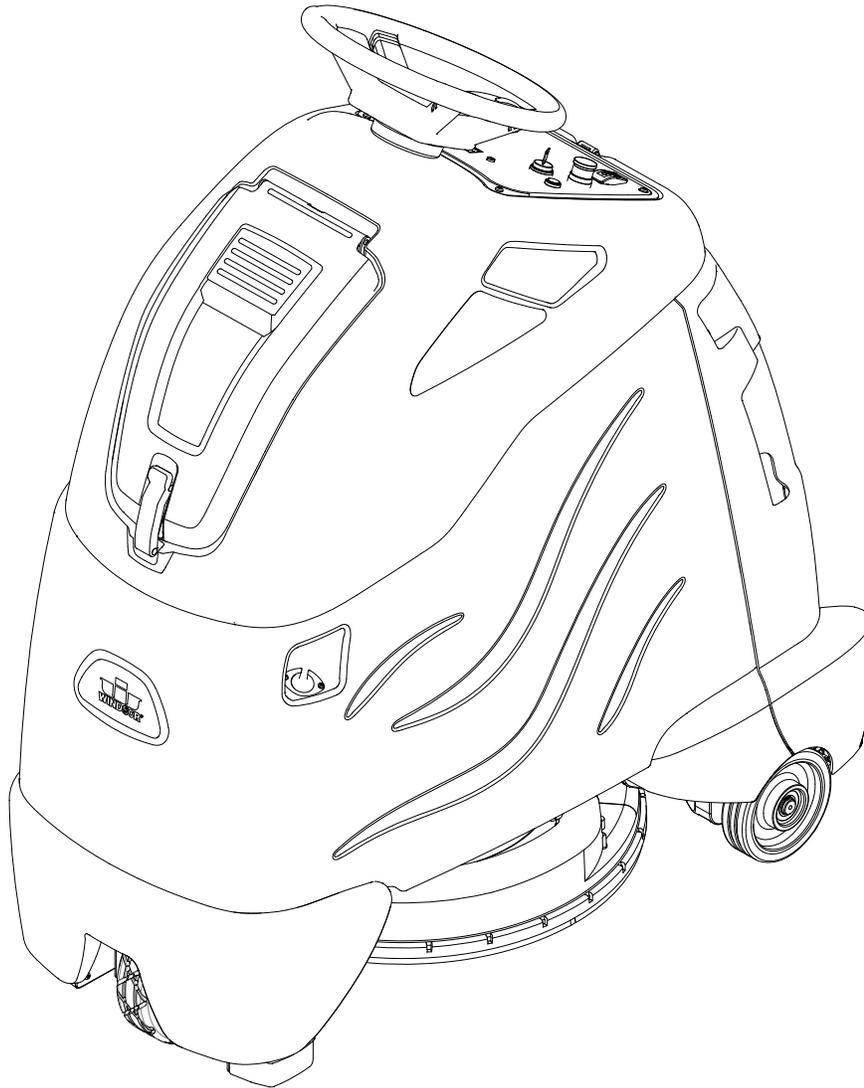




# *Chariot<sup>®</sup> 2*

## *iGloss 20*

Operating instructions (ENG)



**MODELS:** **CBPS20**  
**10020310**

**CBPSC20**  
**10020320**

**CBPL20**  
**10020330**

**CBPLC20**  
**10020340**

**CBAL20**  
**10020350**

**CBALC20**  
**10020360**

**Prior to Serial Number (Ref No. 10\*)  
See Serial number page or call  
manufacturer.**

Read these instructions before using the machine.

86356230-AL  
07/06/15



 **CLICK TO ORDER PARTS**

Model: \_\_\_\_\_

Date of Purchase: \_\_\_\_\_

Serial Number: \_\_\_\_\_

Dealer: \_\_\_\_\_

Address: \_\_\_\_\_

Phone Number: \_\_\_\_\_

Sales Representative: \_\_\_\_\_

### Overview

The Chariot iGloss 20 burnisher is a battery powered, ride-on, hard floor burnisher intended for commercial use. This machine applies a high luster to hard floor surfaces.

## Warranty Registration

Thank you for purchasing a Windsor product. Warranty registration is quick and easy. Your registration will allow us to serve you better over the lifetime of the product.

To register your product go to :  
[www.windsorind.com/WarrantyRegistration.aspx](http://www.windsorind.com/WarrantyRegistration.aspx)

For customer assistance:  
1-800-444-7654



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## How To Use This Manual

This manual contains the following sections:

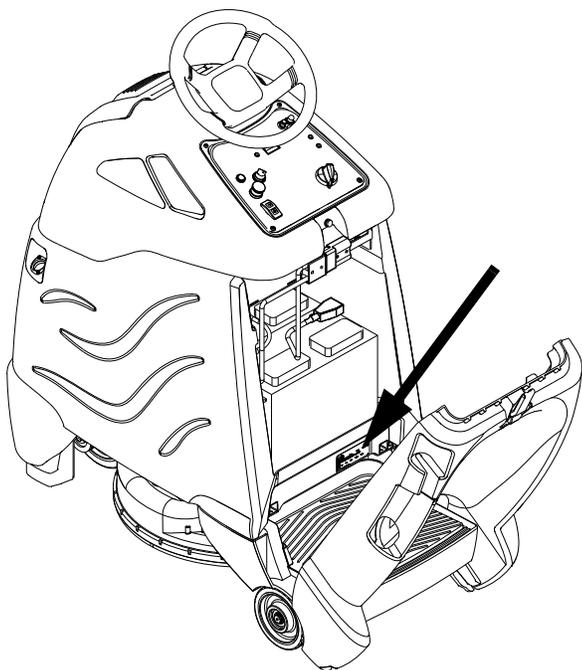
- HOW TO USE THIS MANUAL
- SAFETY
- OPERATIONS
- MAINTENANCE
- PARTS LIST

The HOW TO USE THIS MANUAL section will tell you how to find important information for ordering correct repair parts.

Parts may be ordered from authorized Windsor dealers. When placing an order for parts, the machine model and machine serial number are important. Refer to the MACHINE DATA box which is filled out during the installation of your machine. The MACHINE DATA box is located on the inside of the front cover of this manual.

|                       |       |
|-----------------------|-------|
| Model:                | _____ |
| Date of Purchase:     | _____ |
| Serial Number:        | _____ |
| Dealer:               | _____ |
| Address:              | _____ |
| Phone Number:         | _____ |
| Sales Representative: | _____ |

The model and serial number of your machine are located below the battery compartment of the machine.



The SAFETY section contains important information regarding hazard or unsafe practices of the machine. Levels of hazards are identified that could

result in product or personal injury, or severe injury resulting in death.

The OPERATIONS section is to familiarize the operator with the operation and function of the machine.

The MAINTENANCE section contains preventive maintenance to keep the machine and its components in good working condition. They are listed in this general order:

- Batteries
- Brush Deck
- Circuit Protection
- Drive Motor and Brake
- Service Schedule
- Vacuum Motor
- Machine Troubleshooting

The PARTS LIST section contains assembled parts illustrations and corresponding parts list. The parts lists include a number of columns of information:

REF - column refers to the reference number on the parts illustration.

PART NO. - column lists the part number for the part.

PRV NO. - Reference No.

QTY - column lists the quantity of the part used in that area of the machine.

DESCRIPTION - column is a brief description of the part.

SERIAL NO. FROM - If this column has an (\*) and a Reference number, see the SERIAL NUMBERS page in the back of your manual. If column has two asterisk (\*\*), call manufacturer for serial number.

The serial number indicates the first machine the part number is applicable to. The main illustration shows the most current design of the machine.

When a boxed illustration is shown, it displays the older design.

NOTES - column for information not noted by the other columns.

*NOTE: If a service or option kit is installed on your machine, be sure to keep the KIT INSTRUCTIONS which came with the kit. It contains replacement parts numbers needed for ordering future parts.*

*The number on the lower left corner of the front cover is the part number for this manual.*

## IMPORTANT SAFETY INSTRUCTIONS

**When using an electrical appliance, basic precaution must always be followed, including the following:**

**READ ALL INSTRUCTIONS BEFORE USING THIS MACHINE.**

**⚠ WARNING:** To reduce the risk of fire, electric shock, or injury:

Use only indoors. Do not use outdoors or expose to rain.

Use only as described in this manual. Use only manufacturer's recommended components and attachments.

If the machine is not working properly, has been dropped, damaged, left outdoors, or dropped into water, return it to an authorized service center.

Do not operate the machine with any openings blocked. Keep openings free of debris that may reduce airflow.

This machine is not suitable for picking up hazardous dust.

Machine can cause a fire when operating near flammable vapors or materials. Do not operate this machine near flammable fluids, dust or vapors.

This machine is suitable for commercial use, for example in hotels, schools, hospitals, factories, shops and offices for more than normal housekeeping purposes.

Maintenance and repairs must be done by qualified personnel.

Disconnect battery before cleaning or servicing.

Before the machine is discarded, the batteries must be removed and properly disposed of.

Make sure all warning and caution labels are legible and properly attached to the machine.

During operation, attention shall be paid to other persons, especially children.

Before use all covers and doors shall be put in the positions specified in the instructions.

When leaving unattended, secure against unintentional movement.

The machine shall only be operated by instructed and authorized persons.

When leaving unattended, switch off or lock the main power switch to prevent unauthorized use.

This appliance has been designed for use with the pads specified by the manufacturer. The fitting of other pads may affect its safety.

Do not use on surfaces having a gradient of over 10% (6 degrees).

## SAVE THESE INSTRUCTIONS

## MESURES DE SÉCURITÉ IMPORTANTES

Lors de l'utilisation d'un appareil à batteries, il est nécessaire de respecter systématiquement des mesures de sécurité de base, comme suit :

**⚠ AVERTISSEMENT: PRENEZ NOTE DE TOUTES CES MESURES AVANT D'UTILISER CETTE MACHINE.**

Pour réduire les risques d'incendie, de chocs électriques, ou de blessures :

N'utiliser cette machine qu'en intérieur. Ne jamais l'utiliser à l'extérieur ou dans la pluie.

N'utiliser cette machine que comme décrit dans le présent manuel. N'utiliser que les composants et les accessoires conseillés par le fabricant.

Lorsque la machine ne fonctionnant pas correctement, a fait l'objet d'une chute ou d'une détérioration, a été laissée à l'extérieur, est tombée dans l'eau, la retourner au centre de service agréé.

Ne pas opérer la machine lorsque les conduits de ventilation sont bloquées. Débarrasser les débris des conduits, car ils peuvent réduire l'écoulement d'air.

Cette machine n'est pas adaptée au ramassage de poussières dangereuses

Cette machine peut provoquer un incendie lorsqu'elle est utilisée près de vapeurs ou de matériaux inflammables. Ne pas l'utiliser près de liquides, de poussières ou de vapeurs inflammables.

Cette machine est destinée à un usage commercial. Elle est recommandée davantage pour les domaines hôtelier, scolaire, hospitalier, industriel ou pour les bureaux, les chaînes de magasin, que pour un usage domestique normal.

L'entretien et les réparations de la machine doivent être effectuées par un personnel qualifié.

Si de la mousse ou du liquide sort de la machine, la mettre hors tension immédiatement.

Déconnecter les batteries avant de nettoyer la machine ou de la soumettre à un entretien.

Avant de se débarrasser de la machine, il est nécessaire de retirer les batteries et de les jeter correctement.

S'assurer que toutes les plaques d'avertissement ou de précaution sont lisibles et fixées correctement sur la machine.

Durant la manoeuvre de la machine, prendre garde aux personnes environnantes et notamment aux enfants.

Avant l'utilisation de la machine, veiller à positionner tous les couvercles et portes comme indiqué dans les instructions.

Lorsque la machine est laissée sans surveillance, s'assurer qu'elle ne se déplace pas de manière accidentelle.

Cette machine ne doit être manoeuvrée que par un personnel expérimenté et qualifié.

Lorsque la machine est laissée sans surveillance, la mettre hors tension ou verrouiller l'interrupteur principal afin d'empêcher un emploi non autorisé.

Seuls les produits chimiques recommandés par le fabricant doivent être utilisés.

Cette machine a été conçue pour être utilisée avec des garnitures spécifiées par le fabricant.

L'utilisation d'autres garnitures peut affecter sa sûreté.

N'employez pas sur des surfaces ayant un gradient de plus de 10% (6 degrés).

## CONSERVER CES INSTRUCTIONS

The following symbols are used throughout this guide as indicated in their descriptions:

## HAZARD INTENSITY LEVEL

There are three levels of hazard intensity identified by signal words -**WARNING** and **CAUTION** and **FOR SAFETY**. The level of hazard intensity is determined by the following definitions:

### **WARNING:**

**WARNING** - Hazards or unsafe practices which **COULD** result in severe personal injury or death.

### **CAUTION:**

**CAUTION** - Hazards or unsafe practices which could result in minor personal injury or product or property damage.

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

Report machine damage or faulty operation immediately. Do not use the machine if it is not in proper operating condition. Following is information that signals some potentially dangerous conditions to the operator or the equipment. Read this information carefully. Know when these conditions can exist. Locate all safety devices on the machine. Please take the necessary steps to train the machine operating personnel.

#### **FOR SAFETY:**

**DO NOT OPERATE MACHINE:**

Unless Trained and Authorized.

Unless Operation Guide is Read and understood.

In Flammable or Explosive areas.

In areas with possible falling objects.

#### **WHEN SERVICING MACHINE:**

Avoid moving parts. Do not wear loose clothing; jackets, shirts, or sleeves when working on the machine. Use Windsor approved replacement parts.

### **WARNING:**

**Batteries emit hydrogen gas. Explosion or fire can result. Keep sparks and open flame away. Keep battery compartment open during charging. Keep sparks and flames away from the batteries. Do not smoke around batteries.**

### **WARNING:**

**Disconnect batteries before working on machine. Only qualified personnel should work inside machine. Always wear eye protection and protective clothing when working on or near batteries. Avoid skin contact with the acid contained in the batteries.**

### **WARNING:**

**Never allow metal to lie across battery tops.**

Les symboles ci-dessous sont utilisés à travers ce manuel comme illustré dans leurs descriptions :

### DEGRÉS DE RISQUES EN CAS DE DANGER

Il existe trois degrés de risques identifiés par les termes signalétiques -AVERTISSEMENT et ATTENTION et POUR VOTRE SÉCURITÉ. Le degré de risque est défini de la manière suivante:

#### **⚠ AVERTISSEMENT:**

**AVERTISSEMENT** - Dangers ou méthodes dangereuses qui POURRAIENT provoquer de graves blessures ou entraîner la mort.

#### **⚠ ATTENTION:**

**ATTENTION** - Dangers ou méthodes dangereuses qui pourraient provoquer des blessures légères ou une détérioration du produit ou des biens immobiliers.

**POUR VOTRE SÉCURITÉ:** ce signe permet d'identifier les mesures de précaution à prendre pour assurer un bon fonctionnement du matériel.

Rendre compte immédiatement d'une défaillance ou d'une détérioration de la machine. Ne pas utiliser la machine si celle-ci ne fonctionne pas correctement. Lire soigneusement les informations ci-dessous signalant certains dangers potentiels pour l'opérateur de la machine. L'opérateur doit être absolument au courant de ces dangers potentiels. Localiser tous les dispositifs de sécurité sur la machine. Il est conseillé de prendre les mesures nécessaires pour former le personnel opérateur.

#### **POUR VOTRE SÉCURITÉ:**

**NE PAS MANOEUVRER LA MACHINE:**

Lorsqu'on n'est pas expérimenté ou qualifié.

Lorsque le guide d'utilisation n'est pas été lu ou compris.

Dans des zones inflammables ou explosives.

Dans des zones où des objets peuvent tomber.

#### **LORS DE L'ENTRETIEN DE LA MACHINE:**

Éviter les parties amovibles. Ne pas porter de vêtements amples, tels que des vestes, des chemises ou des vêtements avec manches lors de l'utilisation de la machine. Utiliser les pièces détachées Windsor homologuées.

#### **⚠ AVERTISSEMENT:**

**Les batteries émettent le gaz d'hydrogène. L'explosion ou le feu peut résulter. Étincelles de subsistance et flamme nue loin. Compartiment de batterie de subsistance ouvert en chargeant. Étincelles et flammes de subsistance loin des batteries. Ne fumez pas autour des batteries.**

#### **⚠ AVERTISSEMENT:**

**Déconnecter les batteries avant de travailler sur la machine. La machine ne doit être confiée qu'à un personnel qualifié. Porter systématiquement des lunettes et des vêtements de protection lors d'une intervention sur les batteries ou aux alentours. Éviter tout contact de la peau avec l'acide contenu dans les batteries.**

#### **⚠ AVERTISSEMENT:**

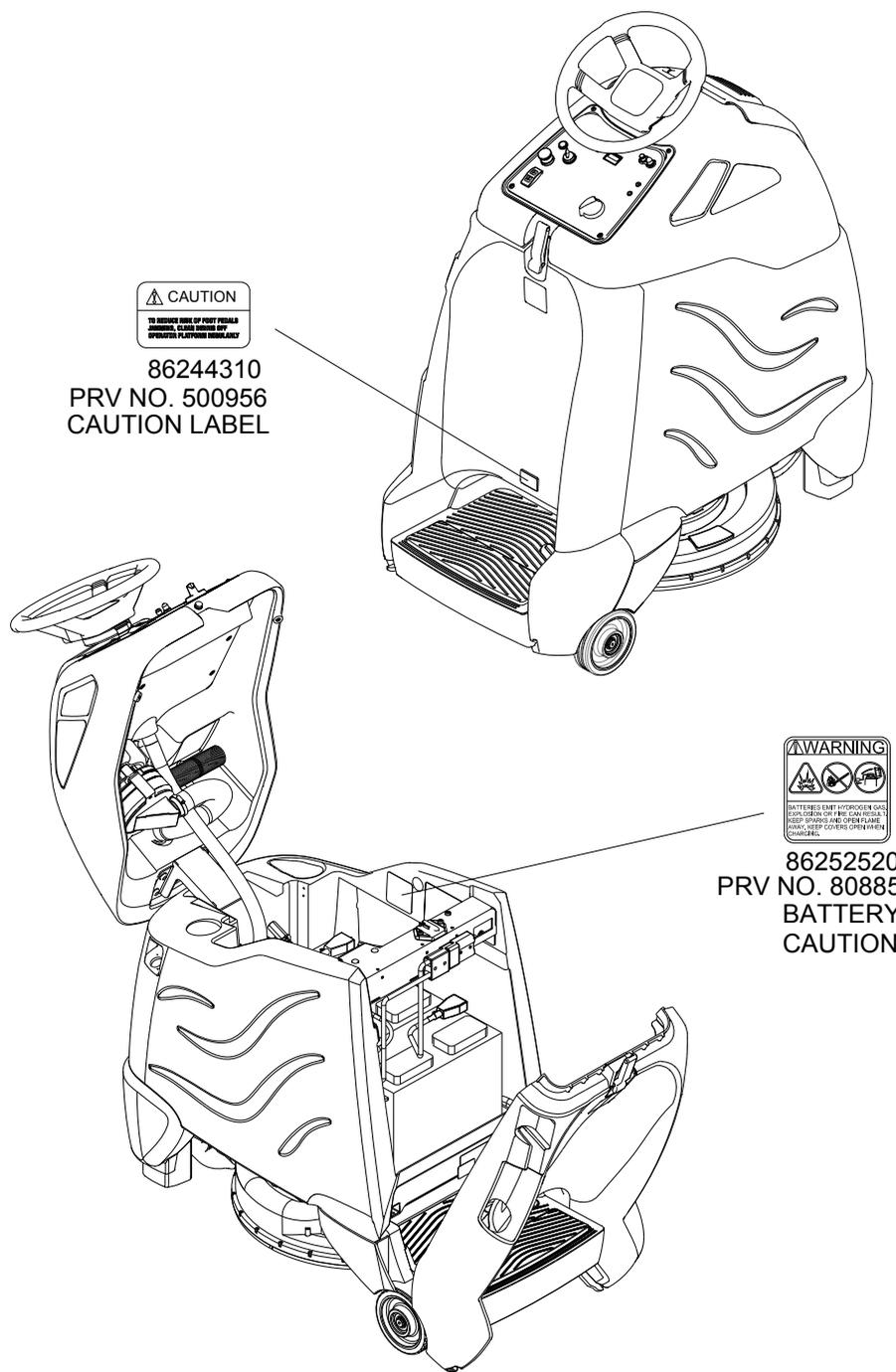
**Ne jamais placer d'objets métalliques sur le dessus des batteries.**

## SAFETY LABEL LOCATIONS

These drawings indicate the location of safety labels on the machine. If at any time the labels become illegible, promptly replace them.

### EMPLACEMENT DE L'ÉTIQUETTE DE SÉCURITÉ

REMARQUE : Ces dessins indiquent l'emplacement des étiquettes de sécurité sur la machine. Si, à tout moment, les étiquettes deviennent illisibles, contactez votre représentant autorisé pour un remplacement rapide.



86244310  
PRV NO. 500956  
CAUTION LABEL

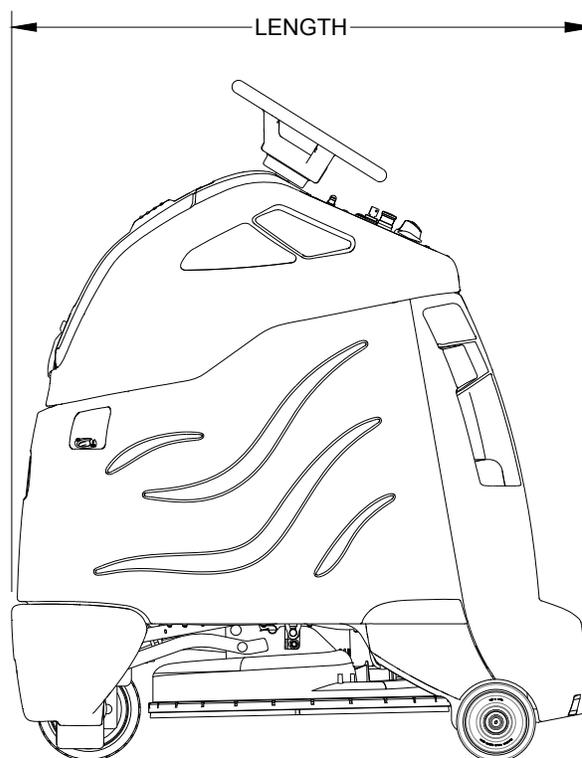
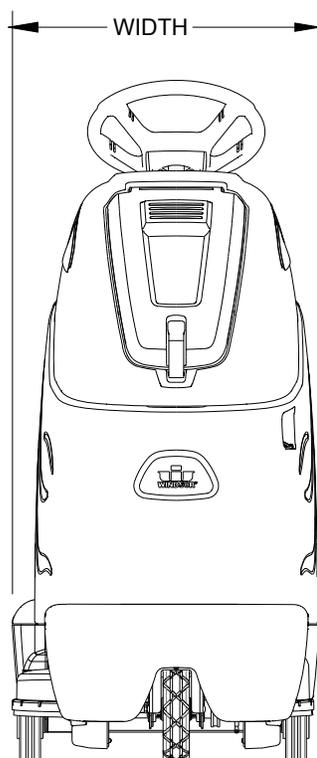


86252520  
PRV NO. 80885  
BATTERY  
CAUTION

**Technical Specifications**

| ITEM                                  | DIMENSION/CAPACITY  |
|---------------------------------------|---|
| Nominal Power                         | Passive Dust Control 2232W, Active Dust Control 2628W                 |
| Rated Voltage                         | 36 Volts DC   |
| Rated Amperage                        | Passive Dust Control 62A, Active Dust Control 73A                     |
| Batteries                             | 3 X12 Volt 114 AH, 130 AH, 225AH, or 234AH @ 20 hr. rate              |
| Battery Compartment Dimensions        | 21.5 in. x 15.25 in. x 16 in. tall (546mm x 387mm x 406mm tall)       |
| Burnisher Motor                       | 3.0 HP, 36V, 2000RPM (2237W)  |
| Vacuum Motor                          | .63 HP (470 W)  |
| Maximum flow rate of vacuum motor     | 72 cfm (33.98 liters per second)                                      |
| Maximum suction of vacuum motor       | 47.3 inches of water (11.7 kPa)                                       |
| Propelling Motor                      | .21 HP (157 W)  |
| Mass (GVW)                            | 838 lbs (380 kg)  |
| Weight empty without batteries        | 231 lbs (105 kg)  |
| Burnisher pad diameter                | 20 inch (508 mm)  |
| Tires                                 | 8 in. (203mm) drive, 6 in. (156mm) rear, polyurethane                 |
| Maximum Speed                         | 2.7 mph (4.3 Km/hour)   |
| Theoretical Coverage                  | 19,800ft <sup>2</sup> /hr @ 2.5 mph with 2 in. overlap                |
| Brake                                 | Electrical parking brake, sets automatically whenever operator stops. |
| Minimum aisle u-turn width            | 51in. (1295 mm)   |
| Maximum rated climb and descent angle | 10% (6 degrees)   |
| Vibration, hands                      | 1.58 m/s <sup>2</sup>   |
| Vibration, feet                       | 1.39 m/s <sup>2</sup>   |
| Uncertainty                           | 0.5 m/s <sup>2</sup>  |
| Sound pressure level                  | Passive Dust Control 59.7 dBA, Active Dust Control 62.2 dBA           |
| Sound power level                     | Passive Dust Control 76.3 dBA, Active Dust Control 80.1 dBA           |
| Uncertainty                           | 3.0 dBA   |

| ITEM                  | MEASURE          |
|-----------------------|------------------|
| Height                | 51.8 in (1316mm) |
| Length                | 44.0 in (1118mm) |
| Width                 | 23.4 in. (594mm) |
| Width of burnish path | 20 in (508mm)    |



**⚠ CAUTION:**

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

**⚠ AVERTISSEMENT:**

Cet appareil n'est pas prévu à l'usage des personnes (enfants y compris) avec des possibilités physiques, sensorielles ou mentales réduites, ou le manque d'expérience et de connaissance, à moins qu'ils aient été donnés la surveillance ou l'instruction au sujet de l'utilisation de l'appareil par une personne chargée de leur sûreté. Des enfants devraient être dirigés pour s'assurer qu'ils ne jouent pas avec l'appareil.

### How This Machine Works

The Chariot® iGloss 20 is a battery powered, self-propelled, hard floor burnisher intended for commercial use. The appliance spins a high-speed burnishing pad in contact with the floor surface to produce a high luster shine.

The machine's primary systems are the burnishing system, the dust control system, and the operator control system.

The function of the burnishing system is to spin a high-speed burnishing pad in contact with a floor surface that has had a burnishable floor finish applied. The burnishing pad can be lowered to the floor and raised by the operator. The burnishing pad will spin only when the machine is directed to move by the operator.

The function of the dust control system is to collect the dust that is created during the burnishing process. It is normal for a portion of the floor finish to be removed in the form of dust during the process. While burnishing, air movement is created within the burnishing head by the spinning pad. The dust that is also created is entrained in the air stream and transported to a filter bag where it is collected and separated from the air stream. The filter bag can be easily changed without releasing the collected dust. The optional active dust control system uses a vacuum motor to improve dust collection before, during, and after burnishing.

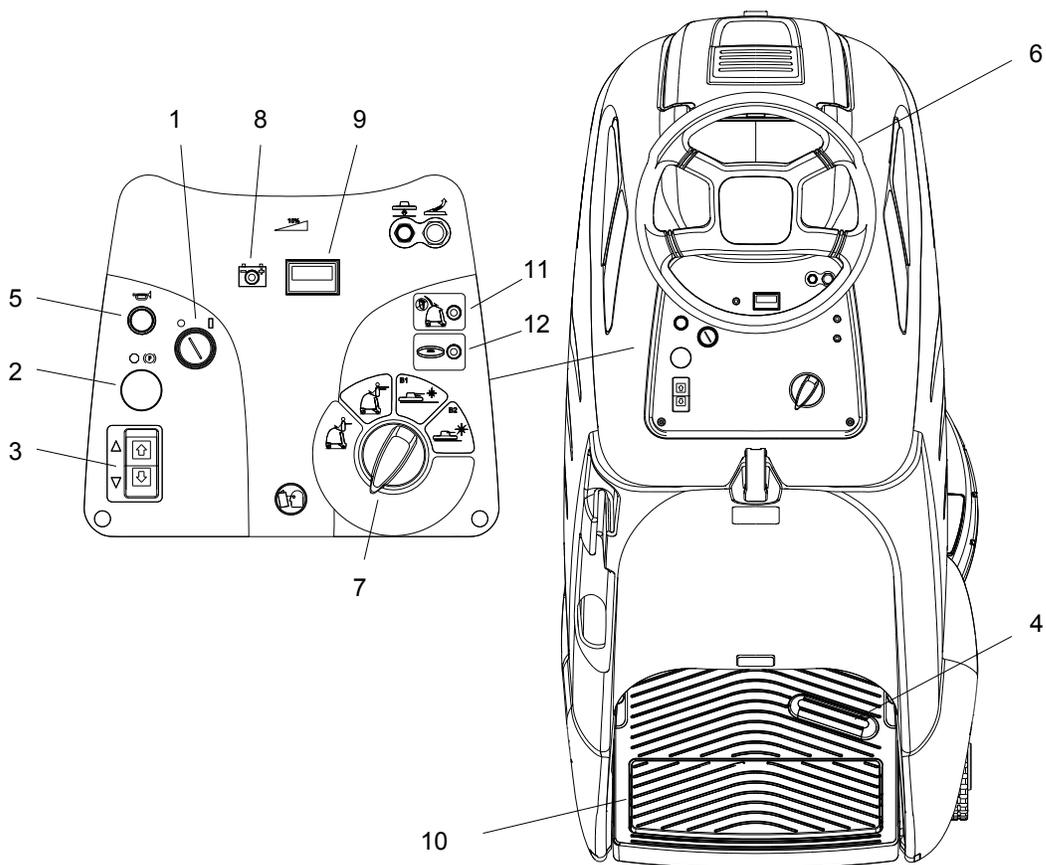
The function of the operator control system is to control the direction and speed of the machine. The directional control system consists of the direction control drive reset switch, throttle pedal, emergency stop/brake switch, steering wheel, propel controller, and drive wheel. The directional control drive reset switch signals forward or reverse direction and makes sure the operator is on the platform before machine will propel. The controller interprets signals from the throttle pedal to command the drive wheel to propel or slow the machine. The steering wheel points the drive wheel in the direction desired by the operator. The parking brake automatically engages when the operator stops the machine. The emergency stop/brake can be used to hold the machine on slopes.



**Components**

- |                       |                        |
|-----------------------|------------------------|
| 1. Drive Control      | 6. Bag Enclosure       |
| 2. Burnisher Controls | 7. Bag Enclosure Cover |
| 3. Control Console    | 8. Burnisher Deck      |
| 4. Pedal Platform     | 9. Rear Cover          |
| 5. Lower Body         |                        |

## Components



1. Key Switch
2. Emergency Stop/Brake Switch
3. Directional Control / Drive Reset Switch
4. Throttle Pedal
5. Horn Button
6. Steering Wheel
7. Speed Control/Function Select
8. Battery Discharge Indicator
9. Hour Meter
10. Operator Presence Switch
11. Bag Present indicator
12. Check Pad Indicator

**1. KEY SWITCH**

Controls the power for machine functions.

To turn the machine power on, rotate key clockwise.

To turn the machine off, rotate key counterclockwise.

When the key is turned on the battery symbol will flash once and stay on continuously.

**2. EMERGENCY STOP/BRAKE SWITCH**

This safety feature is designed to cut all power to the machine at any time and apply parking brake.

To shut the machine power off, push the Emergency Stop Switch, this will also engage the parking brake and cause the machine to stop immediately.

To reset the machine, rotate the switch clockwise.

**3. DIRECTIONAL CONTROL / DRIVE RESET SWITCH**

This safety feature is designed to ensure safe engagement of propel drive. Each time the machine power is turned on, or each time an operator steps on to the platform, the Drive Reset Switch must be pushed before machine will propel.

The switch controls the direction of travel of the vehicle. The lighted arrow on the switch indicates direction of travel.

To travel forward, press the top of the switch.

To travel in reverse, press the bottom of the switch.

### 4. THROTTLE PEDAL

Controls the speed of the vehicle within the speed control setting selected. Pressing the pedal causes the machine to travel in the direction selected by the Directional Control Switch.

To increase speed, increase pressure on the pedal.

To decrease speed, decrease pressure on the pedal.

### 5. HORN BUTTON

The horn is activated by pressing the horn button.

### 6. STEERING WHEEL

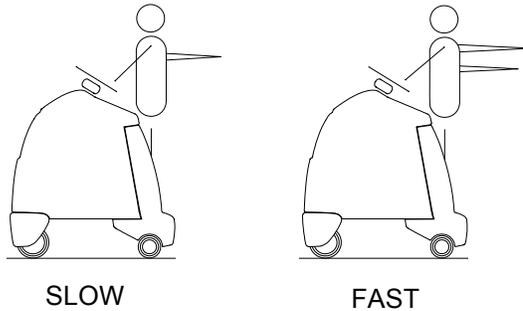
The steering wheel turns the front wheel causing the machine to change direction.

### 7. SPEED CONTROL

Controls the maximum speed of the machine. There are two settings, slow and fast.

To change speed, rotate the dial to either slow or fast position. The slow position is to the left (counterclockwise), fast to the right (top position).

The throttle pedal will always regulate the speed between 0 and maximum



## 8. BATTERY DISCHARGE INDICATOR

Indicates the charge level of the batteries.

The indicator will be illuminated if the batteries have a sufficient charge. A slow, continuous flash indicates the batteries require charging.

The Battery Lockout function will activate when the batteries are low.

Once active, the LED status indicator will begin to flash slowly and the controller will inhibit the burnisher motor.

The vacuum and drive remain functional. Return the unit to the charging station and charge the batteries.

*NOTES: Continuing usage may damage the batteries.*

When the machine is left overnight with less than a full charge, the display may initially indicate a full charge. It will also indicate a full charge if the batteries are disconnected, then reconnected. After a few minutes of operation the indicator will give the correct charge level.

## 9. HOUR METER

Records the number of hours the machine has been in burnishing operation. This information is useful in determining when to service the machine.

## 10. OPERATOR PRESENCE SWITCH

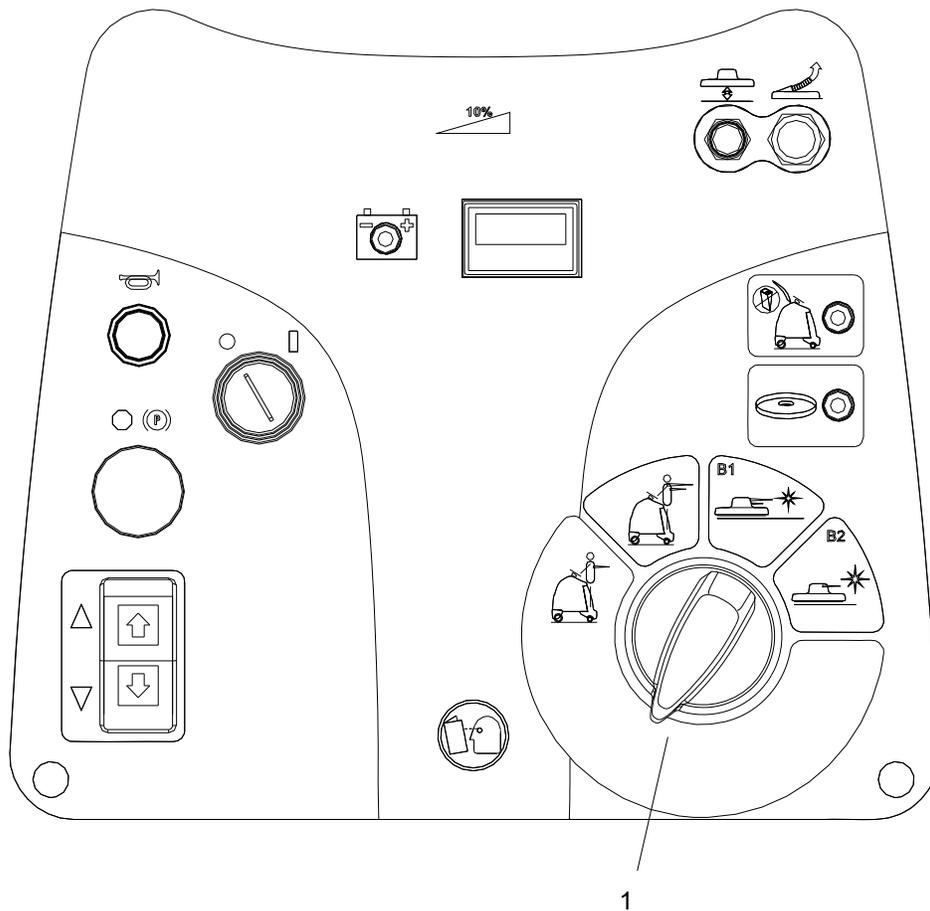
Must be pressed down prior to any machine functions enabled.

## 11. BAG PRESENT INDICATOR

Notifies operator if dust collection bag is missing. LED is red when bag is missing or not properly installed.

## 12. CHECK PAD INDICATOR

Notifies operator of potential problem with pad or missing pad. When LED is red, operator should remove pad driver and verify pad condition and proper installation.



## 1. FUNCTION MODE SWITCH

The first two positions are for transport only. See drive controls section.

### **B1 - Light burnishing**

This mode is used for light burnishing. In this mode the machine will propel at fast speed. The 'floating' burnisher deck is in the down position. When equipped with optional active dust collection, vacuum motor will be on.

### **B2 - Deep burnishing**

This mode is used for deep burnishing. In this mode the machine will propel at slow speed. The 'floating' burnisher deck is in the down position. When equipped with optional active dust collection, vacuum motor will be on.



### Machine Operation

#### Pre-Run Machine Inspection

Do a pre-run inspection to find possible problems that could cause poor performance or lost time from break-down. Follow the same procedure each time to avoid missing steps.

*NOTE: See maintenance section for pre-run machine inspection checklist items.*

#### Starting Machine

*NOTE: Perform pre-run machine check before operating machine.*

**FOR SAFETY: Before starting machine, make sure that all safety devices are in place and operating properly.**

1. Disconnect or unplug battery charger.
2. Close the cover(s).
3. Verify condition of burnishing pad, replace if necessary.
4. Verify removable pad driver is installed correctly and pad rotation lock is released.
5. The operator should be on the pedal platform. The throttle pedal must be in the neutral position.
6. Turn the machine power on by turning key switch clockwise to the "ON" position.
7. Verify dust collection bag is installed.
8. Press the Drive Reset Directional Control Switch to reset and set the intended direction for travel.
9. Press lightly on the throttle pedal with right foot

#### Emergency Stop Procedure

Push in emergency stop button. This will also engage the parking brake and cause the machine to stop immediately.

## Operating the Machine

When operating the machine around people, pay close attention for unexpected movement. Use extra caution around children.

1. Stand on the operator platform. Throttle pedal must be in neutral position.
2. Turn machine power on.
3. Select transport speed from Function Mode Switch.
4. Press the Drive Reset/Directional Control Switch, selecting the desired travel direction.
5. Select B1 or B2 from the Function Mode Switch. Deck will Lower.
6. The pad motor will only run when the burnishing head is lowered to within 2 inches of the floor.
7. Occasionally verify "check pad" indicator light is "green". If not, stop machine, remove pad driver and check pad. Replace or flip as needed.

*NOTE: To prevent possible damage to the floor surface, always keep the machine moving while the pad is spinning.*

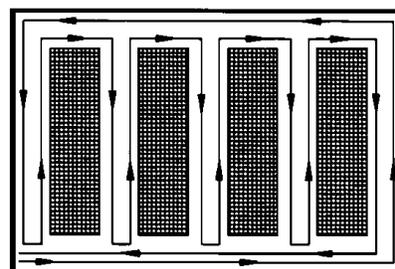
8. When the head is down and the machine is propelled, the pad motor runs.
9. When the battery light flashes it indicates discharged batteries, stop operation and charge batteries.

## Normal Burnishing

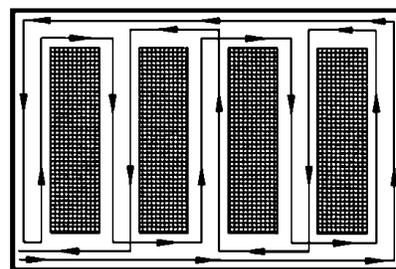
Plan the burnishing pattern in advance. The longest track is around the perimeter of the area to be burnished. For efficient operation, the runs should be the longest possible without turning, stopping, or raising or lowering the burnisher head.

In order to achieve the best possible results, the area which is to be burnished should be swept and auto scrubbed before burnishing.

### INEFFICIENT BURNISHING PATH

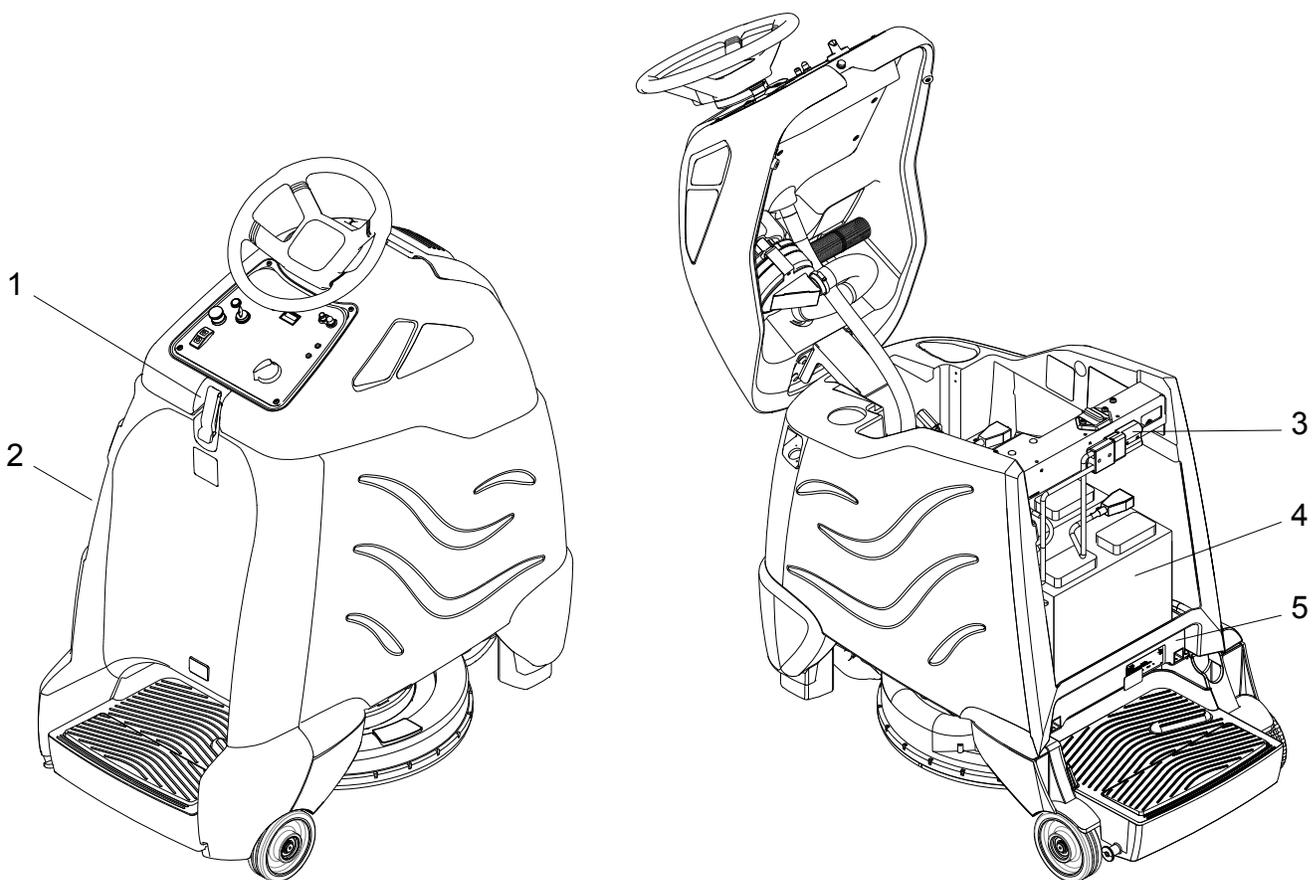


### RECOMMENDED BURNISHING PATH



**Service Schedule**

| MAINTENANCE  | BEFORE EACH<br>WORK PERIOD | AFTER EACH<br>WORK PERIOD | 50<br>HRS | 100<br>HRS | 200<br>HRS |
|--|----------------------------|---------------------------|-----------|------------|------------|
| Check water level of batteries after charging; add distilled water if necessary. (Wet cell only) | *                          |                           |           |            |            |
| Visually check for damaged or worn tires.  | *                          |                           |           |            |            |
| Check brush or pad for proper installation.  | *                          |                           |           |            |            |
| Check vacuum hose connections.   | *                          |                           |           |            |            |
| Check pedal, brake and steering for proper operation.  | *                          |                           |           |            |            |
| Check dust bag.  |                            | *                         |           |            |            |
| Charge batteries if needed.  |                            | *                         |           |            |            |
| Clean off top of batteries.  |                            |                           | *         |            |            |
| Check battery cells with hydrometer. (Wet cell only)   |                            |                           | *         |            |            |
| Inspect deck skirt.  |                            |                           | *         |            |            |
| Check battery connections are tight.   |                            |                           | *         |            |            |
| Clean battery cases and battery compartment.   |                            |                           |           | *          |            |
| Check parking brake.   |                            |                           |           |            | *          |
| Clean pivot points on burnishing head.   |                            |                           |           |            | *          |
| Check all motors for carbon brush wear.  |                            |                           |           |            | *          |
| Check steering chain tension.  |                            |                           |           |            | *          |
| Check drive chain tension.   |                            |                           |           |            | *          |



- 1. Cover Retainer Latch
- 2. Rear Cover
- 3. Battery Connector-Machine
- 4. Batteries
- 5. Battery Tray

### Batteries (Wet Cell)

The batteries provide the power to operate the machine. The batteries require regular maintenance to keep them operating at peak efficiency.

The machine batteries will hold their charge for long periods of time, but they can only be charged a certain number of times. To get the greatest life from the batteries, charge them when their charge level reaches 25% of a full charge. Use a hydrometer to check the charge level.

Do not allow the batteries to remain in a discharged condition for any length of time. Never expose a discharged battery to temperatures below freezing. Discharged batteries will freeze causing cracked cases. Do not operate the machine if the batteries are in poor condition or if they have a charge level below 25% (specific gravity below 1.155).

Keep all metallic objects off the top of the batteries, as they may cause a short circuit. Replace worn or damaged cables and terminals.

Check the electrolyte level in each battery cell before and after charging the batteries. Never add acid to the batteries, use distilled water. Do not allow water level to fall below the battery plates. Portions of plates exposed to air will be destroyed. Do not overfill. Keep plugs firmly in place at all times.

#### **WARNING:**

**Not all batteries require maintenance. AGM batteries are maintenance free. Do not attempt to remove sealed caps from AGM batteries. Warranty is void if caps are removed from AGM battery.**

#### **AVERTISSEMENT:**

**L'entretien n'est pas nécessaire pour toutes les batteries. Les batteries AGM ne nécessitent pas d'entretien. N'essayez pas d'enlever les bouchons scellés des batteries AGM. La garantie est annulée si les bouchons sont retirés des batteries AGM.**

**⚠ CAUTION:**

When servicing machine, avoid contact with battery acid.

**⚠ ATTENTION:**

Lors de l'entretien de la machine, évitez tout contact avec l'acide de batterie.

**⚠ WARNING:**

Batteries emit hydrogen gas. Explosion or fire can result. Keep sparks and open flame away. Keep covers open when charging.

**⚠ AVERTISSEMENT:**

Les batteries émettent du gaz hydrogène. Une explosion ou un incendie peut en résulter. Maintenez les étincelles et les flammes nues à l'écart. Gardez les carters ouverts lors du chargement.

**⚠ WARNING:**

Wear eye protection and protective clothing when working with batteries.

**⚠ AVERTISSEMENT:**

Portez des lunettes de protection et des vêtements de protection lorsque vous travaillez avec des batteries.

**⚠ WARNING:**

Charge batteries in a well ventilated area.

**⚠ AVERTISSEMENT:**

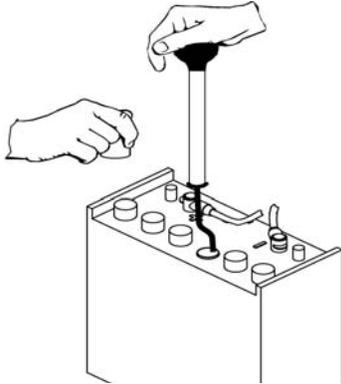
Chargez les batteries dans un endroit bien ventilé

**Battery Maintenance**

1. When cleaning the batteries, use a solution of baking soda and water. Do not allow the cleaning fluid to enter the battery cells, electrolyte will be neutralized.
2. Maintain the proper electrolyte level in each battery cell. If a cell should accidentally overflow, clean immediately.
3. Wipe off the top of the batteries at least once a week.
4. Test battery condition with a hydrometer at least once a week.
5. Ensure that all connections are tight and all corrosion removed.
6. Every 4 to 6 months, remove the batteries from the machine and clean the battery cases and battery compartment.

## Checking Battery Specific Gravity

Use a hydrometer to check the battery specific gravity.



### CHECKING GRAVITY

- a. Hydrometer Battery
- b. Battery

*NOTE: Do not take readings immediately after adding distilled water, if the water and acid are not thoroughly mixed, the reading may not be accurate.*

Check the hydrometer readings against this chart.

| <b>SPECIFIC GRAVITY<br/>@ 80° F (27°C)</b> | <b>BATTERY CONDITION</b> |
|--|--------------------------|
| 1.265                                      | 100% CHARGED             |
| 1.225                                      | 75% CHARGED              |
| 1.190                                      | 50% CHARGED              |
| 1.155                                      | 25% CHARGED              |
| 1.120                                      | DISCHARGED               |

*NOTE: If the readings are taken when the battery electrolyte is any temperature other than 80°F (27°C), the reading must be temperature corrected.*

To find the corrected specific gravity reading when the temperature of the battery electrolyte is other than 80°F (27°C): Add (+) to the specific gravity reading 0.004 (4 points), for each 10°F (6°C) above 80° (27°C). Subtract (-) from the specific reading 0.004 (4 points), for each 10°F (6°C) below 80°F (27°C).

## Charging Batteries

### **⚠ CAUTION:**

When servicing machine, avoid contact with battery acid.

### **⚠ ATTENTION:**

Lors de l'entretien de la machine, évitez tout contact avec l'acide de batterie.

### **⚠ WARNING:**

Batteries emit hydrogen gas. Explosion or fire can result. Keep sparks and open flame away. Keep covers open when charging.

### **⚠ AVERTISSEMENT:**

Les batteries émettent du gaz hydrogène. Une explosion ou un incendie peut en résulter. Maintenez les étincelles et les flammes nues à l'écart. Gardez les carters ouverts lors du chargement.

### **⚠ WARNING:**

Wear eye protection and protective clothing when working with batteries.

### **⚠ AVERTISSEMENT:**

Portez des lunettes de protection et des vêtements de protection lorsque vous travaillez avec des batteries.

### **⚠ WARNING:**

Charge batteries in a well ventilated area.

### **⚠ AVERTISSEMENT:**

Chargez les batteries dans un endroit bien ventilé

Use a 36 volt, 20 amp maximum output DC charger which will automatically shut off when the batteries are fully charged.

1. Stop the machine in a clean, well ventilated area next to the charger.
2. Turn "OFF" machine.

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

3. Remove rear cover, unplug batteries from machine.

### **⚠ WARNING:**

Batteries emit hydrogen gas. Explosion or fire can result. Keep sparks and open flame away. Keep covers open when charging.

### **⚠ AVERTISSEMENT:**

Les batteries émettent du gaz hydrogène. Une explosion ou un incendie peut en résulter. Maintenez les étincelles et les flammes nues à l'écart. Gardez les carters ouverts lors du chargement.

4. Check the electrolyte level in each battery cell. Before charging, add just enough distilled water to cover the plates. After charging is complete, add just enough distilled water to bring up the level to the indicator ring. If the water level is too high before charging, normal expansion rate of the electrolyte may cause an overflow resulting in a loss of battery acid balance and damage the machine.

5. Replace the battery caps, and leave them in place while charging.
6. Unplug the battery connector from the machine.

**FOR SAFETY: When charging, connect the charger to the batteries before connecting the charger to the AC wall outlet. Never connect the charger to the AC wall outlet first. Hazardous sparks may result.**

7. Plug the charger connector into the battery connector. Connect the charger AC plug to a wall outlet. The charger gauge should indicate that the batteries are charging.
8. When the batteries are fully charged, disconnect the charger from the AC wall outlet, then disconnect the charger from the batteries.
9. Connect the batteries to the machine connector.
10. Check the electrolyte level. It should be up to the indicator ring. If necessary, add distilled water.
11. Install the rear cover.

### Changing Batteries

Stop the machine in a clean area next to the charger. Turn off machine.

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

1. Open the console cover.
2. Remove rear cover.
3. Disconnect battery pack from machine.

Use the proper size open end wrench to disconnect main ground wire first and secure cable terminal away from batteries.

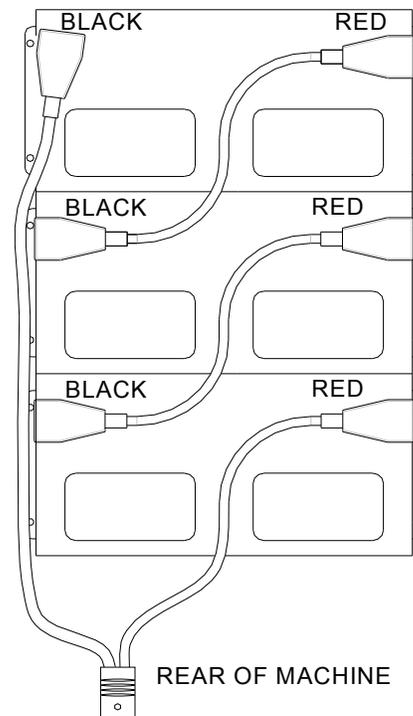
4. Disconnect main positive lead and secure cable terminals away from batteries.
5. Loosen both terminals on each jumper cable and remove one at a time.
6. Prepare a suitable site to place the batteries.

### **⚠ WARNING:**

**Attach suitable battery lifting device and lift batteries from the machine. Batteries are a potential environmental hazard. Consult your battery supplier for safe disposal methods.**

### **⚠ AVERTISSEMENT:**

**Fixez le dispositif de levage de batterie approprié et levez les batteries de la machine. Les batteries constituent un danger potentiel pour l'environnement. Consultez le fournisseur de votre batterie pour c**



**NOTE: Red (+) and Black (-) installed opposite for 225 AH (J185) battery configuration.**

## Battery Charger Programming

*NOTE: For machines equipped with optional on-board charger. When replacing batteries, charger programming changes may be required. If replacing batteries with same type, (e.g. maintenance free batteries with maintenance free) no programming is required. When batteries with different type (e.g. maintenance free with wet cell), programming changes are required. Failure to make programming changes may lead to reduced battery life.*

## Programming Instructions

The charger is pre-loaded with the charge algorithms shown below:

| AlgID | Description           |
|-------|-----------------------|
| 1     | Trojan J185H          |
| 5     | Trojan 30XHS          |
| 42    | Discover AGM EV31A-A  |
| 43    | Discover AGM EV185A-A |

## Check Default Charge Algorithm

Enter Algorithm Display Mode:

1. Disconnect AC Power.
2. Remove positive lead from battery pack.
3. Apply AC power and the charger will display the algorithm number after the Power On Self Test:
  - a. All algorithms will display as a series of flashes of the 80% LED.
  - b. Algorithms #1 - 6 will also be indicated by the Ammeter LEDs (see Users Guide).

Examples:

☼☼☼☼ = Algorithm #3

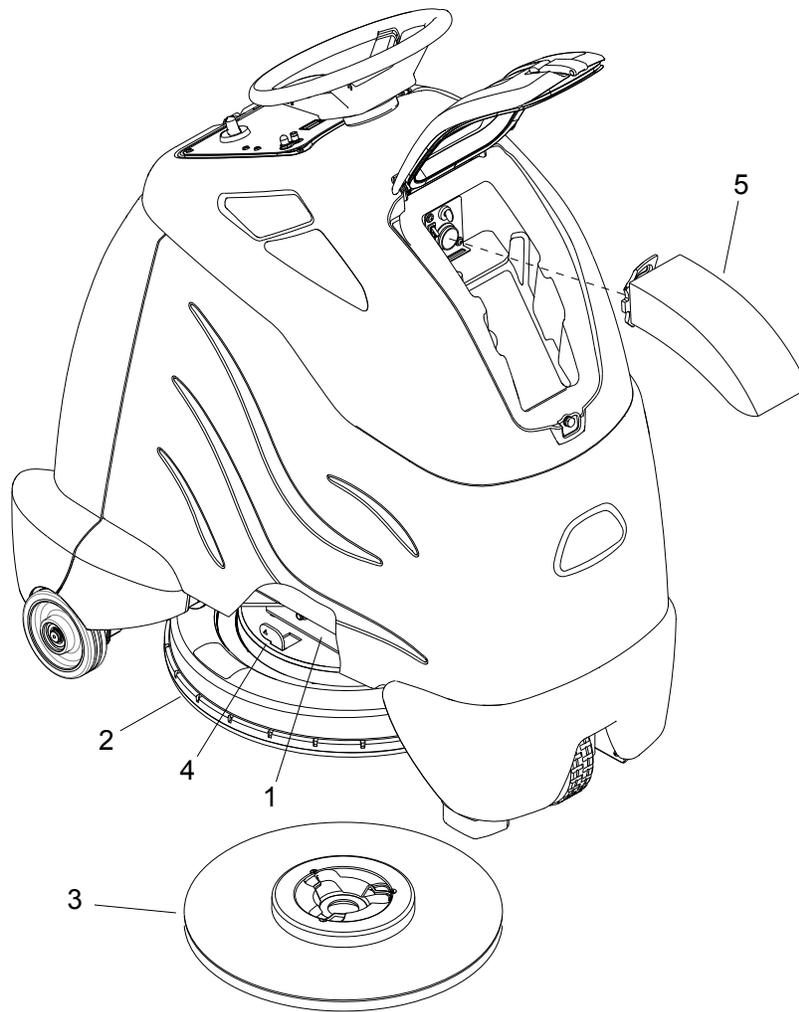
☼☼☼ , Short Pause, ☼ = Algorithm #21

4. Algorithm number display repeats for 11 seconds, then Algorithm Display Mode ends.
5. Remove AC Power and reconnect positive lead.

## Check Default Charge Algorithm

1. Enter Algorithm Display Mode (as above).
2. While Algorithm Number is displayed (for 11 seconds), touch positive lead to the battery pack positive terminal for 3.0 seconds ( $\pm 0.5s$ ).
3. Remove lead from battery pack. Algorithm Number will increment.
4. To increment the Algorithm Number again, repeat Steps 2 and 3 within 30 seconds.
5. Touch positive lead to positive terminal and hold until relay clicks (>10 seconds). The new default algorithm is now stored.
6. Remove AC power and check default algorithm.

Contact your original equipment manufacturer if your battery pack is not supported by the charge algorithms loaded in your charger.



**Burnishing Deck**

- 1. Burnisher Motor
- 2. Skirt
- 3. Pad Driver/Pad
- 4. Pad Rotation Lock Lever

**Dust Collection**

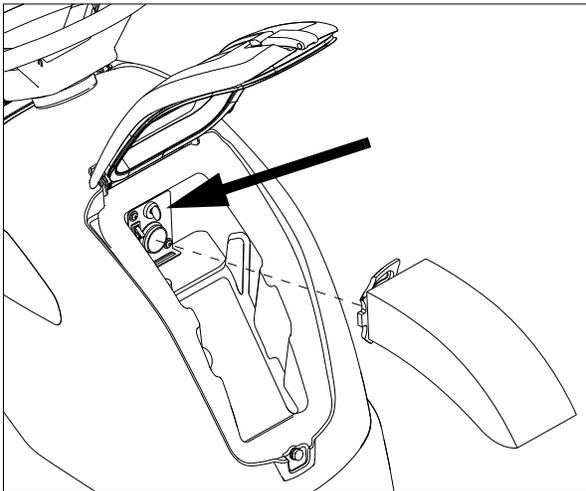
- 5. Dust Bag

## Burnishing Pad

Many types of pads are available for floor burnishing. Select a pad type based on floor type and floor finish for best results.

## Dust Bag Replacement

1. Release latch and raise cover to access dust bag.
2. Turn thumb screw to horizontal position to release dust bag.
3. Remove dust bag at the plastic frame from the bag mounting bracket.
4. Reverse procedure to install new bag.



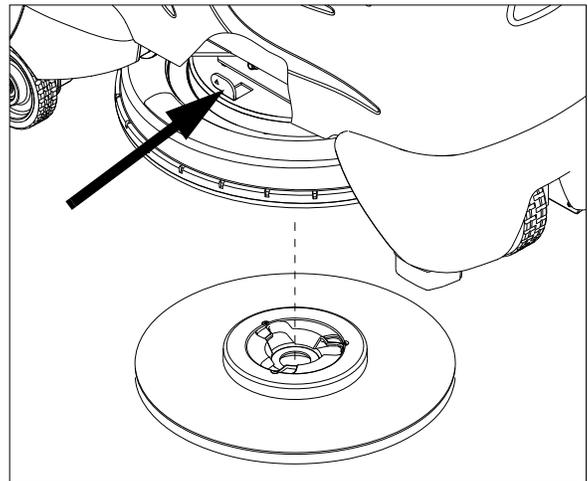
## Dust Control Skirt Replacement

1. Raise burnisher deck with Function Mode Switch set to transport mode.
2. Find ends of brush skirt. Pull down on one end to release from shroud snap features. Once released from two snaps, gently pull skirt parallel to the floor to fully remove from shroud.
3. Install new skirt by pushing up into snaps one at a time working around shroud diameter.
4. Where the ends meet, trim any excess skirt with scissors or wire cutter.

## Pad Replacement

1. Set the burnisher deck to the raised position.
2. To remove the pad driver:
  - Push in and hold the Pad Rotation Lock lever.
  - Grip the outside diameter of the pad and pad driver.

- Rotate firmly counterclockwise. Pad driver will disconnect from motor hub.
- Release Pad Rotation Lock lever.



3. To remove pad from pad driver:
  - Set pad driver on flat surface with pad facing up.
  - Release pad retainer from center of pad using retainer's wire clip.
  - Peel pad off pad driver.
4. To install pad on pad driver:
  - Center the pad on pad driver with pad facing up.
  - Check the pad inner diameter where the pad fits over the raised ring of the pad retainer.
  - Install pad retainer making sure wire clips snap in place. Pad will need to compress to engage pad retainer clips
5. To install the pad driver:
  - Push in and hold the Pad Rotation Lock lever.
  - Hold the pad driver parallel to the floor under the shroud.
  - Lift pad driver up to contact hub keeping level and centered with motor shaft.
  - Rotate pad driver clockwise applying light pressure up on the hub. Pad driver will align with hub and move up.
  - Continue rotating clockwise approximately 15 degrees to fully engage hub.
  - Release Pad Rotation Lock lever.

*NOTE: Final tensioning of the pad driver occurs as the motor rotates during burnishing.*

### Burnisher Motor Replacement

1. Remove the pad driver assembly.
2. Lower the burnisher deck using the Function Mode Switch.
3. Turn the key to the off position.
4. Unplug the battery pack from the machine.
5. Disconnect the positive and negative wires from the posts at the front of the motor. Note the positions for reassembly. Isolate the ends of the wires as batteries will be connected in step 6.
6. Unhook deck lift springs, one per side. Prevent bracket from retracting inside body of machine by using holes and temporary cross pin.
7. Remove the hardware (4X) connecting the linkage to the motor mount. Note the stack arrangement of the hardware for reassembly.
8. Plug in the battery pack. Turn on the key. Turn the Function Mode Switch to transport to raise upper linkage.
9. Slide the deck assembly from under the machine.
10. Flip the deck assembly over.
11. Slide Pad Rotation Lock lever in and hold while removing bolt and washer from pad driver hub.
12. Release Pad Rotation Lock lever slide hub and key off motor shaft.
13. Remove bolts and washers (4X) holding inner shroud and plate. Remove motor from shrouds and motor mount.
14. Reverse process to reinstall.

### Burnisher Motor Carbon Brush Ring Replacement

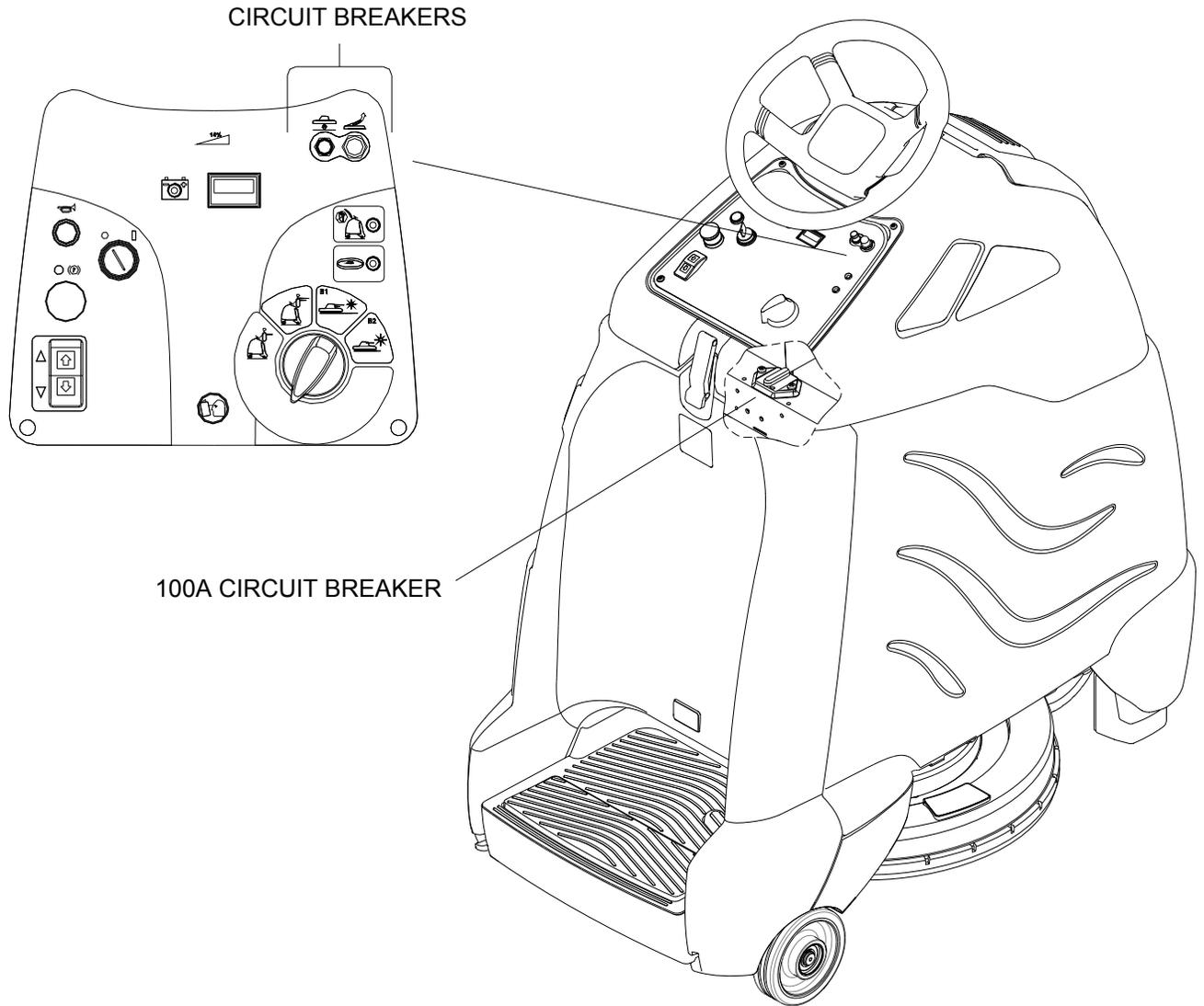
1. Follow steps 1-9 of "Burnisher Motor Replacement" to access the top of the motor.
2. Remove flat head screws (4X) in the motor cover. Remove the cover.
3. Remove hex head screws (4X) holding the brush ring assembly to the motor casting.
4. Slide the brush ring assembly off the motor commutator.
5. Clean excessive carbon deposits off motor components with compressed air.

6. Prepare new brush assembly for use by inserting individual brush springs into brush guides. Check each brush to ensure proper movement after installing springs.
7. Depress brushes as required to insert brush housing over commutator.
8. Check area under cable lugs to make sure brush ring is seated against casting fully.
9. Replace hex head screws (4X) holding the brush ring assembly.
10. Rotate motor to check for smooth rotation.
11. Replace motor cover and flat head screws (4X).
12. Reverse steps in step 1 to reinstall to machine.

### Deck Actuator Removal / Replacement

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

1. Support deck under pad driver so that actuator pins can be removed.
2. Remove bumper screws (2).
3. Remove front battery.
4. Pull steering shaft.
5. Disconnect actuator from wiring harness.
6. From the underside of the machine, remove lower lifting pin from actuator.
7. Remove clevis pin from actuator upper bracket.
8. Lift actuator upward and free from machine.
9. Reverse steps to install.



## Circuit Breakers

Circuit breakers interrupt the flow of power in the event of an electrical overload. When a circuit breaker is tripped, reset it by pressing the exposed button. If a circuit breaker continues to trip, the cause of the electrical overload should be found and corrected.



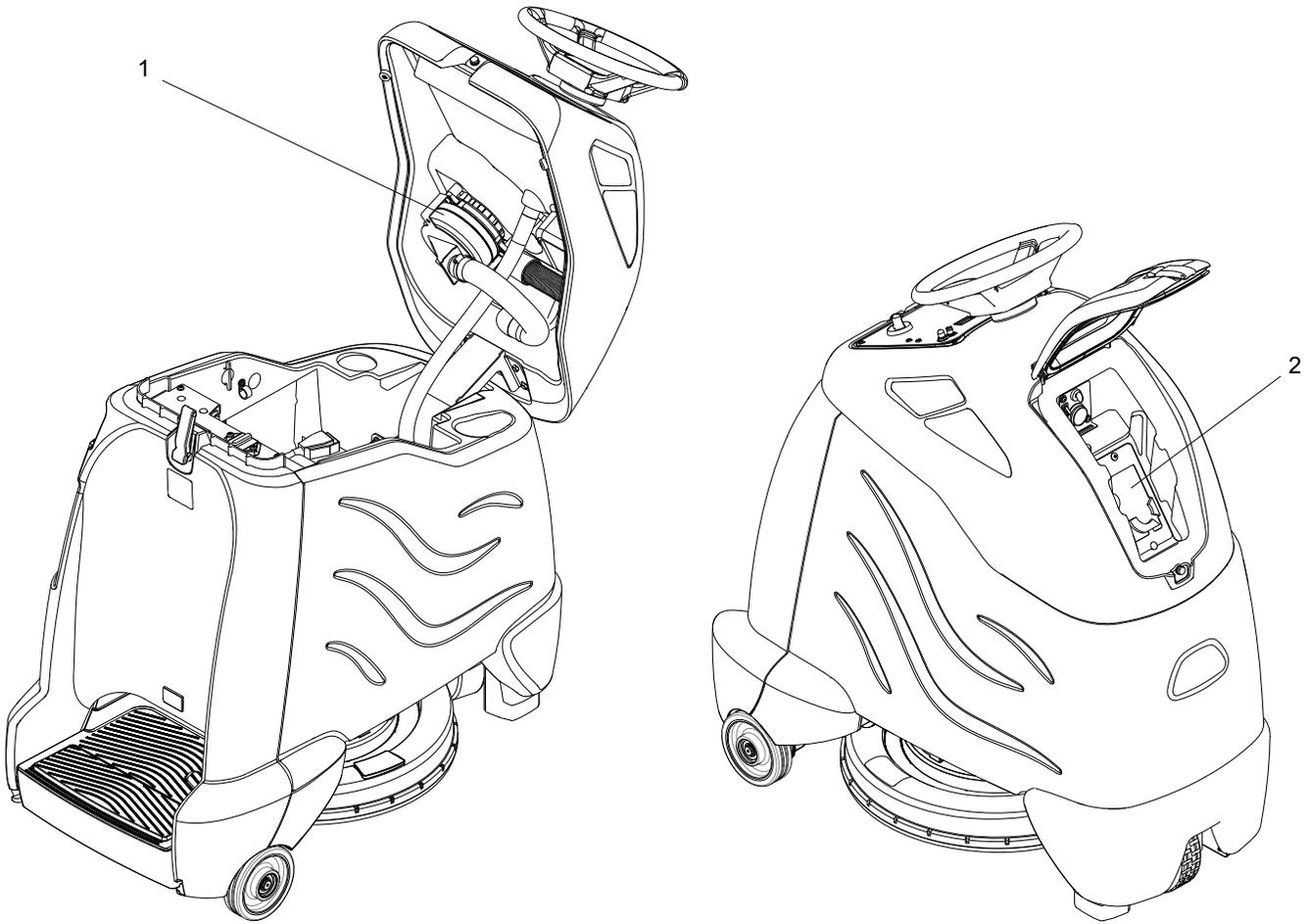
1.5 Amp protects the deck lift actuator, horn & controller.



18 Amp protects the vacuum motor.

100 Amp protects the burnisher motor.

Vacuum - Optional

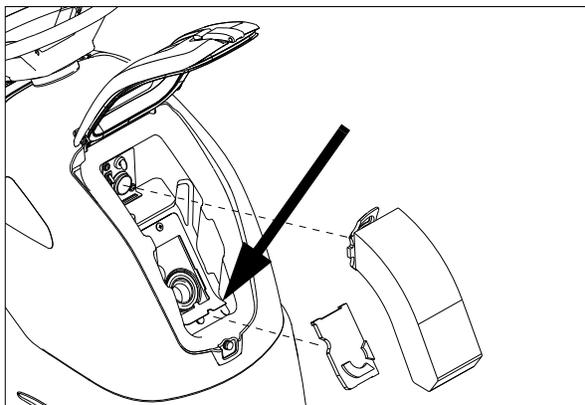


1. Vacuum Motor

2. Vacuum Filter

## To Replace Vacuum Filter

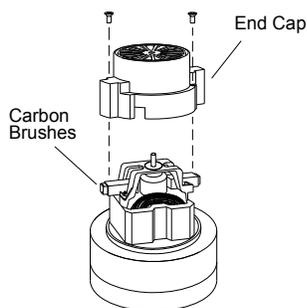
1. Open dust bag cover.
2. Remove dust bag.
3. Unlock bottom of filter frame by bending it slightly and slide from under the bolt head.
4. Lift filter out of housing.
5. Reverse steps to install.



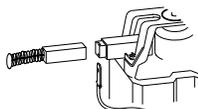
## Vacuum Motor Carbon Brush Replacement

**FOR SAFETY:** before leaving or servicing machine, stop on a level surface, turn off machine and disconnect power.

### Vacuum Motor Carbon Brushes

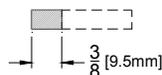


If armature commutator is grooved, extremely pitted or not concentric, the motor will need to be replaced or sent to a qualified service center.



Important:

These brushes wear quicker as the length shortens due to increased heat. Spring inside brush housing will damage motor if brushes are allowed to wear away completely.

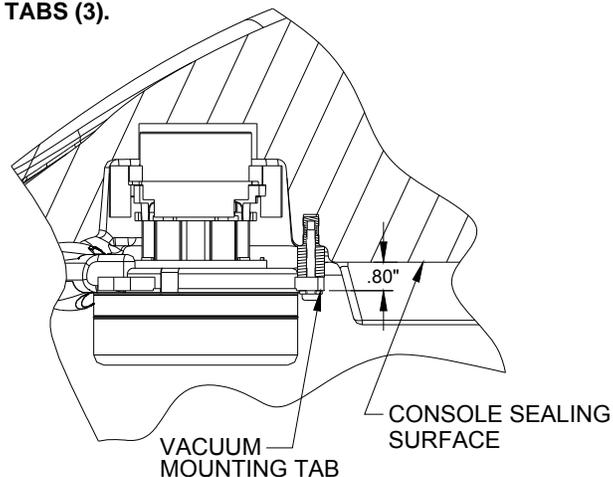


Periodically check the length of the carbon brushes. Replace both carbon brushes when either is less than 3/8" (9.5mm) long.

## To Repair or Replace Vacuum Motor

1. Remove four (4) screws from top of control panel.
2. Tip control panel back from console to expose vacuum motor wires.
3. Disconnect electrical connector from the vacuum motor.
4. Replace control panel, attach with one (1) screw to secure in place.
5. Open console.
6. Remove three (3) screws and mounting bracket that secure vacuum motor.
7. Reverse steps to install.

**MOUNT .80" FROM SEALING SURFACE OF CONSOLE TO THE TOP OF THE MOUNTING TABS (3).**



**NOTE:** If vacuum motor is not mounted as shown, vacuum may not seal properly, resulting in poor performance.

### Body Assembly Removal

In order to access the frame or drive components, the entire tank/console cover assembly can be removed as a single unit.

Body Removal:

1. Open the console cover.
2. Remove back panel.
3. Grasp the lower end of the flexible steering shaft and pull it straight up until it is disengaged with the hex steering shaft.
4. Disconnect the five electrical plugs located just forward of the battery tray. Access plugs through front left hole in main body.
5. Remove the battery cable connection from the rear cross member.
6. Close the console cover.
7. Remove the bumper. One mounting bolt per side is located just above the tip pads on the inside.
8. Remove 6 bolts holding the body in place.
9. The body assembly can now be lifted off the chassis and set aside.
10. Reverse the process for reassembly.

### Drive Unit Removal

1. Remove tank assembly.
2. Pull the brake and drive electrical connectors off of their support plate.
3. Remove the P-clamp holding the cable.
4. Lift the chain cover plate off of the motor.
5. Support the chassis on the tip pads so that the front wheel is 10 inches off the floor.
6. Locate and remove two mounting nuts and remove the drive unit from below.
7. To reinstall, reverse the process.

*NOTE: The small tab at the front of the drive unit frame should line-up with the notch in the mating plate.*



## Drive Motor

### Drive Motor Carbon Brush Replacement

#### **⚠ WARNING:**

Do not use a pressure washer to clean around the motors. Use tap pressure only.

#### **⚠ AVERTISSEMENT:**

N'utilisez pas de nettoyeur haute pression pour nettoyer autour des moteurs des brosses. Utilisez seulement la pression du robinet.

*FOR SAFETY: Before leaving or servicing machine, stop on a level surface, turn off machine and remove motor carbon brushes.*

1. Open the console cover.
2. Tilt the recovery tank back until it stops on the lanyard.
3. Grasp the lower end of the flexible steering shaft and pull it straight up until it is disengaged with the hex steering shaft. Place the loose end into one of the fill ports.
4. Remove the cover and gasket at the steering shaft area.
5. Grasp the drive wheel by reaching under the front bumper and turn it to near the left steering stop.
6. The drive motor carbon brushes are located under screw caps. The caps are accessible by gently moving the harness aside.
7. Rotate the drive wheel to near the right hand stop to access the right side carbon brush.
8. Replace the gasket and cover, set the drive wheel straight ahead, set the steering wheel straight ahead, and gently align the steering shaft coupling and slide onto the lower shaft.
9. Slowly close the cover and make sure the shaft slides without binding.

## Drive Chain Tension

The drive chain should deflect about 1/4 inch on either side of the loop when the opposite side is tight.

To adjust chain tension:

1. Remove bumper.
2. Loosen five (5) 10mm screws that hold the drive gear motor and slide the gear motor up until the chain tension is correct. Retighten the five (5) mounting bolts.
3. Reinstall the bumper.

## Pushing Machine

This machine is equipped with a drive gear engagement/disengagement lever.

The brake automatically engages and keeps the machine from moving whenever the operator stops the machine.

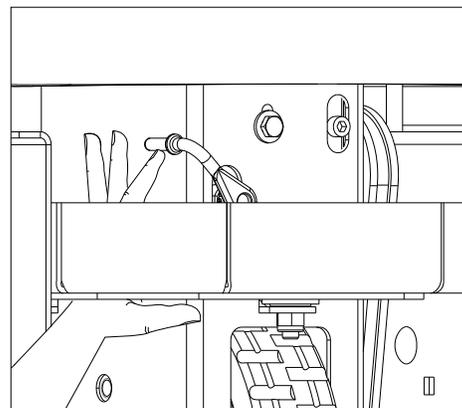
The drive gear can be disengaged so the machine can be pushed or towed (slowly).

When the drive gear is disengaged the machine cannot be driven.

*NOTE: Front bumper removed for clarity and to show access to lever.*

### Lever access

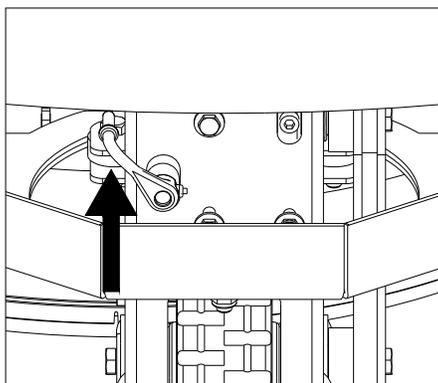
Turn wheel to left and reach up under bumper and steel bracket.



**Drive gear engaged**

Machine can be driven.

Rotate lever firmly in direction of arrow.

**Inclines**

When navigating an incline the machine may come to a stop. Turn the machine off. Wait 5 minutes and start the machine and proceed up the incline.

**⚠ CAUTION:**

Overheating may occur if you do not wait the full 5 minutes.

**⚠ ATTENTION:**

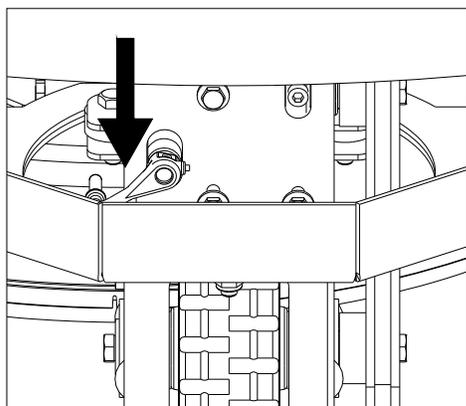
Une surchauffe peut se produire si vous n'attendez pas les 5 minutes complètes.

**Drive gear disengaged**

Machine can be pushed or towed (slowly).

When disengaged the machine rolls easily. Disengage on a level surface.

Rotate lever firmly in direction of arrow.



## Preparation for Loading/Unloading Trailer

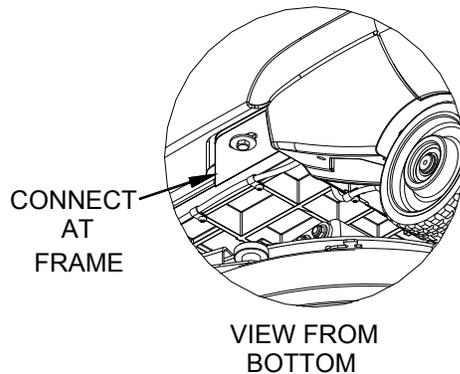
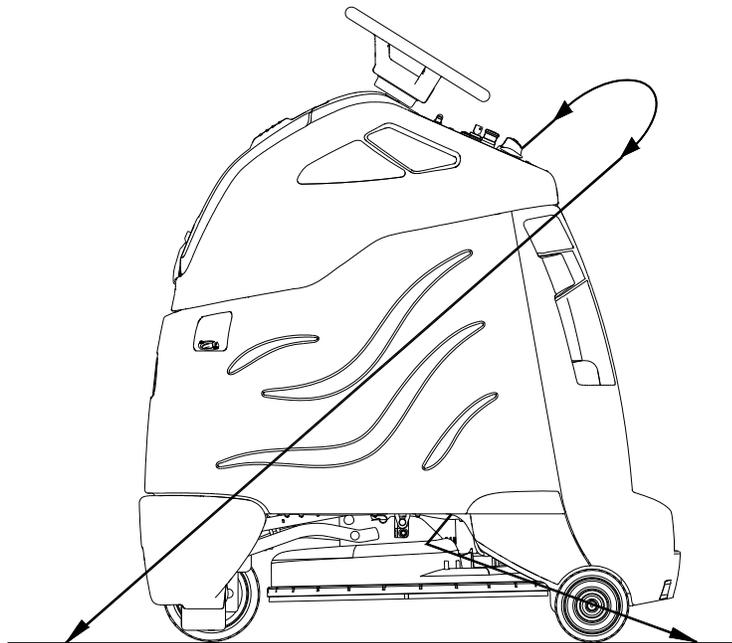
Burnisher Deck must be in the up position before loading.

When transporting the machine on a trailer or in a truck, in addition to using tie-downs, be sure to block the tires to prevent the machine from rolling.

## Machine Tie-Downs

There are two tie points located in front of the rear wheels on the frame, and a Tie-down wrap point on the back panel. Tie-down devices must be of the proper type and strength. The combined strength of all tie-downs must be strong enough to lift two times the weight of the machine. Tie-downs must be positioned to prevent the machine from moving forward, backward, or either side to side. Use all four corners of the machine with the tie-downs running out opposite directions. Tie-downs must be attached to the transporting vehicle securely.

## Recommended Tie-Down Points



## Troubleshooting

| PROBLEM                          | CAUSE  | SOLUTION   |
|----------------------------------|--|--|
| No machine function              | Console lid is open  | Close console lid  |
| No power to machine              | Battery disconnected   | Check all battery cable connections  |
|                                  | Emergency shut-off activated                                   | Reset  |
|                                  | Battery cables corroded  | Clean connections  |
|                                  | Faulty key switch  | Replace switch   |
|                                  | Batteries not plugged in                                       | Plug batteries in  |
|                                  | On Board charger plugged in                                    | Un-plug and stow cord  |
| Little or no propel              | Low battery charge   | Charge batteries   |
|                                  | Tripped circuit breaker  | Reset controller circuit breaker   |
|                                  | Controller protecting motor from overload                      | Controller limits motor amperage. Allow unit to cool down for several minutes. |
|                                  | Machine is stalled against an obstacle (threshold, curb, etc.) | Remove obstacle or push machine away from obstacle                             |
|                                  | Controller overheated  | Allow cool down period   |
|                                  | Loose motor connection   | Check wires and connections from controller to motor                           |
|                                  | Faulty throttle circuit or potentiometer                       | Check wires and connections from and potentiometer resistance                  |
|                                  | Drive Lever disengaged   | Engage drive   |
| Machine does not change speeds   | Faulty speed control circuit or switch                         | Check wires & connections  |
| Forward speed only               | Faulty forward/reverse circuit                                 | Check wires & connections  |
| Reverse speed only               |  |  |
| Battery indicator light flashing | Battery needs charged  | Charge Battery   |
|                                  | Controller is indicating a fault code                          | See fault code table   |

| <b>PROBLEM</b>                               | <b>CAUSE</b>                     | <b>SOLUTION</b>                              |
|--|----------------------------------|--|
| Vacuum motor does not run, or runs slowly    | Faulty vacuum circuit or switch  | Check wires & connections                    |
|  | Worn vacuum motor brushes        | Replace brushes, check commutator            |
|  | Vacuum circuit breaker tripped   | Reset circuit breaker                        |
| Poor burnishing performance                  | Debris caught in pad             | Remove debris or change pad                  |
|  | Worn pad                         | Replace pad or flip pad                      |
|  | Improper pad used                | Contact equipment or application specialists |
|  | Low battery charge               | Charge batteries                             |
| Burnisher motor does not run, or runs slowly | Circuit breaker tripped          | Reset circuit breaker                        |
|  | Low battery charge               | Charge battery                               |
|  | Faulty brush circuit or motor    | Check wires, connections and motor           |
|  | Worn brush motor brushes         | Replace brushes, check commutator            |
| Deck does not go down                        | Actuator circuit breaker tripped | Reset actuator circuit breaker               |

## Battery Discharge Indicator Troubleshooting

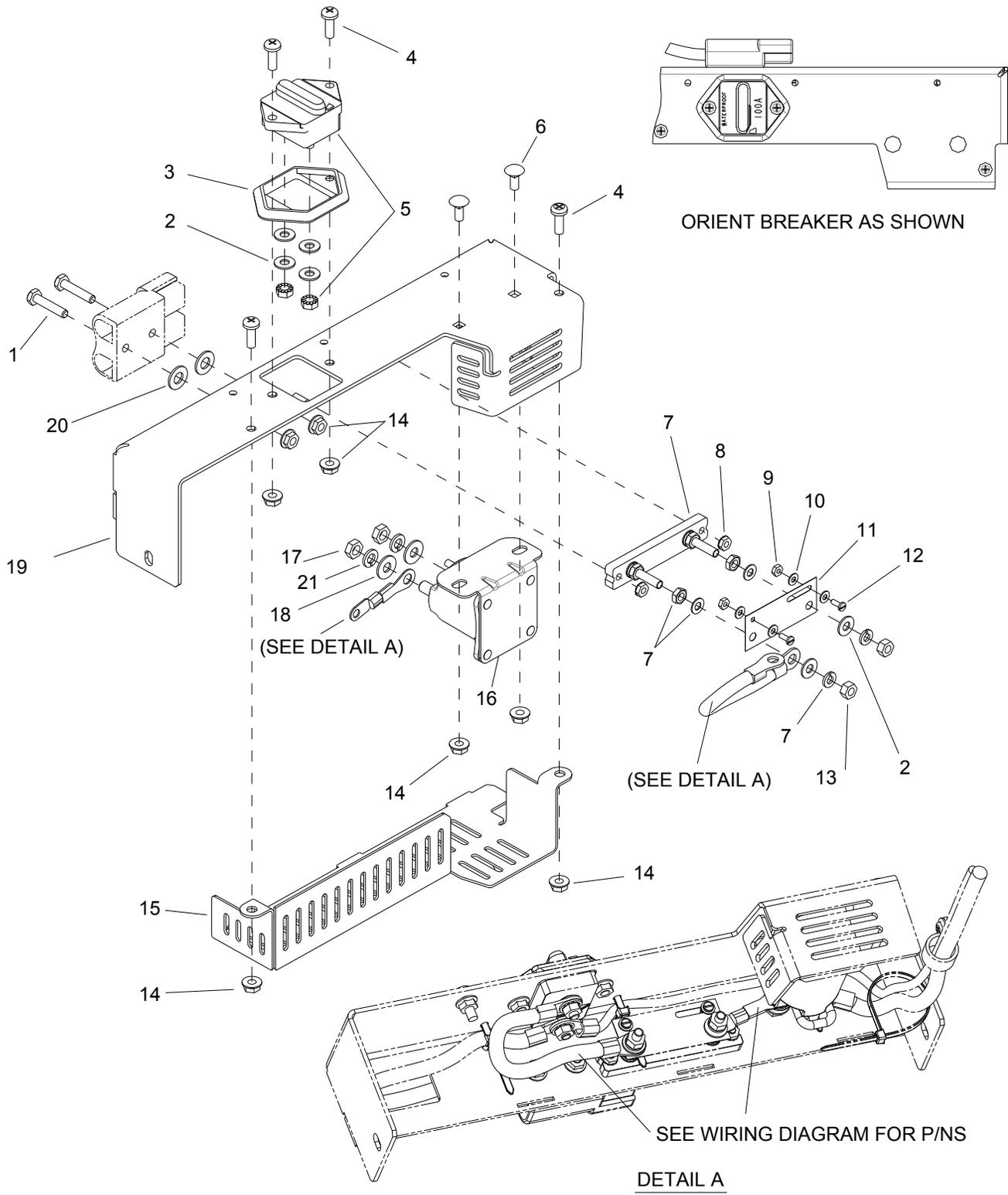
The battery indicator flashes when a problem occurs. The table below list solutions for the indicated problems.

| Number of flashes | Problem   | Solution  |
|-------------------|---|---|
| 1                 | The battery needs charging, there is a bad connection to the battery or dependent on the programming, may indicate that the battery lockout function is active and the controller is in a restricted mode of operation. Check the connections to the battery. | If the connections are good, try charging the battery.  |
| 2                 | There is a bad connection to the drive motor.   | Check all connections between the motor and the controller.                                     |
| 3                 | The drive motor has a short circuit to a battery connection.  | Contact your service agent.   |
| 4                 | The battery charge level has fallen below the battery Lockout Level and the controller is inhibiting burnisher motor function.  | Charge the battery.   |
| 5                 | Not used.   | -   |
| 6                 | The controller is being inhibited from driving, this may be because the battery charger is connected (on board charger only).   | Disconnect battery charger.   |
| 7                 | A throttle fault is indicated.  | Make sure that the throttle is in the rest position before switching on the machine.            |
| 8                 | A controller fault is indicated.  | Make sure that all connections are secure.  |
| 9                 | The parking brake has a bad connection.   | Check the parking brake and motor connections. Make sure the controller connections are secure. |
| 10                | An excessive voltage has been applied to the controller. This is usually caused by a poor battery connection.   | Check the battery connections.  |
| -                 | Blinks once every 5 seconds   | Sleep mode, cycle key switch  |

*Notes:*

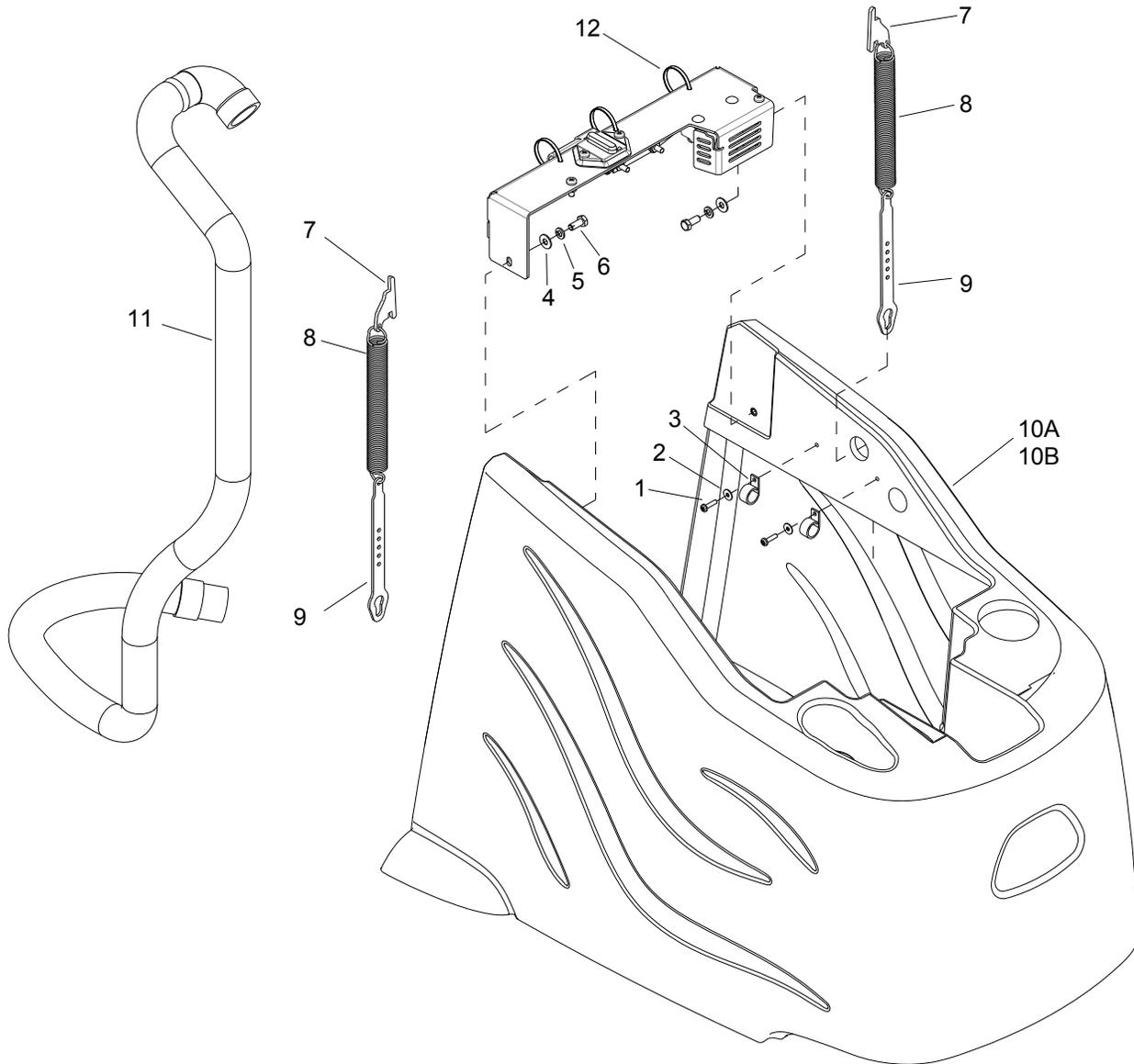
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# **PARTS**

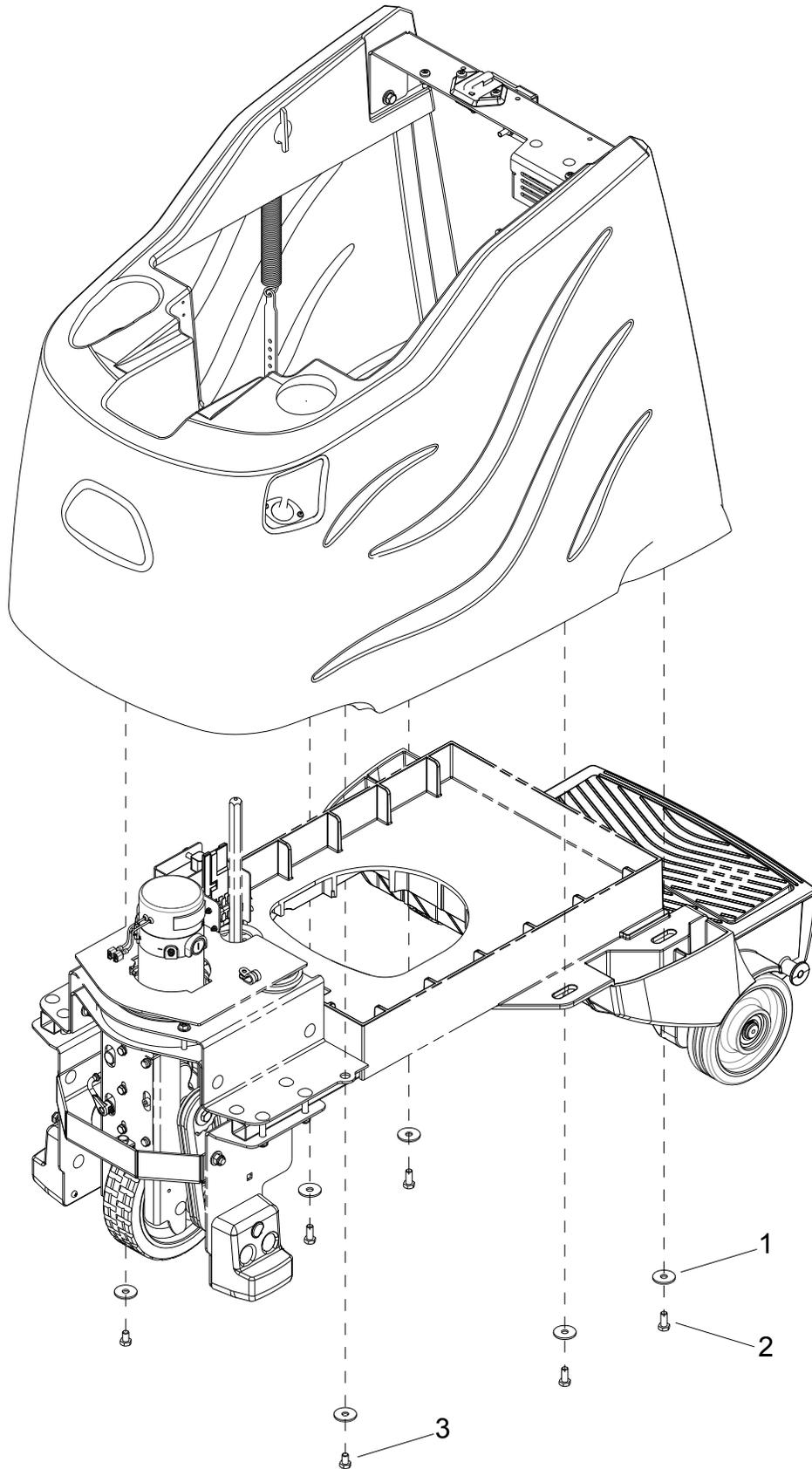


| REF | PART NO. | QTY | DESCRIPTION                              | SERIAL NO.<br>FROM | NOTES |
|-----|----------|-----|--|--------------------|-------|
| 1   | 86273820 | 2   | SCREW 1/4-20 X 1.25 HHCS SS              |                    |       |
| 2   | 86010630 | 6   | WASHER 1/4 ID X 5/8 OD SS                |                    |       |
| 3   | 86340020 | 1   | COVER, PANEL MNT BREAKER                 |                    |       |
| 4   | 86275120 | 4   | SCR, 1/4-20 X.75 PPHMS PHIL              |                    |       |
| 5   | 86340030 | 1   | BREAKER, 100A CIRCUIT                    |                    |       |
| 6   | 86277500 | 2   | SCR, 1/4-20 X 5/8 CARR SS                |                    |       |
| 7   | 86229770 | 1   | BLOCK, SHUNT MOUNT                       |                    |       |
| 8   | 86005700 | 2   | NUT 10-32 W/STAR WASHER PLTD             |                    |       |
| 9   | 86271790 | 2   | NUT, 6-32 HEX BRASS                      |                    |       |
| 10  | 86279600 | 4   | WASHER, #6 FLAT BRASS                    |                    |       |
| 11  | 86253600 | 1   | SHUNT, 50MV 70AMP                        |                    |       |
| 12  | 86276250 | 2   | SCR, 6-32 X 3/8 SRHMS BR                 |                    |       |
| 13  | 86270770 | 2   | NUT, 1/4-20 HEX                          |                    |       |
| 14  | 86271370 | 8   | NUT, 1/4-20 FLANGE LOCK                  |                    |       |
| 15  | 86353270 | 1   | BRACKET, CONTACTOR COVER                 |                    |       |
| 16  | 86371450 | 1   | RELAY 36VDC 100A HD                      | (7*)               |       |
| 17  | 86271120 | 2   | NUT, 5/16-18 BRASS                       |                    |       |
| 18  | 86010670 | 2   | WASHER, 5/16 FLAT SS                     |                    |       |
| 19  | 86353260 | 1   | BRACKET, SOL TANK BRACE                  |                    |       |
| 20  | 86010680 | 2   | WASHER 3/8 ID X 3/4 OD NYLON             |                    |       |
| 21  | 86279130 | 2   | WASHER, 5/16 X .583 X .078 SPL STL ZNPLT |                    |       |

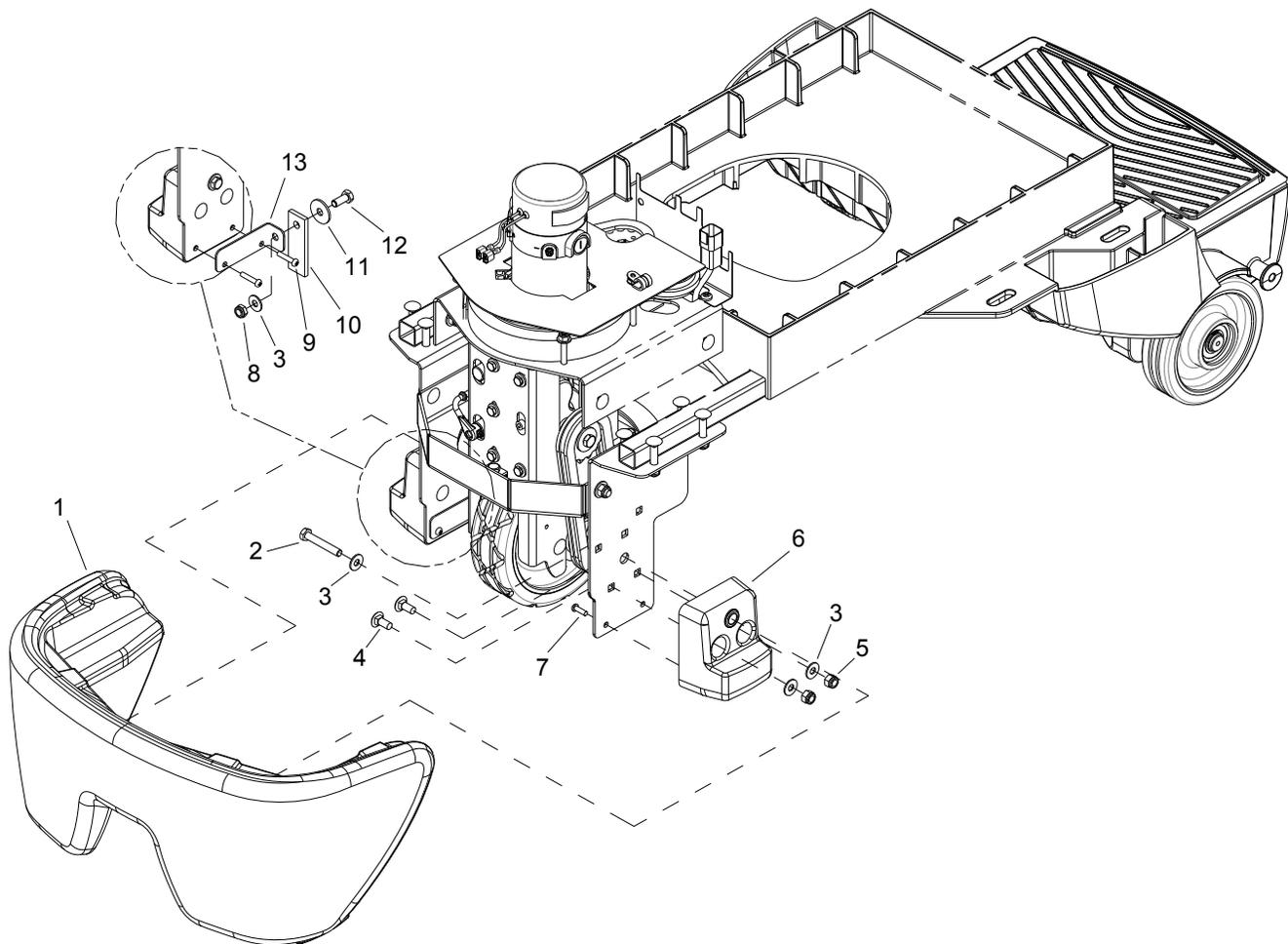
\* SEE SERIAL NUMBER PAGE



| REF | PART NO. | QTY | DESCRIPTION                      | SERIAL NO.<br>FROM | NOTES   |
|-----|----------|-----|----------------------------------|--------------------|---|
| 1   | 86273980 | 2   | SCREW 10-32 X 3/4 PPHMS SS       |                    |   |
| 2   | 86010650 | 2   | SP WASHER #10 X 9/16 OD          |                    |   |
| 3   | 86354990 | 2   | CLAMP, .75 DIA, FLEX LOOP, NYLON |                    |   |
| 4   | 86010670 | 2   | WASHER 5/16 FLAT SS              |                    |   |
| 5   | 86279130 | 4   | WASHER 5/16 SPLIT LOCK PLTD      |                    |   |
| 6   | 86276780 | 2   | SCR, 5/16-18 X 3/4 HHCS SS       |                    |   |
| 7   | 86354570 | 2   | BRACKET, SPRING, UPPER           |                    |   |
| 8   | 86353220 | 2   | SPRING, EXTENSION                |                    |   |
| 9   | 86353720 | 2   | BRACKET, SPRING, LOWER           |                    |   |
| 10A | 86353200 | 1   | MAIN BODY, LB,OBC, TRIM          |                    |   |
| 10B | 86358530 | 1   | MAIN BODY, LB, NO OBC, TRIM      |                    | SHELF CHARGER<br>MODELS ONLY,<br>1.002-033.0<br>1.002-035.0 |
| 11  | 86353280 | 1   | HOSE 1.5" X 49", 4:1 STRETCH     |                    |   |
| 12  | 86264940 | 3   | CABLE TIE 11.38" UL/CSA          |                    |   |

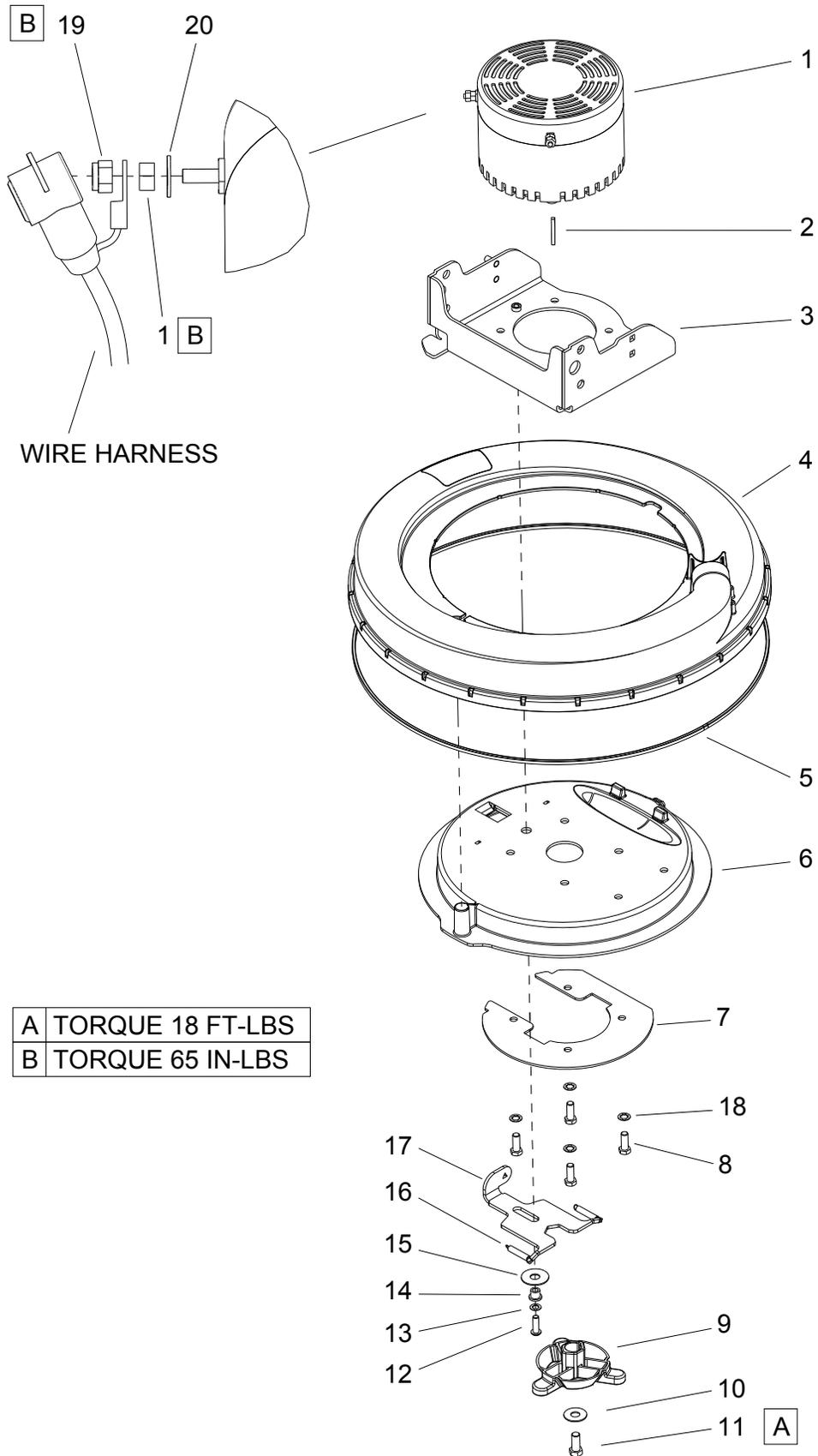


| <b>REF</b> | <b>PART NO.</b> | <b>QTY</b> | <b>DESCRIPTION</b>              | <b>SERIAL NO.<br/>FROM</b> | <b>NOTES</b> |
|------------|-----------------|------------|---------------------------------|----------------------------|--------------|
| 1          | 86279630        | 6          | WASHER, .344IDX1.13ODX.09T PLT  |                            |              |
| 2          | 86006760        | 4          | SCREW 5/16-18 X 3/4HHCSGR5PLTDL |                            |              |
| 3          | 86275180        | 2          | SCR, 5/16-18 X 1/2 HHCS GR5 NP  |                            |              |



| REF | PART NO. | QTY | DESCRIPTION                         | SERIAL NO.<br>FROM | NOTES |
|-----|----------|-----|-------------------------------------|--------------------|-------|
| 1   | 86318180 | 1   | BUMPER, TRIM, GRAY                  |                    |       |
| 2   | 86276980 | 2   | SCREW 5/16-18 X 2 HHCS SS           |                    |       |
| 3   | 86010670 | 7   | WASHER 5/16 FLAT SS                 |                    |       |
| 4   | 86276070 | 4   | SCR, 5/16-18 X 3/4 CARRIAGE SS      |                    |       |
| 5   | 86270830 | 4   | NUT 5/16-18 HEX NYLOCK SS           |                    |       |
| 6   | 86323950 | 2   | PAD, TIP                            |                    |       |
| 7   | 86327510 | 2   | SCR, KA50X16, PT OHS, WN1412, A2 SS |                    |       |
| 8   | 86271840 | 1   | SP NUT 5/16-18 HEX NYLOCK THIN SS   |                    |       |
| 9   | 86327910 | 2   | SCR, KA50X25, PT OHS, WN1412, PLTD  |                    |       |
| 10  | 86256130 | 1   | STRAP, STATIC, .2T X 1W X 3L        |                    |       |
| 11  | 86279630 | 1   | WASHER, .344IDX1.13ODX.09T PLT      |                    |       |
| 12  | 86006760 | 1   | SCREW 5/16-18 X 3/4HHCSGR5PLTDL     |                    |       |
| 13  | 86359510 | 1   | BRKT, STATIC STRAP                  |                    |       |

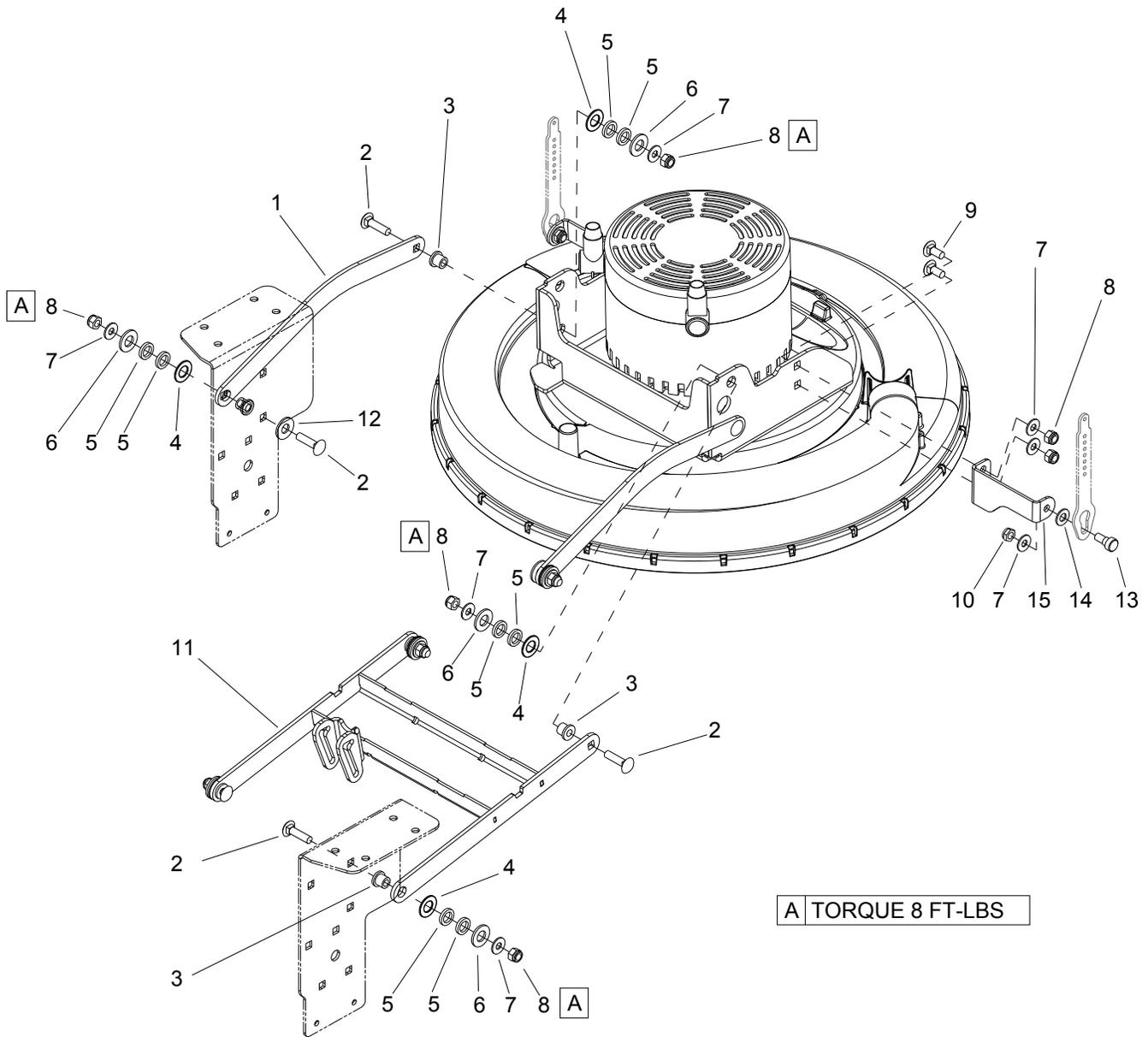
# Burnishing Deck



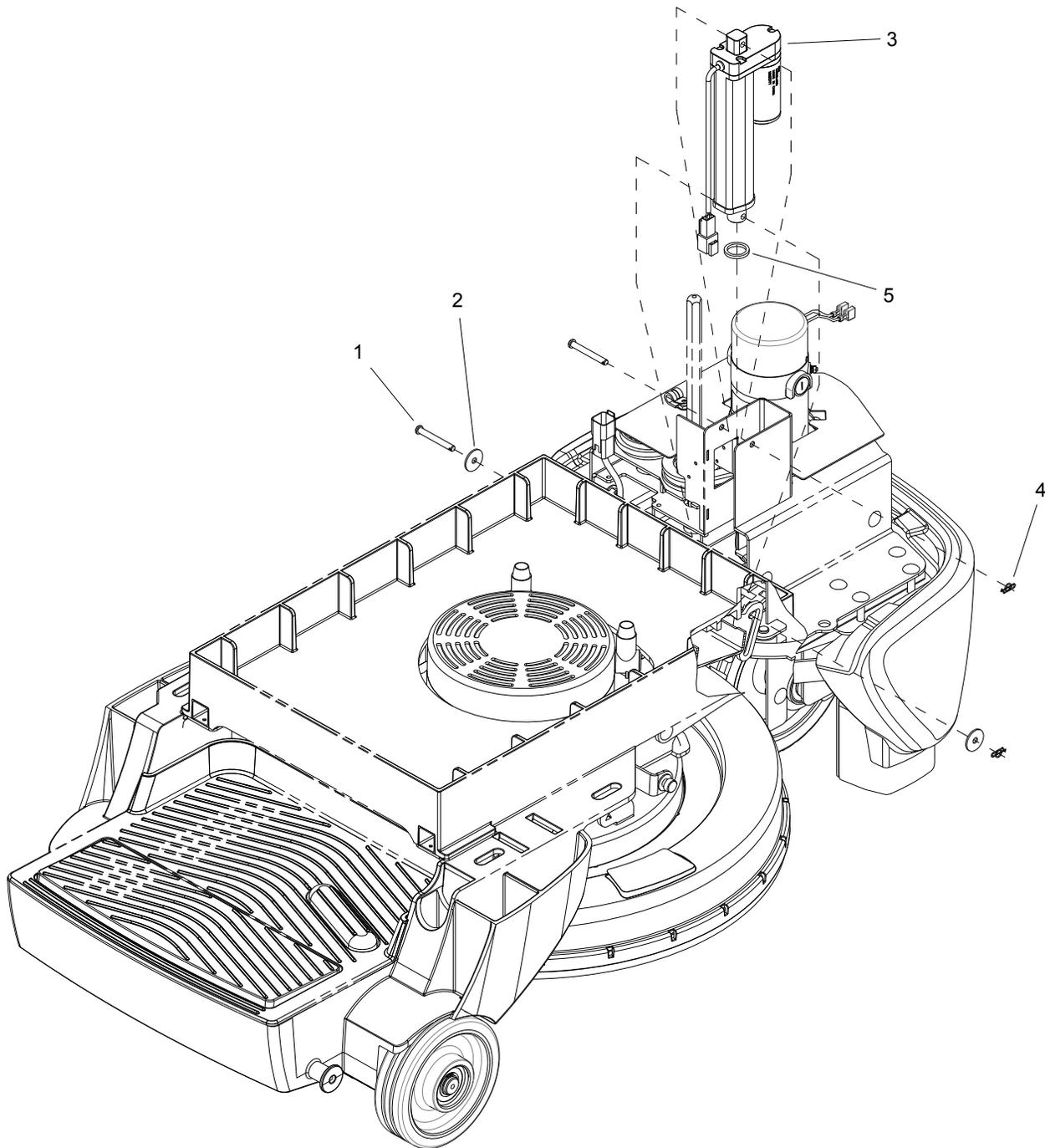
| REF | PART NO. | QTY | DESCRIPTION                     | SERIAL NO.<br>FROM | NOTES |
|-----|----------|-----|---------------------------------|--------------------|-------|
| 1   | 86354980 | 1   | MOTOR, 36VDC 3 HP 2000RPM       |                    |       |
| -   | 86348010 | 1   | BRUSH SET, BURNISHER MOTOR      |                    |       |
| 2   | 86286850 | 1   | KEY, 3/16 SQ X 1.5" LONG        |                    |       |
| 3   | 86353470 | 1   | BRACKET, MOTOR LIFT             |                    |       |
| 4   | 86352910 | 1   | SHROUD, OUTER                   |                    |       |
| 5   | 86353780 | 1   | BRUSH, FLEXIBLE STRIP, 72" LONG |                    |       |
| 6   | 86352900 | 1   | SHROUD, INNER                   |                    |       |
| 7   | 86353750 | 1   | PLATE, SUPPORT, INNER SHROUD    |                    |       |
| 8   | 86276920 | 4   | SCREW 3/8-16x1                  |                    |       |
| 9   | 86372140 | 1   | HUB, PAD DRIVER                 | (9*)               |       |
| 10  | 86010710 | 1   | WASHER .5 X 1.25 FLAT GR8 PLT   |                    |       |
| 11  | 86277540 | 1   | SCREW 7/16-20 X 1 HHCS PLTD     |                    |       |
| 12  | 86006930 | 1   | SCREW 5/16-18 X 1.00 BSHCS SS   |                    |       |
| 13  | 86330990 | 1   | WASHER, 5/16 INT STAR, SS       |                    |       |
| 14  | 86228840 | 1   | BEARING FLANGED.314IDX.502OD    |                    |       |
| 15  | 86279030 | 1   | WASHER, .53 ID X 1.5 OD TEFLON  |                    |       |
| 16  | 86007910 | 2   | SPRING EXT .31D X 2.0L X .03W   |                    |       |
| 17  | 86353760 | 1   | BRACKET, MOTOR LOCK             |                    |       |
| 18  | 86279110 | 4   | WASHER, 3/8 ID INT.LOCK         |                    |       |
| 19  | 86271910 | 2   | NUT, 5/16-18 FLEXLOCK           |                    |       |
| 20  | 86010670 | 2   | WASHER 5/16 FLAT SS             |                    |       |

\*SEE SERIAL NUMBER PAGE

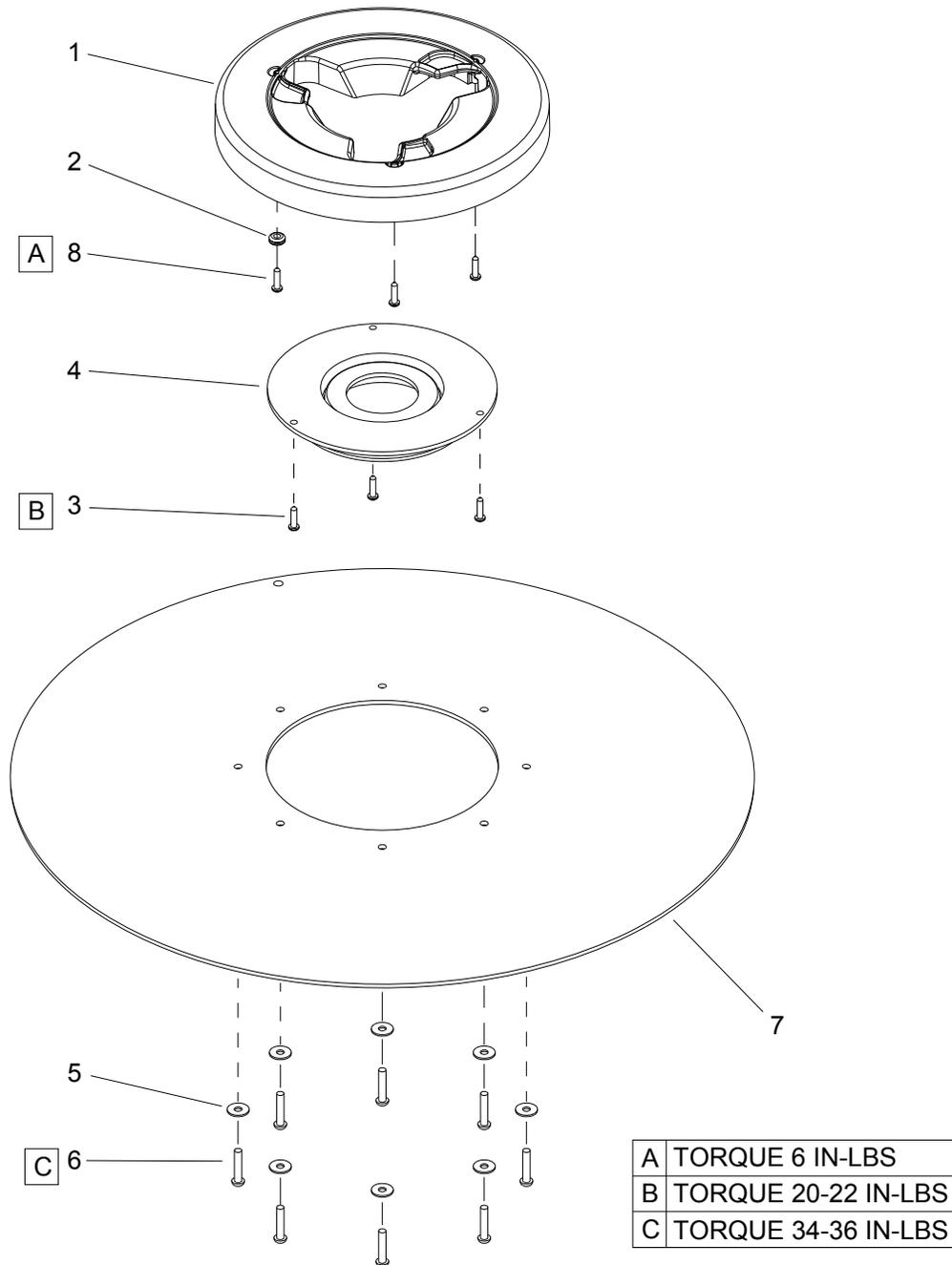
# Burnishing Deck Mounting



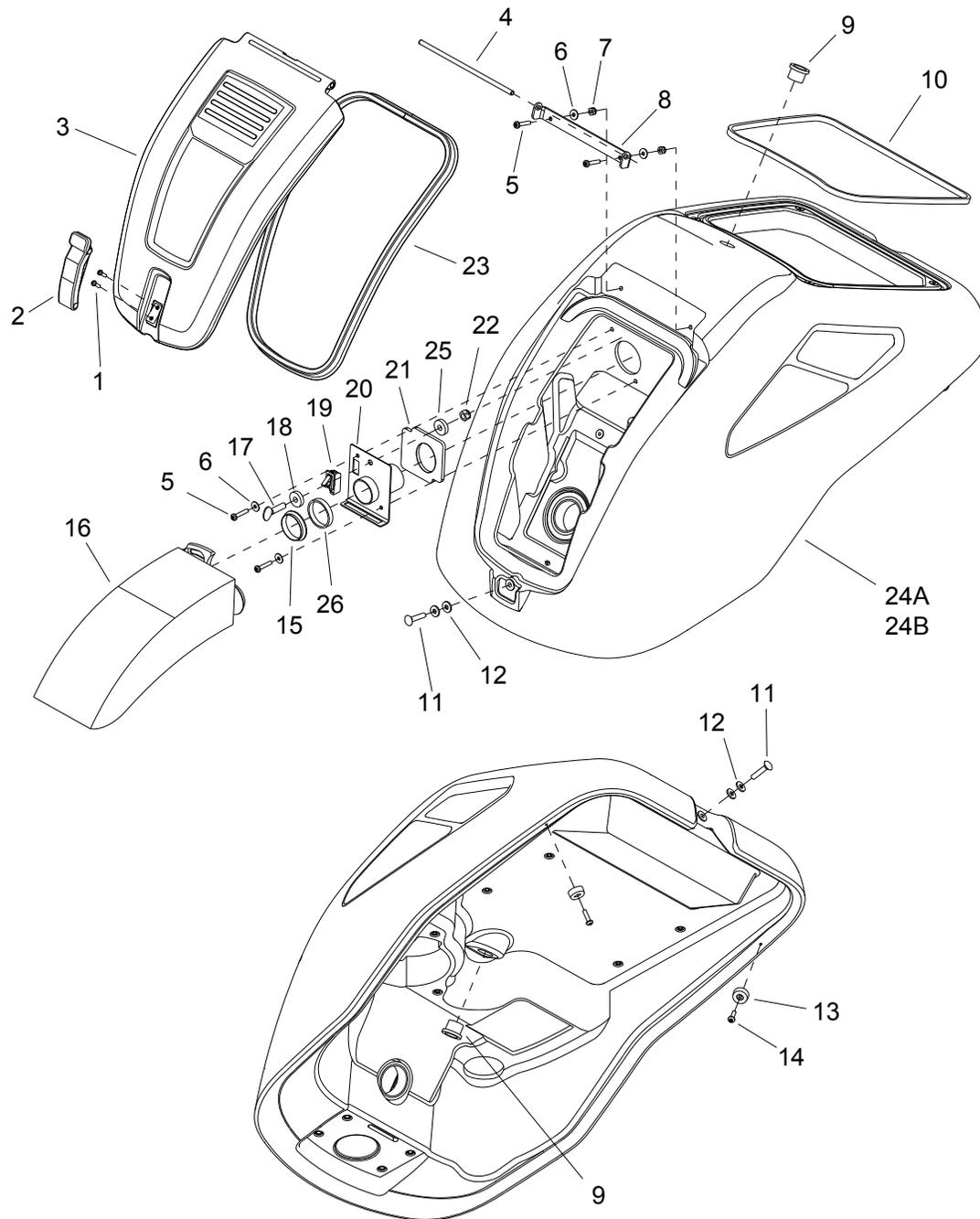
| REF | PART NO. | QTY | DESCRIPTION                       | SERIAL NO.<br>FROM | NOTES |
|-----|----------|-----|-----------------------------------|--------------------|-------|
| 1   | 86353790 | 2   | BRACKET, LINKAGE ARM              |                    |       |
| 2   | 86277030 | 8   | SCR, 5/16-18X1.25 CARRIAGE SS     |                    |       |
| 3   | 86228840 | 8   | BEARING FLANGED.314IDX.502OD      |                    |       |
| 4   | 86259410 | 8   | WASHER THRUST.51 ID X1ODX.063     |                    |       |
| 5   | 86279350 | 16  | WASHER, WAVE 1/2ID X3/4D X.125    |                    |       |
| 6   | 86259420 | 8   | WASHER, THRUST .51ID X 1 ODBRO    |                    |       |
| 7   | 86010670 | 14  | WASHER 5/16 FLAT SS               |                    |       |
| 8   | 86270830 | 12  | NUT 5/16-18 HEX NYLOCK SS         |                    |       |
| 9   | 86276070 | 2   | SCR, 5/16-18 X 3/4 CARRIAGE SS    |                    |       |
| 10  | 86271840 | 2   | SP NUT 5/16-18 HEX NYLOCK THIN SS |                    |       |
| 11  | 86353740 | 1   | BRACKET, LIFT ASSY, TOP           |                    |       |
| 12  | 86010770 | 2   | WASHER 7/16ID X1DX.08 FLT SS      |                    |       |
| 13  | 86353810 | 2   | BOLT SHOULDER, 3/8 OD X 1/4 L SS  |                    |       |
| 14  | 86010680 | 2   | WASHER 3/8 ID X 3/4 OD NYLON      |                    |       |
| 15  | 86353800 | 2   | BRACKET, SPRING LIFT              |                    |       |



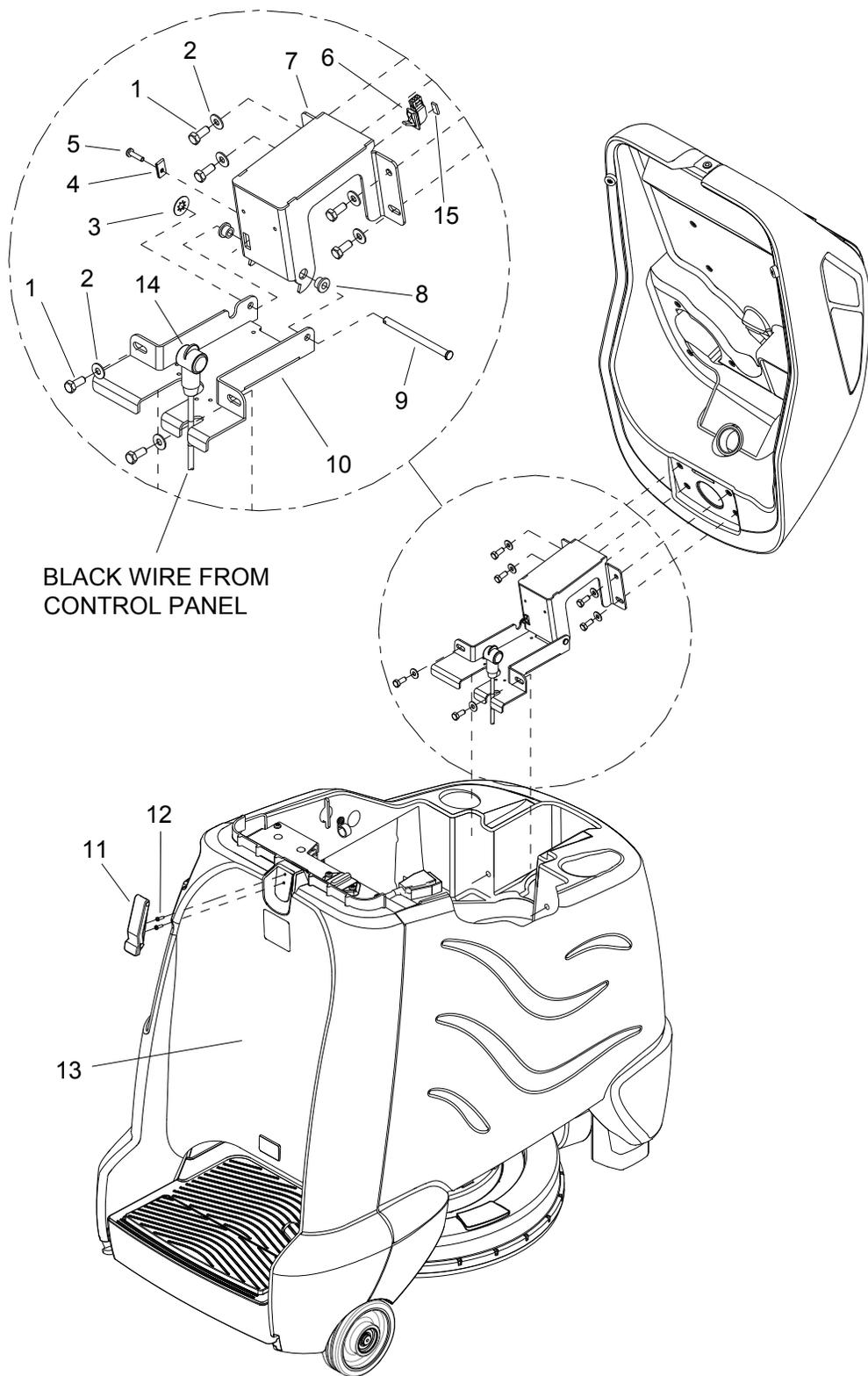
| <b>REF</b> | <b>PART NO.</b> | <b>QTY</b> | <b>DESCRIPTION</b>                  | <b>SERIAL NO.<br/>FROM</b> | <b>NOTES</b> |
|------------|-----------------|------------|-------------------------------------|----------------------------|--------------|
| 1          | 86328040        | 2          | PIN, CLEVIS, 1/4 X 2.0 L            |                            |              |
| 2          | 86354750        | 2          | WASHER, 1.00X.264X.070THK, NYL, BLK |                            |              |
| 3          | 86320880        | 1          | ACT, 36VDC, 3.0" STK, 8.74 LNG      |                            |              |
| 4          | 86008650        | 2          | COTTER 1/4" RING                    |                            |              |
| 5          | 86342240        | 1          | SPACER, .81 X 1.06 X .125           |                            |              |



| REF | PART NO. | QTY | DESCRIPTION                         | SERIAL NO.<br>FROM | NOTES     |
|-----|----------|-----|-------------------------------------|--------------------|-----------|
| 1   | 86352460 | 1   | HUB, PAD DRIVER                     |                    |           |
| 2   | 86355650 | 1   | GROMMET, .188ID x .438OD x .188T    |                    |           |
| 3   | 86173140 | 3   | SCR, KA40X16,PT OVAL,WN1412,PL      |                    |           |
| 4   | 86355620 | 1   | RETAINER, PAD CENTER LOCK           |                    |           |
| 5   | 86173330 | 8   | WASHER, M5, FLAT, ISO7093, SS       |                    |           |
| 6   | 86327910 | 8   | SCR, KA50X25, PT OHS, WN1412, PLTD  |                    |           |
| 7   | 86355610 | 1   | PAD DRIVER, FACE 20"                |                    |           |
| 8   | 86351660 | 3   | SCREW, 6-19 X .5 PHPNH HL STL ZNPLT |                    |           |
| -   | 86358450 | -   | ASM, PAD DRIVER iGLOSS 20           |                    | NOT SHOWN |



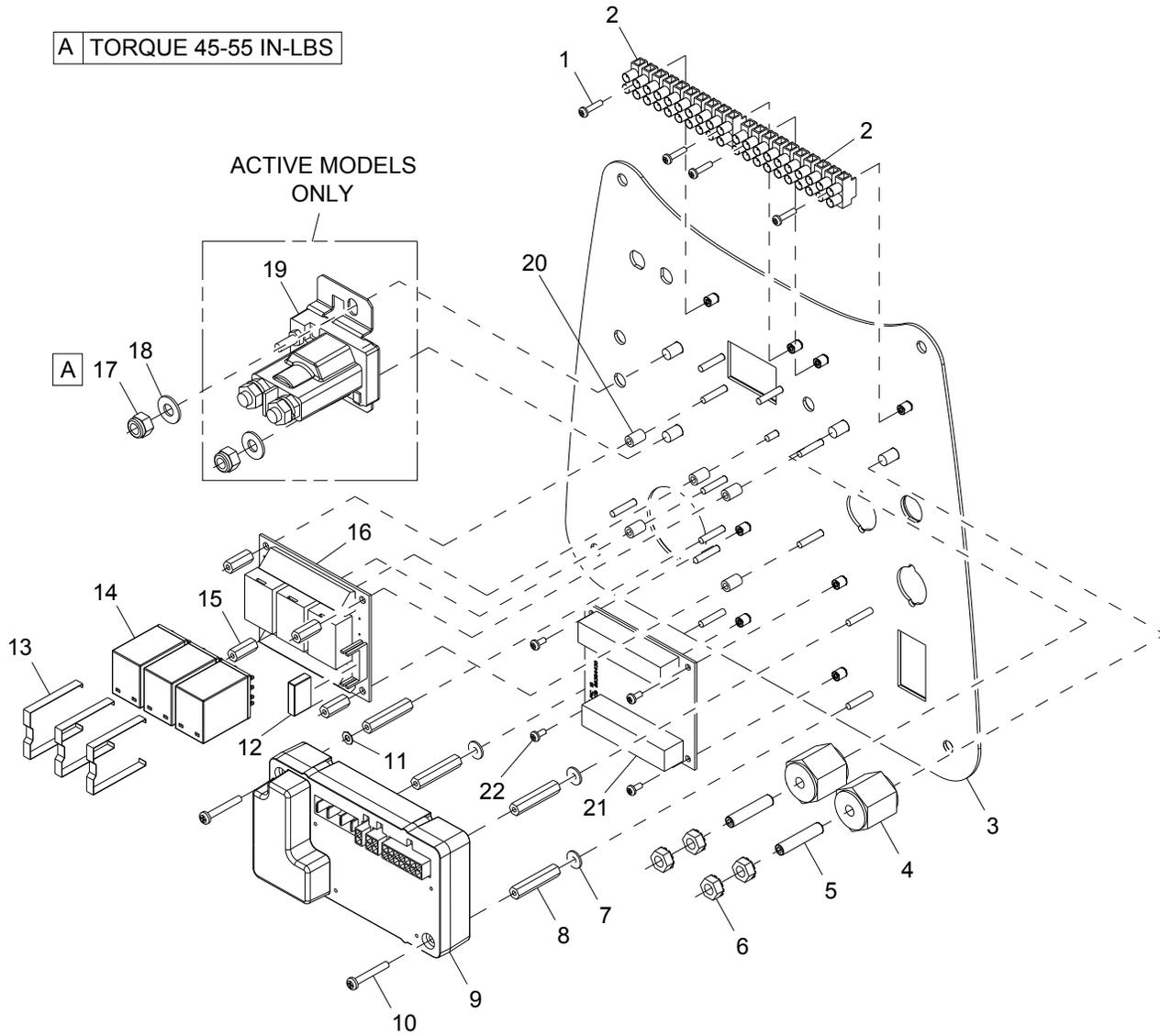
| REF | PART NO. | QTY | DESCRIPTION                              | SERIAL NO.<br>FROM | NOTES                |
|-----|----------|-----|--|--------------------|----------------------|
| 1   | 86173140 | 2   | SCR, KA40X16,PT OVAL,WN1412,PL           |                    |                      |
| 2   | 86161800 | 1   | CATCH CONCEALED KEEPER                   |                    |                      |
| 3   | 86353230 | 1   | COVER, BAG ENCLOSURE                     |                    |                      |
| 4   | 86353650 | 1   | SHAFT, .25 X 7.3, SS                     |                    |                      |
| 5   | 86275810 | 4   | SCR, 10-32 X 1 PPHMS BLK                 |                    |                      |
| 6   | 86010650 | 4   | SP WASHER #10 X 9/16 OD                  |                    |                      |
| 7   | 86005640 | 1   | NUT 10-32 HEX NYLOCK                     |                    |                      |
| 8   | 86353170 | 1   | BRKT, HINGE                              |                    |                      |
| 9   | 86228790 | 2   | BEARING FLANGE .88ODX.75IDX.75           |                    |                      |
| 10  | 86327830 | 1   | GASKET,.188X.31X41.0                     |                    |                      |
| 11  | 86276330 | 2   | SCR, 1/4-20 X 1.25 CARRIAGE BZ           |                    |                      |
| 12  | 86279520 | 4   | WASHER, 1/4 ID FLAT BLK                  |                    |                      |
| 13  | 86356130 | 2   | BUMPER, 7/8OD X 13/32H, RUBBER           |                    |                      |
| 14  | 86006600 | 2   | SCREW #10 X 3/4 PPHST TYPE B SS          |                    |                      |
| 15  | 86354640 | 1   | WASHER, 1.5ID SINK, RUBBER               |                    |                      |
| 16  | 86284790 | 1   | FILTER BAG (10 PACK)                     |                    |                      |
| 17  | 86007040 | 1   | SCREW 5/16-18X1 THUMB SS TYPE P          |                    |                      |
| 18  | 86356820 | 1   | WASHER, .315ID X .89OD X .215, NYL       |                    |                      |
| 19  | 86327680 | 1   | SWITCH, INTERLOCK                        |                    |                      |
| 20  | 86354590 | 1   | BRACKET, BAG MOUNT                       |                    |                      |
| 21  | 86354630 | 1   | GASKET, BAG MOUNT                        |                    |                      |
| 22  | 86271840 | 1   | SP NUT 5/16-18 HEX NYLOCK THIN SS        |                    |                      |
| 23  | 86353660 | 1   | GASKET, BAG COVER, 43.6"                 |                    |                      |
| 24A | 86353640 | 1   | CONSOLE, iGLOSS 20, TRIMMED              |                    | ACTIVE DUST CONTROL  |
| 24B | 86358550 | 1   | CONSOLE, PASSIVE, TRIMMED                |                    | PASSIVE DUST CONTROL |
| 25  | 86008320 | 1   | SPACER, .314 X .59 X .36 NYLON           |                    |                      |
| 26  | 86359260 | 1   | WASHER, 1.5 ID X 1.7 PD X .19,<br>RUBBER |                    |                      |



| REF | PART NO. | QTY | DESCRIPTION                    | SERIAL NO.<br>FROM | NOTES |
|-----|----------|-----|--------------------------------|--------------------|-------|
| 1   | 86276780 | 6   | SCR, 5/16-18 X 3/4 HHCS SS     |                    |       |
| 2   | 86010670 | 6   | WASHER 5/16 FLAT SS            |                    |       |
| 3   | 86328860 | 1   | NUT, 5/16 PUSH-LOCK, PLTD      |                    |       |
| 4   | 86270860 | 1   | NUT, 10-24 U-TYPE SPEED        |                    |       |
| 5   | 86277110 | 1   | SCR, 10-24 X 3/4 PPHMS SS      |                    |       |
| 6   | 86327680 | 1   | SWITCH, INTERLOCK              |                    |       |
| 7   | 86326320 | 1   | BRACKET, HINGE UPPER           |                    |       |
| 8   | 86228990 | 2   | BEARING,FLNGD, .314ID X.502OD  |                    |       |
| 9   | 86326340 | 1   | PIN, CLEVIS 5/16 X 4.0, PLTD   |                    |       |
| 10  | 86355010 | 1   | BRACKET, HINGE LOWER           |                    |       |
| 11  | 86161800 | 1   | CATCH CONCEALED KEEPER         |                    |       |
| 12  | 86173140 | 2   | SCR, KA40X16,PT OVAL,WN1412,PL |                    |       |
| 13  | 86354790 | 1   | PANEL, BACK, TRIMMED           |                    |       |
| 14  | 86008920 | 1   | BOOT, RUBBER TERM. ISOLATOR    |                    |       |
| 15  | 86402180 | 1   | GASKET, .125 X .375 X .65      |                    |       |

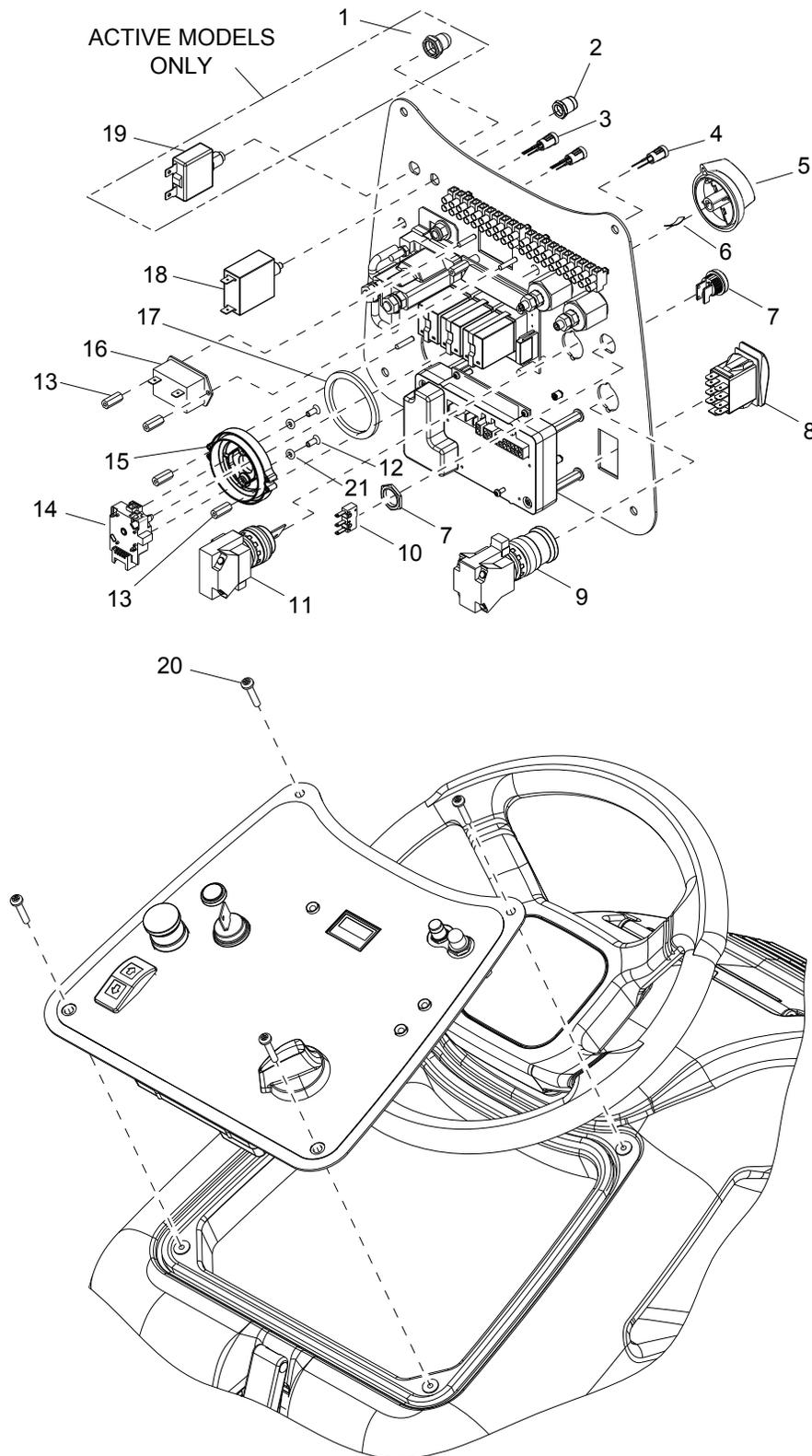
A TORQUE 45-55 IN-LBS

ACTIVE MODELS ONLY

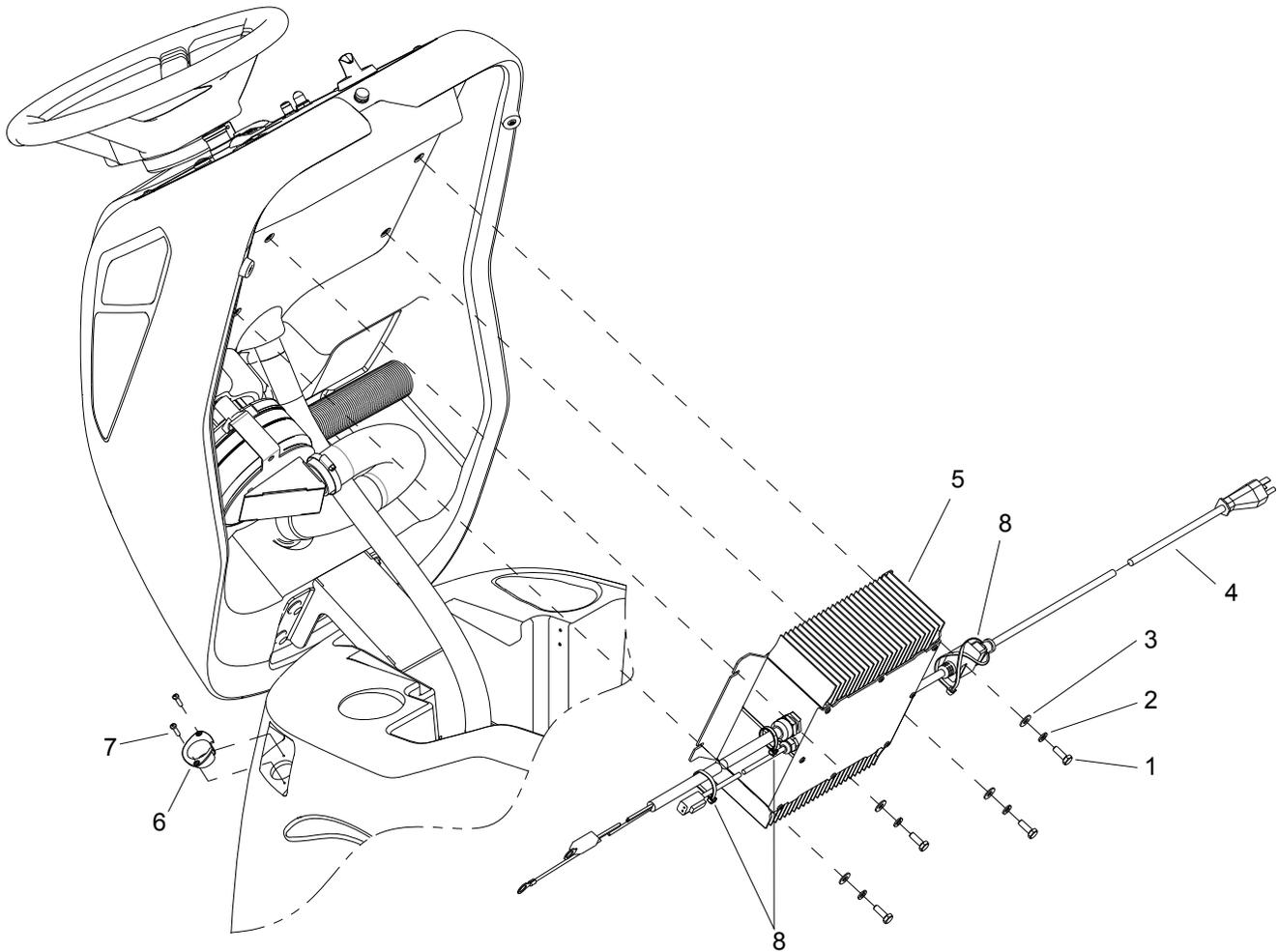


| REF | PART NO. | QTY | DESCRIPTION                      | SERIAL NO.<br>FROM | NOTES             |
|-----|----------|-----|----------------------------------|--------------------|-------------------|
| 1   | 86275260 | 4   | SCR, 4-40 X 1/2 PPHMS            |                    |                   |
| 2   | 86326390 | 2   | CONN, 8MM PITCH, 10 POSN         |                    |                   |
| 3   | 86352490 | 1   | PANEL, CONTROL iGLOSS 20         |                    |                   |
| 4   | 86255910 | 2   | STANDOFF, 1/4-20 X 1.0 HEX INS   |                    |                   |
| 5   | 86006850 | 1   | SCR, 1/4-20 X 1.25 SSSCU         |                    |                   |
| 6   | 86005710 | 4   | NUT, 1/4-20 HEX W/STAR           |                    |                   |
| 7   | 86279450 | 3   | WASHER, #6 FLAT SAE PLTD         |                    |                   |
| 8   | 86354860 | 4   | STANDOFF, 6-32 X 1.25L, NYL      |                    |                   |
| 9   | 86356320 | 1   | CONTROLLER, iGLOSS 20            |                    |                   |
| 10  | 86275550 | 2   | SCREW 6-32 X 1.25                |                    |                   |
| 11  | 86279020 | 1   | WASHER #6 LOCK EXT STAR SS       |                    |                   |
| 12  | 86336110 | 1   | RELAY, SPST-NO                   |                    |                   |
| 13  | 86336100 | 3   | CLIP, RELAY                      |                    |                   |
| 14  | 86313900 | 3   | RELAY, 5A, 24V, 4PDT             |                    |                   |
| 15  | 86255900 | 4   | STANDOFF, 6-32 X 5/8 HEX NYL     |                    |                   |
| 16  | 86347250 | 1   | PCBA, RELAY OMRON II             |                    |                   |
| 17  | 86005810 | 2*  | NUT, 1/4-20 HEX NYLOCK SS        |                    | ACTIVE MODEL ONLY |
| 18  | 86010630 | 2*  | WASHER, 1/4 X 5/8 FLAT SS        |                    | ACTIVE MODEL ONLY |
| 19  | 86251360 | 1   | RELAY, 36VDC, 100A               |                    | ACTIVE MODEL ONLY |
| 20  | 86337210 | 5   | SPACER, .141D X .250D X .38, NYL |                    |                   |
| 21  | 86354430 | 1   | PCB, ROTARY SWITCH               |                    |                   |
| 22  | 86274570 | 4   | SCR, 4-40 X 1/4 PPHMS            |                    |                   |

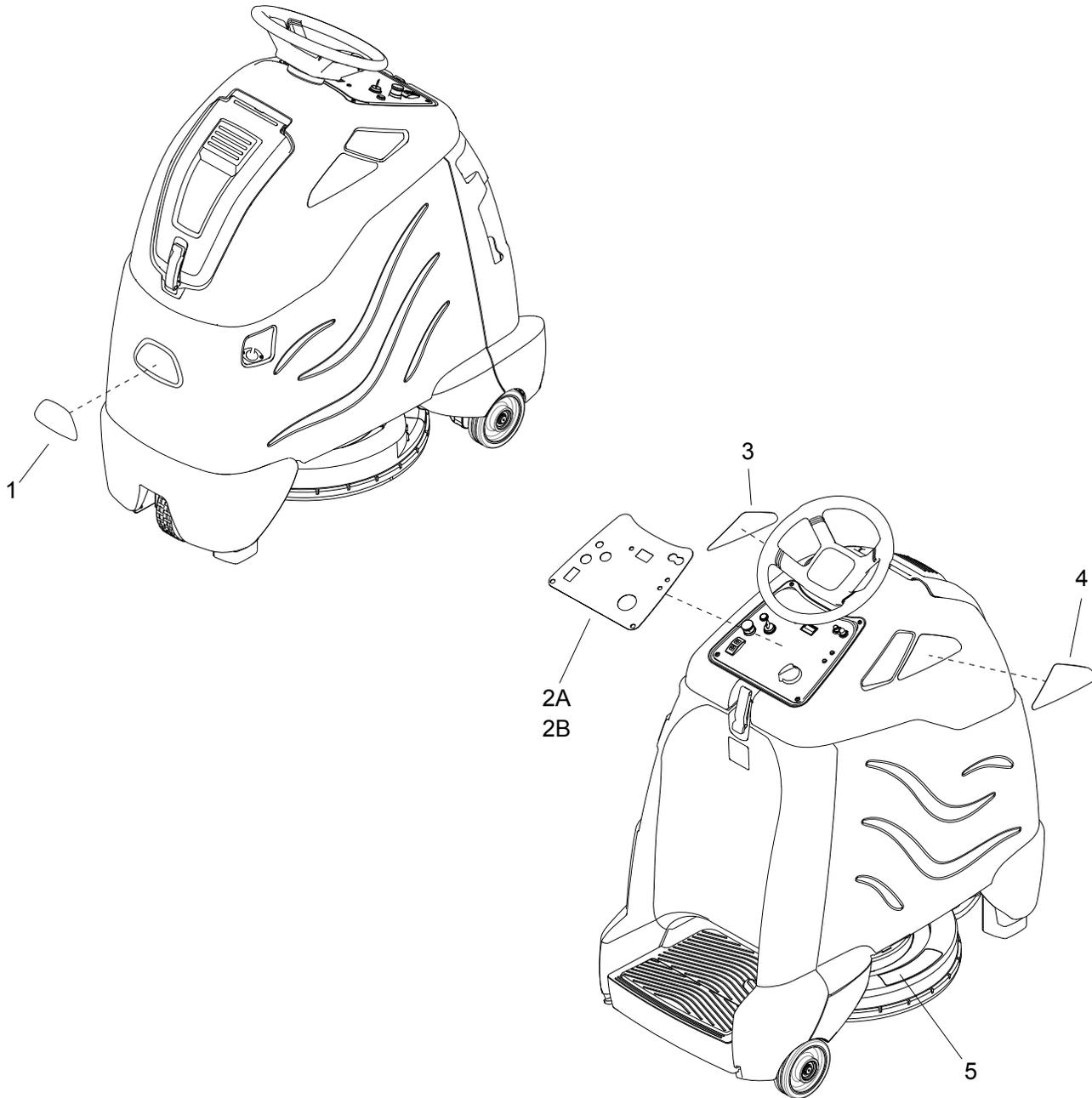
\* QUANTITY OF 1 FOR PASSIVE MODEL



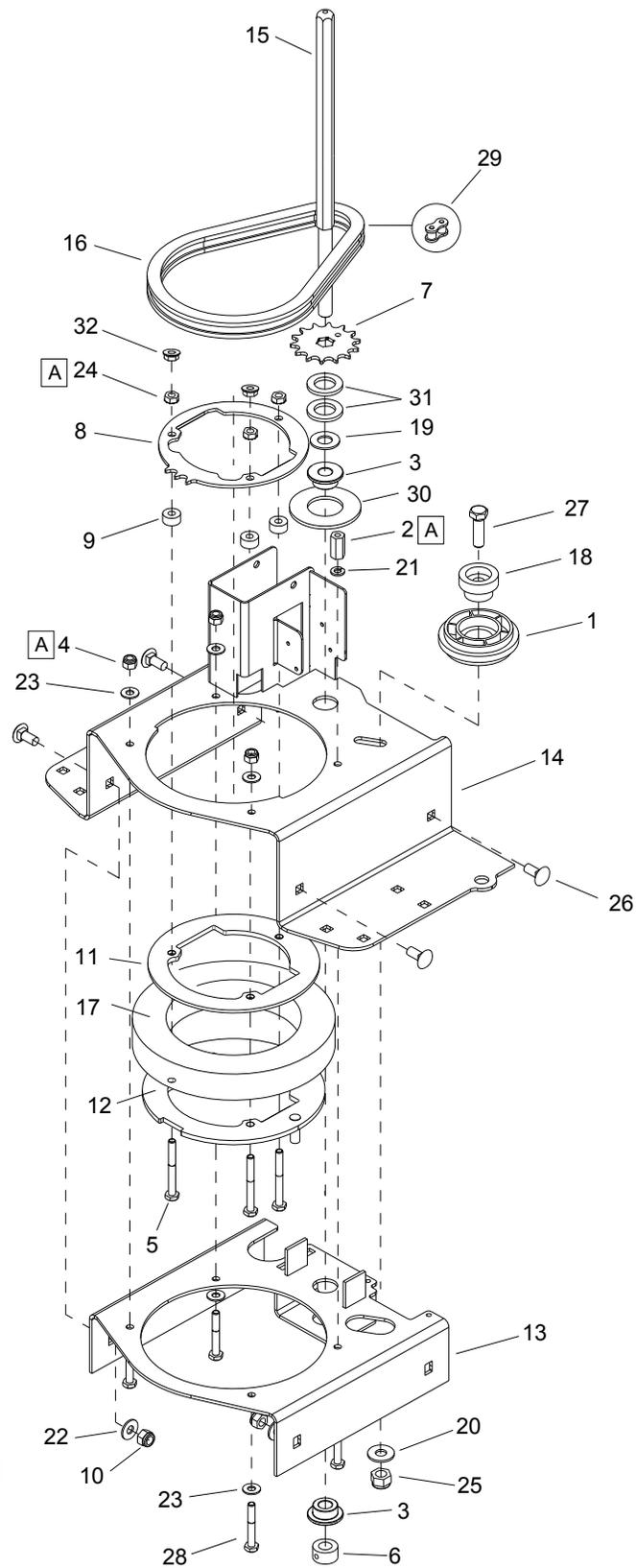
| REF | PART NO. | QTY | DESCRIPTION                          | SERIAL NO.<br>FROM | NOTES             |
|-----|----------|-----|--------------------------------------|--------------------|-------------------|
| 1   | 86332510 | 1   | BOOT, SEAL PUSH BUTTON 11MM          |                    | ACTIVE MODEL ONLY |
| 2   | 86001260 | 1   | BOOT, CB 3/8-32 UNS                  |                    |                   |
| 3   | 86348640 | 2   | LED, BAG FULL INDICATOR              |                    |                   |
| 4   | 86348960 | 1   | LED, BATTERY INDICATOR               |                    |                   |
| 5   | 53217380 | 1   | KNOB, SELECTION                      |                    |                   |
| 6   | 63130140 | 1   | SPRING ELEMENT                       |                    |                   |
| 7   | 86295200 | 1   | ASM, BUTTON, BLACK, W/BEZEL          |                    |                   |
| 8   | 86313950 | 1   | SWITCH, SPDT 3 POSN MOM, ARROW       |                    |                   |
| 9   | 86292590 | 1   | SWITCH, E-STOP AKW CHARIOT           |                    |                   |
| 10  | 86292780 | 1   | SWITCH,MICRO                         |                    |                   |
| 11  | 86007170 | 1   | SWITCH, KEY 2 POSITION               |                    |                   |
| 12  | 86358430 | 2   | SCR, M4X12 FHMS, ISO7046 SS NP       |                    |                   |
| 13  | 86255900 | 4   | STANDOFF, 6-32 X 5/8 HEX NYL         |                    |                   |
| 14  | 86354870 | 1   | SWITCH, ROTARY                       |                    |                   |
| 15  | 86354560 | 1   | BEZEL, ROTARY SWITCH                 |                    |                   |
| 16  | 86315470 | 1   | METER, HOUR, LCD                     |                    |                   |
| 17  | 86354810 | 1   | GASKET, SCE42B W/5008B PSA           |                    |                   |
| 18  | 86353680 | 1   | BREAKER, 1.5A, CARLING MAGNETIC      |                    |                   |
| 19  | 86316160 | 1   | BREAKER, 18A, 250VAC, 32VDC          |                    | ACTIVE MODEL ONLY |
| 20  | 86329570 | 4   | SCR, PAN HD #10-32 X 1.0 TORX, SS NP |                    |                   |
| 21  | 86358440 | 2   | O-RING, 4MM ID, 1.5MM THK, BUNA-N    |                    |                   |



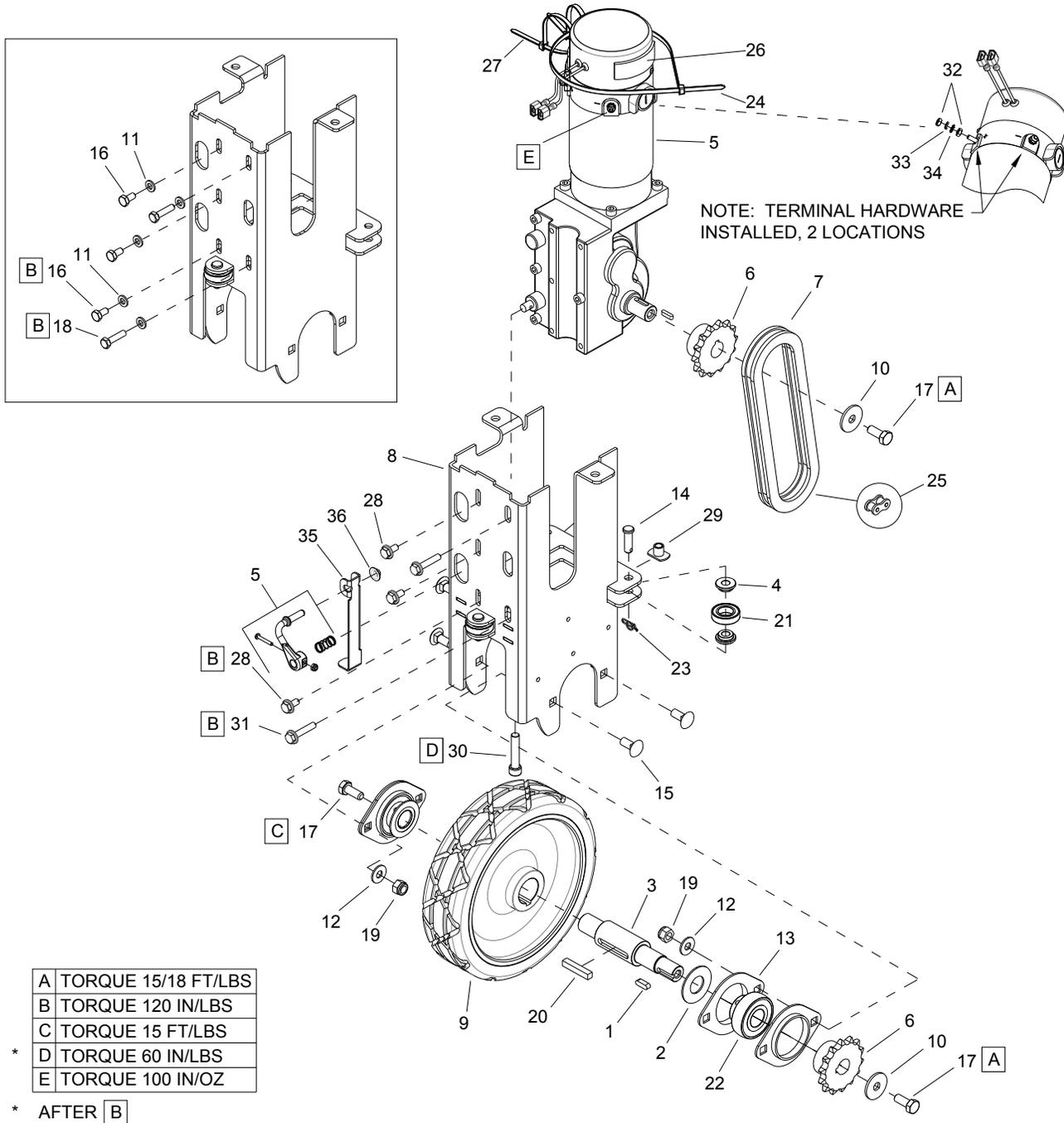
| REF | PART NO. | QTY | DESCRIPTION                      | SERIAL NO.<br>FROM | NOTES |
|-----|----------|-----|----------------------------------|--------------------|-------|
| 1   | 86273780 | 4   | SCR, 1/4-20 X 3/4 HHCS SS NP     |                    |       |
| 2   | 86010780 | 4   | WASHER 1/4 SPLIT LOCK PLTD       |                    |       |
| 3   | 86010630 | 4   | WASHER 1/4 ID X 5/8 OD SS        |                    |       |
| 4   | 86234390 | 1   | SP CORD ASM, 16/3 SJTW X 2M IEC  |                    |       |
| 5   | 86353300 | 1   | CHARGER, 36V 21A, OBC, 4 PROFILE |                    |       |
| 6   | 86344430 | 1   | GROMMET, CHARGE PLUG             |                    |       |
| 7   | 86173140 | 2   | SCR, KA40X16,PT OVAL,WN1412,PL   |                    |       |
| 8   | 86264940 | 3   | CABLE TIE, 11.38" UL/CSA         |                    |       |



| REF | PART NO. | QTY | DESCRIPTION                  | SERIAL NO.<br>FROM | NOTES          |
|-----|----------|-----|------------------------------|--------------------|----------------|
| 1   | 86004970 | 1   | LABEL WINDSOR LOGO DOMED     |                    |                |
| 2A  | 86353580 | 1   | LABEL, PANEL, iGLOSS 20, DLX |                    | ACTIVE MODELS  |
| 2B  | 86357750 | 1   | LABEL, PANEL iGLOSS 20       |                    | PASSIVE MODELS |
| 3   | 86354330 | 1   | LABEL, iGLOSS 20 LEFT        |                    |                |
| 4   | 86354340 | 1   | LABEL, iGLOSS 20 RIGHT       |                    |                |
| 5   | 86363810 | 1   | LABEL, BURNISHER SHROUD      |                    |                |



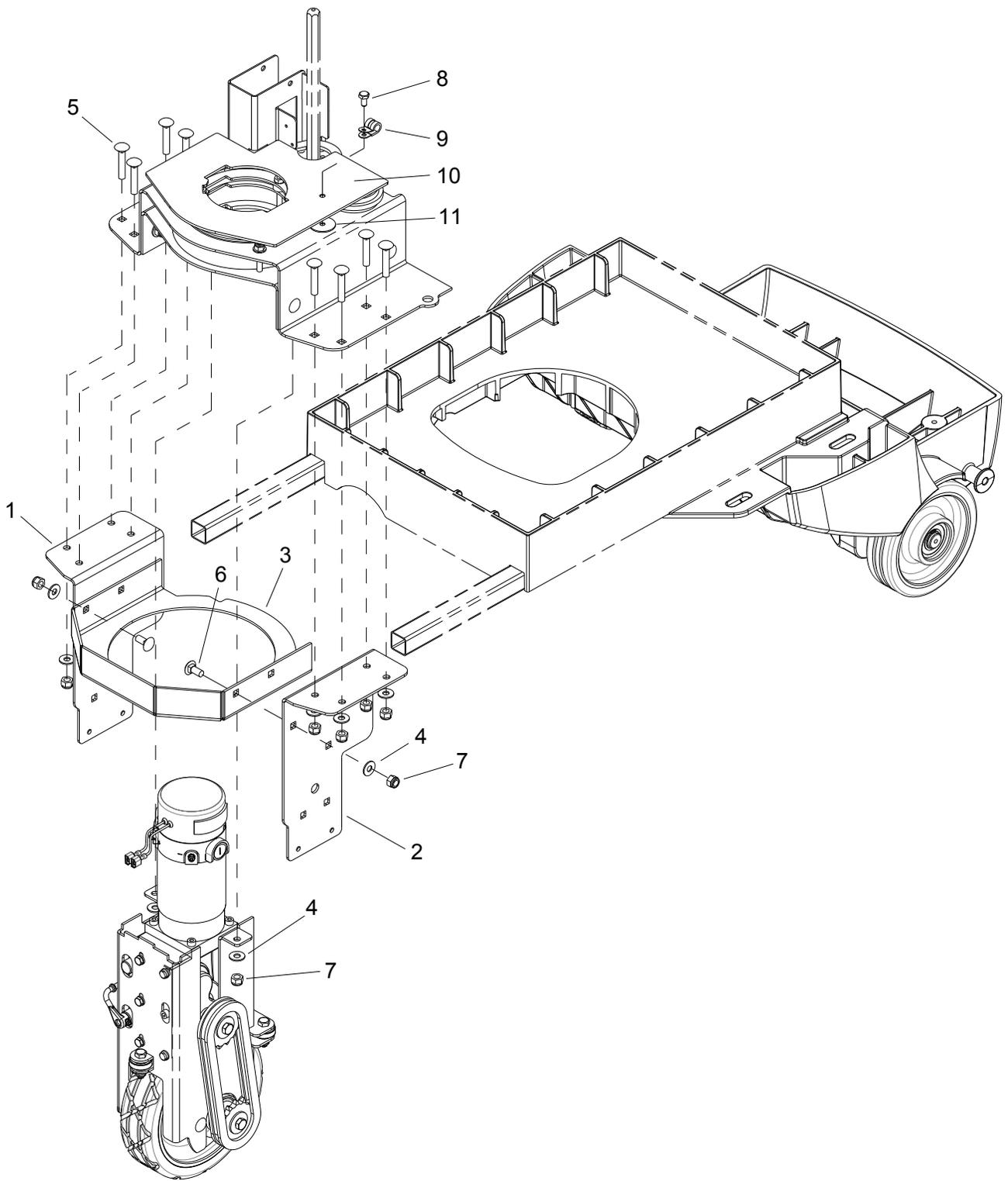
| REF | PART NO. | QTY | DESCRIPTION                                 | SERIAL NO.<br>FROM | NOTES |
|-----|----------|-----|---|--------------------|-------|
| 1   | 86330720 | 1   | CHAIN TENSIONER                             |                    |       |
| 2   | 86329350 | 1   | NUT, 1/4-20 X 7/8 HEX COUPLING SS           |                    |       |
| 3   | 86328050 | 2   | WASHER, SHOULDER.48ID X 1.25OD              |                    |       |
| 4   | 86005810 | 3   | NUT, 1/4-20 HEX NYLOCK SS                   |                    |       |
| 5   | 86273100 | 3   | SCR, 1/4-20X2-1/4 HXHD CAP                  |                    |       |
| 6   | 86322060 | 1   | COLLAR, 12MM ID                             |                    |       |
| 7   | 86322050 | 1   | SPROCKET, STEERING, 14T                     |                    |       |
| 8   | 86322040 | 1   | PLATE, CHAIN RING                           |                    |       |
| 9   | 86322030 | 3   | SPACER                                      |                    |       |
| 10  | 86270830 | 7   | NUT, 5/16-18 HEX NYLOCK SS                  |                    |       |
| 11  | 86319740 | 1   | PLATE, UPPER CLAMP                          |                    |       |
| 12  | 86319680 | 1   | PLATE, LOWER CLAMP                          |                    |       |
| 13  | 86319610 | 1   | BRACKET, BEARING CLAMP                      |                    |       |
| 14  | 86319600 | 1   | BRACKET, DRIVE MOUNT                        |                    |       |
| 15  | 86319590 | 1   | SHAFT, STEERING SPROCKET                    |                    |       |
| 16  | 86319560 | 1   | CHAIN, ISO O8B, 12.7MM PITCH                |                    |       |
| 17  | 86014440 | 1   | BEARING, DRIVE                              |                    |       |
| 18  | 86224270 | 1   | SLEEVE, CHAIN TENSIONER                     |                    |       |
| 19  | 86259430 | 1   | WASHER, 12.5 ID X 26 OD X 2T FLAT           |                    |       |
| 20  | 86279510 | 1   | WASHER, 3/8 X 1 FLAT NP                     |                    |       |
| 21  | 86010780 | 1   | WASHER, 1/4 SPLIT                           |                    |       |
| 22  | 86010670 | 4   | WASHER, 5/16 X 3/4 SS                       |                    |       |
| 23  | 86010630 | 7   | WASHER, 1/4 X 5/8 FLAT SS                   |                    |       |
| 24  | 86005710 | 3   | NUT, 1/4-20 HEX W/STAR                      |                    |       |
| 25  | 86271930 | 1   | NUT, 3/8-16 HEX NYLOCK SS                   |                    |       |
| 26  | 86276070 | 4   | SCR, 5/16-18 X 3/4 CARRIAGE SS              |                    |       |
| 27  | 86275190 | 1   | SCR, 3/8-16 X 1.25 HHCS SS                  |                    |       |
| 28  | 86274150 | 4   | SCR, 1/4-20 X 1.75 HHCS                     |                    |       |
| 29  | 86232780 | -   | CHAIN MASTERLINK 12.7MM                     |                    |       |
| 30  | 86368600 | 1   | WASHER, 2.5 OD X 1.25 ID X .125 THK, DELRIN |                    |       |
| 31  | 86279420 | 2   | WASHER .75IDX1.25ODX.125THK NY              |                    |       |
| 32  | 86271370 | 2   | NUT, 1/4-20 SERFLG STL ZNPLT                |                    |       |



| REF | PART NO. | QTY | DESCRIPTION                            | SERIAL NO. FROM | NOTES       |
|-----|----------|-----|--|-----------------|-------------|
| 1   | 86326710 | 1   | KEY, 5 X 5 X 16                        |                 |             |
| 2   | 86321670 | 2   | WASHER, WHEEL SPACER                   |                 |             |
| 3   | 86319810 | 1   | AXLE, DRIVE WHEEL                      |                 |             |
| 4   | 86319670 | 6   | SLEEVE, BEARING                        |                 |             |
| 5   | 86364010 | 1   | MOTOR, TRACTION                        | (4*)            | ▲           |
| -   | 86378440 | 1   | KIT, BRUSHES, DRIVE MOTOR              |                 | ● NOT SHOWN |
| -   | 98408960 | -   | BRAKE REPLACEMENT SMALL STAND ON       |                 | NOT SHOWN   |
| 6   | 86319650 | 2   | SPROCKET, DRIVE, 14T                   |                 |             |
| 7   | 86319640 | 1   | CHAIN, ISO O8B, 12.7MM PITCH           |                 |             |
| 8   | 86319620 | 1   | FRAME, LOWER DRIVE                     |                 |             |
| 9   | 86369170 | 1   | WHEEL, 8.00 X 2.00, GRAY X-GRV         | (6*)            |             |
| 10  | 86279630 | 3   | WASHER, .344IDX1.130ODX.09T PLT        |                 |             |
| 11  | 86358800 | 5   | WASHER, M6 CONICAL                     |                 |             |
| 12  | 86010670 | 4   | WASHER, 5/16 X 3/4 SS                  |                 |             |
| 13  | 86008610 | 4   | FLANGE, BEARING PRESSED STEEL          |                 |             |
| 14  | 86272550 | 3   | PIN, CLEVIS, 5/16 X 1.00 PLTD          |                 |             |
| 15  | 86276070 | 4   | SCR, 5/16-18 X 3/4 CARRIAGE SS         |                 |             |
| 16  | 86358820 | 3   | SCREW, M6-1.0 X 16 HCS 10.9Z           |                 |             |
| 17  | 86136640 | 3   | SCR, M8 X 20 HHMS                      |                 |             |
| 18  | 86358810 | 2   | SCREW, M6 - 1.0 X 30 HCS 10.9Z         |                 |             |
| 19  | 86270830 | 4   | NUT, 5/16-18 HEX NYLOCK SS             |                 |             |
| 20  | 86219640 | 1   | KEY, 1/4 SQ. X 1.5                     |                 |             |
| 21  | 86332380 | 3   | ROLLER, 1.1 OD                         |                 |             |
| 22  | 86001030 | 2   | BEARING, BALL 3/4 BORE SPHERED         |                 |             |
| 23  | 86008660 | 3   | COTTER 5/16" RING                      |                 |             |
| 24  | 86002830 | 1   | CABLE TIE .375 X 24.7                  |                 |             |
| 25  | 86232780 | -   | CHAIN MASTER LINK 12.7MM               |                 | NOT SHOWN   |
| 26  | 86362040 | 2   | TAPE CLOSED CELL 1/8 X 3/4 X 2 1/2 PSA | (1*)            |             |
| 27  | 86264920 | 2   | CABLE TIE, 7" UL/CSA                   | (1*)            |             |
| 28  | 86362140 | 3   | SCREW, M6 X 12MM, HEX FLANGE, PLTD     | (3*)            |             |
| 29  | 86348490 | 1   | NUT, WELD 5/16-18 X .38, TAB BASE, STL | (3*)            |             |
| 30  | 86362130 | 1   | SCREW, 5/16 X 1.50, SHCS, SS, FT       | (3*)            |             |
| 31  | 86362150 | 2   | SCREW, M6 X 30MM, HEX FLANGE, PLTD     | (3*)            |             |
| 32  | 86288500 | 4   | NUT, M4-.7 HEX STL CL8 ZNPLT           |                 |             |
| 33  | 86134850 | 2   | WASHER, SPRNG LK, M4, DIN127B, SST     |                 |             |
| 34  | 86372230 | 2   | WASHER, EXT TOOTH STAR                 |                 |             |
| 35  | 86333870 | 1   | LEVER, DRIVE ENGAGEMENT                |                 |             |
| 36  | 86271240 | 1   | NUT, 1/4 PAL STL ZNPLT                 |                 |             |

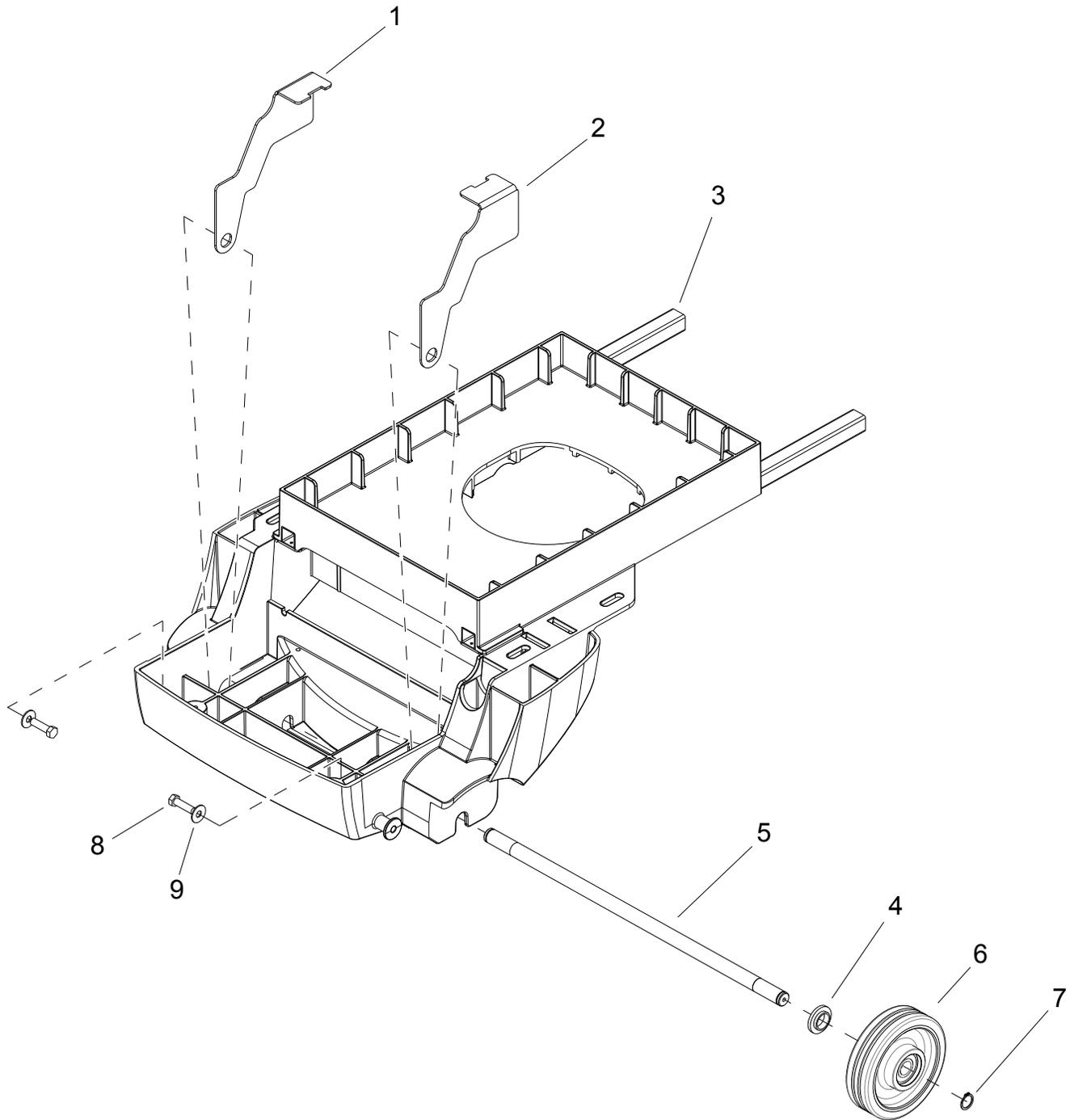
\* SEE SERIAL NUMBER PAGE

- ▲ For installation of 8.636-401.0 with brake harness and lower harness, order kit 8.636-900.0
- For CCL traction motor, use 86331990 brush set.  
For Linix traction motor, use 86378410 brush set.  
Both sets included in kit.



| REF | PART NO. | QTY | DESCRIPTION                    | SERIAL NO.<br>FROM | NOTES |
|-----|----------|-----|--------------------------------|--------------------|-------|
| 1   | 86344620 | 1   | BRACKET, LINKAGE MOUNT         |                    |       |
| 2   | 86319730 | 1   | BRACKET, LINKAGE MOUNT, LEFT   |                    |       |
| 3   | 86331630 | 1   | BRACKET, ROLLER GUIDE          |                    |       |
| 4   | 86010670 | 12  | WASHER, 5/16 X 3/4 SS          |                    |       |
| 5   | 86276690 | 8   | SCR, 5/16-18 X 1.75 CARR SS    |                    |       |
| 6   | 86276070 | 2   | SCR, 5/16-18 X 3/4 CARRIAGE SS |                    |       |
| 7   | 86270830 | 12  | NUT, 5/16-18 HEX NYLOCK SS     |                    |       |
| 8   | 86274760 | 1   | SCR, 1/4-20 X 1/2 HHCS         |                    |       |
| 9   | 86363870 | 1   | CLAMP, 5/8" OD CUSHIONED       |                    |       |
| 10  | 86329340 | 1   | PLATE, CHAIN GUARD             |                    |       |
| 11  | 86278940 | 1   | WASHER 1/4 ID X 1-1/4 OD PLT   | (1*)               |       |

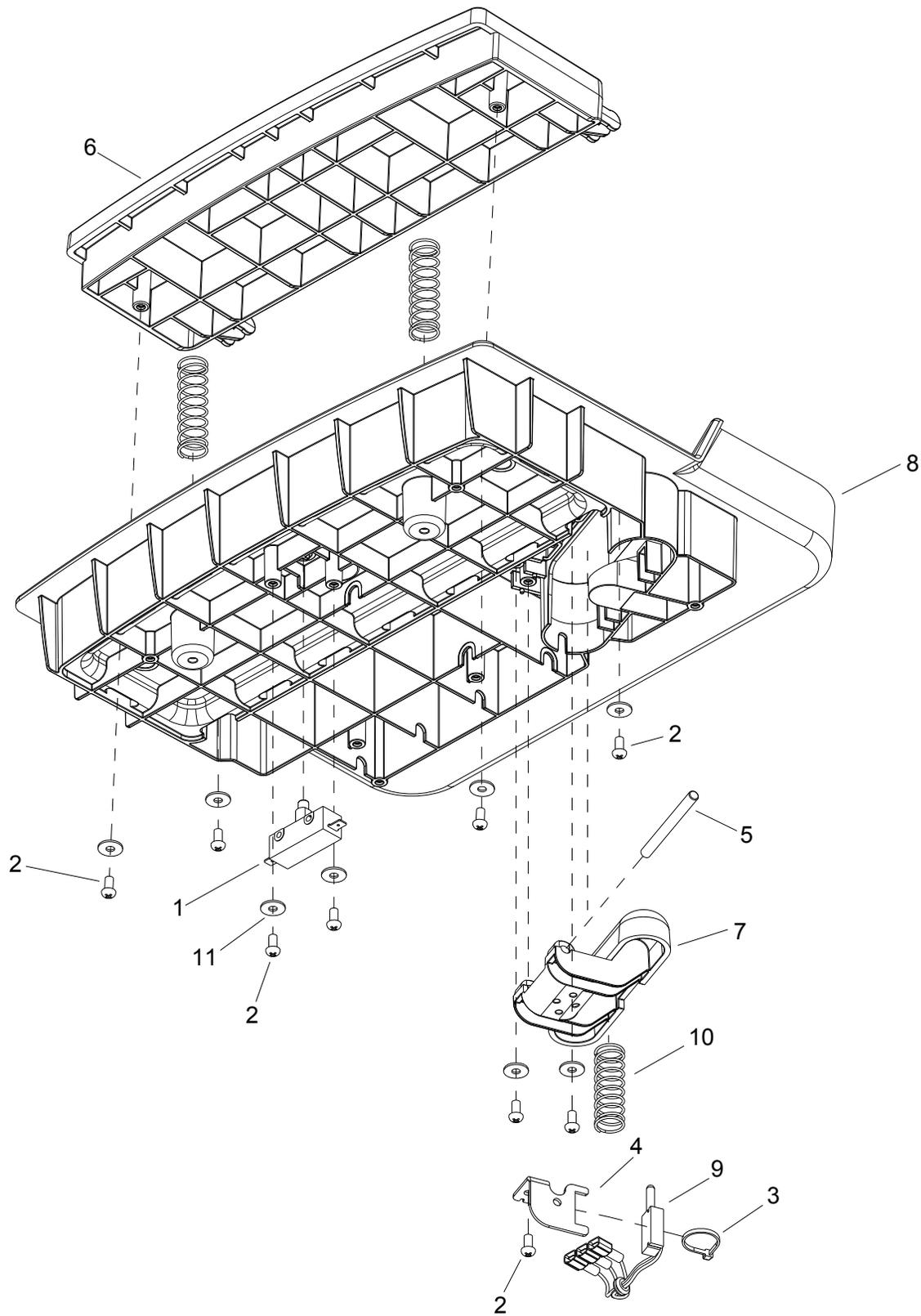
# Frame & Rear Wheels



| REF | PART NO. | QTY | DESCRIPTION                             | SERIALNO.<br>FROM | NOTES               |
|-----|----------|-----|---|-------------------|---------------------|
| 1   | 86326260 | 1   | BRACKET, FRAME LEFT                     |                   |                     |
| 2   | 86326250 | 1   | BRACKET, FRAME RIGHT                    |                   |                     |
| 3   | 86356380 | 1   | FRAME ASM IGLOSS 20                     |                   | INCLUDES ITEM 8 & 9 |
| 4   | 86326220 | 2   | SPACER, FLG .887ID X 1.055D X<br>.345LG |                   |                     |
| 5   | 86318030 | 1   | AXLE, 20MM X 562 MM                     |                   |                     |
| 6   | 86369160 | 2   | WHEEL, 6.00X1.58, GRY W/<br>BEARINGS    | (8*)              |                     |
| 7   | 86223470 | 2   | RING, 20MM EXTERNAL SNAP                |                   |                     |
| 8   | 86279510 | 2   | WASHER 3/8 FLAT                         |                   |                     |
| 9   | 86340950 | 2   | SCR, 3/8 X 1.5, LAG, PLTD               |                   |                     |

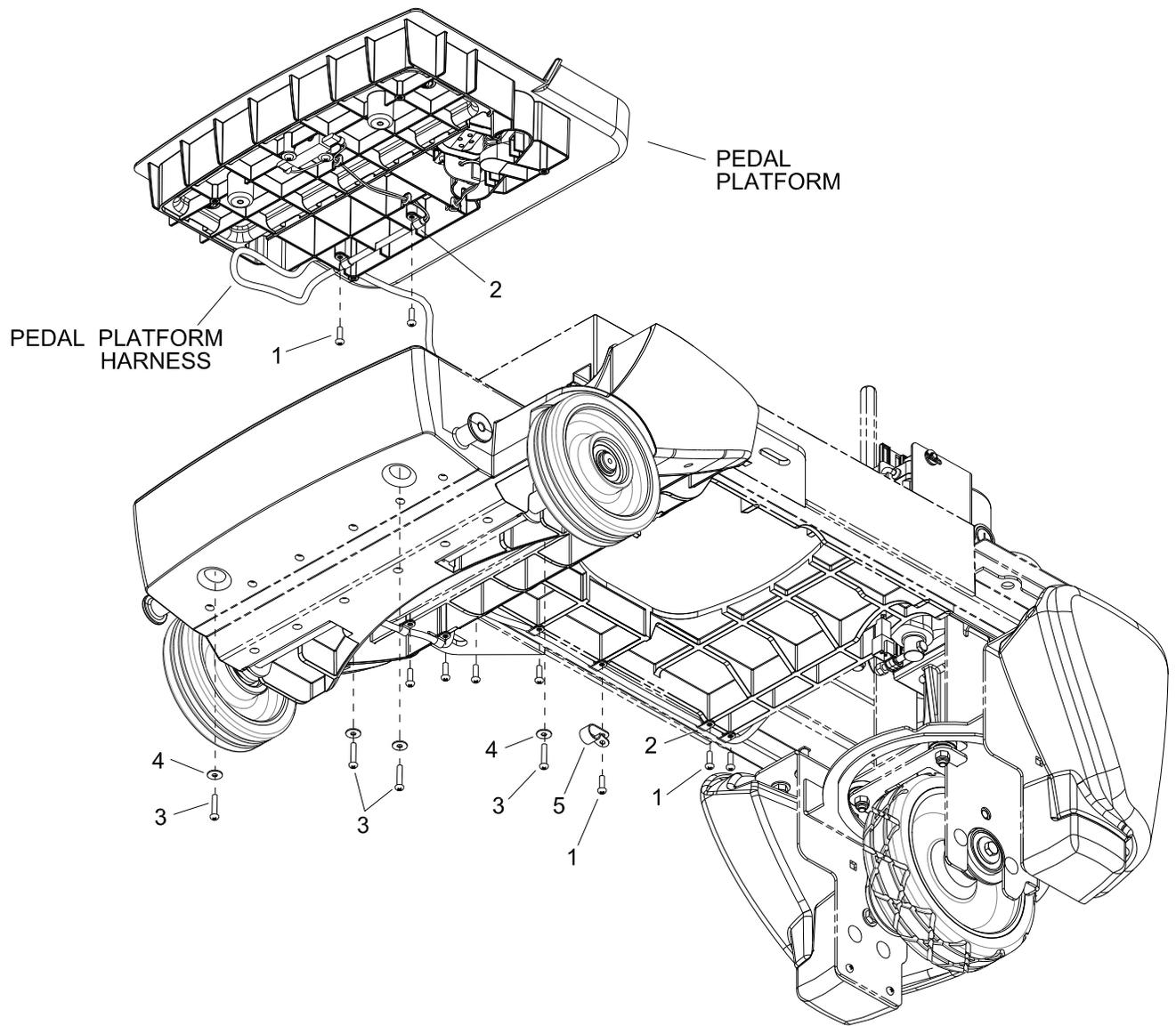
\* SEE SERIAL NUMBER PAGE

# Pedal Platform

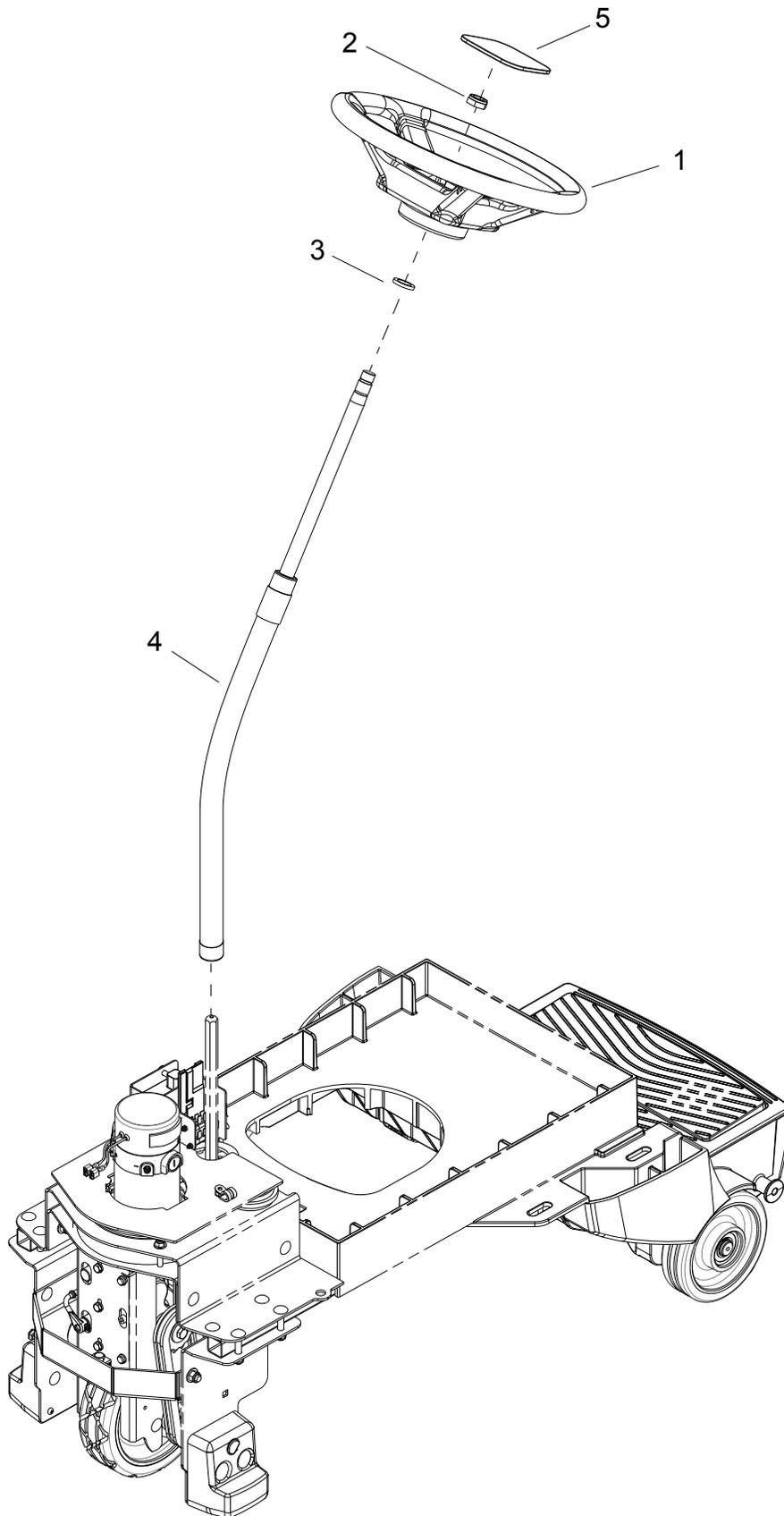


| REF | PART NO. | QTY | DESCRIPTION                           | SERIAL NO.<br>FROM | NOTES |
|-----|----------|-----|---------------------------------------|--------------------|-------|
| 1   | 86007110 | 1   | SWITCH, 25A SPST 125-250V SNAP        |                    |       |
| 2   | 86172980 | 9   | SCR, KA50X10, PT OHS, WN1412,<br>PLTD |                    |       |
| 3   | 86264930 | 1   | CABLE TIE, 3.5" UL/CS                 |                    |       |
| 4   | 86326150 | 1   | BRKT, LINEAR POT                      |                    |       |
| 5   | 86326140 | 1   | PIN, DOWEL .25 X 2.75, STEEL          |                    |       |
| 6   | 86318010 | 1   | PEDAL, HEEL                           |                    |       |
| 7   | 86318000 | 1   | PEDAL, ACCELERATOR                    |                    |       |
| 8   | 86317990 | 1   | PLATFORM, OPERATOR                    |                    |       |
| 9   | 86311560 | 1   | POTENTIOMETER ASM, LINEAR             |                    |       |
| 10  | 86254970 | 3   | SPRING, COMP 18MM OD X 83 X 2         |                    |       |
| 11  | 86173330 | 8   | WASHER, M5, FLAT, ISO7093, SS         |                    |       |

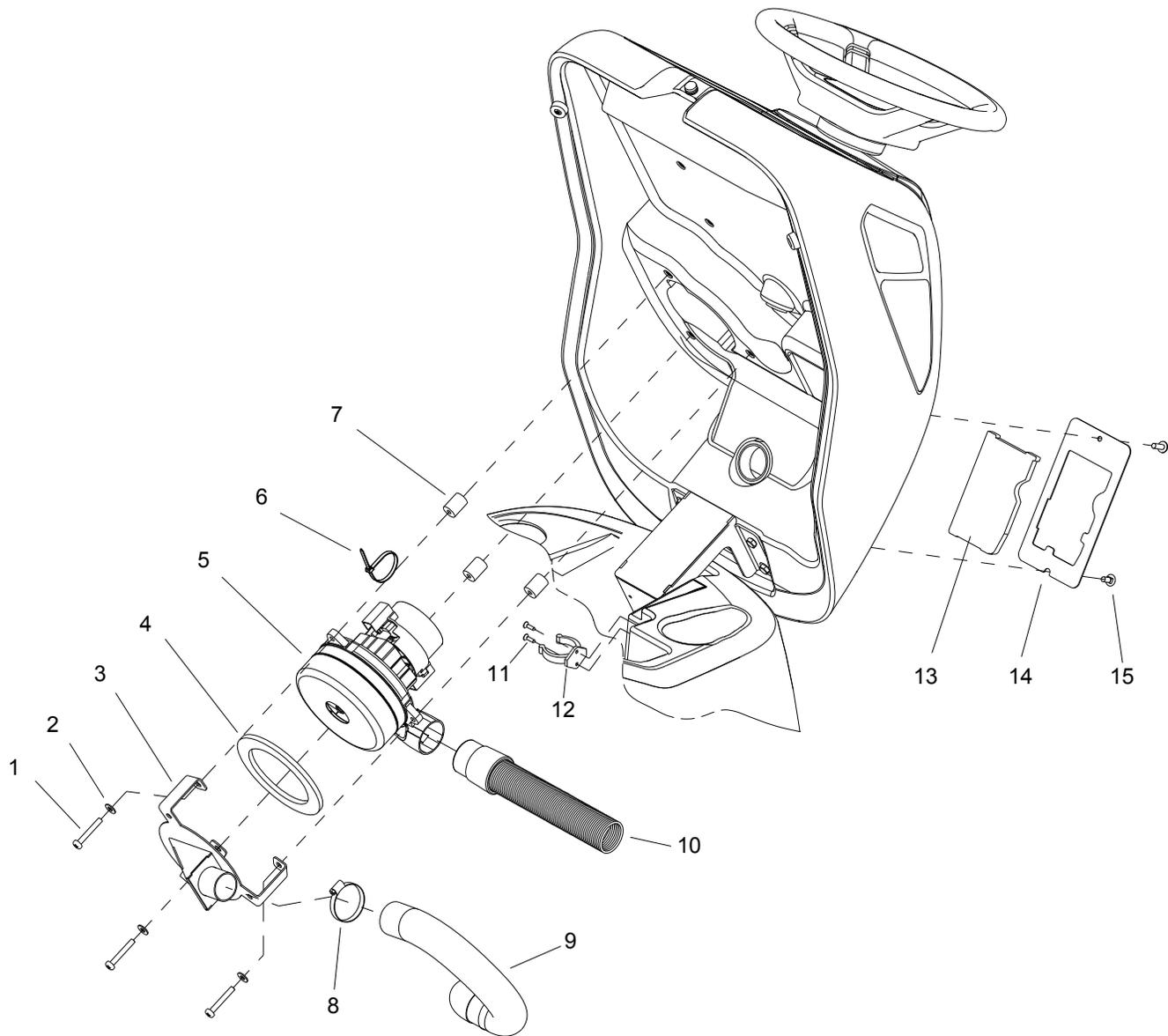
# Pedal Platform Mounting



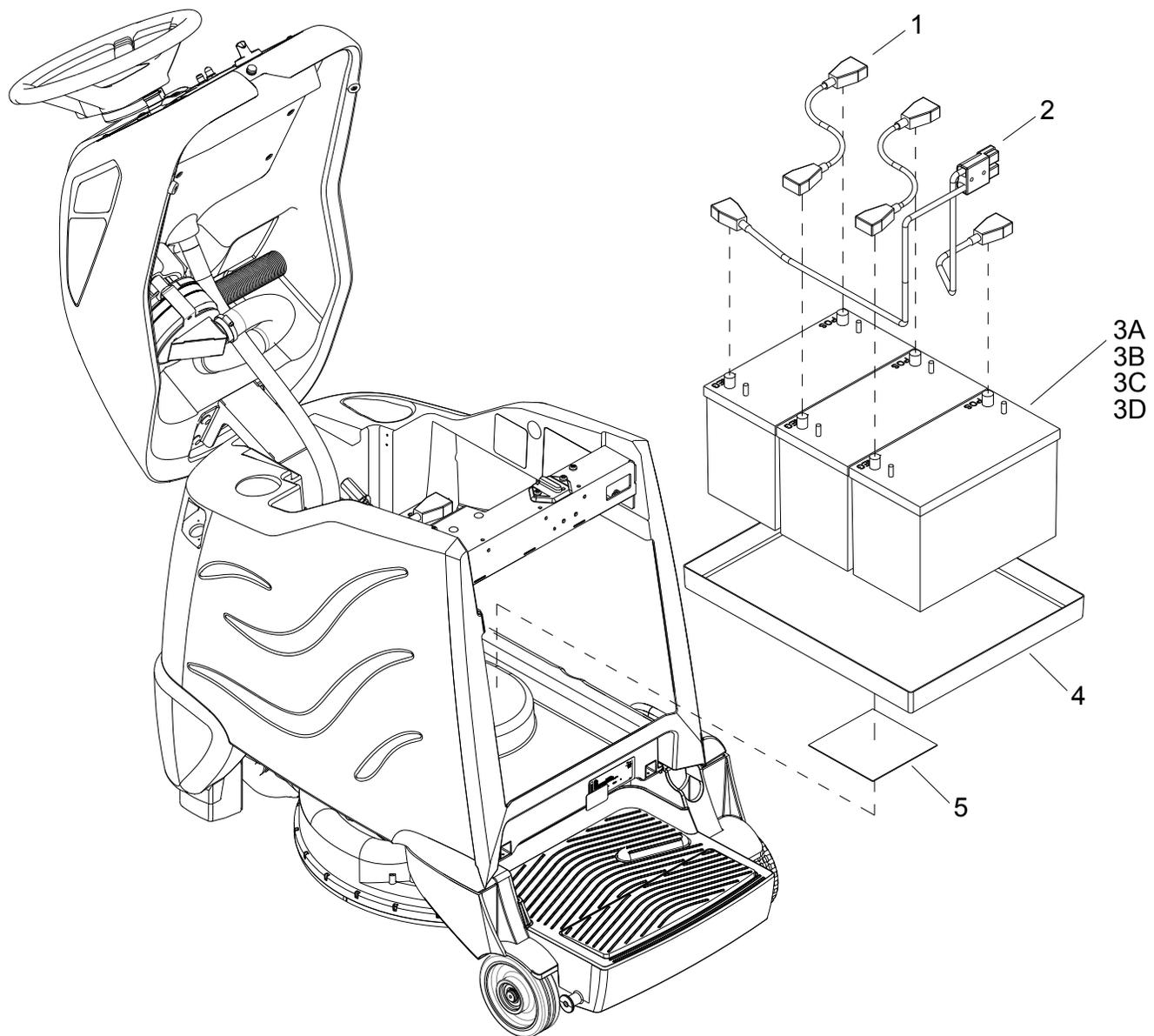
| <b>REF</b> | <b>PART NO.</b> | <b>QTY</b> | <b>DESCRIPTION</b>                 | <b>SERIAL NO.<br/>FROM</b> | <b>NOTES</b> |
|------------|-----------------|------------|------------------------------------|----------------------------|--------------|
| 1          | 86327510        | 9          | SCR, KA50 X 16, WN1412 A2 SS       |                            |              |
| 2          | 86198440        | 9          | CLAMP, 1/4 PLASTIC CABLE           |                            |              |
| 3          | 86327910        | 4          | SCR, KA50X25, PT OHS, WN1412, PLTD |                            |              |
| 4          | 86173330        | 4          | WASHER, M5, FLAT, ISO7093, SS      |                            |              |
| 5          | 86198470        | 1          | CLAMP, 9/16 DIA NYLON              |                            |              |



| REF | PART NO. | QTY | DESCRIPTION                     | SERIAL NO.<br>FROM | NOTES |
|-----|----------|-----|---------------------------------|--------------------|-------|
| 1   | 86259610 | 1   | WHEEL STEERING 40 SPLINE HUB    |                    |       |
| 2   | 86271610 | 1   | NUT 5/8-18 HEX NYLOCK THN       |                    |       |
| 3   | 86279420 | 1   | WASHER,.75IDX1.25ODX.125THK NY  |                    |       |
| 4   | 86378370 | 1   | ASM, SHAFT, STEERING, CHARIOT 2 |                    |       |
| 5   | 86234810 | 1   | COVER, STEERING WHEEL           |                    |       |

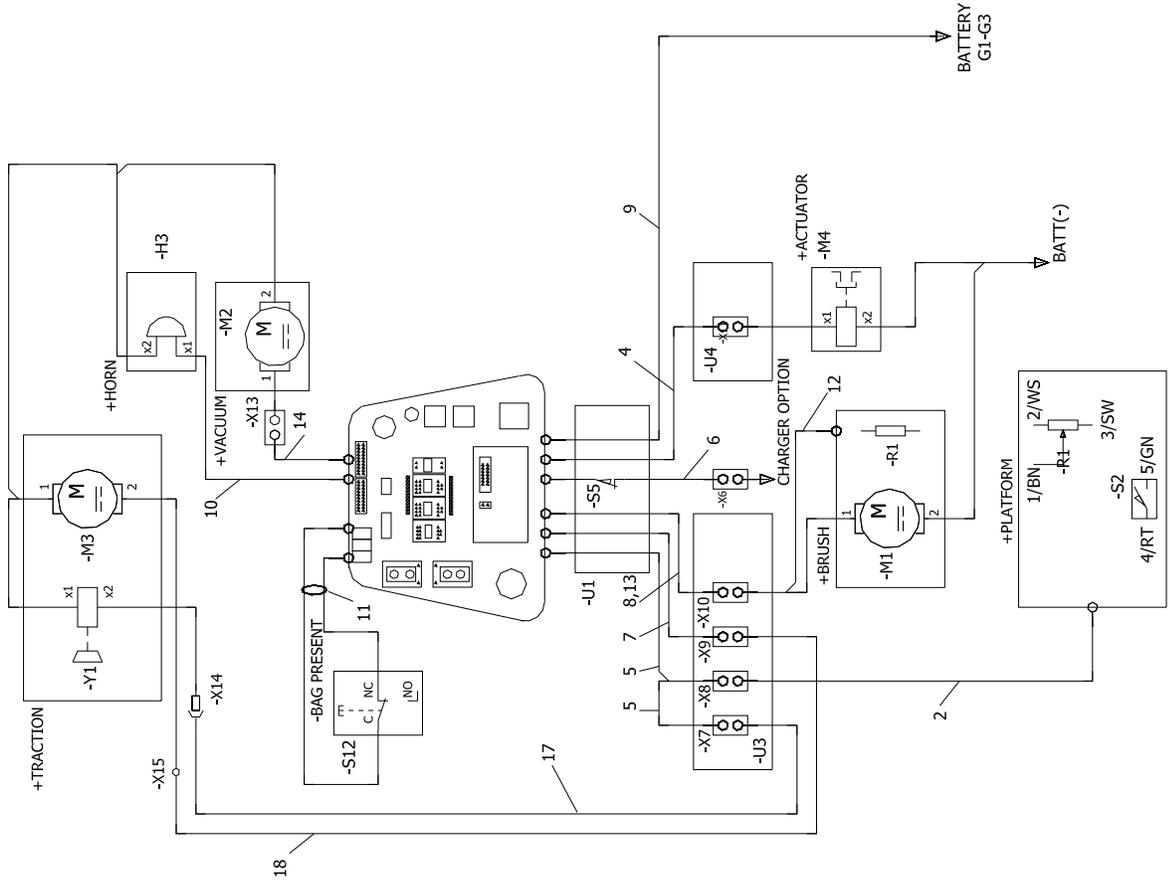


| REF | PART NO. | QTY | DESCRIPTION                     | SERIAL NO.<br>FROM | NOTES |
|-----|----------|-----|---------------------------------|--------------------|-------|
| 1   | 86273920 | 3   | SCREW 1/4-20 X 1.75 PPHMS SS    |                    |       |
| 2   | 86010630 | 3   | WASHER 1/4 ID X 5/8 OD SS       |                    |       |
| 3   | 86353290 | 1   | BRKT, VAC MOTOR                 |                    |       |
| 4   | 86312920 | 1   | GASKET, VAC MOTOR               |                    |       |
| 5   | 86012210 | 1   | VAC MOTOR, 36VDC 2ST TD         |                    |       |
| 6   | 86264940 | 1   | CABLE TIE, 11.38" UL/CSA        |                    |       |
| 7   | 86327500 | 3   | MOUNT, VIBRATION                |                    |       |
| 8   | 86002400 | 1   | CLAMP, 2.0" WORM GEAR X .312W   |                    |       |
| 9   | 86320330 | 1   | HOSE ASM, 1.5 BLK VAC X12       |                    |       |
| 10  | 86356150 | 1   | HOSE, 1.5" X 7.75", 4:1 STRETCH |                    |       |
| 11  | 86291220 | 2   | SCR, KA40X16,PT FLAT,WN1413,SS  |                    |       |
| 12  | 86355910 | 1   | CLIP, 1-3/4", PLASTIC           |                    |       |
| 13  | 86143330 | 1   | MOTOR FILTER U19836             |                    |       |
| 14  | 86354650 | 1   | FRAME, FILTER                   |                    |       |
| 15  | 86277640 | 2   | SCREW 1/4-20 X 3/4 PTHMS SS     |                    |       |



| REF | PART NO. | QTY | DESCRIPTION                         | SERIAL NO.<br>FROM | NOTES                             |
|-----|----------|-----|-------------------------------------|--------------------|-----------------------------------|
| 1   | 86329720 | 2   | BATT, CBL, ASM, JUMPER              |                    |                                   |
| 2   | 86356120 | 1   | CABLE, ASM, BATTERY                 |                    |                                   |
| 3A  | 86228400 | 3   | BATTERY, 12V, 130AH                 |                    |                                   |
| 3B  | 86328630 | 3   | BATTERY, 12V 114A/H AGM             |                    | NOT SHOWN                         |
| 3C  | 86283410 | 3   | BATTERY, 12V, 225AH (J185H-AC)      |                    | NOT SHOWN                         |
| 3D  | 86228430 | 3   | BATTERY, 12V AGM 234AH              |                    | NOT SHOWN                         |
| 4   | 86008300 | 1   | TRAY, BATTERY LINER                 |                    | REQD. WITH 86283410 &<br>86228430 |
| 5   | 86359550 | 1   | TAPE, 1/16" T X 6.0" SQ. 2 SIDE ADH |                    |                                   |

# Wiring Diagram 1



|     |                       |          |   |
|-----|-----------------------|----------|---|
| X7  | BRAKE<br>Y1           |          | 1 - 15/RT<br>2 - 14/SW  |
| X8  | POT<br>PLATFORM<br>U2 |          | 1 - 19/BN<br>2 - 20/WS<br>3 - 18/OR<br>4 - 17/GN<br>5 - 16/BL<br>6 - NC |
| X9  | TRACTION<br>M3        |          | 1 - 21/RT<br>2 - 22/SW  |
| X10 | BRUSH<br>SHUNT<br>M1  |          | 1 - 1/WS<br>2 - 2/SW<br>3 - 7/RT<br>4 - 13/GN                           |
| X11 | ACTUATOR<br>M4        |          | 1 - 3/RT<br>2 - 4/WS  |
| X13 | VACUUM<br>M2          |          | 1 - 23/WS<br>2 - 24/SW  |
| U1  | INTERLOCK<br>S5       |          | 1 - 11/SW<br>2 - 12/RT  |
| X3  | HORN<br>H3            | PANEL TB | 5 - 5/WS<br>6 - 6/SW  |
| X6  | CHARGER<br>OPTION     |          | 1 - 11C/SW<br>2 - 12C/RT  |

| REF | PART NO. | QTY | DESCRIPTION                             | SERIAL NO.<br>FROM | NOTES    |
|-----|----------|-----|---|--------------------|----------|
| 1   | 86354410 | 1   | HARNESS, PANEL IGLOSS20                 |                    |          |
| 2   | 86356360 | 1   | HARNESS, IGLOSS20 OPERATOR<br>PLATFORM  |                    |          |
| 3   | 86354380 | 1   | HARNESS, ROTARY SWITCH                  |                    |          |
| 4   | 86344450 |     | HARNESS, MAIN ACTUATOR                  |                    |          |
| 5   | 86356350 | 1   | HARNESS, IGLOSS20 MAIN POT AND<br>BRAKE |                    |          |
| 6   | 86356370 | 1   | HARNESS, IGLOSS20 MAIN CHARGER          |                    |          |
| 7   | 86356340 | 1   | HARNESS, IGLOSS20 MAIN TRACTION         |                    |          |
| 8   | 86354390 | 1   | HARNESS, IGLOSS20 BRUSH                 |                    |          |
| 9   | 86354400 | 1   | HARNESS, IGLOSS20 MAIN POWER            |                    |          |
| 10  | 86333170 | 1   | HARNESS, CS20 MAIN HORN                 |                    |          |
| 11  | 86354370 | 1   | HARNESS, IGLOSS20 BAG PRESENT           |                    |          |
| 12  | 86359290 | 1   | HARNESS, IGLOSS20 SHUNT SENSE<br>JUMPER |                    |          |
| 13  | 86359300 | 1   | HARNESS, IGLOSS20 SHUNT SENSE           |                    |          |
| 14  | 86333140 |     | HARNESS, CS20 MAIN VACUUM               |                    | OPTIONAL |
| 15  | 86359190 | 1   | HARNESS, SHUNT JUMPER WIRE,<br>BRAIDED  |                    |          |
| 16  | 86359200 | 1   | HARNESS, SHUNT JUMPER WIRE              |                    |          |
| 17  | 86362990 | 1   | HARNESS, LOWER BRAKE                    |                    |          |
| 18  | 86365410 | 1   | HARNESS, LOWER TRACTION                 |                    |          |

# Wiring Diagram 2

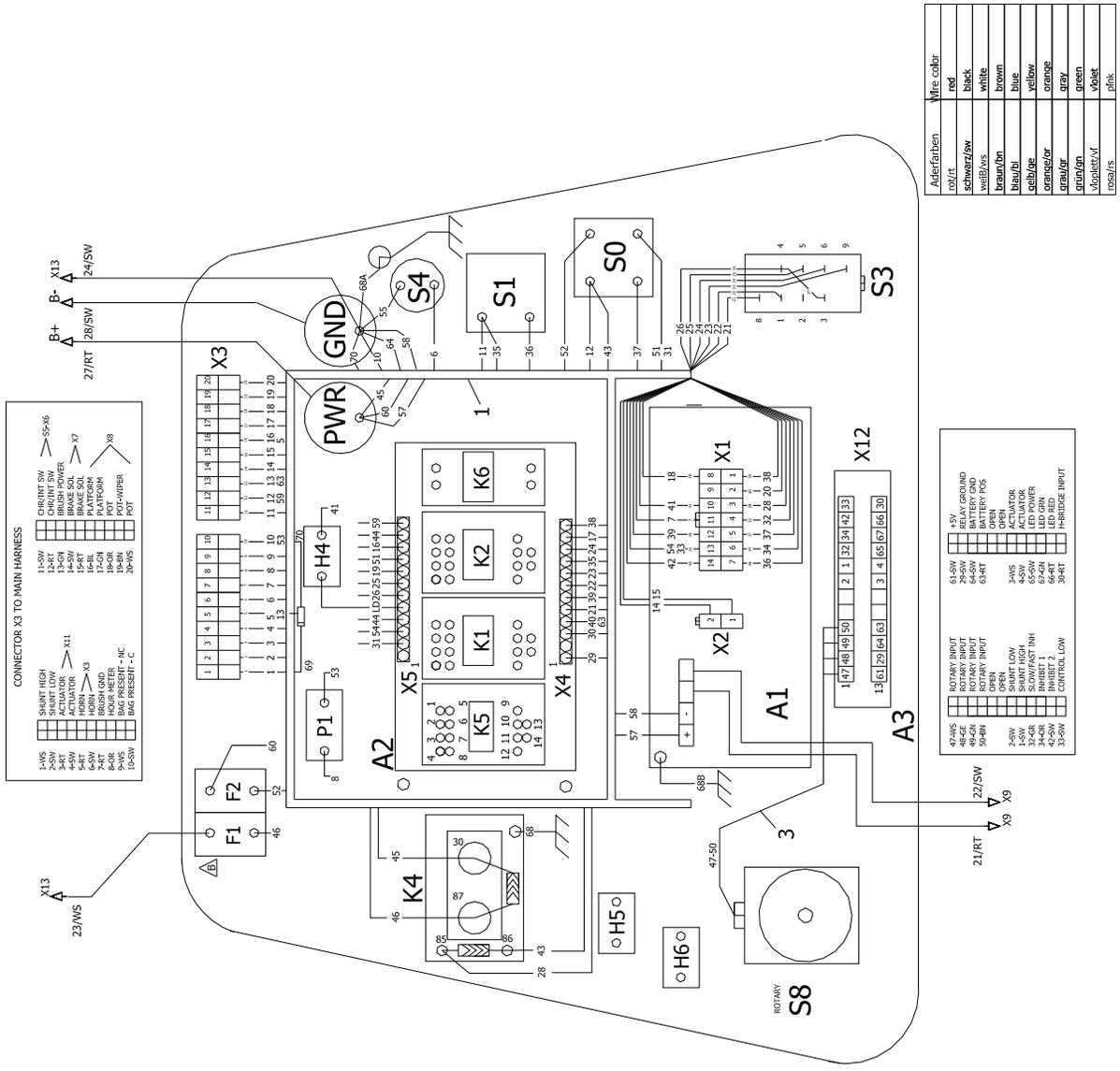
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3

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5

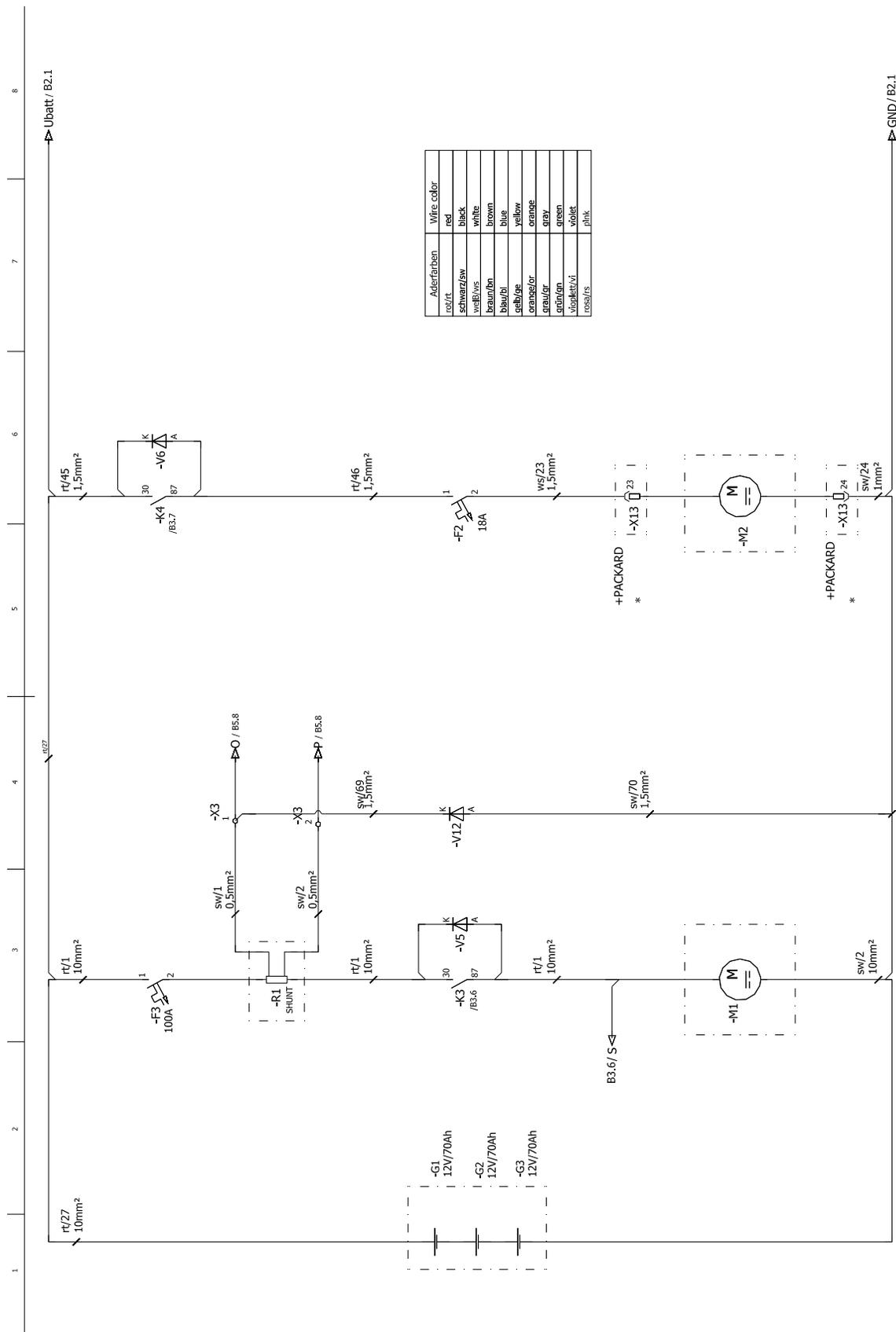
6



| REF | PART NO. | QTY | DESCRIPTION          | SERIAL NO. FROM | NOTES |
|-----|----------|-----|----------------------|-----------------|-------|
| 1   | 86352310 | 1   | HARNESS, I-DRIVE GND |                 |       |

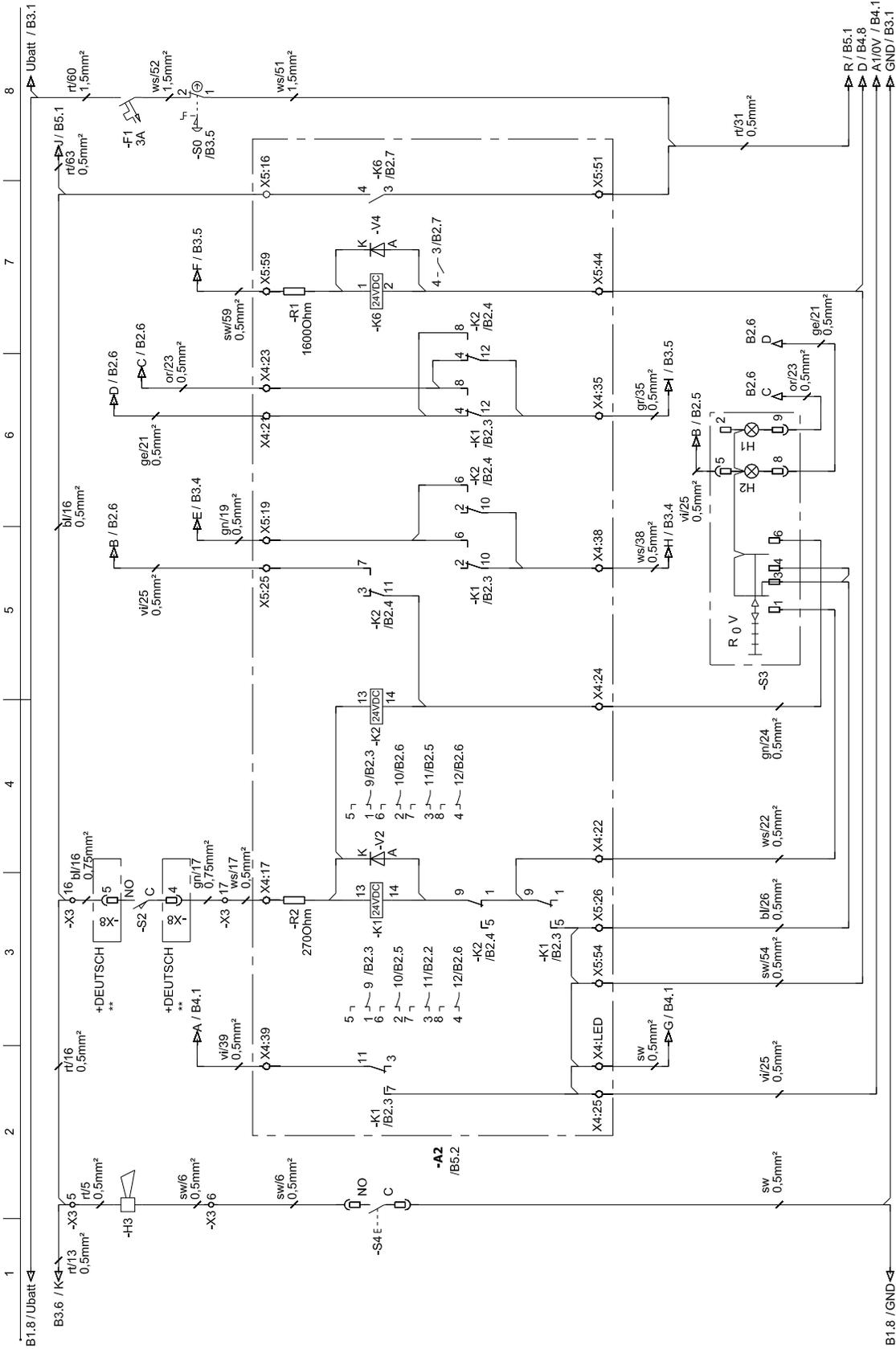
| REF                                    | DESCRIPTION                             |
|--|---|
| A1                                     | DRIVE CONTROL                           |
| A2                                     | RELAY BOARD                             |
| A3                                     | PROCESSOR                               |
| F1                                     | CIRCUIT BREAKER-DRIVE CONTROL           |
| F2                                     | CIRCUIT BREAKER-VACUUM MOTOR - OPTIONAL |
| F3                                     | CIRCUIT BREAKER-BRUSH                   |
| G1-G3                                  | BATTERY 12V                             |
| H1                                     | SIGNAL LAMPS REVERSE DIRECTION          |
| H2                                     | SIGNAL LAMPS DIRECTION FORWARD          |
| H3                                     | HORN                                    |
| H4                                     | LED-BATT.                               |
| H5                                     | LED                                     |
| H6                                     | LED                                     |
| K1                                     | RELAYS-REVERSE DIRECTION                |
| K2                                     | RELAYS DIRECTION FORWARD                |
| K3                                     | RELAYS BRUSH MOTOR                      |
| K4                                     | RELAY VACUUM MOTOR - OPTIONAL           |
| K5                                     | RELAYS ACTUATOR                         |
| K6                                     | RELAYS MAIN                             |
| M1                                     | BRUSH MOTOR                             |
| M2                                     | VACUUM MOTOR - OPTIONAL                 |
| M3                                     | TRACTION MOTOR                          |
| M4                                     | LINEAR ACTUATOR MOTOR BRUSH / SQUEEGEE  |
| S0                                     | EMERGENCY SWITCH                        |
| S1                                     | KEYSWITCH                               |
| S2                                     | MICROSWITCH-PLATFORM                    |
| S3                                     | BUTTON REVERSE FORWARD                  |
| S4                                     | HORN BUTTON                             |
| S5                                     | MICROSWITCH-COVER                       |
| S8                                     | PROGRAM SWITCH                          |
| S11                                    | CHARGER                                 |
| S12                                    | BAG PRESENT                             |
| R1                                     | SHUNT                                   |
| P1                                     | HOURS METER                             |
| V1-V2-V3-V4-V5-V6-V7-V8-V9-V10-V11-V12 | DIODE                                   |
| V-UP & V-DOWN                          | DIODE-MOTOR M4                          |
| X3                                     | TERMINAL BLOCK                          |
| X12                                    | TERMINAL BLOCK                          |
| ** X6-X7-X8-X11                        | DEUTSCH CONNECTOR                       |
| * X9-X10-X13                           | PACKARD CONNECTOR                       |
| X14                                    | FASTON TERMINAL                         |
| X15                                    | RING TERMINAL                           |
| Y1                                     | BRAKE                                   |

# Wiring Diagram 3



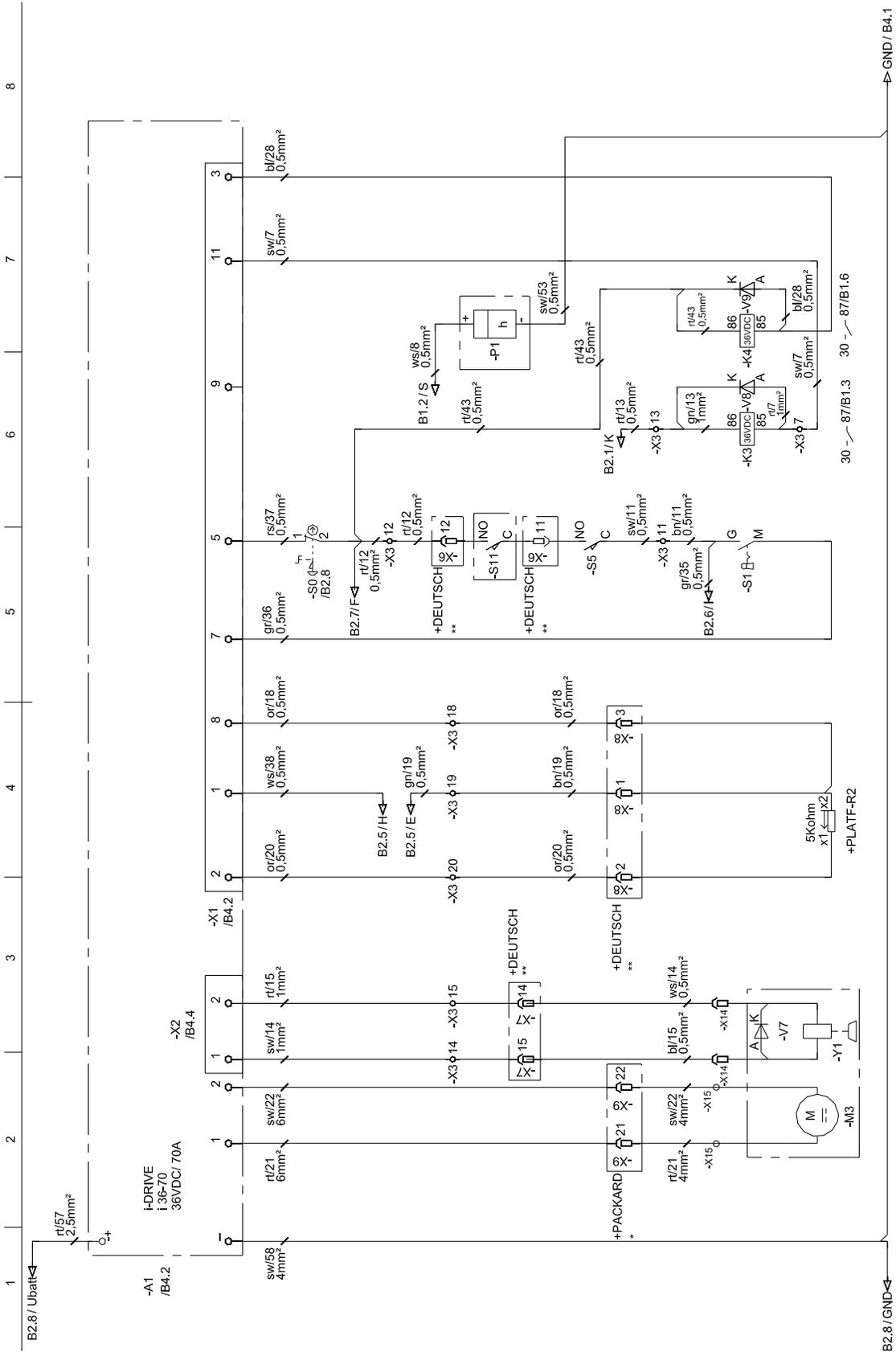
| REF                                    | DESCRIPTION                             |
|--|---|
| A1                                     | DRIVE CONTROL                           |
| A2                                     | RELAY BOARD                             |
| A3                                     | PROCESSOR                               |
| F1                                     | CIRCUIT BREAKER-DRIVE CONTROL           |
| F2                                     | CIRCUIT BREAKER-VACUUM MOTOR - OPTIONAL |
| F3                                     | CIRCUIT BREAKER-BRUSH                   |
| G1-G3                                  | BATTERY 12V                             |
| H1                                     | SIGNAL LAMPS REVERSE DIRECTION          |
| H2                                     | SIGNAL LAMPS DIRECTION FORWARD          |
| H3                                     | HORN                                    |
| H4                                     | LED-BATT.                               |
| H5                                     | LED                                     |
| H6                                     | LED                                     |
| K1                                     | RELAYS-REVERSE DIRECTION                |
| K2                                     | RELAYS DIRECTION FORWARD                |
| K3                                     | RELAYS BRUSH MOTOR                      |
| K4                                     | RELAY VACUUM MOTOR - OPTIONAL           |
| K5                                     | RELAYS ACTUATOR                         |
| K6                                     | RELAYS MAIN                             |
| M1                                     | BRUSH MOTOR                             |
| M2                                     | VACUUM MOTOR - OPTIONAL                 |
| M3                                     | TRACTION MOTOR                          |
| M4                                     | LINEAR ACTUATOR MOTOR BRUSH / SQUEEGEE  |
| S0                                     | EMERGENCY SWITCH                        |
| S1                                     | KEYSWITCH                               |
| S2                                     | MICROSWITCH-PLATFORM                    |
| S3                                     | BUTTON REVERSE FORWARD                  |
| S4                                     | HORN BUTTON                             |
| S5                                     | MICROSWITCH-COVER                       |
| S8                                     | PROGRAM SWITCH                          |
| S11                                    | CHARGER                                 |
| S12                                    | BAG PRESENT                             |
| R1                                     | SHUNT                                   |
| P1                                     | HOURS METER                             |
| V1-V2-V3-V4-V5-V6-V7-V8-V9-V10-V11-V12 | DIODE                                   |
| V-UP & V-DOWN                          | DIODE-MOTOR M4                          |
| X3                                     | TERMINAL BLOCK                          |
| X12                                    | TERMINAL BLOCK                          |
| ** X6-X7-X8-X11                        | DEUTSCH CONNECTOR                       |
| * X9-X10-X13                           | PACKARD CONNECTOR                       |
| X14                                    | FASTON TERMINAL                         |
| X15                                    | RING TERMINAL                           |
| Y1                                     | BRAKE                                   |

# Wiring Diagram 4



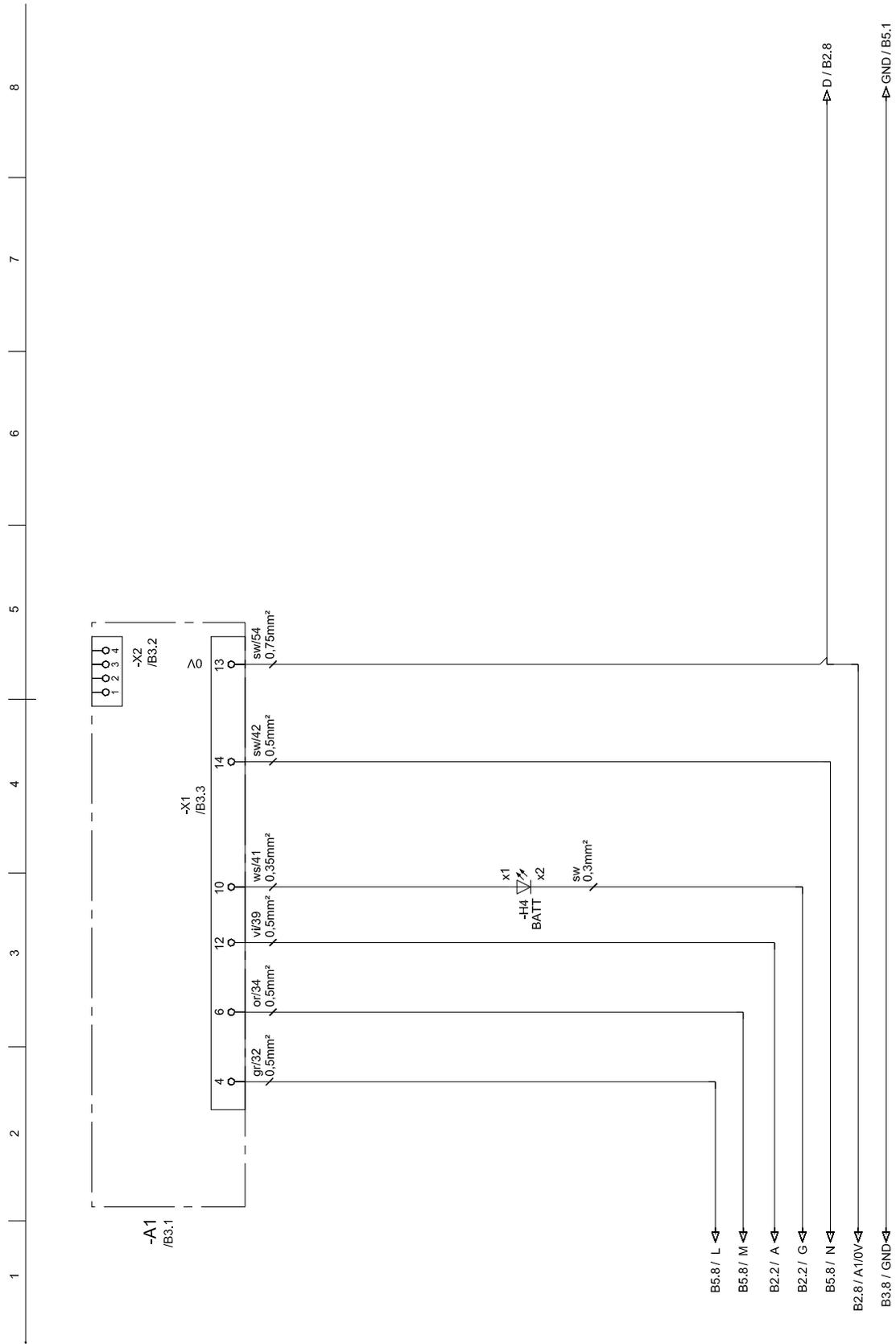
| REF  | DESCRIPTION                             |
|--|---|
| A1   | DRIVE CONTROL                           |
| A2   | RELAY BOARD                             |
| A3   | PROCESSOR                               |
| F1   | CIRCUIT BREAKER-DRIVE CONTROL           |
| F2   | CIRCUIT BREAKER-VACUUM MOTOR - OPTIONAL |
| F3   | CIRCUIT BREAKER-BRUSH                   |
| G1-G3  | BATTERY 12V                             |
| H1   | SIGNAL LAMPS REVERSE DIRECTION          |
| H2   | SIGNAL LAMPS DIRECTION FORWARD          |
| H3   | HORN                                    |
| H4   | LED-BATT.                               |
| H5   | LED                                     |
| H6   | LED                                     |
| K1   | RELAYS-REVERSE DIRECTION                |
| K2   | RELAYS DIRECTION FORWARD                |
| K3   | RELAYS BRUSH MOTOR                      |
| K4   | RELAY VACUUM MOTOR - OPTIONAL           |
| K5   | RELAYS ACTUATOR                         |
| K6   | RELAYS MAIN                             |
| M1   | BRUSH MOTOR                             |
| M2   | VACUUM MOTOR - OPTIONAL                 |
| M3   | TRACTION MOTOR                          |
| M4   | LINEAR ACTUATOR MOTOR BRUSH / SQUEEGEE  |
| S0   | EMERGENCY SWITCH                        |
| S1   | KEYSWITCH                               |
| S2   | MICROSWITCH-PLATFORM                    |
| S3   | BUTTON REVERSE FORWARD                  |
| S4   | HORN BUTTON                             |
| S5   | MICROSWITCH-COVER                       |
| S8   | PROGRAM SWITCH                          |
| S11  | CHARGER                                 |
| S12  | BAG PRESENT                             |
| R1   | SHUNT                                   |
| P1   | HOURS METER                             |
| V1-V2-V3-V4-V5-V6-<br>V7-V8-V9-V10-V11-<br>V12 | DIODE                                   |
| V-UP & V-DOWN                                  | DIODE-MOTOR M4                          |
| X3   | TERMINAL BLOCK                          |
| X12  | TERMINAL BLOCK                          |
| ** X6-X7-X8-X11                                | DEUTSCH CONNECTOR                       |
| * X9-X10-X13                                   | PACKARD CONNECTOR                       |
| X14  | FASTON TERMINAL                         |
| X15  | RING TERMINAL                           |
| Y1   | BRAKE                                   |

# Wiring Diagram 5



| REF  | DESCRIPTION                             |
|--|---|
| A1   | DRIVE CONTROL                           |
| A2   | RELAY BOARD                             |
| A3   | PROCESSOR                               |
| F1   | CIRCUIT BREAKER-DRIVE CONTROL           |
| F2   | CIRCUIT BREAKER-VACUUM MOTOR - OPTIONAL |
| F3   | CIRCUIT BREAKER-BRUSH                   |
| G1-G3  | BATTERY 12V                             |
| H1   | SIGNAL LAMPS REVERSE DIRECTION          |
| H2   | SIGNAL LAMPS DIRECTION FORWARD          |
| H3   | HORN                                    |
| H4   | LED-BATT.                               |
| H5   | LED                                     |
| H6   | LED                                     |
| K1   | RELAYS-REVERSE DIRECTION                |
| K2   | RELAYS DIRECTION FORWARD                |
| K3   | RELAYS BRUSH MOTOR                      |
| K4   | RELAY VACUUM MOTOR - OPTIONAL           |
| K5   | RELAYS ACTUATOR                         |
| K6   | RELAYS MAIN                             |
| M1   | BRUSH MOTOR                             |
| M2   | VACUUM MOTOR - OPTIONAL                 |
| M3   | TRACTION MOTOR                          |
| M4   | LINEAR ACTUATOR MOTOR BRUSH / SQUEEGEE  |
| S0   | EMERGENCY SWITCH                        |
| S1   | KEYSWITCH                               |
| S2   | MICROSWITCH-PLATFORM                    |
| S3   | BUTTON REVERSE FORWARD                  |
| S4   | HORN BUTTON                             |
| S5   | MICROSWITCH-COVER                       |
| S8   | PROGRAM SWITCH                          |
| S11  | CHARGER                                 |
| S12  | BAG PRESENT                             |
| R1   | SHUNT                                   |
| P1   | HOURS METER                             |
| V1-V2-V3-V4-V5-V6-<br>V7-V8-V9-V10-V11-<br>V12 | DIODE                                   |
| V-UP & V-DOWN                                  | DIODE-MOTOR M4                          |
| X3   | TERMINAL BLOCK                          |
| X12  | TERMINAL BLOCK                          |
| ** X6-X7-X8-X11                                | DEUTSCH CONNECTOR                       |
| * X9-X10-X13                                   | PACKARD CONNECTOR                       |
| X14  | FASTON TERMINAL                         |
| X15  | RING TERMINAL                           |
| Y1   | BRAKE                                   |

# Wiring Diagram 6



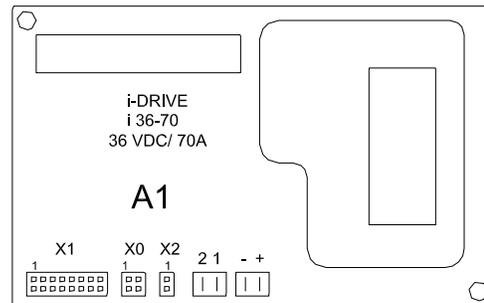
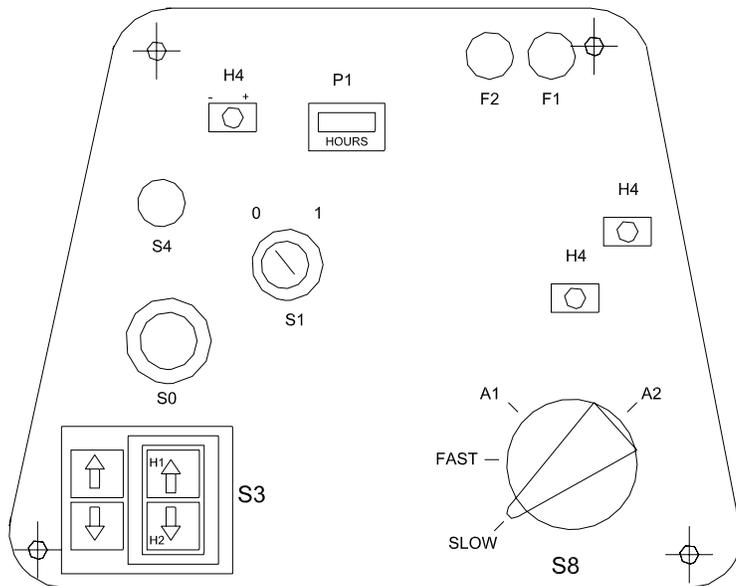
| REF  | DESCRIPTION                             |
|--|---|
| A1   | DRIVE CONTROL                           |
| A2   | RELAY BOARD                             |
| A3   | PROCESSOR                               |
| F1   | CIRCUIT BREAKER-DRIVE CONTROL           |
| F2   | CIRCUIT BREAKER-VACUUM MOTOR - OPTIONAL |
| F3   | CIRCUIT BREAKER-BRUSH                   |
| G1-G3  | BATTERY 12V                             |
| H1   | SIGNAL LAMPS REVERSE DIRECTION          |
| H2   | SIGNAL LAMPS DIRECTION FORWARD          |
| H3   | HORN                                    |
| H4   | LED-BATT.                               |
| H5   | LED                                     |
| H6   | LED                                     |
| K1   | RELAYS-REVERSE DIRECTION                |
| K2   | RELAYS DIRECTION FORWARD                |
| K3   | RELAYS BRUSH MOTOR                      |
| K4   | RELAY VACUUM MOTOR - OPTIONAL           |
| K5   | RELAYS ACTUATOR                         |
| K6   | RELAYS MAIN                             |
| M1   | BRUSH MOTOR                             |
| M2   | VACUUM MOTOR - OPTIONAL                 |
| M3   | TRACTION MOTOR                          |
| M4   | LINEAR ACTUATOR MOTOR BRUSH / SQUEEGEE  |
| S0   | EMERGENCY SWITCH                        |
| S1   | KEYSWITCH                               |
| S2   | MICROSWITCH-PLATFORM                    |
| S3   | BUTTON REVERSE FORWARD                  |
| S4   | HORN BUTTON                             |
| S5   | MICROSWITCH-COVER                       |
| S8   | PROGRAM SWITCH                          |
| S11  | CHARGER                                 |
| S12  | BAG PRESENT                             |
| R1   | SHUNT                                   |
| P1   | HOURS METER                             |
| V1-V2-V3-V4-V5-V6-<br>V7-V8-V9-V10-V11-<br>V12 | DIODE                                   |
| V-UP & V-DOWN                                  | DIODE-MOTOR M4                          |
| X3   | TERMINAL BLOCK                          |
| X12  | TERMINAL BLOCK                          |
| ** X6-X7-X8-X11                                | DEUTSCH CONNECTOR                       |
| * X9-X10-X13                                   | PACKARD CONNECTOR                       |
| X14  | FASTON TERMINAL                         |
| X15  | RING TERMINAL                           |
| Y1   | BRAKE                                   |



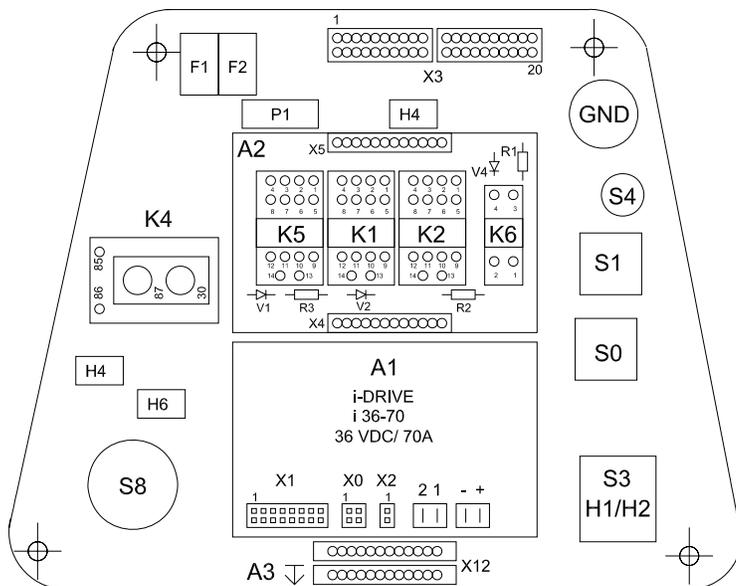
| REF  | DESCRIPTION                             |
|--|---|
| A1   | DRIVE CONTROL                           |
| A2   | RELAY BOARD                             |
| A3   | PROCESSOR                               |
| F1   | CIRCUIT BREAKER-DRIVE CONTROL           |
| F2   | CIRCUIT BREAKER-VACUUM MOTOR - OPTIONAL |
| F3   | CIRCUIT BREAKER-BRUSH                   |
| G1-G3  | BATTERY 12V                             |
| H1   | SIGNAL LAMPS REVERSE DIRECTION          |
| H2   | SIGNAL LAMPS DIRECTION FORWARD          |
| H3   | HORN                                    |
| H4   | LED-BATT.                               |
| H5   | LED                                     |
| H6   | LED                                     |
| K1   | RELAYS-REVERSE DIRECTION                |
| K2   | RELAYS DIRECTION FORWARD                |
| K3   | RELAYS BRUSH MOTOR                      |
| K4   | RELAY VACUUM MOTOR - OPTIONAL           |
| K5   | RELAYS ACTUATOR                         |
| K6   | RELAYS MAIN                             |
| M1   | BRUSH MOTOR                             |
| M2   | VACUUM MOTOR - OPTIONAL                 |
| M3   | TRACTION MOTOR                          |
| M4   | LINEAR ACTUATOR MOTOR BRUSH / SQUEEGEE  |
| S0   | EMERGENCY SWITCH                        |
| S1   | KEYSWITCH                               |
| S2   | MICROSWITCH-PLATFORM                    |
| S3   | BUTTON REVERSE FORWARD                  |
| S4   | HORN BUTTON                             |
| S5   | MICROSWITCH-COVER                       |
| S8   | PROGRAM SWITCH                          |
| S11  | CHARGER                                 |
| S12  | BAG PRESENT                             |
| R1   | SHUNT                                   |
| P1   | HOURS METER                             |
| V1-V2-V3-V4-V5-V6-<br>V7-V8-V9-V10-V11-<br>V12 | DIODE                                   |
| V-UP & V-DOWN                                  | DIODE-MOTOR M4                          |
| X3   | TERMINAL BLOCK                          |
| X12  | TERMINAL BLOCK                          |
| ** X6-X7-X8-X11                                | DEUTSCH CONNECTOR                       |
| * X9-X10-X13                                   | PACKARD CONNECTOR                       |
| X14  | FASTON TERMINAL                         |
| X15  | RING TERMINAL                           |
| Y1   | BRAKE                                   |

# Wiring Diagram 8

FRONT



BACK



| REF  | DESCRIPTION                             |
|--|---|
| A1   | DRIVE CONTROL                           |
| A2   | RELAY BOARD                             |
| A3   | PROCESSOR                               |
| F1   | CIRCUIT BREAKER-DRIVE CONTROL           |
| F2   | CIRCUIT BREAKER-VACUUM MOTOR - OPTIONAL |
| F3   | CIRCUIT BREAKER-BRUSH                   |
| G1-G3  | BATTERY 12V                             |
| H1   | SIGNAL LAMPS REVERSE DIRECTION          |
| H2   | SIGNAL LAMPS DIRECTION FORWARD          |
| H3   | HORN                                    |
| H4   | LED-BATT.                               |
| H5   | LED                                     |
| H6   | LED                                     |
| K1   | RELAYS-REVERSE DIRECTION                |
| K2   | RELAYS DIRECTION FORWARD                |
| K3   | RELAYS BRUSH MOTOR                      |
| K4   | RELAY VACUUM MOTOR - OPTIONAL           |
| K5   | RELAYS ACTUATOR                         |
| K6   | RELAYS MAIN                             |
| M1   | BRUSH MOTOR                             |
| M2   | VACUUM MOTOR - OPTIONAL                 |
| M3   | TRACTION MOTOR                          |
| M4   | LINEAR ACTUATOR MOTOR BRUSH / SQUEEGEE  |
| S0   | EMERGENCY SWITCH                        |
| S1   | KEYSWITCH                               |
| S2   | MICROSWITCH-PLATFORM                    |
| S3   | BUTTON REVERSE FORWARD                  |
| S4   | HORN BUTTON                             |
| S5   | MICROSWITCH-COVER                       |
| S8   | PROGRAM SWITCH                          |
| S11  | CHARGER                                 |
| S12  | BAG PRESENT                             |
| R1   | SHUNT                                   |
| P1   | HOURS METER                             |
| V1-V2-V3-V4-V5-V6-<br>V7-V8-V9-V10-V11-<br>V12 | DIODE                                   |
| V-UP & V-DOWN                                  | DIODE-MOTOR M4                          |
| X3   | TERMINAL BLOCK                          |
| X12  | TERMINAL BLOCK                          |
| ** X6-X7-X8-X11                                | DEUTSCH CONNECTOR                       |
| * X9-X10-X13                                   | PACKARD CONNECTOR                       |
| X14  | FASTON TERMINAL                         |
| X15  | RING TERMINAL                           |
| Y1   | BRAKE                                   |

## Suggested Spare Parts

| PART NO. | DESCRIPTION                     | SERIAL NO.<br>FROM | NOTES |
|----------|---------------------------------|--------------------|-------|
| 86001030 | BEARING, BALL 3/4 BORE SPHERED  |                    |       |
| 86228990 | BEARING,FLNGD,.314ID X.502OD    |                    |       |
| 86001260 | BOOT, CB 3/8-32 UN              |                    |       |
| 86332510 | BOOT, SEAL PUSH BUTTON 11MM     |                    |       |
| 86008920 | BOOT, RUBBER TERM. ISOLATOR     |                    |       |
| 86340030 | BREAKER, 100A CIRCUIT           |                    |       |
| 86353680 | BREAKER, 1.5A, CARLING MAGNETIC |                    |       |
| 86316160 | BREAKER, 18A, 250VAC, 32VDC     |                    |       |
| 86353780 | BRUSH, FLEXIBLE STRIP, 72" LONG |                    |       |
| 86348010 | BRUSH SET, BURNISHER MOTOR      |                    |       |
| 86135310 | BRUSH SET, 24/36V VAC, WINDSOR  |                    |       |
| 86232780 | CHAIN MASTERLINK 12.7MM         |                    |       |
| 86284790 | FILTER BAG (10 PACK)            |                    |       |
| 86327830 | GASKET,.188X.31X41.0            |                    |       |
| 86354630 | GASKET, BAG MOUNT               |                    |       |
| 86353660 | GASKET, BAG COVER, 43.6"        |                    |       |
| 86312920 | GASKET, VAC MOTOR               |                    |       |
| 53217380 | KNOB, SELECTION                 |                    |       |
| 86328860 | NUT, 5/16 PUSH-LOCK, PLTD       |                    |       |
| 86143330 | MOTOR FILTER U19836             |                    |       |
| 86223470 | RING, 20MM EXTERNAL SNAP        |                    |       |
| 86007910 | SPRING EXT .31D X 2.0L X .03W   |                    |       |
| 86327680 | SWITCH, INTERLOCK               |                    |       |
| 86007170 | SWITCH, KEY 2 POSITION          |                    |       |
| 86313950 | SWITCH, SPDT 3 POSN MOM, ARROW  |                    |       |
| 86354640 | WASHER, 1.5ID SINK, RUBBER      |                    |       |
| 86318020 | WHEEL, PU 150MM X 40MM          |                    |       |
| 86316890 | WHEEL, PU 200MM X 50MM          |                    |       |

| REF. NO | MODEL: SERIAL #  |
|---------|--|
| 1       | 10020350000012, 10020360000016   |
| 2       | 10020350000012, 10020360000013   |
| 3       | 10020350000014, 10020360000017   |
| 4       | 10020310000033, 10020320000009, 10020330000036, 10020340000007, 10020350000060, 10020360000075 |
| 5       | 10020310000068, 10020320000015, 10020330000040, 10020340000010, 10020350000064, 10020360000079 |
| 6       | 10020310000018, 10020320000021, 10020330000043, 10020340000014, 10020350000083, 10020360100101 |
| 7       | 10020310000079, 10020320000019, 10020330000043, 10020340000014, 10020350000072, 10020360100093 |
| 8       | 10020310000103, 10020320000030, 10020330000053, 10020340000024, 10020350000097, 10020360100137 |
| 9       | 10020310000124, 10020320000054, 10020330000063, 10020340000032, 10020350000132, 10020360100199 |
| 10      | 10020310000177, 10020320000095, 10020330000083, 10020340000053, 10020350000188, 10020360100300 |