

Q&A

Battery tools

1ST CHOICE
FOR OVER 50 YRS

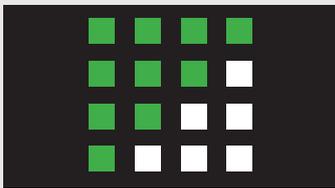
WORLD'S
LEADING
RESCUE
TOOLS



holmatro
mastering power

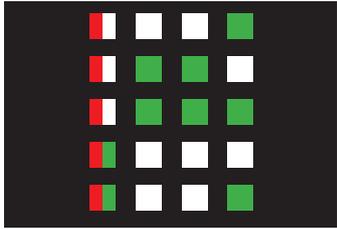
Q&A

HOLMATRO BATTERY TOOLS - EVO 3

Question	Answer															
<p>Battery Which battery type does Holmatro use on its EVO 3 tools?</p>	<p>We use the latest lithium-ion batteries (28 V, 6 Ah). Features are:</p> <ul style="list-style-type: none"> • Large battery capacity for maximum operational use • Low self discharge rate for long battery life • No memory effect 															
<p>Battery Can you check the available battery capacity (SOC)?</p>	<p>Yes, the remaining battery capacity (State Of Charge, SOC) is indicated with the help of 4 LEDs. When the tool is switched off or when the battery is not on the tool, you can check the SOC as well, by pressing the SOC button on the battery.</p>															
<p>Battery What does the State of Charge (SOC) indication on the battery mean?</p>	<div style="display: flex; align-items: flex-start;"> <div style="flex: 1;"> <p>4 LEDs on: battery capacity = 75% - 100%</p> <p>4th LED blinks: battery capacity > 62%</p> <p>3 LEDs on: battery capacity ≥ 50%</p> <p>3th LED blinks: battery capacity > 37%</p> <p>2 LEDs on : battery capacity ≥ 25%</p> <p>2nd LED blinks: battery capacity > 12%</p> <p>1 LED on: battery capacity ≥ 5%</p> <p>1st LED blinks: battery capacity < 5%</p> </div> <div style="flex: 1; text-align: center;"> <p>Description of capacity indicator</p>  </div> </div>															
<p>Battery Can I use another battery brand than Holmatro?</p>	<p>No, only batteries supplied by Holmatro can be used.</p>															
<p>Battery What happens when a battery is left on the tool for a longer period of time?</p>	<p>When a battery is left on the tool in storage its self-discharge rate is very low, thanks to the Li-ion cells. The self-discharge also depends on the storage temperature, which is best between 0°C / 32°F and 25°C / 77°F. At this temperature the rate is max. 2% per month.</p>															
<p>Battery Do lithium-ion batteries have memory effect? Does the battery capacity decrease over time?</p>	<p>Lithium ion batteries do not have memory effect. However, the battery capacity will eventually decrease due to conditions such as storage temperature and charge level. See examples below.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Storage temperature</th> <th>Capacity loss after 1 year (battery 50% charged)</th> <th>Capacity loss after 1 year (battery 100% charged)</th> </tr> </thead> <tbody> <tr> <td>0 °C</td> <td>2%</td> <td>5%</td> </tr> <tr> <td>25 °C</td> <td>4%</td> <td>20%</td> </tr> <tr> <td>40 °C</td> <td>15%</td> <td>35%</td> </tr> <tr> <td>60 °C</td> <td>25%</td> <td>40% (after 3 months!)</td> </tr> </tbody> </table>	Storage temperature	Capacity loss after 1 year (battery 50% charged)	Capacity loss after 1 year (battery 100% charged)	0 °C	2%	5%	25 °C	4%	20%	40 °C	15%	35%	60 °C	25%	40% (after 3 months!)
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<p>Battery Can the batteries be accidentally discharged by making contact with the compartment of the truck?</p>	<p>No, this is not possible. The contacts of the battery are protected. Moreover, in the unlikely event that the battery contacts should touch metal objects, the Battery Management System (BMS) will protect the cells from damage.</p>															
<p>Battery What is the battery life? How many recharge cycles does the battery have?</p>	<p>Battery life will be between 500 and 1000 full charging cycles. It depends on how heavily the battery has been used over its operational life. Apart from that, high temperatures have a negative effect on battery life.</p> <p>Just opening and closing a tool with no load uses less Amps and allows for 1000 full charging cycles. Constantly working with a tool at its max. load uses more Amps and allows for 500 full charging cycles. In reality you will have a mix of loaded and unloaded operations.</p> <p>Please note that 500 full charges = 1000 times half a charge (50% battery capacity) = 1500 times a third charge (33.3 % battery capacity).</p>															

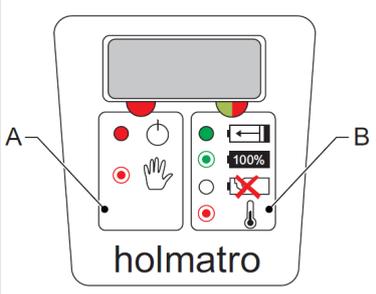
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HOLMATRO BATTERY TOOLS - EVO 3

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<p>Battery What happens if the battery is dropped? Will it break and/or become unusable?</p>	<p>No, the battery is designed for rugged use, in the worst conditions. It passes NFPA required drop testing and meets military specifications for vibration and bump testing. Tests include dropping the battery from 1.5 m / 5 ft on a concrete underground several times, after which it is still perfectly usable.</p>																																
<p>Battery What do the error codes on the battery pack mean? How should I act?</p> <p>Description of errors</p> 	<p>The battery management system (BMS) protects the battery against internal damage. The condition of the battery is indicated by means of 4 red and green LEDs. Please find below the error codes that may be displayed and the action you should take to solve the problem:</p> <p>1st LED red, 4th LED green: Below minimum voltage. The voltage of the battery has dropped too far. The battery is empty. Charge the battery. Replace the battery to continue the rescue action.</p> <p>1st LED red, 2nd and 3rd LED green: Electronics above allowed temperature. The temperature of the electronics in the battery pack is too high (due to intensive use at high ambient temperatures). Cool the battery. Replace the battery to continue the rescue action.</p> <p>1st LED red, 2nd, 3rd and 4th light green: Cells above maximum temperature. The temperature of the cells in the battery is too high (due to intensive use at high ambient temperatures). Cool the battery. Replace the battery to continue the rescue action.</p> <p>1st LED red and green: Cells below minimum temperature. The temperature of the cells in the battery is too low (due to extreme low ambient temperatures). Warm the battery pack. Replace the battery to continue the rescue action.</p> <p>1st LED red and green, 4th LED green: Below minimum voltage and minimum temperature. Both the battery voltage and the temperature of the cells in the battery are too low (due to extreme low ambient temperatures). Warm and charge the battery. Replace the battery to continue the rescue action.</p>																																
<p>Battery & Charger How long does it take to recharge the battery? To 90%? To 100%?</p>	<p>This depends on the temperature and the type of charger.</p> <p><u>Temperature</u> The best charging temperature lies between 0°C / 32°F and 45°C / 113°F. When the temperature is too low charging will start slowly to warm the battery. When the battery is too hot, the charger will wait until the battery (cell) temperature is under 45°C / 113°F.</p> <p><u>Charger type 1</u> The 100-120 V AC and 220-240 V AC chargers have 150W of power and charge with 4 Amps per hour. So under optimal conditions, these are the charging times:</p> <table border="1"> <thead> <tr> <th>Battery model</th> <th>Battery capacity</th> <th>Maximum charging time to 100%</th> <th>Maximum charging time to 90%</th> </tr> </thead> <tbody> <tr> <td>BPA283</td> <td>3.0 Ah</td> <td>45 minutes</td> <td>20 minutes</td> </tr> <tr> <td>BPA285</td> <td>5.0 Ah</td> <td>75 minutes</td> <td>40 minutes</td> </tr> <tr> <td>BPA286</td> <td>6.0 Ah</td> <td>90 minutes</td> <td>72 minutes</td> </tr> </tbody> </table> <p><u>Charger type 2</u> The 12-24V DC charger has 70W of power and charges with 1.8 Amps per hour. So under optimal conditions, these are the charging times:</p> <table border="1"> <thead> <tr> <th>Battery model</th> <th>Battery capacity</th> <th>Maximum charging time to 100%</th> <th>Maximum charging time to 90%</th> </tr> </thead> <tbody> <tr> <td>BPA283</td> <td>3.0 Ah</td> <td>100 minutes</td> <td>60 minutes</td> </tr> <tr> <td>BPA285</td> <td>5.0 Ah</td> <td>170 minutes</td> <td>100 minutes</td> </tr> <tr> <td>BPA286</td> <td>6.0 Ah</td> <td>202 minutes</td> <td>162 minutes</td> </tr> </tbody> </table>	Battery model	Battery capacity	Maximum charging time to 100%	Maximum charging time to 90%	BPA283	3.0 Ah	45 minutes	20 minutes	BPA285	5.0 Ah	75 minutes	40 minutes	BPA286	6.0 Ah	90 minutes	72 minutes	Battery model	Battery capacity	Maximum charging time to 100%	Maximum charging time to 90%	BPA283	3.0 Ah	100 minutes	60 minutes	BPA285	5.0 Ah	170 minutes	100 minutes	BPA286	6.0 Ah	202 minutes	162 minutes
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HOLMATRO BATTERY TOOLS - EVO 3

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<p>Battery & Charger What happens when a battery is left on a charger continuously?</p>	<p>The battery is protected against overcharging and will not get damaged by being left on the charger continuously. In fact, it is advisable to leave it there, even when it is fully charged. The charger switches off and on automatically, keeping the battery capacity at 100%.</p>																						
<p>Battery & Charger Can a wet battery pack be charged?</p>	<p>No the battery pack must be dried before inserting into the charger. Dry the battery after use with a cloth or by storing it at room temperature.</p>																						
<p>Battery & Tool What is the power consumption of a battery when the tool is not used?</p>	<p>There is virtually no battery power consumption when the tool is in idle mode (switched on, but not used). The motor keeps running at a low rpm and at a minimum noise level, which cools the motor. After two minutes of inactivity the motor stops and the green light of the on/off switch starts flashing, to indicate that the tool has switched itself off. After ten minutes the flashing stops. This too hardly requires any battery power. The tool can be activated again by pushing the on/off switch twice.</p>																						
<p>Charger What do the green and red LED lights on the charger mean?</p>	<p>The charger has a condition indicator which is divided into two parts:</p> <ul style="list-style-type: none"> • The left part indicates the condition of the charger itself • The right part indicates the condition of the battery that is being charged <div style="display: flex; align-items: center;">  </div> <table border="1" style="width: 100%; margin-top: 10px;"> <thead> <tr> <th colspan="2">Left part = condition of the battery charger</th> </tr> <tr> <th>Color and state of LED</th> <th>Charger condition</th> </tr> </thead> <tbody> <tr> <td>Red, continuously ON</td> <td>Power is on</td> </tr> <tr> <td>Red, blinking</td> <td>Battery charger is malfunctioning</td> </tr> </tbody> </table> <table border="1" style="width: 100%; margin-top: 10px;"> <thead> <tr> <th colspan="2">Right part = condition of the battery</th> </tr> <tr> <th>Color and state of LED</th> <th>Charger condition</th> </tr> </thead> <tbody> <tr> <td>Green, continuously ON</td> <td>Battery is charging</td> </tr> <tr> <td>Green, blinking</td> <td>Battery is fully charged</td> </tr> <tr> <td>Red, continuously ON</td> <td>Battery is faulty or power voltage is outside the required input voltage range</td> </tr> <tr> <td>Red, blinking</td> <td>Battery temperature is outside the fast charging temperature range (-5°C to +45°C). As soon as the allowed temperature range is achieved, the battery charger automatically switches to the fast charging mode.</td> </tr> <tr> <td>Orange, blinking (only on car charger BCH3)</td> <td>The input voltage (12/24V DC) is too low</td> </tr> </tbody> </table>	Left part = condition of the battery charger		Color and state of LED	Charger condition	Red, continuously ON	Power is on	Red, blinking	Battery charger is malfunctioning	Right part = condition of the battery		Color and state of LED	Charger condition	Green, continuously ON	Battery is charging	Green, blinking	Battery is fully charged	Red, continuously ON	Battery is faulty or power voltage is outside the required input voltage range	Red, blinking	Battery temperature is outside the fast charging temperature range (-5°C to +45°C). As soon as the allowed temperature range is achieved, the battery charger automatically switches to the fast charging mode.	Orange, blinking (only on car charger BCH3)	The input voltage (12/24V DC) is too low
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<p>Charger What charger is recommended for car and truck installation?</p>	<p>For installation in a car or truck a 12-24 V DC charger is available, model BCH3. This charger has a Universal Male Cigarette Lighter Din Plug (plug type 12 V - ISO 4165 connector).</p>																						
<p>Charger How do I know if there is a problem with the charger?</p>	<p>When multiple batteries are not charging properly or are causing a red light indication on the charger (left red LED blinking), the charger should be inspected by a Holmatro dealer.</p>																						
<p>Charger Can the chargers be used in any country? What are the requirements?</p>	<p>Two chargers are available for connection to the mains : 115 V AC (between 100 and 120 V AC) and 230 V AC (between 220 and 240 V AC). Both can be used at 50 and 60 Hz.</p>																						

Q&A

HOLMATRO BATTERY TOOLS - EVO 3

Question	Answer
<p>Charger Can a charger be used outdoors?</p>	No, the charger can only be used indoors and in the compartment of a truck.
<p>Tool How long will the tool run on one battery?</p>	<p>As the time you can work with a tool on one battery depends on various factors (e.g. tool load, ambient temperature, operator skills, etc.) an exact number of minutes cannot be given. There is also no industry standard for testing battery-powered rescue tools, which means that objective standards to compare these tools, also in relation to battery duration, are not available. Main influencing factors are:</p> <ul style="list-style-type: none"> • Temperature. Very low temperatures will have a negative impact on battery duration (read: hours of exposure to temperatures of -10°C / 14°F or lower). If the tools are not exposed to this kind of low temperatures in storage, there will be no negative impact on battery duration. • Tool load. The use of battery tools on new car constructions will require higher working pressures, thus more battery capacity. • Extrication techniques. Extremely skilled operators may achieve the same result in less cutting or spreading actions, thus saving battery capacity. • Battery management. Is the battery fully charged and stored under the most optimal conditions?
<p>Tool Does the tool supply less force the more the battery drains down?</p>	No, the hydraulic pressure supplied by the integrated pump in EVO 3 tools will always reach the maximum value, even when the battery gets low.
<p>Tool Does the speed of the tool drop the more the battery drains down?</p>	<p>No, EVO 3 tools have Electronic Speed Control which ensures that the highest possible tool speed is maintained, even when the battery gets low.</p> <p>Tool speed depends on tool load. At a relatively low load the pump runs in its first stage. In this stage the hydraulic pressure is low and the oil flow (=tool speed) is high. At higher loads the pump switches to its second stage. In this stage the oil flow is less, but the hydraulic pressure is higher. EVO 3 tools do not slow down within the same pump stage when the battery gets low. The Electronic Speed Control maintains the motor rpm (directly related to the hydraulic oil flow), thus also the tool speed.</p>
<p>Tool How can I remove a tool from its position when the battery is empty?</p>	<p>By replacing the empty battery with a charged battery you can continue working with the tool. Thanks to the position of the battery on top of EVO 3 tools it is easy to replace, even if a tool is (almost) stuck in the door opening of a car. Moreover, each battery offers a small reserve capacity enabling you to switch the tool back on and remove it from its position, after the tool has stopped working due to an empty battery.</p>
<p>Tool Can I still work with Holmatro battery tools if the battery is empty and a spare battery is not available?</p>	Yes, a mains power connector including power cord is available to power the tool from the mains or a generator (AC power).
<p>Tool Will the electronics inside the tool be damaged if it is dropped?</p>	EVO 3 tools are designed for rugged use, in the worst conditions. They pass NFPA required drop testing and meet military specifications for vibration and bump testing. The tools' electronic circuit board is secured firmly inside the housing where external forces cannot damage it.
<p>Tool Do battery-powered rescue tools contain the same standard safety features that can be found in Holmatro hose tools, such as an overpressure relief valve?</p>	Yes, the EVO 3 tools contain safety relief valves and safety check valves, just like Holmatro hose tools do.

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Question	Answer
<p>Tool Can the tool be used in (heavy) rain and snow?</p>	<p>Yes, it can. The complete tool with battery has an IP 54 protection rate which indicates protection against dust and splashing water. In addition, the electronic circuit board inside the tool is fully sealed and therefore moisture resistant. Please find below a more detailed explanation of the IP 54 rating.</p> <ul style="list-style-type: none"> • IP 5X: Protection against dust. • IP X4: Protection against splashing of water.
<p>Tool Can battery-powered rescue tools be used under water?</p>	<p>No, they cannot be used under water.</p>
<p>Tool Can the tool be repaired in the field or must it be sent back to Holmatro?</p>	<p>The tool can be repaired by any Holmatro certified Service Technician/Engineer. This can be a Holmatro dealer or end user. Holmatro (Dealer) Service Technicians are trained and (re-)certified by Holmatro every three years.</p>
<p>Tool What kind of routine maintenance is required?</p>	<p>The routine maintenance for a battery-powered hydraulic tool is very similar to a hydraulic tool that is powered by an external pump. The only difference is that in addition, the drive unit of the battery tool should be checked for damage and functioning. And of course used batteries must be recharged to ensure that the maximum battery capacity is available for the next deployment. See the tool's user manual for specific maintenance instructions.</p>
<p>Tool How about maintenance costs for battery tools compared to hose tools?</p>	<p>The number of items that require yearly inspection and maintenance is lower in a set of battery tools than in a set of hose tools. With a battery tool set, there are no maintenance costs for a separate hydraulic pump and separate hydraulic hoses. The integrated hydraulic pump in a battery tool is a so-called "closed system" that does not require yearly oil replacement and spark plug replacement. Apart from that, as Holmatro's battery tools and hose tools have exactly the same front end, both types of tools require the same yearly inspection and maintenance. You could say that all in all, the inspection/maintenance costs for a battery tool set are lower.</p> <p>However, depending on the degree to which batteries are managed in an optimal way (storage temperatures, storage charging levels) and battery tool operating conditions (ambient temperatures, frequency of tool use and tool load), batteries lose capacity and reach their end of life sooner or later. Therefore, to a greater or lesser extent, additional costs have to be taken into account for battery replacement during the lifetime of the battery tool set.</p>
<p>Tool Can the tool be used in an explosive environment?</p>	<p>No, the tool is not rated as an explosion-proof device.</p>
<p>Tool Do Holmatro battery tools comply with the NFPA 1936 standard?</p>	<p>All Holmatro battery tools have been tested by Underwriters Laboratories (UL) and have been found fully compliant with the NFPA 1936 standards.</p>
<p>Tool Do Holmatro battery tools comply with the EN 13204 standard?</p>	<p>Strictly speaking, since EN 13204 does not include battery-operated rescue tools in its scope, not a single agency can certify compliance of whatever battery-operated rescue tool with this standard. Underwriters Laboratories (UL) can however certify that the hydraulic part of each Holmatro battery-powered rescue tool has been tested according to, and found compliant with, the relevant performance and safety requirements of the EN 13204 standard for hydraulic rescue tools.</p>

Q&A

HOLMATRO BATTERY TOOLS - EVO 3

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<p>Tool What's the difference between a battery tool and a hydraulic tool?</p>	<p>It's a big misconception that battery-powered rescue tools are no hydraulic tools, because most of them are. Holmatro battery tools are still high-pressure hydraulic tools that can generate the same high forces as Holmatro hose tools. The only difference is the drive unit. With Holmatro battery tools, the drive unit (motor pump) is integrated and powered by a battery. This as opposed to hose tools, that are powered (through a hose) by an external pump running on combustibles (or powered by a battery or from the mains). Apart from the integrated drive unit Holmatro battery tools are completely similar to Holmatro hose tools, including safety features such as a deadman's control handle and protection against overload/overpressure.</p>
<p>Tool Can a Holmatro Greenline EVO tool be upgraded to EVO 3?</p>	<p>Yes, contact your Holmatro dealer or sales rep for more information.</p>
<p>Tool Can a Holmatro CORE tool be converted to an EVO 3 tool?</p>	<p>A number of CORE tools can be converted to EVO 3 (and vice versa). Contact your Holmatro dealer or sales rep for more information.</p>
<p>Tool, Battery, Charger How about the use of Holmatro battery tools in hot and cold conditions?</p>	<p>EVO 3 tools including batteries and mains power connectors meet the requirements for tool operating temperatures according to EN 13204 and NFPA 1936. The temperature range is from -20°C / -4°F to + 55°C / 131°F.</p> <p>Tool: Tests have shown that, even during use at high ambient temperatures, the operation temperature of the electronics inside the tool is well below safety settings. In the unlikely event that the electronic components pass the temperature safety settings (due to very intensive use and/ or extreme high ambient temperatures), the tool switches to safety mode, meaning that the tool will slow down the more the temperature further rises. This is to reduce further heating of the electronics. The lower speed allows the rescuer to continue the rescue action, even at extreme high ambient temperatures. If, despite the safety mode, the electronics' temperature continues to rise, the tool will further slow down and eventually turn itself off to protect the electronics from overheating. Once the electronic components have cooled down sufficiently, the tool can be operated again.</p> <p>Battery: The battery temperature operating range is -20°C / -4°F to + 65°C / 149°F. The battery is protected against overheating by the Battery Management System (BMS) in the battery. Above 65°C / 149°F the BMS will shut down the battery. The rescue action can be continued by replacing the battery by a cool(er) one, or using a mains power connector.</p> <p>Charger: For charging, the temperature of a battery pack must be within the charging temperature range (-0°C / 32°F to +45°C / 113°F). Outside this range the charger will not charge a battery pack.</p>

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