

USER MANUAL

for

Batteryless Jump Starter

M+S BOOSTER

400 A – LED

with Ultra-Capacitors



Read this instruction manual carefully before the commissioning and preserve it. If you transfer this appliance to anyone else, please also pass on this manual.

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INTRODUCTION

The M+S Booster is a mobile and maintenance free jump starter with Ultra-Capacitors instead of batteries or accumulator. You can jumpstart your vehicle smoothly, quickly, and unassisted if vehicle battery is weak, even when ambient temperature is much below 0°C.

The Ultra-Capacitors of the M+S Booster are loaded within 2 minutes by the residual energy of the weak vehicle battery. After it, the vehicle can be started directly by the M+S Booster.

As an alternative, the M+S Booster can also be precharged externally via battery terminal clamps at another good charged battery, a 12V socket or a USB-cable (Longer charging times)!

- Maintenance-, wear-, trouble-free – 100% reliable and up to 10,000 cranking sessions possible
- Suitable for almost all petrol and diesel engines

NOTES

1. Usage conformant with intended purpose



- The intended use of the M+S Booster includes the unassisted jump starting of a vehicle motor. Permitted voltage and engine displacement can be found in the technical specifications.
- The device may only be used in compliance with the relevant user manual and these instructions.
- Any other usage exceeding this will be considered to be non-conformant with the intended purpose. The user alone is liable for any damage caused from neglect of the manual and the notes and instructions in it.

2. Warnings



- Read vehicle owner's manual for jump starting. The vehicle manufacturer may have specific precautions and instructions about jump starting your vehicle of which you should be aware of.
- Jump start your vehicle only, if you are in a well-ventilated area!
- Prevent any fluid from penetrating into the appliance!
- Keep the M+S Booster away from heat sources!
- Do not expose the charger continuously to direct sunlight, dust or shock!
- Use the appliance only at ambient temperatures between -40°C and +65°C.
- Do not use the M+S Booster in the vicinity of flammable fluids, gases and vapours, dusty environments, atmospheric humidity above 80% or in wet conditions.

- If safe, hazard-less operation is not possible, disconnect the jump starter from the battery, and secure it against unintentional use. Safe, hazard-free operation is not possible, if:
 - the appliance does not show any functions
 - shows visible damage
 - parts are loose

3. Hazards



- Service and repair work may only be carried out by technical personnel or trained persons under the management and supervision of a qualified electrical technician.



- Never open the M+S Booster! The capacitors may be still loaded and a heavy short circuit or an explosion may occur.
- In case of visible damage, such as the development of smoke, penetration of fluids etc., immediately disconnect the appliance from the battery. Have the fault repaired immediately.



- Hazard from interchanging of the poles, short-circuits and contact with battery acid – follow the safety instructions of the battery manufacturer without fail.



Caution! Battery acid has a strong corrosive action. If acid gets splashed on the skin or the clothing, immediately treat it with soap suds and rinse thereafter with plenty of water. If acid has splashed into the eyes, immediately rinse with plenty of water and consult a doctor as quickly as possible.

4. Restricted user base



- The device is not intended for use by
- persons (including children) whose
 - physical, sensory, or mental capabilities; or
 - lack of experience and knowledge prevents them from using the appliance safely without supervision or instruction.
 - children playing with the appliance.

5. Fault Indications

If the appliance does not work, check the following points:

- Can the appliance be charged by one of the three charging connections (Battery terminal clamps, 12 V charging cable or micro USB-cable)?
- Is the connected battery faulty or deep-discharged?
- Has the appliance been connected with correct polarity?

6. Cleaning



- Before cleaning, disconnect the appliance from battery or if necessary from external charging cables.
- Clean the housing only with a moist cloth and then wipe it dry. Solvents like thinners and petrol as well as abrasive products destroy the surface, the printing and the display.
- Prevent penetration of cleaners into the inside of the appliance.

7. Packaging/Environment protection



- When disposing of the packaging, please follow the applicable laws for environment protection and trash disposal.
- Disposal of the outer packaging with the normal domestic trash or paper recycling is permitted.

8 Recycling Information



- According to the electrical and electronic appliances law, owners of electrical appliances are legally obliged to take old electrical and electronic appliances to a separate waste collection facility. Help along and make a contribution to environment protection by bringing used appliances to a collection center of your communal disposal agency (e.g. materials yard) or to any dealer who sells electronic devices and who has more than 400m² sales area. Collection is free of cost.



- Disposal with the normal household trash is prohibited.
- The symbol alongside means that the appliance must be disposed separately from the normal household trash.

SCOPE OF SUPPLY

Delivery includes:

- 1x M+S Booster with battery terminal clamps
- 1x Charging cable for 12V socket
- 1x User manual

TECHNICAL DESCRIPTION



1	Voltage indicator	Indicates battery or M+S Booster voltage
2	Condition indicator	Indicates all M+S Booster conditions
3	Button Glow	Starts glow function for starting diesel engines
4	Button ON/OFF	Switches M+S Booster ON/OFF or activates Override-/Bypass-Mode
5	Battery terminal clamps	For connecting with battery terminals
6	Micro USB-socket	For external charging the M+S Booster via USB cable
7	12 V charging socket	For external charging via charging cable and 12 V plug
8	Charging cable with 12 V plug	For external charging the M+S Booster via 12 V socket

SPECIFIC SAFETY INDICATION

- Put vehicle gear in PARK position or idle and engage the emergency brake.
- Turn off ALL electronic devices in your vehicle (lights, seat heater, rear-window defroster, van etc.) to ensure the best performance of M+S Booster.
- Ensure ignition key is in "OFF" position before M+S Booster is connected to battery. For smart-key vehicles (push-to-start vehicles), make sure the vehicle is completely "OFF" before M+S Booster is connected.

1. USE AS A JUMP STARTER

1.1 Standard mode

In most situations, the weak battery can fully recharge the M+S Booster so that it is able to start the vehicle.

Follow five simple steps to get your vehicle unassisted started even with weak battery.



WARNING

Only jumpstart the engine when M+S Booster is secured against slipping or falling down. Watch out ahead rotating or hot engine parts.

1. Turn OFF ALL electronic devices.



2. Connect black battery terminal clamp of M+S Booster with MINUS terminal of vehicle battery and red battery terminal clamp with PLUS terminal of vehicle battery. M+S Booster turns on automatically. LED indicators will show voltage of vehicle's battery.



3. Press ON/OFF button. M+S Booster starts to recharge itself on the weak battery. Indicators show M+S Booster's voltage during charging.
4. After 14V indicator stops blinking, turn ON engine.
5. Disconnect battery terminal clamps and remove M+S Booster.



1.2 Pre-charge mode:

If the battery is too weak to fully recharge the M+S Booster, FAULT LED will glow during charging. In this case follow six simple steps to get your car unassisted started.

1. Turn OFF ALL electronic devices.
2. Fully pre-charge the M+S Booster with an external power supply. You have following possibilities:
 - a. Via battery terminal clamps at another good charged battery.
 - b. Via enclosed charging cable from 12V socket of another vehicle.
 - c. Via USB-cable and grid adapter or powerbank (Optional accessory).



As soon as external power supply is connected, M+S Booster turns on automatically and indicators show M+S Booster's voltage during charging.

After 14V indicator stops blinking, disconnect external power supply.

3. Connect black battery terminal clamp of pre-charged M+S Booster with MINUS terminal of weak vehicle battery and red battery terminal clamp with PLUS terminal of weak vehicle battery. The display now shows voltage of the weak battery.
4. Press ON/OFF button to activate M+S Booster.
5. Turn ON engine.
6. Disconnect battery clamps and remove M+S Booster.



1.3 Bypass mode

If pre-charge mode with external charged battery M+S Booster also fails, please use bypass mode as final option.

NOTE:

Not for diesel engines which must be glowed at low temperatures!



WARNING! Due to hazards caused by short circuit and running engine, this mode is only recommended for experts! Watch out right polarity. During bypass mode NO protection against short circuit or reverse polarity!

Execute following steps.

1. Fully pre-charge the M+S Booster again with an external power supply.
2. Disconnect the black MINUS cable fastener from battery terminal and connect it directly with black battery terminal clamp of M+S Booster.

WARNING! Take care that cable fastener does not contact PLUS battery terminal. Short-circuit hazard!

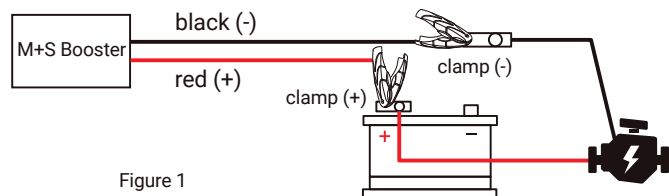


Figure 1

3. Press ON/OFF button for more than 5 seconds to activate bypass mode.
4. Turn ON engine.



WARNING! Hazard by running engine and short circuit!

5. Connect black MINUS cable fastener with battery terminal. The black battery terminal clamp of M+S Booster keeps still connected to cable fastener!

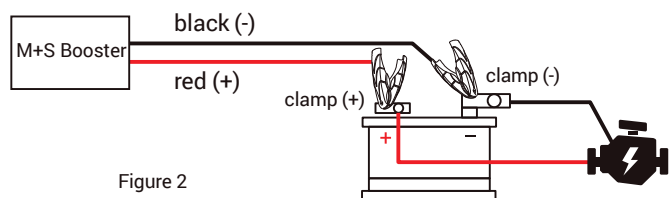


Figure 2

6. Fasten black MINUS cable fastener with battery terminal.
7. Disconnect battery terminal clamps and remove M+S Booster.

1.4 Glow mode:

During cold weather, the glow plugs in most diesel vehicles will be first energized to heat up the engine chamber before engine start. This is indicated by the GLOW sign on vehicle dashboard.

In this situation proceed as following.



1. Turn OFF ALL electronic devices.
2. Connect black battery terminal clamp of M+S Booster with MINUS terminal of vehicle battery and red battery terminal clamp with PLUS terminal of vehicle battery. M+S Booster turns on automatically. LED indicators will show voltage of vehicle's battery.
3. Press ON/OFF button. M+S Booster starts to recharge itself on the weak battery. Indicators show M+S Booster's voltage during charging.
4. After 14V indicator stops blinking, press GLOW button.
5. Turn ON engine.
6. Disconnect battery clamps and remove M+S Booster.



NOTE:

Glow mode is NOT active during Bypass mode.

2. CONDITION INDICATOR

1. FAULT: Steady red
Reverse polarity
Battery too low
2. GLOW mode, red green alternately appear
3. Bypass mode, blinking for 5 seconds then steady green
4. READY: ready for ignition

3. TECHNICAL DATA

Model: 01.60.302

For vehicles with electrical system voltage	12V
Crank current	400A
Crank current (peak)	800A
For petrol engines up to cylinder capacity	4.500 cm ³
For diesel engines up to cylinder capacity	3.000 cm ³
Operating temperature	-40° C – +65° C
Charging with battery clamps direct from 12 V battery	12V= / max. 1A
Charging time from 12V battery	~2 minutes
Charging with charging cable from 12V vehicle power socket	12V= / 10A
Charging time from 12V vehicle power socket	~3 minutes
Charging with USB-cable and grid adaptor	5V= / 2A
Charging time with USB-cable	40 minutes
Max. consecutive starts	5
Min. interval between starts	5 minutes
Dimensions	210 × 132 × 58 mm
Weight	1,38 kg
Number of possible starts	>10.000

This jump starter is maintenance free! No regularly recharging necessary.

Batteryless jump start technology are world wide patented.

US PATENT PENDING 14/443,021 EUROPEAN PATENT PENDING 15167725.9

DECLARATION OF CONFORMITY

The M+S Booster fulfils the following standards:

- EN60335-1:2002 + A1:2004 + A11:2004 + A2:2006 + A12:2006 + A13:2008 + A14:2010 + A15:2011;
- EN61000-3-3, EN61000-3-2, EN55014-1, EN55014-2 in accordance with the conditions in the directive 2004/108/EG (Electromagnetic compatibility)

SERVICE ADDRESS / IMPRINT

Service-Address:

M+S Solution GmbH
 Bogenstraße 1
 90530 Wendelstein
 Germany

You can find the latest telephone number at <http://www.m-u-s.com>

The website also contains this operating manual as a download in colour or in other languages, as well as accessories and other interesting products on the theme of battery charging and protecting vehicles.

Imprint

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We reserve the right to make technical and visual changes and correct printing errors. (08.05.2020).

LIMITED MANUFACTURER GUARANTEE IN EUROPE

Please note that this limited manufacturer's warranty does not affect your legal rights with regard to the sales of consumable goods according to the respective laws and acts.

The M+S Solution GmbH („M+S“) grants you, the purchaser of the M+S product, which can be found in the sale packaging („product“), the following limited warranty.

Limited warranty:

According to this limited manufacturer's warranty, within the warranty period, material-, design- or processing short-comings or defects will be rectified by M+S or a customer service center authorized by M+S within an economically reasonable period free of cost, either by repair or, if M+S should consider it necessary, at its discretion, by replacement of the product. The execution of the warranty will be in keeping with the conditions of this limited manufacturer's warranty, unless compelling legal regulations lay down something to the contrary. This limited manufacturer's warranty is only valid and implementable in the country in which the product was purchased, and requires also that the product was intended to be sold by M+S in that country. If you have purchased the product in a member country of the EU or in Switzerland and if it was originally intended by M+S to be sold in one of these countries, this

limited manufacturer's warranty is valid and implementable in the aforementioned countries. There may be some limitations to the warranty service owing to country-specific product components.

Warranty period

The warranty period starts on the date on which the product was first purchased by an end customer. The product can consist of several individual parts, for which different warranty periods hold good (hereinafter „warranty period“). The different warranty periods are:

- a) Twenty-four (24) months for all products and for accessories (depending on whether the accessories were present in the original packaging or were bought separately) with the exception of the wear parts and accessories that fall under the category given in (b);
- b) Thirty (30) days on the following wear parts and accessories: Battery cells, storage batteries, manuals and covers

The warranty will be neither extended, nor will it start again from the beginning, nor be influenced in any other way because of a later second sale, or repairs authorized by M+S or replacement of the product. Notwithstanding the above, for parts repaired or replaced during the warranty period, a fresh warranty period of sixty (60) days from the time of repairs or replacement or for the remaining warranty period existing for the original period will be granted, whichever of the two is longer.

How to make use of the warranty service?

If you wish to file a claim according to this limited manufacturer's warranty, please get the product or the faulty part of the product (if the entire product is not involved) to a sales agency authorized by M+S. You can also call M+S (there may be national telephone charges or value-added service charges applicable), to get further information on filing the claim.

For every assertion of claims according to this limited manufacturer's warranty, you must inform M+S or a customer service center or sales center authorized by M+S within a reasonable period after the discovery of the purported defect, but in any case, before the warranty period has lapsed.

If you wish to make a claim on the basis of the limited warranty, you must submit the following:

- a) the product (or the affected part) and
- b) the original proof of purchase, which must clearly show the name and address of the seller, the date, the place of purchase and the product type.

What does the limited manufacturer's warranty not include?

1. This limited manufacturer's warranty does not include either the user manuals or any software supplied by third parties, settings, contents, files or links, regardless of whether they are included in the product or were downloaded to the product and regardless of whether they were inserted in the shipment chain during the installation, the assembly, the transport or at any other time or were obtained by you in any other manner or by any other means.

M+S does not guarantee that every M+S software fulfils your requirements, or is

compatible with any hardware or software supplied by a third party, or that the work sequence of every software will function free of errors or interruptions or that every software error can be corrected or will be corrected.

2. This limited manufacturer's warranty does not include
 - a) normal wear-and-tear (including any wear of batteries and displays)
 - b) defects caused by rough handling (including defects that result from sharp objects, bending, pressure or dropping etc.) or
 - c) defects or damage that result from improper use of the product, including usage that is not in keeping with instructions from M+S (for example, according to the instructions in the user manual)
 - d) defects or damage resulting from improper assembly of the product, including the and/or
 - e) other events, which are not reasonably within the sphere of influence of M+S.
3. This limited manufacturer's warranty does not include defects or purported defects that occur because the product was used or connected to any other product, accessories, software and/or services not manufactured or provided by M+S, or used in any other way that is considered to be not in keeping with the intended purpose.
4. This limited manufacturer's warranty does not hold good if the product is opened, modified or repaired by anyone other than the authorized customer service center, or is repaired with non-approved spare parts or if the product serial number was removed, deleted, defaced or changed or has been made unreadable in any other way, with the decision regarding this being solely according to the discretion of M+S.
5. This limited manufacturer's warranty does not apply if the product has been subjected to moisture, wetness or extreme temperatures and ambient conditions or a rapid change in these, corrosion or oxidation, or foodstuff or fluids were spilled on it, or chemical substances have acted on it.

Important remarks

M+S acquires ownership of all parts of the product or other fittings that M+S has replaced. M+S and the sales and customer service centers of M+S reserve the right to charge processing fees if the product does not fall under the conditions of the limited manufacturer warranty. M+S may use new or repaired products or parts for the repair or replacement of the product.

Your product can contain country-specific elements, including software. In case of re-export of the product from the original country of destination to another country, the product can contain country-specific elements that are not considered to be shortcomings in the meaning of this limited manufacturer warranty.

The SIM card as well as the cellular phone network and/or another network or system on which some products are operated, are provided by a third party, for example, an independent provider. For this reason, M+S does not accept, with this warranty, any liability for the operation, availability, network coverage, services or range of the cellular phone network or system.



Limitation of liability

This limited manufacturer's warranty contains your sole and only judicial redress against M+S and is M+S's sole and only liability for defects in your product. This limited manufacturer's warranty replaces every other warranty and liability of M+S, regardless of whether such an earlier warranty was given verbally, or in writing, or on the basis of legal (not mandatory) conditions or contractually, or results owing to an unlawful act or in any other manner, including and without restriction and to the extent permissible by the applicable law, any implicit conditions, guarantees or other conditions with regard to sufficient quality or the suitability for use. This limited manufacturer warranty does not exclude either i) your legal rights according to the respective applicable laws or ii) your entitlements with respect to the seller of the product, or limit these in any way. Insofar as the applicable laws allow it, M+S is not liable for the loss, damage or falsification of data, the loss of profits, or the usability or operability of the product, for loss of business, loss of contract, loss of the source of income, or loss of expected savings, increased costs or costs for indirect loss or damage, consequential losses or damage or for extra-ordinary losses or damage.

The M+S liability is limited to the magnitude of the procurement value of the product.

The afore mentioned liability limitations do not apply to cases where M+S has acted in a pre-meditated or grossly negligent manner or in case of the death of or injuries to persons, if these are caused by negligence on the part of M+S.

Note:

Your product is a technically sophisticated electronic appliance. M+S emphatically requires you to familiarize yourself with the user manual and the instructions that accompany the product.