

# KÄRCHER

makes a difference

## Lightning BDP 50/2000 W

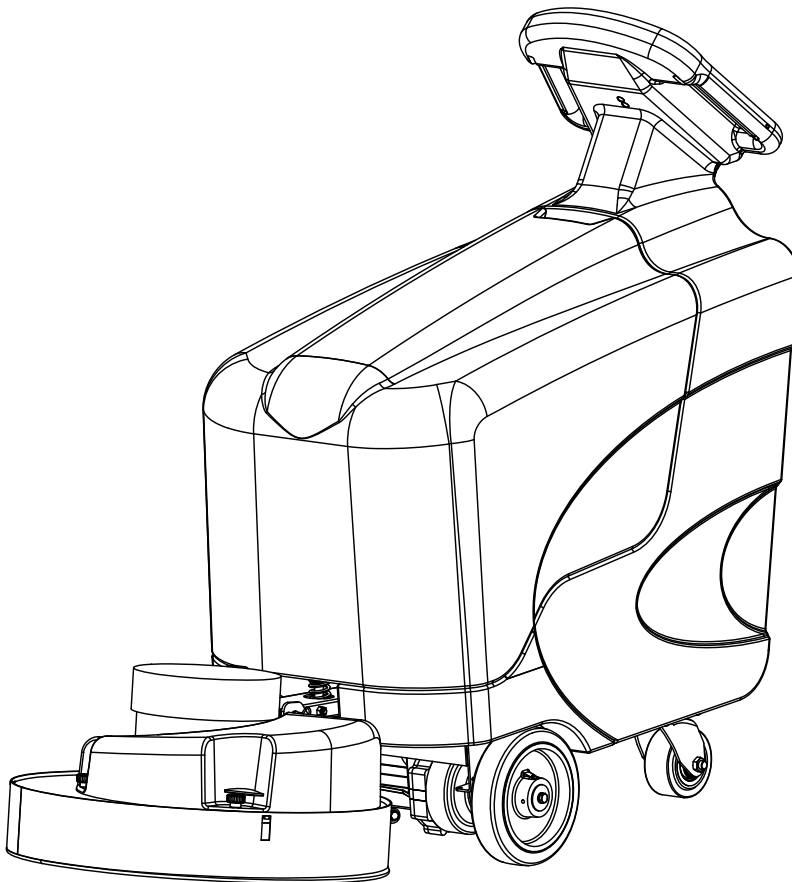
Operating Instructions (ENG)

**Burnisher**

**MODELS:**

**1.002-043.0  
BDP 50/2000 W AGM**

**1.002-044.0  
BDP 50/2000 W WET**



## **Machine Data Label**

---

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

### **Overview**

The Lightning BDP 50/2000 W is a battery powered burnisher, designed to burnish most modern types of non-carpeted floors.

## **Warranty Registration**

Thank you for purchasing a Kärcher North America 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 :  
<http://warranty.karcherna.com>

For customer assistance:  
1-800-444-7654

**KÄRCHER**  


<b>Machine Data Label</b> . . . . .	<b>2</b>
Overview . . . . .	2
<b>Table of Contents</b> . . . . .	<b>3</b>
<b>How To Use This Manual</b> . . . . .	<b>4</b>

## **Safety**

IMPORTANT SAFETY INSTRUCTIONS . . . . .	5
IMPORTANT SAFETY INSTRUCTIONS (FRENCH). . . . .	8
HAZARD INTENSITY LEVEL . . . . .	11
Safety Labels . . . . .	13

## **Operations**

Technical Specifications . . . . .	14
Operator Responsibility . . . . .	16
Test for Operator-Ear Sound Pressure Level . . . . .	16
Test for Hand-Arm Vibration . . . . .	16
Machine Preparation . . . . .	17
Unpacking the Machine . . . . .	17
Connecting the Batteries . . . . .	17
Installing Steel Skirt . . . . .	17
Controls . . . . .	18
Over Current Protection . . . . .	20
Onboard Battery Charger . . . . .	20
Battery Charger Controls: . . . . .	20
Charger Settings . . . . .	21
Battery Charger Fault Codes . . . . .	22
Pre-Operation Checklist . . . . .	24
Turning on the Machine . . . . .	24
Changing Direction . . . . .	24
Stopping and Turning Off Machine . . . . .	24
Installing/Changing Burnishing Pad . . . . .	24
Dust Bag Removal . . . . .	25
Pad Pressure Adjustment . . . . .	26
Storage . . . . .	26
Operation on Inclines . . . . .	26
Post Operation Checklist . . . . .	27
Lubrication of Rear Casters . . . . .	27
Caster Parking Brake . . . . .	27
Body Maintenance . . . . .	27

## **Maintenance**

Battery Maintenance . . . . .	28
Lead Acid Batteries . . . . .	28
Body Maintenance . . . . .	29
Repacking the Machine . . . . .	29
Transporting the Machine . . . . .	29
Service Schedule . . . . .	30
Alarm Codes . . . . .	30
Troubleshooting . . . . .	31

## How To Use This Manual

This manual contains the following sections:

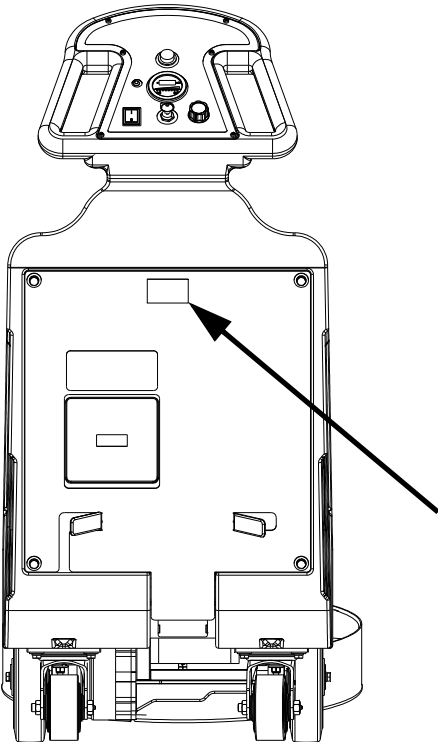
- How to Use This Manual
- Safety
- Operations
- Maintenance
- Parts

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 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 is located on the back of the machine.



The SAFETY section contains important information regarding hazardous or unsafe practices of the machine. Levels of hazards are identified that could result in product damage, 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:

- Storage
- Maintenance
- Troubleshooting

*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.*

*NOTE: The manual part number is located on the lower right corner of the front cover.*

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.

REF NO. - reference number.

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*

# IMPORTANT SAFETY INSTRUCTIONS

When using this machine, basic precaution  
must always be followed, including the following:

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

## **⚠ DANGER:**

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

- This machine has parts including the pad/brush assemblies that can cause severe injury if these parts are contacted while they are moving.
- Do not allow any part of the body or clothing to come in contact with these parts while they are moving.
- Do not try to change the pads/brushes while the machine is running.
- Do not allow other people to come near the machine while it is in operation.
- Do not allow the machine to run unattended.
- Do not leave the machine in a place where unauthorized or untrained personnel could use the machine.
- Do not run the machine with the pads/brushes off center, damaged or missing.
- Do not operate the machine if the machine has loose parts.

## READ AND SAVE THESE INSTRUCTIONS

# **IMPORTANT SAFETY INSTRUCTIONS**

**When using this machine, 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:**

- Batteries emit hydrogen gas. Explosion or fire can result.
- Keep sparks and open flame away.
- Keep covers open when charging.
- Do not smoke around batteries.
- Avoid skin contact with the acid contained in the batteries.
- Never allow metal objects to lay across battery tops.
- Operate from the rear of the machine only.
- Inspect pad holders regularly. A fractured pad holder may result in pad fragments causing injury.
- Use caution when operating the machine on a ramp or incline.
- Do not turn the machine, or leave it unattended, on a ramp or incline.
- Store machine inside.
- Keep the electrical components of the machine dry.
- Do not pressure wash machine.
- Modifications or alterations to this machine can lead to personal injury or damage to the machine.
- Do not make unauthorized modifications or alterations to this machine. Kärcher North America assumes no liabilities for injury or damage resulting from an unauthorized modification or alteration to the machine.
- Any unauthorized modification or alteration to this machine voids all warranties.
- The motor and motor controller become hot enough while the machine is in operation, and for a long time after the machine is shut off, to cause severe burns.
- Do not touch these parts of the machine until they have cooled.
- Injury can occur to the eyes and body while using the machine.
- Safety goggles, safety shoes, and safety clothing are recommended while operating the machine.
- Machine vibration may cause tingling or numbness in the fingers or hands. Gloves are recommended to reduce machine vibration. If tingling or numbness persists, shut off the machine.
- If the vibration is caused by loose parts such as an off center pad/brush, adjust or tighten these parts before using the machine again.
- Do not burnish on an incline. This machine is designed to burnish on a flat level floor.

## **READ AND SAVE THESE INSTRUCTIONS**

# IMPORTANT SAFETY INSTRUCTIONS

When using this machine, basic precaution  
must always be followed, including the following:  
**READ ALL INSTRUCTIONS BEFORE USING THIS MACHINE.**

## **⚠ CAUTION:**

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

- Do not operate machine unless trained and authorized.
- Do not operate machine unless you have read and understand the operation manual.
- Do not operate machine in flammable or explosive areas.
- Before starting machine ensure all safety devices are in place and functioning properly.
- Before starting machine check for proper operation.
- When using machine, go slowly on inclines or slippery surfaces.
- Use care when operating machine in reverse.
- Follow all manufacturers' instructions on chemical product containers when handling, mixing, or using chemical products.
- When servicing machine, stay clear of moving parts.
- Do not wear loose clothing when working on machine.
- Block machine wheels before raising or jacking up machine.
- Use hoist stands that will support the weight of the machine.
- Wear eye and ear protection when using pressurized air.
- Disconnect battery connections before servicing machine.
- Use only replacement parts supplied by Kärcher North America or a Kärcher North America Authorized Distributor or Service Center.

## READ AND SAVE THESE INSTRUCTIONS

# CONSIGNES DE SÉCURITÉ IMPORTANTES

Lors de l'utilisation de cette machine, des précautions de base doivent toujours être prises, y compris les précautions suivantes :  
**LIRE TOUTES LES INSTRUCTIONS AVANT D'UTILISER CETTE MACHINE.**

## **⚠ DANGER:**

**Pour réduire le risque d'incendie, d'électrocution ou de blessure :**

- Cette machine se compose de pièces, dont des assemblages à patin mobile et brosse, pouvant causer de graves blessures à leur contact.
- Ne laissez aucune partie du corps ou aucun vêtement entrer en contact avec ces pièces alors qu'elles sont en mouvement.
- N'essayez pas de changer les patins/brosses lorsque la machine est en marche.
- Ne laissez pas d'autres personnes venir à proximité de la machine pendant son fonctionnement.
- Ne laissez pas la machine fonctionner sans surveillance.
- Ne laissez pas la machine dans un endroit où du personnel non formé ou non autorisé pourrait l'utiliser.
- Ne faites pas fonctionner la machine si ses patins/brosses sont décentrés, endommagés ou manquants.
- N'utilisez pas la machine si des composants sont desserrés.

## LIRE ET CONSERVER CES INSTRUCTIONS



# CONSIGNES DE SÉCURITÉ IMPORTANTES

Lors de l'utilisation de cette machine, des précautions de base doivent toujours être prises, y compris les précautions suivantes :  
**LIRE TOUTES LES INSTRUCTIONS AVANT D'UTILISER CETTE MACHINE.**

**▲ AVERTISSEMENT:** Pour réduire le risque d'incendie, d'électrocution ou de blessure :

- Les batteries dégagent de l'hydrogène. Il peut en résulter une explosion ou un incendie.
- Éloignez toute source d'étincelle ou de flamme.
- Laissez les couvercles ouverts au moment de la charge de la batterie.
- Ne fumez pas à proximité des batteries.
- Évitez tout contact de la peau avec de l'acide contenu dans les batteries.
- Ne laissez jamais d'objets métalliques en travers la partie supérieure de la batterie.
- Travaillez à partir de l'arrière de la machine uniquement.
- Inspectez les supports de patin régulièrement. Un support de patin cassé peut se décomposer en fragments et causer des blessures.
- Faites preuve de prudence en cas d'utilisation de la machine sur une rampe ou une pente.
- Ne faites pas tourner la machine ou ne la laissez pas sans surveillance sur une rampe ou une pente.
- Rangez la machine à l'intérieur.
- Veillez à ce que les composants électriques de la machine restent secs.
- Ne lavez pas la machine sous pression.
- Toute modification apportée à cette machine peut provoquer des blessures ou endommager la machine.
- N'effectuez pas de modifications non autorisées à cette machine. Kärcher North America n'assume aucune responsabilité quant aux blessures ou dommages résultant d'une modification non autorisée apportée à la machine.
- Toute modification non autorisée apportée à cette machine annule toutes les garanties.
- Le moteur et le contrôleur de moteur deviennent chauds lorsque la machine est en marche, et ils le restent pendant un long moment après l'arrêt de la machine, ce qui peut causer de graves brûlures.
- Ne touchez pas à ces pièces de la machine jusqu'à ce qu'elles aient refroidi.
- L'utilisation de la machine peut causer des blessures aux yeux et au corps.
- Le port de lunettes de protection, chaussures de sécurité et vêtements de sécurité est recommandé pour faire fonctionner la machine.
- Les vibrations de la machine peuvent provoquer des sensations d'engourdissement ou des picotements dans les doigts ou les mains. Le port de gants est recommandé pour réduire les vibrations de la machine. Si les sensations d'engourdissement ou les picotements persistent, arrêtez la machine.
- Si les vibrations sont causées par des pièces desserrées, comme des brosses ou patins décentrés, serrez ou ajustez ces pièces avant d'utiliser de nouveau la machine.
- N'utilisez pas le brunissoir sur une surface inclinée. Cette machine est conçue pour être utilisée sur un plancher de niveau plat.

## LIRE ET CONSERVER CES INSTRUCTIONS

# CONSIGNES DE SÉCURITÉ IMPORTANTES

Lors de l'utilisation de cette machine, des précautions de base doivent toujours être prises, y compris les précautions suivantes :  
**LIRE TOUTES LES INSTRUCTIONS AVANT D'UTILISER CETTE MACHINE.**

**⚠ ATTENTION:** Pour réduire le risque d'incendie, d'électrocution ou de blessure :

- N'utilisez pas la machine à moins d'avoir été formé et autorisé.
- N'utilisez pas la machine sans avoir lu et compris le manuel d'utilisation.
- N'utilisez pas la machine dans des endroits inflammables ou comportant des risques d'explosion.
- Avant de mettre la machine en marche, assurez-vous que tous les dispositifs de sécurité sont en place et fonctionnent adéquatement.
- Avant de mettre la machine en marche, vérifiez son bon fonctionnement.
- Lors de l'utilisation de la machine, travaillez lentement sur les surfaces inclinées ou glissantes.
- Faites preuve de prudence lors de l'utilisation de la machine en marche arrière.
- Suivez toutes les instructions des fabricants figurant sur les contenants de produits chimiques lors de la manipulation, du mélange, ou de l'utilisation de produits chimiques.
- Lors de l'entretien de la machine, restez à l'écart des éléments mobiles.
- Ne portez pas de vêtements amples lorsque vous travaillez sur la machine.
- Bloquez les roues de la machine avant de la soulever ou d'utiliser un dispositif de levage.
- Utilisez des socles de levage qui supporteront le poids de la machine.
- Portez un dispositif de protection des yeux et des oreilles lors de l'utilisation d'air comprimé.
- Débranchez les raccordements de batterie avant d'entretenir la machine.
- Utilisez uniquement des pièces de rechange fournies par Kärcher North America ou par un distributeur agréé ou un centre de services de Kärcher North America.

## LIRE ET 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 -**DANGER**, **WARNING** and **CAUTION** and **FOR SAFETY**. The level of hazard intensity is determined by the following definitions:

### **DANGER:**

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

### **WARNING:**

**WARNING** - Hazards or unsafe practices which COULD result in personal injury to the operator or other people.

### **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 manufacturer approved replacement parts.

Les symboles suivants sont utilisés dans tout ce manuel, tels que décrits ici :

### **NIVEAU D'INTENSITÉ DU DANGER**

Il existe trois niveaux d'intensité du danger, identifiés par des termes d'avertissement - **AVERTISSEMENT**, **ATTENTION** et **POUR VOTRE SÉCURITÉ**. Le niveau d'intensité du danger est déterminé par les définitions suivantes :

#### **⚠ DANGER:**

**DANGER** - Les dangers ou des pratiques contraires à la sécurité qui **POURRAIENT** entraîner des blessures personnelles ou la mort.

#### **⚠ AVERTISSEMENT:**

**AVERTISSEMENT** - Les dangers ou des pratiques contraires à la sécurité qui **POURRAIENT** entraîner des blessures personnelles ou la mort.

#### **⚠ ATTENTION:**

**ATTENTION** - Les dangers ou des pratiques contraires à la sécurité qui pourraient entraîner des blessures personnelles légères ou des dégâts sur le produit ou d'autres biens.

#### ***POUR DES RAISONS DE SÉCURITÉ : Pour identifier les actions qui doivent être exécutées pour un fonctionnement sûr de l'équipement.***

Signaler immédiatement tout dommage subi par la machine ou fonctionnement défectueux. Ne pas utiliser la machine si elle ne fonctionne pas correctement. Ci-dessous se trouvent les informations indiquant les conditions potentiellement dangereuses pour l'opérateur ou l'équipement. Lire attentivement ces informations. Être conscient que ces conditions peuvent survenir. Repérer tous les dispositifs de sécurité sur la machine. Suivre les étapes nécessaires de formation du personnel qui utilise la machine.

#### ***POUR DES RAISONS DE SÉCURITÉ :***

**NE PAS FAIRE FONCTIONNER LA MACHINE :**

Sauf si le personnel est formé et autorisé.

Sauf si le manuel d'utilisation est lu et compris.

Dans des zones inflammables ou explosives.

Dans des zones contenant des objets susceptibles de tomber

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

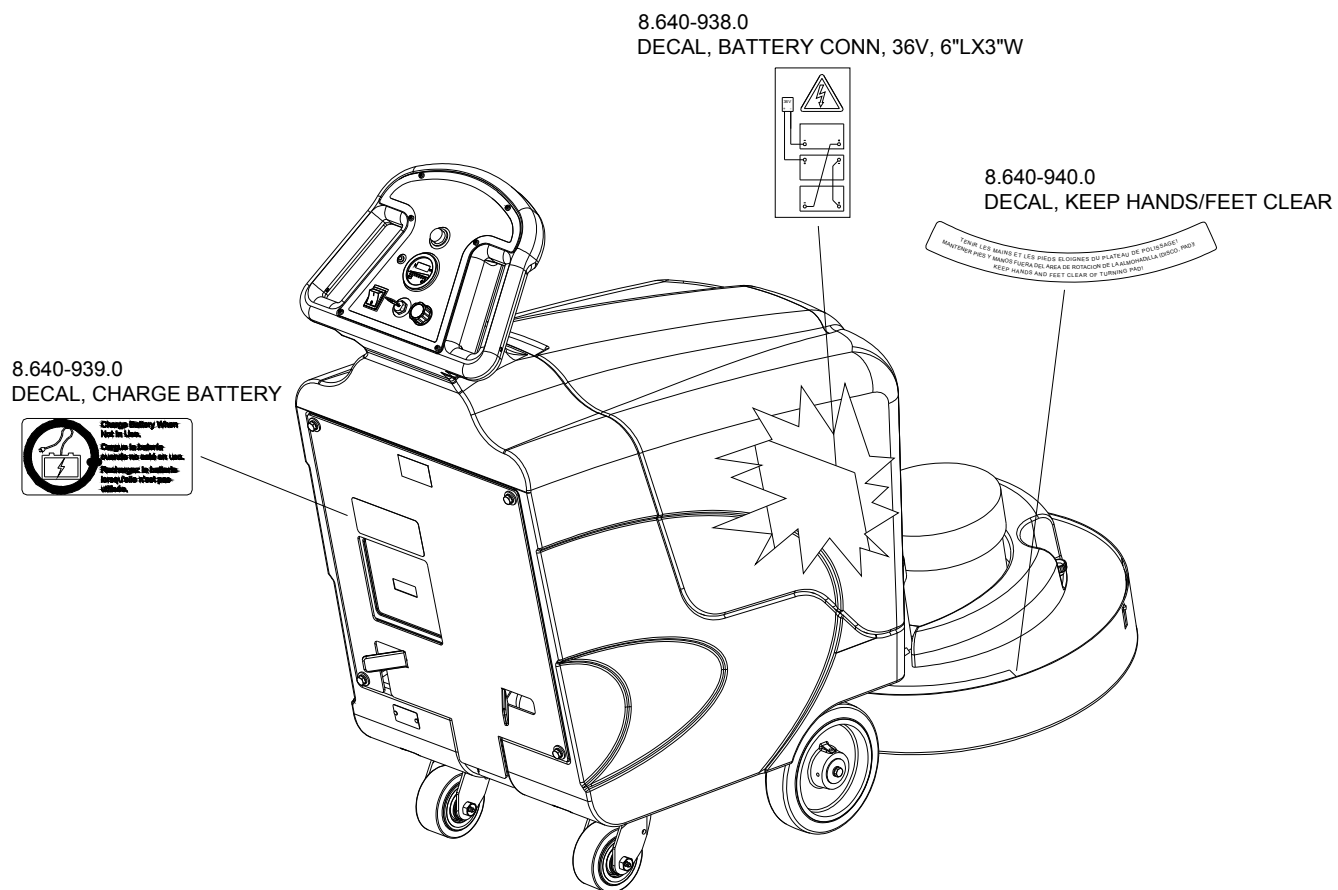
Éviter les pièces mobiles. Ne pas porter de vêtements, vestes, chemises ou manches vagues lors de l'entretien de la machine. Utiliser les pièces de rechange approuvées par le fabricant.

## Safety Labels

*NOTE: 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*

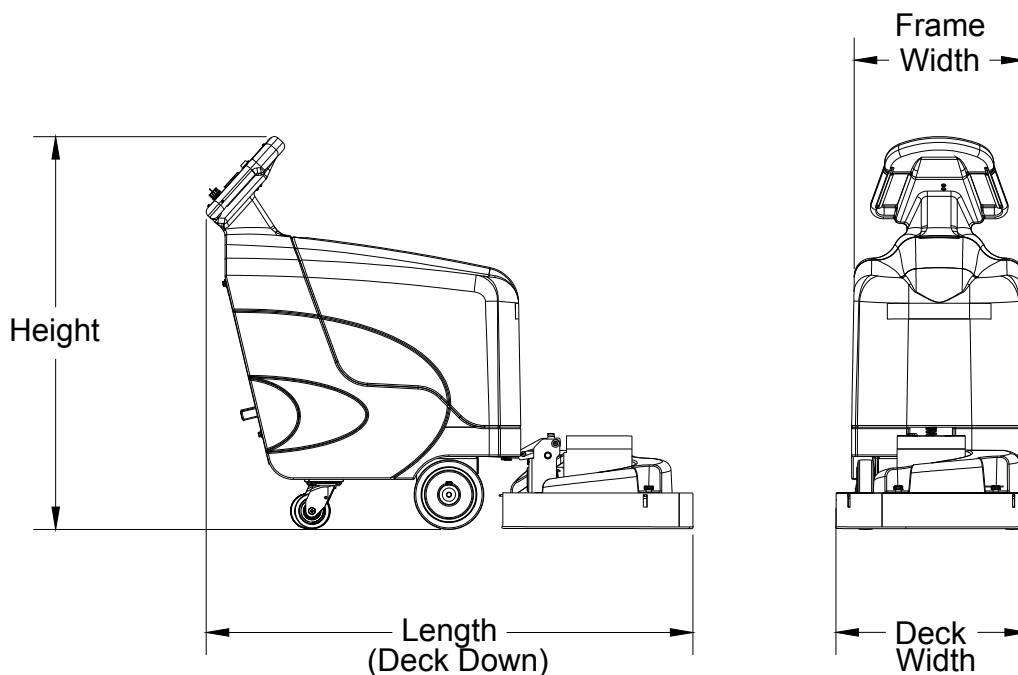


## Operations

### Technical Specifications

ITEM	DIMENSION/CAPACITY
Voltage	36VDC (3 - 12 VDC Batteries)
Batteries	12 VDC Lead Acid 228 Ah
	12 VDC AMG 235 Ah
Battery Weight	(3) Sealed 418 lbs
	(3) Lead Acid 378 lbs
Burnish Rate	$\pm 26,000$ ft <sup>2</sup> /hr (2415 m <sup>2</sup> /hr)
Burnish Width	20 in (51cm)
Burnish Pad	20 in (51cm)
Pad Speed	2000 rpm
Pad Pressure	Adjustable
Forward Speed	3.25 mph (5.23 km/h)
Reverse Speed	1.5 mph (2.4 km/h)
Burnish Motor	PM 2.5 hp (1.86 kw)
Transaxle	1/4 hp (186 watt)
Battery Charger	On-Board 36VDC 25A
Wheels	8 in (20.3cm) Solid
Noise Level	<70 dB
Vibration Level	Less than 2.5 m/s <sup>2</sup>
Weight (w/o Batteries)	219 lbs (99kg)
Overload Protection	Resettable Breakers
Operating Time	Approximately 3 hrs

ITEM	MEASURE
Length 20in (Deck Up)	49in (124cm)
Length 20in (Deck Down)	58in (147cm)
Deck Width	22in (56cm)
Frame Width	22in (56cm)
Height	45in (114cm)



**⚠ 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.

**⚠ ATTENTION:**

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 the Machine Works

This machine is designed and manufactured for burnishing indoor hard floor surfaces. Kärcher North America does not recommend use of this machine in any environment other than an indoor environment. Battery powered floor equipment is designed and manufactured for commercial use only. These machines are designed to burnish most modern types of floors including composition tile, stone, marble, terrazzo, and resilient floor covering, and some coated wood floors.

### Operator Responsibility

The operator is responsible for performing the recommended daily maintenance and checkups of the machine to keep it in good working condition. The operator must inform the service mechanic or supervisor when recommended maintenance procedures are required as prescribed in the MAINTENANCE section of this manual.

Read this manual carefully before operating this machine.

*FOR SAFETY: Do not operate machine before reading and understanding the operation manual.*

Check the machine for shipping damage.

Keep your machine regularly maintained by following the maintenance information in this manual. A service contract for the Lightning BDP 50/2000 W is available from a Kärcher North America Authorized Distributor or Service Center.

Order parts and supplies only from an Authorized Kärcher North America Distributor. Use the parts illustration section of your manual when ordering parts. During and after operation, perform the recommended daily and hourly procedures outlined in the Maintenance Chart.

### Test for Operator-Ear Sound Pressure Level

The machine has been measured and rated on the operator-ear sound pressure level for hand-guided floor treatment and floor cleaning machines for industrial use. All tests are performed in accordance with European Machinery Directive (2006/42/EC).

- Outdoor test area consists of a flat open space free from effects of signboards, buildings or hillsides for at least 15m (50ft) from the center of the test surface. Indoor tests are conducted in a semi-anechoic or sound deadening room.

- The test surface is a single sheet of floor covering at least 1m (3.3ft) wider and longer than the equipment being tested. In order to not affect the sound reading, the observer taking readings is at least 2m (6.6ft) from the equipment being tested, or standing directly behind the operator.
- All machines are tested while stationary and centered on the test surface. With the traction drive in neutral (where applicable) the test is conducted with the machine at maximum engine or motor speed as specified by the manufacturer.
- The operator is located in the normal operating position with the microphone or meter supported independent of the machine, 1,68m (66in) above the test surface, 25cm (10in) to the right and left centerline of the operators position, and 20cm (8in) to the rear most point of the handle, with the handle in the most forward position.
- The sound level meter is observed for a minimum of 5 seconds or until a stabilized reading is obtain. The maximum repeatable sound level observed during the test at each microphone position is recorded and documented.

### Test for Hand-Arm Vibration at the Grip Surface of Hand-Guided Machinery

The machine has been measured and rated on the vibration at the machine-hand contact surface of hand-guided machines that are provided with handles in accordance with European Machinery Directive (2006/42/EC).

- The test area consists of a flat open floor area that allows the machine to be operated normally.
- The transducer is mounted firmly at a point halfway along the length of the handle where the handle would normally be held.
- Machines are tested while stationary, with all mechanisms necessary for the equipment to perform its intended functions engaged and the traction drive in neutral (if applicable). The machine will be tested at maximum engine or motor speed as specified by the manufacturer of the subject machine.
- The measurements are recorded from the dominant axis.



## Machine Preparation

### Unpacking the Machine

1. Cut and remove green bands holding the box to the pallet.
2. Remove staples attaching the box to the platform at the edge of the box.
3. With two people, one at either end of the box, lift box straight up and off the machine.
4. Remove loose accessories from the top of machine.
5. Cut and remove the bands across the top of the machine and across the burnish head. Lower the attached ramp.
6. If the machine has batteries then remove the battery cover and plug the battery pack plug into the machine, turn on the key, drive the machine down the ramp off the pallet. If the machine does not have batteries, pull the machine down the ramp and off the pallet. See the "Connecting the batteries" section of the manual.

### Connecting the Batteries

1. Place the batteries in the machine oriented as shown in diagram.
2. Connect the batteries as shown in the battery connection diagram.

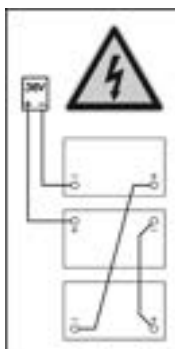
### **⚠ DANGER:**

Incorrect connection of batteries can cause explosion and/or serious injury.

### **⚠ DANGER:**

Une connexion incorrecte des piles peut provoquer une explosion et / ou des blessures graves.

3. Double check battery connections.
4. Connect the battery pack plug to the machine.



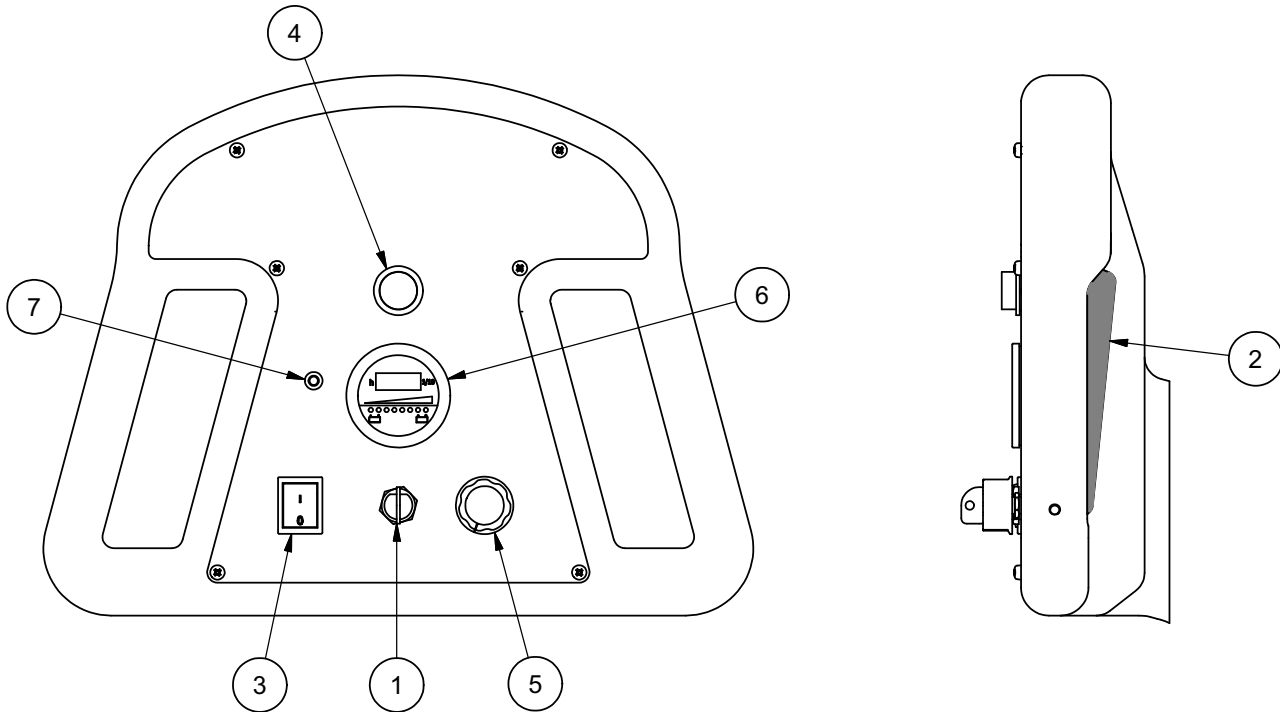
## Installing Steel Skirt

1. Lift the deck upward about 90 degrees by pulling up on the front of the deck. At this point, the tilt latch will hold the deck in the pad change position. (Ref. Machine Operation - Installing/Changing Burnishing Pad)
2. Remove steel skirt from bubble wrap packing and on the outside of the skirt, loosen the 1/4" hex bolt with jam.
3. Slide the skirt onto the burnish head aligning the slots in the skirt with the tabs on the deck. Make sure the 1/4" bolt is at the back of the shroud.



4. Tighten the 1/4" bolt until the skirt is snug around the deck but also floats up and down freely.
5. Tighten jam nut and lower deck to burnish position. (Ref. Machine Operation: Installing / Changing Burnishing Pad)

## Operations



## Controls

1. Key Switch
2. Handle Lever
3. Burnish Switch
4. Reverse Switch
5. Traction Speed Control
6. Hour Meter / Battery Discharge Indicator
7. Alarm LED

1. **Key Switch** - Turns the machine on/off.
2. **Handle Lever** - When the lever is engaged the machine will move forward. If the Burnish switch is on, the pad will also start turning. If the burnish head is tilted up into the pad change position, the burnish motor will not engage.
3. **Burnish Switch** - Turns burnish function on/off. The burnish motor will not engage unless the burnish switch is on and the handle lever is engaged. If the burnish head is tilted up into the pad change position, the burnish motor will not engage.

*NOTE: The machine needs to be moving when the burnish switch is turned on or off in order to keep from burning the floor.*

4. **Reverse Switch** - Hold down this switch while the handle lever is engaged and the machine will move in reverse. Once the reverse switch is released the machine will start moving forward.
5. **Traction Speed Control** - Turn the knob clockwise to increase speed. Turn the knob counter-clockwise to decrease speed.
6. **Hour Meter / Battery Discharge Indicator** - The LCD displays the number of burnishing hours. The machine will only count hours while burnishing. The row of LEDs display the charge level of the battery pack. When all the yellow LEDs are lit, the battery pack is fully charged. In order to protect the battery pack, when the red LED is lit, the burnish motor will stop and the machine should be recharged.
7. **Alarm LED** - Displays trouble codes as a blink pattern. In normal operation this LED will be off. If it comes on, refer to the troubleshooting section.

## Operations

### Over Current Protection

70A Breaker - Over current protection for the Burnish Motor. Push to reset.

40A Breaker - Over current protection for the Traction Drive. Push to reset.

3A Fuse In-Line holder - Over current protection for key switch.



### Onboard Battery Charger

To charge the batteries, first drive the machine to a flat, dry, well-ventilated area then turn the machine off. If using lead acid batteries, check the water level in all the battery cells. If the level is low, add just enough distilled water to cover the plates. **\*\*DO NOT OVERFILL.\*\***

Then plug the charger cord into a wall socket. The battery charger will initialize and then soft start the charging cycle.

### ⚠ WARNING:

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

### ⚠ CAUTION:

When servicing machine, wear protective gloves and goggles. Avoid contact with battery acid.

### ⚠ ATTENTION:

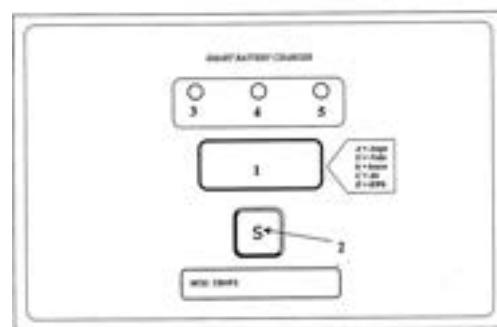
Portez toujours des lunettes et des vêtements de protection pour travailler sur les batteries. Évitez tout contact avec l'acide de batterie.

### Battery Charger Controls:

1. Three-digit display + symbol (1), to view A=charging current, U=battery voltage, h=charging time, C=charging ampere-hours (AH), E=energy used to charge (KWh)
2. Button for the Selection of the display mode (2): A, U, h, C, E. After 10 seconds the display returns to the display of charging current.
3. Red control indicator (3): when it is on, the charging cycle has started.
4. Yellow control indicator (4): when it is on, the final phase of the charging cycle has started.
5. Green control indicator (5): when it is on, the charging cycle has finished.

Once the charge cycle is complete, the charger will remain active in a trickle charge mode to maintain the charge on the batteries until the charger is unplugged from the wall socket.

FRONT PANEL OF BATTERY CHARGER MODEL CBNF2



## Charger Settings

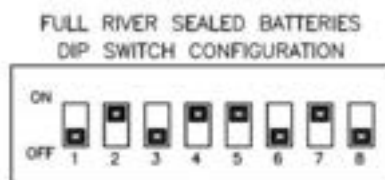
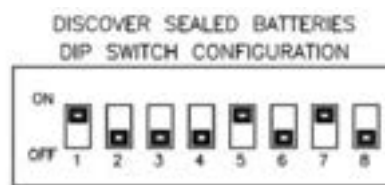
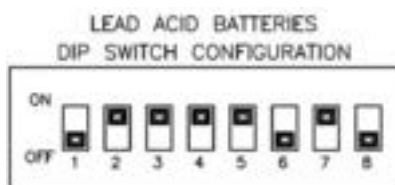
The On-Board battery charger settings need to be set for your battery type before charging. Failure to properly set will result in battery damage. To determine your battery type, see battery label or contact your battery supplier.

To change charger settings:

1. Unplug the charger.
2. Peel back the corner of the display label.



3. Set the DIP switches, according to your battery pack, as shown below. If your battery pack type is not listed, contact Kärcher North America.



## Operations

### Battery Charger Fault Codes

Fault	Description	Remedy
No Display	No display on charger, no LED indicators.	Check that plug is connected to an operating wall outlet. Check 20A fuse.
bat	Incorrect battery connection or no battery connection	Check the connection and the polarity of the battery connection.
E01	The maximum voltage admissible by the battery has been exceeded. The charge cycle was interrupted.	Restart the charge cycle. If problem persists, battery pack may be damaged.
E02	The maximum voltage admissible by the battery has been exceeded. The charge cycle was interrupted.	Restart the charge cycle. If problem persists, battery pack may be damaged.
E03	The maximum time for the charging phase has been exceeded. The charge cycle was interrupted.	Restart the charge cycle. If problem persists, battery pack may be damaged.
Sct	The total safety time has interrupted the charge cycle.	Restart the charge cycle. If problem persists, battery pack may be damaged.
Srt	Internal charger fault.	Replace battery charger.



## Operations

The Burnish components of the machine are:

- Burnish pad holder
- Burnish pad
- Burnish motor
- Dust Collection Bag

As the machine moves forward, the burnish pad shines the floor. Any excess dirt or wax gets picked up by the pad and distributed into the dust collection bag via the dust collection system.

### Pre-Operation Checklist

- Check that the Burnish Switch is in the off position.
- Check the pad holder to ensure there are no breaks or cracks.
- Check correct connection of the batteries.
- Check that the Dust Collection Bag is empty.
- Release caster breaks.

### Turning on the Machine

1. Complete pre-operation check.
2. Turn the Key to the ON position.
3. Turn on the burnish switch and engage the handle levers.
4. Adjust speed as needed with traction speed control knob.

### Changing Direction

When the handle levers are engaged the machine will travel in the forward direction. To travel in reverse, while the handle levers are engaged, hold down the reverse switch. The machine will change from forward direction to reverse direction. The machine will continue in the reverse direction until the reverse switch is released.

### Stopping and Turning Off Machine

To stop the machine, release the handle levers and the machine will smoothly break to a stop and after 3 seconds the burnish motor will stop. When turning the machine off, turn off the burnish switch and then turn off the key switch.

### Installing/Changing Burnishing Pad

1. Make sure the Burnish Switch is OFF.
2. Lift on the front of the deck and tilt deck into the pad change position.



3. Remove the center device by turning counter clockwise and carefully remove the old pad from the Velcro material.

#### **⚠ CAUTION:**

Carefully inspect the pad holder for cracks or damage! replace if necessary.

#### **⚠ ATTENTION:**

Inspectez soigneusement le support de patin à la recherche de fissures ou de dommages. Remplacez-le au besoin.

4. Pull center from new pad, align pad on pad holder and secure with centering device by turning clockwise.



5. Press pad firmly onto Velcro.



6. Lift the front of the shroud and lift the shroud release lever and SLOWLY let the shroud return to the down position.

### **⚠ CAUTION:**

Keep hold of the deck to avoid injury!

### **⚠ ATTENTION:**

Gardez la main sur le module pour éviter les blessures.

## Dust Bag Removal

The machine has two dust bag options. A re-usable cloth bag and a disposable paper bag. Monitor the dust bag carefully and empty/change as needed. The dust collection system will not operate effectively when the dust bag is full. Under heavy burnishing conditions the dust bag should be emptied/changed every hour.

1. Turn off the Burnish Motor.
2. Unscrew the knobs holding the dust bag cover to the shroud.



3. Pull the dust bag off the dust tube.



4. Empty/Change dust bag.

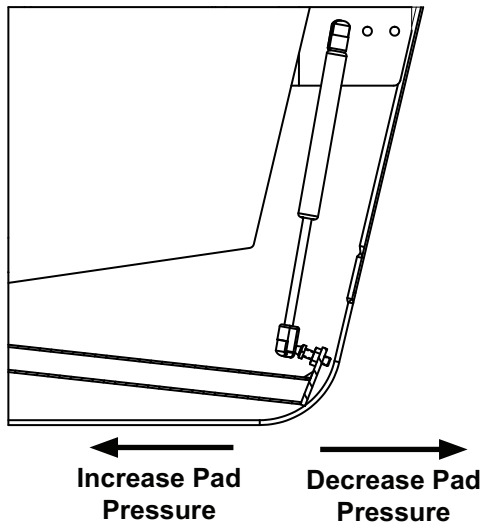
## Operations

### Pad Pressure Adjustment

The pad pressure is set at the factory for optimal burnish performance in most conditions. If the pad pressure needs to be adjusted, follow the procedure outlined below.

*NOTE: Pad pressure adjustments should only be performed by a qualified technician.*

1. Turn burnish switch off.
2. Remove back panel.
3. Adjust ball end to increase or decrease pad pressure as shown in diagram.



### Storage

1. Machine should be stored in a dry environment.
2. Store machine away from objects that may fall and damage it.
3. Never store burnisher near an open flame or heat producing device.
4. Make sure burnisher is cleaned properly by wiping machine down with damp cloth before storing.

#### **⚠ CAUTION:**

Never pressure wash machine.

#### **⚠ ATTENTION:**

Ne lavez pas la machine sous pression.

### Operation on Inclines

#### **⚠ CAUTION:**

When using the machine, go slowly on inclines.

#### **⚠ ATTENTION:**

Lors de l'utilisation de la machine, travaillez lentement sur les surfaces inclinées ou glissantes.

#### **⚠ CAUTION:**

Do not burnish on an incline.

#### **⚠ ATTENTION:**

N'utilisez pas le brunissoir sur une surface inclinée.

The maximum rated climb and descent incline is 6°.

### Post Operation Checklist

Turn the machine OFF and perform the following checks:

- Check for wire, string, or twine wrapped around the burnish pad.
- Check Wire fray or damage.
- Empty the Dust Collection Bag.
- Inspect batteries.
- Plug in on-board battery charger.

### Lubrication of Rear Casters

Each of the two rear casters has two grease fittings. Lubricate each caster with a grease gun every 100 hours of machine operation.



### Caster Parking Brake

The two rear casters are equipped with brakes. To set the brake, push down the "ON" side of the brake lever. To release the brake push down the "OFF" side of the brake lever. The caster breaks should only be used as a parking brake if needed. Before moving the machine make sure both breaks are released.

### Body Maintenance

The body may be cleaned with a damp cloth to remove dust and scuff marks. More stubborn scuff marks on the tank exterior can be removed with a vinyl cleaner.

## Maintenance

### Battery Maintenance

The batteries are deep cycle 12 volt batteries. The lifetime of the batteries is limited by the number of charges the batteries receive. To get the most life from the batteries, charge them when the battery discharge LED (Red) starts to blink (20% charge left). Use only the on-board battery charger supplied to charge the batteries.

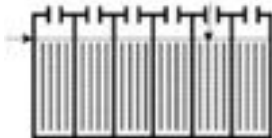
Periodically clean the top surface of the batteries and the terminals, and check for loose connections. Use a strong solution of baking soda and water. Brush the solution sparingly over the battery tops, terminals, and cable clamps. **DO NOT ALLOW ANY BAKING SODA SOLUTION TO ENTER THE BATTERIES!** Use a wire brush to clean the terminal posts and cable connectors. After cleaning, apply a coating of clear battery post protectant to the terminals and the cable connectors. Keep the tops of the batteries clean and dry.

To prevent a possible short circuit, keep all metallic objects off the top of the batteries. Replace any worn or damaged wires.

### Lead Acid Batteries

Never add acid to the batteries, only distilled water. Always keep the battery caps on, except when adding water or taking hydrometer readings.

Check the electrolyte level in each battery cell before and after charging, and after every 50 hours of operation. Do not charge the batteries unless the fluid is slightly above the battery plates. If needed, add just enough distilled water to cover the plates. Never add acid to the batteries. Do not overfill.



Measuring the specific gravity, using a hydrometer, is a way to determine the charge level and condition of the batteries. If one or more of the battery cells test lower than the other battery cell (0.050 or more), the cell is damaged, shorted, or is about to fail. Sealed batteries no additional maintenance required.

### ⚠ CAUTION:

When working with batteries, always wear eye protection and protective clothing.

### ⚠ ATTENTION:

Portez toujours des lunettes et des vêtements de protection pour travailler sur les batteries

### ⚠ CAUTION:

Batteries emit Hydrogen Gas. NO SMOKING!

### ⚠ ATTENTION:

Les batteries dégagent de l'hydrogène. Ne fumez pas.

### ⚠ CAUTION:

Battery damage will occur if the electrolyte level does not cover the battery plates.

### ⚠ ATTENTION:

La batterie risque d'être endommagée si le niveau d'électrolyte ne couvre pas les plaques de la batterie.

### ⚠ CAUTION:

Machine and/or battery damage can occur if the electrolyte level is above the bottom of the tube in each cell.

### ⚠ ATTENTION:

La machine et/ou de la batterie peut être endommagée si le niveau d'électrolyte est inférieur au fond du tube de chaque élément de batterie.

### **CAUTION:**

Never use tap water to fill battery cells. Tap water contains contaminants that will damage the battery. Only use distilled water to fill battery cells.

### **ATTENTION:**

N'utilisez jamais d'eau du robinet pour remplir les éléments de la batterie. L'eau du robinet contient des contaminants qui endommageront la batterie. Utilisez uniquement de l'eau distillée pour remplir les éléments de la batterie.

### **Body Maintenance**

The body may be cleaned with a damp cloth to remove dust and scuff marks. More stubborn scuff marks on the tank exterior can be removed with a vinyl cleaner.

### **Repacking the Machine**

Refer to Unpacking section and repack machine using original packing materials and container.

### **Transporting the Machine**

When shipping the machine, make sure the batteries are disconnected and the machine is secured in the transporting vehicle.

## Maintenance

### Service Schedule

Maintenance	Perform at marked interval					
	Daily	25 Hours	50 Hours	100 Hours	200 Hours	1000 Hours
Empty/Clean Dust Bag	*					
Inspect Pad Holder	*					
Check for loose/missing nuts or screws	*					
Check wiring harness for frays or cuts		*				
Inspect Battery water level (Lead Acid Only)			*			
Tighten nuts and screws				*		
Lubricate rear casters				*		
Check Burnish Motor ampere draw					*	
Check brushes on transaxle motor and burnish motor						*

### Alarm Codes

If the following alarm codes persist, troubleshooting should be performed by a Kärcher North American Certified Technician. A programming handset may be required for troubleshooting.

# of Flashes	Description	Possible Cause
<b>1 (Fast)</b>	Low Battery Voltage	The battery needs charging or there is a bad connection to the battery. Check the connections to the battery. If the connections are good, try charging the battery.
<b>1 (Medium)</b>	Handle Lever Engaged at Key On	Disengage the handle lever, key off and key back on to clear
<b>1 (Slow)</b>	Machine Time Out	The machine has been left with the key on. Turn the key off and then back on again.
<b>2</b>	Motor Disconnected	The motor has a bad connection. Check all the connections and leads between the motor and the controller.
<b>3</b>	Motor Wiring Trip	The motor has a short circuit to a battery. Check all the connections and leads between the motor and the battery.
<b>6</b>	Inhibit Active	The controller is being inhibited from driving. Check the state of the Inhibit inputs.
<b>7</b>	Throttle Trip	A throttle trip is indicated. Make sure that the throttle is in the rest position before switching on the vehicle.
<b>8</b>	Possible Controller Trip	A possible controller trip is indicated. Make sure that all connections are secure.
<b>9</b>	Solenoid Brake Trip	The parking brakes have a bad connection. Check the parking brake and motor connections. Make sure the controller connections are secure.
<b>10</b>	High Battery Voltage	An excessive voltage has been applied to the controller. This is usually caused by a poor battery connection. Check the battery connections.

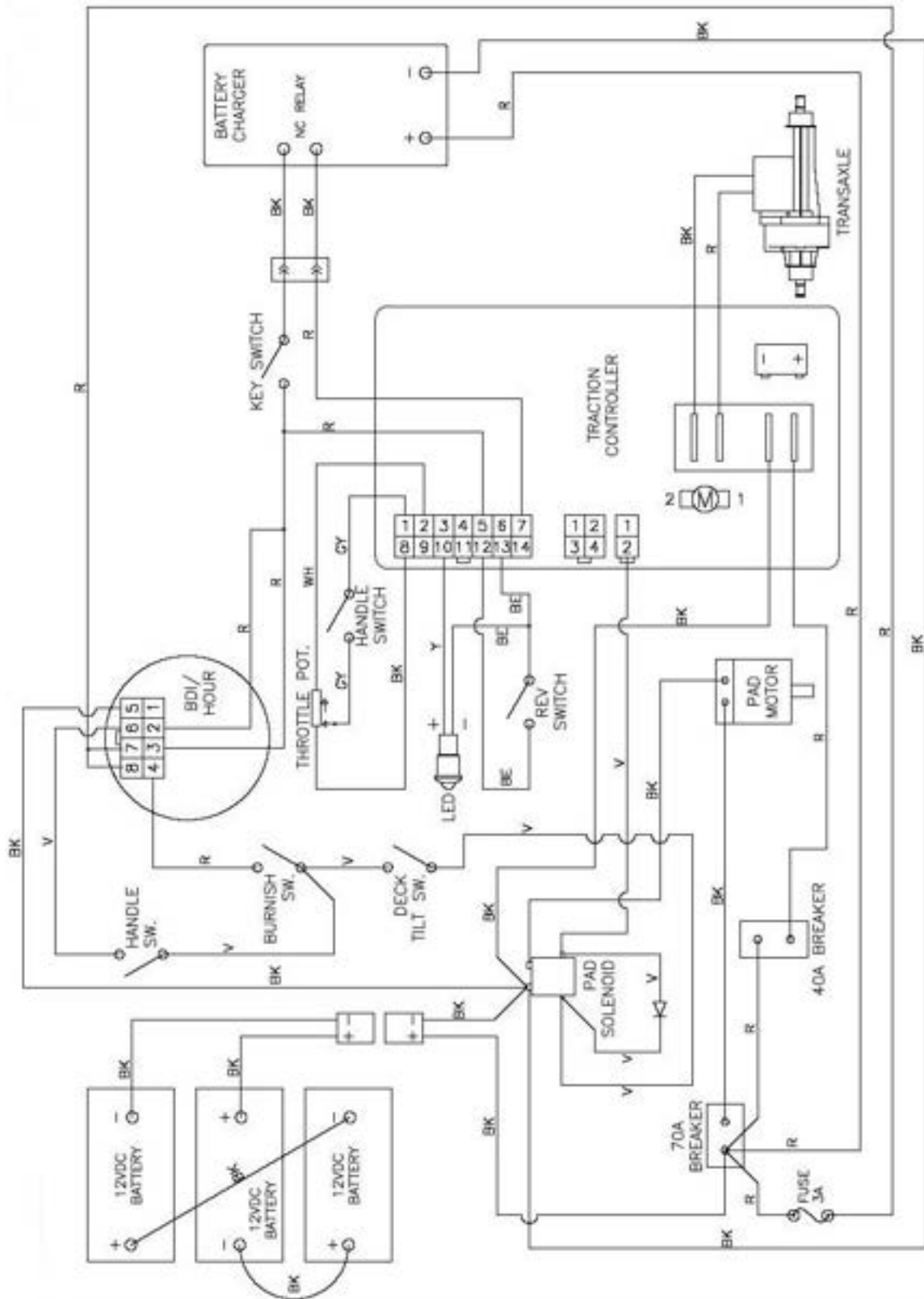
**Troubleshooting**

<b>Problem</b>	<b>Possible Cause</b>	<b>Remedy</b>
<b>Machine will not turn on.</b>	Breaker tripped	Push breaker button to reset.
	Incorrect battery connection	Check batteries are wired together correctly via the battery connection diagram, check that the Anderson connectors are plugged together.
	On-board battery charger plugged in	Unplug the charging cord from the machine.
	Key switch failure	Check key switch is functioning and wiring to the key switch is correct.
	Failed fuse	Check the fuse in the in line fuse holder.
<b>Burnish motor will not turn on</b>	Deck tilted into pad change position	Lower the deck to the burnish position.
	Speed control knob turned all the way counterclockwise (off)	Turn speed control knob clockwise to increase speed
	Burnish switch off	Turn burnish switch on.
	Handle levers not engaged	Engage handle levers.
	Battery lockout	Batteries need to be charged.
<b>Red LED flashing on Dash</b>	Check alarm code reference sheet	Troubleshoot accordingly.
<b>Machine exhibits poor burnishing performance</b>	Pad dirty	Remove debris or string/twine from pads; clean pad; replace pad.
	Incorrect pad	Use more aggressive burnishing pad.
	Pad worn down	Replace pad.
<b>Machine exhibits very aggressive burnish performance</b>	Gas spring faulty	Check ampere draw of burnish motor (should not be above 50 amps); replace gas spring.
	Incorrect pad	Use less aggressive burnishing pad.
<b>Dust collection not working properly</b>	Dust collection is bad, is not collecting dust	Empty dust bag.
		Check the dust tube to see if there is an obstruction.
	Skirt is not sealing to the floor	Skirt is bent or damaged. Replace if necessary.
		Adjust the skirt to fight tightly against the seal, but still able to move freely. Check wear edge on bottom of the skirt and replace if necessary.

## Suggested Spare Parts

<b>PART NO.</b>	<b>REF NO.</b>	<b>DESCRIPTION</b>	<b>NOTES</b>
86406560	MP414000	PADHOLDER, 20", W/ PAD RETAINER	PAD DRIVER
86406950	MP432400	RETAINER, PAD, BLUE	PAD DRIVER
86406800	MP425200	SKIRT, STEEL, 20", ASM	PAD DRIVER
86406570	MP414100	BAG, DUST, CLOTH	PAD DRIVER
86406580	MP414200	BAG, DUST, PAPER, 3 PACK	PAD DRIVER
86406390	MP139800	SKIRT EDGING - 6FT (183 CM)	PAD DRIVER
86409080	MP265100	115V CHARGER FUSE	CHARGER
86406660	MP415200	GAS SPRING	CHARGER
86406440	MP234700	FUSE, GLASS, 3 AMP1	CONNECTION
86409070	MP223500	BATTERY, 12V, LEAD ACID	CONNECTION
86409090	MP413600	BATTERY, 12V, SEALED	CONNECTION
86409120	MP433200	BRUNISH MOTOR BRUSHES	SUBASSEMBLIES
86409130	MP433300	TRANSAXLE MOTOR BRUSH	WHEELS







# THANK YOU!

## MERCI! ¡GRACIAS! DANKE!



Register your product and benefit from many advantages.

Enregistrez votre produit et bénéficiez de nombreux avantages.

Registre su producto y aproveche de muchas ventajas.

Registrieren Sie Ihr Produkt und Sie von vielen Vorteilen.

[www.kaercher.com/welcome](http://www.kaercher.com/welcome)

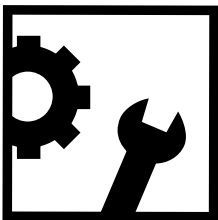


Rate your product and tell us your opinion.

Évaluez votre produit et donnez-nous votre opinion.

Reseña su producto y díganos su opinión.

Bewerten Sie Ihr Produkt und sagen Sie uns Ihre Meinung.



[www.kaercher.com/dealersearch](http://www.kaercher.com/dealersearch)

**Kärcher North America**  
6398 N Kärcher Way  
Aurora, CO 80019  
Phone: +1 800 444-7654

