PowerPusher®

If It Rolls...We Can Move It.™



Automotive PowerPusher™

Operations Manual

1425 Stagecoach Road, Shakopee, MN 55379

800.800.9274 **952.445.0231**

www.powerpusher.com

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Automotive PowerPusher™ Machine & Parts Warranty

For one (1) year on parts and one (1) year on electrical components, Nu-Star will replace for the original purchaser, free of charge, any part or parts found upon examination by a factory authorized dealer of Nu-Star to be defective in material and/or workmanship.

All transportation charges on parts submitted for replacement under this warranty will be borne by the purchaser.

Nu-Star (the seller) shall in no event be liable for any consequential damages, or shall they be liable to the purchaser for loss, damage, or injury to persons or property or damages of any kind or nature occasioned by or arising out of operation, use, misuse, noise, repair or replacement of the equipment.



Electric Vehicle Notice



It has come to our attention that some electric vehicles are not equipped with a ***neutral mode***. This means that in order to roll the vehicles, the electric motor armatures need to be turned over and rotated. This requires a much larger pushing force when compared to standard neutral on a traditional transmission vehicle. Because of this, Nu-Star, Inc. recommends purchasing a higher capacity Automotive PowerPusher for vehicles with this feature

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Operating Instructions

PowerPusher® If It Rolls...We Can Move It.™

BATTERIES

Batteries required are TWO (2) Group 27-12V Deep Cycle Marine (160 minutes @ 25 amp draw). Use of any other type battery will void performance of this unit as designated. The battery manufacturer furnishes the warranty on the batteries. There is a 1-800 number on the battery for service or refer to "Batteries" in your local yellow pages for the nearest battery service agent.

Note: Battery casing dimensions must not exceed 13" x 6 ¾" x 10".

BATTERY CHARGER

A 10 ampere automatic cut-off battery charger is provided as standard equipment to maintain the batteries in a fully charged condition at the start of each work day.

WARNING: CHARGING THIS UNIT IN ANY MANNER OTHER THAN PLUGGING THE SUPPLIED CHARGER INTO A 115 VOLT AC OUTLET MAY RESULT IN SERIOUS DAMAGE TO THE UNIT.

CHARGING THE BATTERIES

The batteries supplied with the POWERPUSHER are designed for heavy duty service. With all lead acid type batteries, their life and performance depends on keeping them charged at all times. They must never be left standing in a discharged condition. Under normal usage, it is sufficient to recharge the batteries each night. By keeping the batteries at full charge, your POWERPUSHER will perform to your satisfaction at all times.

SET UP AND MAINTENANCE:

Read and follow the battery instructions. Failure to do so could result in battery problems and other electrical failures.

Your unit has been fully tested for performance. See the battery connection diagram on page 10 before connecting batteries. This information is also located under the lid of the PowerPusher.

1. If the POWERPUSHER is shipped with batteries, the batteries will be between 60-80% charged. However, before initial usage, charge overnight to bring to full charge.
2. Do not smoke or create any sparks when charging batteries. Charge only in a well ventilated area.
3. Check battery level every two(2) weeks. If it is below the recommended level, add a sufficient amount of distilled water to bring it to the bottom of the filler neck in each cell.

Remove and fill the batteries outside of the machine. Use of a face shield and rubber gloves is recommended. Spillage of battery acid into the interior of the unit can cause severe damage. If spillage does occur, remove batteries and battery pan and flush compartment with solution of baking soda and water

DO NOT CHARGE THE UNIT BY HOOKING UP TO THE BATTERY TERMINALS OR USING A CHARGER THAT WAS NOT SUPPLIED BY NU-STAR.

DO NOT OPERATE THE POWERPUSHER WHEN CHARGER IS CONNECTED.

FORWARD-REVERSE SELECTOR

This unit is equipped with electronic forward and reverse. Direction of travel should be selected prior to engaging the accelerator. See Diagram at bottom of page.

MAIN POWER SWITCH

The main power (on-off) switch is located on the top panel of the handle just below the forward-reverse selector. See diagram below. This switch should be turned to the off position whenever the unit is not in use.

NOTE: IF SWITCH IS LEFT IN THE ON POSITION AND THE MACHINE HAS NOT BEEN USED FOR A PERIOD OF 25 MINUTES OR MORE, YOU MUST TURN OFF THE SWITCH AND THEN TURN IT BACK ON TO RESUME NORMAL FUNCTIONS.

ACCELERATOR

To actuate the unit, softly squeeze the accelerator lever on the right handle. Pull the lever toward the handle to increase speed. Maximum speed is set at the factory. There is no adjustment to increase this setting. See servicing instructions on page 7 for accelerator adjustment.

To stop the unit, release the accelerator lever. There is no additional braking control. The unit is in gear at all times and has a direct braking function. See Anti-runaway under Special features on page 6.



NOTE: IF SWITCH IS LEFT IN THE ON POSITION AND THE MACHINE HAS NOT BEEN USED FOR A PERIOD OF 25 MIN. OR MORE, YOU MUST TURN OFF THE SWITCH AND THEN TURN IT BACK ON TO RESUME NORMAL FUNCTIONS.

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ANTI-RUNAWAY

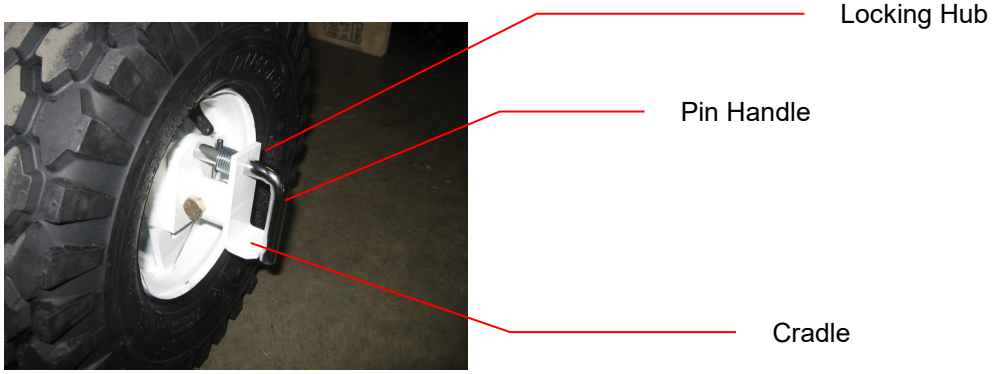
This added safety feature guards against an unpowered runaway. The controller that operates the POWER-PUSHER, even if the power is off and there are no batteries in the unit, will detect the increase in voltage created by the moving load. When the voltage becomes high enough the controller logic will power up to short the motor and stop the load from moving. You are able to move the unit unpowered at reduced speeds for short distances.

MANUALLY MOVING A UNIT THAT IS SHUT DOWN

The gearing in the transmission and motor will limit the unit from being moved manually. If the unit stops functioning, disengaging the hub lock allows manual moving of the unit.

Complete the following steps to unlock the wheel from the axle and allow manual movement of the unit:

1. Pull out the hub locking pin on the rim to unlock the wheel from the axle.
2. Rotate the pin and set the handle in the cradle as shown below.
3. The unit is now able to be manually moved.
4. To engage the hub, pull the locking pin and rotate the handle out of the cradle. Move unit slightly to lock hub.



POWER SAVER MODE

This feature minimizes drain on the battery if the POWERPUSHER is left on but is not being used.

If the unit is left on but has not been used for a period of 25 minutes or more, the controller will power down completely. Normal operation will resume by turning the main power switch off and then back on again.

OVERCURRENT PROTECTION

If the motor controller senses excessive current draw during operation, it will limit the maximum current after 30 seconds which protects the motor and supporting components. If this situation occurs, the machine will have reduced output power for a brief period of time. The output power will also be reduced if the controller temperature is too high and will be restored when the temperature decreases.

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TRANSAXLE

This is a sealed unit that requires no maintenance or lubrication.

CHAINS

The roller chains should be lubricated (#30 oil) once a year—depending on the amount of usage and the operating conditions. Under rusty and gritty conditions, the chains should be serviced more often.

The chains should be checked twice a year for proper tension. Maximum slack should not be over ½ inch midway between sprockets. The adjustment is provided at the transaxle. After obtaining the proper chain tension, tighten the 7/16" bolts to 60 foot-pounds.

Do not adjust the chains too tight.

The final drive axles do not require lubrication or adjustment. Should it become necessary to remove the axle and bearing, there is an internal snap ring on one side that retains the axle bearing. By removing that snap ring, the axles and sprocket assembly can be removed.

WHEELS & TIRES

Maintain tire pressure at 25 psi. This is important. At low pressure, the chassis will ride the floor. Too high a pressure may damage the tires and provide insufficient traction.

If tire chains are desired, order **P/N 316-024** from NU-STAR.

FUSE PROTECTION

Fuse protection is provided by an in-line fuse holder near the positive battery terminal. See the schematic on page 9. If needed, replace the fuse with an AGW 32 volt 3 amp fuse or equivalent.

ACCELERATOR ADJUSTMENT—DECREASE ONLY

CAUTION: BEFORE MAKING ANY ADJUSTMENTS TO THE ACCELERATOR, DISCONNECT THE BATTERIES TO PREVENT ACCIDENTAL START.

1. Remove top cover from handle by removing the 6 hex-head self-tapping screws.
2. Follow the accelerator rod to the pot box and remove the hairpin clip that attaches the rod to the pot box.
3. Thread the rod end counter-clockwise to reduce speed to the desired level.
4. Re-install hairpin clip, lid, and 6 self-tapping screws when complete.

There is no adjustment available to increase the speed of your POWERPUSHER.

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Inspection and replacement parts

Monthly inspection

- Check for bent structural members and broken or cracked welds.
- Check wheels and tires for wear.
- Check battery terminals for corrosion.
- Check chain tension: maximum slack 1/2 in. midway between sprockets.
- Check pneumatic tire pressure: maintain 25 psi.
- Check fuses and replace if necessary; use the specified fuse rating.
- Check bolts inside and out for loosening from vibration.

Replace any bent, broken or worn parts.

Ordering replacement parts

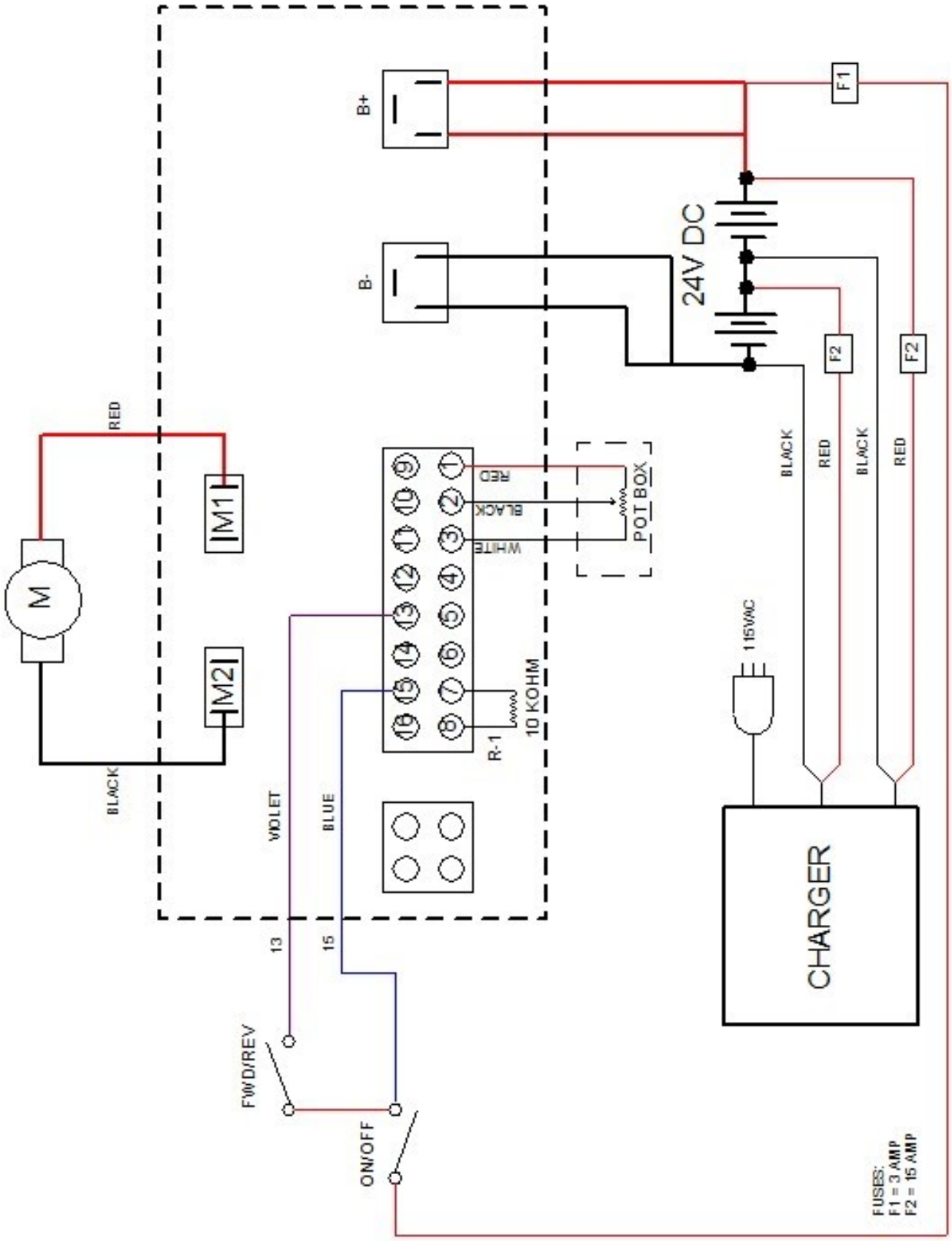
Provide the machine model and serial number, listed part or kit number, description and quantity. Drawing numbers and hardware letters identify a reference; they are not order numbers.

Call 800.800.9274 or 952.445.8295, or visit powerpusher.com. Confirm availability, pricing and payment terms when ordering.

Warranty and return requests

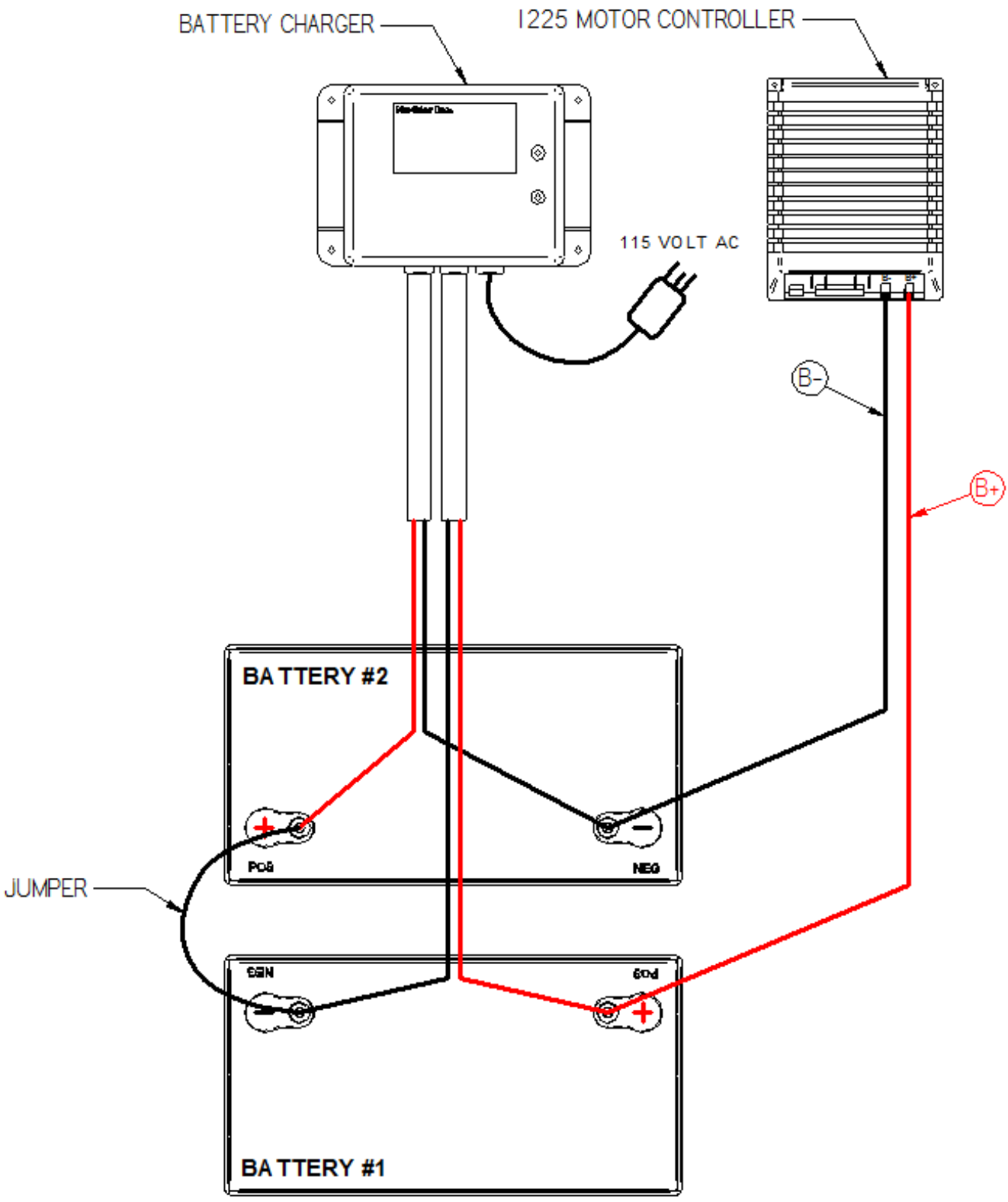
Contact PowerPusher Parts & Service before returning parts. Obtain return authorization and an RMA number when a return is required. Include the machine serial number and order reference. Warranty coverage is governed by the warranty on page 3.

Wiring Diagram



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Connecting Batteries

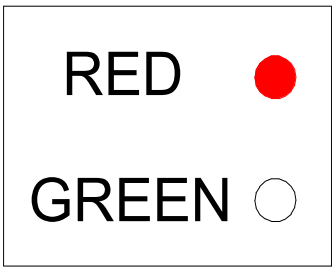
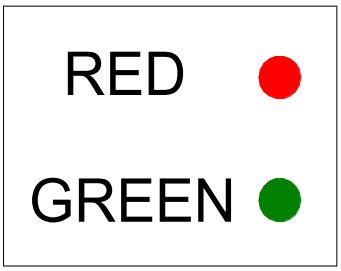
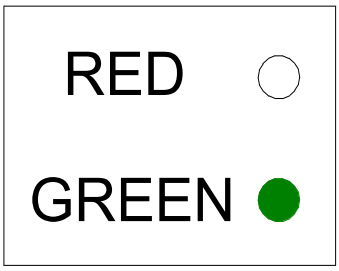


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OPERATION

Activate the battery charger by plugging in the AC line cord. Use only a grounded 3-pin 115 volt AC outlet. If available, one equipped with a UL listed GFI (Ground Fault Interrupting Circuit) breaker. One or more of the LED lights on the front of the charger will glow.

The chart below describes how the two LED lights on the charger indicate the state of charge of your batteries.

DISPLAY	OPERATING CONDITION
	When the red light is on, it indicates that your batteries are discharged and the charger is recharging them at the "bulk" rate (stage 1). This charging rate is 10 amps. While the red LED is on, the voltage measured at each battery (with the charger on) will be 11.8 to 14 volts. If the red LED stays on for more than 48 hours, refer to the troubleshooting chart on the following page.
	When both the green and the red lights are on, the charger is charging at an "absorption" rate of between 3 and 10 amps (stage 2). This "absorption" charging current gradually "tops off" your batteries and reduces harmful sulfating. While both lights are on, the voltage measured at each battery (with the charger on) should be approximately 14 volts. If both lights stay on longer than 48 hours, refer to the troubleshooting chart
	When the green light is on, the charger is charging at a "float" rate of less than 3 amps (stage 3). Your batteries are now 80% to 90% charged are ready for use. This "float" charging current will gradually decrease to as low as 0.1 amps over the next few days as the batteries reach 100% charge. they will now be kept at full charge without overcharging. If the green light stays on when your batteries are known to be low, refer to the troubleshooting chart on the following page.

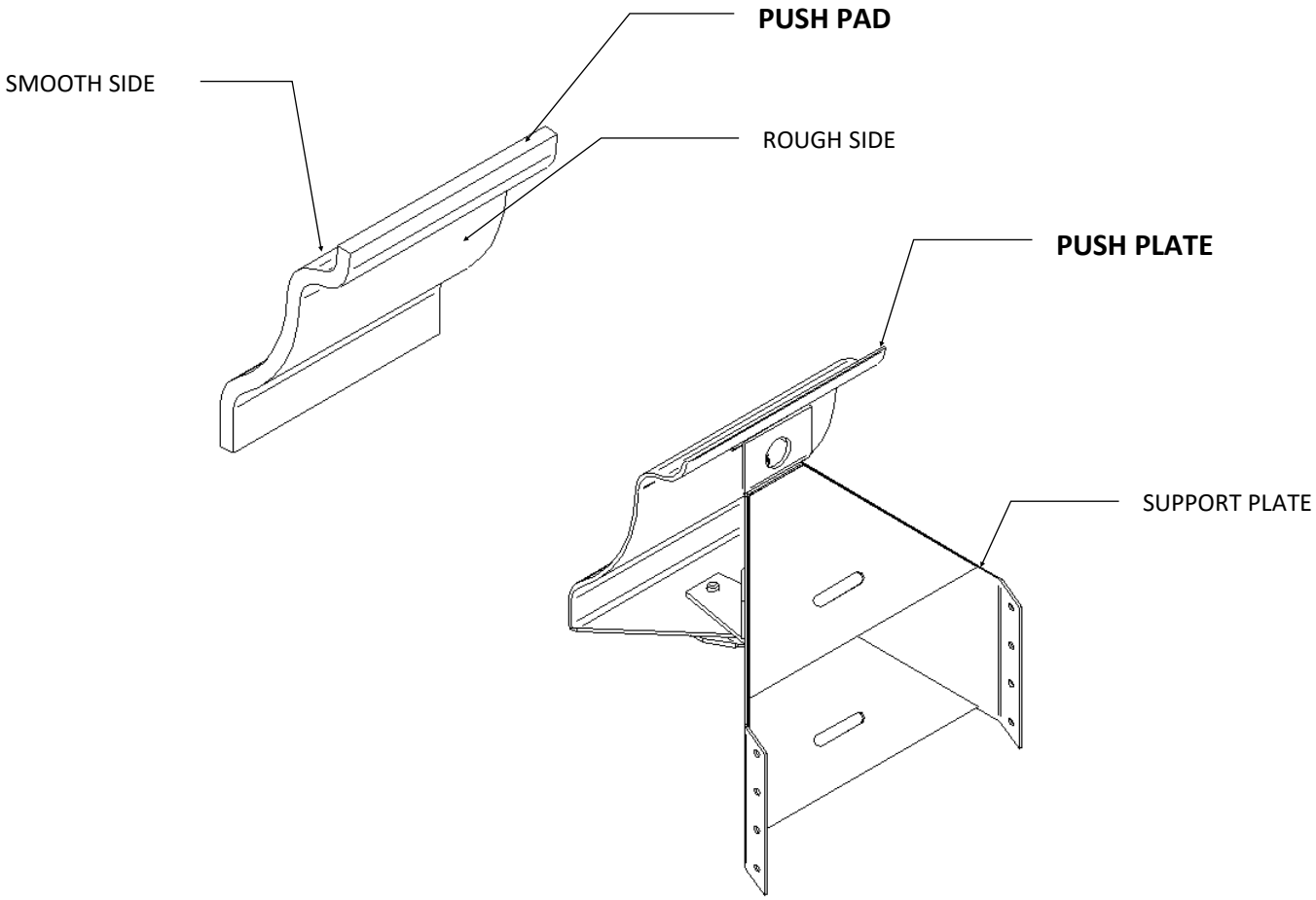
TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
1. The LED lights function but the charger does not seem to be charging batteries. (Note Measure the voltages in your batteries as described under "Operation" on previous page to confirm that there is actually a charging problem.	• One or more defective or damaged batteries. • One or more loose wire connections. • Charger has reduced its output voltage due to a DC overload or a DC short. • One or both of the AGC 15 amp DC output fuses have blown.	• Test batteries and replace if necessary. • Tighten connections. • Remove the source of the overload or short. Test the charger as described below for Problem #3. • Test/replace AGC 15 amp output fuses. Do NOT replace with a higher amperage fuse.
2. It seems to take a long time charge the batteries in hot weather.	• The charger has over-heated due to poor air circulation and has reduced its output.	• Consider moving the charger to a location with better ventilation.
3. The red light stays on all the time.	• A dead short or over load. • One or more bad batteries. • Too many batteries. • A heavy DC load on batteries while charging (lights, pumps, etc.). • Batteries are to large.	A. Unplug the AC cord. B. Remove the black charger output wire from each battery. C. When AC power is re-applied, only the green light should turn on, if not please replace the charger.
4. The green light stays on but the battery does not recharge.	• Check the chargers output fuses. • Check the wiring connections.	• Replace blown output fuses with 15 amp AGC fuse. Do NOT use a higher amperage fuse. • If connections and fuses are good, return charger to factory for service.
5. Both red and green lights stay on all the time.	• One or both batteries are damaged or unable to reach a full charge. • A DC accessory is continuously drawing 3 amps or more, holding the charger in its absorption stage.	• Check electrolyte. Test / replace the batteries. • Disconnect the accessories while charging. If the conditions on board force the charger to stay in absorption stage for several days, battery damage may occur.
6. When AC power is applied, neither lights turn on.	• Confirm that AC power is available.	• Reset AC power. • Return Charger to Nu-Star service department.

INSTRUCTIONS TO REPLACE PUSH PAD

1) Scrape off old cement from push plate and clean surface
2) Brush contact cement on rough side of push pad and steel push plate—follow directions on cement can for set time (Home Depot—Weldwood Contact Cement permanent bond recommended)
3) Mount pad to plate and clamp in several places using pipe to clamp rounded surfaces
4) Let cement dry overnight before removing clamps





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PotBox Test Procedure

Before performing any electrical work on a PowerPusher, disconnect the batteries.

If you have any questions call SERVICE at 1-800-800-9274

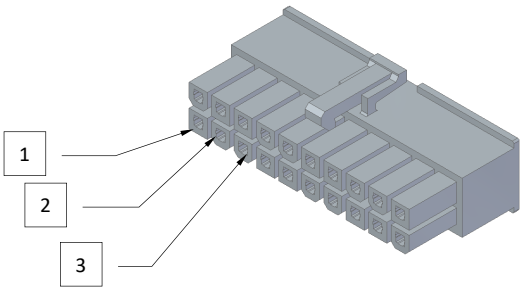
Tools Needed: Digital multimeter with up to 20k Ohm reading, flat blade screw driver and 2x 7mm sockets, wrench's or drivers.

Ω = Ohm on multimeters — Auto ranging multimeters must have manual setting for 20k Ohms.

Step 1. Unplug white 16 pin connector from the motor controller or wire adaptor.

Step 2. Connect a multimeter to the white 16 pin connector between pins 1 and 3 and verify that that the resistance is 4.5 to 5.5 KOhm's. The value should not vary when throttle is applied. If either one of these is not true the either the Pot Box and/or wire connections are bad.

Step 3. Connect a multimeter to the white 16 pin connector between Pin #2 and Pin #3. Do this on the side opposite where the wire enters the connector. The resistance value should read 300—350 Ohm (0.30 to 0.35 KOHM) when the throttle at rest.



Acceptable Starting Range = **0.30 to 0.35 KOhm**

- If the above setting are outside of the starting range, the potbox needs to be calibrated.

Potbox Calibration

Step 1. Locate screw and nut at the base of the throttle swing arm.

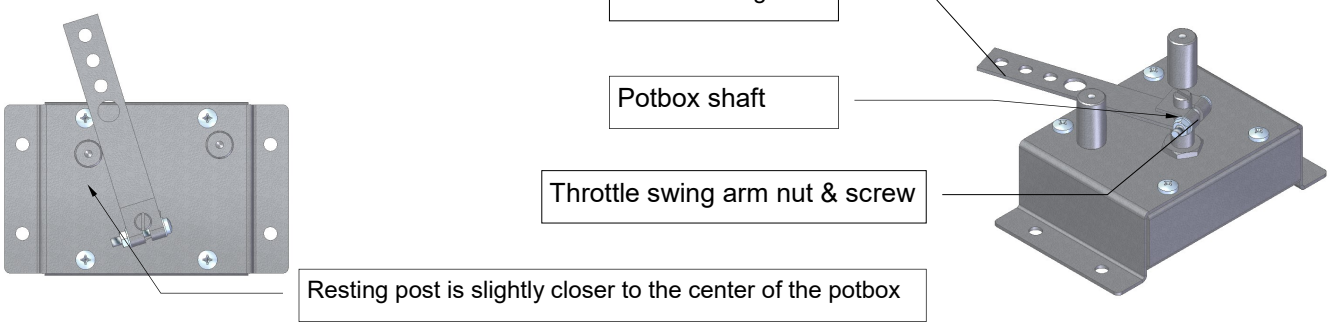
Step 2. Using 7mm wrench/socket/drivers loosen the throttle swing arm nut and screw just enough where the potbox shaft can be rotated independently from the throttle swing arm. Keep throttle swing arm in contact with the resting post for the remaining steps.

Step 3. Using a flat blade screwdriver and with the digital multimeter on pins 2 & 3 from above, adjust the Ohm value to 0.30-0.35 KOhm.

Step 4. Retighten the throttle swing arm nut and screw.

Step 5. During the tightening process the value can go up or down, double check the value and repeat steps 1-4 as necessary, until the final value when tightened is 0.30 to 0.35 KOhm.

Step 6. Before reinstalling the pot box, Plug in the 16 pin connector and with machine in free wheeling mode or propped up so the tires are off the ground, verify the throttle drives the wheels.



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PotBox Replacement Procedure

Before performing any electrical work on a PowerPusher, disconnect the batteries.

If you have any questions call SERVICE at 1-800-800-9274

Tools Needed: Digital multimeter with up to 20k Ohm reading, flat blade screw driver and 2x 7mm sockets, wrench's or drivers.

Ω = Ohm on multimeters — Auto ranging multimeters must have manual setting for 20k Ohms.

Before installing the new potbox verify it is the faulty component before uninstalling the old potbox.

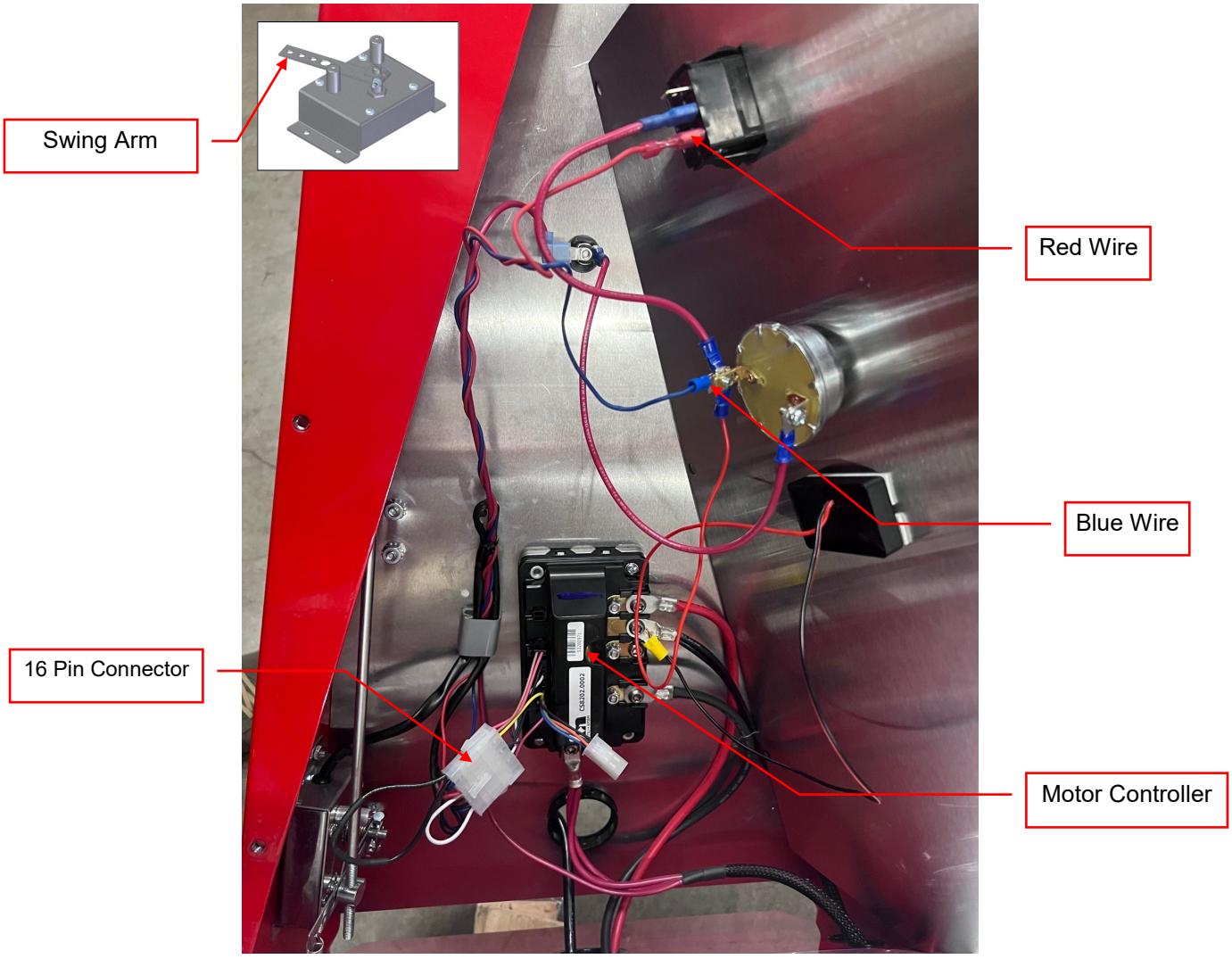
Step 1. Disengage the free wheel hub so when testing the machine will not move.

Step 2. Unplug the existing white 16 pin connector from the motor controller or wire adaptor.

Step 3. Plug in the new potbox and connect the red and blue wire to the location pictured below.

Step 4. Reconnect batteries and slowly move the swing arm on the potbox and see if the axles rotate.

Step 5. If the axles rotate disconnect batteries and continue with replacing the potbox. If this does not resolve the issue, contact service at **1-800-800-9274.**



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Find the right replacement part

Find the drawing reference, then order by the listed part or kit number.

Body and chassis 17-18

Drive and transaxle 19-20

Handle and controls 21-22

Push-pad assembly 23-24

Hardware kits available

HK-1 Body Hardware Kit

HK-2 Arm + Handlebar Hardware Kit

A row marked HK-1 or HK-2 is supplied through that complete kit. Individual parts may be ordered where a separate part number is listed. Kit contents are identified in the matching parts lists.

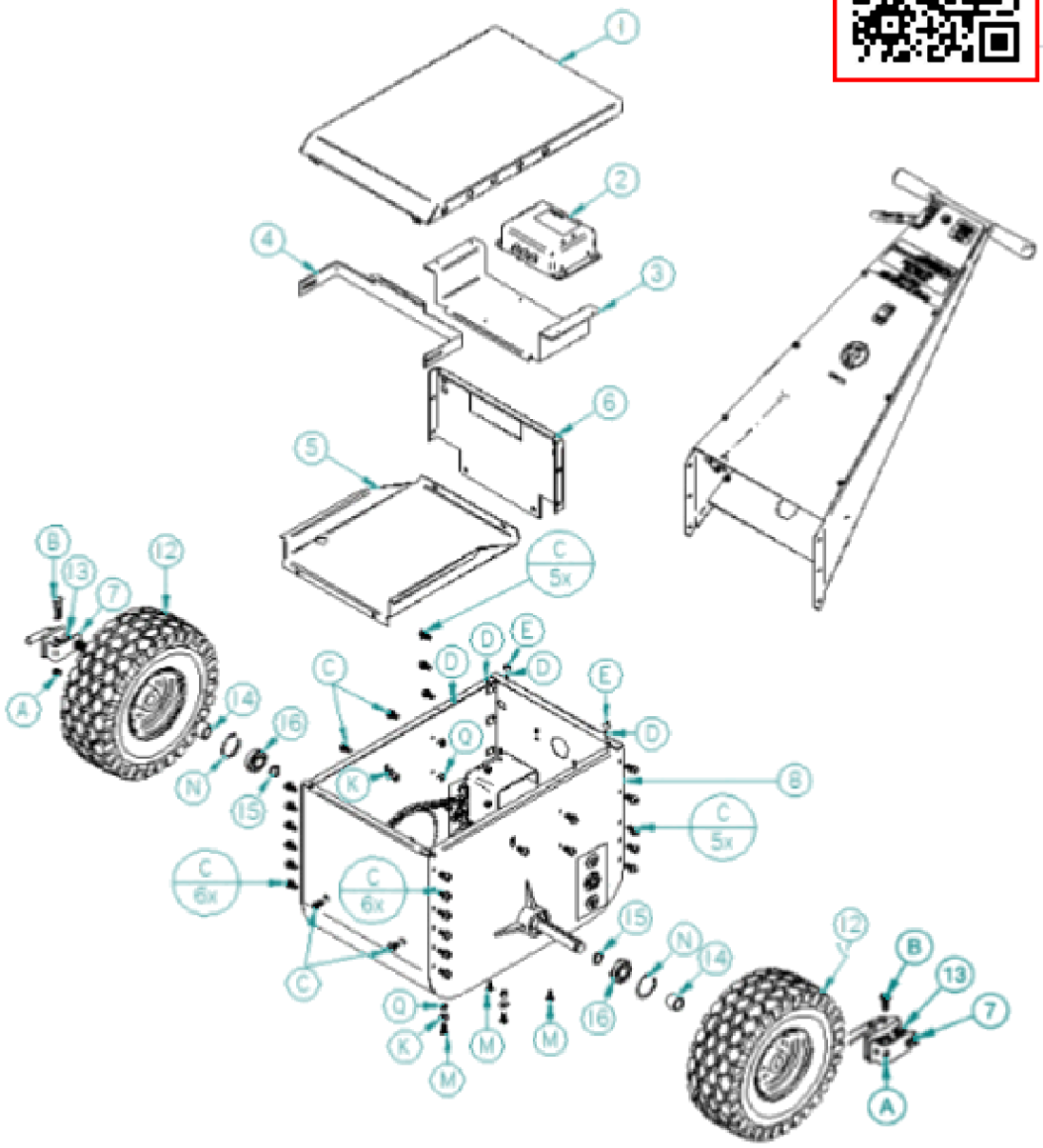
AXLE VERSION GUIDE

TIRE REFERENCE

EXPLODED ASSEMBLY DRAWING

Body and chassis

Original PowerPusher exploded drawing; callout numbers retained



HK-1

BODY HARDWARE

Complete hardware kit

KIT ORDER NO. HK-1

FOUR TIRE AND RIM ASSEMBLIES AVAILABLE

Match the keyway or locking hub configuration.

TIRE REFERENCE - PAGE 27

AXLE VERSION GUIDE

VIEW PARTS LIST

Identify the callout number, then use the matching parts list on the next page.

Body and chassis

References match the preceding drawing. Order by the listed part or kit number.

REF.	PART NUMBER / KIT	DESCRIPTION	QTY
1	401-347	Cover; Main	1
2	500-107	Charger; Battery	1
3	500-106	Tray; Charger	1
4	403-483	Brace; Battery	1
5	401-249	Plate; Battery Support	1
6	401-248	Plate; Drive Assembly	1
7	315-096	Locking Hub Assembly	Varies
8	401-247	Body; Main	1
12	316-010	Keyway tire and rim assembly	Varies
13	316-036	Locking hub tire and rim assembly	Varies
14	403-514	Spacer; Collar for Axle	2
15	13-RR-EXT-1	External Retaining Ring, 1 in.	Varies
16	315-039	Bearing; Axle	2
A	HK-1 (kit)	Nut	1
B	HK-1 (kit)	Bolt	3
C	HK-1 (kit)	Bolt	41
D	HK-1 (kit)	Screw	6
E	HK-1 (kit)	Bumper	2
K	HK-1 (kit)	Washer	8
M	HK-1 (kit)	Bolt	4
N	HK-1 (kit)	Retainer	2
Q	HK-1 (kit)	Nut	8

Wheel quantities: choose one configuration. See pages 26-27 for axle and tire selection.

MACHINE CONFIGURATION	KEYWAY WHEELS	LOCKING HUB WHEELS
Original - two keyway wheels	2	0
Intermediate - one of each	1	1
Current - two locking hub wheels	0	2

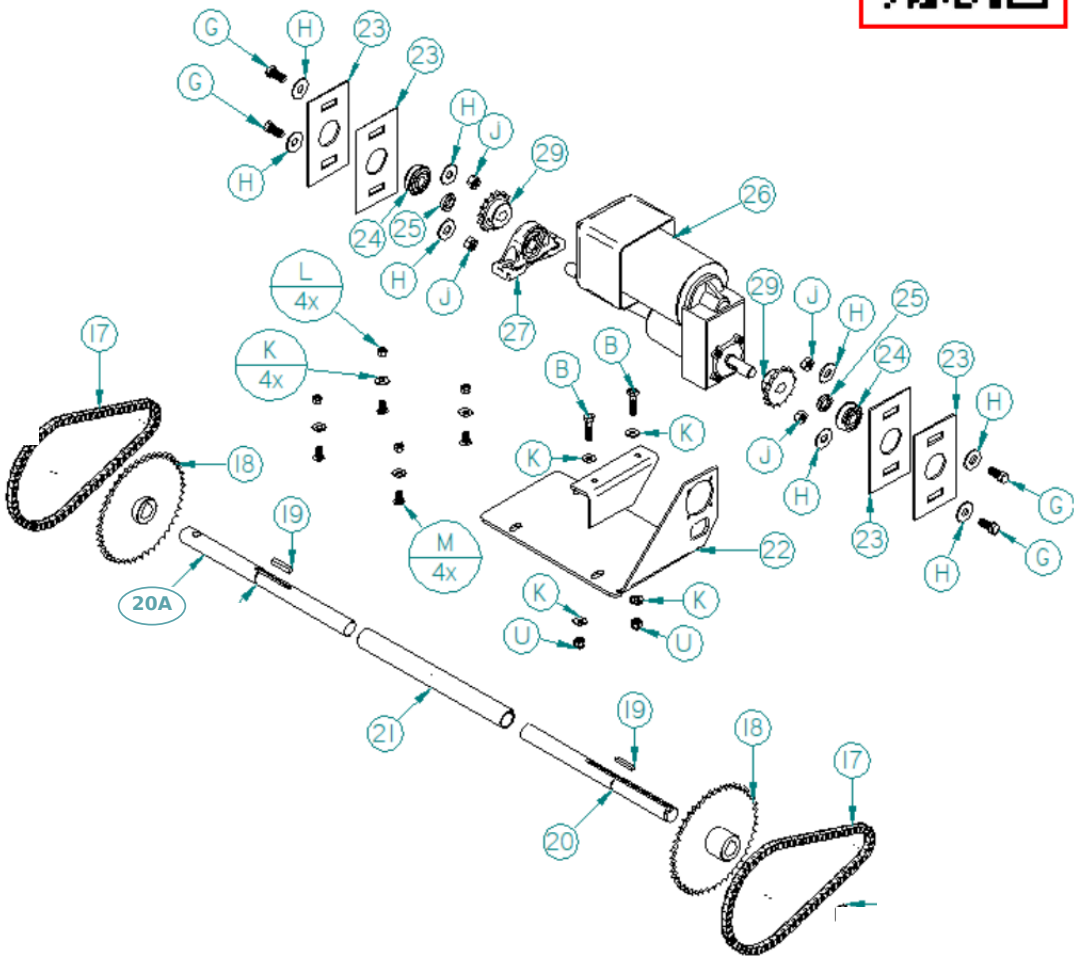
Ref. 15 total per machine: keyway/keyway = 4; mixed = 3; locking/locking = 2.

BACK TO DRAWING | PARTS REFERENCE | CONTENTS

EXPLODED ASSEMBLY DRAWING

Drive and transaxle

Original PowerPusher exploded drawing; callout numbers retained



IMPORTANT | IDENTIFY AXLE BEFORE ORDERING

3 wheel configurations / 2 axle types / 4 tire and rim assemblies

Original: 2 keyway wheels | Intermediate: 1 of each | Current: 2 locking hub wheels

Compare axle 20 and axle 20A, then select the matching wheel assembly.

AXLE VERSION GUIDE + WHEELS

Drive and transaxle

References match the preceding drawing. Order by the listed part or kit number.

REF.	PART NUMBER / KIT	DESCRIPTION	QTY
17	304-058	Chain; #40 precut with link (#15)	2
17a	304-054	Chain; #40 precut with link (#10)	2
18	403-476	Sprocket; Main Axle	2
19	310-081	Key; 1/4 x 2-1/2 in.	2
20	403-472	Axle; Main	Varies
20A	403-478	Axle; Locking Hub	Varies
21	403-474	Housing; Main Axle	1
22	500-310	Transaxle Mounting Bracket; Extra Duty	1
23	403-508	Bracket; Bearing	4
24	315-040	Bearing; Differential	2
25	403-492	Spacer; Sprocket	2
26	500-202	Transaxle Assembly; Extra Duty	1
27	500-218	Bearing; Transaxle Axle	1
29	303-060	Transaxle Sprocket (#15)	2
29a	303-052	Transaxle Sprocket (#10)	2
B	HK-1 (kit)	Bolt	3
G	HK-1 (kit)	Bolt	4
H	HK-1 (kit)	Washer	8
J	HK-1 (kit)	Nut	4
K	HK-1 (kit)	Washer	8
L	HK-1 (kit)	Nut	4
M	HK-1 (kit)	Bolt	4
U	HK-1 (kit)	Nut	2

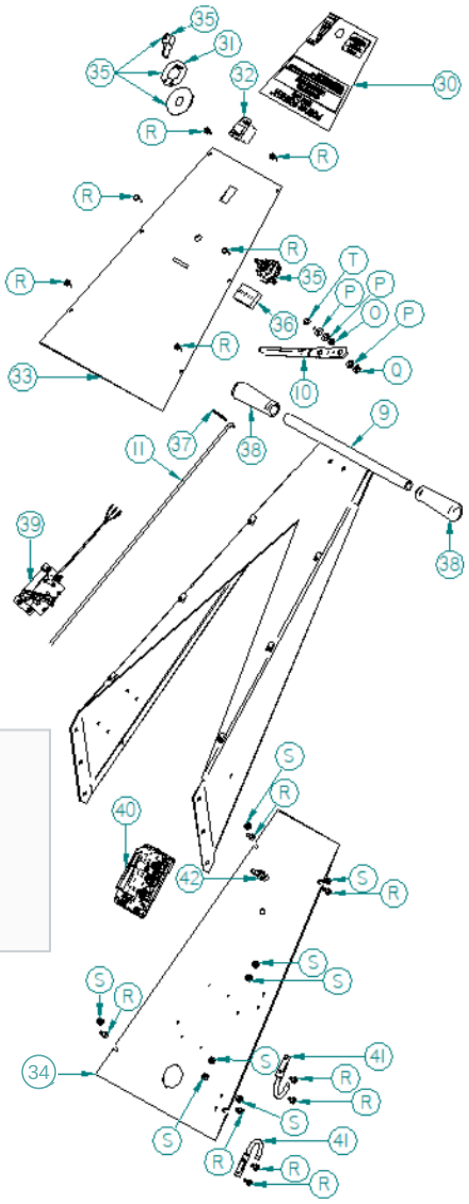
CHOOSE ONE CONFIGURATION	KEYWAY AXLE 20	LOCKING HUB AXLE 20A
Original - two keyway wheels	2	0
Intermediate - one of each	1	1
Current - two locking hub wheels	0	2

BACK TO DRAWING | PARTS REFERENCE | CONTENTS

EXPLODED ASSEMBLY DRAWING

Handle and controls

Original PowerPusher exploded drawing; callout numbers retained



HK-2

ARM + HANDLEBAR HARDWARE KIT

Keyway excluded

KIT ORDER NO. HK-2

VIEW PARTS LIST

Identify the callout number, then use the matching parts list on the next page.

Handle and controls

References match the preceding drawing. Order by the listed part or kit number.

REF.	PART NUMBER / KIT	DESCRIPTION	QTY
9	401-256	Handle	1
10	403-484	Lever; Hand	1
11	403-488	Rod; Speed Control	1
30	303-317	PP Handle Decal	1
31	403-676	On/Off Plate (Switch Plate)	1
32	319-433	Switch; Rocker	1
33	403-512	Plate; Mount PP Speed Control Top	1
34	403-505	Plate; Mount PP Speed Control Bottom	1
35	319-237	Switch On/Off	1
36	500-077	Lights, Indicator	1
37	HK-2 (kit)	Cotter pin	1
38	324-050	Handle Grip	2
39	403-871	Potbox	1
40	403-990	Controller	1
41	14-OT-Hook	Charger hook	2
42	705043	Fuse holder	1
O	403-471	Spacer; Handle Lever (included in HK-2)	1
P	HK-2 (kit)	Washer	3
Q	HK-2 (kit)	Nut	8
R	HK-2 (kit)	Bolt	14
S	HK-2 (kit)	Nut	8
T	HK-2 (kit)	Bolt	1
U	HK-1 (kit)	Nut	2

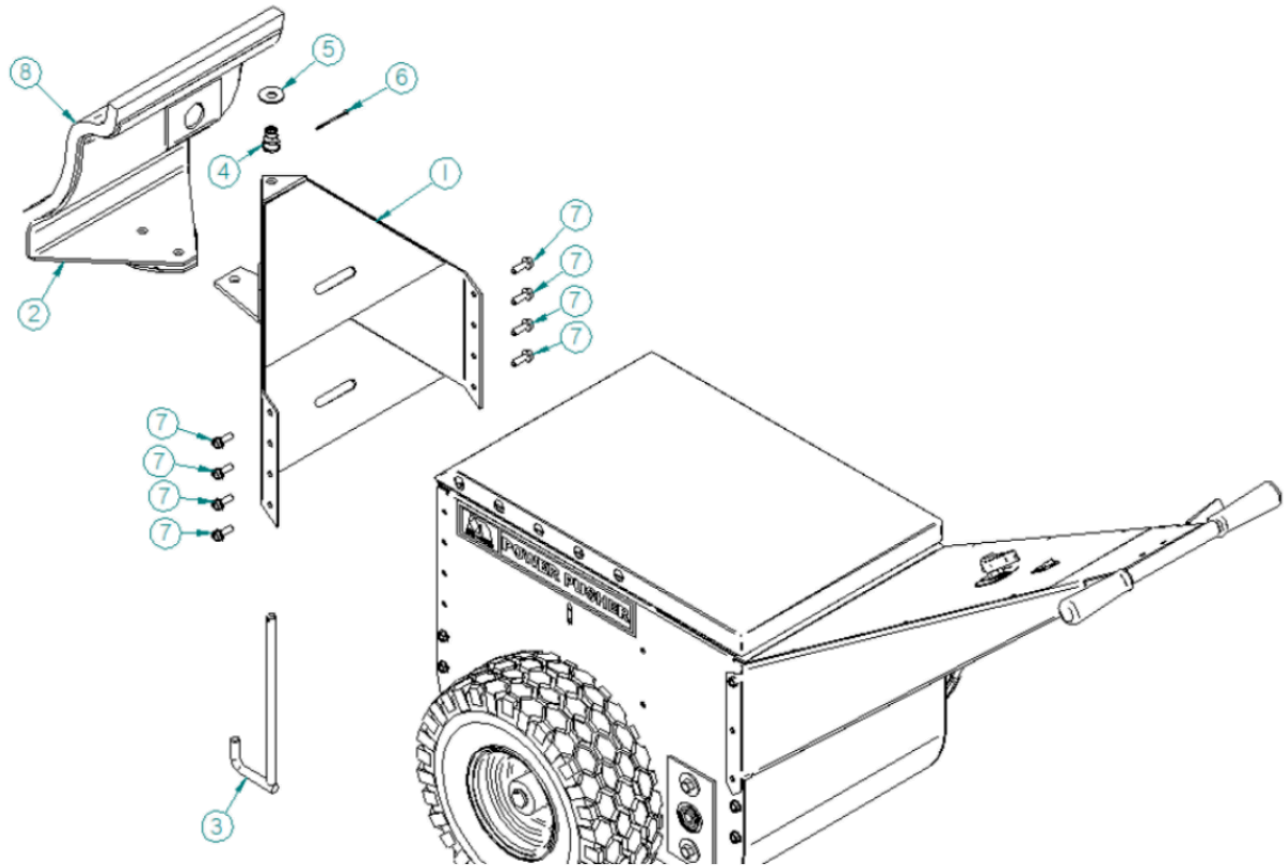
HK-2 includes arm and handlebar hardware: 37, O, P, Q, R, S, T.
Keyway excluded. No separate HK-3 kit. Spacer 403-471 is also available separately.

PARTS REFERENCE | CONTENTS | BACK TO DRAWING

EXPLODED ASSEMBLY DRAWING

Push-pad assembly

Original PowerPusher exploded drawing; item references 1-8



Drawing references 1-8 match the parts list on page 24.

VIEW PARTS LIST

Identify the callout number, then use the matching parts list on the next page.

MATCHING PARTS LIST

Push-pad | parts list

Drawing references on the immediately preceding page

REF.	PART NUMBER / KIT	DESCRIPTION	QTY
1	401-253	Push Pad Support	1
2	401-252	Push Plate	1
3	401-251	J-Rod	1
4	320-007	Spring	1
5	13-FW-Z-1_2x0.125	1/2 in. flat washer	1
6	13-COTTER-Z-1_8x1.5	1/8 x 1-1/2 in. cotter pin	1
7	13-HF-GR5Z-5_16-18x0.75	5/16-18 x 3/4 in. flange bolt	8
8	321-055	Foam Push Pad	1

Push-pad is an attachment; no hardware kit is currently offered.
Confirm machine configuration and fitment before ordering.

PARTS REFERENCE | CONTENTS | BACK TO DRAWING

Machine record and pre-use check

Record the model and serial number from the machine identification label. If the label cannot be located or read, contact PowerPusher for assistance.

Model _____

Serial number _____

Date / operator _____

Before operating

- [ ] Check for visible damage, loose hardware and worn wheels or tires.
- [ ] Check pneumatic tire pressure against the maintenance instructions.
- [ ] Check the batteries are charged and the charger is disconnected.
- [ ] Check the locking hub is engaged before powered operation, if fitted.
- [ ] Check direction selection and accelerator release / stopping function.

Stop use if damage or a control fault is found. Follow the operating and service instructions in this manual. This quick check does not replace the monthly inspection on page 8.

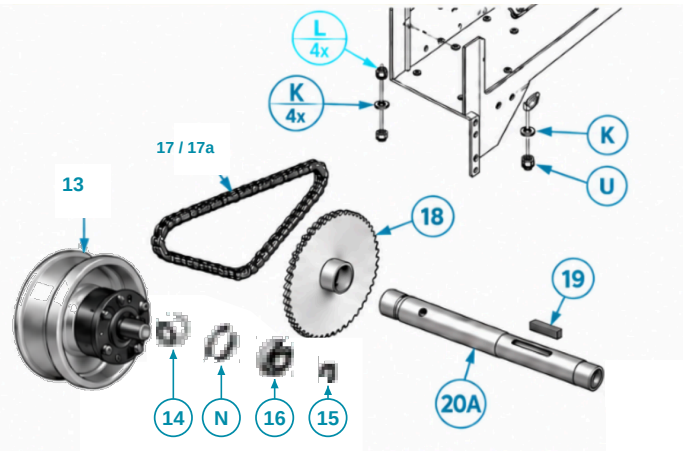
Notes: _____
_____

Identify your axle configuration

Match the axle connection before selecting a wheel. Drawing references below match the body and drive parts lists on pages 18 and 20.

LOCKING HUB

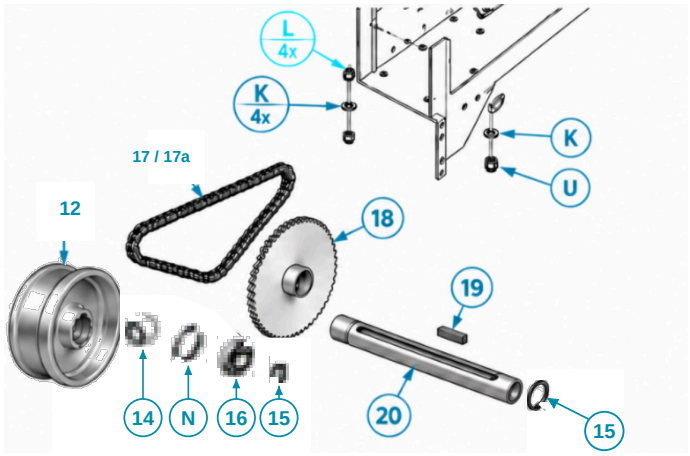
Axle 20A / 403-478



REF.	PART NUMBER	DESCRIPTION
13	316-036	Wheel assembly
14	403-514	Axle spacer
15	13-RR-EXT-1	Retaining ring, 1 in. (qty 1)
16	315-039	Axle bearing
17 / 17a	304-058 / 304-054	Drive chain; match version
18	403-476	Main axle sprocket
19	310-081	Key; 1/4 x 2-1/2 in.
20A	403-478	Locking hub axle
N	310-078	Retainer (snap ring)

KEYWAY HUB

Axle 20 / 403-472



REF.	PART NUMBER	DESCRIPTION
12	316-010	Wheel assembly
14	403-514	Axle spacer
15	13-RR-EXT-1	Retaining ring, 1 in. (qty 2)
16	315-039	Axle bearing
17 / 17a	304-058 / 304-054	Drive chain; match version
18	403-476	Main axle sprocket
19	310-081	Key; 1/4 x 2-1/2 in.
20	403-472	Keyed main axle
N	310-078	Retainer (snap ring)

Hardware letters K, L and U refer to kit components; use page 20 for ordering.
Wheel quantities depend on the machine configuration; compare the wheel guide.

WHEEL SELECTION - PAGE 27

DRIVE PARTS LIST - PAGE 20

Select the correct wheel assembly

Each machine uses two drive wheels. Select the matching hub connection and tire type.

KEYWAY WHEEL ASSEMBLIES

For axle 20 / 403-472



316-010

PNEUMATIC

Pneumatic tire and rim assembly

KEYWAY



316-048

FOAM-FILLED

Foam-filled tire and rim assembly

KEYWAY

LOCKING HUB WHEEL ASSEMBLIES

For axle 20A / 403-478



316-036

STANDARD

Tire assembly for locking hub

LOCKING HUB



316-060

FOAM-FILLED

Foam-filled tire and rim for locking hub

LOCKING HUB

TWO DRIVE WHEELS TOTAL - CHOOSE ONE CONFIGURATION

MACHINE CONFIGURATION	KEYWAY WHEELS	LOCKING HUB WHEELS
Original - two keyway wheels	2	0
Intermediate - one of each	1	1
Current - two locking hub wheels	0	2

AXLE VERSION GUIDE - PAGE 26

BODY / CHASSIS DRAWING - PAGE 17

PowerPusher Parts & Service



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Automotive PowerPusher
Operations and illustrated parts manual

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