POWERHANDLING

SMARTER. SMALLER. STRONGER.

POWERROLL G SERIES

ASSEMBLY, OPERATION, SAFETY AND MAINTENANCE MANUAL

POWERROLL

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Instructions upon Receipt of Machine

Please note if there is any noticeable damage to the exterior packaging and if so, immediately inform PowerHandling of the damage. If possible also take digital photos of the damaged box and email them to sales@powerhandling.com. If there is no physical damage to the outside packaging, place the box on the ground or work table with the "THIS WAY UP" arrows pointing up and open from the top.

IMPORTANT NOTE:

ENSURE ALL PACKAGING IS RETAINED

Do not discard packaging. After removal of machine, place all packaging into outer shipping containers and store. By retaining the original packaging and instructions the unit can be repacked securely should you need to return the machine at any time for repairs, analysis or upgrade by a PowerHandling facility.

Packaging varies according to the model, etc. In all cases the packaging has been custom designed to safely and securely protect the machine in transport. Correct packaging is critical in being able to transport PowerRolls without damage in transit as the units are extremely dense (very heavy for their size) and must be securely packed in sturdy packaging that prevents movement of any parts of the machine within the outer shipping container.

Open the outer and inner boxes to reveal the equipment inside, typically consisting of (1) PowerRoll, (2) charged battery packs and (1) charger. Ensure all inside boxes have been opened, as parts are sometimes shipped with machines. Verify all components in the box match the packing slip. If everything is accounted for, unpack and assemble the machine per the Machine Assembly section of the manual. If any items are missing please contact PowerHandling before continuing.

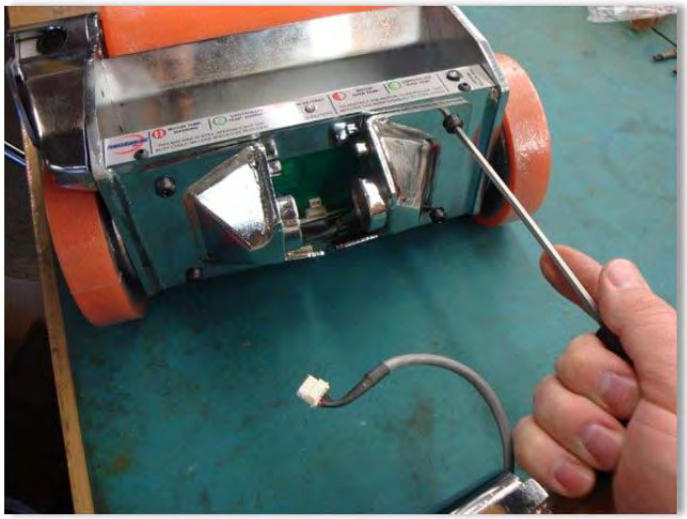
Please note that when sending a PowerRoll back to the factory, any damage incurred due to incorrect or insufficient packaging is the responsibility of the sending party.

Please retain original packaging in the event that such return transportation is ever required.

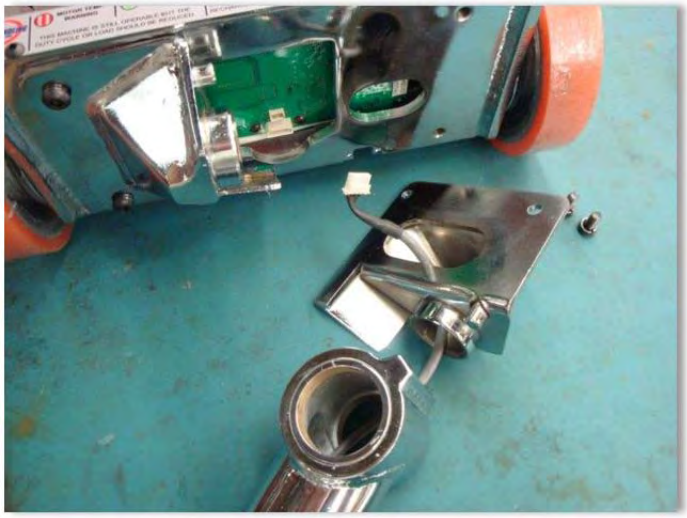
Out of Box Assembly Instructions

Swivel Handle ("S") G-Series PowerRolls are shipped fully assembled - no customer assembly required. Swivel Pivot ("SP") & Center Straight ("C") Handle G-Sereis PowerRolls require the handle assembly be attached to the base machine unit and the quick-connect electrical connections completed.

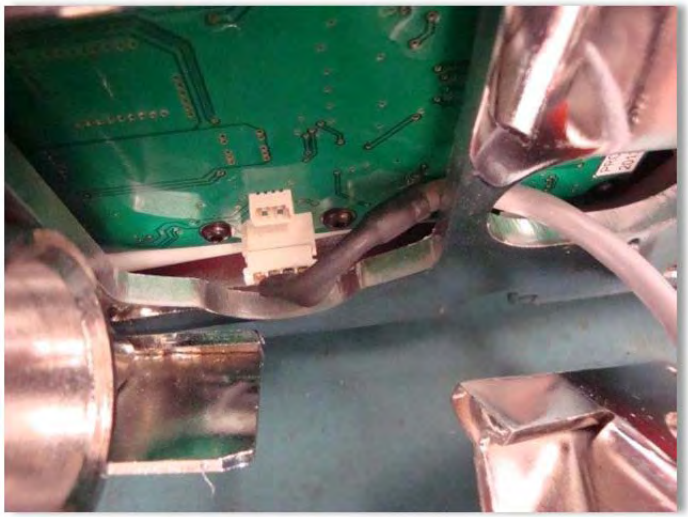
Swivel Pivot ("SP") Handle Assembly Instructions



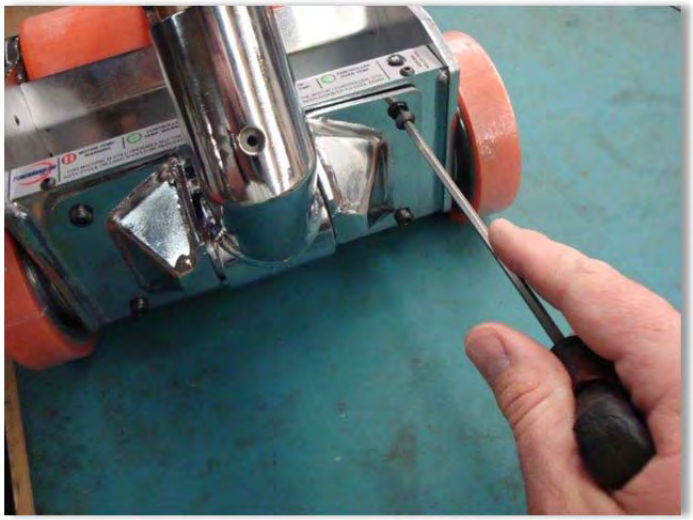
STEP 1: Remove the right side pivot support from the machine base.



STEP 2: Route wire from pivot arm through the right side pivot support as shown.



STEP 3: Route wire through the hole in the back of the machine base and connect to control board.



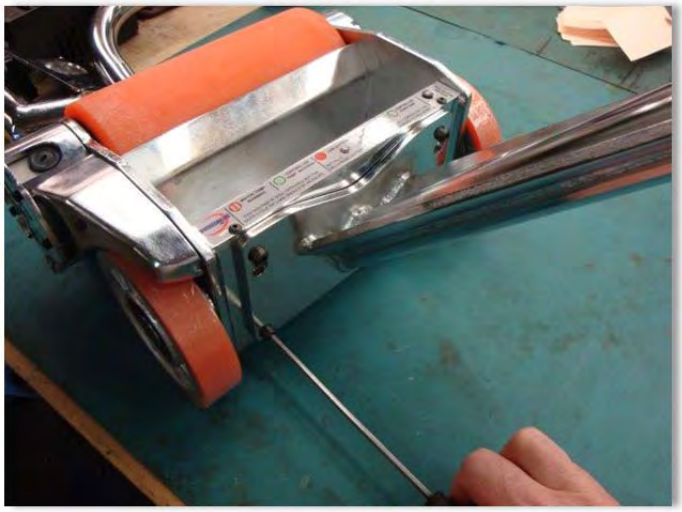
STEP 4: Install the right pivot support and tighten all four pivot support bolts. Then insert a battery pack and ensure the drive roller rotates when given a throttle input.

Center Straight ("C") Handle Assembly Instructions

STEP 1: Loosely install the four handle attachment screws and lock washers on the machine base.

STEP 3: Position Handle Mount over mounting screws & lock washers and slide down. Ensure all lock washers are seated under screw heads and not trapped between the mount and base.

STEP 2: Carefully insert the (male) connector from the wire harness of the handle to the (female) connector on the control board.



STEP 4: Tighten all four handle mounting screws and then insert a battery pack and test the drive roller rotates when given a throttle input.

Battery Care

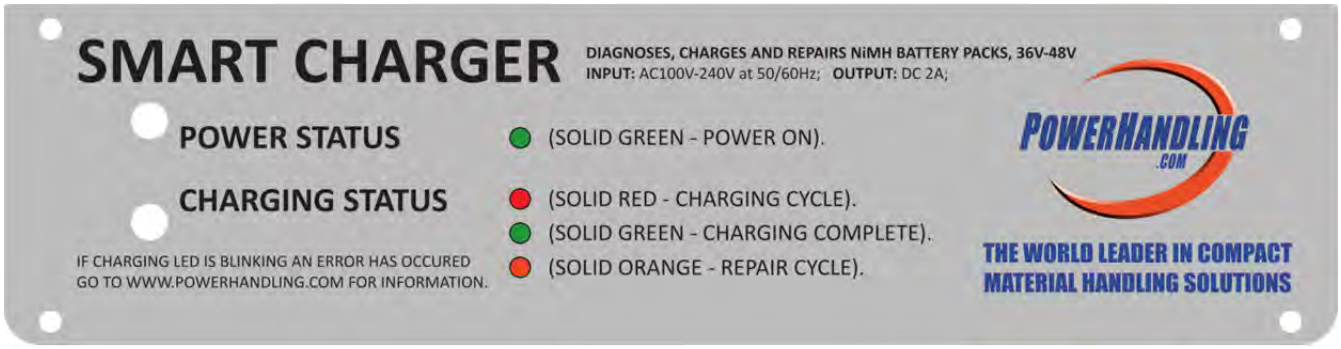
All battery packs are fully charged before shipping from the factory. If you have recently received a PowerRoll from us the battery packs should be ready to use. If the battery packs have been stored before placing them in service please charge them prior to use.

When the battery pack has completed its charging cycle, the smart charger will maintain a “trickle charge” to keep the battery at peak voltage. Note that the battery pack will begin to self-discharge when removed from the charger so the longer it remains off the charger the less its capacity will be when it is finally inserted into a PowerRoll and used.

The Charger has two LED lights to indicate the state of the charger and battery pack, as per the table below:

POWER STATUS (UPPER LED)	**MEANING**
Green	The charger is connected to an appropriate power source.
CHARGING STATUS (LOWER LED)	**MEANING**
Off	Either there is no battery pack on the charger or if there is, it is not making terminal connection (not registering).
Red	The charger is “fast charging” the inserted battery pack.
Green	The battery pack is mostly charged and “slow charging” for the final stage or it is fully charged and trickle charging only.
Orange	The battery pack is undergoing a “REPAIR” cycle. This is most commonly because the battery pack has been over-depleted.
Flashing Green	Thermistor circuit error.

Below is a copy of the decal on the charger summarizing the above information:



General Principle of Operation

To overcome the inertia of a heavy load, PowerRolls require a significant amount of traction – both with the load itself and the ground on which it's being moved. Regardless of the amount of power (or specifically 'torque') generated, the load will not move without the necessary traction.

PowerRolls gain this traction by directing the weight of the load down onto the drive roller to generate the traction required. In the case of moving cylindrical loads, small diameter / lighter loads can in fact be more of a problem than larger heavier loads as the weight transfer onto the drive roller is not as good. This problem will be apparent if the drive roller is observed to slip or spin against the load rather than wedging in under the load and rotating it. Please refer to the "Trouble-Shooting" section for suggestions on how to address this issue.

General Overview of Models Available Within the PowerRoll Series

PowerHandling's product line and features are constantly being updated and improved so please check for more information and updates at www.powerhandling.com.

- The G–Series PowerRoll can be used in two distinct applications:
    - Rolling Applications -such as rolling paper rolls, cable reels or tires on vehicles; or
    - Pushing Applications - such as trolleys, carts etc., using one of 3 optional pusher brackets. Note in such case a center "C" Handle is required and the bracket can be slipped on and off to allow both rolling AND pushing of loads.
- Further model distinctions apply according to:
    - The gearbox, specifically the amount of reduction of the gearbox (three versions available), influences the torque ouptut. Note the gearing does not change the "power" of the PowerRoll, but rather with each increase in gearing it increases the torque output while it correspondingly reduces the running speed (or v.v.).
- Finally, models can be further customized according to the choice of handle assembly or other attachments. For example 'Roller' models can be configured with one of any of the following:
    - **C**enter Straight handle shaft ("C")
    - **S**wiveling handle shaft ("S")
    - **S**wiveling & **P**ivoting handle shaft ("SP")

Model Identification (Which Model G-Series Do You Have?)

G-Series are available in three models, depending on the gearbox used. Reference RGB Data Sheet for performance specifications including actual speeds and estimated load moving capacities.

RGB40
Lowest reduction 157:1 gearbox (color coded green), making it the highest speed but lowest torque RGB.

RGB50
Mid-range 204:1 gearbox (color coded red), making it a mid-speed and mid-torque model RGB.

RGB70
Highest reduction 298:1 gearbox (color coded orange), making it the highest torque but lowest speed RGB.

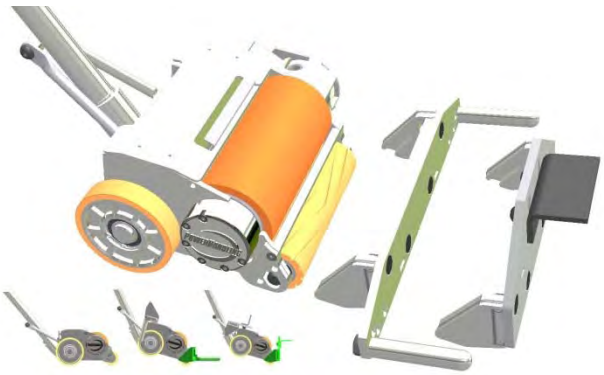
The machines above are identical apart from the gearbox, so any RGB above can be changed to another by switching out the gearbox. If a different reduction in gearbox better suits your application and the machine is within 3 months of age, a gearbox can be switched to another model. There will be no fee to switch gearbox beyond the difference, if any, in model prices.

Each of the G-Series base models is available with three handle options, a Swivel, Swivel-Pivot, or Center-Straight Handle.

RGB--S
The Swiveling "S" handle can be swiveled to the left or right – not forward/back.

RGB--SP
The Swivel/Pivot "SP" handle can swivel left and right PLUS be pivoted front and back – the latter to "pull" loads.

RGB--C; RGB--C/HI; RGB--C/HA; RGB--C/HU
The center "C" handle is fixed in place. Three optional brackets are available on a "C" model. The i) Hybrid PIN bracket; ii) Hybrid PADDLE bracket (each used to push paper rolls laterally on a skate or dolly); and the adjustable height iii) Hybrid PUSHER bracket (for pushing carts or other rolling loads - pushing on a bracket or the frame).



In addition to the three standard pusher brackets we can design and manufacture custom brackets to meet customers' specific application requirements.

G-Series Operation

Maneuvering

To move the PowerRoll to the load, take the handle grip in hand (without depressing the throttle) and tilt the unit back by pushing down on the handle grip until the front support roller lifts up off the ground. In this position the device can be easily rolled around on its rear wheels. When in position to move a load, lower the support roller until it is in contact with the ground and the drive roller is in contact with the load. Depress the throttle gradually to smoothly move the load.

Pushing the Load Forward

Once the PowerRoll has been maneuvered into position *(just behind the cable reel, paper roll, wheel or other cylindrical surface*) place the drive roller in contact with the surface of the load. Then depress the variable speed throttle on the handle grip, accelerating the load at a moderate rate to full speed. If the operator accelerates too quickly it may cause the drive roller to slip on the roll potentially causing damage to either the product being moved or the drive roller. The further the lever is depressed, the more speed and torque the unit will generate. It is generally safest to engage the variable speed throttle gradually so as to prevent the possibility of accelerating the load too rapidly and rolling it beyond the intended travel distance as a result of the momentum from a rapid acceleration.

Pulling the Load Backward

If your PowerRoll has an SP handle with a pivoting handle system, pulling backward is not unlike rolling forward. Maneuver your PowerRoll to either end of the rolling load. Swivel the handle to the outside of the rolling load and pivot it over the top of the machine into the pulling position. It is critical additional caution is exercised to ensure there are no obstacles to the operator as he/she walks backward, pulling the load with him/her. Tripping or falling while pulling the load could result in the operator unintentionally depressing the throttle as he falls, accelerating the load backwards and onto himself. To minimize the risk of such circumstance, at a minimum the following additional precautions should be implemented:

1. The path checked for obstacles or other potential encumbrances to the operator's travel.
2. The operator walking outboard of the load being rolled backwards.
3. A safety stop to be used to limit the travel of the load.

IMPORTANT SAFETY NOTE:

Precautions to Take Before Rolling a Load

The PowerRoll should be operated on relatively level and smooth concrete (or similar) flooring, as is typical for indoor industrial applications. Operation on sloping (gradient) floors or on uneven surfaces is a safety risk and not recommended.

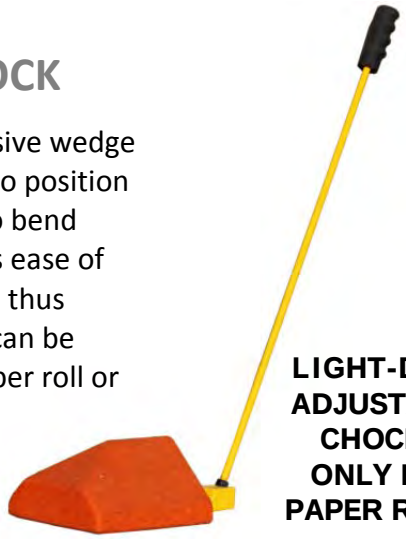
Before moving the load, ensure the path over which the load will travel is not occupied - by either people or obstacles. Also ensure there is not a slope away from the load which could result in the load free rolling faster than the PowerRoll. If possible place a Safety Stop on the opposite side of the load to the PowerRoll to ensure the load cannot move beyond the end of its intended travel.

Operators should refer to the safety procedures of the facility in which the PowerRoll is being used. All precautions required in ensuring a clear path is available, sufficient warning or safety lock-out is put into effect and where possible a safety stop or similar is in place so as to ensure moving the load will not result in damage or injury to property or person. Appropriate caution should also be exercised in rolling loads up inclines due to the risk of the load rolling back onto the operator or other unintended movement of the load.

HEAVY-DUTY ADJUSTABLE CHOCK – FOR PAPER ROLLS OR CABLE REELS

OPTION: SAFETY STOP / CHOCK

PowerHandling offers two styles of inexpensive wedge shaped safety stops which can be moved into position conveniently without the operator having to bend down to pick it up or kick it into position. Its ease of use increases the likelihood of it being used, thus increasing operational safety. The handles can be adjusted to suit the requirements of any paper roll or cable reel stopping application.



LIGHT-DUTY ADJUSTABLE CHOCK – ONLY FOR PAPER ROLLS

IMPORTANT SAFETY NOTE:

The PowerRoll does not in itself "control" the load it moves. It rolls the load forwards but without braking or controlling that movement. Therefore, precautions must be taken to ensure the load does not roll forward further than intended, causing damage or injury to others. Use of a safety stop is one recommended procedure. Note that whatever method is used, the onus of safety is on the operator to ensure there are no risks involved with the intended move.

The Quick-Charge / Quick-Change Battery Concept

Battery powered PowerRolls operate on the principle that most of the battery capacity is 'off-machine' and can be recharging while a smaller amount of the battery capacity is 'on-machine' and being used. This principle allows the PowerRoll to be significantly more compact than conventional materials handling machines of comparable torque / load moving capacity.

Therefore, it is important to locate the charger and second battery pack as close as possible to the area in which the PowerRoll will be used. This will minimize the operator's travel time to switch-out battery packs and therefore improve not just convenience but also performance and efficiency.

Installation of the Charger

PowerHandling's smart chargers are custom designed and built to operate only with PowerHandling battery packs. Do **not** use a different charger for a PowerHandling battery pack and do **not** use a different battery pack on the PowerHandling charger.

- The charger should be located such that the fan opening and the exhaust opening are located at least 2" from any surface which would restrict airflow. The charger's fan cools both the charging board and the cells of the battery pack (note the venting grill holes on the bottom and top of the battery packs) while charging.

- A thermistor on the battery pack provides feedback to the charger on the temperature of the cells during the charging process, allowing the charger to ensure it does not overheat (over-amp) the pack during the charging process.

- The AC input can be from any properly grounded wall outlet worldwide, handling from 100V-240V and either 50 or 60 Hz. If the power supply is not "clean" however, consider using a UPS, or line filter to prolong the life and improve the performance of the charger.

General Throttle Operation Guide

This model of PowerRoll is equipped with a variable speed throttle which allows the operator to engage the drive roller to the load to be moved and gradually accelerate it to full speed / full throttle.

The purpose of the variable speed is to accelerate the load gradually, which:

a) Reduces the likelihood of slipping or traction loss between the drive roller and load;
b) Reduces the likelihood of tearing or damage to either the product or the drive roller;
c) Reduces jarring or lurching of the load, which is safer in respect to maintaining control of the load and better for the machine, as it reduces peak amp draw which extends both battery life and motor life.

Stall and Near-Stall Conditions

The operator should exercise caution to ensure the PowerRoll does not enter a stall, or near stall, condition, for more than just a few seconds at most. PowerRolls can output extremely high torque to move very heavy loads, however if they are trying to move too great a load this can be damaging to the machine – in particular, to the motor or battery pack. A near-stall condition is identifiable by a noticeable drop in the machine's RPM. This occurs in particular when lifting loads, such as a paper roll onto a dolly or cable reel up onto a platform. This short duration of near-stall is okay, and it is expected to be subjected to this. However, if it remains in this near-stall state for too long, damage is occurring to the motor and battery pack which decreases their life.

Overload / Shorting Circuit Breaker Protection

In order to protect the motor, wiring and/or battery from damage or improper use a resettable circuit breaker has been implemented. This breaker is located in the back panel of the chassis and is accessible from above when the battery pack is removed. Its purposes are:

a) Electrical protection in the event of a short and partial protection in the event of excessive amp draw, which damages the battery packs and motor.
b) Creating awareness of improper use of the machine, both to the operator and also to management so practices can be checked and modified.

What to do if the Overload Circuit Breaker Trips

If the application is <u>within</u> the rated capacity of the PowerRoll being used:

- Check the operational practices with the PowerRoll to ensure the unit is not being used to move more load than intended. This has been a common occurrence where:
  a) A PowerRoll intended to move one roll/reel/vehicle at a time ends up being used to push 2 or 3 such loads simultaneously, doubling or tripling its amp draw; or
  b) A PowerRoll intended for one station ends up being shared between 2 or 3 stations, doubling or tripling its duty cycle.

If the application is <u>beyond</u> the rated capacity of the PowerRoll being used:

1. Discuss with PowerHandling the possibility of changing the gearbox to a higher reduction version, increasing its torque output while reducing its speed (for any given amp draw).
2. Discuss with PowerHandling the possibility of moving to a higher capacity PowerRoll.

For more information visit PowerHandling online at www.powerhandling.com or contact a sales associate at 1-888-37-POWER or 1-509-244-8860.

Trouble Shooting Guide For Battery Powered Machines

The Drive Roller Turns Unengaged but Won't Move the Load

Determine whether the issue is:

1. **TORQUE** (drive roller stops turning when engaged with the load) or
2. **GRIP or TRACTION** (drive roller spins against the load, not moving it).

1. TORQUE - The drive roller stops turning when it engages with the load

Check the unloaded speed of the motor and compare it to what it should be (see below). On battery machines low speed can be an indicator of many problems and is a good initial test to perform to get a baseline for further troubleshooting. Ensure you do this unloaded RPM test using a recharged battery pack, as a depleted battery pack will give lower values. Below are RPM (Revolutions-Per-Minute) or MPM (Metres-Per-Minute) values. If you do not have access to a hand-held RPM meter, just count the number of seconds to complete 10 full revolutions:

MODEL	RPM	MPM	Seconds (to complete 10 rev's)
RGB40	55	18	9.2
RGB50	45	15	7.5
RGB70	29	10	4.8

If the variance for your model is greater than 5% below the specified value or if the machine is showing a noticeable lack of speed or power when moving a load then please progress through the following trouble-shooting suggestions:

I. The brushes on the motor are damaged or worn. Remove and inspect motor brushes, check for chipped or damaged brushes or commutator bars and blow out (clean carbon dust) and replace. Refer to separate manual on brush replacement procedure.

II. Inspect the drive roller urethane to determine if it has delaminated, i.e. separated from the drive roll core. This would give the impression the drive roll is not turning when in fact the core is but the polyurethane that was bonded to it has separated and become a loose sleeve around the core. Look at the side of the machine to see if the drive roller core is turning while the urethane surface is not.

III. The battery pack is not providing enough amps, either worn out or not recharging correctly. Run the machine with another battery pack if one is available to determine if a faulty battery pack is the cause of the reduced performance. If another battery pack is not available the suspect battery pack can be returned to PowerHandling for evaluation.

IV. The load being moved or lifted is too great for the capacity of your PowerRoll. Contact PowerHandling to review your application. We can tell you if you are using your PowerRoll beyond it design capabilities and offer a more suitable model (or substitute a higher reduction / higher torque gearbox) to better suit your application.

2. GRIP - The drive roller spins against the load instead of moving it

This is typically because of insufficient traction between the drive roller and the load being moved and can occur for a number of reasons, including:

I. On a brand new machine, there can be a problem with initial grip until the drive roller becomes "worn in". This is a temporary condition that can be remedied quickly. The best way to wear in the drive roller is to use it. It is important you wear in the roller on product that does not cause slip – usually larger diameter loads. Using it on rolls or other product that does slip will heat up the urethane surface due to friction and exacerbate the grip problem. After 10 minutes of rolling a load back and forth it should be worn in enough to move loads without slipping.

II. The geometry may be accentuating an existing traction problem. Reference the explanation in the 'General Overview' section describing how too small of a diameter load results in less of the inertial resistance of the load pushing downward (vertical) instead of backward (horizontal). A small diameter can be moved if there is sufficient friction contact and a large diameter load can be moved even with very little friction contact, but the combination of a small diameter **and** low friction greatly increases the likelihood of slipping. Generally, the load's diameter should be > 1000mm (40").

III. The drive roller has oil, grease or other low viscosity material embedded into or otherwise making contact with it, reducing its ability to achieve a friction contact. As the drive roller makes pressure contact with the support roller while the machine is operating, oil and/or grease may be picked up from the floor and deposited onto the drive roller in which case the rollers will need to be cleaned with an appropriate oil dissolving solvent or detergent.

IV. To address low friction issues and reduce the impact of lubricants that end up interfering with the rollers, the application of Borax (Hydrated Sodium borate – an inexpensive cleaning agent, ref www.borax.com) to the drive roller can help. All new PowerRolls and replacement drive rollers are sent out with Borax already applied.

V. PowerHandling also offers special low durometer (i.e. softer) high grip polyurethane drive rollers for special applications. These softer rollers will typically not wear as well and will not last as long at the higher durometer (i.e. harder) polyurethane rollers that PowerHandling provides as standard, however the lower durometer provides better grip in applications which require it.

Battery Pack Discharges Quickly

I. If the current battery pack has been in service for quite some time, it may be depleted. All current battery technologies are such they lose a percentage of their total effective capacity on each discharge/recharge cycle. In time, this reaches a point that the battery pack's life becomes too short and it should be replaced. If two battery packs are being used equally, this should result in both battery packs becoming ineffective around the same time. If one pack is wearing out prematurely though, return the suspect pack to PowerHandling for analysis.

II. If the battery pack is relatively new and has undergone few discharge/recharge cycles, it is possible it is a faulty battery pack. If this is the case, there will likely be problems during both the charging and discharging of the battery pack. Contact your PowerHandling sales representative.

LED Indicator Light

The G-Series PowerRolls are equipped with an electronic control board to monitor and control the high current required to move the heavy loads for which they are designed.

The LED indicator on the top of the back plate provides feedback on the status of the machine and warnings if the machine is being used is a way which can potentially cause damage.

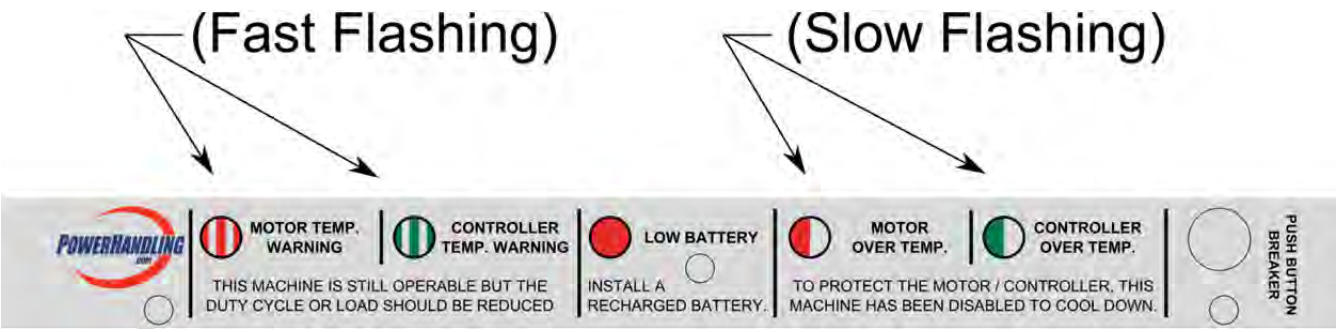
Explanation of LED Functions:

- When a battery pack is installed the LED will flash green once and remain off until the throttle is actuated. This simply indicates power is on and throttle input is being seen.
- The LED will turn on whenever the throttle is actuated and go off when throttle is not actuated. If the controller board is asleep (to reduce power draw while the machine is not being used) depressing the throttle awakens the board again.
- The LED will glow solid green anytime machine is within the normal operating temperature or safe operation mode.
- The LED will start to flash green quickly when the control board temperature is higher than normal operating temperature but the PowerRoll will still function. This is intended to serve as a warning / feedback to the operator. The LED will continue to flash green quickly until the board cools down to normal operating temperature - even when throttle is not actuated. High controller board temperatures are most likely caused by a) stalling or near-stalling under heavy loads; b) a combination high load and high duty cycle operation; or c) operating with load using partial throttle. An operator should only use partial throttle on initial acceleration then move to full-throttle.
- If the controller board temperature continues to rise after being in the rapid flashing green “warning mode”, it will eventually switch to “overheated” and the machine will be disabled to cool down and the green LED will flash slowly. Slow flashing will continue while the PowerRoll remains disabled until the controller board return to the “warning” temperature set point (rapid flashing).
- A push-button resettable circuit breaker is also installed in the machine. It has two purposes.
    - In the event of a wiring, connector or other failure condition which would cause a dead short, which is both dangerous and destroys the battery pack, it pops and prevents this from occurring.
    - In the event of an excessively high current draw which is too rapid for the controller board to react to for self-protection, again the circuit breaker will pop (that is, the push-button will pop up).

  Note the machine will not function until the circuit breaker is reset by depressing the button stem on the circuit breaker and the throttle actuated. If the circuit breaker immediately pops again, it is likely the result of a dead short somewhere – please contact your PowerHandling representative to trouble-shoot.

Throttle	Condition	LED Condition	Color	Machine State	Explanation / Comments
Off	No Error	Off	Off	Off	Controller board may be asleep.
On	No Error	Solid	Green	Operating	This is the normal operating state.
On/Off	Control Board Getting Hot	Fast Flash	Green	Operating	This is a warning state.
On/Off	Control Board Over Temp.	Slow Flash	Green	Disabled	This protects the control board from overheating and ensures time to cool down. Board re-enters warning state (fast flash green) as it cools.
On/Off	Low Battery	Solid	Red	Disabled	The LED turns red only after switch is released and low battery condition is found. Can be reset.
Off	Sleep	Off	Off	Off	Machine enters “sleep mode” after approx. three (3) minutes. Looks for throttle input to reawaken.
On/Off	(Calc’d) Motor Temp too high.	Fast Flash	Red	Operating	This is a warning state for the motor temperature; however it is based on an algorithm that looks at amp draw over time rather than measuring temp.
On/Off	(Calc’d) Motor Over Temp.	Slow Flash	Red	Disabled	This is to protect the motor from overheating. The machine is disabled for 4½ minutes then reverts to the warning state and stays in warning condition for 8½ minutes (if the machine is not used).

Below is a copy of the decal which is located on the chassis of the base machine below the rear overhanging hood of the battery pack (when installed in the machine).



Motor Brush Kit Maintenance and Replacement Procedure

Tool Required:

1. **Flat screwdriver**
2. **External snap ring pliers**
3. **Air line with blower nozzle**
4. **Shop vacuum**

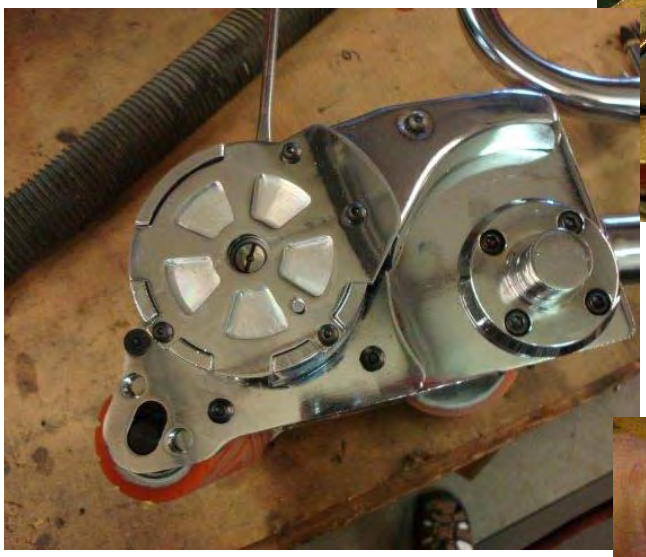
STEP 1: Remove snap ring from wheel axle adjacent to electric motor.

STEP 2: Remove wheel from axle and set aside.

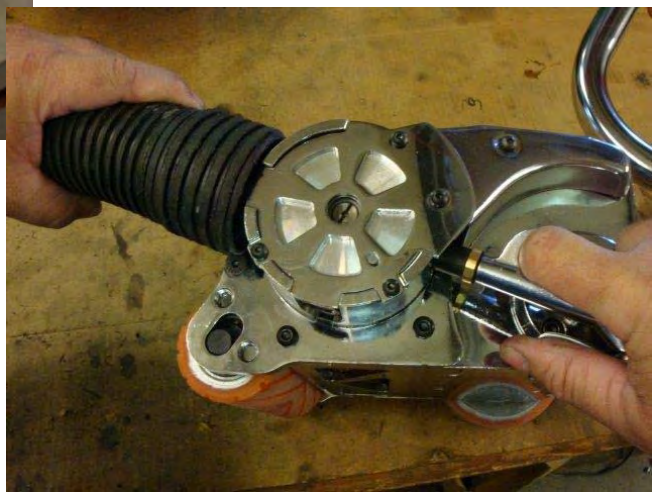
STEP 3: Remove all four brush caps to expose the brushes.

STEP 4: Remove brushes from brush holders.

STEP 5: Replace the brush cap on the bottom of the PowerRoll.



STEP 6: Replace the brush cap on the top the PowerRoll.



STEP 7: Blow compressed air through the motor to clean out carbon dust. Use shop vacuum to keep carbon dust from contaminating surrounding air.

STEP 8: Remove the brush caps and install the new brushes into brush holders, then re-install the brush caps being careful not to over tighten.

STEP 9: Replace wheel onto wheel axle.

STEP 10: Install snap ring on wheel axle.

BRUSH REPLACEMENT COMPLETE.

Warranty & Guarantee (Machines & Parts / Materials & Labor)

Overview & Conditions:
PowerHandling Incorporated hereby warrants and guarantees all of its material handling machines and parts will be free from defects in materials and workmanship.
This Warranty is conditional upon:

- The unit being used in a normal and responsible manner and for the purpose for which it was intended - consistent with the application details provided to PowerHandling.
- The unit is being used in accordance with PowerHandling's recommended operation and maintenance instructions as outlined in the documentation provided with the machine.
- The unit having all replacement parts provided by PowerHandling. The use of non-original PowerHandling replacement parts voids all warranties.
- All afore-mentioned parts being correctly installed, either by PowerHandling, an authorized reseller or by the customer (per the instructions or directions provided by PowerHandling).

Warranty Periods

- RVB Series is warranted for a period of twenty four (24) months from the date the user receives the unit(s) from PowerHandling.
- PowerPallet, PowerCart H-Series, PowerCart L-Series, PowerMover G-Series, RGB-Series, A-Series are warranted for a period of twelve (12) months from the date the user receives the unit(s) from PowerHandling.
- NiMH battery packs are warranted for a period of three (3) months from purchase. If battery life is less than 12 months, please review your application and charging procedures with PowerHandling to ensure they are consistent with maximizing their service life.
- Lithium Battery Packs are warranted for a period of twelve (12) months from purchase. If battery life is less than 24 months, please review your application and charging procedures with PowerHandling to ensure they are consistent with maximizing their service life.

Any and all defects either due to improper use, negligent maintenance, or as a result of normal wear and tear are not covered by this guarantee. Hence the following are excluded:

Exceptions - Use/Misuse Related:

- Air motor damage due to air that is not clean (unfiltered) or not dry (no inline water trap fitted).
- Brushed electric motor damage caused by over-use (too high a duty cycle for the PowerRoll).
- Brushed electric motor damage caused by non-timely brush replacement and/or improper or incomplete brush maintenance.

Exceptions - Long Term Consumables:

- Vanes / vane kits (for air machines) and brushes / brush kits (for battery machines).
- Brushed electric motors are a long-term consumable and will typically need to be replaced after 5-10 brush replacements, depending on the condition of the commutator bars.
- Battery packs are long-term consumables and will need to be replaced periodically. Life depends on many factors including cycling rate, charging practices, and operating/storage temperatures. Misuse or failing to follow best practices can reduce battery life.
- Muffler materials, connectors and other miscellaneous hardware (for air machines).

Terms & Conditions
All parts supplied under warranty will be provided at no charge to the customer FOB, Post Falls, ID, once the failed parts have been received back at PowerHandling. If the warranty parts are provided in advance of the failed items being returned, they will be invoiced as a normal parts sale and then a credit note will be applied when the failed parts are received by PowerHandling. If the warranted parts are available from another PowerHandling location closer to the customer, the parts may be supplied from that location if available.

In the event of a claim being made under the terms of this Warranty which requires the unit to be returned to PowerHandling, the customer must first obtain a Return Material Authorization (RMA) from their sales contact. All freight and related duties and other costs are to customer's account. All parts and labor costs incurred for the repair and / or replacement of warranted parts will be provided at no charge to the customer.

PowerHandling and its distributors, agents, and resellers assume no other responsibility beyond the scope of this Warranty. The repair or replacement of the said unit constitutes the limit of PowerHandling's liability to the customer and PowerHandling specifically disclaims and excludes rescission as a remedy, or the payment of compensatory or consequential damages, attorney's fees or costs of litigation.