX	2
18	600874	BRACKET, SQUEEGEE LIFT	1
19	140509	NUT, 1/2-13 HXJM	2
20	069764009	●SWITCH, SNAP-LEVER	1
21	140032	WASHER, #6 FLT	2
22	607398	SCREW, #6-32 X 1.25"	2
23	140539	NUT, 6-32 KEP	2
24	604076	PIN, CLEVIS	2
25	578421	PIN, COTTER	2
26	600952	●ACTUATOR, 24VDC	1
27	130133	TERMINAL, ML DSCNT RED	2
28	384490	PLATE, SQUEEGEE WEIGHT	1
29	140201	SCREW 3/8-16X3/4	2
30	140017	WASHER, 3/8 SPLITLOCK	4
31	140036	WASHER, 3/8 FLAT	2

● RECOMMENDED STOCK ITEMS

SQUEEGEE GROUP



## SQUEEGEE GROUP

REF	PART #	DESCRIPTION	QTY.
▽	610707	SQUEEGEE ASM.	1
▲1	222411	FRAME, SQUEEGEE	1
▲2	222412	PLATE	1
▲3	222413	●BLADE, SQUEEGEE FRONT 36"	1
▲4	222416	●BLADE, SQUEEGEE REAR 36"	1
▲5	222417	BAND, WLDT SQUEEGEE 36"	1
▲6	222794	KNOB, 1/4-20X1-1/2	2
▲7	82138	NUT, SPEED RETAINER	2
▲8	222066	●WHEEL, 3.0 DIA.	2
▲9	384466	PLATE, CORNER	2
▲10	222268	WASHER, 1.25D NEOPRENE	2
▲11	222244	CAM, SQUEEGEE	2
▲12	610690	CHANNEL, WHEEL MOUNTING LH	1
▲13	49914	PIN, CLEVIS .375" X 4.0	2
▲14	222130	SPRING, TORSION	2
▲15	140630	PIN, COTTER 3/32X3/4	2
▲16	222497	BUSHING, .318"X.495"X1.25"	2
▲17	370100	KNOB, 5/16 THD BLACK	4

REF	PART #	DESCRIPTION	QTY.
▲18	384491	STRIP, SQUEEGEE CORNER PLATE	2
▲19	140027	WASHER, 5/16 FLAT	6
▲20	08713	NUT, M8X1.25 NYLOCK	6
▲21	09767	SCREW, M8X1.25X70 HXHDCP	2
▲22	140028	WASHER, 3/8 FLAT	2
▲23	578717	SCREW, M8X1.25X50 HXHDCP	4
▲24	630480	SCREW, 5/16DIA X1-1/4 SHLDER	2
▲25	140027	WASHER, 5/16 FLAT	6
▲26	579184	WHEEL, 2"X7/8" RUBBER	2
▲27	140226	SCREW, 5/16-18X5/8 HXHDCP	2
▲28	140027	WASHER, 5/16 FLAT	2
▲29	630450	WHEEL, 3"X7/8" RUBBER	2
▲30	140524	NUT, 1/4-20 KEP	2
▲31	607989	DECAL, NO STEP SYMBOL	1
▲32	610689	CHANNEL, WHEEL MOUNTING RH	1
33	130041	WIRE TIE, 11-1/2X.19	2
34	603259	HOSE VAC 1-1/2X50" 90DEG CUFF	1

▽ ASSEMBLY

▲ INCLUDED IN ASSEMBLY

● RECOMMENDED STOCK ITEMS