

PowerMate[®]

StairClimbing HandTrucks

OPERATING MANUAL



STEEL MODELS



M-2C

M-2B

M-1

S02-040.01

T20-000.04

For Serial Numbers 30000 and higher.

PN 010900 Rev. C1
PN 300320 Rev. C1
Eng. 02/28/11



WARNING!

The manufacturer states that only competent operators trained to manufacturer's standards, are to use this equipment.

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.

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

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.

GENERAL SAFETY RULES

1. **Read** all safety and operating instructions before anyone operates your *PowerMate®* unit. Use the *PowerMate®* unit only as described in this manual.
2. **Retain** all safety and operating instructions for future reference. Ensure they are readily available.
3. **Heed** all warnings in the safety and operating instructions.
4. **Follow** all installation, operation, service and safety instructions.
5. **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. **Never** allow unqualified or un-authorized personnel to operate the equipment.
6. **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.
7. **CAUTION:** Barriers, warning signs, designated walkways or other safeguards must be provided where pedestrians are exposed to the risk of collision.
8. **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.
9. **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.
10. **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 moth-proofing substances, or in an area where flammable dust is present.
11. **Do not use** accessories or attachments not recommended by the manufacturer as this may increase risks of damage and cause hazards.
12. **Use** only *PowerMate®* accessories best suited for the application ie: Strapbar Attachment for box type loads, Cylinder Attachment for cylindrical loads, etc.
13. **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.
14. **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.
15. **Ensure** planned route for *PowerMate®* operation is clear of obstacles and un-involved personnel. When visibility is obstructed, use spotter person for direction instruction and /or clear path of obstacles and un-involved personnel.

GENERAL SAFETY RULES

16. **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 vehicle, be prepared for movement in the vehicle suspension system.
17. **Insure** that the *PowerMate®* unit is charged and ready for operation.
18. **Never** lift a load that is over the rated capacity of the *PowerMate®* unit. Estimate the weight and center of gravity position and refer to the 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 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. Do not operate with a load that is beyond the operator's physical ability.
19. **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.
20. **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.
21. **Verify** the load is secure at the beginning of use, and prior to climbing or descending with the load. Check for any loose items or load shifting.
22. **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.
23. **Do not** lift people and never ride on the *PowerMate®* unit.
24. **Do not** load the *PowerMate®* unit with a load center of gravity that is outside the side to side limits of the unit wheels. Avoid quick reversal operations. When in transit, do not travel at excessive speed (walk, do not run).
25. 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.
26. 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.
27. **Always** keep your attention in the direction you are moving, monitoring clearances above, below and to 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.
28. **Stay alert.** Should something break, loosen, or malfunction on your machine, stop work and seek qualified assistance to correct the condition.
29. 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.

GENERAL SAFETY RULES

30. **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.
31. **Do not** compress the top urethane bumper when the machine is under load.
32. **Operators** shall determine the balance of unfamiliar loads prior to 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!**
33. **Store** *PowerMate®* unit in a fully retracted position. If the unit is in mobile operation, ensure the unit is secure to prevent movement. Store the unit in a clean/dry environment to prevent damage and corrosion. The storage area should have adequate ventilation for the battery charging procedure.
34. **WARNING:** There is a risk of explosion if the battery is replaced by an incorrect type. Only use batteries that are provided by L P INTERNATIONAL INC. for your *PowerMate®*. Use only battery chargers provided with your *PowerMate®*. Dispose of used batteries according to your local environmental guidelines. **Do not** puncture or incinerate the battery.
35. **Do not** perform maintenance on any *PowerMate®* unit unless authorized to do so. The unit is capable of high electrical currents and the motor can generate excessive heat. If the motor/electrical compartment is accessed for any reason, the fuse must be removed and the circuit breaker activated prior to entry.
36. **WARNING:** If the *PowerMate®* unit or any of its components become unserviceable for any reason, activate(trip) the circuit breaker. Indicate on the unit in a prominent location, by way of a tag, the unit is unserviceable and words stating "DO NOT USE".
37. **DANGER:** Never insert any metallic device, such as a tool, in the *PowerMate®* unit without first removing the fuse and the circuit breaker activated. Inadvertent contact with any electrical contact may cause the machine to activate resulting in severe injury.
38. **Never** remove or override any mechanical or electrical safety device. Replace the fuse with a fuse of equal type and rating only. If the fuse continues to blow, seek service.
39. **Do not** touch hot components. Allow the equipment to cool down before servicing.
40. Maintain the equipment regularly. Poorly maintained equipment jeopardizes the safety of the operator and all other personnel. Remember that safety is your responsibility. Complete the recommended daily inspection procedure. Do not operate the equipment if it does not pass the inspection. Have the equipment thoroughly checked by a competent service person at least once a year.

PERSONNEL

1. **Operator** must be able to communicate clearly.
2. **Operator** must be familiar with normal operating practices and procedures. Whenever there is any doubt as to safety, the operator should stop the operation and not proceed until safe conditions are restored.
3. **Operator** must have received approved training on the *PowerMate®* unit to be used. Training shall include theory, practice and testing.
4. **Operator** must have good hearing and vision (with or without correction) and must have good depth perception.
5. **Operator** must not be afflicted with any known heart or any other health conditions(s) that might cause sudden loss of ability to react.
6. **Operator** is responsible for maintaining proficiency on *PowerMate®* equipment. Familiarity with instructions, safety procedures, maintenance practices, controls, operation and loading are required at all times.

OPERATOR DON'TS

1. Do not eat or drink during the operation of *PowerMate®* equipment.
2. Do not sleep. Stay alert when operating *PowerMate®* equipment.
3. Never divert attention when the *PowerMate®* equipment is loaded.
4. No horseplay or practical jokes when operating the equipment.
5. Do not use alcohol or other intoxicants when operating the equipment.
6. Do not operate the equipment when taking medication that will affect your physical performance or judgement.
7. Do not abuse the equipment. Use *PowerMate®* equipment for their intended use only.

CHARGING THE POWERMATE

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

DANGER: Lead-acid Batteries can generate explosive gases. Only charge lead-acid batteries in well ventilated areas. If charging in a vehicle, make sure sufficient ventilation is provided.

DANGER: RISK OF ELECTRICAL SHOCK, BURNS, OR FIRE - The battery charger must be used as supplied. Never replace, splice, or repair cables or connectors supplied with the charger.

DANGER: If fuse installed, replace fuse only with a fuse of the same rating.

CAUTION: RISK OF SHOCK - Do not use charger units if the input or output cord is cut or frayed or damaged in any way. Do not use the charger if case is damaged in any way. Do not open the charger case for any reason. There are no serviceable parts.

CAUTION: RISK FROM HIGH CURRENTS. RISK OF BURNS - Always be sure that the charger is disconnected from the power source and battery being charged before handling.

CAUTION: Protect the charger from dampness or wet weather such as rain, snow, etc. Keep charger way from sources of liquid such as drinks, washbasins, bathtubs, shower stalls, solvents, flowing water, etc. 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, emit dangerous gases, or cause personal injury or damage.

WARNING: The charger units supplied by L P INTERNATIONAL INC. 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.

WARNING: Only use the supplied charger(s) on PowerMate® products.

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 being placed upon or against them.

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

ADDITIONAL CHARGER SAFETY INSTRUCTIONS

110V Battery Charger

1. Before using battery charger, read all instructions and cautionary markings on the battery charger, battery and product using the battery.
2. **CAUTION:** To reduce risk of injury, charge only 12 volt lead-acid type rechargeable batteries. Other types of batteries may burst causing personal injury or damage.
3. Your AC cord came equipped with three-wire grounding plug (a plug that has a third grounding pin). This plug will only fit 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.
4. 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.
5. Ensure the pins of the extension cord plug are the same number, size and shape as those on the charger. Ensure the extension cord is wired properly and in good electrical condition.
6. **Do not** overload wall outlets or extension cords as this can result in a risk of fire or electrical shock.
7. **Do not** operate charger if it has received a sharp blow, been dropped, or otherwise damaged in any way.
8. **Do not** disassemble charger. There are no serviceable parts.
9. To reduce risk of electrical shock, unplug the charger from the outlet before attempting maintenance or cleaning.
10. Disconnect the power plug by pulling the plug, not the cord.
11. **Do not** handle the plug with wet hands.
12. Unplug the charger when not in use.

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.

BATTERY SAFETY

Whenever handling or working with a lead-acid battery, consult your vehicle and battery owners manual for instructions and safety precautions. 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:

1. **Wear** ANSI approved safety glasses or goggles and a face shield.
2. **Wear** proper clothing to protect your face, hands and body. Wear a rubber apron.
3. Make sure work area is well-ventilated.
4. **Never** lean over a battery when testing or charging.
5. Cigarettes, flames or sparks could cause a battery to explode. Keep all ignition sources away from the battery.
6. **Always** shield eyes and face from battery.
7. **Do not** charge or use booster cables or adjust battery connections without proper instructions and training.
8. **Never** remove vent caps on a sealed battery.
9. In the event of an accident, flush with water and call a physician immediately.
10. If venting gas is significantly inhaled, seek immediate medical attention.
11. **Keep** batteries out of reach of children.
12. **Never** store batteries with explosives, flammable materials, chemicals or food.
13. **Protect** batteries from crushing, punctures and shorting.
14. **Do not** strike the sides of a battery with any spark producing item.
15. **Do not** accumulate used batteries. Dispose used batteries in accordance with local environmental laws.
16. **Never** touch both battery terminals with bare hands at the same time.
17. **Remove** rings, watches and dangling jewelry when working with batteries. The metal in jewelry can cause a shock and cause a shock and burns if contacted with the battery terminals.
18. **Only** use insulated/non-conducting tools when making connections on a battery. Never lay tools or other parts on top of a battery.
19. If there is spilled sulphuric acid present, neutralize with baking soda. Because the batteries used in L P INTERNATIONAL INC. products are of the sealed type, the battery should be replaced if there is evidence of spillage.

M-SERIES POWERMATE CHARGING INSTRUCTION



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 Twist Lock Plug into the Charging Receptacle located in the Motor Bracket. The Plug will lock in place with a slight clockwise turn. 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 Plug from the Receptacle by using a slight counter clockwise turn and pull.
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.

POWERMATE BATTERY SPECIFICATIONS

dryfit from Sonnenschein.

dryfit-the name that has a synonym for a future-oriented battery generation

dryfit technology was invented by Sonnenschein.

Solid advantages point-by-point:

Tested and found to be good!

• Maintenance-free and sealed	Needs no maintenance whatsoever throughout its life. Each cell is sealed by a valve preventing penetration by air-borne oxygen. Over-pressure in the cells [e.g. through over-charging] unseals the valve so letting out the excess independent pressure; the valve then closes again. For installations of dryfit batteries in rooms, containers and cabinets the standards VDE 0510 Part 2 are complied with.
• Independence of position	Sonnenschein dryfit batteries of series A200 can be used in any orientation including upside down. In stationery installation, care should be taken to ensure that valves point upwards and are not covered.
• Deep discharge resistant	dryfit batteries survive deep-discharging without suffering damage. Even when discharged and remaining connected to a load for 4 weeks, they recover 80% of their capacity after 48 hours charging. 100% is reached after a few cycles.
• Extremely low self-discharging	Less than 0.1% of the rated capacity per day at +20°C ambient temperature means no re-charging even after up to 2 years storage.
• Cyclic capability	Special measure relating to electrolyte production give A200 version of dryfit batteries good cyclic capability. At 100% discharge [up to discharge cut-off voltage of 1.75 Volts/cell] more than 200 cycles can be obtained. Considerably more cycles are possible with partial discharges.
• Long-life	Under continuous charge operation the life is 4-5 years, end of life being defined as when 60% of the rated capacity is reached [as per DIN 43534].
• Wide temperature range	From -30°C to + 50°C [can also be briefly exceeded]. For operation under extreme temperature conditions, please observe works recommendations.
• High load capacity, all-round use	Robust grid and connector design gives good high-current load properties. Excellently suited for operation under extreme conditions due to high resistance to vibration. The larger types [from 20Ah] are suitable for starting internal combustion motors.
• Simple charging method	Just one charging voltage for cyclic and continuous charging modes. No current limiter needed as charging current is regulated by the battery. Constant charging voltage at +20°C room temperature is 2.3 Volts/cell.
• VdS approval:	At present 8 types are approved by the VdS [federation of German specialist insurers].
• No hazardous goods	Due to immobilized gel electrolyte dryfit batteries A200 are not classified as hazardous goods.

Sonnenschein dryfit batteries comply with the following international standards:

dryfit A 200

DIN 43534 "Maintenance-free" sealed rechargeable batteries with gelled electrolyte.

DIN 43539 Part 5 Tests "Maintenance-free" sealed rechargeable batteries with gelled electrolyte.

VdS approvals:

Currently 8 types approved by VdS [federation of German insurers].

DIN 57510/VDE 0510 Rechargeable batteries and battery systems, stationary batteries.

NATO - Selected types tested and approved according to guidelines for military supply standards.

DIN EN 50014/VDE 0179/0171 Part 1/5.78 General specifications.

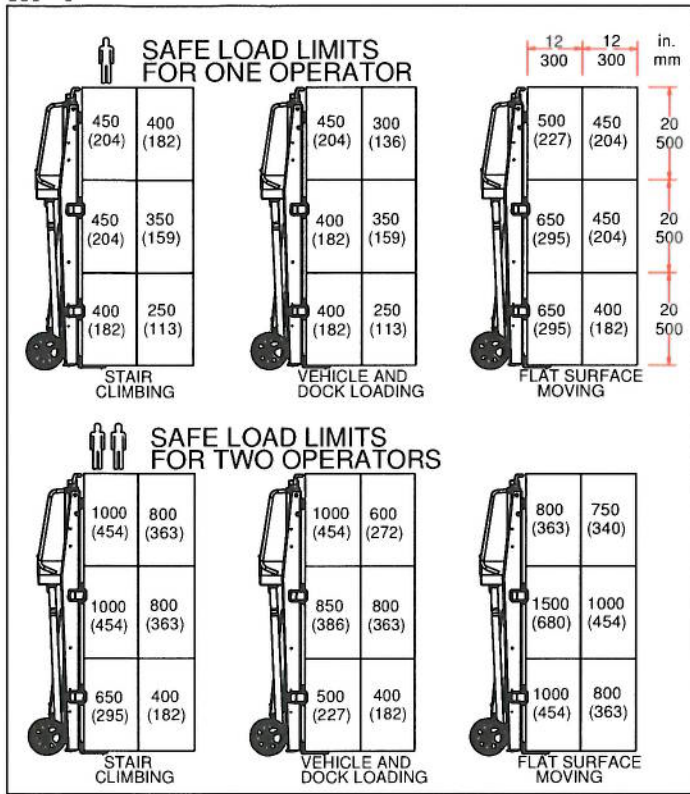
DIN 57833/VDE 0833 Part 1 Danger warning equipment for fire, assault/robbery and burglary.

UL recognition File MH 12547.

PowerMate® units are fitted with Sonnenschein Batteries. Customers using **PowerMate®** get a full days' use from a fully charged battery. When **PowerMate®** is not in use, recharge the battery.

M-1 POWERMATE® LOADING INSTRUCTIONS

M-1



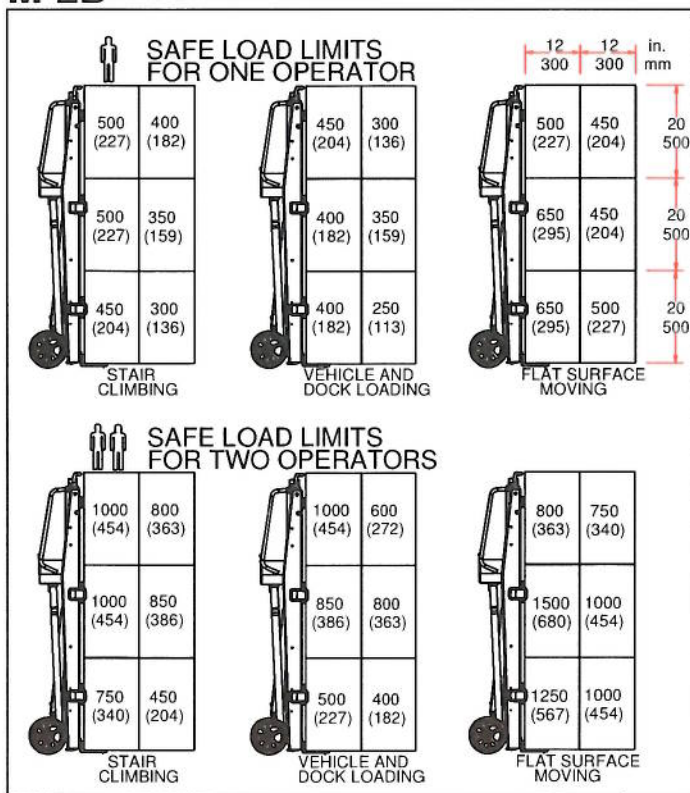
After establishing the weight of your load and its center of gravity, refer to the load drawings to determine:

1. That the capacity of the *PowerMate*® is adequate for the intended application.
2. Whether one or two operators are required.

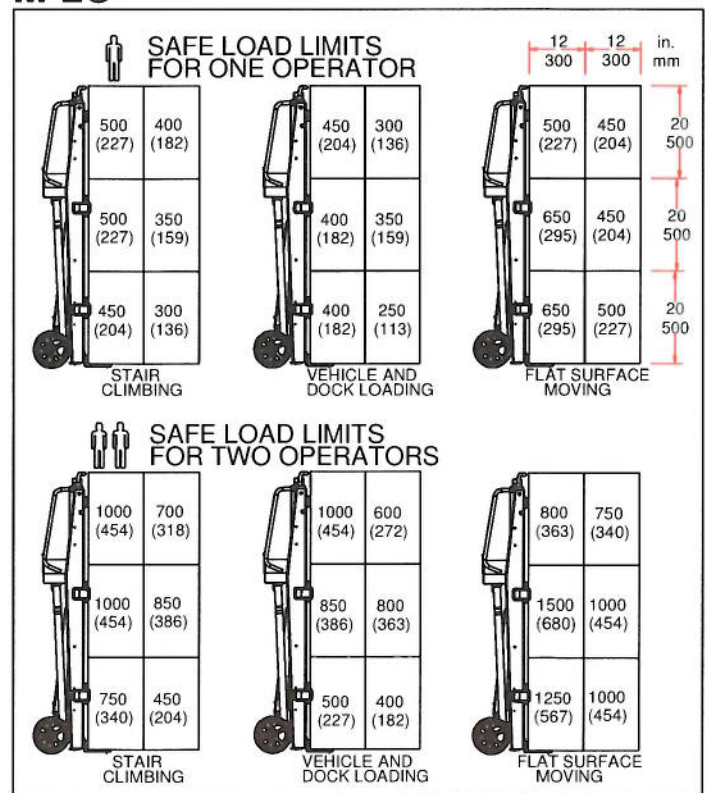
SAFE LOADING RECOMMENDATIONS IN LBS (KG).

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

M-2B

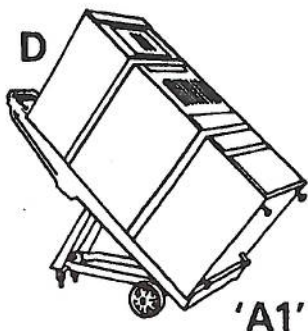
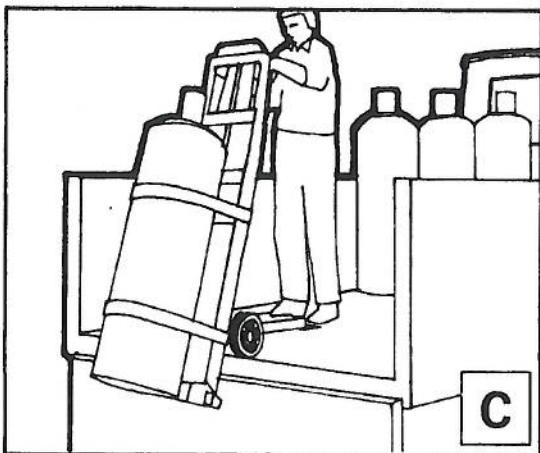
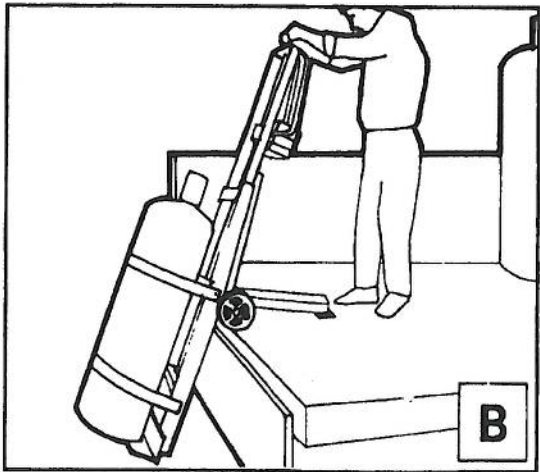
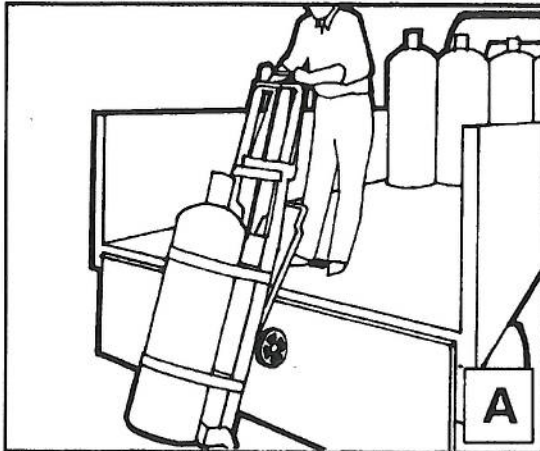


M-2C



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 upon 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.

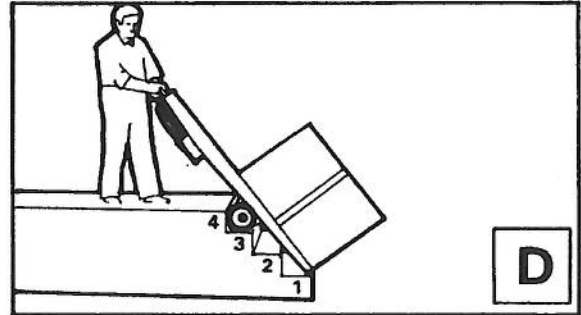
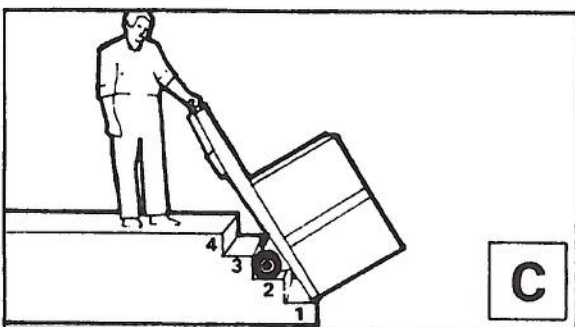
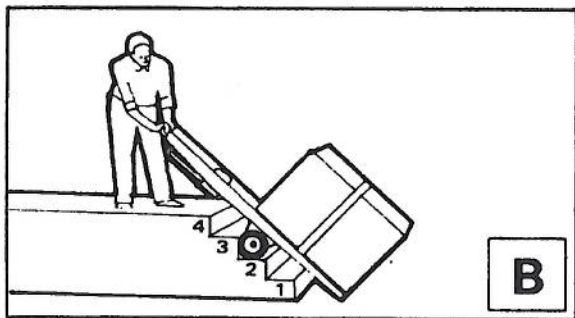
POWERMATE OPERATION

STAIR CLIMBING

Upstairs

- 1 Manoeuvre 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".

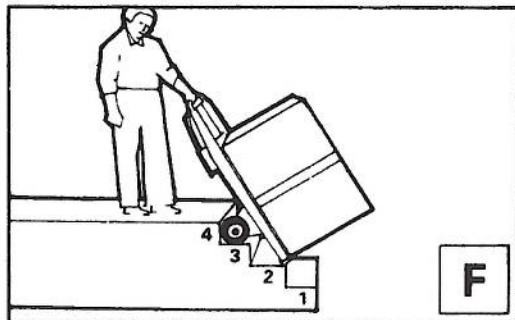
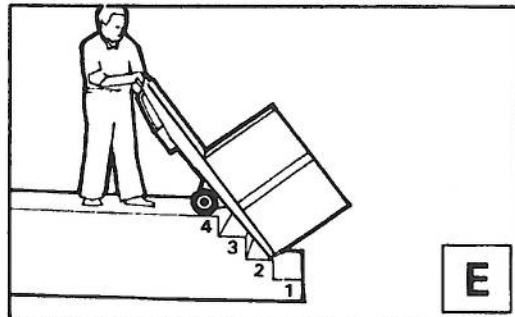
Repeat procedures 3 and 4 until the top of the stairs are reached.

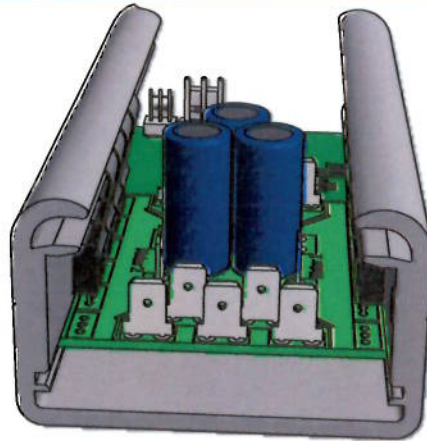


Down Stairs

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.





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 too 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<25°C)
Continuous Current (Ambient<25°C)	65 Amps (75 Amps in Le-Series Unit)
Maximum Run without stop:	25 to 30 Seconds (software 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:	-25°C to 50°C
Storage Temperature Range:	-40°C to 85°C

FAULT ALERTS

Faults are indicated by a buzzer producing a series of beeps to indicate 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**