



EN

Original Instructions
Version 4
March 2025

12V INTELLIGENT **BATTERY CHARGER**

53489, 53490, 53491



53491 shown

1. Preface

These are the original product instructions. This document is part of the product; retain it for the life of the product, passing it on to subsequent holders. Read this manual in full before attempting to assemble, operate or maintain this product.

This Draper Tools manual describes the purpose of the product and contains all the necessary information to ensure its correct and safe use. Following all the instructions and guidance in this manual will ensure the safety of both the product and the operator and increase the lifespan of the product.

All photographs and drawings within this manual are supplied by Draper Tools to help illustrate correct operation of the product.

Every effort has been made to ensure the information contained in this manual is accurate. However, Draper Tools reserves the right to amend this document without prior warning. Always use the latest version of the product manual.

1.1 Product Reference

User Manual for: 12V Intelligent Battery Charger

Stock No: 53489, 53490, 53491

Part No: BCI4, BCI6, BCI10

1.2 Revisions

Version 1: August 2020

First release

Version 2: January 2024

Version 3: June 2024

Version 4: March 2025

As our manuals are continually updated, always ensure that the latest version is used.

Please visit drapertools.com/manuals for the latest version of this manual and the associated parts list, if applicable.

1.3 Understanding the Safety Content of This Manual



WARNING! – Situations or actions that may result in personal injury or death.



CAUTION! – Situations or actions that may result in damage to the product or surroundings.

Important: – Information or instructions of particular importance.

1.4 Copyright © Notice

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3. Product Introduction

3.1 Intended Use

This product is a microprocessor controlled automatic charger designed to charge automotive maintenance free lead acid and lithium batteries. It is also suitable for long term charging and maintenance of batteries which are not in constant use – for example batteries for classic cars, recreational vehicles, lawn tractor and similar vehicles.

Any other application beyond the conditions established for use will be considered misuse. Draper Tools accepts no responsibility for improper use of this product.

3.2 Specification

Stock No.	53489	53490	53491
Part No.	BCI4	BCI6	BCI10
Rated Voltage	230V/50Hz	230V/50Hz	230V/50Hz
Rated Output Current			
12V STD, 12V AGM/c, 12V GEL	4A	6A	10A
6V STD, 12V LFP	2A	2A	2A
Rated Battery Capacities			
12V STD, 12V AGM/c, 12V GEL	10 – 120Ah	20 – 150Ah	30 – 200Ah
6V STD, 12V LFP	4 – 60Ah	4 – 60Ah	4 – 60Ah
Protection Class	II	II	II
Protection Type	IP65	IP65	IP65
Operating Temperature	-20 to 40°C	-20 to 40°C	-20 to 40°C
Suitable Battery Types	WET, MF, Ca/Ca, EFB, AGM, GEL, LFP* (For all 3 chargers)		
Weight	500g	700g	800g

*LFP= 12V Lithium iron phosphate batteries only

Important: Read all the Health and Safety instructions before attempting to operate, maintain or repair this product. Failure to follow these instructions may result in injury or damage to the user, the product or the battery.

4.1 Vehicle Battery Health and Safety Precautions



WARNING!

Risk of explosive gases

- Working in the vicinity of lead-acid batteries is dangerous as they generate explosive gases during normal operation. Follow these instructions and those published by the battery manufacturer and the manufacturer of any other equipment to be used in the vicinity of the battery.
- Review warning markings on all these products and on the engine.
- When working near a lead-acid battery, ensure someone is within range of your voice or close enough to come to your aid.
- Never smoke or allow a spark or flame near the battery or engine.
- Take extra care not to drop a metal tool onto the battery. It could spark or short circuit the battery.



WARNING!

NEVER charge frozen batteries.

- Wear suitable eye and face protection.
- Have plenty of fresh water and soap nearby in case battery acid contacts eyes, skin or clothing. If acid enters eyes, wash eye under cold clean running water for at least 15 minutes and get medical attention immediately.
- Remove any metallic items such as rings, bracelets, necklaces and watches. A lead-acid battery can produce a short circuit current high enough to weld a metallic item, which may cause a severe burn.

4.2 Charger Specific Health and Safety Precautions

- The battery charger is for indoor use only. **DO NOT** expose to rain or wet conditions.



CAUTION! To reduce the risk of injury, only use the charger for charging Lead Acid, GEL, Calcium, AGM and EFB automotive type rechargeable batteries.

- It is not intended to supply power to a low voltage electrical system other than in a starter motor application.
- **DO NOT** use for charging dry-cell batteries, these batteries may burst and cause injury to persons or damage to property.
- This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.
- Before plugging the charger into the power supply, check that the plug, cord and casing are in good condition. If they are damaged or any defective part is evident, get them replaced immediately by a suitably qualified person.
- **ONLY** use the clamps and accessories recommended and supplied by Draper Tools.
- **DO NOT** use this unit if the clamp leads are damaged or worn.



WARNING! Explosive gases, Prevent flames and sparks. During charging provide adequate ventilation. The battery must be placed in a well-ventilated area (for chargers for lead-acid batteries).

- Set up the charger and cord in a safe place where it will not be knocked, tripped over or stepped on and where it is well ventilated.
- The battery terminal not connected to the chassis must be connected first. The other connection is to be made to the chassis, remote from the battery and fuel line. The battery charger is then to be connected to the mains supply.
- After charging, disconnect the battery charger from the mains supply. Then remove the chassis connection and then the battery connection.
- **ALWAYS** unplug the charger from the power supply after charging and before carrying out any cleaning or maintenance.

4. Health and Safety Information

4.3 Connection To The Power Supply

This appliance is supplied with an approved plug and cord for your safety.

If the power supply cord is damaged, it must be replaced by Draper Tools, an authorised service agent or similarly qualified personnel in order to avoid a hazard.

The damaged or incomplete plug, when cut from the cord, shall be disabled to prevent connection to a live electrical outlet.

This charger is a Class II  appliance and is designed for connection to a power supply matching that detailed on the rating label and compatible with the plug fitted. The value of the fuse fitted is marked on the pin face of the plug. Should the fuse need replacing, use a small plain-slot screwdriver to remove the fuse cover. Ensure the substitute is of the correct rating, approved to BS 1363/A and ASTA or BS Kite marked. This should only be performed by suitably qualified personnel.

Use of an extension lead is not recommended with this charger.

If an extension lead is required, use an approved and compatible lead rated for this product.

Follow all the instructions supplied with the extension lead.

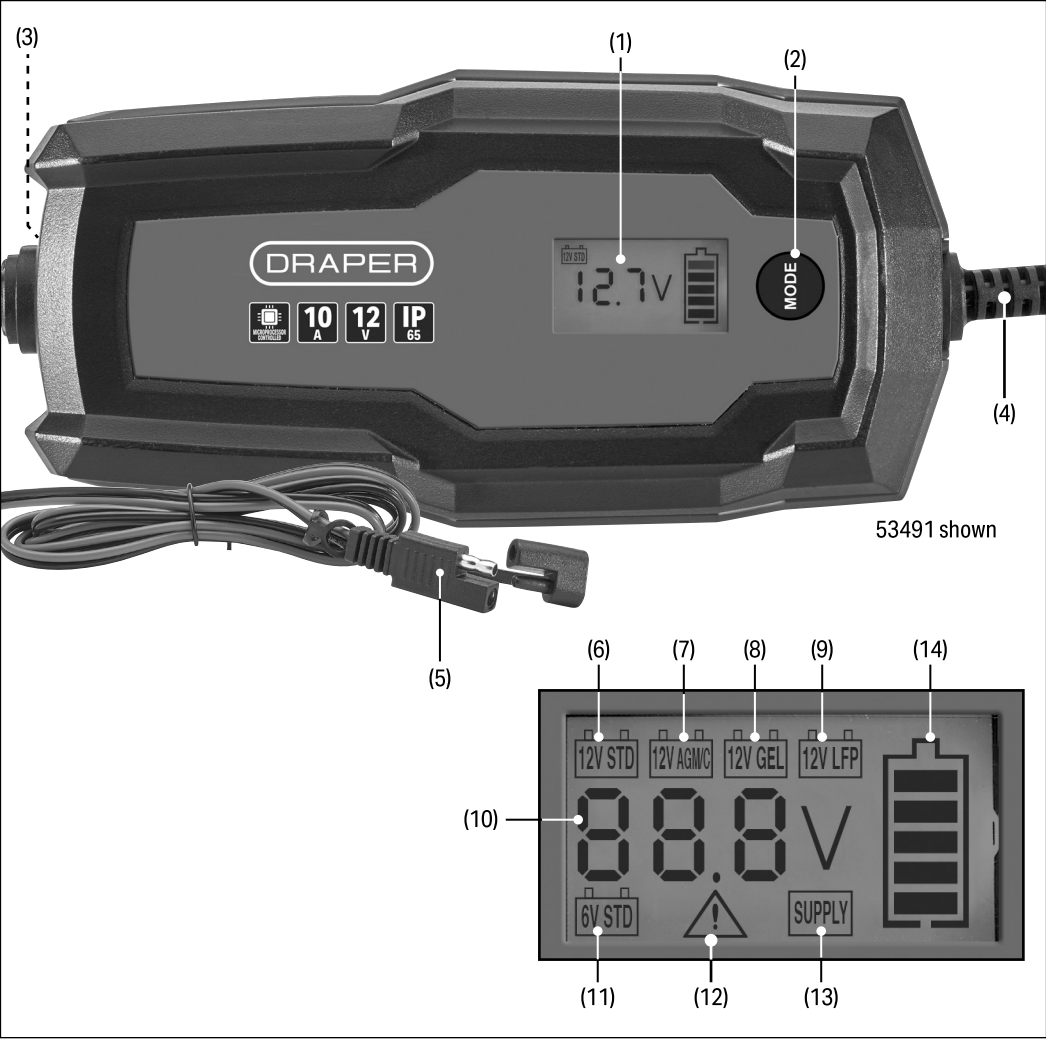
†Double insulated: This product is double insulated and does not require an earth connection to protect against electric shock from accessible conductive parts in the event of failure of the basic insulation.

4.4 Residual Risk

The safety instructions in this manual cannot account for all possible conditions and situations that may occur. Exercise common sense and caution when using this product and protect against any additional conceivable risks.

5. Identification and Unpacking

5.1 Product Overview



- (1) LCD display

(2) Mode button

(3) Hanging keyhole

(4) Power cord and plug

(5) Connector charging lead
- (6) 12V Standard Battery (lead acid battery)

(7) 12V AGM battery and winter mode

(8) 12V GEL battery

(9) 12V LFP battery

(10) Charging voltage/fault indicator

(11) 6V battery

(12) Reverse polarity

(13) Operating 12V DC consumer unit

(14) Battery charge status

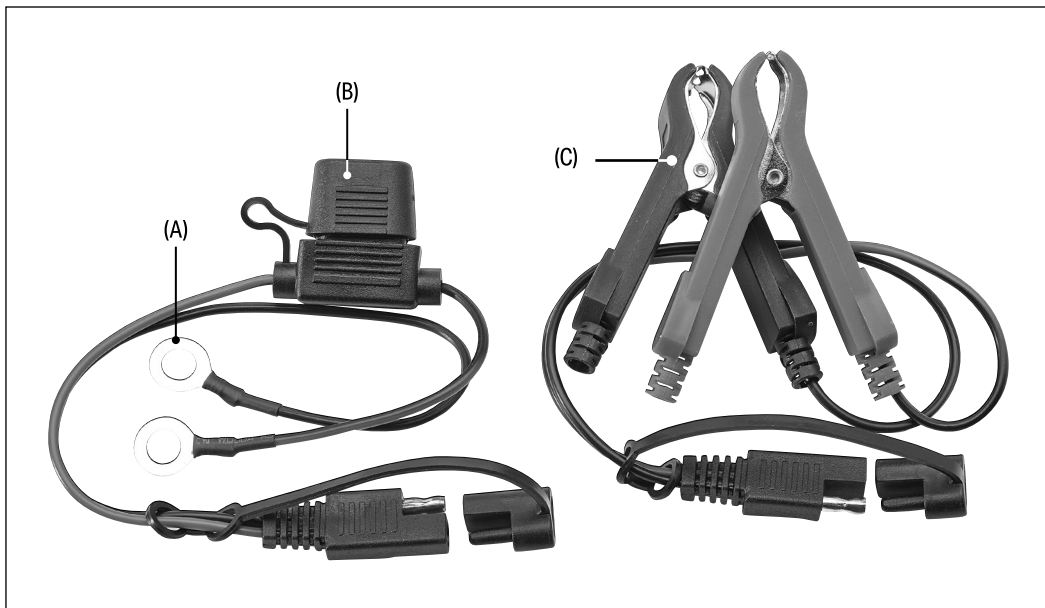
Display Screen

5. Identification and Unpacking

5.2 What's in the Box?

Carefully remove the product from the packaging and examine it for any signs of damage that may have occurred during shipment. If any part is damaged or

missing, do not attempt to use the product. Please contact the Draper Helpline; contact details can be found at the back of this manual.



- (A) O-ring leads with connector (for permanent installation)
- (B) Fuse unit (15A)
- (C) Crocodile clamp leads with connector

5.3 Packaging

Keep the product packaging for the duration of the warranty period for reference should the product need to be returned for repair.



WARNING! Keep packaging materials out of reach of children. Dispose of packaging correctly and responsibly and in accordance with local regulations.

Please visit **[drapertools.com](https://www.drapertools.com)** for our full range of accessories and consumables.

Important: Before charging the battery:

- It is recommended that the battery is disconnected from the vehicle to avoid damage to the alternator.
- Check that the voltage of the battery matches that of the charger.

Note: To avoid loss of audio or security codes before disconnecting the battery connect a 12V memory saver or an EOBD 16 pin diagnostic socket type.

7. Operating Instructions

7.1 Connection

- Before connecting the charger to the power supply ensure that the information on the rating label matches the supply voltage.
- Refer to the instructions in the manufacturer's manual for the car, radio and navigation systems etc.
- **Notes for automatic charging (Programs 12V STD, 12V AGM/C, 12V GEL and 12V LFP)**
 - Charging is carried out in ten steps; the final maintenance charging step maintains the battery capacity at 95 – 100%. The charging operation does not need to be monitored; however, it is recommended not to leave the battery unattended if charging over an extended period of time.

7.2 Permanent Installation Of 'O' Rings to Battery



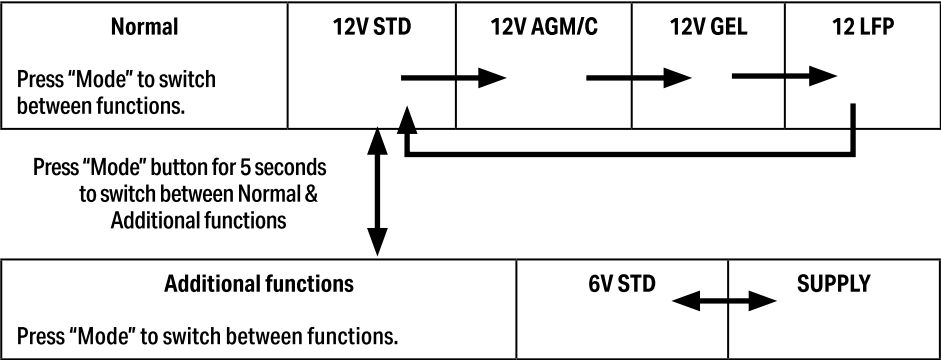
Fig. 1

- Use the 'O' ring leads (A) to connect the battery to the charger without having to obtain access to the battery, where access is difficult. Ideal for motorbikes, classis cars and jet skis etc. (Fig. 1).

7.3 Setting the Charging Modes/'MODE' Button (2)

Note:

- If the battery voltage is less than 3V or more than 15V, the battery is either not suitable for charging or it is faulty.
- When the charger is disconnected, the last charging mode set will be saved (apart from 6V STD and DC SUPPLY) and will be the default program the next time the charger is used.



7.4 Charging Modes

Mode	Display Screen	Battery Charging
Standard	(6) 12V Std	Lead acid batteries (Wet, Ca/Ca and EFB) and GEL batteries. Note: When the charger is used for the first time it will default to 12V STD.
	(7) 12V AGM/C	AGM batteries. Cold weather conditions (-20°C to 5°C) for normal lead acid batteries (wet and Ca/Ca).
	(8) 12V GEL	GEL batteries only.
	(9) 12V LFP	LFP (Lithium iron phosphate) batteries only. DO NOT attempt to charge any other lithium batteries.
Additional Functions	(11) 6V STD	6V batteries only.
	(13) 12V DC supply	For supplying 12 DC when changing a battery or for operating 12V DC consumer units.



WARNING!

- No protection against swapped poles. **ALWAYS** ensure the polarity is correct when connecting. If the poles are swapped there is a risk of damage to the charger, battery/onboard vehicle power supply or a connected consumer unit.
- Observe the maximum power consumption of the consumer unit.

Note:

- The direct voltage supplied is load dependent and without a load is approx. 14.5V.
- Use with consumer units operated by a vehicle 12V supply.
- Refer to and observe the operating instructions for your 12V consumer unit.

7.5 Charging the Battery

IMPORTANT: read all the Health & Safety warnings and refer to your vehicle and battery instruction manual before charging a battery.

1. Release or remove the battery stopper (if fitted) from the battery.
2. Check the acid level in the battery and top up with distilled water if necessary.
- **Important; Battery acid is aggressive**, wear protective gloves and safety glasses. Rinse off any acid splashes thoroughly with plenty of water and seek medical advice if necessary.
3. Connect the crocodile clamp leads (C) to the battery.

With Battery Removed from Vehicle

1. Connect the **RED** positive charger lead to the positive (+) terminal of the battery.
2. Then connect the **BLACK** negative lead to the negative (-) terminal of the battery.
3. Connect the charger to a power socket to switch on.
4. Press the '**MODE**' button (2) to select the correct charging mode.
5. When '**FUL**' appears on the display screen charging is complete.

7. Operating Instructions

With Battery Connected to Vehicle

NOTE: All loads in the vehicle must be switched off during charging.

- 1. Connect the **RED** positive charger lead to the positive (+) terminal of the battery.
- 2. Then connect the **BLACK** negative lead to the vehicle ground connection on either the engine or chassis, away from any fuel lines or battery vents.
- 3. Connect the charger to a power socket to switch on.
- 4. Press the '**MODE**' button (2) to select the correct charging mode.
- 5. When '**FUL**' appears on the display screen charging is complete.

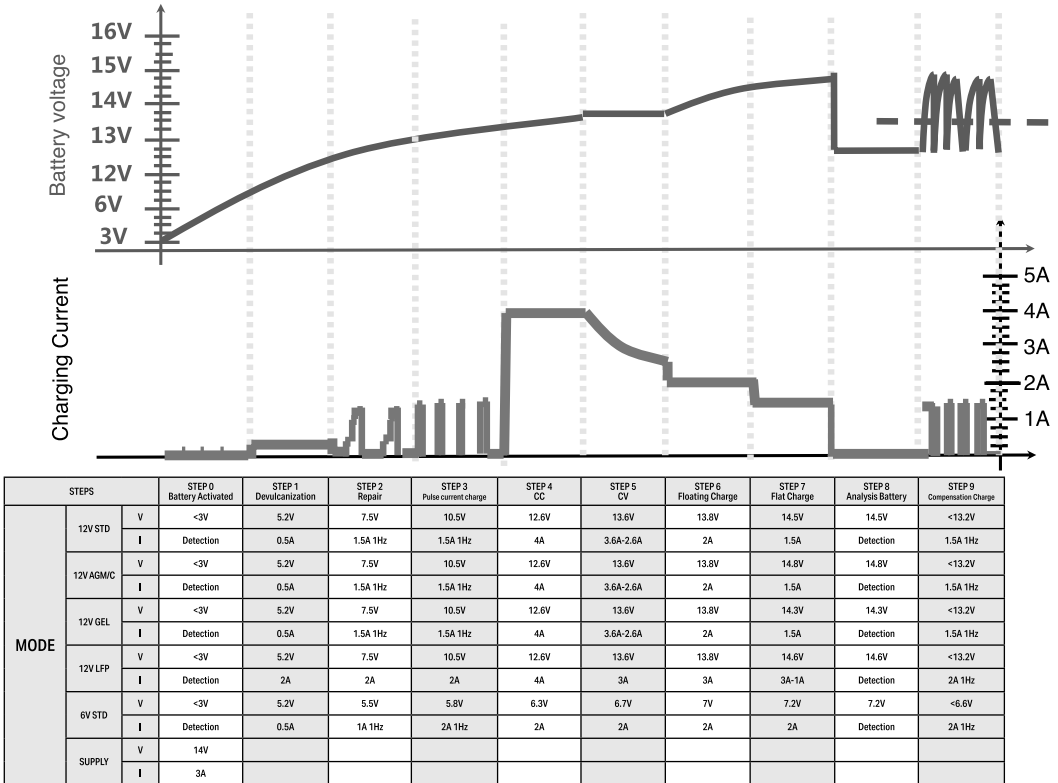
7.6 Finishing Battery Charging

- 1. Unplug the charger from the power supply.
- 2. Disconnect the black charging lead first, then disconnect the red charging lead from the positive terminal.
- 3. Refit the battery stoppers back into position (if removed or released).

7.7 10 Steps of Charging (all charger models)

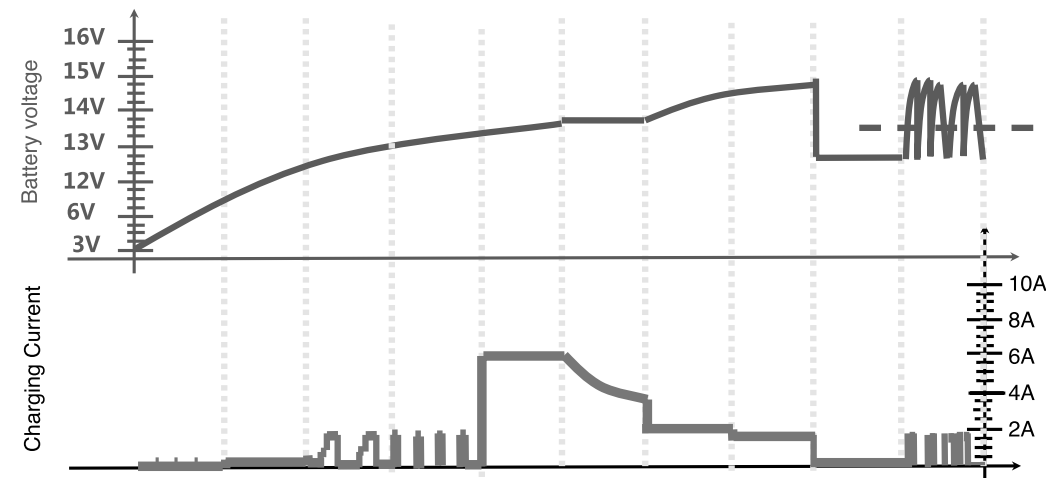
Step	Steps After Charging Mode Selected
0 Battery activated	The status of the battery is checked. If the voltage is below 5V, trickle charging is used to activate the battery.
1 Battery devulcanisation	For batteries with vulcanisation on the plate. Repeated charging with small current pulses will occur to eliminate the vulcanisation and to increase the battery capacity.
2 Battery repair	For old batteries or batteries that have not been used for a long time, charging with pulse current will occur to expand the battery capacity again.
3 Pulse current charge	Save the battery with impulse charging to prepare for bulk charging.
4 Constant current charging	Charging with maximum current until approx.80% battery capacity.
5 Constant voltage charging	Charging with steady charging voltage to maximise up to 100% battery capacity.
6 Floating charge	Charge optimisation – charge with small constant current charging.
7 Flat charge	Charge optimisation – charge with smaller constant current charging to maximise the battery charge and reach fully charged state.
8 Analysis battery	Stop for 1 minute. Analysis the charging voltage to determine whether fully charged.
9 Compensation charge	Battery capacity monitored and kept at 95 – 100%. If required the charger will give an impulse to the battery to retain the charge.

7.8 53489 – 10 Steps of Charging Chart (Refer to section 7.7)



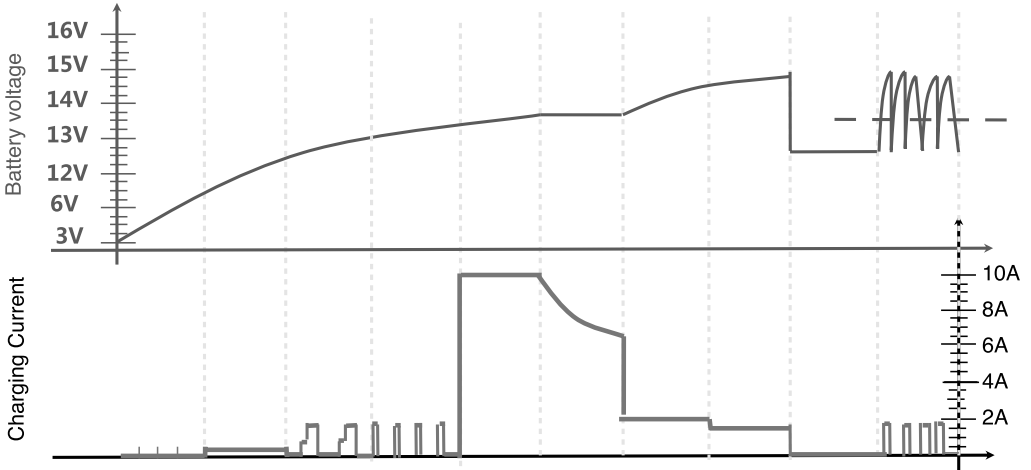
7. Operating Instructions

7.9 53490 – 10 Steps of Charging Chart (Refer to section 7.7)



STEPS		STEP 0 Battery Activated	STEP 1 Devulcization	STEP 2 Repair	STEP 3 Pulse current charge	STEP 4 CC	STEP 5 CV	STEP 6 Floating Charge	STEP 7 Flat Charge	STEP 8 Analysis Battery	STEP 9 Compensation Charge	
MODE	12V STD	V	<3V	5.2V	7.5V	10.5V	12.6V	13.6V	13.8V	14.5V	14.5V	<13.2V
		I	Detection	0.5A	1.5A 1Hz	1.5A 1Hz	6A	5.4A-3.4A	2A	1.5A	Detection	1.5A 1Hz
	12V AGM/C	V	<3V	5.2V	7.5V	10.5V	12.6V	13.6V	13.8V	14.8V	14.8V	<13.2V
		I	Detection	0.5A	1.5A 1Hz	1.5A 1Hz	6A	5.4A-3.4A	2A	1.5A	Detection	1.5A 1Hz
	12V GEL	V	<3V	5.2V	7.5V	10.5V	12.6V	13.6V	13.8V	14.3V	14.3V	<13.2V
		I	Detection	0.5A	1.5A 1Hz	1.5A 1Hz	6A	5.4A-3.4A	2A	1.5A	Detection	1.5A 1Hz
	12V LFP	V	<3V	5.2V	7.5V	10.5V	12.6V	13.6V	13.8V	14.6V	14.6V	<13.2V
		I	Detection	2A	2A	2A	6A	5A	5A	5A-1A	Detection	2A 1Hz
	6V STD	V	<3V	5.2V	5.5V	5.8V	6.3V	6.7V	7V	7.2V	7.2V	<6.6V
		I	Detection	0.5A	1A 1Hz	2A 1Hz	2A	2A	2A	2A	Detection	2A 1Hz
	SUPPLY	V	14V									
		I	5A									

7.10 53491 – 10 Steps of Charging Chart (Refer to section 7.7)



STEPS		STEP 0 Battery Activated	STEP 1 Devulcanization	STEP 2 Repair	STEP 3 Pulse current charge	STEP 4 CC	STEP 5 CV	STEP 6 Floating Charge	STEP 7 Flat Charge	STEP 8 Analysis Battery	STEP 9 Compensation Charge	
MODE	12V STD	V	<3V	5.2V	7.5V	10.5V	12.6V	13.6V	13.8V	14.5V	14.5V	<13.2V
		I	Detection	0.5A	1.5A 1Hz	1.5A 1Hz	10A	9A-6.5A	2A	1.5A	Detection	1.5A 1Hz
	12V AGMC	V	<3V	5.2V	7.5V	10.5V	12.6V	13.6V	13.8V	14.8V	14.8V	<13.2V
		I	Detection	0.5A	1.5A 1Hz	1.5A 1Hz	10A	9A-6.5A	2A	1.5A	Detection	1.5A 1Hz
	12V GEL	V	<3V	5.2V	7.5V	10.5V	12.6V	13.6V	13.8V	14.3V	14.3V	<13.2V
		I	Detection	0.5A	1.5A 1Hz	1.5A 1Hz	10A	9A-6.5A	2A	1.5A	Detection	1.5A 1Hz
	12V LFP	V	<3V	5.2V	7.5V	10.5V	12.6V	13.6V	13.8V	14.6V	14.6V	<13.2V
		I	Detection	2A	2A	2A	10A	8A	8A	8A-1A	Detection	2A 1Hz
	6V STD	V	<3V	5.2V	5.5V	5.8V	6.3V	6.7V	7V	7.2V	7.2V	<6.6V
		I	Detection	0.5A	1A 1Hz	2A 1Hz	2A	2A	2A	2A	Detection	2A 1Hz
	SUPPLY	V	14V									
		I	10A									

8. Maintenance and Troubleshooting

8.1 General Maintenance and Storage

Important: Always disconnect the charger from the power supply before carrying out any maintenance or cleaning.

- Wipe over the case and cord with a slightly damp cloth and dry.

- When not in use store in a safe, dry, childproof location.



WARNING! Servicing should only be carried out by qualified personnel.

8.2 Troubleshooting

Error Code	Problem	Possible Cause	Remedy
Flashing 	Fault indicator	Battery voltage below 3V or above 15V.	Battery is either defective or unsuitable for charging.
		Note: Err will be displayed as well. Battery clamps polarity reversed.	Disconnect and reconnect correctly.
		Short circuit between the clamps.	Do not connect the clamps to each other or to the same metal surface.
'Err'	Not charging.	Battery clamps incorrectly connected/polarity reversed.	Disconnect and reconnect correctly.
		Battery voltage not matching selected mode.	Check that voltage matches the selected mode.
bAd	Not charging.	Battery issue.	Charge for over 12hours. 'bAd' will disappear from screen If battery successfully rescued. If not back to normal replace battery.
	Battery voltage too low.	Batety is deep- discharged or defective (below 3V).	Replace battery.
Battery is not fully charged after 24hours.		Charge current is too low	Select a higher charge rate.
Battery voltage rising fast.		Charge current is too high.	Select a lower charge rate

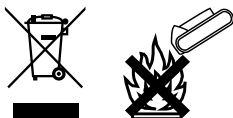
Note: If the battery voltage is below 3V the battery cannot be recharged with this charger.

9. Disposal & Warranty

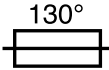
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At the end of its working life, dispose of the product responsibly and in line with local regulations. Recycle where possible.

- **DO NOT** dispose of this product with domestic waste; most local authorities provide appropriate recycling facilities.
- **DO NOT** burn or mutilate batteries; this may release toxic or corrosive substances.



The warranty period is 12 months from date of purchase
- Visit [drapertools.com/warranty](https://www.drapertools.com/warranty) for full details.

	Read the instruction manual		Short-circuit-proof safety isolating transformer
	Warning!		Fuse protective device
	Caution!		Polarity indication
	Do not incinerate or throw onto fire		Rated voltage
	Wear face mask and safety glasses		WEEE – Waste Electrical & Electronic Equipment Do not dispose of Waste Electrical & Electronic Equipment in with domestic rubbish
	For indoor use only; do not expose to rain		European conformity
	Class II construction (Double insulated)		UK Conformity Assessed

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