

Trouble shooting Chart Lifepo4 Battery-P and (HP Series and Hybrid)

- Always charge your Motobatt Lifepo4 battery properly before use
 - Motobatt Lithium HP series and Hybrid batteries are programmed to 0v when in protection mode.
- Motobatt uses both a balance board and a PCB Safety board in its HP series and Hybrid batteries to control the dynamic balancing and the safety parameters of the battery. Importantly it “protects the battery cells” by entering shutdown mode see conditions below in Fig 2
- Most aftermarket chargers will NOT ACTIVATE under 2v, so you must use a Motobatt Lithium charger model (which activates from 0v) or a direct source of power such as a car battery or constant voltage car charger to apply charge to reset the board. Once re-activated you can measure and see that you have voltage at the terminal, if the voltage is lower than specified use any 12v charger to recharge so long as it does not have a desulphation mode.
- If the battery is at the required voltage it may be that the amperage draw of your vehicle in certain conditions at startup is too high for the battery pack performance or safety board settings and there is a mismatch. In this case you need to return the battery and select one of the same size with a higher Amp Hour capacity. It is not only the Cranking amps that matter, you must be able to draw down on the battery the amount of discharge amps required to start the machine under different conditions. Extreme conditions like snow cold temperatures, hot temperatures and repeatedly holding down the start button can all be causes of shutdown activation or over discharging the pack in the case of P series. Riders in Fred Flintstone mode hill climbing on the starter button will wreck a good battery! Do not repeatedly hold the start button allow the battery to “rest for 30 seconds” between difficult starts.
- Motobatt P series has no shutdown protection since the physical size of that battery will not allow for the fitment of a PCB. If this battery is drawn under **8V it will likely irreversibly damage the cell pack**. You must always ensure a fully charged battery before attempting starting or you risk ruining the battery. **This is not a warranty event, its maintenance!** We often find our P series batteries will start machines that our HP series will not. This is due to the programmed voltage settings on the PCB. They may be just outside the range needed for a successful start. To ensure the battery is not ruined and you have enough reserve, we have to have the setting in the safe voltage shutdown range. In this case you will need to opt for a battery of higher overall capacity if you want extra reliability. There can be large differences in amp draw in between brands with the same engine size and CCA requirements, and over time batteries degrade, so if you are close to the limit always go the next size up in capacity if there is one available.
 - You will find that the MPLX7U-HP, MPLX4.5-HP and MPLX6.0-HP are all the same physical size but higher capacity respectively.
- Generally there is no diagnostic equipment available to check why a lithium starting battery of this type has failed. So you will need to use a Multimeter or voltmeter to check terminal voltage.

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MOTOBATT Hybrid GO BEYOND LIMITS OF BOTH LEAD ACID & LITHIUM BATTERIES

Overview Lifepo4 Battery HP Series and Hybrid

MOTOBATT Pro LITHIUM (HP-SERIES)

HIGH PERFORMANCE

BALANCER AND PROTECTION CIRCUIT BOARD

- SAFE - Most Stable Chemistry Available.
- POWERFUL - Dynamic Cell Balancer (CBC) to Maximize High Cranking Power.
- DURABLE - 3 Times Longer Life, No Sulfation & No need Off Season Maintenance.
- Fit & Go - Ready to go anytime, Super Light & Exact OE Fitment.

BALANCER FUNCTION IS TO OPTIMIZE EACH CELL VOLTAGE TO THE MAXIMUM OUTPUT

CELL PROTECTION: BATTERY PROTECTION (PER CELL) ACTIVATES AT 3.55V

VOLTAGE PROTECTION:
Charging protection cut off at 15.4V Discharging protection cut off at 8.0V

TEMPERATURE PROTECTION:
Charging protection cut off at 55° C Discharging protection cut off at 75° C

Battery Type: MPLX180-HP
Voltage: 12V CCA:165
Weight: 0.51kg
Dimensions (in / mm)
L: 4.49(114) W: 2.76(70) H: 3.43(87) HL: 5.00(127)

Assembly Figure
Terminal Locations: 2

Terminals: 2, M6x2.5 (Part#MPP1)
Screws: 4, M5x7 (Part#MPS1)
Allen Wrench: 1, 4x4 (Part#MPAK1)

Terminal Caps: 2, 12x5.5 (Part#MPC1)
EVA: 3 Bottom (1.25 IAA + 4xM4x1.5L4 IAA 147x4x9)
EVA: 1 - 20mm x 2 - 10mm x 2 - 10mm, total: 40mm

Battery Type: MPLX184-HP
Voltage: 12V CCA: 280
Weight: 0.83kg
Dimensions (in / mm)
L: 5.90(150) W: 2.76(70) H: 4.09(104) HL: 5.66(144)

Assembly Figure
Terminal Locations: 2

Terminals: 2, M6x2.5 (Part#MPP2)
Screws: 4, M6x7 (Part#MPS2)
Allen Wrench: 1, 4x4 (Part#MPAK2)

Terminal Caps: 2, 12x5.5 (Part#MPC1)
EVA: 3 Bottom (1.25 IAA + 4xM4x1.5L4 IAA 147x4x9)
EVA: 1 - 15mm x 2 - 10mm x 2 - 10mm, total: 40mm

Battery Type: MPLT2146-HP
Voltage: 12V CCA: 280
Weight: 0.89kg
Dimensions (in / mm)
L: 5.94(151) W: 3.43(87) H: 3.74(95) HL: 4.11(110)

Assembly Figure
Terminal Locations: 4

Terminals: 2, M6x2.5 (Part#MPP2)
Screws: 4, M6x7 (Part#MPS2)
Allen Wrench: 1, 4x4 (Part#MPAK2)

Terminal Caps: 4, 12x5.5 (Part#MPC2)
EVA: 2 Bottom (1.25 IAA + 4xM4x1.5L4 IAA 147x4x9)
EVA: 1 - 10mm x 2 - 5mm, total: 17mm

Battery Type: MPLX180-HP
Voltage: 12V CCA: 370
Weight: 1.07kg
Dimensions (in / mm)
L: 5.94(151) W: 3.43(87) H: 5.11(130) HL: 6.29(160)

Assembly Figure
Terminal Locations: 4

Terminals: 2, M6x2.5 (Part#MPP2)
Screws: 4, M6x7 (Part#MPS2)
Allen Wrench: 1, 4x4 (Part#MPAK2)

Terminal Caps: 4, 12x5.5 (Part#MPC2)
EVA: 2 Bottom (1.25 IAA + 4xM4x1.5L4 IAA 147x4x9)
EVA: 1 - 13mm x 2 - 5mm, total: 33mm

Battery Type: MPLX184L-HP
Voltage: 12V CCA: 300
Weight: 1.04kg
Dimensions (in / mm)
L: 5.91(150) W: 3.44(88) H: 5.74(146) HL: 6.90(176)

Assembly Figure
Terminal Locations: 4

Terminals: 2, M6x2.5 (Part#MPP2)
Screws: 4, M6x7 (Part#MPS2)
Allen Wrench: 1, 4x4 (Part#MPAK2)

Terminal Caps: 4, 12x5.5 (Part#MPC2)
EVA: 3 Bottom (1.25 IAA + 4xM4x1.5L4 IAA 147x4x9)
EVA: 1 - 13mm x 2 - 20mm x 2 - 10mm, total: 30mm

Battery Type: MPLS1814-HP
Voltage: 12V CCA: 370
Weight: 1.15kg
Dimensions (in / mm)
L: 7.12(180) W: 3.22(82) H: 6.73(171)

Assembly Figure
Terminal Locations: 4

Terminals: 2, M6x2.5 (Part#MPP2)
Screws: 4, M6x7 (Part#MPS2)
Allen Wrench: 1, 4x4 (Part#MPAK2)

Terminal Caps: 4, 12x5.5 (Part#MPC2)
EVA: None

Battery Type: MPLX200UND-HP
Voltage: 12V CCA: 550
Weight: 2.78kg
Dimensions (in / mm)
L: 6.51(166) W: 4.96(126) H: 6.88(175) HL: 7.24(185)

Assembly Figure
Terminal Locations: 4

Terminals: 2, M6x2.5 (Part#MPP3)
Screws: 4, M6x7 (Part#MPS2)
Allen Wrench: 1, 4x4 (Part#MPAK2)

Terminal Caps: 4, 12x5.5 (Part#MPC2)
Spacers: 17mm Bottom (Part#MPC3), 2 Square Top Corners (Part#MPC5)

Battery Type: MPLX200UND-HP
Voltage: 12V CCA: 450
Weight: 2.39kg
Dimensions (in / mm)
L: 6.88(175) W: 3.42(87) H: 6.10(155) HL: 6.88(175)

Assembly Figure
Terminal Locations: 4

Terminals: 4, M6x2.5 (Part#MPP2 and MPP3)
Screws: 4, M6x7 (Part#MPS2)

Allen Wrench: 1, 4x4 (Part#MPAK2)
Terminal Caps: 4, 12x5.5 (Part#MPC2)
Spacers: 2, 20mm Bottom (Part#MPC3), 13mm Back (Part#MPC5)

PROTECTION CIRCUIT BOARD (PCB)

HP SERIES FEATURES:

- Over charge protection-Prevents the machine, charger or consumer applying damaging voltages to the battery.
- Over discharge protection-Prevents machine or consumer draining battery to failure point by parasitic drain or battery application incompatibility. At 8V battery will shut down the protect the cells from being discharged to failure. Simply recharge to full voltage and use again!
- Prevents damages by non-lithium chargers using de-sulphating mode or boost mode.
- Thermal Protection-Built in temperature sensor activates shutdown process before the battery an overheat.
- Note competitor batteries or standard P series Lithium batteries may not recover from being drawn below 8V. This is a main cause of nuisance warranty.

MOTOBATT Hybrid GO BEYOND LIMITS OF BOTH LEAD ACID & LITHIUM BATTERIES

Overview Lifepo4 Battery-P

MOTOBATT Pro Lithium (P-SERIES)

PERFORMANCE CELL BALANCER CIRCUIT

CHARGING

CELL1 CELL2 CELL3 CELL4

- **BALANCER FUNCTION:** IS TO OPTIMIZE EACH CELL VOLTAGE TO THE MAXIMUM OUTPUT
- **CELL PROTECTION:** BALANCE PROTECTION (PER CELL) ACTIVATED AT 3.85V
- SAFE - Most Stable Chemistry Available.
- POWERFUL - Dynamic Cell Balancer (CBC) to Maximize High Cranking Power.
- DURABLE - 5 Times Longer Life, No Sulfation & No need Off Season Maintenance.
- Fit & Go - Ready to go anytime, Super Light & Exact OE Fitment.

<p>Battery Type: MPLX10U-P Voltage: 12V, CCA: 165 Weight: 0.8kg Dimensions (in / mm) L: 4.9(114) W: 2.7(70) H: 3.4(87) HL: 5.0(127) Assembly Figure Terminal Locations: 2 Terminals: 2, M6x2.5 (Part#MPF1) Screws: 4, M6x7 (Part#AMP51) Allen Wrench: 1, 3/32 (Part#MPA41) Terminal Caps: 2, 12x5.5 (Part#MPC1) EVA: 3 Bottom (1 Pos EVA #MPLX10U-100 12x9x120) EVA: 1 Bottom (1 Pos EVA #MPLX10U-100 14x9x90) EVA: 1 - 20mm x 2 - 20mm x 3 - 2mm, 35mm - 43mm</p>	<p>Battery Type: MPLX14AU-P Voltage: 12V, CCA: 300 Weight: 1.25kg Dimensions (in / mm) L: 5.2(133) W: 3.5(90) H: 3.7(94) HL: 6.3(161) Assembly Figure Terminal Locations: 4 Terminals: 2, M6x2.5 (Part#MPF2) Screws: 4, M6x7 (Part#AMP51) Allen Wrench: 1, 3/32 (Part#MPA41) Terminal Caps: 2, 12x5.5 (Part#MPC1) EVA: 3 Bottom (1 Pos EVA #MPLX14AU-100 13x9x120) EVA: 1 Bottom (1 Pos EVA #MPLX14AU-100 14x9x90) EVA: 1 - 20mm x 2 - 20mm x 3 - 2mm, 35mm - 43mm</p>
<p>Battery Type: MPL14B4-P Voltage: 12V, CCA: 200 Weight: 0.77kg Dimensions (in / mm) L: 5.0(115) W: 2.7(70) H: 4.0(100) HL: 5.6(140) Assembly Figure Terminal Locations: 2 Terminals: 2, M6x2 (Part#MPF2) Screws: 4, M6x7 (Part#AMP52) Allen Wrench: 1, 4/4 (Part#MPA42) Terminal Caps: 2, 12x5.5 (Part#MPC2) EVA: 3 Bottom (1 Pos EVA #MPL14B4-100 13x9x120) EVA: 1 Bottom (1 Pos EVA #MPL14B4-100 14x9x90) EVA: 1 - 15mm x 2 - 15mm x 3 - 2mm, 35mm - 43mm</p>	<p>Battery Type: MPL18A4-P Voltage: 12V, CCA: 370 Weight: 1.07kg Dimensions (in / mm) L: 7.3(186) W: 3.2(82) H: 6.7(171) Assembly Figure Terminal Locations: 4 Terminals: 2, M6x2.5 (Part#MPF2) Screws: 4, M6x7 (Part#AMP52) Allen Wrench: 1, 4/4 (Part#MPA42) Terminal Caps: 4, 12x5.5 (Part#MPC2) EVA: None</p>
<p>Battery Type: MPL17U4B-P Voltage: 12V, CCA: 380 Weight: 0.82kg Dimensions (in / mm) L: 5.9(131) W: 3.4(87) H: 3.7(95) HL: 4.1(100) Assembly Figure Terminal Locations: 4 Terminals: 2, M6x2.5 (Part#MPF2) Screws: 4, M6x7 (Part#AMP52) Allen Wrench: 1, 4/4 (Part#MPA42) Terminal Caps: 4, 12x5.5 (Part#MPC2) EVA: 2 Bottom (1 Pos EVA #MPL17U4B-100 12x9x120) EVA: 1 Bottom (1 Pos EVA #MPL17U4B-100 14x9x90) EVA: 1 - 15mm x 2 - 15mm x 3 - 2mm, 35mm - 43mm</p>	<p>Battery Type: MPLX20UHD-P Voltage: 12V, CCA: 550 Weight: 1.52kg Dimensions (in / mm) L: 5.9(149) W: 4.9(125) H: 6.8(175) HL: 7.5(191) Assembly Figure Terminal Locations: 4 Terminals: 2, M6x2.5 (Part#MPF3) Screws: 4, M6x7 (Part#AMP53) Allen Wrench: 1, 4/4 (Part#MPA42) Terminal Caps: 4, 12x5.5 (Part#MPC2) Spacers: 17mm Bottom (Part#MPC3), 3 Square Top Corner (Part#MPC4)</p>
<p>Battery Type: MPLX16U-P Voltage: 12V, CCA: 550 Weight: 0.99kg Dimensions (in / mm) L: 5.94(151) W: 3.4(87) H: 5.1(130) HL: 6.25(160) Assembly Figure Terminal Locations: 4 Terminals: 2, M6x2.5 (Part#MPF2) Screws: 4, M6x7 (Part#AMP52) Allen Wrench: 1, 4/4 (Part#MPA42) Terminal Caps: 4, 12x5.5 (Part#MPC2) EVA: 2 Bottom (1 Pos EVA #MPLX16U-100 12x9x120) EVA: 1 Bottom (1 Pos EVA #MPLX16U-100 14x9x90) EVA: 1 - 15mm x 2 - 15mm x 3 - 2mm, 35mm - 43mm</p>	<p>Battery Type: MPLX25UHD-P Voltage: 12V, CCA: 450 Weight: 1.28kg Dimensions (in / mm) L: 6.88(175) W: 3.4(87) H: 6.1(155) HL: 8.8(223) Assembly Figure Terminal Locations: 4 Terminals: 4, M6x2.5 (Part#MPF2 and MPF3) Screws: 4, M6x7 (Part#AMP52) Allen Wrench: 1, 4/4 (Part#MPA42) Terminal Caps: 4, 12x5.5 (Part#MPC2) Spacers: 2, 20mm Bottom (Part#MPC5), 13mm Back (Part#MPC6)</p>
<p>Battery Type: MPLX16U-P Voltage: 12V, CCA: 165 Weight: 0.8kg Dimensions (in / mm) L: 5.0(115) W: 3.4(87) H: 5.1(130) HL: 6.25(160) Assembly Figure Terminal Locations: 4 Terminals: 2, M6x2.5 (Part#MPF2) Screws: 4, M6x7 (Part#AMP52) Allen Wrench: 1, 4/4 (Part#MPA42) Terminal Caps: 4, 12x5.5 (Part#MPC2) EVA: 2 Bottom (1 Pos EVA #MPLX16U-100 12x9x120) EVA: 1 Bottom (1 Pos EVA #MPLX16U-100 14x9x90) EVA: 1 - 15mm x 2 - 15mm x 3 - 2mm, 35mm - 43mm</p>	<p>Battery Type: MPLX16U-P Voltage: 12V, CCA: 165 Weight: 0.8kg Dimensions (in / mm) L: 5.0(115) W: 3.4(87) H: 5.1(130) HL: 6.25(160) Assembly Figure Terminal Locations: 4 Terminals: 2, M6x2.5 (Part#MPF2) Screws: 4, M6x7 (Part#AMP52) Allen Wrench: 1, 4/4 (Part#MPA42) Terminal Caps: 4, 12x5.5 (Part#MPC2) EVA: 2 Bottom (1 Pos EVA #MPLX16U-100 12x9x120) EVA: 1 Bottom (1 Pos EVA #MPLX16U-100 14x9x90) EVA: 1 - 15mm x 2 - 15mm x 3 - 2mm, 35mm - 43mm</p>

CELL BALANCING CIRCUIT (CBC) P SERIES FEATURES:

- This is a key feature of Motobatt batteries that many competitors do not have. It provides the ultimate in cell control giving superior performance, life span and safety.
- Each Motobatt Lithium battery contains a unique CBC which controls the charge and discharge of the cells at all times, especially when currents can be unreliable when in actual use on the machine.
- Many competitors require you to buy their specific battery charger at a high cost because the CBC is in the charger not the battery itself.
- This is interior cell control since the only time the cells are properly controlled is when connected to a wall socket.

Note: Motobatt P-Series batteries do not have our unique PCB board. For maximum life choose the HP upgrade.

RECOMMENDED UPGRADE
Motobatt Pro Lithium HP Series Featuring Protection Circuit Board (PCB) with automatic overcharging, over discharging and thermal protection.

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Trouble shooting Chart Lifepo4 Battery-HP Series and Hybrid

Motobatt Lithium and Hybrid batteries are programmed to 0v when in protection mode. Most aftermarket chargers will NOT ACTIVATE under 2v, so you must use a Motobatt Lithium charger model or a direct source of power such as a car battery to apply charge to reset the board. Once activated you can use any 12v charger to recharge so long as it does not have a desulphation mode.

