New batteries must be charged before first use.
Les batteries neuves doivent être chargées avant leur utilisation initiale.
Las baterías nuevas se deben cargar antes de usarlas por primera vez.

12V Li-ION BATTERY CHARGERS
12V Li-ION BATTERY
CHARGEURS AU LITHIUM-ION 12V
BATTERIE AU LITHIUM-ION 12V
CARGADORS PARA BATERÍAS DE IONES DE LITIO DE 12V
BATERÍA DE IONES DE LITIO DE 12V

TO REDUCE THE RISK OF INJURY, USER MUST READ AND UNDERSTAND OPERATOR'S MANUAL.
AFIN DE RÉDUIRE LE RISQUE DE BLESSURES, L'UTILISATEUR DOIT LIRE ET BIEN COMPRENDRE LE MANUEL DE L'UTILISATEUR.
PARA REDUCIR EL RIESGO DE LESIONES, EL USUARIO DEBE LEER Y ENTENDER EL MANUAL DEL OPERADOR.
IMPORTANT SAFETY INSTRUCTIONS

WARNING  READ AND UNDERSTAND ALL INSTRUCTIONS.
Failure to follow all instructions listed below, may result in electric shock, fire and/or serious personal injury.

SAVE THESE INSTRUCTIONS

1. SAVE THESE INSTRUCTIONS - THIS OPERATOR'S MANUAL CONTAINS IMPORTANT SAFETY AND OPERATING INSTRUCTIONS FOR MILWAUKEE 12 V LI-ION BATTERIES AND THE MILWAUKEE 12V LI-ION BATTERY CHARGER.

2. BEFORE USING THE BATTERIES AND CHARGER, READ THIS OPERATOR'S MANUAL, YOUR TOOL OPERATOR'S MANUAL, AND ALL LABELS ON THE BATTERY, CHARGER AND TOOL.

3. CAUTION! TO REDUCE THE RISK OF INJURY, CHARGE MILWAUKEE 12V LITHIUM-ION BATTERIES ONLY IN MILWAUKEE 12V LITHIUM-ION CHARGERS. Other types of chargers may cause personal injury or damage. Do not wire a battery to a power supply plug or car cigarette lighter. Batteries will be permanently disabled or damaged.

4. USE MILWAUKEE 12V LITHIUM-ION BATTERIES ONLY ON MILWAUKEE 12V LITHIUM-ION TOOLS. Use with other tools may result in a risk of fire, electric shock or personal injury.

5. AVOID DANGEROUS ENVIRONMENTS. Do not charge battery in rain, snow, damp or wet locations. Do not use battery or charger in the presence of explosive atmospheres (gaseous fumes, dust or flammable materials) because sparks may be generated when inserting or removing battery, possibly causing fire.

6. CHARGE IN A WELL VENTILATED AREA. Do not block charger vents. Keep them clear to allow proper ventilation. Do not allow smoking or open flames near a charging battery. Vented gases may explode.

7. MAINTAIN CHARGER CORD. When unplugging charger, pull plug rather than cord to reduce the risk of damage to the electrical plug and cord. Never carry charger by its cord. Keep cord from heat, oil and sharp edges. Make sure cord will not be stepped on, tripped over or subjected to damage or stress. Do not use charger with damaged cord or plug. Have a damaged cord replaced immediately with identical replacement parts (see "Maintenance").

8. DO NOT USE AN EXTENSION CORD UNLESS IT IS ABSOLUTELY NECESSARY. Using the wrong, damaged or improperly wired extension cord could result in the risk of fire and electrical shock. If an extension cord must be used, plug the charger into a properly wired 16 gauge or larger extension cord with pins that are the same number, size and shape as the pins on the charger. Make sure that the extension cord is in good electrical condition.

9. CHARGER 48-59-2401 IS RATED FOR 120 VOLT AC ONLY. CHARGER 2510-20 IS RATED FOR 12 VOLT DC AND 120 VOLT AC. Charger must be plugged into an appropriate receptacle.

10. USE ONLY RECOMMENDED ATTACHMENTS. Use of an attachment not recommended or sold by the battery charger or battery manufacturer may result in a risk of fire, electric shock or personal injury.

11. UNPLUG CHARGER when not in use. Remove battery from unplugged chargers.

12. TO REDUCE THE RISK OF ELECTRIC SHOCK, always unplug charger before cleaning or maintenance. Do not allow water to flow into AC/DC plug. Use a Ground Fault Circuit Interrupter (GFCI) to reduce shock hazards.

13. DO NOT BURN OR INCINERATE BATTERIES. Batteries may explode, causing personal injury or damage. Toxic fumes and materials are created when batteries are burned.

14. DO NOT CRUSH, DROP, OR DAMAGE batteries. Do not use a battery or charger that has received a sharp blow, been dropped, run over, or damaged in any way (e.g., pierced with a nail, hit with a hammer, stepped on).

15. DO NOT DISASSEMBLE. Incorrect reassembly may result in the risk of electric shock, fire or exposure to battery chemicals. If it is damaged, take it to a MILWAUKEE service facility.

16. BATTERY CHEMICALS CAUSE SERIOUS BURNS. Never allow contact with skin, eyes, or mouth. If a damaged battery leaks battery chemicals, use rubber or neoprene gloves to dispose of it. If skin is exposed to battery fluids, wash with soap and water and rinse with vin-
egar. If eyes are exposed to battery chemicals, immediately flush with water for 20 minutes and seek medical attention. Remove and dispose of contaminated clothing.

17. **DO NOT SHORT CIRCUIT.** A battery will short circuit if a metal object makes a connection between the positive and negative contacts on the battery. Do not place a battery near anything that may cause a short circuit, such as coins, keys or nails in your pocket. A short circuited battery may cause fire and personal injury.

18. **STORE YOUR BATTERY AND CHARGER** in a cool, dry place. Do not store battery where temperatures may exceed 120°F (50°C) such as in direct sunlight, a vehicle or metal building during the summer.

### Symbology

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>Volts Direct Current</td>
</tr>
<tr>
<td>V~</td>
<td>Volts Alternating Current</td>
</tr>
<tr>
<td>Double Insulated</td>
<td></td>
</tr>
<tr>
<td>Properly Recycle Batteries</td>
<td></td>
</tr>
<tr>
<td>Hz</td>
<td>Hertz</td>
</tr>
<tr>
<td>A</td>
<td>Amps</td>
</tr>
<tr>
<td>mA</td>
<td>Milliamps</td>
</tr>
<tr>
<td>UL</td>
<td>Underwriters Laboratories, Inc. United States and Canada</td>
</tr>
</tbody>
</table>

### Functional Description

1. Contacts
2. Release buttons
3. Vents
4. Bay
5. Light indicators - when a battery is inserted into the charger, the light will indicate the following situations:
   - Continuous red: Charging
   - Continuous green: Charging complete
   - Flashing red: Battery is too hot/cold - Charging will begin when battery reaches correct charging temperature
   - Flashing red/green: Damaged or faulty battery

### Specifications

<table>
<thead>
<tr>
<th>Charger Cat. No.</th>
<th>AC Input Volts</th>
<th>AC Input Milliamps</th>
<th>DC Input Volts</th>
<th>DC Input Amps</th>
<th>DC Output Volts</th>
<th>DC Output Amps</th>
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</thead>
<tbody>
<tr>
<td>48-59-2401</td>
<td>120</td>
<td>750</td>
<td>12</td>
<td>4.4</td>
<td>12 DC</td>
<td>3</td>
</tr>
<tr>
<td>2510-20</td>
<td>120</td>
<td>750</td>
<td>12</td>
<td>4.4</td>
<td>12 DC</td>
<td>3</td>
</tr>
<tr>
<td>Li-Ion Battery Cat. No.</td>
<td>DC Volts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>48-11-2401</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>48-11-2402</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### MILWAUKEE 12 V LITHIUM-ION BATTERIES

**Maintenance and Storage**

Do not expose your battery or cordless tools to water or rain, or allow them to get wet. This could damage the tool and battery. Do not use oil or solvents to clean or lubricate your battery. The plastic casing will become brittle and crack, causing a risk of injury. Store batteries at room temperature away from moisture. Do not store in damp locations where corrosion of terminals may occur. As with other battery types, permanent capacity loss can result if the battery is stored for long periods of time at high temperatures (over 120°F). **MILWAUKEE** Lithium-ion batteries maintain their charge during storage longer than other battery types. After about six months of storage, charge the battery as normal.
**WARNING** To reduce the risk of injury or explosion, never burn or incinerate a battery pack even if it is damaged, dead or completely discharged. When burned, toxic fumes and materials are created.

Disposing of MILWAUKEE Lithium-Ion Batteries

MILWAUKEE Lithium-Ion batteries are more environmentally friendly than some other types of power tool batteries (e.g., nickel-cadmium). Always dispose of your battery according to federal, state and local regulations. Contact a recycling agency in your area for recycling locations.

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**WARNING** Charge only MILWAUKEE 12V Li-Ion batteries in the MILWAUKEE 12V Li-Ion charger. Other types of batteries may cause personal injury and damage.

To reduce the risk of electric shock, do not allow water to flow into AC/DC plug.

AD/DC Charger (Cat. No. 2510-20)

To reduce the risk of damage to the charger, do not attempt to plug into both AC and DC outlets at the same time.

To use the AC/DC plug in a DC outlet, rotate the DC adapter out (A) and insert into a DC outlet. The AC plug blades should be folded in.

To use the AC/DC plug in an AC outlet, rotate the AC plug blades out (B) and insert into an AC outlet. The DC adapter should be folded in.

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When to Charge the Battery Pack

Remove the battery from the tool for charging when convenient for you and your job. MILWAUKEE batteries do not develop a "memory" when charged after only a partial discharge. It is not necessary to run down the battery before placing it on the charger.

- Use the Fuel Gauge (on the tool) to determine when to charge your MILWAUKEE Li-Ion battery.
- You can "Top-Off" your battery's charge before starting a big job or long day of use.

Even discharged batteries contain some energy. Before disposing, use electrical tape to cover the terminals to prevent the battery from shorting, which could cause a fire or explosion.

**RBRC Battery Recycling Seals**

The RBRC™ Battery Recycling Seals (see "Symbology") on your tool battery indicates that MILWAUKEE has arranged for the recycling of that battery with the Rechargeable Battery Recycling Corporation (RBRC). At the end of your battery's useful life, return the battery to a MILWAUKEE Branch Office/Service Center or the participating retailer nearest you. For more information, visit the RBRC web site at www.rbrc.org.

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**MILWAUKEE 12 V LITHIUM-ION CHARGERS**

- The only time it is necessary to charge the MILWAUKEE Lithium-Ion battery is when the battery has reached the end of its charge. To signal the end of charge, power to the tool will drop quickly, allowing you just enough power to finish making a cut, drilling a hole, or driving a fastener. Charge the battery as needed.

**How to Charge the Battery**

Align the battery with the bay and slide the battery into the charger as far as possible. The red light will come on, either flashing (battery is too hot or cold) or continuous (pack is charging).

- A fully discharged battery with an internal temperature in the normal range will charge in 30 to 75 minutes, depending on the battery pack and charger. Heavily cycled batteries may take longer to charge completely.

- After charging is complete, the continuous green light will come on.

- The charger will keep the battery fully charged if it is left on the charger.

- If the light indicator flashes red and green, check that the battery is fully seated into the bay. Remove the battery and reinset. If the light continues to flash red and green, the battery may be extremely hot or cold, or wet. Allow the battery to cool down, warm up, or dry out and then reinset. If the problem persists, contact a MILWAUKEE service facility.

- If the light indicator does not come on, check that the battery is fully seated into the bay. Remove the battery and reinset. If the light indicator still does not come on, contact a MILWAUKEE service facility.
The Red Flashing Indicator light on the charger indicates that the battery temperature is outside the charging range. Once the battery is within the acceptable range, normal charging will take place and the red light will be continuous. Hot or cold batteries may take longer to charge.

### Li-Ion Charging Status

<table>
<thead>
<tr>
<th>Battery Temp</th>
<th>Red Indicator Light</th>
<th>Charging Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>140°F or more</td>
<td>Flashing</td>
<td>Not charging</td>
</tr>
<tr>
<td>32°F to 140°F</td>
<td>Continuous</td>
<td>Normal charging</td>
</tr>
<tr>
<td>32°F or less</td>
<td>Flashing</td>
<td>Not charging</td>
</tr>
</tbody>
</table>

### Powering the Charger with an Inverter or Generator

The charger will operate with most generators and inverters rated at 100 Watts or higher.

### Maintenance and Storage

Store your charger in a cool, dry place. As a general practice, it is best to unplug battery chargers and remove batteries when not in use. No battery damage will occur, however, if the charger and battery are left plugged in.

**WARNING**: To reduce the risk of injury, always unplug the charger and remove the battery from the charger before performing any maintenance. Never disassemble the battery or charger. Contact a MILWAUKEE service facility for ALL repairs.

To reduce the risk of injury and damage, never immerse your battery or charger in liquid or allow a liquid to flow inside them.

### Cleaning

Clean out dust and debris from charger vents and electrical contacts by blowing with compressed air. Use only mild soap and a damp cloth to clean the battery and charger, keeping away from all electrical contacts. Certain cleaning agents and solvents are harmful to plastics and other insulated parts. Some of these include gasoline, turpentine, lacquer thinner, paint thinner, chlorinated cleaning solvents, ammonia, and household detergents containing ammonia. Never use flammable or combustible solvents around batteries, charger, or tools.

### Repairs

The charger has no serviceable parts.