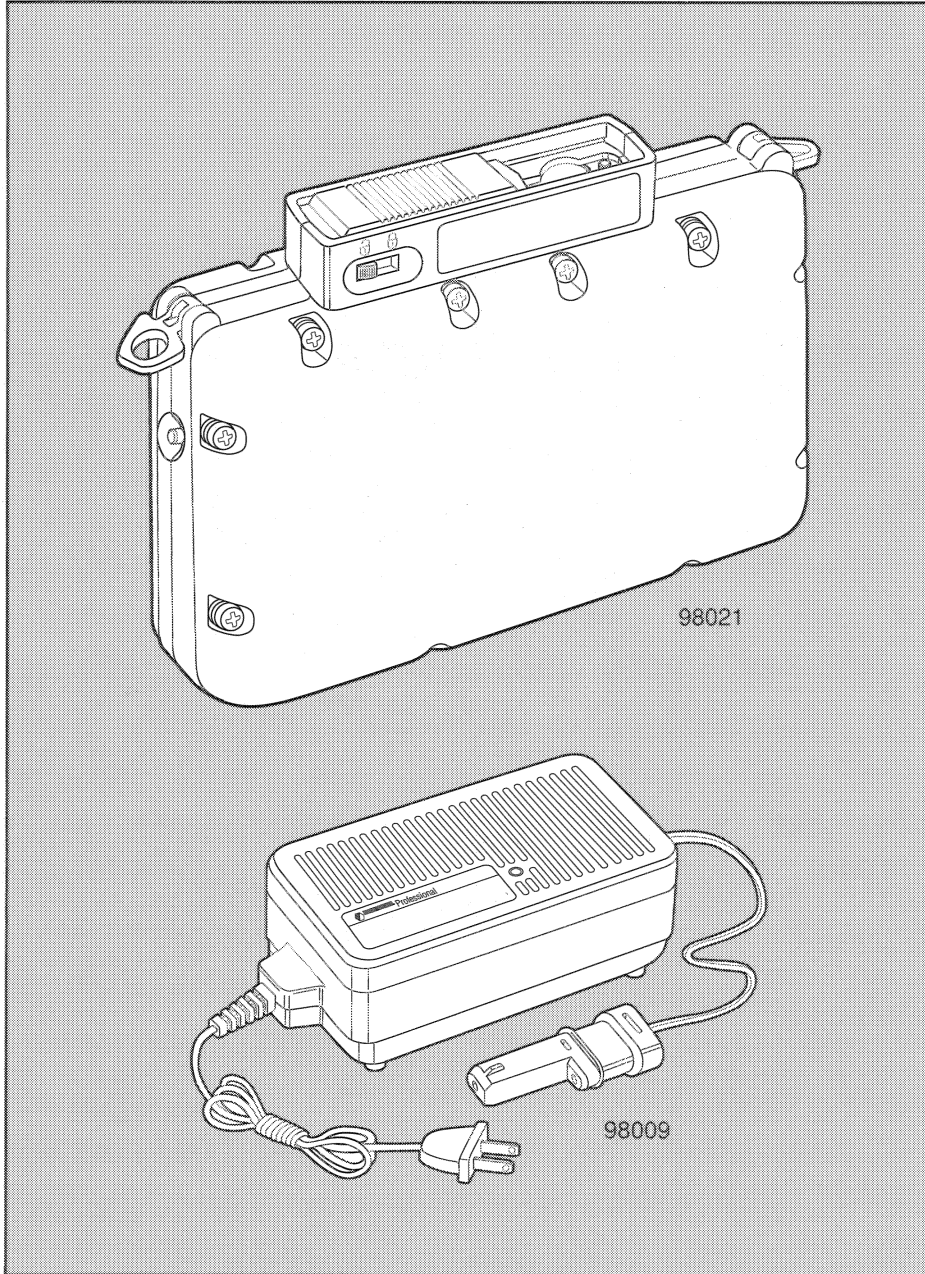




BLACK & DECKER®

ThunderVolt™
24 Volt Cordless System



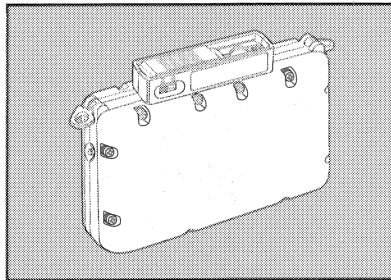
98021 Battery Pack

98009 Battery Charger

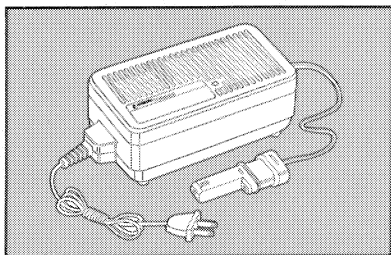
98034 Charger From Vehicle

98035 Automotive Charging Adapter

Thundervolt™ 12 & 24 Volt System Charger & Battery Instructions



98021 Battery Pack



98009
High Performance Lead Acid
Battery Charger

98009 High Performance Lead Acid Battery Charger

Important Charger Safety Instructions

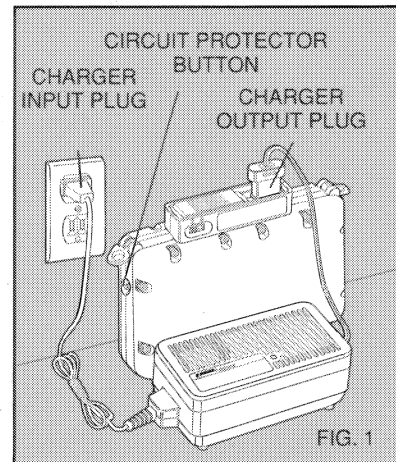
- SAVE THESE INSTRUCTIONS** — This manual contains important safety and operating instructions for battery charger Model 98009.
- Before using battery charger, read all instructions and cautionary markings on (1) battery charger, (2) battery, and (3) product using battery.
- CAUTION** — To reduce risk of injury, charge only 98021 rechargeable battery pack or 12 Volt Lead Acid Rechargeable Automobile Batteries. Other types of batteries may burst causing personal injury and damage.
- To reduce risk of electric shock, unplug charger from outlet before attempting any maintenance or cleaning.

- PLACE THE CHARGER IN-DOORS**, never expose it to the weather. Do not charge in areas where temperatures are below 40°F (4°C) or above 104°F (40°C).
- Place the battery pack on a flat surface away from water, a heat source, or flame. Keep the cord away from sharp edges, a heat source, oil and other chemicals.
- Choose a spot away from chemicals or other corrosive materials.
- Use the charger only with standard household outlets.
- PLUG CHARGER DIRECTLY INTO AN ELECTRICAL OUTLET. DO NOT** use an extension cord unless absolutely necessary. For further details, refer to Table 1. **DO NOT ABUSE THE CORD.** Never carry charger by cord or yank it to disconnect from an outlet.
- MAINTAIN WITH CARE. UNPLUG** the charger before attempting any routine cleaning or maintenance.
- DO NOT** operate a damaged charger. Have damaged cords or charger replaced immediately by an authorized Black & Decker Service Center.
- Do not expose charger to rain or snow.
- Use of an attachment not recommended or sold by the battery charger manufacturer may result in a risk of fire, electric shock, or injury to persons.
- To reduce risk of damage to electric plug and cord, pull by plug rather than cord when disconnecting charger.
- Make sure cord is located so that it will not be stepped on, tripped over, or otherwise subjected to damage or stress.
- Do not operate charger with damaged cord or plug — replace them immediately.
- Do not operate charger if it has received a sharp blow, been dropped, or otherwise damaged in any way; take it to a qualified service person.
- Do not disassemble charger; take it to a qualified serviceman when service or repair is required. Incorrect reassembly may result in a risk of electric shock or fire.

Charging the Battery Pack(Using the 98009 Charger)

The 98009 Charger is designed to charge a 98021 Battery Pack to approximately 85% of full capacity in less than 1 hour.

- Plug the charger's output plug firmly into the 12 volt receptacle of the battery pack, as shown in Figure 1. Make sure it's plugged in all the way.
- Plug the charger's input plug into a standard household electrical outlet.



- As soon as you plug the charger into the outlet, the light on the top of the charger should come on.
- After the battery pack reaches approximately 85% of full charge the light will stop glowing steadily. At this time the charger is still operating, producing a maintenance charge to keep the battery pack fresh.

Important

Additional Charging Notes

- For maximum battery pack capacity, leave the pack on charge for an additional hour after the light on the charger stops glowing steadily, or leave it on charge overnight.
- For best results, charge the battery pack overnight at least once per week. The first 10-12 times you charge battery pack, charge it overnight.
- If you notice a reduction in performance, leave your battery pack on charge overnight to fully top off your pack.

4. Do not leave your battery pack on continuous charge for more than 7 days.
5. Charge after each usage.
6. The most effective charging temperature range is 40°F (4°C) to 104°F (40°C). Charging at temperatures below 40°F (4°C) or above 104°F (40°C) is not recommended.
7. If input voltage is too low, it may take longer to charge your battery pack. Don't use undersized extension cords (see table 1) or share electrical circuits with high power consuming tools or appliances.
8. Old or severely discharged battery packs may take longer to charge.
9. In some rare cases, a fully depleted battery will not hold a charge but will continue to accept charging from the charger. If you find that the charger light is still glowing after several hours, take or send the battery pack to your closest Black & Decker Service Center for a thorough inspection.

Extension Cords

An extension cord should not be used with the 98009 charger unless absolutely necessary. Use of improper extension cord could result in a risk of fire and electric shock. If extension cord must be used, make sure:

- a. That pins on plug of extension cord are the same number, size, and shape as those of plug on charger;
- b. That extension cord is properly wired and in good electrical condition; and
- c. That wire size is large enough for AC ampere rating of charger as specified in Table 1.

TABLE 1 RECOMMENDED MINIMUM AWG SIZE FOR EXTENSION CORDS FOR BATTERY CHARGERS					
Ampere rating of charger		Length of Cord, Feet			
Equal to or greater than	but less than	25	50	100	150
0	2	18	18	18	16
AWG Size of cord					

98021 Battery Pack

Battery Pack Safety Instructions

WARNING

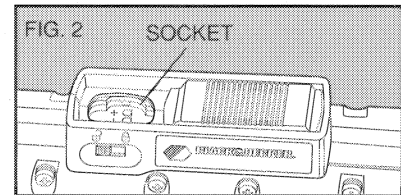
1. **STORE AND CHARGE IN A DRY LOCATION** — out of children's reach.
2. **DRESS PROPERLY.** Do not wear any loose clothing or jewelry.
3. **USE ONLY WITH RECOMMENDED BLACK & DECKER 12 & 24 VOLT PRODUCTS.**
4. **FOLLOW ALL SAFETY INSTRUCTIONS.**
5. **DO NOT CHARGE OR DISCHARGE BATTERY IN AN EXPLOSIVE ENVIRONMENT.**
6. **UNPLUG BATTERY PACK FROM CHARGER OR TOOL** when servicing and cleaning.
7. **DO NOT ATTEMPT TO REPAIR THE BATTERY PACK OR CHARGER.** Any repairs must be made by authorized Black & Decker Service Centers.
8. **CAUTION** — Do not insert any metal objects into either receptacle — **THIS ACTION MAY CAUSE A BURN.**
9. **DO NOT INCINERATE OR MUTILATE** — Batteries contain toxic materials.
10. **USE CHARGER NO. 98009 or 98034 ONLY** when charging battery pack.
11. **DO NOT LEAVE CHARGER PLUGGED INTO WALL OUTLET** when not in use.
12. **DO NOT PLUG CHARGER INTO ANY RECEPTACLE OTHER THAN THOSE DESCRIBED IN THIS MANUAL.**
13. **DISCONNECT THE TOOL FROM THE BATTERY PACK** when leaving the tool unattended.

SAVE THESE INSTRUCTIONS

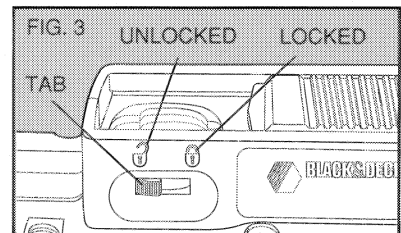
NOTE: Your 98021 Battery Pack was shipped in a partially charged condition. At the time of purchase and before initial use charge the battery pack as described in these instructions.

24 Volt Usage

1. Slide the top door to the side so that the socket pictured in Figure 2 is exposed.



2. Unlock the plug locking ring by rotating the tabs so that they align with the "Unlocked" emblem on the housing, as shown in Figure 3.

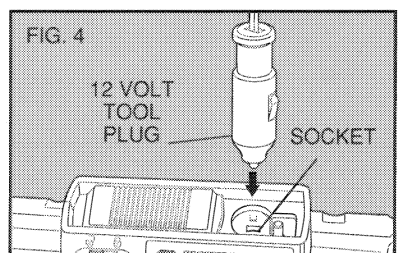


3. Insert the 24 volt tool plug firmly into the socket. **NOTE:** The plug is designed so that it will only fit one way; if it doesn't fit, turn it around.
4. Lock the plug locking ring by rotating the tabs so that they align with the "Locked" emblem on the housing . . . the tool is now ready to operate.
5. Follow all operating instructions in the tool's instruction manual.

12 Volt Usage

Your battery pack has a 12 volt receptacle designed to accept 12 volt automotive type (cigarette lighter) plugs. This may be used for 12 volt lights or other 12 volt products with cigarette lighter plugs. (These other products are not part of the Thundervolt system.)

1. Slide the top door to the side so that the socket pictured in Figure 4 is exposed.



2. Insert the 12 volt tool plug firmly into the socket . . . the tool is now ready to operate.
3. Follow all safety and operating instructions in the tool's instruction manual.
NOTE: The 12 volt receptacle described above is also used for charging the battery pack. See charging instructions on the preceding pages.

Important Battery Pack Usage Notes

1. Available capacity is affected by temperature.

Ambient Air Temperature	Available Battery Capacity
68° to 104°F (20°C-40°C)	100%
32°F (0°C)	85%
-4°F (-20°C)	60%

Usage in very low temperature may reduce available capacity. Usage in very high temperature may damage the battery.

2. Repeatedly deep discharging the battery pack will shorten the battery pack's life. Recharge the battery pack when the tool fails to produce sufficient power.

Important Battery Pack Storage Notes

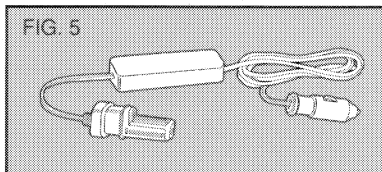
1. Do not store your battery pack in a discharged state.
2. Battery packs will self discharge over a period of time depending on storage temperature. It is best to store in cool environment. If battery packs are to be stored for long periods of time they should be given a "refresh charge" every six months.
3. After long term storage, your battery will deliver less than full capacity on the first cycle. Full capacity will be restored after several charge/discharge cycles. To maximize capacity, charge overnight for the first few cycles after long term storage.

Circuit Protector

Your power pack is equipped with a circuit protector to prevent damage to the system in the event of an accidental overload of the tool. If the power pack fails to operate or accept a charge, check and reset the circuit protector as required by pushing in the plastic button, shown in Figure 1.

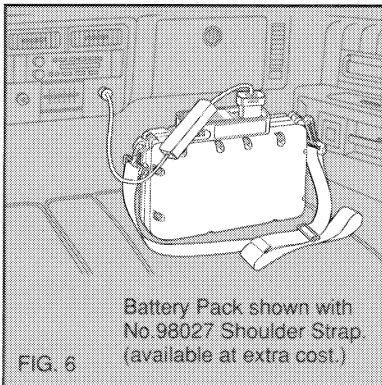
98034 Charger From Vehicle

(Charging the 98021 battery pack using a vehicle with a 12 volt cigarette lighter socket and the 98034 Charger From Vehicle)



NOTE: The 98009 charger is not used at the same time as the 98034 Charger From Vehicle. The Charger From Vehicle is used to supplement your battery pack charging. For best results, you should charge your battery pack with your 98009 charger after every day's use.

1. Start your car's engine and set the parking brake. Allow the engine to idle with the transmission in park (if automatic) or neutral (if manual).

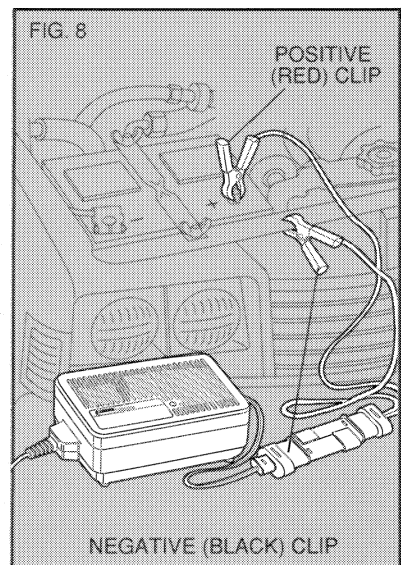
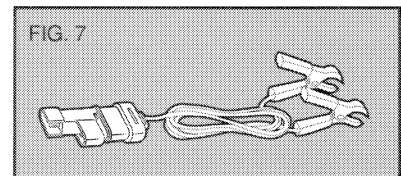


2. Plug the output plug of the 98034 Charger From Vehicle into the 12 volt receptacle of the battery pack, as shown in Figure 6.

3. Plug the input plug of the Charger From Vehicle into the cigarette lighter receptacle of your automobile.
4. Drive your car normally. After about one hour, your battery will be charged. **NOTE:** The Charger From Vehicle will NOT fully charge the battery pack under engine idling conditions. The engine must be operated at considerably higher than idle RPM to fully charge the battery pack. This RPM is best achieved by driving the car at normal speeds (above 35 mph).
NOTE: DO NOT CHARGE THE BATTERY PACK IN THE ABOVE MANNER BY LETTING THE CAR IDLE UNATTENDED OR IN A CLOSED GARAGE.

Charging the Car Battery using the 98035 Automotive Charging Adaptor

A special accessory that enables you to charge your car battery when used in conjunction with the 98009 charger.



Important Safety Instructions

1. WARNING — RISK OF EXPLOSIVE GASES.

a. **WORKING IN VICINITY OF A LEAD-ACID BATTERY IS DANGEROUS. BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL BATTERY OPERATION. FOR THIS REASON, IT IS OF UTMOST IMPORTANCE THAT EACH TIME BEFORE USING YOUR CHARGER, YOU READ THIS MANUAL AND FOLLOW THE INSTRUCTIONS EXACTLY.**

b. To reduce risk of battery explosion, follow these instructions and those published by battery manufacturer and manufacturer of any equipment you intend to use in vicinity of battery. Review cautionary marking on these products and on engine.

2. PERSONAL PRECAUTIONS

- a. Someone should be within range of your voice or close enough to come to your aid when you work near a lead-acid battery.
- b. Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.
- c. Wear complete eye protection and clothing protection. Avoid touching eyes while working near battery.
- d. If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters eye, immediately flood eye with running cold water for at least 10 minutes and get medical attention immediately.
- e. **NEVER** smoke or allow a spark or flame in vicinity of battery or engine.
- f. Be extra cautious to reduce risk of dropping a metal tool onto battery. It might spark or short-circuit battery or other electrical part that may cause explosion.

g. Remove personal metal items such as rings, bracelets, necklaces, and watches when working with a lead-acid battery. A lead-acid battery can produce a short-circuit current high enough to weld a ring or the like to metal, causing a severe burn.

h. Use charger for charging a **LEAD-ACID** automobile battery only. It is not intended to supply power to a low-voltage electrical system. Do not use battery charger for charging dry-cell batteries that are commonly used with home appliances. These batteries may burst and cause injury to persons and damage to property.

i. **NEVER** charge a frozen battery.

j. Never attempt to charge any battery except 12 volt lead acid rechargeable automobile batteries. Never attempt to charge motorcycle, snowmobile, garden tractor, lawnmower, wheelchair, golf cart or similar batteries. To do so will severely damage the batteries and may cause personal injury.

k. This product is not intended for marine use.

3. PREPARING TO CHARGE

- a. If necessary to remove battery from vehicle to charge, always remove grounded terminal from battery first. Make sure all accessories in the vehicle are off, so as not to cause an arc.
- b. Be sure area around battery is well ventilated while battery is being charged. Gas can be forcefully blown away by using a piece of cardboard or other nonmetallic material as a fan.
- c. Clean battery terminals. Be careful to keep corrosion from coming in contact with eyes.
- d. Add distilled water in each cell until battery acid reaches level specified by battery manufacturer. This helps purge excessive gas from

cells. Do not overfill. For a battery without cell caps, carefully follow manufacturer's recharging instructions.

- e. Study all battery manufacturer's specific precautions such as removing or not removing cell caps while charging and recommended rates of charge.
- f. Determine voltage of car battery by referring to the car's owner's manual and make sure that the battery is rated at 12 volts. If it is not so rated, **IT CAN NOT BE CHARGED WITH THIS CHARGER.**

4. CHARGER LOCATION

- a. Never place charger directly above battery being charged; gases from battery will corrode and damage charger.
- b. Never allow battery acid to drip on charger when reading specific gravity or filling battery.
- c. Do not operate charger in a closed-in area or restrict ventilation in any way.
- d. Do not set a battery on top of charger.
- e. Locate charger as far away from battery as the charging cables permit.

5. DC CONNECTION PRECAUTIONS

- a. **CONNECT AND DISCONNECT DC OUTPUT CLIPS ONLY AFTER REMOVING AC CORD FROM ELECTRIC OUTLET. NEVER ALLOW CLIPS TO TOUCH EACH OTHER.**
- b. Attach clips to battery posts and/or frame positions and twist or rock back and forth several times to make a good connection. This tends to keep clips from slipping and helps to reduce risk of sparking.

6. FOLLOW THESE STEPS WHEN BATTERY IS INSTALLED IN VEHICLE. A SPARK NEAR BATTERY MAY CAUSE BATTERY EXPLOSION. TO REDUCE RISK OF A SPARK NEAR BATTERY:

- a. Position all cords to reduce risk of damage by hood, door, or moving engine part.
- b. Stay clear of fan blades, belts, pulleys, and other parts that can cause injury to persons.
- c. Check polarity of battery posts. POSITIVE (POS, P, +) battery post usually has larger diameter than NEGATIVE (NEG, N, -) post.
- d. Determine which post of battery is grounded (connected) to the chassis. If negative post is grounded to chassis (as in most vehicles), see item e. If positive post is grounded to the chassis, see item f.
- e. For negative-grounded vehicle, connect POSITIVE (RED) clip from battery charger to POSITIVE (POS, P, +) ungrounded post of battery. Connect NEGATIVE (BLACK) clip to vehicle chassis or engine block away from battery. NOTE: DO NOT FACE BATTERY WHEN MAKING FINAL CONNECTION. Do not connect clip to carburetor, fuel lines, or sheet-metal body parts. Connect to a heavy gauge metal part of the frame or engine block.
- f. For positive-grounded vehicle, connect NEGATIVE (BLACK) clip from battery charger to NEGATIVE (NEG, N, -) ungrounded post of battery. Connect POSITIVE (RED) clip to vehicle chassis or engine block away from battery. Do not connect clip to carburetor, fuel lines, or sheet metal body parts. Connect to a heavy gauge metal part of the frame or engine block.
- g. When disconnecting charger, disconnect AC cord, remove clip from vehicle chassis, and then remove clip from battery terminal.

- h. See operating instructions below for length of charge information.

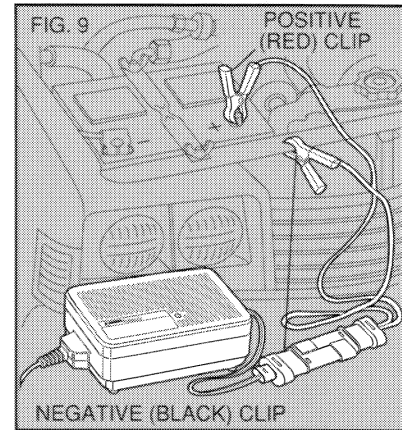
7. **FOLLOW THESE STEPS WHEN BATTERY IS OUTSIDE VEHICLE. A SPARK NEAR THE BATTERY MAY CAUSE BATTERY EXPLOSION. TO REDUCE RISK OF A SPARK NEAR BATTERY:**

- a. Check polarity of battery posts. POSITIVE (POS, P, +) battery post usually has a larger diameter than NEGATIVE (NEG, N, -) post.
- b. Attach at least a 24-inch-long 6-gauge (AWG) insulated battery cable (not supplied with system) to NEGATIVE (NEG, N, -) battery post.
- c. Connect POSITIVE (RED) charger clip to POSITIVE (POS, P, +) post of battery.
- d. Position yourself and free end of cable as far away from battery as possible — then connect NEGATIVE (BLACK) charger clip to free end of cable.
- e. Do not face battery when making final connection.
- f. When disconnecting charger, always do so in reverse sequence of connecting procedure and break first connection while as far away from battery as practical.

Charging the Car Battery

(Using the 98009 Charger and the 98035 Automotive Charging Adaptor)

1. Always plug the output cord from the 98009 charger all the way into the matching end of the Automotive Charging Adaptor first.
2. With the charger unplugged from the wall, attach the positive (RED) clip from the Automotive Charging Adaptor to the positive (+) post of the car's battery, as shown in Figure 9.



4. Plug the input cord to the charger into any conventional 120 volt AC outlet.
 - a. If the red charging light on the charger does not come on, unplug the charger from the wall and check to make sure that you have connected the battery charging cables correctly as described above. Your charger has a built-in polarity protection device which prevents the charger from operating if the battery cables are attached backwards.
 - b. If the red charging light blinks off and on for more than 5 hours, check to make sure that none of the car's accessories (including interior lights) are operating.

CAUTION: Check frequently to see that red charging light on charger is glowing. As soon as the red light goes out, signifying that the battery has reached full charge, unplug the charger from the wall and disconnect the cables from the battery. To leave the charger connected after the light goes out may damage the battery.

Automobile batteries may require over 12 hours to reach full charge. Small automobile batteries with a partial charge may require only 2 - 3 hours to reach full charge. If your automobile battery is not charged after 16 hours, disconnect it from your car and try charging it again. If it still won't charge, it is probably defective and should be checked by a qualified mechanic.

NOTES

Accessories

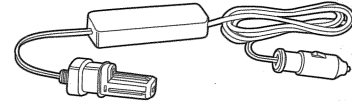
The accessories listed in this manual are available at extra cost from your local dealer or Black & Decker Service Center. A complete listing of service centers is included on the owner's registration card packed with your tool.

If you need assistance in locating any accessory, please contact: Black & Decker (U.S.) Inc., Consumer Service Dept. 626 Hanover Pike, P.O. Box 618, Hampstead, MD 21074-0618

CAUTION: The use of any accessory or attachment other than those recommended in this manual may be hazardous.

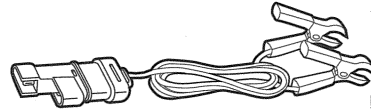
98034 Charger From Vehicle

The Charger From Vehicle is used for charging the 98021 Battery Pack from your car battery. See page 4 and Figure 6 for operating instructions.



98035 Automotive Charging Adaptor

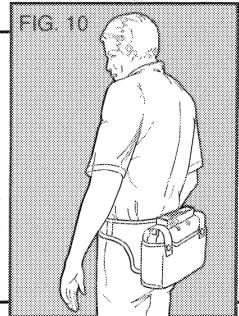
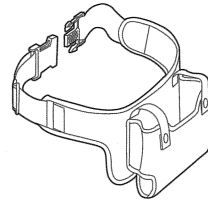
The Automotive Charging Adaptor is used to charge your car battery with the 98009 charger. See pages 4, 5 & 6 and for operating instructions.



98024 Battery Pack Belt and Pouch

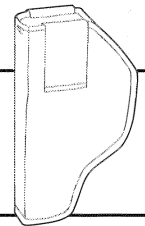
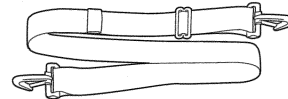
The belt and pouch are designed to carry the battery pack comfortably and conveniently. The pouch is worn against the small of the back, as shown in Figure 10 and is held in place with the attached belt.

Cinch the belt snugly to hold the pack firmly and tuck any extra material into the loops provided. Belt adjustments are provided on both the left and right side of the buckle. The belt will adjust from 24" to 44" waist size.



98027 Battery Pack Shoulder Strap

The Shoulder Strap can be used instead of the Battery Pack Belt and Pouch if you prefer. The Battery Pack shown in Figure 6 of this manual shows the Shoulder Strap.



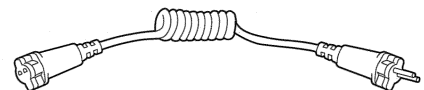
98028 Holster

The Holster is provided for convenience and will fit most of the tools in the Thundervolt System. It is designed for right or left handed use.

98031 Coiled 6 ft. (1.8 Meter) Power Cord

The Coiled Power Cord is used to connect the 24 volt tools to the battery pack.

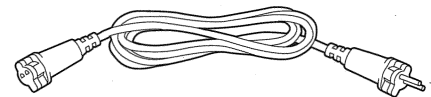
CAUTION: Do not attempt to use 98031 Power Cord in conjunction with 98032 Power Cord. Do not use more than one 98031 Power Cord in any single application. Do not use 98031 power cord unless it is in good physical



98032 13 ft. (4 Meter) Power Cord

The 98032 13 ft. Power Cord is used to connect the 24 volt tools to the battery pack.

CAUTION: Do not attempt to use 98032 Power Cord in conjunction with 98031 Power cord. Do not use more than one 98032 Power Cord in any single application. Do not use 98032 power cord unless it is in good physical condition.



Warranty

Black & Decker (U.S.) Inc. warrants this product for one year from date of purchase. We will repair without charge, any defects due to faulty material or workmanship. Please return the complete unit, transportation prepaid, to any Black & Decker Service Center or Authorized Service Station listed under "Tools Electric" in the yellow pages. This warranty does not apply to accessories. This warranty does not apply to damage caused where repairs have been made or attempted by others.

Every Black & Decker tool is of the highest quality. If you wish to contact us regarding this product, please call toll free between 8:00 a.m. and 5:00 p.m. EST, Monday through Friday. 1-800-762-6672.



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