PowerMate®

StairClimbing HandTrucks

OPERATING MANUAL

STEEL MODELS

M-2C M-2B M -1

S02-040.01

T20-000.12

For Serial Numbers 36000 and higher.

PN 010900 Rev. F
PN 300320 Rev. F
Eng. 11/ 16/ 15

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WARNING

Failure to obey the Instructions and Safety rules in this manual could result in death or serious injury.

Read the Operating Manual completely.
Only competent, trained operators may use this equipment.
Training is essential to understanding all the features and capabilities of your PowerMate, and ensure good safe work practices.

Training courses are available through
L P INTERNATIONAL INC., please call
1-800-697-6283

PowerMate

MODEL M-SERIES

The ***PowerMate***® M-Series Models are motorized electric hand trucks used for the safe movement of heavy and awkward loads. It can move loads up and down stairs, on and off of vehicles or loading docks and across flat surfaces.

The design takes advantage of the principle of leverage. All of the lifting of the load is performed by the equipment.

The ***PowerMate***® M-Series units are designed specifically to move loads with a various center of gravity locations. Refer to the Load Recommendation Chart for capacities.

DELIVERY AND WARRANTY REGISTRATION

When your ***PowerMate***® Motorized Stairclimber is delivered, unpack and inspect the unit for damage or shortage of parts. If required, make note of any deficiencies on the Delivery Acceptance Form. Registering your unit for the Warranty can be done online at www.powermate.info. Click on Service, fill in the required fields under Warranty and click Send Now.

Standard Equipment

Retractable Dolly Attachment
2 Strapbars
Battery Charger

Optional Equipment

Load Elevator Kit
Wheel Brakes
Step Extension
Twin Lift Attachment
Barrel Attachment
Extended Depth or Width Toe Plate
Refer to the accessory page for details.

WARNING! The use of this equipment with any options other than those specified in this manual may create a hazard.

Manufactured By:

L P INTERNATIONAL INC.
P.O. Box 696, 151 Savannah Oaks Drive
Brantford, Ontario, Canada N3T 5P9
TEL: (519) 759-3292 FAX: (519) 759-3298
1-800-697-6283

PN 010910 Rev.E
Eng. 05/ 08/ 14

OPERATOR TRAINING

The ***PowerMate*®** M-Series Model has been tested and inspected by both the manufacturer and the distributor to ensure the quality of manufacture and operation. The equipment is delivered by the distributor, fully assembled and ready for use.

The ***PowerMate*®** M-Series Model is unique in its operation and is used to move heavy and awkward loads. For these reasons, classroom and hands-on training in safe and efficient operating procedures for all operators is absolutely necessary.

During the training, the operator should

LEARN HOW TO DO THE FOLLOWING

General. Use the Load Recommendation Instructions.
Follow the General Safety Rules.

Strapbars. Adjust the location of the strapbars.
Adjust, tighten and release the straps.
Stow loose strapping when not in use.

Flat Surface. Raise the wheels to incline the load back.
Reposition the load in balance over the wheels.
Move over obstacles on the floor.
Bring the load back to an upright position.

Stairclimbing. Position the wheels and heelplate on a stair.
Climb up and down stairs.
Rest safely in a balanced position on stairs.
Pivot on tight landings.

Lifting. Load and unload onto vehicles or loading docks.
Load and unload small vans.

Two Operators. Work as a team with another operator.

HAZARD GRAPHICAL SYMBOLS

The ***PowerMate*®** products use graphical symbols, safety colours, and signal words throughout the Operators Manual and on the units themselves. Operators using the ***PowerMate*®** must familiarize themselves with these symbols.

Safety Alert Symbol: This symbol indicates a potential personal injury hazard. Safety information following this symbol must be followed to avoid possible injury or death.

DANGER: Indicates an *imminently* hazardous situation which, if not avoided, will result in death or serious injury.

WARNING: Indicates a *potentially* hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

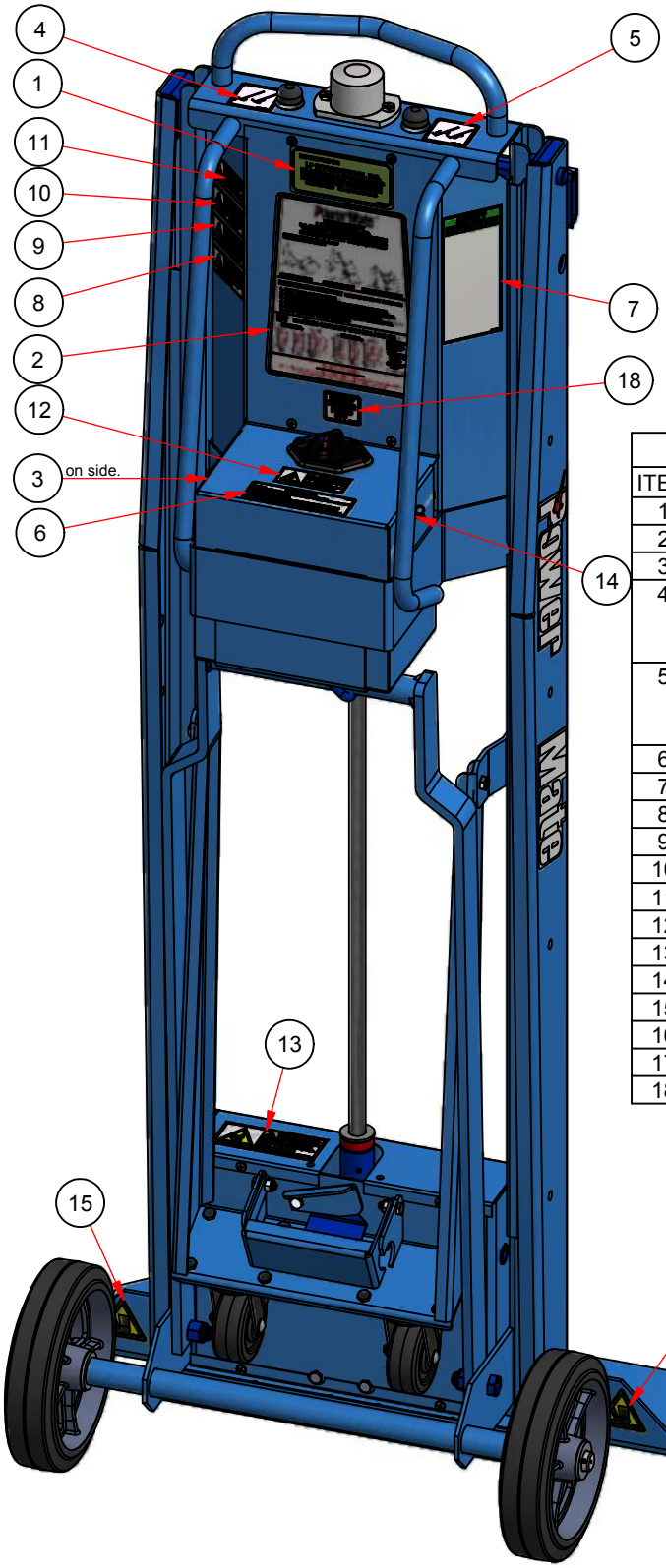
NOTICE: The signal word to address practices not related to personal injury.

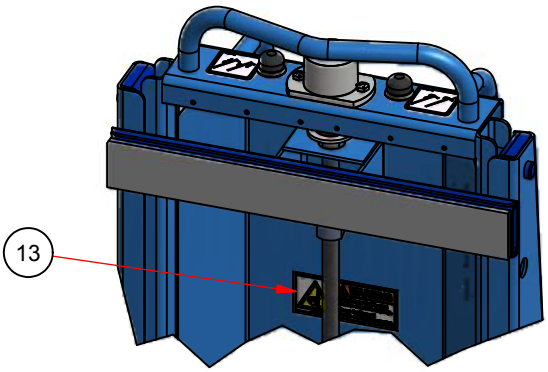
SAFETY LABEL MAINTENANCE

Safety of the operator and surrounding environment must be considered at all times. To that end, safety labelling on the ***PowerMate*®** must be maintained to provide legible safety information. Clean the labels with soap and water. Do not use solvent-based cleaners because they may damage the labels. Replace damaged or missing labels. Replacement labels may be purchased from L P International Inc. Customer Service Phone number 1-800-697-Mate.

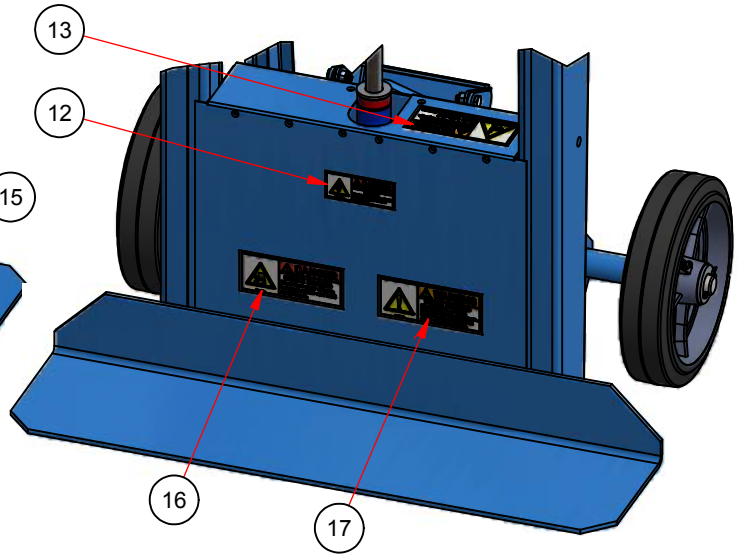
MANDATORY SAFETY LABEL PLACEMENT
Standard M-1/M-2B/M-2C *PowerMate*® Units

NOTE: Model M-1 shown.





PARTS LIST			
ITEM	QTY	PART No.	DESCRIPTION
1	1	051590C	DECAL MS DISTRIBUTED BY LP
2	1	052620/30/40	DECAL MS MAINTENANCE M-1/M-2B/M-2C
3	1	055820C	DECAL LS CHARGER PLUG
4	1	051640/ 052660/ 051640	DECAL MS LOAD DOWN M-1/ M-2B/ M-2C
5	1	051650/ 052650/ 051650	DECAL MS LOAD UP M-1/ M-2B/ M-2C
6	1	057160A	DECAL - FAULT ALERTS
7	1	057200	DECAL - SAFETY INSTRUCTION MS
8	1	057010A	CAUTION DECAL - AUTHORIZED PERSONNEL
9	1	057080A	WARNING DECAL - MOVING PARTS Small
10	1	057050A	WARNING DECAL - KEEP OFF
11	1	057040A	DANGER DECAL - EXPLOSIVE ENVIRONMENT
12	2	057030A	DANGER DECAL - ELECTRICAL SHOCK
13	2	057110A	WARNING DECAL-ROTATING SHAFT/HAIR Large
14	1	057170A	DECAL - FUSE 10 AMPS
15	2	057140A	WARNING LABEL CRUSH FOOT PICTOGRAM
16	1	057020A	DANGER DECAL - CRUSH HAZARD FOOT
17	1	057090A	WARNING DECAL - PINCH POINT HAZARD
18	1	057150A	DECAL - CIRCUIT BREAKER PRESS OFF



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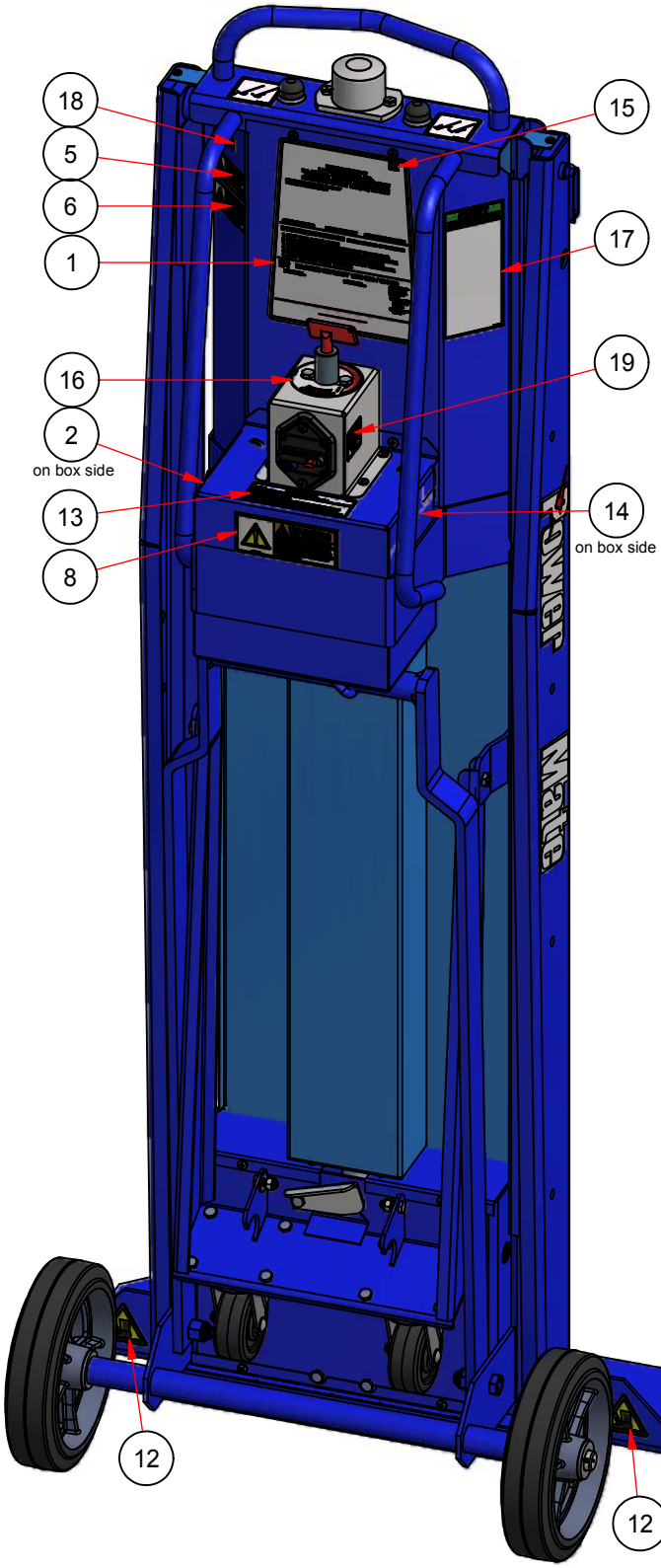
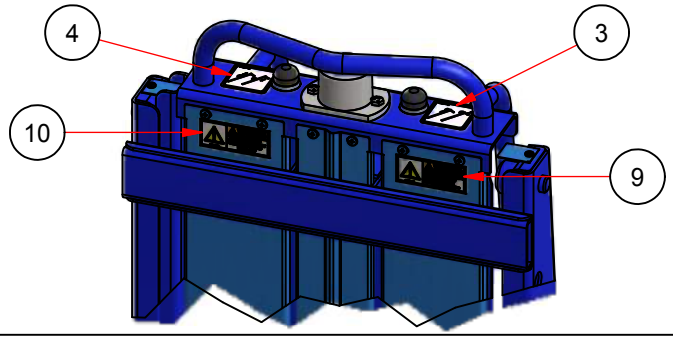
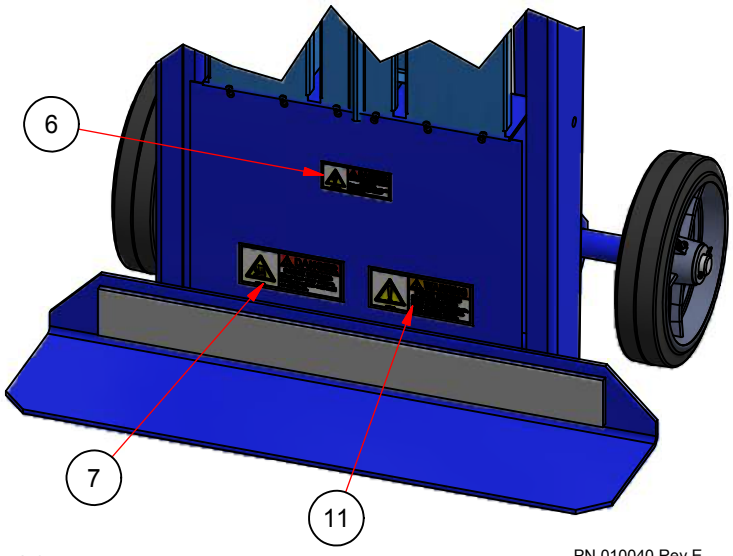
MANDATORY SAFETY LABEL PLACEMENT For M-1/M-2B/M-2C *PowerMate®* Units with Battery Switch

NOTE: Model M-1 shown.





PARTS LIST			
ITEM	QTY	PART No.	DESCRIPTION
1	1	052620/30/40	DECAL MS MAINTENANCE M-1/M-2B/M-2C
2	1	051630	DECAL MS CHARGER PLUG
3	1	051640/ 052660/ 051640	DECAL MS LOAD DOWN M-1/ M-2B/ M-2C
4	1	051650/ 052650/ 051650	DECAL MS LOAD UP M-1/ M-2B/ M-2C
5	1	057040A	DANGER LABEL EXPLOSIVE ENV.
6	2	057030A	DANGER DECAL - ELECTRICAL SHOCK
7	1	057020A	DANGER DECAL - CRUSH HAZARD FOOT
8	1	057060A	WARNING DECAL - MOVING PARTS Large
9	1	057070A	WARNING DECAL - SCREW GUARD
10	1	057050A	WARNING DECAL - KEEP OFF
11	1	057090A	WARNING LABEL PINCH POINT
12	2	057140A	WARNING LABEL CRUSH HAZARD
13	1	057160A	DECAL - FAULT ALERTS
14	1	057170A	DECAL - FUSE 10 AMPS
15	1	055860	DECAL - CE MARK APPROVAL
16	1	057180A	DECAL - ROTARY SWITCH
17	1	057200	DECAL - SAFETY INSTRUCTION MS
18	1	057210A	DECAL - DATE OF MANUFACTURE
19	1	057150A	DECAL - CIRCUIT BREAKER PRESS OFF



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SAFETY PRECAUTIONS

READ THE MANUAL (Mandatory)

Read all safety and operating instructions before anyone operates your PowerMate® Unit. Use the PowerMate® unit only as described in this manual.

Retain all safety and operating instructions for future reference. Ensure they are readily available.

Heed all warnings in the safety and operating instructions.

Follow all installation, operation, service, and safety instructions.

Operator must have received approved training on the PowerMate® unit to be used. Training shall include theory, practice, and testing.

Never allow unqualified or un-authorized personnel to operate the equipment.

Operator must be familiar with normal operating practices and procedures. Whenever there is and doubt as to safety, the operator should stop the operation and not proceed until safe conditions are restored.

Operator is responsible for maintaining proficiency on PowerMate® equipment. Familiarity with instructions, safety procedures, maintenance practices, controls, operation, loading, are required at all times.

WARNING: Only trained personnel shall operate PowerMate® equipment. Failure to comply may result in possible severe injury to the operator and/or others, and damage and/or loss of property.

Wear safety shoes. Keep hair, loose clothing, fingers and all parts of the body away from pinch points and moving/rotating parts. Use equipment handles and controls for manoeuvring and operation.

Operator must have good hearing and vision (with or without correction) and must have good depth perception.

Operator must not be afflicted with any health condition(s) that might cause loss of control or ability.

Do not operate the equipment when using alcohol or taking medication that will affect your physical performance or judgement.

Do not eat or drink during the operation of PowerMate® equipment.

Stay alert when operating PowerMate® equipment.

No horseplay or practical jokes when operating the equipment.

Do not lift people and never ride on the PowerMate® Unit.

Do not abuse the equipment. Use PowerMate® equipment only for their intended use.

SAFETY INSPECTION

WARNING: Do not use PowerMate® equipment if it is damaged. Check for corrosion. Failure to do so may result in catastrophic failure, which may lead to injury, damage or loss of property, and loss of life.

Inspect the PowerMate® unit (see maintenance section) prior to using to ensure the operation can be safely completed. Insure all components of the unit are secure and functioning.

Do not use accessories or attachments not recommended by the manufacturer, as this may increase risk of damage and cause hazards.

Use only PowerMate® accessories best suited for the application ie: Strapbar Attachment for box type loads, Cylinder attachment for cylindrical loads, etc.

Insure that the PowerMate® unit is charged and ready for the operation.

ENVIRONMENT SAFETY

CAUTION: Barriers, warning signs, designated walkways or other safeguards must be provided where pedestrians are exposed to the risk of collision.

Plan your work. Make a plan of action from picking up the load to the point where the load is delivered. Check for doorway size, pathway surfaces, ceiling heights, tight corners, stair step size and integrity, turn radius considerations, etc.. Always use the recommended number of operators for a load.

Check the work site. Inspect the area to be traversed with the PowerMate® unit. Avoid debris, rough surfaces, pot holes, bumps, steep grades, etc. Avoid spills of any kind, slippery surfaces, soft ground, and standing water. Observe any condition that may cause loss of control of the PowerMate® unit leading to injury and/or property damage.

Ensure planned route for PowerMate® operation is clear of obstacles and uninvolved personnel. When visibility is obstructed use spotter person for direction instruction and/or clear path of obstacles and un-involved personnel.

Do Not Place the PowerMate® Unit on an unstable surface. Supporting surface must be capable of carrying the loaded PowerMate® Unit with Operator(s). Check the condition of stairs and the edges of loading docks and vehicle beds. When moving on or off a vehicle, be prepared for movement in the vehicle suspension system.

Do not use PowerMate® equipment in an enclosed space where oxygen, flammable, explosive or toxic vapours are present and/or are given off by oil base paint, paint thinner, some mothproofing substances, or in an area where flammable dust is present.

LOADING SAFETY

CAUTION: Never lift a load that is over the rated capacity of the PowerMate® unit. Estimate the weight and center of gravity position of the load and refer to the unit Load Capacity Chart to ensure the load is within the loading envelope. The capacity may be limited by the weight and strength of the operator(s). Do not operate with a load that is beyond the operator's physical ability.

Do not attempt to increase the load capacity of the equipment by the use of chains, rope, or other means of securing the equipment to the bed or bodies of vehicles, handrails, wall brackets, etc..

Operators shall determine the balance of unfamiliar loads prior moving the load. Work performed in a balanced condition is done easier and safer. New operators should gain practice experience with lighter loads of approximately 250 lbs. with a medium center of gravity before progressing to heavier loads. Do not raise or lower the load too far past the balance point. Jog the equipment control switches so as not to transfer the load weight too quickly. Training is mandatory!

Ensure the load is not damaged, properly packaged, no loose items such as tools used in packaging the load and sharp items (such as nails) projecting from the load.

Protect the PowerMate® strapping material from sharp edges to prevent strap failure. Always inspect straps prior to use. Insure the strapping latching mechanism is fully engaged.

Verify load secureness at the beginning of use, and prior to climbing or descending with the load. Check for any loose items or load shifting.

Never unstrap a load with the PowerMate® unit in an open (extended) condition. The unit will fall over backwards if the wheels are not in contact with a stable surface when the unit is unloaded.

Do not load the PowerMate® unit with a load center of gravity that is outside the side to side limits of the unit wheels.

SAFETY IN MOTION

CAUTION: When transiting a surface, avoid high speed turns that may cause the load and PowerMate® unit to tip. Remember that the load must be secure to the PowerMate® unit to ensure the load cannot shift.

When transiting the unit without a load, ensure the load strapping devices are secure, not dangling, to prevent a trip hazard and prevent entanglement in the PowerMate® moving parts.

Always keep your attention in the direction you are moving, monitoring clearances above, below, and each side of the PowerMate® and load. When visibility is obstructed use spotter person for directional instruction and/or clear path of obstacles and un-involved personnel.

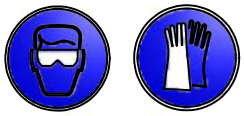
SAFETY IN MOTION continued

Stay alert. Should something break, loosen, or malfunction, on your machine, stop work and seek qualified assistance to correct the condition. When going down a ramp or incline, always walk ahead of the machine and use the open/close controls to engage the rubber guard (foot) with the ground to act as a brake. Do not allow the loaded PowerMate® to attain an un-controllable speed. When moving a PowerMate® unit down a stair without a load, always push the wheels off the step before lowering the wheels to the next step.

Do not compress the top urethane bumper when the machine is under load.

BATTERY SAFETY

Lead-acid batteries contain hydrogen-oxygen gases that can be explosive and sulphuric acid that can cause severe burns. To help avoid risk of danger and injury, observe these precautions when handling or working with a lead-acid battery.



Wear ANSI approved safety glasses or goggles and a face shield. **Wear** proper clothing to protect hands, and body. Wear appropriate rubber gloves and apron.

Never lean over a battery when testing or charging. Cigarettes, flames or sparks, could cause a battery to explode. Keep all ignition sources away from battery. **Do not** strike the sides of a battery with any spark producing item. Make sure work area is well-ventilated.

Never touch both battery terminals with bare hands at the same time. **Remove** rings, watches and dangling jewelry when working with batteries. The metal in the jewelry can cause a shock and burns if contacted with the battery terminals.

Only use insulated/non-conducting tools when making connections on a battery. Never lay tools or other parts on top of a battery.

Because the batteries used in L P International products are of the sealed type, the battery should be replaced if there is evidence of spillage. If there is spilled sulphuric acid present, neutralize with baking soda. **Never** remove vent caps on a sealed battery. In the event of an accident, flush with water and call a physician immediately. If venting gas is significantly inhaled, seek immediate medical attention.

Never store batteries with explosives, flammable materials, chemicals, or food.

Protect batteries from crushing, punctures and shorting.

Do not charge or use booster cables or adjust battery connections without proper instructions and training.

Keep batteries out of reach of children.

Do not accumulate used batteries. Dispose used batteries in accordance with local environmental laws.

CHARGING SAFETY INSTRUCTIONS

Battery Charger

Before using the battery charger, read all instructions and cautionary markings on the battery charger, battery, and product using the battery.

DANGER: Electrical equipment may be hazardous if misused. Operation of this product, and the device it is used on, must always be done with complete knowledge of the product instructions and safety information. Failure to do so may cause serious injury.

DANGER: RISK OF ELECTRICAL SHOCK, BURNS, OR FIRE -The battery charger must be used as supplied. Do not use charger units if the input or output cord is cut or frayed, or damaged in any way. Never replace, splice, or repair cables or connectors supplied with the charger. Do not use the charger if case is damaged in any way. Do not open the charger case for any reason. There are no user serviceable parts. Always be sure that the charger is disconnected from the power source and battery being charged before handling.

NOTICE Your AC cord came equipped with a three-wire grounding plug (a plug that has a third grounding pin). This plug will only fit only a grounded AC outlet. If you are unable to insert the plug into an outlet because the outlet is not grounded contact a licensed electrician to replace the outlet with a properly grounded outlet. Do not defeat the purpose of the grounding plug. Pay particular attention to convenience of receptacles.

If an extension cord is necessary, use a cord with a current rating at least equal to that of the charger. Cords rated for less amperage than the charger may overheat. Ensure the pins of the extension cord plug are the same number, size, shape, as those on the charger. Ensure the extension cord is wired properly and in good condition.

CAUTION: Position the charger and charger cords so that it is not tripped over, pulled, or placed in contact with heated surfaces. Route charger cords so that they are not likely to be walked on or pinched by items placed upon or against them. Protect the charger from dampness or wet weather, such as rain, snow, and so on. Keep charger away from sources of liquids, such as drinks, washbasins, bathtubs, shower stalls, solvents, flowing water, and so on. Do not allow the charger, or any of its cords and connectors lie in standing water such as a puddle.

CAUTION: Charge only properly maintained and rechargeable lead acid batteries of the same voltage rating that is printed on the charger. Other battery types or voltages, damaged batteries, or improperly maintained batteries may burst or emit dangerous gases.

CAUTION: Only use the supplied charger on PowerMate® products. The charger units supplied by L P International are internally protected against battery polarity reversal and overload. This limits potential damage to the charger. However, the charger does not protect against shorting or overload of external wiring or of the battery being charged. Integrity of the PowerMate® unit wiring should be monitored during routine inspections.

CHARGING SAFETY INSTRUCTIONS continued

CAUTION: Do not operate the PowerMate® unit while connected to the charger.

Do not overload wall outlets or extension cords, as this can result in a risk of fire or electrical shock.

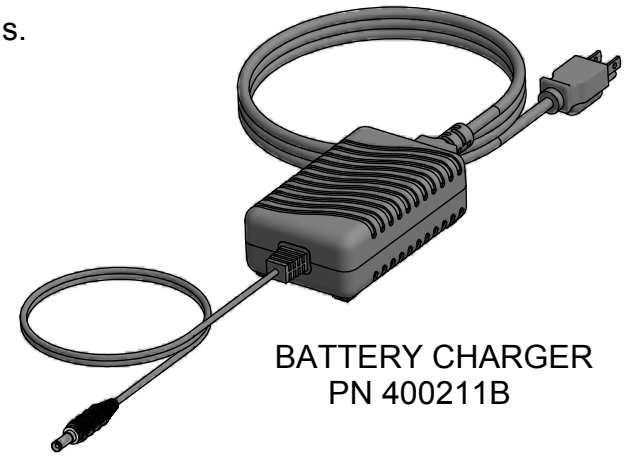
Do not operate charger if it has received a sharp blow, been dropped, or otherwise damaged in anyway.

To reduce risk of electrical shock, unplug the charger from the outlet before attempting maintenance or cleaning.

Disconnect the power plug by pulling the plug, not the cord.

Do not handle the plug with wet hands.

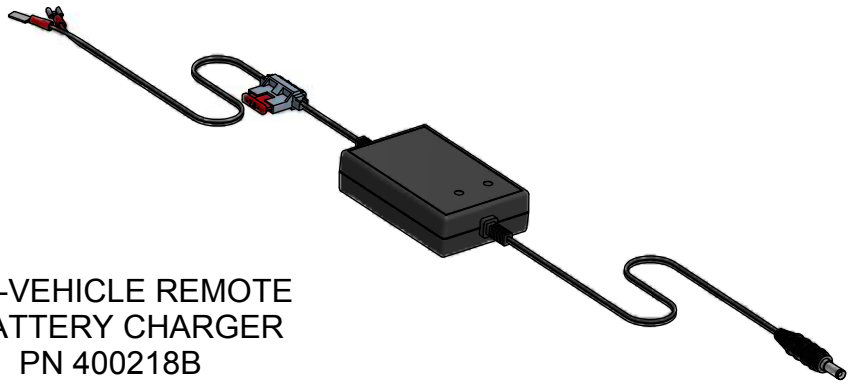
Unplug the charger when not in use.



BATTERY CHARGER
PN 400211B

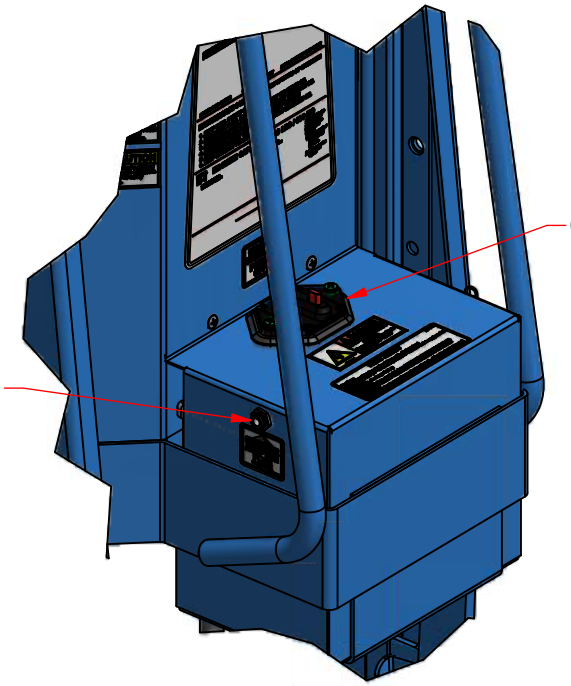
12V IN-VEHICLE CHARGER

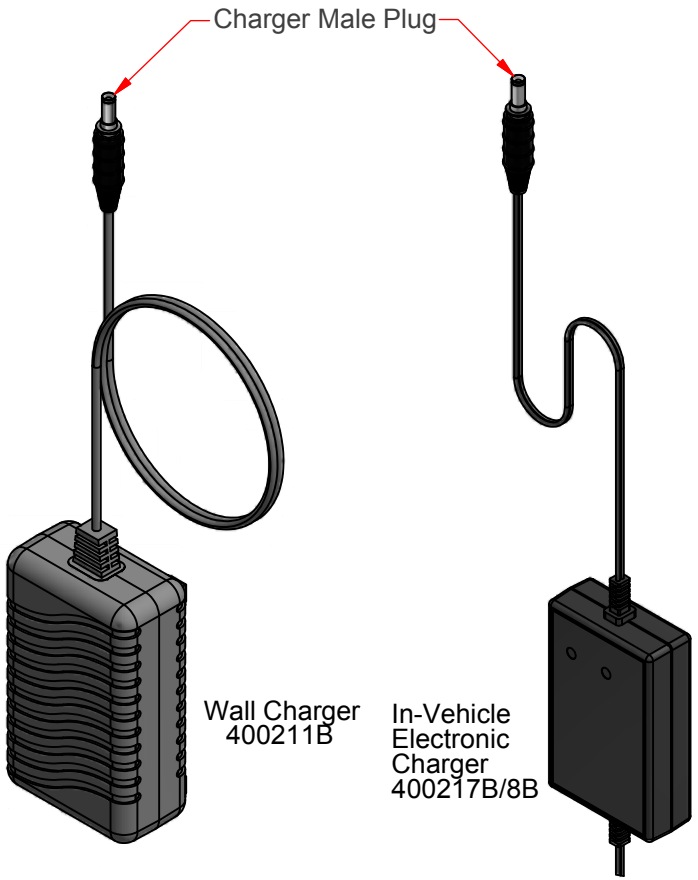
WARNING: The In-vehicle charger cannot protect against vehicle damage caused by faults in the wiring from the vehicle battery to the charger or faults in any other portion of the vehicle wiring harness. The user must ensure that the wiring to the charger adheres to the same vehicle wiring standards and safety precautions required for all vehicle wiring.

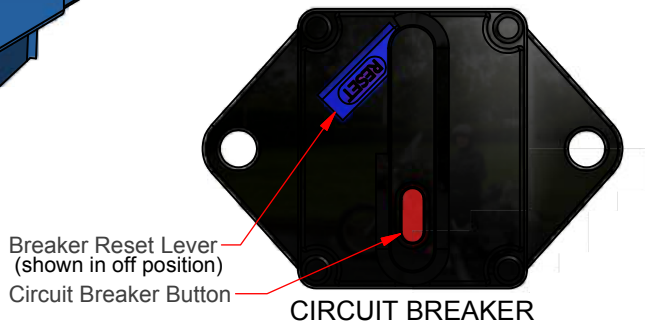


IN-VEHICLE REMOTE
BATTERY CHARGER
PN 400218B

M-SERIES POWERMATE CHARGING INSTRUCTION







CIRCUIT BREAKER

INSTRUCTION:

1. Provide electrical power to the Battery Charger being used.
2. De-activate the PowerMate® by depressing the Circuit Breaker Button located on top of the Battery Box. The Breaker Reset Lever must pop out of the Breaker housing.
3. Insert the Charger Male Plug into the Charging Receptacle located in the Battery Box. The charge cycle is fully automatic. The Wall Charger and the In-vehicle Electronic Charger will indicate the charge status by LED indicators. Refer to the specific Charger documentation.
4. To discontinue the charge cycle, dis-engage the Charger Male Plug from the Charging Receptacle.
5. The PowerMate® can be re-activated for use by swinging the Circuit Breaker Reset Lever back into the Circuit Breaker housing.

NOTE: The PowerMate® can remain on the Battery Charger at all times, ensuring a fully charged unit when called upon. In any case, the Circuit Breaker Reset Lever should always be in the off (extended) position when the PowerMate® is not in use.

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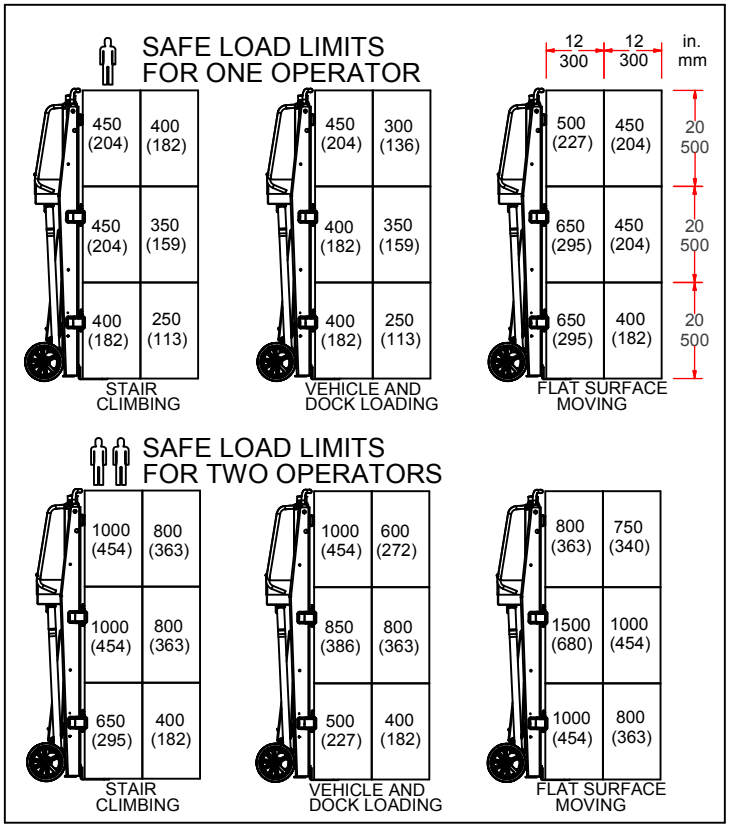
M-1 *POWERMATE®* LOADING INSTRUCTIONS

M-1



After establishing the weight of your load and its center of gravity, refer to the load drawings to determine:

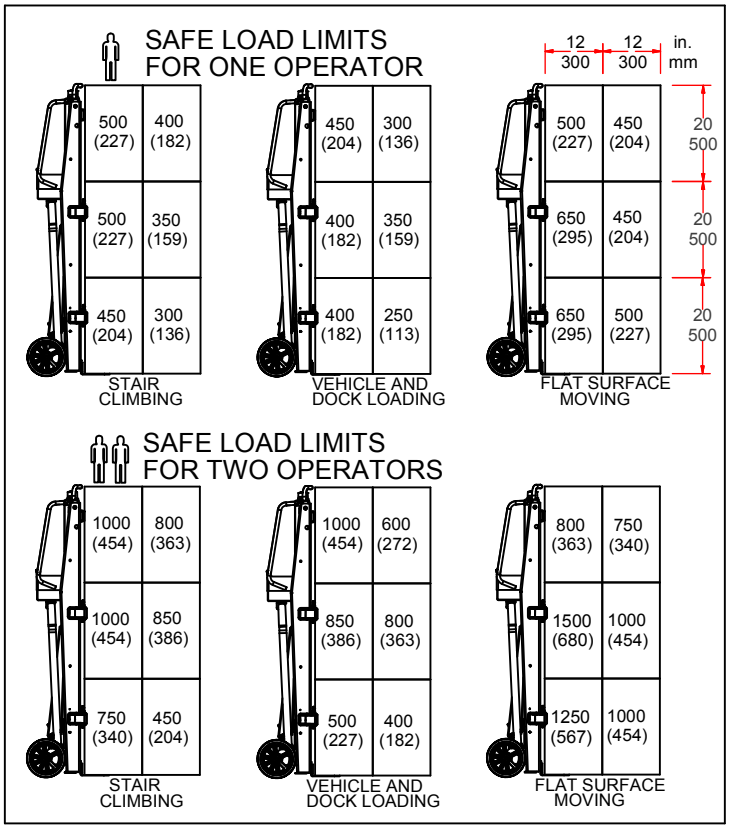
1. That the capacity of the *PowerMate* is adequate for the intended application.

2. Whether one or two operators are required.

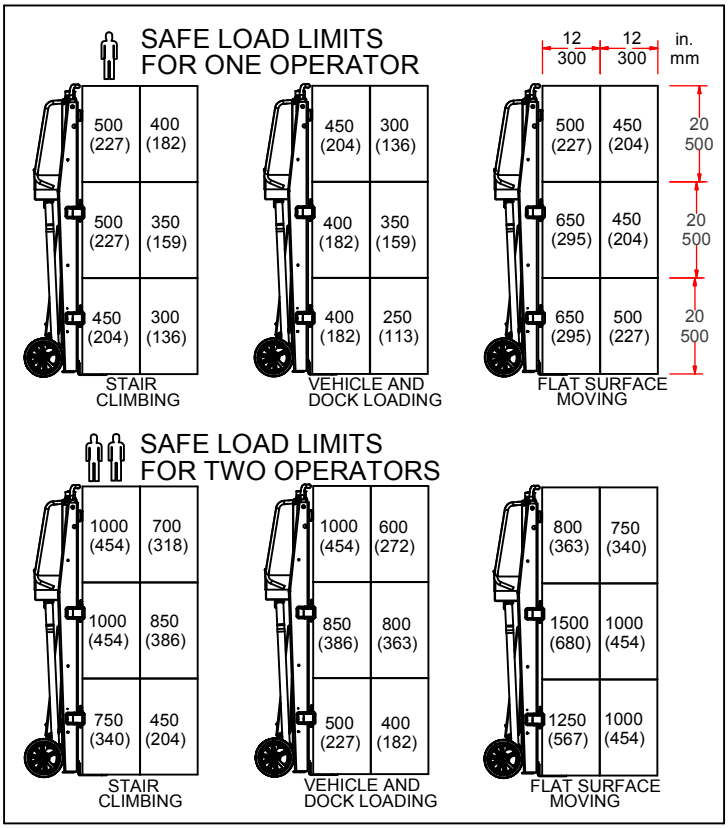
SAFE LOADING RECOMMENDATIONS IN LBS (KG).

NOTE: LOAD RATINGS ARE CALCULATED FOR TRAINED PROFICIENT, EXPERIENCED OPERATORS AND SHOULD BE USED AS A GENERAL GUIDE ONLY.

M-2B



M-2C



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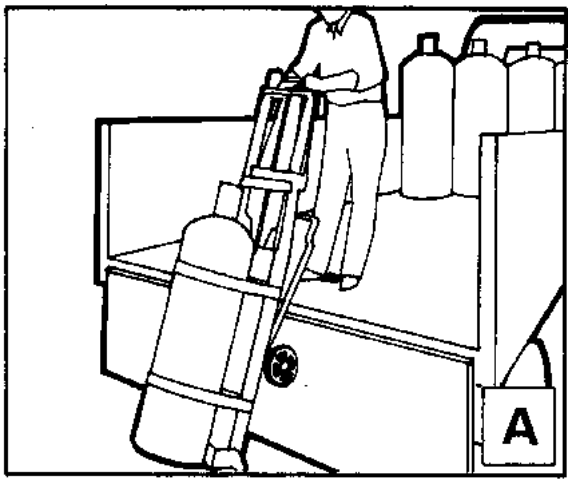
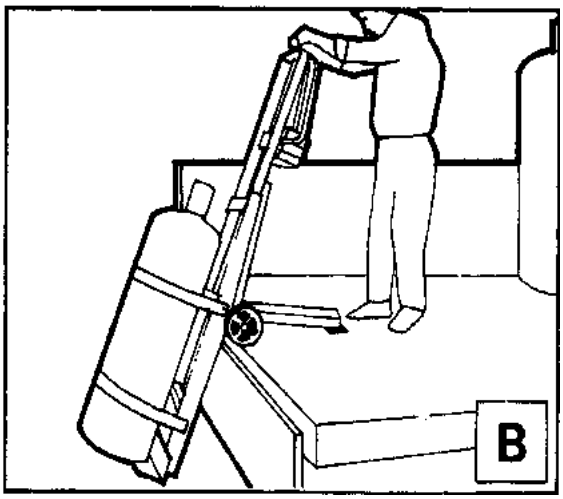
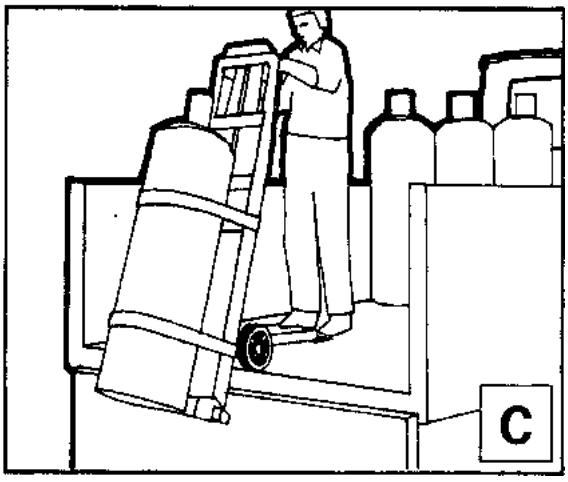
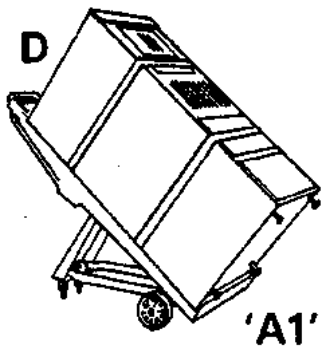
POWERMATE® OPERATION









Loading on a Vehicle

1. Position the *PowerMate®* as shown in "A" close to the tailgate or rear of the vehicle allowing room for the wheels of the *PowerMate®* to clear the vehicle when raising.

2. Push the "LOAD DOWN" button to raise the wheels until they rest on the vehicle bed. Lower the Hook Bar and engage the Hook Attachment (when installed) on the vehicle bed as shown in "B" and Detail "A1".

3. Push the "LOAD UP" button and raise the toeplate/load to the vehicle floor as shown in "C".

4. Disengage the Hook Attachment by pulling the *PowerMate®* away from the rear of the vehicle. The *PowerMate®* can now be positioned anywhere on the vehicle bed.

Unloading from a Vehicle

1. Lower the Hook Bar and connect to the Hook Attachment in the vehicle bed by positioning the *PowerMate®* as shown in "C" and Detail "A1".

2. Push the "LOAD DOWN" button to lower the *PowerMate®* toeplate and load to the ground as shown in "B".

3. Disengage the Hook Bar from the Hook Attachment and stand the *PowerMate®* upright.

4. Push the "LOAD UP" button to lower the wheels to the ground, whereupon the *PowerMate®* can be manoeuvred as required.

5. If desired, the retractable dolly can be unclipped and used in connection with the Hook Bar as shown in "D" to take the load and assist handling for horizontal movement.

POWERMATE OPERATION
STAIR CLIMBING

Upstairs

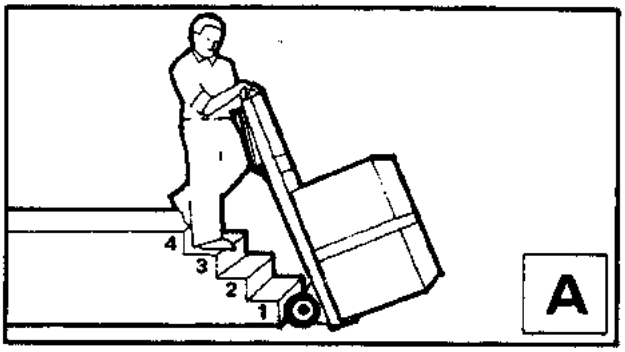
1 Manoeuver the ***PowerMate®*** backwards to the first step as shown in "A", just near enough to allow the wheels to clear the edge of the treads when raised as shown in "B".

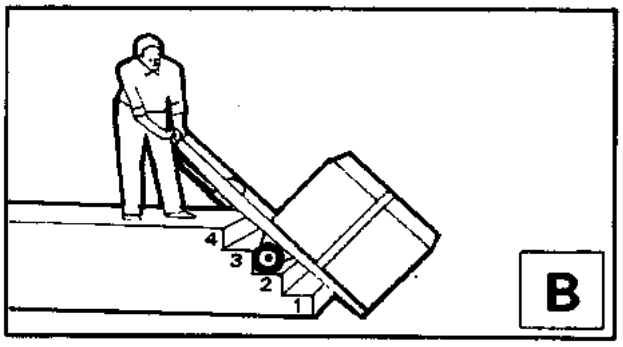
2 Pivot the ***PowerMate®*** on the heel of the toe plate as shown in "B". Push the "LOAD DOWN" button to raise the wheels to rest on step 2.

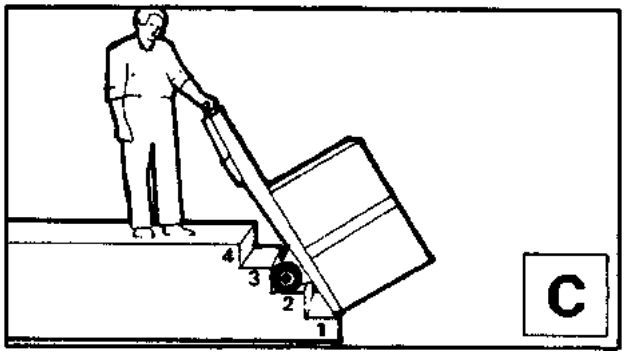
3 Raise the toe plate off the ground, pivoting on the wheels of the ***PowerMate®***. Push the "LOAD UP" button, raising the ***PowerMate®*** frame and load and resting the frame on step 1 as shown in "C".

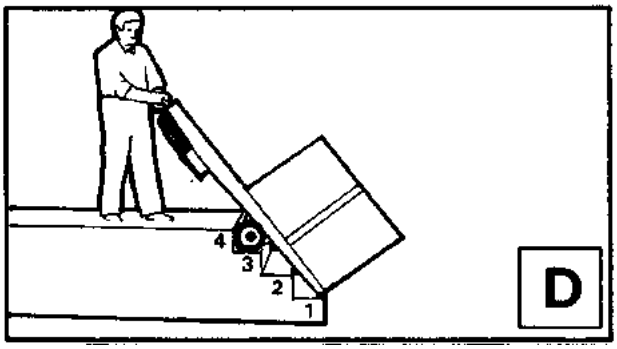
4 Pivot the ***PowerMate®*** on the load frame so that the wheels are clear of the steps and push the "LOAD DOWN" button to raise the wheels to step 3 as shown in "D".

Repeat procedures 3 and 4 until the top of the stairs are reached.









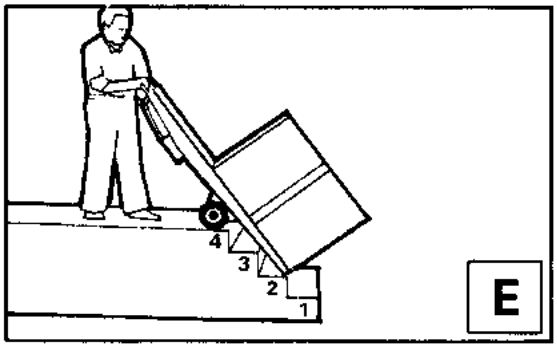
Down Stairs

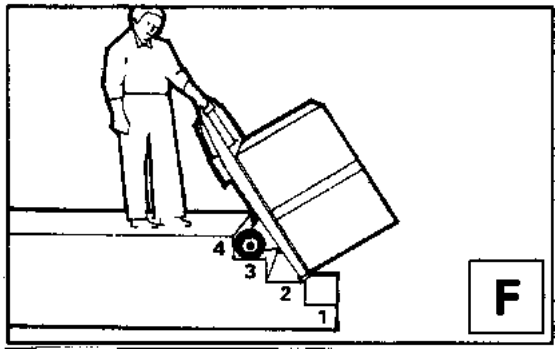
1. Position the ***PowerMate®*** at the top of the stairs with the load frame overhanging and clear of the steps. Push the "LOAD DOWN" button to lower the load and load frame, and rest it on step 2 as shown in "E".

2. Pivot the ***PowerMate®*** on the heel of the load frame and push the "LOAD UP" button which will lower the wheels to step 3 as shown in "F".

3. Pivot the ***PowerMate®*** on its wheels to lift the load frame clear of the steps and push the "LOAD DOWN" button to lower the load frame to rest on the toe plate on step 1.

   Repeat procedures 2 and 3 until reaching the bottom of the stairs.





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STORAGE PROCEDURE

If the equipment is not to be used for an extended period of time (over 3 months) then the following storage procedure should be completed by a knowledgeable service person.

1. Remove the front drive screw guard (if installed). Extend the main frames fully. Clean and lubricate the drive screw with light machine oil. Replace the drive screw guard.

2. Disable the equipment by placing the safety toggle switch in the “Off” (O) position.

3. Store the equipment in a dry / dust-free location.

4. Check every 3 months that the battery is fully charged.

5. Before returning the equipment to service, it should be examined by a trained and competent service person.

BATTERY CARE

The 12 volt DC battery system is maintenance free and sealed. The gelled electrolyte inside the battery requires no maintenance whatsoever throughout its life. *DO NOT ATTEMPT TO OPEN THESE BATTERIES.*

The best battery life and equipment performance will be attained by keeping the battery fully charged.

The equipment has a small female battery charging receptacle located on the left side of the battery box cover. This receptacle is connected directly to the battery.

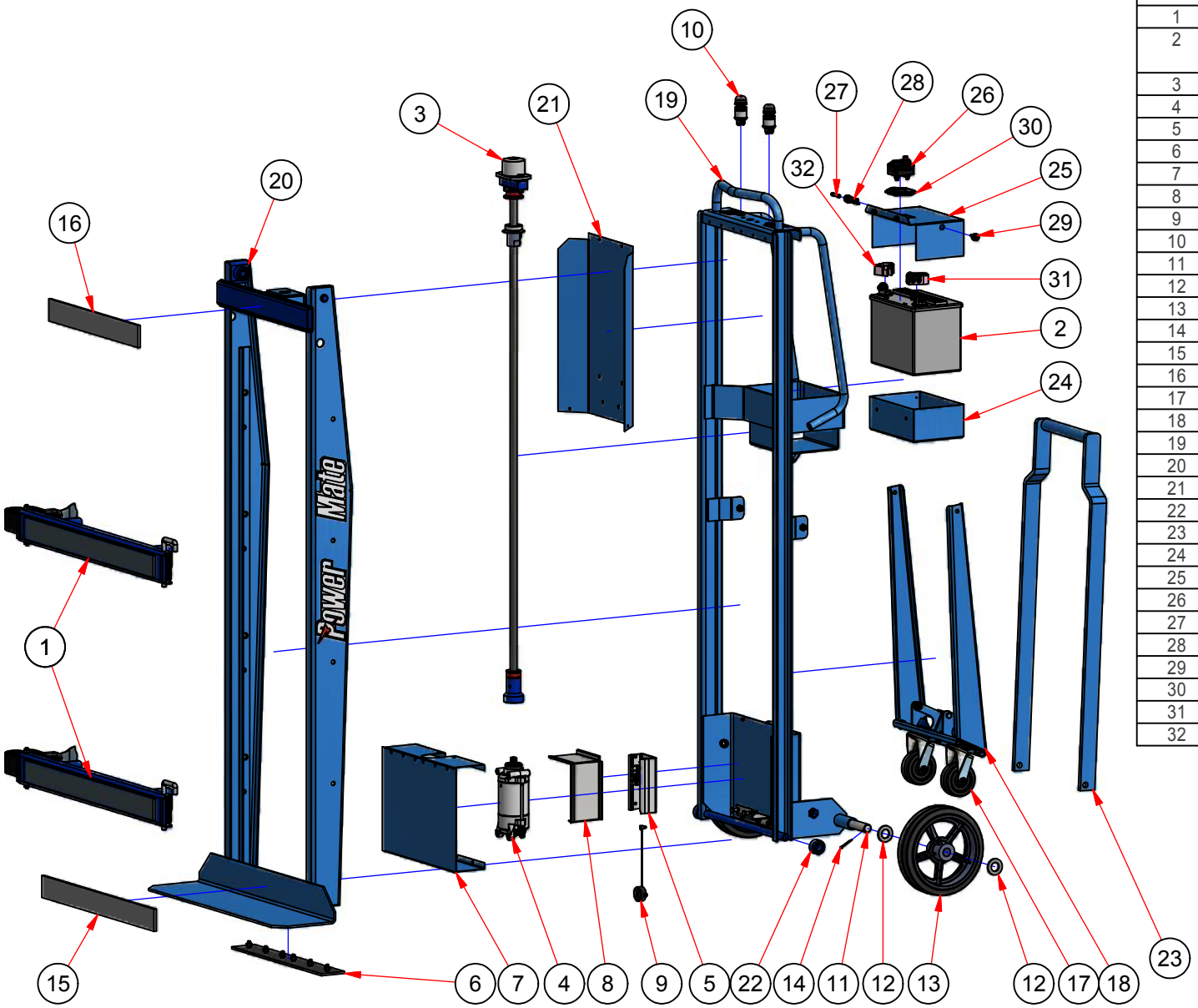
The battery charger output wire has a mating male plug.

Insertion of the male plug into the female receptacle connects the battery charger to the battery. Once connected the battery charger automatically commences charging. The charger stops when the battery is fully charged.

Additional Tips for Operating the M-Series PowerMate

To enjoy "Trouble Free" *PowerMate* operations, remember the following:

1. Keep the battery fully charged.
2. Follow the maintenance schedule and especially keep the screw clean and oiled with light machine oil.
3. *PowerMate*® equipment is designed to take advantage of balance and leverage principles. Work performed will be easier and safer when the load is maintained in a balanced position. The operator should locate the center of gravity position of an unfamiliar load prior to undertaking lifting or lowering operations.
4. New operators should be trained on light loads not exceeding 400 lbs. (182 kg), progressing to heavier loads after gaining experience.
5. Never unstrap a load with the wheels up.
6. No not compress the top or bottom red bumpers on the drive screw when the unit has a load.
7. Never lay the *PowerMate*® unit down on the battery box when transporting.
8. Ensure the overide bearing is properly adjusted on the drive screw.
9. Keep nuts and bolts tight on the dolly attachment and the hook bar.
10. Keep both hands on the handles when operating the *PowerMate*®.
11. When climbing stairs, keep the wheels at the back of the stair tread and the heel of the machine back a safe distance from the step edge.
12. It is essential for reliability, and to conform with current Health and Safety legislation, that your *PowerMate*® is maintained regularly. We recommend a bi-annual Service Agreement with L P International. Inc.



PARTS LIST		
ITEM	PART	DESCRIPTION
1	400080S	STRAPBAR MS
2	051310C	BATTERY 12V 32Ah SEALED
3	300550C	SCREW ASSEMBLY M-1, M-2B
4	050860D	ELECTRIC MOTOR
5	052810	SOLID STATE CONTROLLER
6	400230	RUBBER GUARD ASSEMBLY
7	305770	MOTOR GUARD
8	305771	SPLASH GUARD
9	301522	BUZZER ASSEMBLY
10	050210	SWITCH PUSH BUTTON 2 TERMINAL
11	307820	AXLE
12	050060	WASHER 3/4 SAE
13	301320	WHEE 8"
14	050110	COTTER PIN 1/8 x 1 ZINC
15	101400	BOTTOM FELT
16	101410	FELT TOP
17	051330	WHEEL CASTER
18	305810	DOLLY ATTACHMENT
19	300010D	INNER FRAME
20	300020C	OUTER FRAME
21	102320	TOP GUARD
22	052970	STEEL ROLLER WHEEL
23	300733	HOOK BAR
24	306010	BATTERY COVER BOTTOM
25	306000C	BATTERY COVER TOP
26	051364	CIRCUIT BREAKER 100A
27	051705	FUSE 10 AMP AGC
28	052690C	FUSE HOLDER
29	301393A	CHARGE PLUG
30	051425	GASKET - CIRCUIT BREAKER
31	051311	BATTERY TERMINAL COVER LH MS
32	051312	BATTERY TERMINAL COVER RH MS

MODEL M-1
REPLACEMENT COMPONENT LIST
4.01

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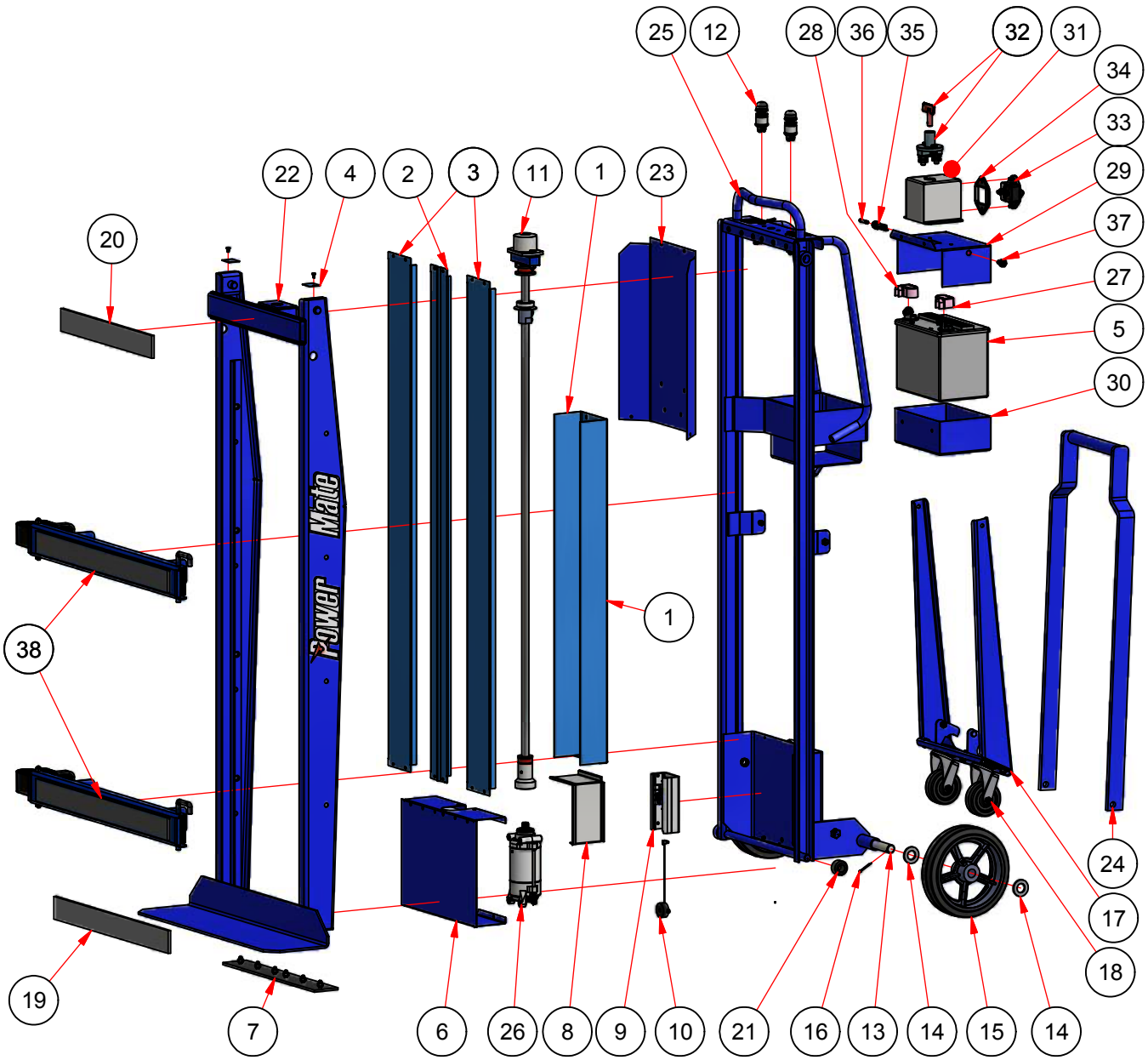
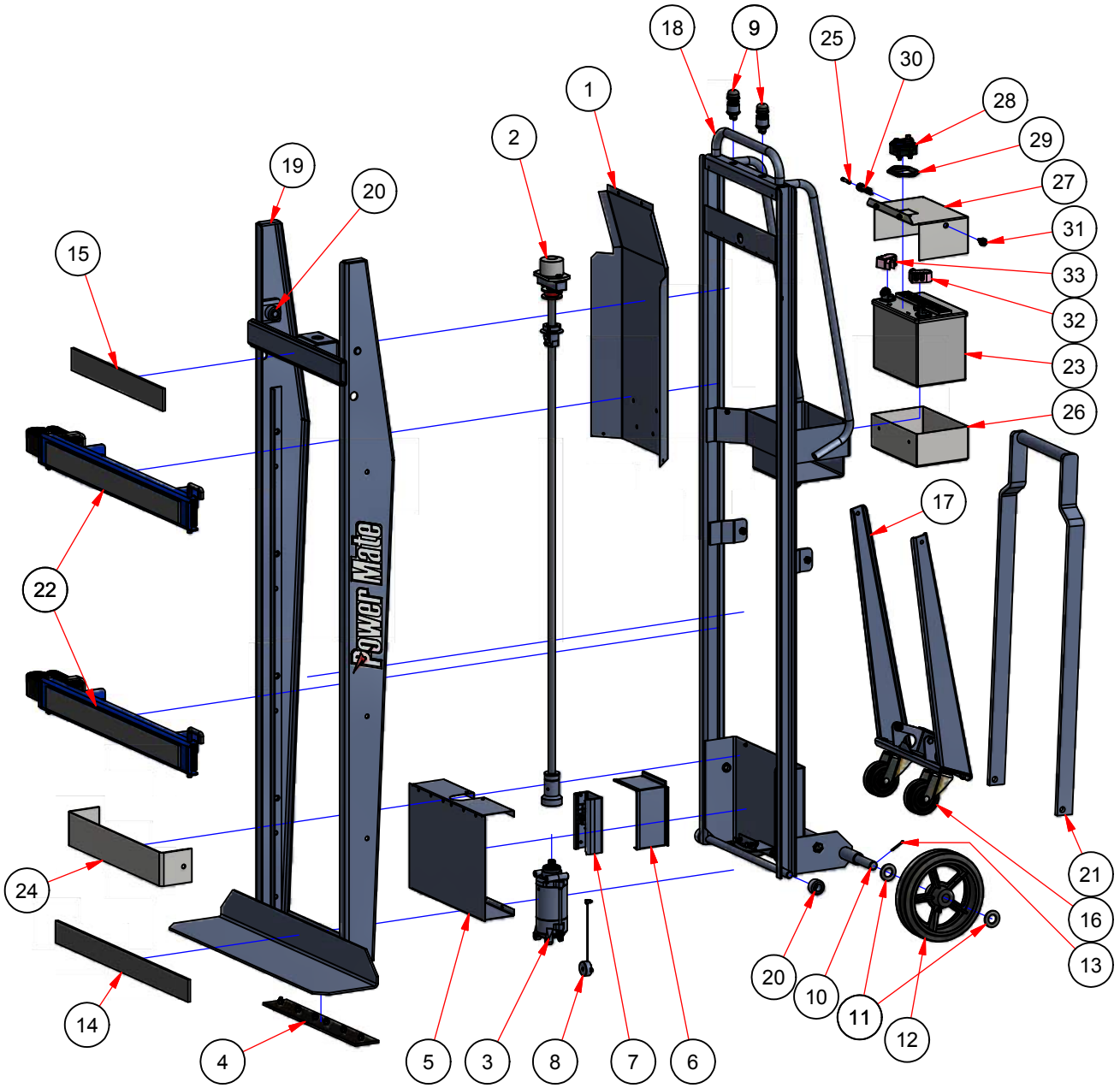
Sheet 1 of 2



PARTS LIST		
ITEM	PART No.	DESCRIPTION
1	302500	SCREW GUARD BACK
2	302510	SCREW GUARD FRONT
3	302610	SCREW COVER
4	302640	ROLLER GUARD
5	051310C	BATTERY 12V 32Ah SEALED
6	305770	MOTOR GUARD
7	400230	BOTTOM RUBBER GUARD
8	305771	SPLASH GUARD
9	052810	SOLID STATE CONTROLLER
10	301522	BUZZER ASSEMBLY
11	300550C	SCREW ASSEMBLY M-1, M-2B
12	050210	SWITCH PUSH BUTTON 2 TERMINAL
13	307820	BOTTOM WHEEL AXLE M-1 PF
14	050060	WASHER 3/4 SAE
15	301320	WHEEL 8"
16	050110	COTTER PIN 1/8 x 1
17	305810	DOLLY ATTACHMENT MS
18	051330	WHEEL CASTER 3" SWIVEL
19	101400	BOTTOM FELT
20	101410	FELT TOP
21	052970	STEEL ROLLER WHEEL
22	300020C	OUTER FRAME
23	102320	TOP GUARD
24	300733	HOOK BAR
25	300010D	INNER FRAME
26	050860D	ELECTRIC MOTOR
27	051311	BATTERY TERMINAL COVER LH
28	051312	BATTERY TERMINAL COVER RH
29	306005B	BATTERY COVER TOP
30	306010	BATTERY COVER BOTTOM
31	305550	SWITCH BOX MS
32	051362	SWITCH BATTERY DISCONNECT
33	051364	CIRCUIT BREAKER 100A
34	051425	GASKET - CIRCUIT BREAKER
35	052690C	FUSE HOLDER
36	051705	FUSE 10 AMP AGC
37	301393A	CHARGE PLUG ASSEMBLY MS
38	400080A	STRAPBAR M-SERIES

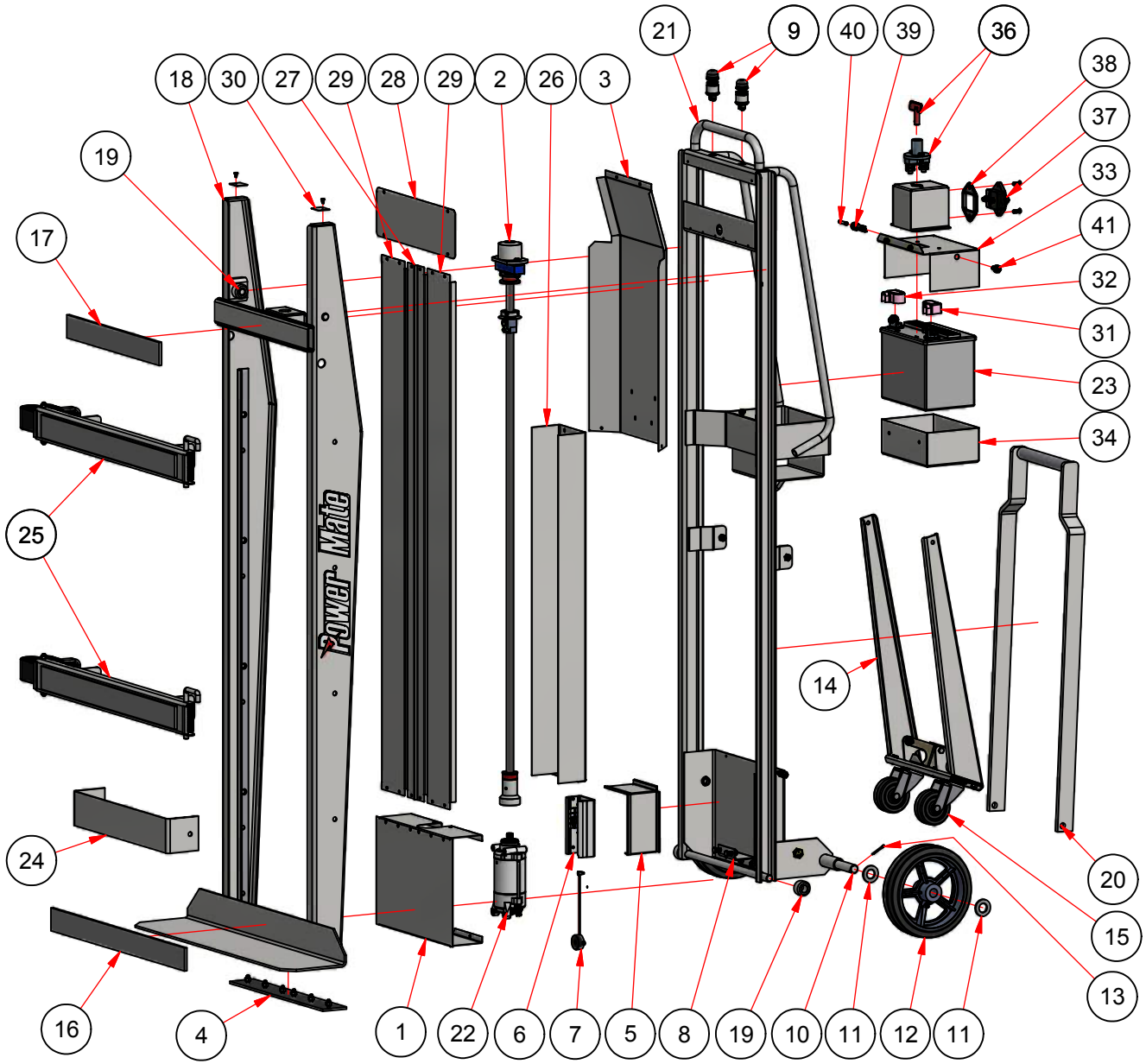
MODEL M-1 with BATTERY SWITCH
REPLACEMENT COMPONENT LIST

4.02



PARTS LIST		
ITEM	PART No.	DESCRIPTION
1	302470	TOP GUARD
2	300550C	SCREW ASSEMBLY
3	050860D	ELECTRIC MOTOR
4	400230	BOTTOM RUBBER GUARD
5	305770	MOTOR GUARD
6	305771	SPLASH GUARD
7	052810	SOLID STATE CONTROLLER
8	301522	BUZZER ASSEMBLY
9	050210	SWITCH PUSH BUTTON
10	307820	BOTTOM WHEEL AXLE
11	050060	WASHER 3/4 SAE
12	301320	WHEEL 8"
13	050110	COTTER PIN
14	101960	FELT STRAP BAR
15	101410	FELT TOP
16	051330	WHEEL CASTER 3"
17	305810	DOLLY ATTACHMENT
18	300110C	INNER FRAME
19	300120C	OUTER FRAME
20	052970	STEEL ROLLER
21	300733	HOOK BAR
22	400080S	STRAPBAR ASSEMBLY
23	051310C	BATTERY 12V 32Ah
24	303000	OUTER FRAME STIFFENER
25	051705	FUSE 10 AMP AGC
26	306010	BATTERY COVER BOTTOM
27	306000C	BATTERY COVER TOP
28	051364	CIRCUIT BREAKER 100A
29	051425	GASKET - CIRCUIT BREAKER
30	052690C	FUSE HOLDER
31	301393A	CHARGE PLUG
32	051311	TERMINAL COVER LH MS
33	051312	TERMINAL COVER RH MS

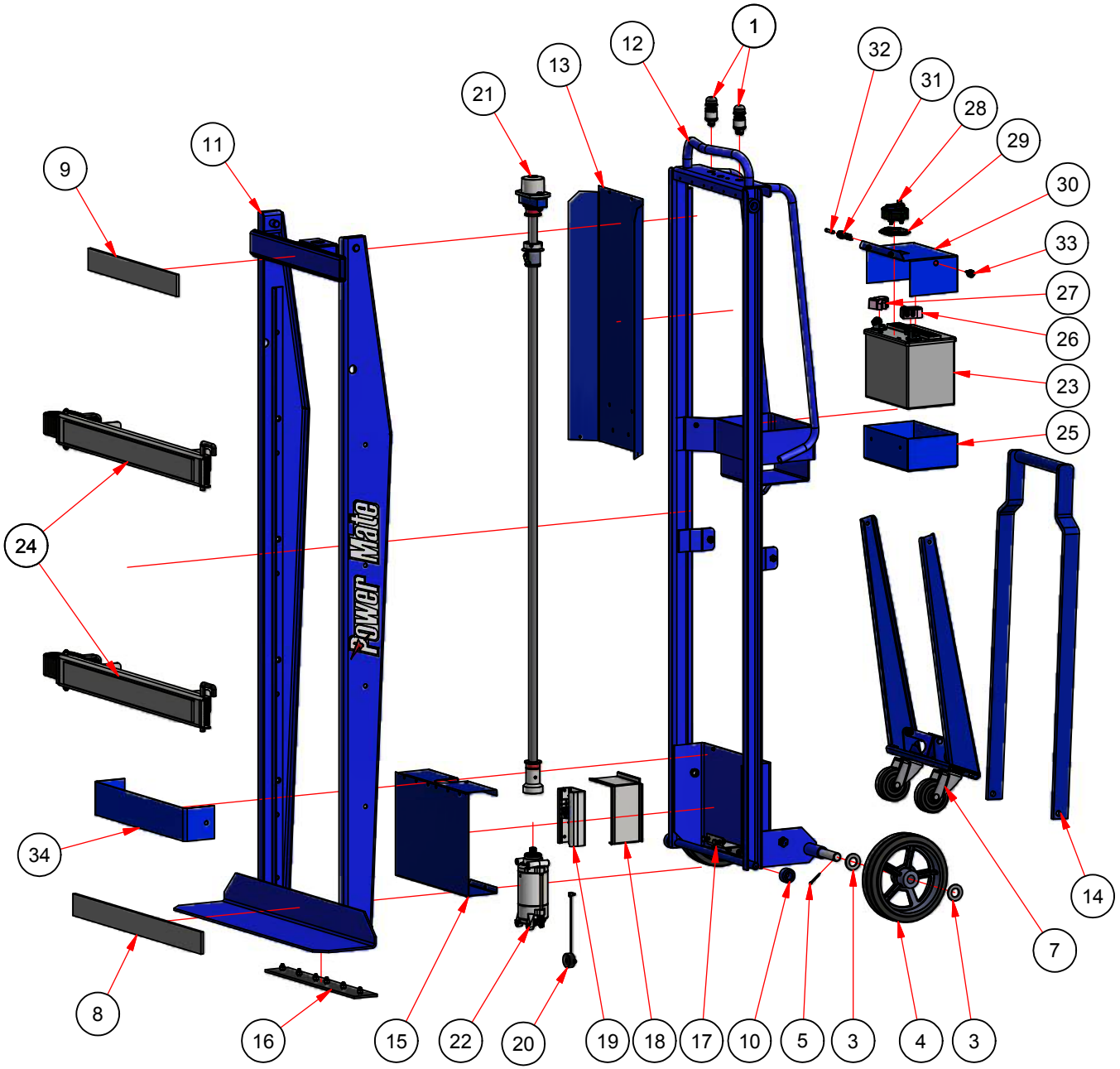
MODEL M-2B
REPLACEMENT COMPONENT LIST
4.03



PARTS LIST		
ITEM	PART No.	DESCRIPTION
1	305770	MOTOR GUARD
2	300550C	SCREW ASSEMBLY
3	302470	TOP GUARD
4	400230	BOTTOM RUBBER GUARD
5	305771	SPLASH GUARD
6	052810	SOLID STATE CONTROLLER
7	301522	BUZZER ASSEMBLY
8	300800C	MOTOR SUPPORT
9	050210	SWITCH PUSH BUTTON
10	307820	WHEEL AXLE
11	050060	WASHER 3/4 SAE
12	301320	WHEEL 8"
13	050110	COTTER PIN 1/8
14	305810	DOLLY ATTACHMENT
15	051330	WHEEL CASTER 3"
16	101960	FELT STRAP BAR
17	101410	FELT TOP
18	300120C	OUTER FRAME
19	052970	STEEL ROLLER WHEEL
20	300733	HOOK BAR
21	300110C	INNER FRAME
22	050860D	ELECTRIC MOTOR
23	051310C	BATTERY 12V 32Ah SEALED
24	303000	OUTER FRAME STIFFENER
25	400084	STRAPBAR ASSEMBLY
26	302500	SCREW GUARD BACK PF
27	302520	SCREW GUARD M-2B PF
28	302540	SWITCH GUARD M-2B PF
29	302620	SCREW COVER M-2B PF
30	302640	ROLLER GUARD MS PF
31	051311	TERMINAL COVER LH
32	051312	TERMINAL COVER RH
33	306005B	BATTERY COVER TOP
34	306010	BATTERY COVER BOTTOM
35	305550	SWITCH BOX
36	051362	BATTERY DISCONNECT
37	051364	CIRCUIT BREAKER 100A
38	051425	GASKET
39	052690C	FUSE HOLDER
40	051705	FUSE 10 AMP AGC
41	301393A	CHARGE PLUG

MODEL M-2B with BATTERY SWITCH
REPLACEMENT COMPONENT LIST

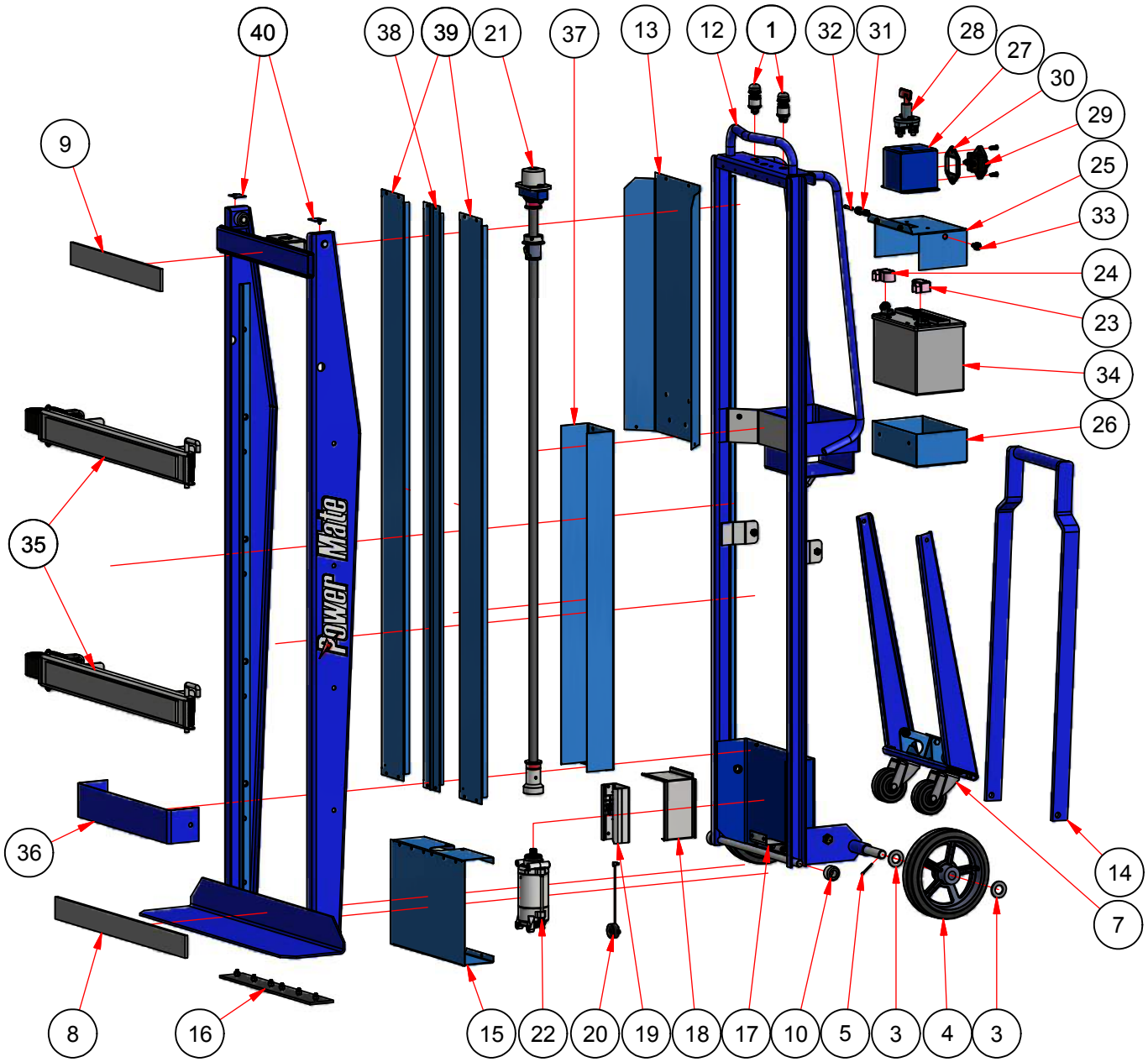
4.04



PARTS LIST		
ITEM	PART No.	DESCRIPTION
1	050210	SWITCH PUSH BUTTON
2	307820	WHEEL AXLE
3	050060	WASHER 3/4 SAE
4	301320	WHEEL 8"
5	050110	COTTER PIN
6	305810	DOLLY ATTACHMENT
7	051330	WHEEL CASTER 3"
8	101960	FELT STRAP BAR
9	101410	FELT TOP
10	052970	STEEL ROLLER WHEEL
11	300122B	OUTER FRAME
12	300112B	INNER FRAME
13	101030	TOP GUARD
14	300733	HOOK BAR
15	305770	MOTOR GUARD
16	400230	BOTTOM RUBBER GUARD
17	300800C	MOTOR SUPPORT
18	305771	SPLASH GUARD
19	052810	SOLID STATE CONTROLLER
20	301522	BUZZER ASSEMBLY
21	300570C	SCREW ASSEMBLY
22	050860D	ELECTRIC MOTOR
23	051310C	BATTERY 12V 32Ah SEALED
24	400084	STRAPBAR ASSEMBLY
25	306010	BATTERY COVER BOTTOM
26	051311	TERMINAL COVER LH
27	051312	TERMINAL COVER RH
28	051364	CIRCUIT BREAKER 100A
29	051425	GASKET - CIRCUIT BREAKER
30	306000C	BATTERY COVER TOP
31	052690C	FUSE HOLDER
32	051705	FUSE 10 AMP AGC
33	301393A	CHARGE PLUG
34	303000	OUTER FRAME STIFFENER

MODEL M-2C
REPLACEMENT COMPONENT LIST

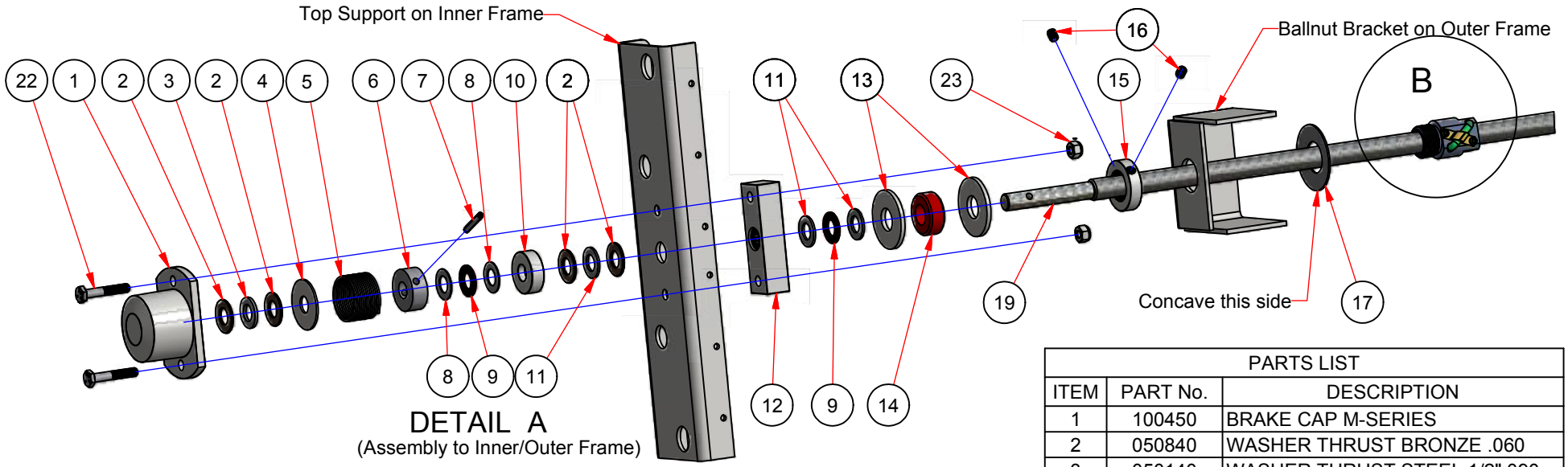
4.05



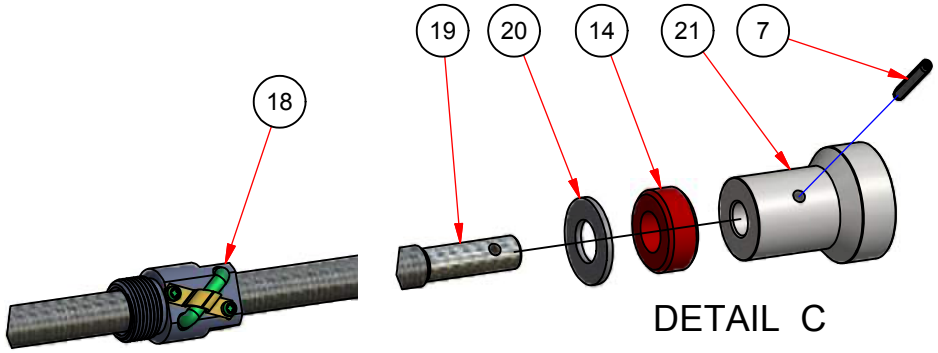
PARTS LIST		
ITEM	PART No.	DESCRIPTION
1	050210	SWITCH PUSH BUTTON
2	307820	WHEEL AXLE
3	050060	WASHER 3/4 SAE
4	301320	WHEEL 8"
5	050110	COTTER PIN
6	305810	DOLLY ATTACHMENT
7	051330	WHEEL CASTER 3"
8	101960	FELT STRAP BAR
9	101410	FELT TOP
10	052970	STEEL ROLLER WHEEL
11	300122B	OUTER FRAME
12	300112B	INNER FRAME
13	101030	TOP GUARD M-2C
14	300733	HOOK BAR SUB-ASSEMBLY
15	305770	MOTOR GUARD
16	400230	BOTTOM RUBBER GUARD
17	300800C	MOTOR SUPPORT
18	305771	SPLASH GUARD MS PF
19	052810	SOLID STATE CONTROLLER
20	301522	BUZZER ASSEMBLY
21	300570C	SCREW ASSEMBLY M-2C
22	050860D	ELECTRIC MOTOR
23	051311	TERMINAL COVER LH
24	051312	TERMINAL COVER RH
25	306005B	BATTERY COVER TOP
26	306010	BATTERY COVER BOTTOM
27	305550	SWITCH BOX MS PF
28	051362	SWITCH BATTERY DISCONNECT
29	051364	CIRCUIT BREAKER 100A
30	051425	GASKET - CIRCUIT BREAKER
31	052690C	FUSE HOLDER
32	051705	FUSE 10 AMP AGC
33	301393A	CHARGE PLUG ASSEMBLY
34	051310C	BATTERY 12V 32Ah SEALED
35	400084	STRAPBAR ASSEMBLY
36	303000	OUTER FRAME STIFFENER
37	302500	SCREW GUARD BACK PF
38	302530	SCREW GUARD FRONT M-2C PF
39	302630	SCREW COVER M-2C PF
40	302640	ROLLER GUARD MS PF

MODEL M-2C with BATTERY SWITCH
REPLACEMENT COMPONENT LIST

4.06

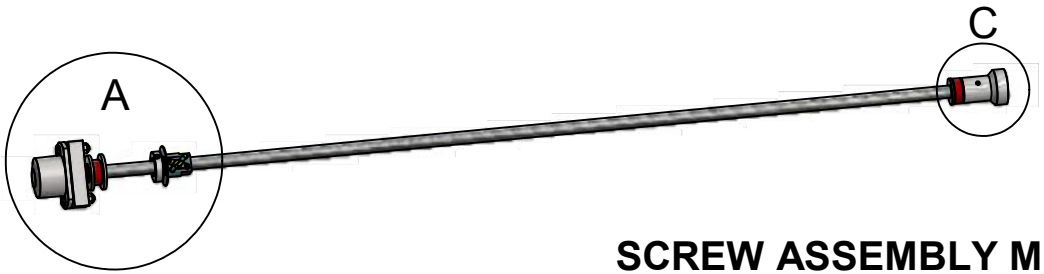


DETAIL A
(Assembly to Inner/Outer Frame)



DETAIL C

DETAIL B

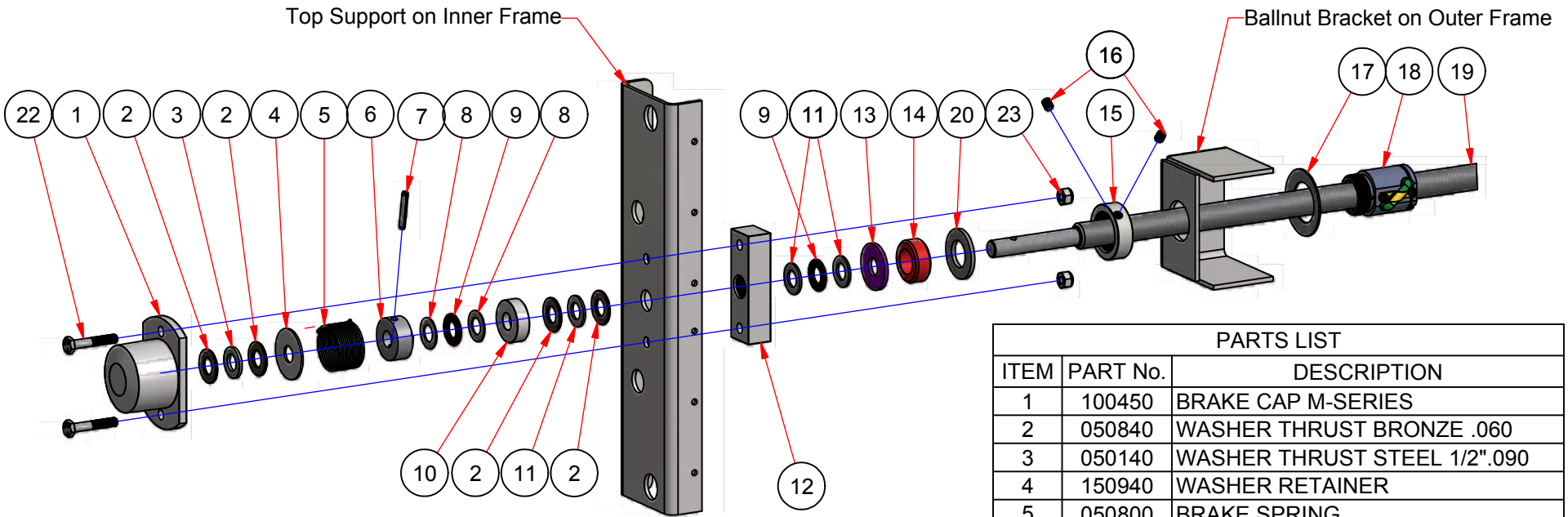


PARTS LIST		
ITEM	PART No.	DESCRIPTION
1	100450	BRAKE CAP M-SERIES
2	050840	WASHER THRUST BRONZE .060
3	050140	WASHER THRUST STEEL 1/2".090
4	150940	WASHER RETAINER
5	050800	BRAKE SPRING
6	050820	WASHER TOP BRAKE DRIVE
7	051680	ROLL PIN SPIROL 3/16"
8	050810	WASHER THRUST STEEL 1/2"x .030
9	050120	THRUST WASHER
10	050850	WASHER BOTTOM BRAKE DRIVE
11	050920	WASHER THRUST STEEL 1/2"x .060
12	300990	BEARING RETAINER BAR
13	050040	PLATE WASHER 5/8"
14	100700	URETHANE BUMPER
15	052090	BALLNUT LOCKNUT 5/8 SCREW
16	050550	SET SCREW 1/4-20NC x 5/16
17	050830B	WASHER DISC SPRING 5/8"
18	050170C	BALLNUT 5/8"
19	102040C	DRIVE SCREW 5/8"
20	051850	WASHER 5/8"
21	300842	COUPLING COVER WITH SPLINE
22	050640	BOLT 1/4-20NC
23	050610	LOCK NUT 1/4-20NC

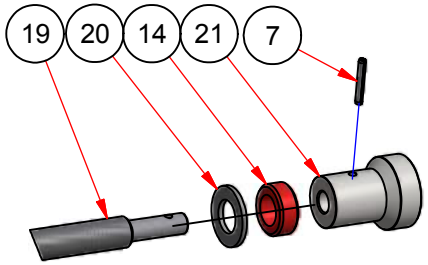
SCREW ASSEMBLY M-1, M-2B

PN 300550

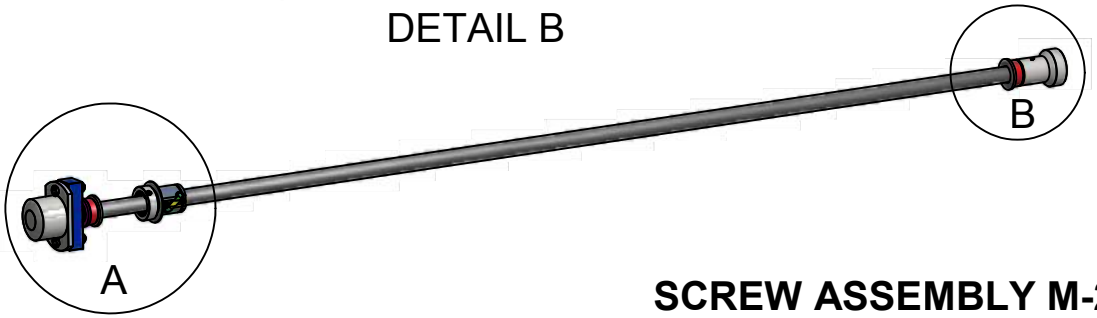
4.07



DETAIL A
(Assembly to Inner/Outer Frame)



DETAIL B



PARTS LIST		
ITEM	PART No.	DESCRIPTION
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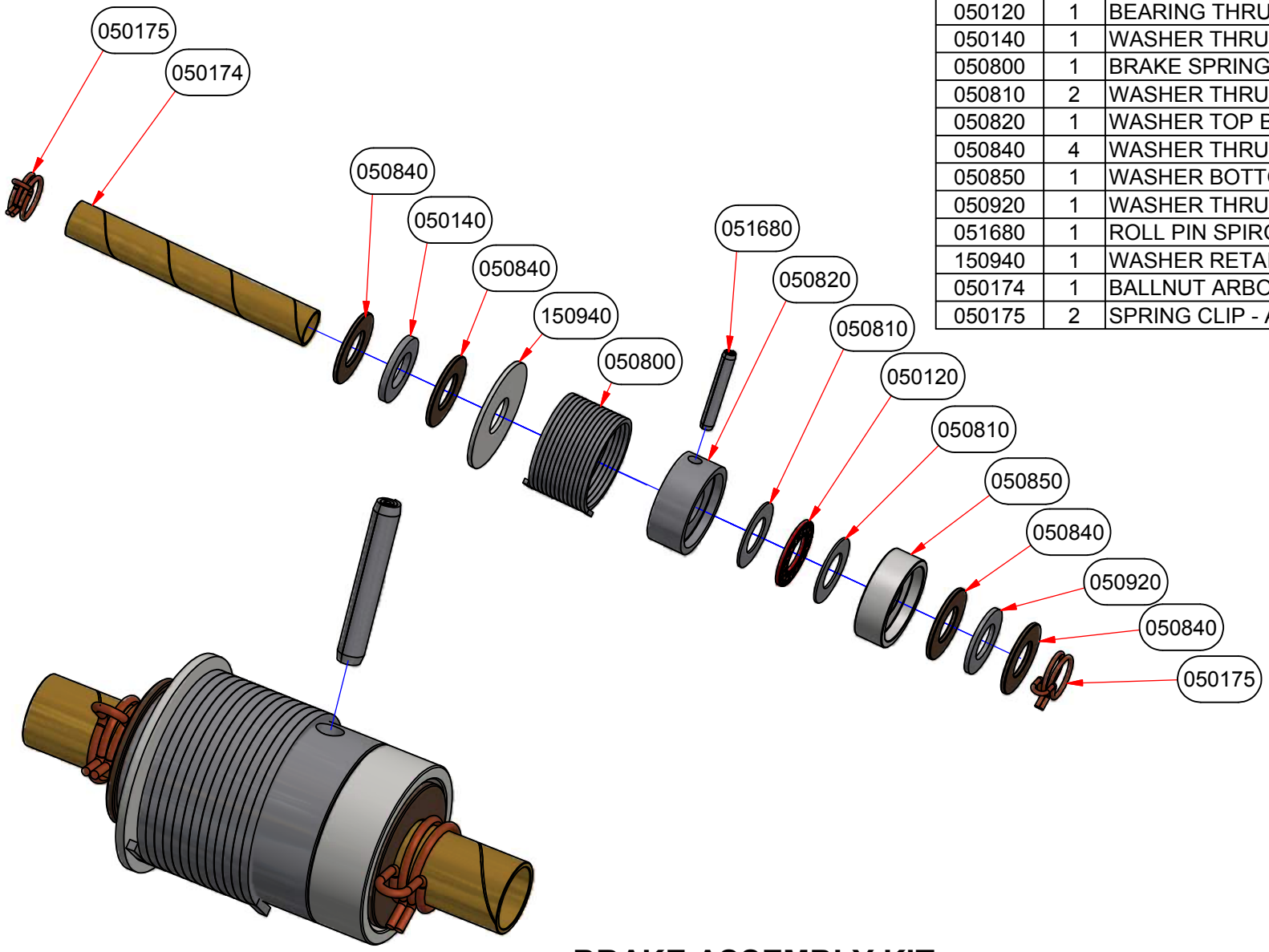
2	050840	WASHER THRUST BRONZE .060
3	050140	WASHER THRUST STEEL 1/2".090
4	150940	WASHER RETAINER
5	050800	BRAKE SPRING
6	050820	WASHER TOP BRAKE DRIVE
7	051680	ROLL PIN SPIROL 3/16"
8	050810	WASHER THRUST STEEL 1/2"x .030
9	050120	BEARING THRUST STEEL
10	050850	WASHER BOTTOM BRAKE DRIVE
11	050920	WASHER THRUST STEEL 1/2"x .060
12	300990	BEARING RETAINER BAR
13	055640	PLATE WASHER 1/2"
14	101320	URETHANE BUMPER 1/2 x 3/4
15	052091	BALLNUT LOCKNUT 3/4 SCREW
16	050550	SET SCREW 1/4-20NC x 5/16
17	102830	WASHER DISC SPRING 3/4"
18	050180	BALLNUT 3/4"
19	102460E	DRIVE SCREW 3/4"
20	050060	WASHER 3/4"
21	300842	COUPLING COVER WITH SPLINE
22	050640	BOLT 1/4-20NC
23	050610	LOCK NUT 1/4-20NC

SCREW ASSEMBLY M-2C
PN 300570
4.08

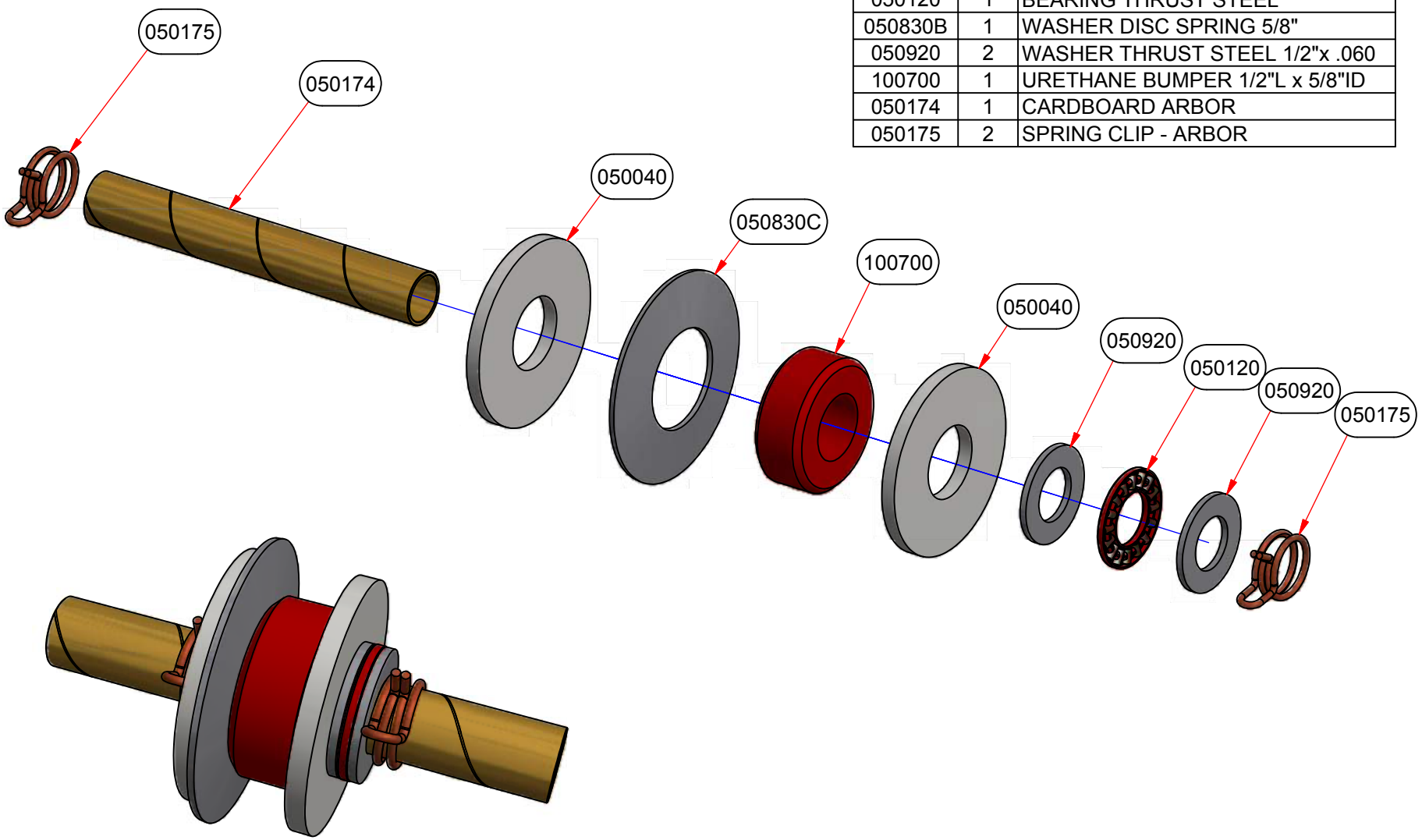
PARTS LIST		
PART No.	QTY	DESCRIPTION
050120	1	BEARING THRUST STEEL
050140	1	WASHER THRUST STEEL 1/2".090
050800	1	BRAKE SPRING
050810	2	WASHER THRUST STEEL 1/2"x .030
050820	1	WASHER TOP BRAKE DRIVE
050840	4	WASHER THRUST BRONZE .060
050850	1	WASHER BOTTOM BRAKE DRIVE
050920	1	WASHER THRUST STEEL 1/2"x .060
051680	1	ROLL PIN SPIROL 3/16"x 1 1/8"
150940	1	WASHER RETAINER
050174	1	BALLNUT ARBOR
050175	2	SPRING CLIP - ARBOR



BRAKE ASSEMBLY KIT
PN 400150

4.09

PARTS LIST		
PART No.	QTY	DESCRIPTION
050040	2	WASHER 5/8"PLATE ZINC
050120	1	BEARING THRUST STEEL
050830B	1	WASHER DISC SPRING 5/8"
050920	2	WASHER THRUST STEEL 1/2"x .060
100700	1	URETHANE BUMPER 1/2"L x 5/8"ID
050174	1	CARDBOARD ARBOR
050175	2	SPRING CLIP - ARBOR



BEARING OVERRIDE KIT
PN 400160

4.10

MAINTENANCE AFTER EVERY YEAR OF OPERATION

This equipment is designed for use as a heavy duty lifting device. To ensure operator safety and continuing trouble free operation, have the equipment thoroughly checked by a trained and competent service person at least once a year. This maintenance should be performed using the following procedure.

1. Place a load of at least 500 pounds (230 kilograms) on the equipment. Cycle the equipment up and down several times in order to evaluate its current condition. This load test will help reveal the condition of the drive and brake systems, the frame structures and the electrical components. Improper conditions may be exhibited by excessive vibration, unusual noise or slow operation.

2. Check the inner and outer frame assemblies for bending, flattening, twisting, looseness or worn surfaces of the frame members. Check the frame roller tracks for cracks and worn surfaces.

3. Check the rollers for free rotation. Lubricate the roller axles with light machine oil.

4. Check that the two main frame wheels and main frame axle are in good condition. Lubricate the two main frame wheels with multi-purpose grease.

5. Check that the strapbar mounting hardware is secure. Check that the load binding straps are not cut or frayed and that the strap locking handles are secure.

6. Remove the drive screw as outlined under “Drive Screw Removal and Installation”. Clean the drive screw and ballnut. Do not remove the ballnut from the drive screw.

7. Check for a close running fit between the drive screw and the ballnut. There should be no wobble or excessive clearance and the ballnut should run smoothly and freely. There is a small tube on the side of the ballnut for the re-circulation of the ball bearings. Check that the 2 tube halves are fastened tightly together. Check that the area of the outside threads at the top of the ballnut is in good condition. If any of these checks reveal a problem, replace the ballnut as outlined in the manual.

8. If during the test of the equipment in step #1, there was excessive vibration, check the drive screw for straightness. Replace the drive screw as outlined in the manual if the drive screw is at all bent.

9. Check that the ballnut locknut, drive coupling, top and bottom red urethane bumpers and brake cap are all in good condition.

10. Replace all of the components for the brake assembly and the override bearing as outlined elsewhere in this manual.

11. Check that the electric motor armature, brushes and bearings are in good condition.

12. Reassemble the drivescrew assembly and electric motor in the equipment as outlined elsewhere in this manual.

MAINTENANCE AFTER EVERY YEAR OF OPERATION continued

13. Replace the Rubber End Cap on the bottom of the outer frame.

14. Remove and replace the two Push Buttons and Push Button Caps.

15. Check that all electrical wire connections are secure.

16. Check that the battery and battery charger are in good condition and that the battery is fully charged.

17. Repeat the equipment load test from step #1. Cycle the equipment up and down several times in order to evaluate its condition.

WARNING - All repairs, electrical or mechanical, should be carried out only by a trained and competent service person. Use only approved repair parts; any others may create a hazard.

Procedure for Repairing the M-Series Drive Screw Assembly

NOTE: *Read all instructions carefully before attempting to make repairs to any part of the drive screw assembly.*

Assembly

1. Place machine on a suitable work bench, with the machine resting on its wheels and rear handles (toeplate up). Activate the unit until it is extended approximately half-way. Disconnect the power supply by way of the circuit breaker.

2. Refering to the Screw Assembly Drawings, remove the two 1/4"bolts(22) and nuts(23). Proceed to remove the brake cap (1), two bronze thrust washers (2), steel washer(3), washer retainer(4), and brake spring(5).

3. Drive out the 3/16"roll pin(7) taking care not to bend the drive screw shaft. Place a suitable support underneath the brake drive top washer(6)for this operation.

4. Remove the brake drive top washer(6), two steel thrust washers(8), thrust washer(9), brake drive bottom washer(10), two bronze thrust washer(2) and the steel thrust washer(11). NOTE: At this point, if it is intended to replace the Bearing Overide or Ballnut, complete those procedures first before continuing with the brake reassembly.

5. As per the screw assembly drawing, replace the brake assembly components (Brake Assembly Kit P/N 400150) in reverse as follows:
   Items 2-11-2-10-8-9-8-6-7-5-4-2-3-2.
   During assembly, place a few drops of light machine oil on the thrust bearing(9) only. Remember to support the brake drive top washer(6) when installing the 3/16" roll pin(7).

6. Install the brake cap(1) and insert the 1/4"bolts(22) and fasten with the nuts(23).

Installation of Override Bearing Kit, Ballnut or Screw Removal

NOTE: For this procedure, it will be necessary to remove all accessories like skid plate, extended toeplate, screw guard, strapbars, etc.

1. Remove the brake assembly as outlined in the Brake Assembly Procedure.

2. Remove the motor guard. Loosen (remove if necessary) the two bolts holding the motor support to the mounting bracket. Pull the motor away from the screw assembly to disengage.

3. Loosen the set screws(16) in the ballnut locknut(15). Unfasten the locknut from the ballnut(18). The outer frame and inner frame are now disengaged.

4. Move the drive screw(19) enough to allow removal of the override bearing components. Remove the bearing retainer bar(12), two steel thrust washers(11), thrust washer(9), plate washers(13), and the urethane bumper(14).
   NOTE: At this point, if it is intended to replace the Ballnut or removing the Drive Screw for service or replacement, complete those procedures first before continuing with the override bearing replacement.

5. As per the screw assembly drawing, replace the override bearing components(Bearing Override Kit PN 400160) in reverse order as follows:
   Items: 13-14-13-11-9-11-12.
   Apply a few drops of light machine oil to thrust bearing(9) and the roller bearing in the bearing retainer bar(12).

6. Guide the drive screw(19) back through the inner frame top support and engage the spline coupling (21) with the motor. Re-install the motor mounting bolts but do not tighten. Reposition the outer frame and/or ballnut so they engage through the ballnut bracket leaving the unit extended approximately halfway.

7. Thread the ballnut locknut(15) onto the ballnut(18), but do not tighten.

8. Replace the brake assembly components as per the Brake Assembly instruction step 5. Re-install the brake cap(1) with 1/4"bolts and nuts(22/23) but do not tighten.

9. Reactivate the electrical power through the circuit breaker and operate the machine to full extension. Push the motor/motor support towards the screw so the skirt on the splined coupling(21) is 1/32" from the motor. Tighten the motor mounting bolts.

10. Operate the unit to its fully retracted position. Tighten the brake cap(1) bolts and nuts(22/23).

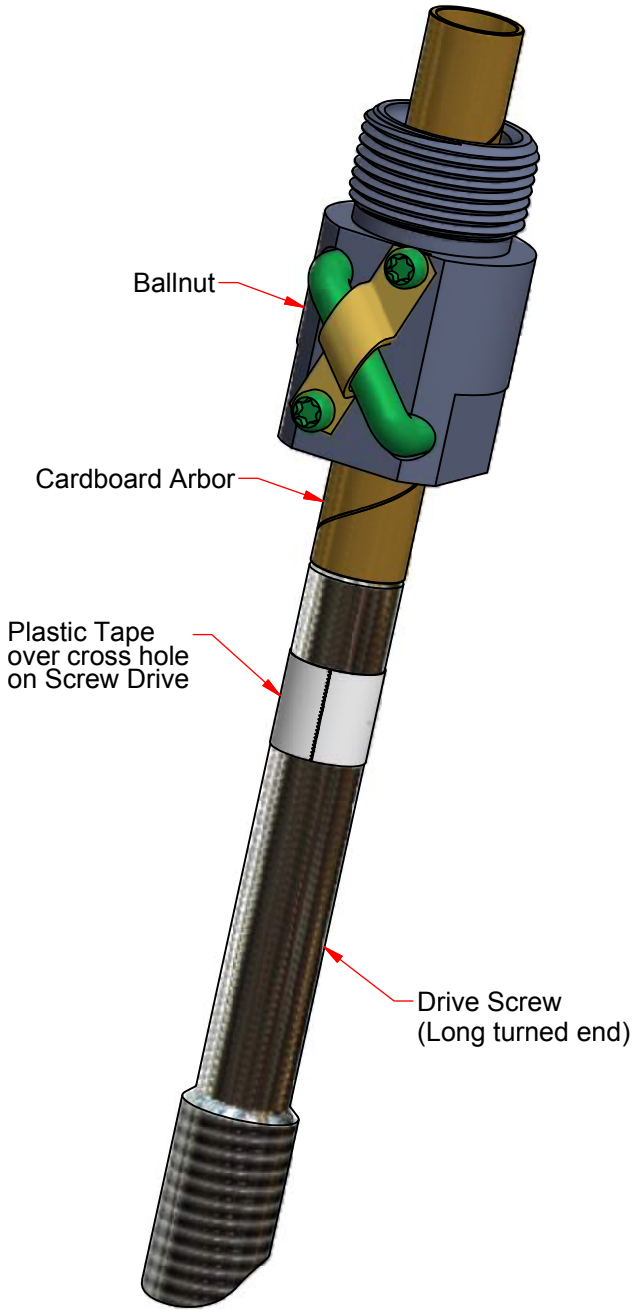
11. Tighten the ballnut locknut(15) to the ballnut(18), hand tight only. Tighten the set screws(16).
    NOTE: The ballnut must spin only when the unit is run to its fully extended or retracted limits. If it does not, adjust the tightness of the ballnut locknut.

12. Re-install the motor guard and strapbar(s). Re-attach any removed accessories.

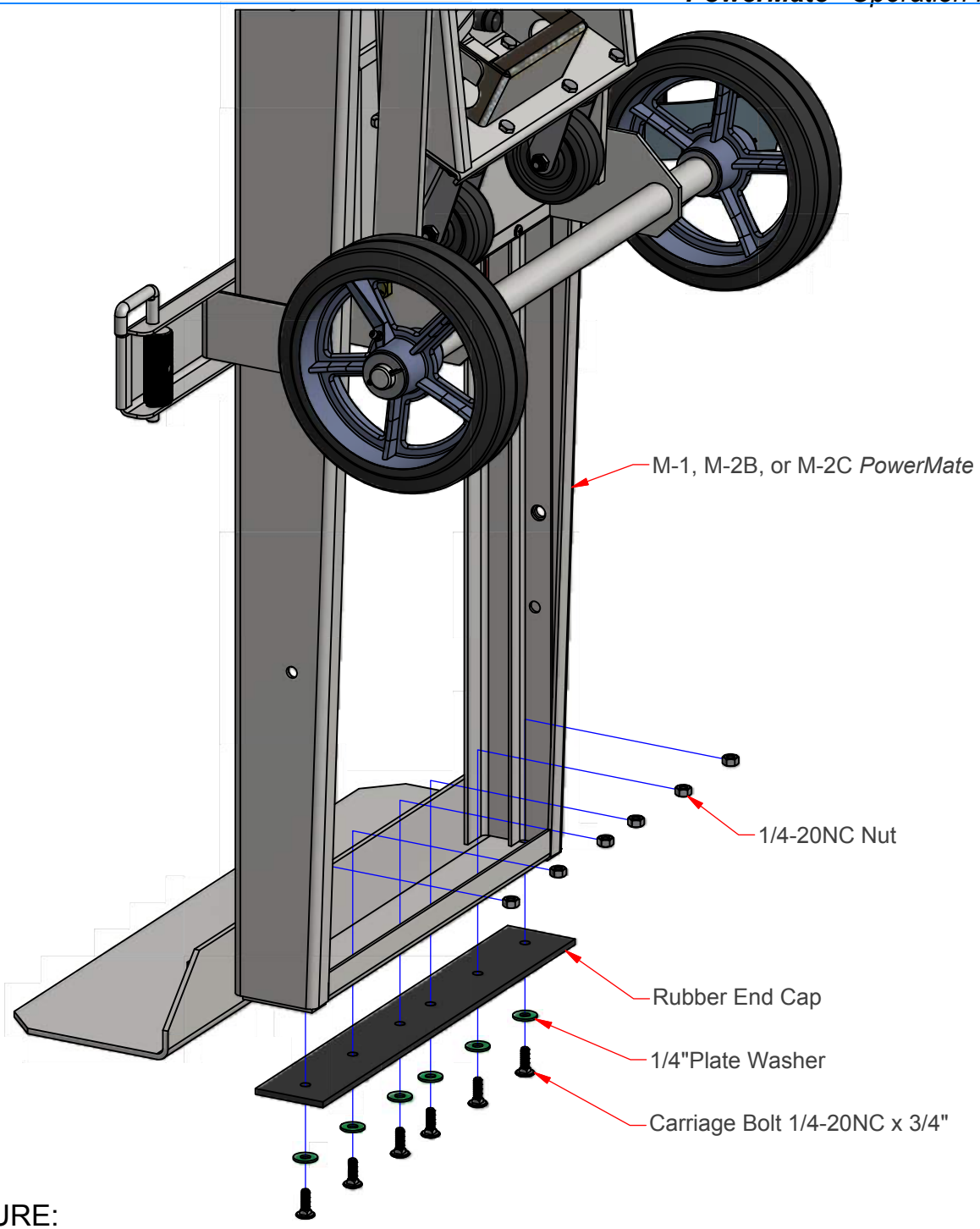
BALLNUT REMOVAL AND REPLACEMENT

PROCEDURE:

1. To begin, the screw assembly must be removed from the unit. Follow the procedure for Drive Screw removal and replacement.
2. Remove the tape from the drive screw that is keeping the ballnut in position, if installed.
3. Apply one layer of thin plastic tape banding around the long turned end of the screw over the cross hole. This is the end that the ballnut will be removed.
4. Stand the drive screw vertically with the long turned end up. Thread the ballnut up the screw until it is completely disengaged from the thread. The tape over the cross hole prevents the balls in the ballnut from falling out into the cross hole.
5. Place a cardboard arbor firmly against the end of the screw, insuring that it is centered and square, and slide the ballnut up onto the cardboard arbor. Loop a tie-wrap through the Cardboard Arbor and around the ballnut and secure tight.
6. To install a ballnut, the reverse happens. Remove the tie-wrap from the cardboard arbor with a side cutter. Be sure the arbor does not disengage from the ballnut or all the balls in the ballnut will fall out.
7. Place the end of the arbor firmly, centered and square, onto the long turned end of the drive screw. Slide the ballnut off the arbor onto the screw, over the tape and engage the drive screw thread. Allow the ballnut to spin down the screw to approximately halfway along its length. Band tape around the screw at both ends of the ballnut to keep the ballnut in position.
8. Remove the plastic tape from the cross hole.
9. Return to the instruction for the installation of the Drive Screw, step 4.



PN 010580 Rev. E
Eng. 05/ 08/ 14

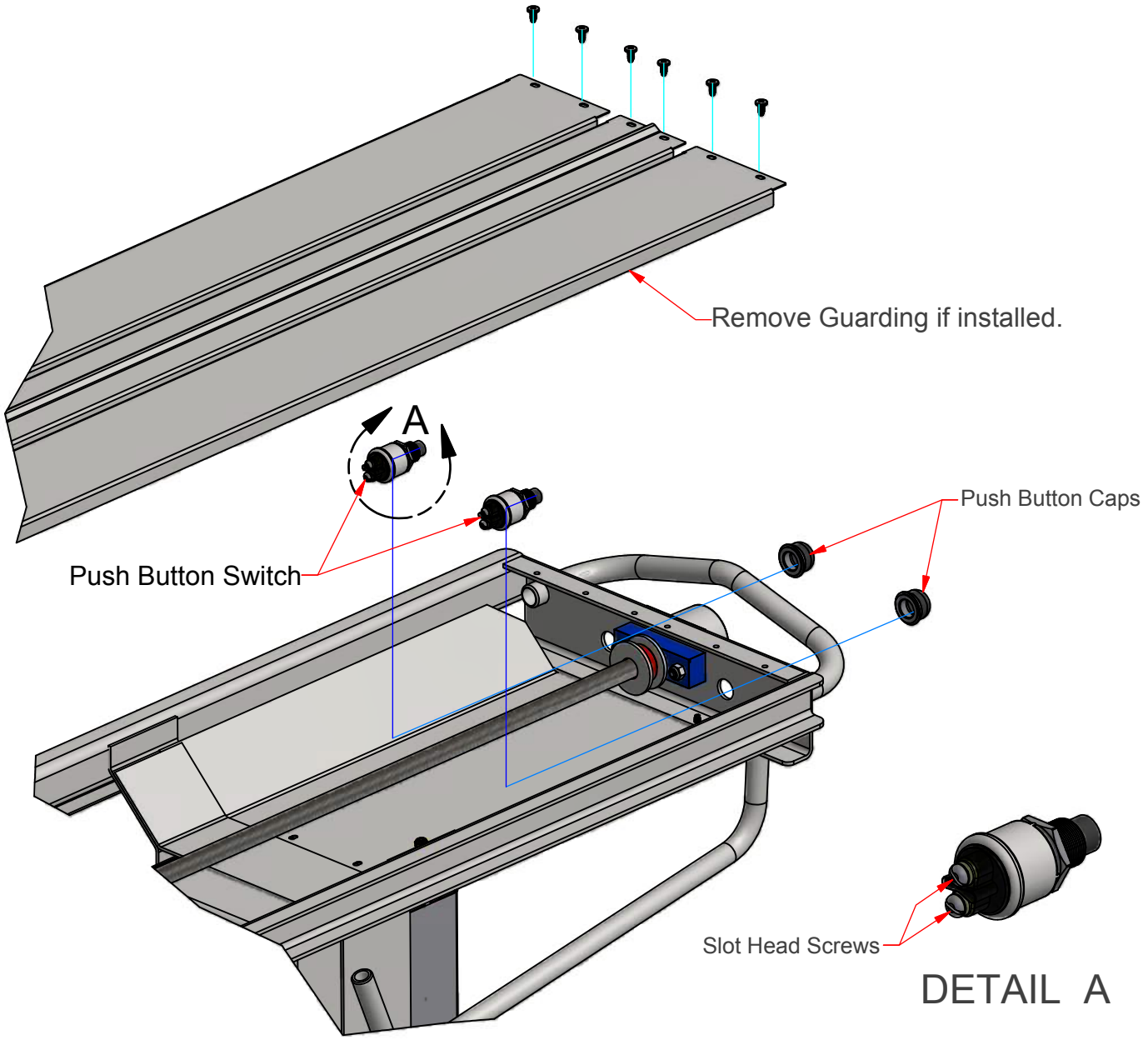


PROCEDURE:

1. Extend Outer Frame approximately 20", tipping the PowerMate back to rest on the rear handles and wheels. Note: Unit shown vertically for visibilty only.
2. Remove the 1/4"Nuts with a 7/16"socket (preferably deep socket or with extension), and ratchet wrench.
3. Remove the Carriage Bolts, Washers, and Rubber End Cap.
4. The replacement Rubber Guard comes with the components assembled finger tight. Remove the 1/4"Nuts and place the Rubber End Cap on the bottom of the outer frame, inserting the 1/4"Carriage Bolts in the holes in the outer frame.
5. Assemble the (6)1/4"Nuts to the 1/4"Carriage Bolts and tighten with the 7/16"wrench.

BOTTOM RUBBER GUARD REPLACEMENT

Replacement Kit No. 400230



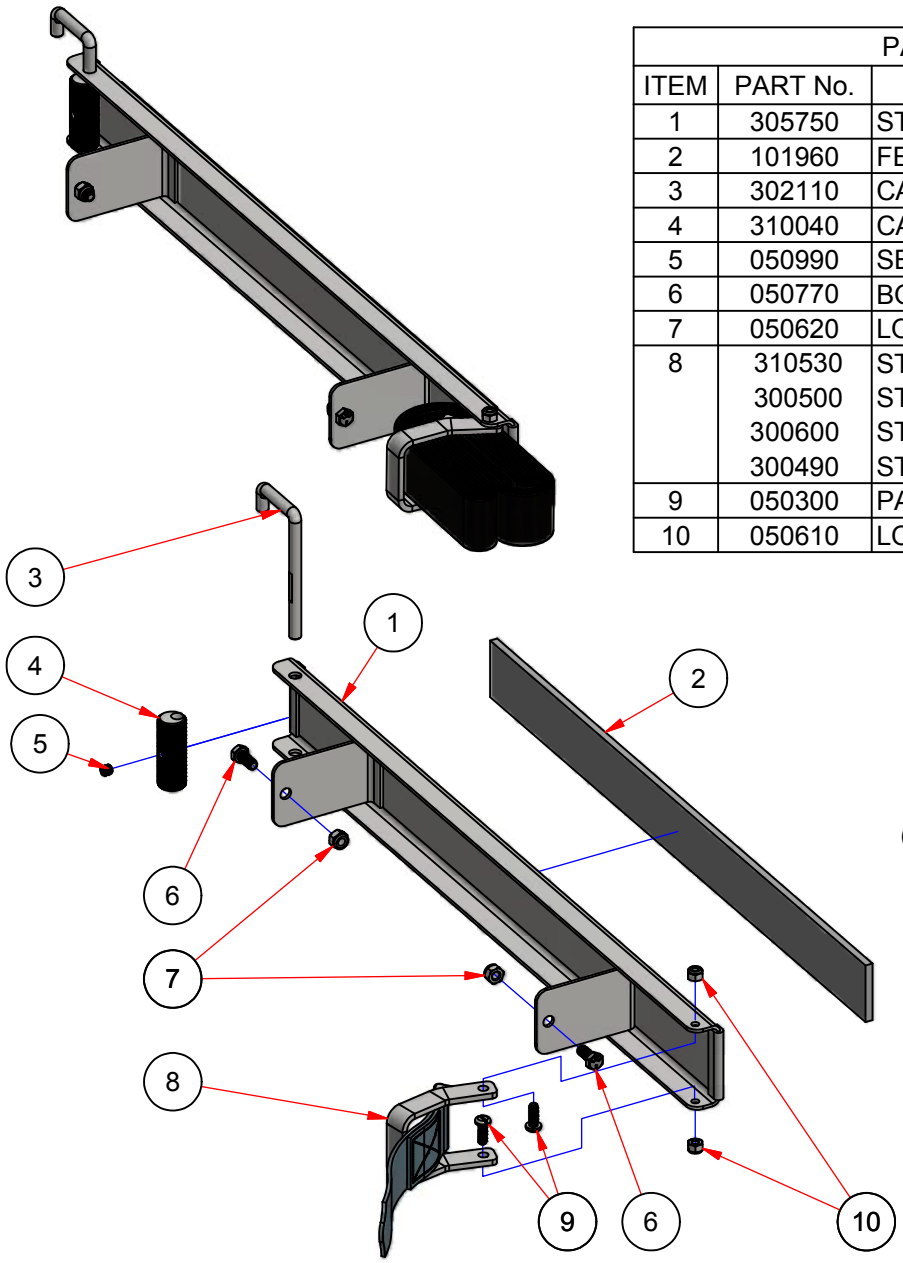
PROCEDURE:

1. Extend PowerMate Unit approximately 15". Rest unit on its rear handles and wheels. Remove fuse.
   NOTE: Remove screw guarding if stalled -3 guards, 12 phillips head screw.
2. Remove Push Button Cap(s) using water pump pliers.
3. Slip Push Button Switch(es) out of mounting hole(s), wiring still connected.
4. Remove two screws at the base of the switch(es) to disconnect the wiring.
5. Attach the wires to the replacement Push Button(s) using 1/4"slot screw driver.
6. Insert Push Button(s) into mounting hole(s).
7. Install Push Button Cap(s) and tighten using water pump pliers.
8. Re-install fuse.

   Note: If screw guarding was installed, re-install prior to re-inserting fuse.

PUSH BUTTON SWITCH REPLACEMENT M-SERIES

PN 010630 Rev.E
Eng. 05/ 08/ 14

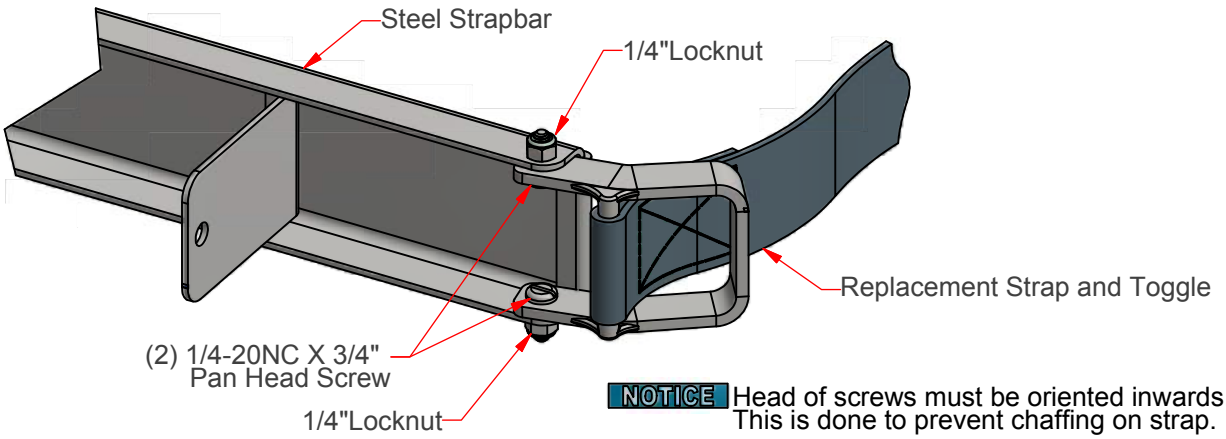


PARTS LIST		
ITEM	PART No.	DESCRIPTION
1	305750	STRAPBAR M-SERIES
2	101960	FELT STRAP BAR 1/4"x 2"x 23"
3	302110	CAM HANDLE
4	310040	CAM
5	050990	SET SCREW 5/16-18 x 5/16
6	050770	BOLT 5/16-18 x 3/4"
7	050620	LOCK NUT 5/16-18NC
8	310530	STRAP 10' c/w TOGGLE
	300500	STRAP 12' c/w TOGGLE
	300600	STRAP 14' c/w TOGGLE
	300490	STRAP 16' c/w TOGGLE
9	050300	PAN HEAD SCREW 1/4-20x3/4
10	050610	LOCK NUT 1/4-20NC

STRAP BAR ASSEMBLIES:
400080S - 10 ft. Strap
400082S - 12 ft. Strap
400084S - 14 ft. Strap
400086S - 16 ft. Strap

REPLACEMENT STRAP/
TOGGLE KITS AVAILABLE
(Comes with fastener hardware):
400310 - 10 ft. Strap
400320 - 12 ft. Strap
400300 - 14 ft. Strap
400340 - 16 ft. Strap
NOTICE Washers in Kits not required.

STRAPBAR ASSEMBLY M-SERIES



NOTICE Head of screws must be oriented inwards. This is done to prevent chaffing on strap.

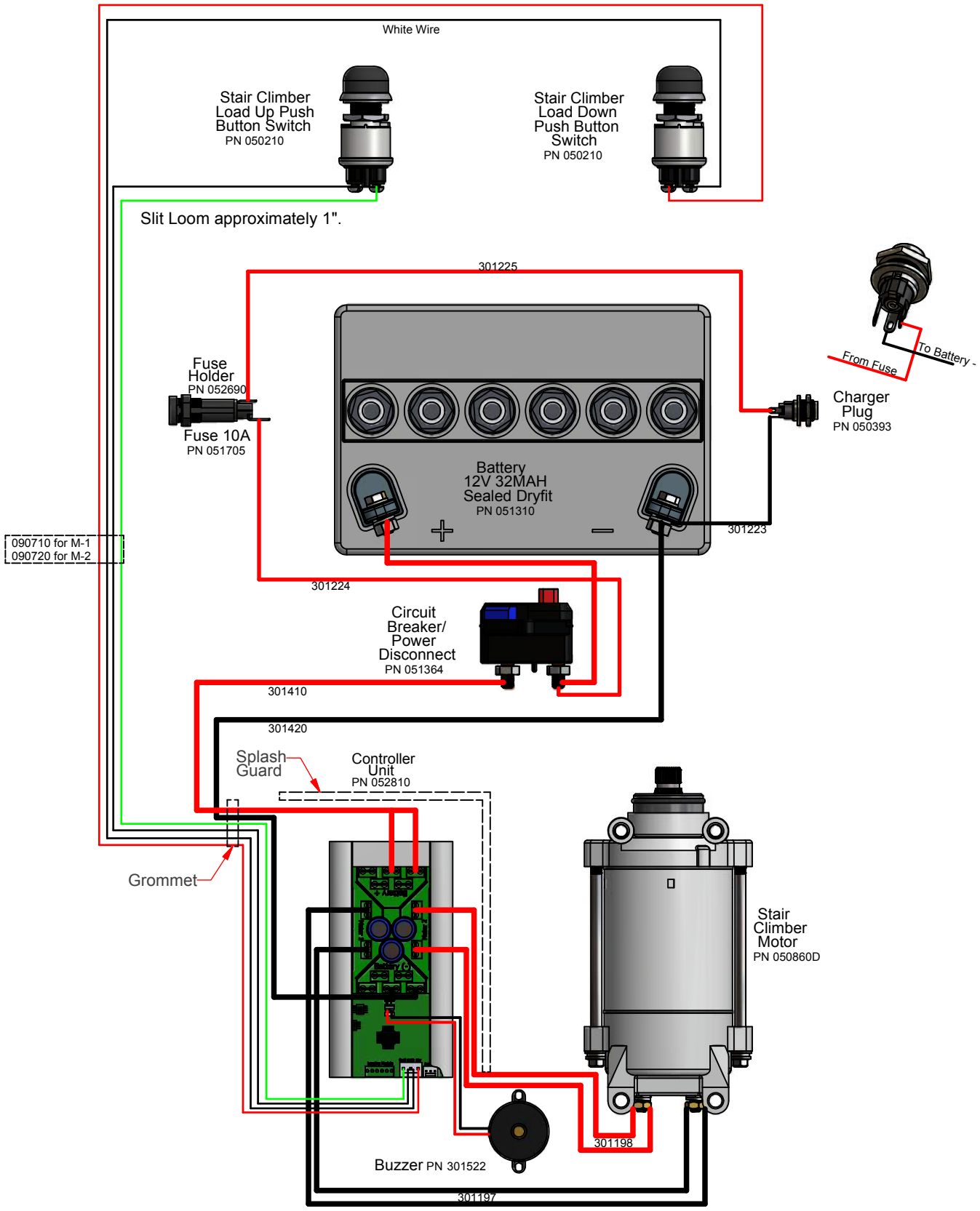
REPLACEMENT STRAP INSTALLATION

TOOLS REQUIRED: 7/16"Wrench, 5/16"Flat Screw Driver.

PN 010640 Rev.E
Eng. 05/ 08/ 14

POWERMATE® M-SERIES WIRING DIAGRAM

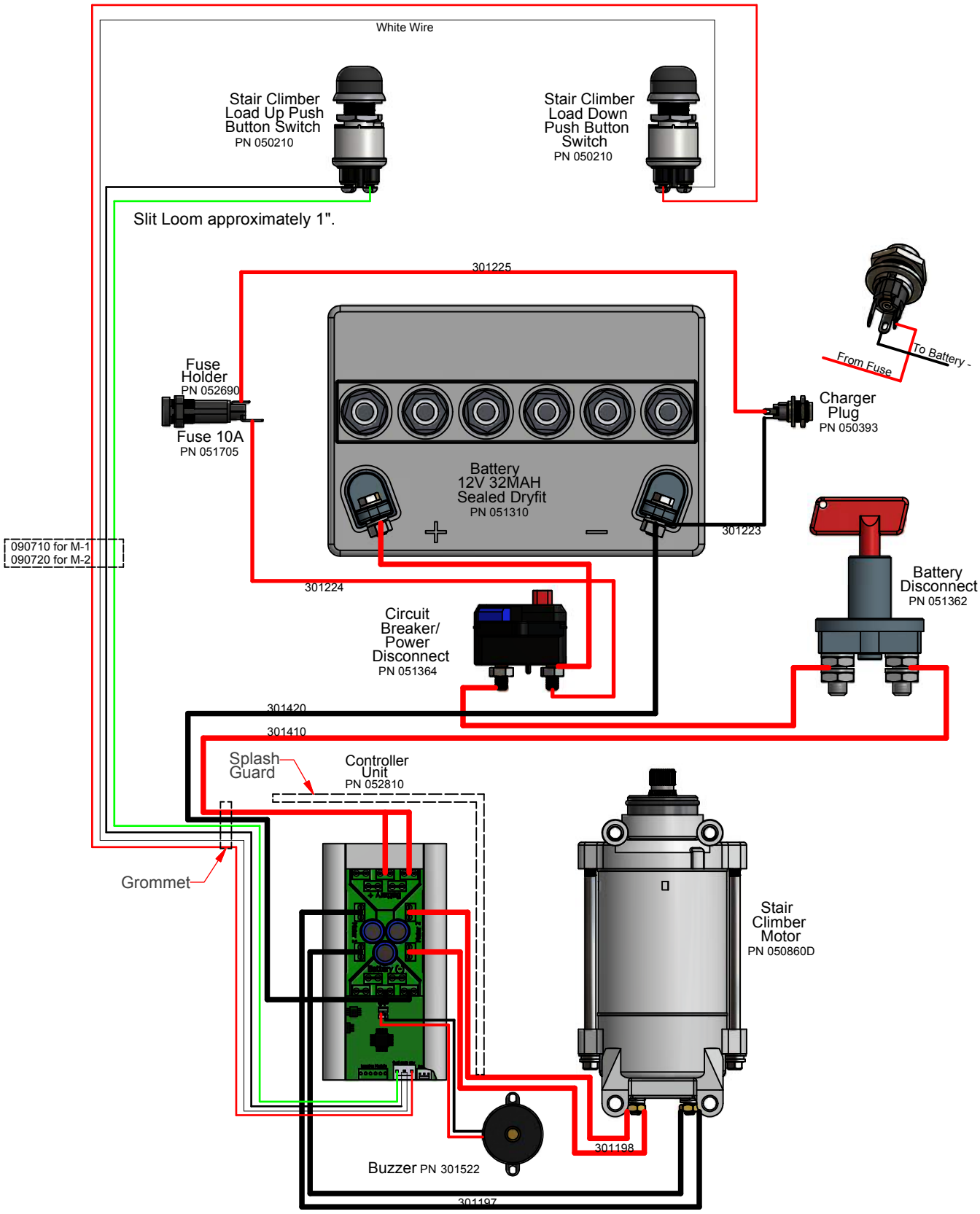
NOTE: Viewed from the front of the machine.



PN 010690 Rev.E1
Eng. 06/ 20/ 14
Sheet 1 of 2

POWERMATE® M-SERIES with BATTERY SWITCH WIRING DIAGRAM

NOTE: Viewed from the front of the machine.

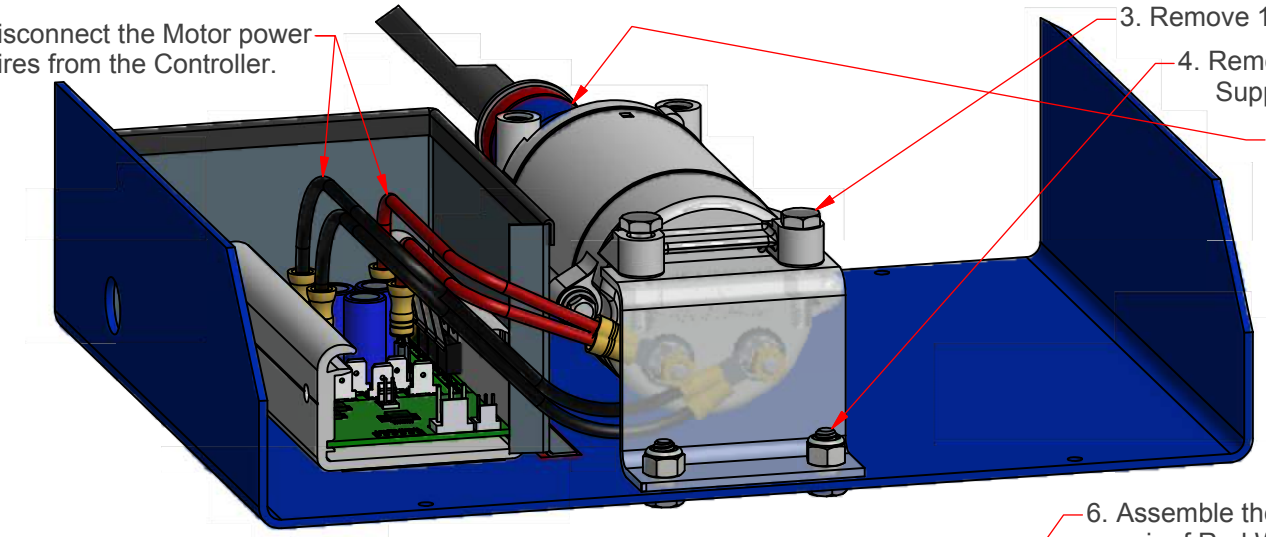


PN 010690 EC Rev.E1
Eng. 06/ 20/ 14
Sheet 2 of 2

REMOVE OLD MOTOR

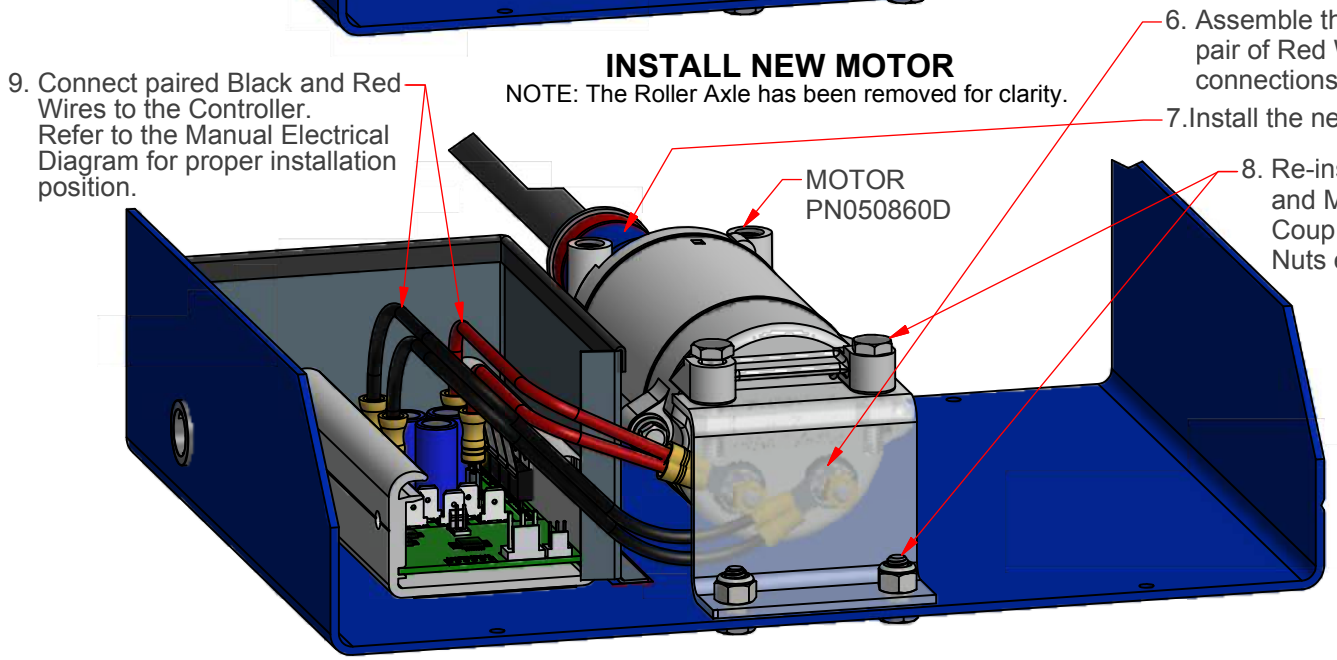
NOTE: The Roller Axle has been removed for clarity.

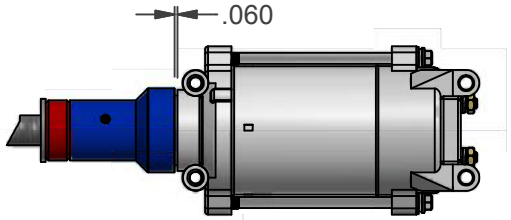
1. Remove the four 10-32NF Screws securing the Motor Cover. Remove the Motor Cover to give access to the Motor. Tip the PowerMate back to rest horizontally with the Motor and Controller facing up. Having the PowerMate on a work table in this position is helpful. Extend the PowerMate approximately 30 inches, and then remove the electrical power by way of the Circuit Breaker.



INSTALL NEW MOTOR

NOTE: The Roller Axle has been removed for clarity.





Coupling/Motor Gap Detail

10. Activate the electrical power at the Circuit Breaker. Close the unit and stand the unit up vertically. Re-install the Motor Cover and fasten with the four 10-32NF Screws. Test and return to service.

MOTOR REPLACEMENT INSTRUCTION for M-SERIES POWERMATE SN 36000 and higher.

M-SERIES SPECIFICATIONS ANSI/CSA

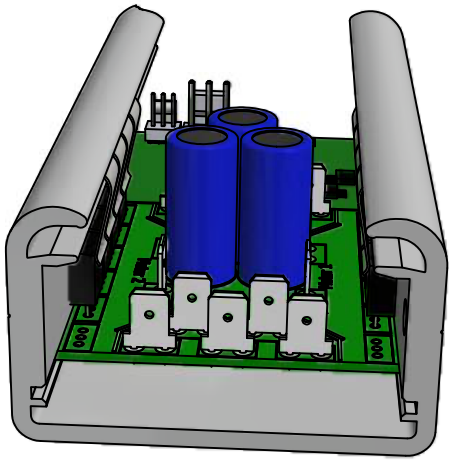
Model	M-1	M-2B	M-2C
Weight	165 lbs.	179 lbs.	182 lbs.
Height	60 1/2"	67 1/2"	
Width	24"	27"	
Strapbar Width	26 1/4"		
Length	17 1/8"		
Ballscrew	5/8"		3/4"
Stroke Length	40"		48"
Extension Speed	5" per sec. (no load)		
Load Capacity			
Stair Climbing	1000 lbs.		
Dock/Vehicle Loading	1000 lbs.		
Flat Surface Moving	1500 lbs.		

M-SERIES SPECIFICATIONS CE

Model	M-1	M-2B	M-2C
Weight	75 kgs.	81 kgs.	82.5 kgs.
Height	1.54m	1.71m	
Width	.61m	.69m	
Strapbar Width	.67m		
Length	.44m		
Ballscrew		15.88mm	19.05mm
Stroke Length	1.02m		1.22m
Extension Speed	127mm per sec. (no load)		
Load Capacity			
Stair Climbing	454 kgs.		
Dock/Vehicle Loading	454 kgs.		
Flat Surface Moving	680 kgs.		

NOTE: Weights are approximate due to manufacturing tolerances. Data given for M-Series PowerMates equipped with standard equipment.

PN 010950 Rev.E
Eng. 05/ 08/ 14



STAIR CLIMBER SOLIDSTATE CONTROLLER

The Stair Climber Solid State Controller is a fully solid state Pulse Width Modulated (PWM) controller. Its advanced microprocessor based control implements a state-of the-art power MOSFET motor drive. Advanced features provide improved functionality, smoother operation, reduced mechanical stress, and protects against abuse and system faults.

ADVANTAGES

- Reduced peak current reduces power loss in batteries, motor, and cabling.
- Reduced peak current reduces battery stress, increased service life.
- Reduced peak torque reduces mechanical stress, increasing service life of the gear train and motor.
- Smooth operation "feel" by controlled acceleration and deceleration (motor voltage ramp-up and ramp-down) eliminating jerkiness.
- Automatically slows speed with heavy loads, improving control and safety.
- Overload protection shuts off if lift load is too heavy.
- Protects batteries by limiting minimum loaded voltage to 8.5 volts.
- Internal protections for many types of internal and external faults.
- Protects controller by inhibiting operation if battery voltage is to high.
- Detects battery+ or battery- short to frame and inhibits motor operation.
- Limits continuous operation to <30 seconds. Control wiring fault protection.
- Alerts to low or excess control heating (from over-use).
- Alerts to overload or excess continuous run time (control fault).
- Alerts to battery+ or battery- short to frame.
- Alerts to internal controller faults.
- Low standby power of less than 20mA.

SPECIFICATIONS

Operating Voltage Range:	8.5V - 14.4V
Maximum Voltage:	16.0V (non-operating)
Over-voltage shut-off	15.5V
Motor Current Limit:	100 Amps (+10%, -5%)
Output Time Rating (@100 Amps):	1.5Min. Minimum (ambient & initial temp<25ºC)
Continuous Current (Ambient<25ºC)	65 Amps (75 Amps in Le-Series Unit)
Maximum Run without stop:	25 to 30 Seconds (sofware limited)
Input control current, Max.(@ 13V)	0.3 mA
Standby Current (@12.6V)	< 18mA
Buzzer or LED output:	5 Volts, maximum 15mA
Standby Time (25% charge remains)	40 days (start with 20 AH battery, fully charged)
Operating Temperature Range:	-25ºC to 50ºC
Storage Temperature Range:	-40ºC to 85ºC
Environmental:	Solid State Controller Unit is100% RoHS compliant.

FAULT ALERTS

Faults are indicated by a buzzer producing a series of beeps to indictate various faults as follows:

One Beep - Overload condition (too much weight on Unit) - **Reduce Load**
- Maximum run time (25-30sec.) exceeded - **Release and re-apply switch**

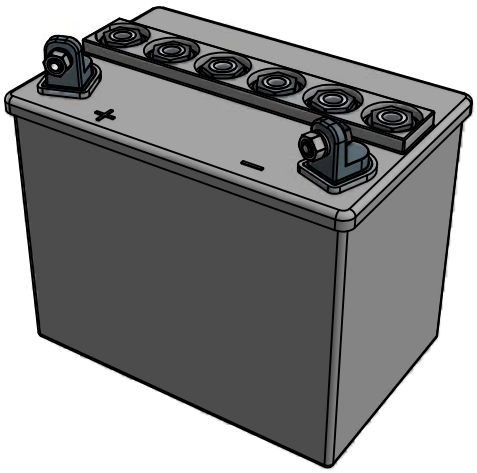
Two Beeps - Low Battery - **Recharge Battery**

Three Beeps- Battery+ or Battery- shorted to frame. **HALT USE AND RETURN FOR REPAIR**
-System Fault - **FAULTY UNIT -HALT USE AND RETURN FOR REPAIR**

Four Beeps - Overheating due to excessive use (many minutes) - **Allow five minutes to cool**

PN 010710 Rev.E
Component 052810
Eng. 05/ 08/ 14

PowerMate® Battery Specifications



All *PowerMate*® M-Series units use the Pinnacle Battery produced by ABS Brand. The Pinnacle Battery is the worlds first and best sealed, maintenance-free, gelled electrolyte battery, providing dependable power, exceptional deep cycling capability and reliable service. Features are:

100% gelled electrolyte.	- Eliminates the need for fluid level checks.
Thick consistency of gelled electrolyte	- Eliminates the damaging effects of severe vibration.
Completely sealed, spill proof recombinant construction.	- Eliminates dangerous gasses and terminal corrosion (unless severely overcharged).
Compu-cast power-path and computer controlled oxide.	-For maximum durability, power and life.
Faster recharging.	- Install it and forget it for quicker turnaround time.

Extremely low self-discharge rate.

Runs considerably longer than comparable wet batteries.

Over 250 quality checks.	- Guarantees highest quality , performance and reliability.

SPECIFICATIONS: **MODEL: 8GU1 12V 32Ah**

Terminal: T874
CCA@0° F: 215A
Reserve Capacity @80°: 40
Approximate Weight: 24 lbs.(10.9 kgs.)

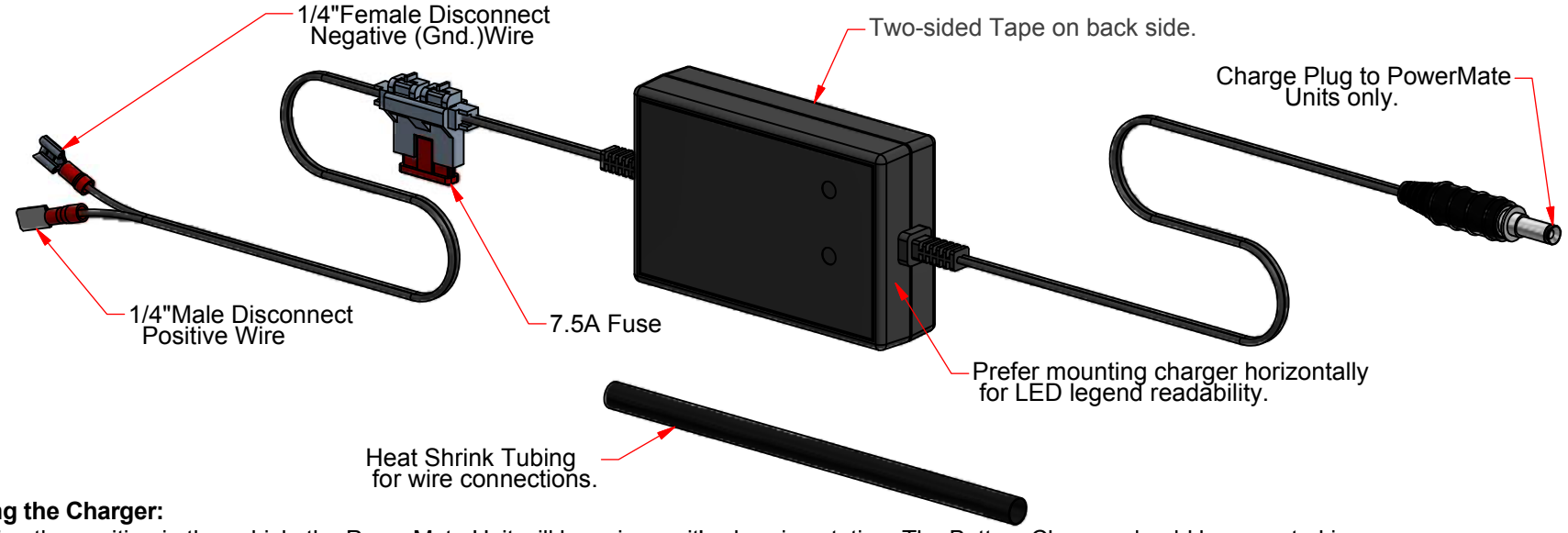
Ampere Hour Capacity			
20 Hr. Rate	6 Hr. Rate	3 Hr. Rate	1 Hr. Rate
31	26	24	20

NOTE: Batteries used in PowerMate products are recyclable. Dispose of scrap batteries according to the local environmental laws.

PN 010700 Rev.E
Eng. 05/ 08/ 14

BATTERY CHARGER REMOTE INSTALLATION INSTRUCTION

CHARGER PN 400218B for Serial Numbers 36000 and higher.



Locating the Charger:

Determine the position in the vehicle the PowerMate Unit will be using as it's charging station. The Battery Charger should be mounted in a position that will allow visibility of the charger and give easy access for the charger output wire (6 feet) and charge plug to the PowerMate Unit. The charger is equipped with adhesive backing for mounting to any flat surface.

NOTE:The mounting location should be free from moisture, dirt, and other contaminants. The charger should be mounted where the air is free to move around it. It should never be located in a box, compartment, or covered by any object. Doing so may result in excess heating and reduced performance. Do not expose the charger to any type of water spray. Do not immerse in water or any liquid. Should the charger become wet inside it should be disconnected immediately and returned to the manufacturer for refurbishment. Mount where the charger and its cables will not be physically damaged.

Input Wiring:

The installation will require a negative ground contact, and a positive wire coming from the vehicle battery. It is the installers responsibility to ensure the wire is of proper size capable of carrying at least 7 Amps continuous. In order to ensure maximum performance of the charger, the following wire sizes are recommended:

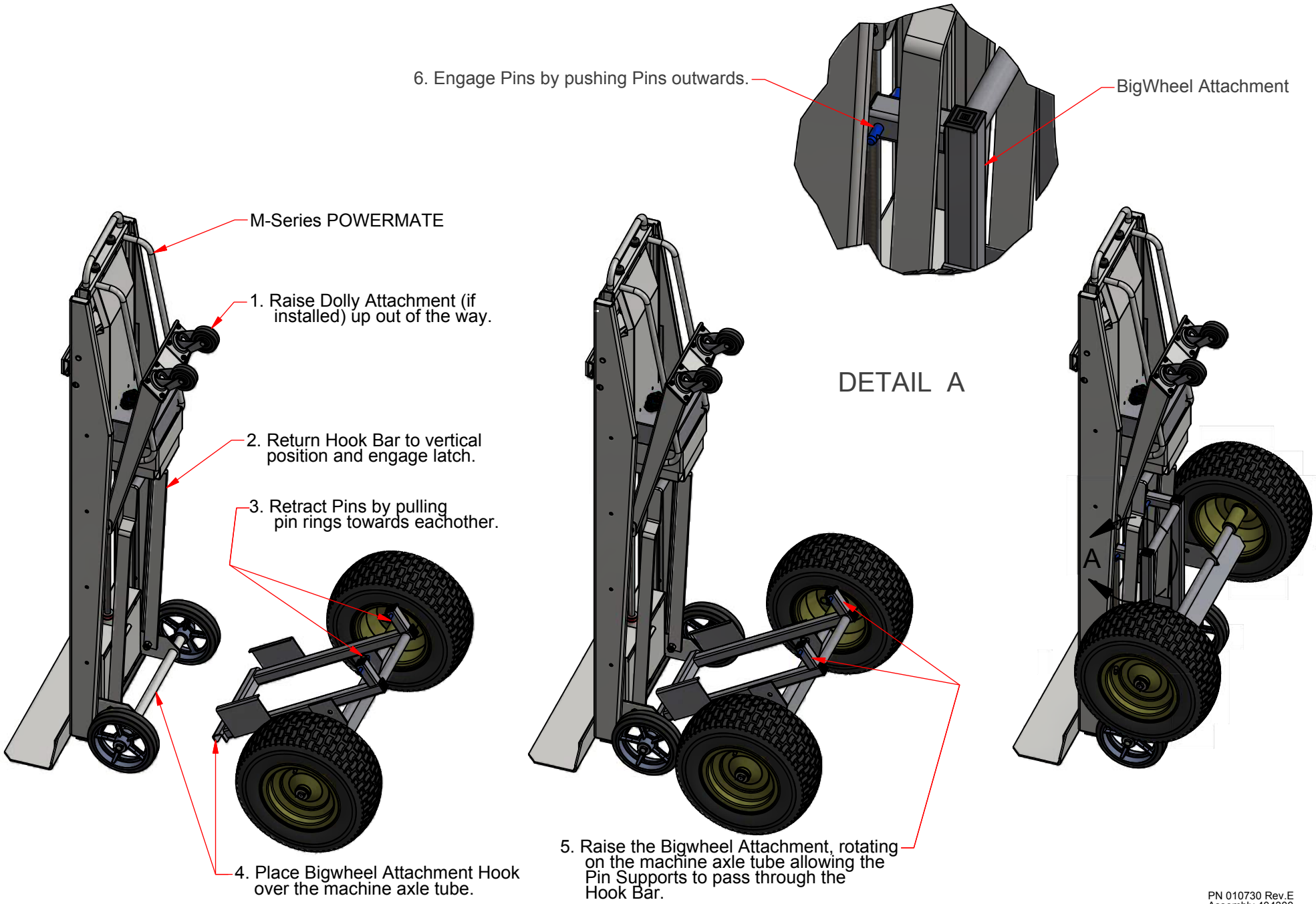
EXTENSION LENGTH	MINIMUM WIRE GAUGE
Up to 10 feet	12 AWG
11 feet to 20 feet	10 AWG
21 feet to 30 feet	8 AWG
Over 30 feet	Not recommended

Attach a 1/4"Male Terminal Disconnect to the negative (Gnd.) wire and a 1/4"Female Terminal Disconnect to the positive wire. Slip on a piece of Heat Shrink Tubing (provided) over the lead in connections and connect the lead in wires to the mating charger input wires. Slide the Heat Shrink Tubing over the connections and shrink. Secure all wires to prevent damage. Wire loom material may be used. It is the installer's responsibility to ensure the wiring to the vehicle battery and negative ground point are properly protected and secure.

NOTE: Refer to the Battery Charger Manufacturers documents provided for safety and operating instructions. Take into consideration that this charger has been modified for remote location mounting.

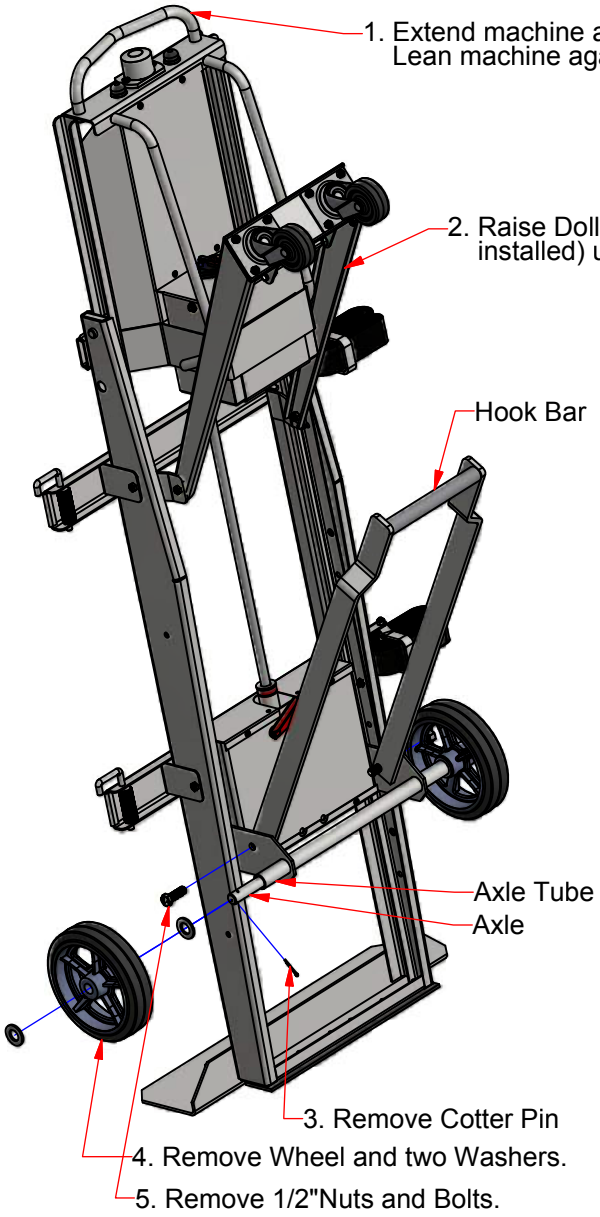
PN 010720 Rev.F
Assy. No. 400218B
Eng. 11/ 12/ 15

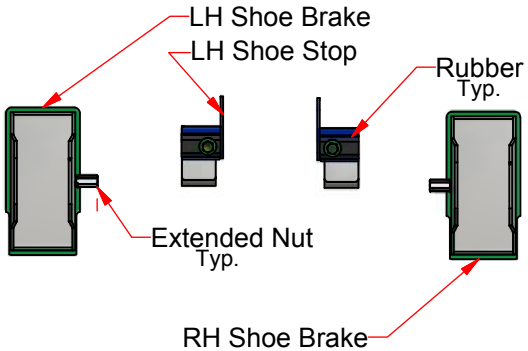
POWERMATE® BIGWHEEL ATTACHMENT INSTALLATION



PN 010730 Rev.E
Assembly 404300
Eng 05/ 09/ 14

POWERMATE® WHEEL BRAKE INSTALLATION



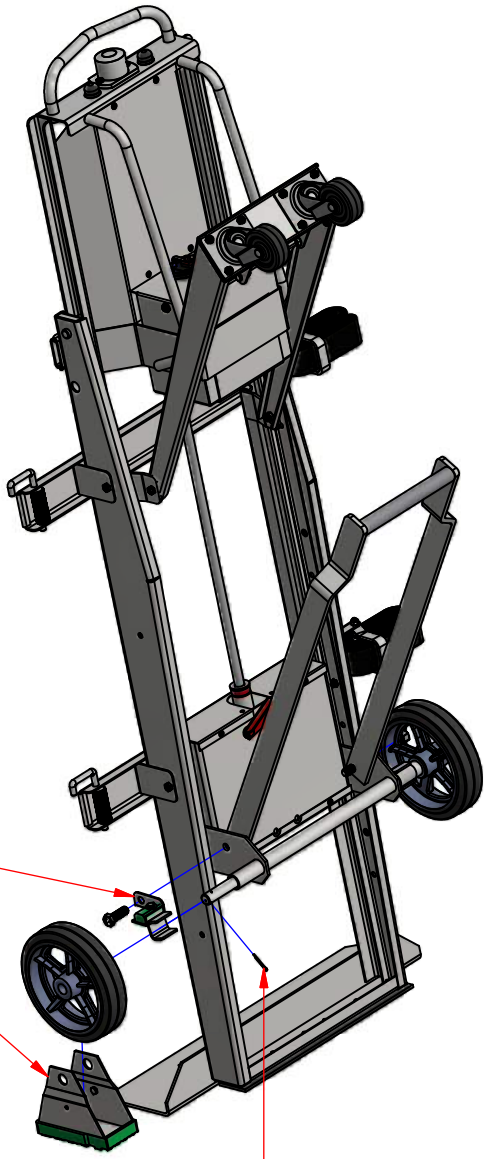


6. Slide Shoe Stop onto Axle Tube and re-install 1/2"Bolt and Nut. Tighten assembly still allowing Hook Bar to move with friction.

7. Align Wheel into Brake and slip onto Axle (no washers). Extended Nut faces inwards toward machine.

9. Apply a little grease to the Shoe Stop Rubber to assist the Extended Nut on the Shoe Brake to push on and off easily.

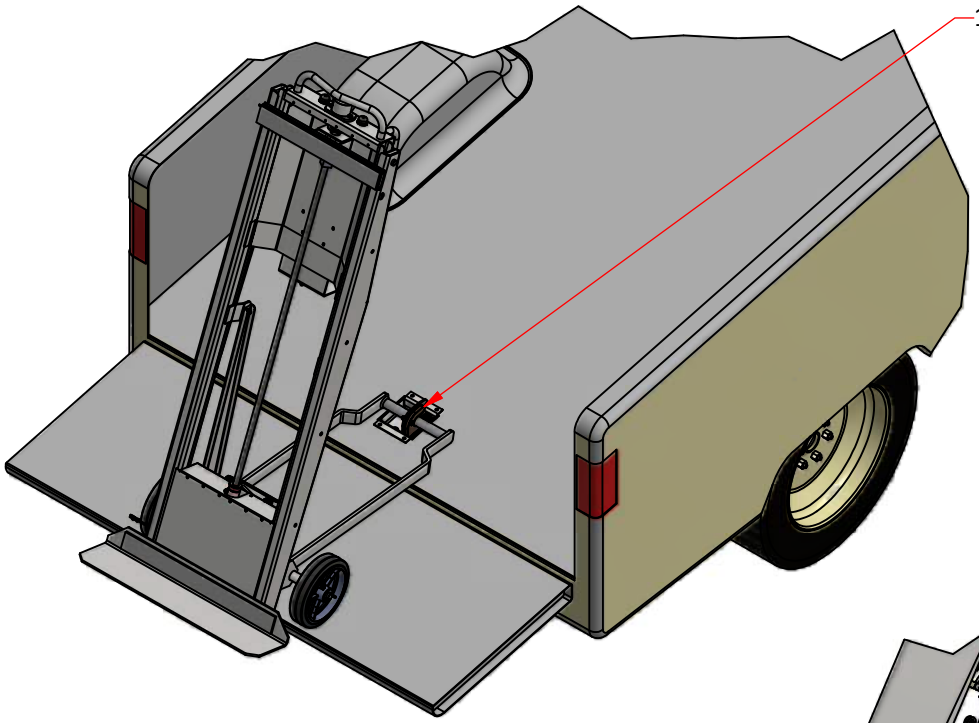
10. Repeat all steps for opposite side.



PN 010740 Rev.E
Assy.No. 404100
Eng. 05/ 08/ 14

HOOK BOX INSTALLATION

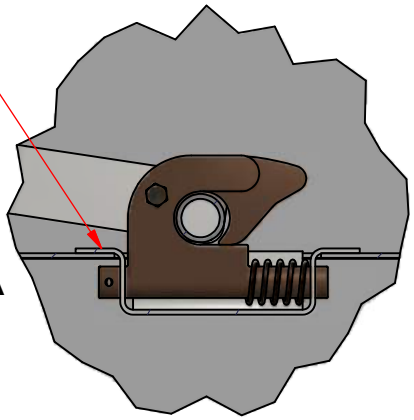
PN 400090

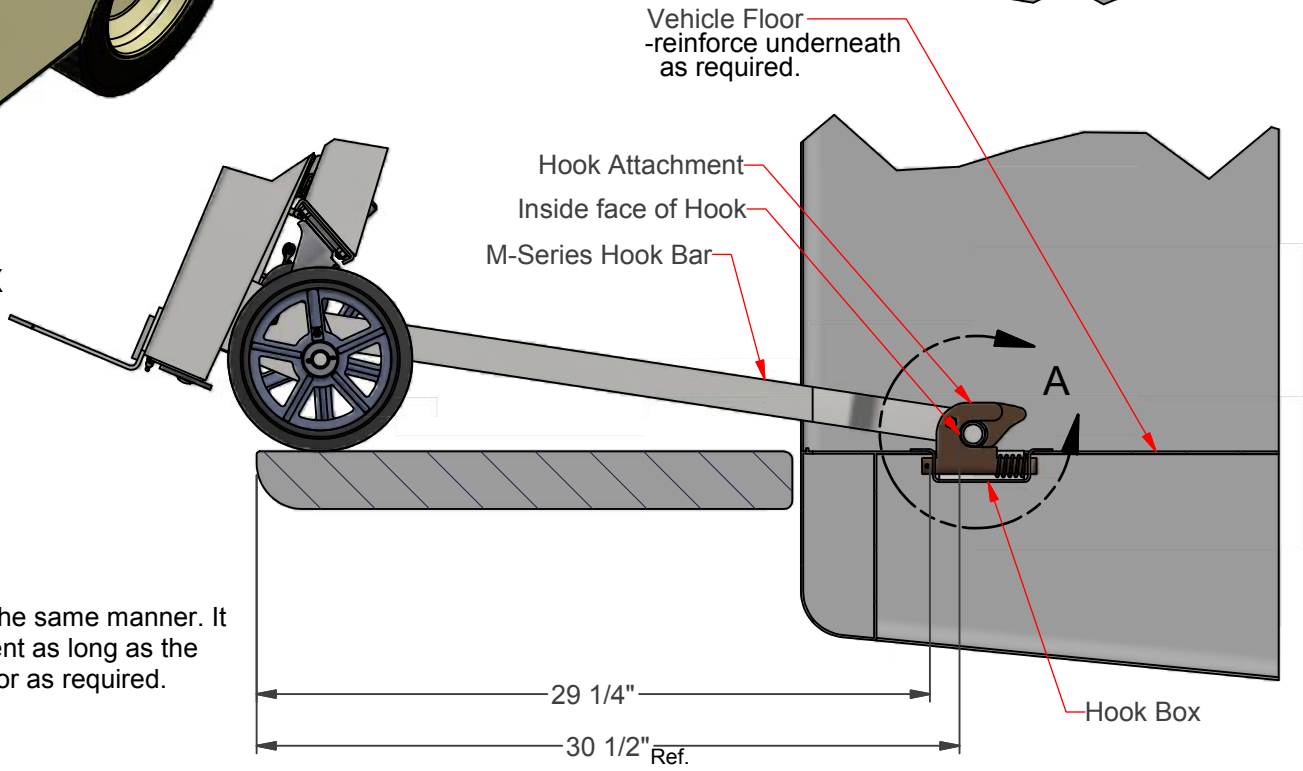


POSITION IN PICK-UP TRUCK BOX

1. Cut a rectangular hole in the truck floor to suit the Hook Box. Measure back from the drop edge (tailgate shown) 29 1/4"to the rear edge of the cutout. Center the cutout in the vehicle floor.
2. Bolt or weld Hook Box to the vehicle floor. Reinforce the floor underneath, if required. The Hook should be flush with the floor when in the down position.

DETAIL A





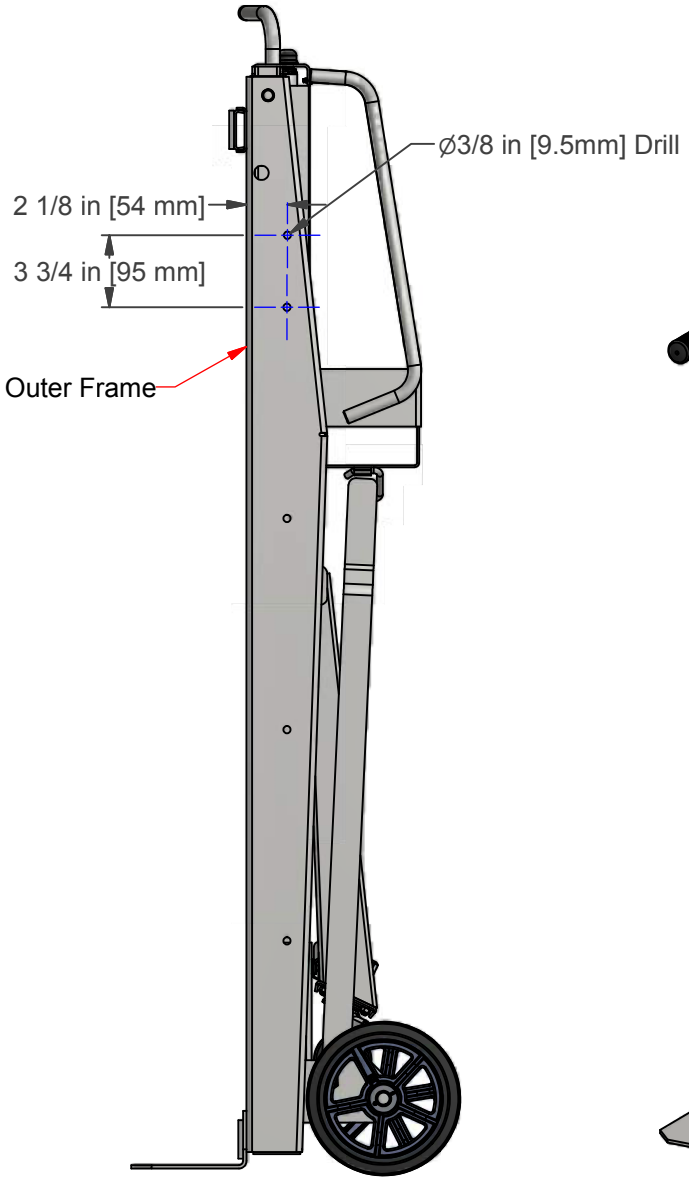
SECTION VIEW

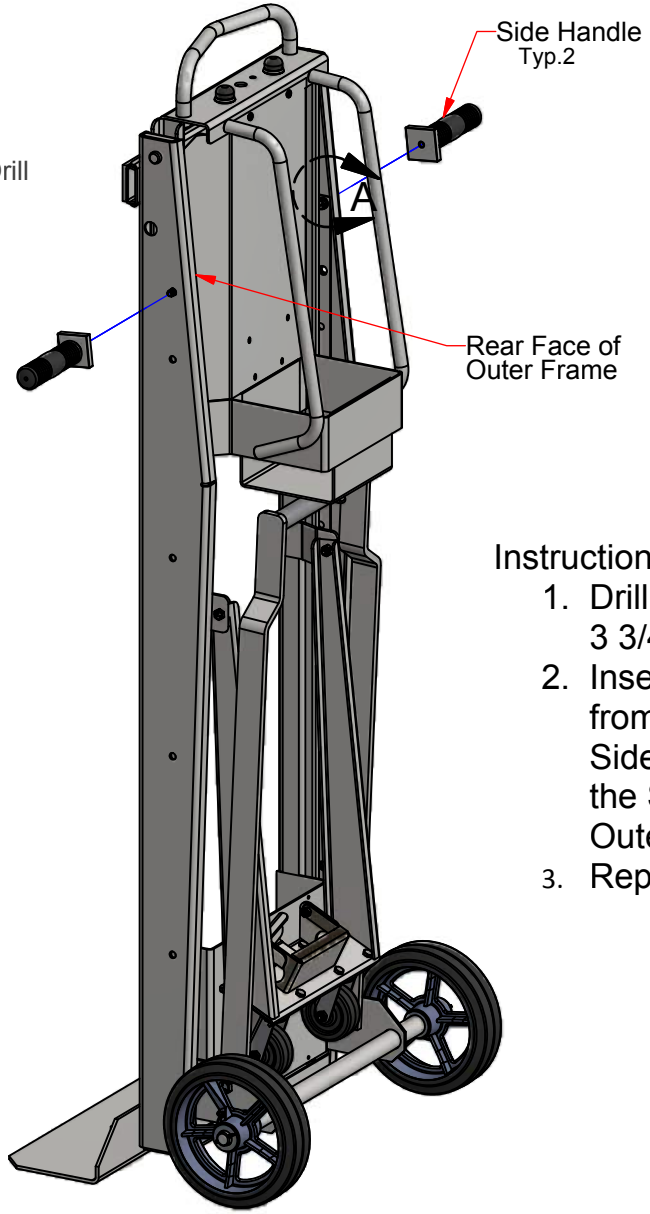
NOTE: The Hook Box is installed in a Flatbed Vehicle in the same manner. It may also be installed in a side loading arrangement as long as the 29 1/4"dimension is maintained. Reinforce the floor as required.

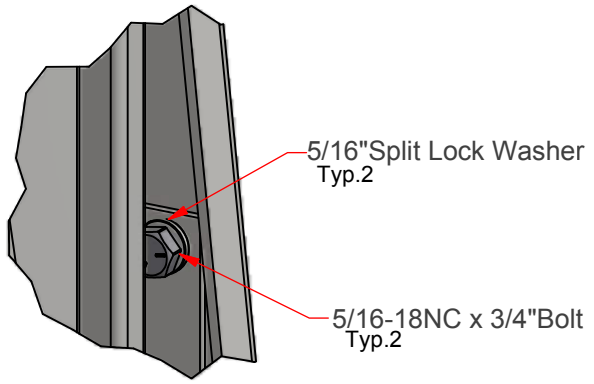
PN 010750 Rev.E
Assy.No. 400090
Eng. 05/ 08/ 14

SIDE HANDLE INSTALLATION INSTRUCTION

SIDE HANDLE KIT No. 400790







DETAIL A

Instruction:

1. Drill a 3/8"diameter hole in the Outer Frame 3 3/4" above the top Strap Bar holes.
2. Insert 5/16"Bolt and Washer into 3/8"hole from the inside of the Outer Frame. Thread Side Handle onto Bolt. Align a flat side of the Side Handle base to the rear face of the Outer Frame. Tighten Bolt.
3. Repeat above for other Side Handle.

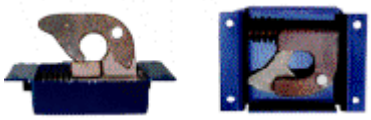
PN 010760 Rev.E
Assembly 400790
Eng. 05/ 08/ 14

PowerMate® ACCESSORIES/SPARE PARTS FOR M-SERIES MODELS

400100 EXTENDED TOEPLATE WIDTH

Depth 6 1/2" 16.51cm
Width 32" 81.28 cm

400090 HOOK BOX



Steel box with fold down brass hook that mounts flush in the bed of a truck or loading dock to assist loading and unloading.

400180 EXTENDED TOEPLATE DEPTH

Depth
12" 30.48cm
Width
22" 55.88cm

400061 CYLINDER ATTACHMENT

Depth 6" 15.24cm
Width 18" 45.72 cm
Height 4" 10.16cm

400080S EXTRA STRAPBAR

400310 10' Strap 3.05m
400320 12' Strap 3.65m
400300 14' Strap 4.24m
400340 16' Strap 4.87m

400280 HORIZONTAL SUPPORT BRACKETS

Two brackets per pkg.

Height 11" 27.94cm

400200 FACE PLATE

Width
16" 40.64cm
Height
51" 129.54cm

Attaches to main frame to cover front of machine.

400190 SKID PLATE

Width
19 1/2" 49.53cm
Height
47" 119.38cm

Fits in front of strapbars. Used to elevate loads for easier handling.

400400 LOAD ELEVATOR

Depth 14" 35.56cm
Width 16" 40.64 cm
Height 18" 45.72cm

Supports load at three levels, centering the weight over the axle, permitting much easier handling.

L P INTERNATIONAL INC.
P.O. Box 696, 151 Savannah Oaks Dr.,
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1-800-697-6283
www.powermate.info

PN 010920 Rev.E
Eng. 05/ 08/ 14

PowerMate® ACCESSORIES/SPARE PARTS FOR M-SERIES MODELS

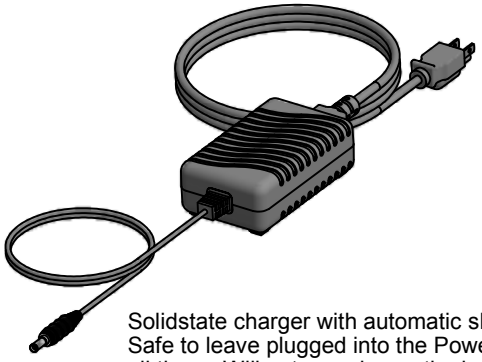
404300 BIG WHEEL ATTACHMENT

BIG WHEEL mounts onto the frame of an M-1 or M-2B in seconds. Designed to make traversing uneven, broken terrain much easier.

051310 SEALED BATTERY 12V-30Ah

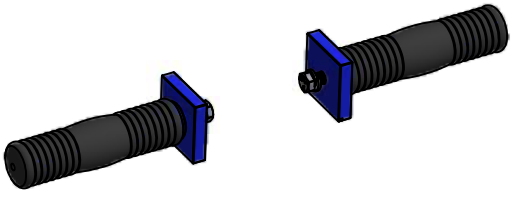
Gel pack, memory free battery. Charge only with PowerMate charger for best performance.

410211 BATTERY CHARGER



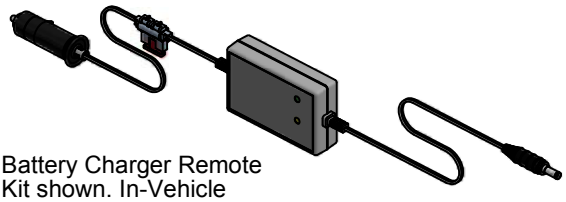
Solidstate charger with automatic shut-off. Safe to leave plugged into the PowerMate at all times. Will not overcharge the battery.

400790 SIDE HANDLES



400217 IN-VEHICLE CHARGER

The MobileCharge 12E charges your PowerMate from the vehicle 12V system. When the vehicle if off, it will continue to charge for 2.5 hrs, protecting the vehicle battery. The 3-stage charging profile extends battery life and is independent of vehicle system voltage.



Battery Charger Remote Kit shown. In-Vehicle Charger comes with accessory port plug.

400218 BATTERY CHARGER REMOTE KIT

Our hard-wired MobileCharge 12E smart charging system keeps yout PowerMate charged as it remains in the back of your vehicle. It will never draw draw the vehicle battery down below 70% capacity so your vehicle will always will have enough power to start the engine.

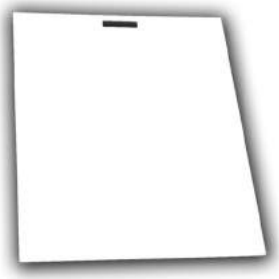
404210 STEP EXTENSION

Comes with Mat Assembly and can be placed at the top or bottom of a staircase to create more room and a better turning surface for maneuvering your PowerMate with it's load. Allows you to complete 17% more moves.

Step Extension = 20"x 28" Mat Assembly = 22"x 44"

304200 PIVOT PAD/MAT ASSEMBLY

Available in two sizes, the Pivot Pad is made of durable material which allows you to turn the PowerMate, with it's load, on a dime. Move your loads effortlessly around tight corners while protecting your customer's property.



Pivot Pad = 24" wide x 30"l ong x 1/4" thick
Mat Assembly = 28" wide x 44" long x 1/4" thick

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PN 010930 Rev.F
Eng. 11/ 12/ 15

***PowerMate*® ACCESSORIES/SPARE PARTS FOR M-SERIES MODELS**

400062 HOT WATER TANK ATTACHMENT

Designed to secure cylinder loads to the machine minimizing the risk of product damage.

404100 WHEEL BRAKES

Depth 3 1/4 inch 8.26cm
Width 5 1/4 inch 13.35cm
Height 6 1/2 inch 16.51cm

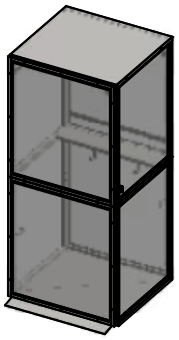
Weight: 12 1/2lbs. 5.67kg

404400 TWIN LIFT

Allows for easy manoeuvering of large loads such as vending machines in tight spaces. Can turn machine and load 360 degrees effortlessly.

406400 DOCKING STATION

The Docking Station is a secure storage locker for storing and charging a PowerMate. Hanging devices are provided for accessories.



400801 PREVENTATIVE MAINTENANCE KIT

Consisting of:

QTY	PART No.	DESCRIPTION
1	400230	BOTTOM RUBBER GUARD MS
2	050210	SWITCH PUSH BUTTON 2 TERMINAL
2	400310	STRAP 10' c/w HARDWARE
1	400150	BRAKE ASSEMBLY KIT
1	400160	BEARING OVERRIDE KIT

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PN 010940 Rev.E1
Eng. 08/ 14/ 14

Warranty

Every ***PowerMate***® Safety Moving System supplied by L P INTERNATIONAL INC. including accessories, with the exception of batteries, straps and shear pins is guaranteed against faulty workmanship and defective materials for a period of one year from date of purchase, when given normal use and maintenance in accordance with operation manual.

The above warranty will apply only to the original purchaser.

L P INTERNATIONAL INC. do not hold themselves responsible for any damage caused by atmospheric or chemical influences nor defects due to unskilled operation, lack of maintenance and use of unprescribed lubricants. Neither do they accept responsibility for normal wear and tear and consequences therefrom. Warranty Service is available through your local authorized dealer or distributor. Warranty is void if serviced by unauthorized persons.

Machine Model _____ Serial No. _____

Manufactured By:
L P INTERNATIONAL INC.

MAILING ADDRESS

P.O. BOX 696, 151 SAVANNAH OAKS DR.
BRANTFORD, ONTARIO, CANADA
N3T 5P9

USA MAILING ADDRESS:
P.O. BOX 1132
LEWISTON, N.Y., 14092-8132

PHONE: (519) 759-3292
1-800-697-6283
FAX: (519) 759-3298

DECLARATION OF CONFORMITY

ORIGINAL LANGUAGE VERSION

Date:

Manufacturer: L P INTERNATIONAL INC.
Box 696, 151 Savannah Oaks Dr
Brantford ON CA N3T 5P9

declares that the apparatus:

***PowerMate*® Model Serial №**

➪ conforms to the protection requirements of Council directive:

2006/42/EC (Machinery Directive)
2004/108/EC (Electromagnetic Compatibility Directive)

on the approximation of the laws of the Member States relating to machinery directive and electromagnetic compatibility.

➪ STANDARDS including Annex 1 of 2006/42/EC and 4 (Lifting)

NAME **L. Jeavons**

TITLE **General Manager**

SIGNATURE

DAILY MAINTENANCE SCHEDULE

NOTE: If attempting any service repair work disconnect the battery by depressing the red button on the circuit breaker.

- Inspect unit frame for structural damage.
- Inspect for corrosion and broken welds.
- Inspect wheels and tires. Grease the wheels if required. Ensure the cotter pins are in place.
- Inspect all bolts and fasteners are in place and secure.
- Inspect the strap(s) for damage. Nicks or tears are not acceptable.
- Inspect the push button switches for condition and operation. Make sure the wiring is secure.
- Test the circuit breaker for operation. Cycle the unit testing for operation, direction and smoothness.
- Observe the roller operation in the outer frame rails. Oil rollers as required. Inspect the drive screw and ballnut for damage, bending during operation, and lubrication.
- Ensure the operating manual is readily available for reference.
- Keep the battery fully charged.

FOR PARTS AND SERVICE CONTACT:

1-800-697-*Mate*