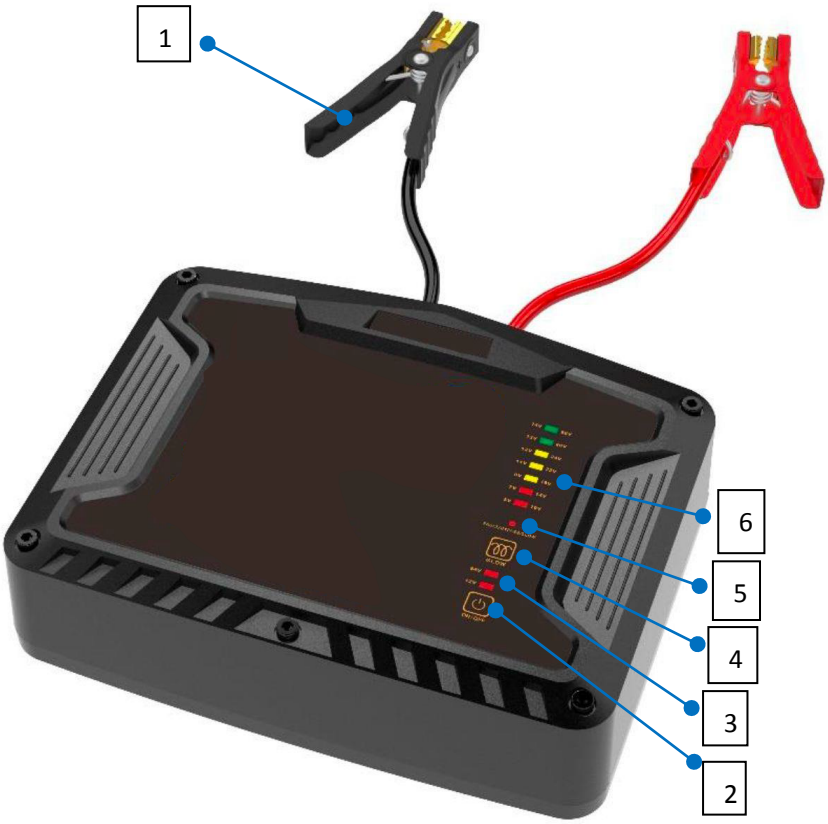
# USER'S MANUAL
# BATTERYLESS JUMP STARTER




**1. Jumper clamps**

**2. ON/OFF switch**

**3. 12V/24V mode indicator**

**4. Glow Switch**

**5. Condition indicator**

**6. Voltage indicator**

**Technical Specification:**
**Input : DC12V/24V**
**Working temperature:-40℃ to 65℃ (-40℉ to 150℉ )**
**Starting current: 24V 800Amp / 12V 500Amp**

## General Safety Guide

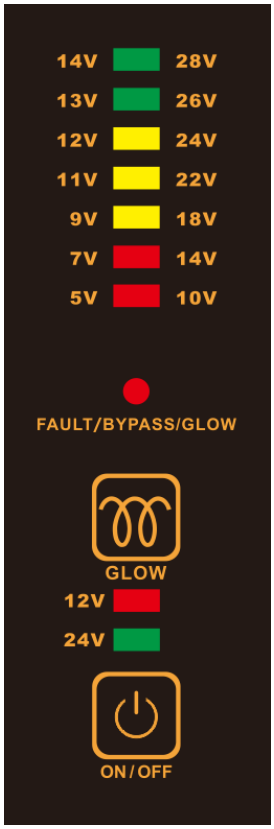
1. Read vehicle owner's manual: The vehicle manufacturer may have specific precautions and instructions about jumping your vehicle of which you should be aware of.
2. Please wear safety glasses and gloves while jumping your vehicle.
3. If you are not in a well-ventilated area, please do not attempt to jump start your vehicle.
4. Put your vehicle in PARK and engage the emergency brake.
5. Turn off ALL electronics in your vehicle (air conditioner, heat, radio, lights, chargers, etc.) to ensure the best performance of your jump starter.
6. Ensure key is in the "OFF" position in the ignition. For smart-key fobs (push-to start vehicles), make sure the vehicle is completely "OFF" before jump starting.

## How to use:

## 1. Standard mode

Turn off headlights,A/C,audio and etc.

In most situations, the weak battery can fully recharge the jump starter, follow three simple steps to get your car started!




1. Connect jumper clamps to battery terminals, jump starter will detect battery's nominal voltage, 12V / 24V indicator turns on respectively, voltage indicators will show vehicle battery's voltage


2. Press ON/OFF, jump starter start to recharge itself, voltage Indicators show jump starter's voltage during charging.

3. After 14V/28V indicator stops blinking, turn on engine.

**NOTE**

The jump starter decides system voltage by battery's initial voltage, it's important to turn off all loads in the vehicle before connect jump starter to battery terminal.

If the battery's voltage is higher than 15V, jump starter will activate 24V mode. If the battery's voltage is lower than 15V, jump starter will activate 12V mode.

**WHAT IF A 24V BATTERY HAS VOLTAGE LOWER THAN 15V?**

A depleted 24V battery could be lower than 15V, jump starter will activate 12V mode first, after it's fully recharged to 14V, long press ON/OFF, it will activate 24V mode.

## 2. Pre-charge methods:

Sometimes, the weak battery can not fully recharge the battery less jump starter, FAULT light turn on during charging, and then follow four simple steps to get your car started!


1. Pre-charge the jump starter from a donator car or battery.


2. Connect pre-charged jump starter to casualty car.
   The indicators now show voltage of the weak battery.


3. Press ON/OFF to active jump starter.

4. Turn on engine.

**TIP** This jump starter can be recharged to 24V mode from a 12V battery

1. Fully recharge the jump starter in 12V mode
2. Long press ON/OFF to activate 24V mode

## 3. Bypass mode

If pre-charge mode fails, please resort to bypass mode as bellowing steps.


1. Pre-charge the jump starter from a donator car or battery.

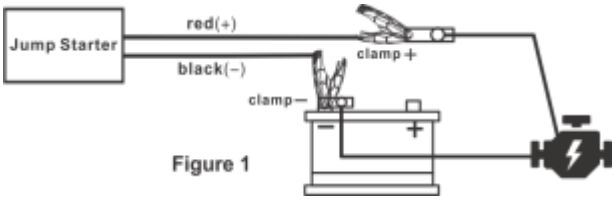


Figure 1

2. Connect jumps tarter to car as figure1.


3. Long press ON/OFF to active bypass mode.

4. Turn on engine.

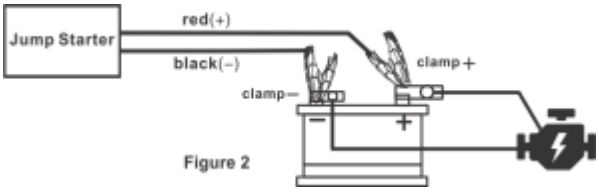


Figure 2

5. Put positive lead to battery terminal together with positive clamp. Remove positive clamps after positive lead is fastened to battery terminal.

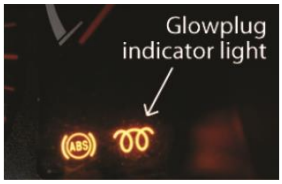
**Warning:**

Do not leave engine running without jump starter or battery is firmly connected.

Do not reverse polarity. There is no reverse or short circuit protection at bypass.

## GLOW MODE:

In cold weather, the glow plugs in most diesel vehicles will be first energized to heat up the engine chamber before the engine start, as indicated by the GLOW sign on dashboard. The process needs current of 40-60Amp and takes about 4-6 seconds. In this situation, after the jump starter is fully recharged and connected ,press GLOW button , and then turn on ignition.

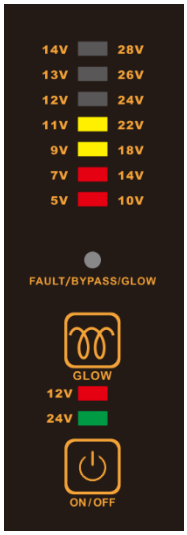



**NOTE** GLOW is inactive under BYPASS mode.

**NOTE**

**If the unit is just recharged with 24V mode, capacitor's voltage is too high for 12V vehicle.**
**It takes about 2 hours to de-energize to proper voltage for 12V vehicle.**
**During this period, 12V mode can not be activated.**

**What if this happen? (both 12V and 24V indicator turn on)**




When capacitor is in 24V mode, while the unit is connected to 12V battery, both 12V and 24V indicator turn on.
Long press On/Off to activate 24V mode.
Or wait a while to activate 12V mode.

## CONDITION INDICATOR

Condition indicator turns RED under following fault :
1. Reverse connection.
2. Battery voltage is too low
3. Recharge is stopped before it's full.

Condition indicator turns GREEN under BYPASS mode.
Condition indicator blinks between RED and GREEN under GLOW mode.

## WORKING CYCLE

Max 3 operation in a row, allow 20 minutes between two sessions.
Allow sufficient cooling time between two working sessions, failing to do so may cause damage to the jump starter.

## FREQUENTLY ASKED QUESTIONS:

**Q: Is battery less jump starter safe to ECU or car's computer?**

**A:** Traditional jump start could put ECU at risk.

Most ECU damage are caused by following reasons,

***1. Jump start car to car***

Some modern cars are equipped with smart charging system, which produce voltage up to 18V. When either of donator car or casualty car are equipped with other charge system, its ECU could be fried.

***2.Jump start with a booster pack or other battery***

When car is started by a booster pack or a donator car's battery, alternator start to recharge both batteries after engine is started. The current go into booster pack's battery could be as high as 50-100Amp.

When the booster pack is disconnected from car, the power produced by alternator is much more than what car's battery can absorb, thus push up voltage. Transient voltage spike can reach 25-100V, which can easily fry out ECU.

Battery less jump starter use super-capacitors instead of traditional battery. The voltage of capacitors are restricted within safe range of all kinds of ECU. So it has no risk from over-voltage. Capacitors has very small capacity, about 0.2-0.4Ah. they will be fully recharged from alternator within couple seconds once casualty car is started. Disconnecting battery less jump starter will not cause any load dump, so there is no any voltage spike produced.

**Q. Will transfer of residual energy to the jump starter damage the weak battery?**

**A.** No.

Battery less jump starter draws only 0.2-0.4Ah energy from the battery. A weak car battery normally has a capacity of 10-30Ah and can recharge the jump starter many times without any side effects.

**Q. How many jump starts can a fully recharged jump starter perform?**

**A.** This jump starter is designed to start only once when fully recharged.

It automatically starts to recharge itself after each use which takes only about 100 seconds. Therefore, it can jump start many times as needed successively.

**Q. How long can this jump starter hold charge?**

**A.** This jump starter will self-discharge to 0 in couple days.

The period of charge storage, is a critical issue with traditional battery, but is less relevant for our battery less jump starter technology because it can be instantly recharged from a weak battery within 100 seconds for uses.

**Q. What's the life span of this jump starter?**

**A.** This jump starter provides more than 10,000 times of use before noticeable performance degradation.

Ultracapacitors remain operatable more than 10 years.

**Q. What is the effect of low temperature on this jump starter?**

**A.** Traditional batteries, such as lead acid or lithium-ion, deliver lower cranking current at low temperature. The ultracapacitors in our battery less jump starter keep the same starting current even at extreme cold weather down to -30℃

| | 20℃ | 0℃ | -10℃ | -20℃ | -30℃ | -40℃ |
|---|---|---|---|---|---|---|
| Lead-Acid | 300Amp | 180Amp | 120Amp | 100Amp | 50Amp | 30Amp |
| Lithium-Ion | 300Amp | 190Amp | 120Amp | 80Amp | 60Amp | 40Amp |
| Ultra-capacitor | 300Amp | 300Amp | 300Amp | 300Amp | 280Amp | 250Amp |

**Q. What is the safety of battery less jump starter?**

**A.** This jump starter is extremely safe because of ultracapacitor technology. It is one of the foremost advantages over the battery-based jump starters.
Ultracapacitors are designed especially to receive and release large electrical current of instantaneous power.
It's even safe to short circuit fully recharged ultracapacitors without any side effect.
This jump starter is also equipped with short circuit/reverse polarity protection.
Therefore short circuit due to unintended uses will not damage ultracpacitors.
They will not self-heat to cause fire or explosion under any circumstance.

**Q. Does it need to be regularly recharged?**

**A.** No!
Our jump starter is based on the instant recharging of ultracapacitors rather than stored electric energy. Therefore it does not need regular recharge and can be stored for years.
It's totally maintenance free!

**Q. What is BYPASS mode?**

**A.** ECU of some cars does not allow engine to start if battery's voltage is lower than 8V.
In this situation, the positive lead needs to be disconnected from the car battery, and instead connected directly to the jump starter. Then ECU can detect the high voltage provided by the jump starter.
CAREFULLY READ USER'S MANUAL BEFORE BYPASS.

**Q. What is GLOW?**

**A.** In cold weather, the glow plugs in most diesel vehicles will be first energized to heat up the engine chamber before the engine start as indicated by the GLOW sign on dashboard.
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