CHARGE AMPS

RAY TYPE 1
PRODUCT MANUAL

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CONTENT

ABOUT RAY

With the smarter, more user friendly RAY, Charge Amps introduces the most efficient, reliable and hassle free charging solution to date.

Born in the fusion of technology and design, RAY is everything you need and want in a charger, made simple and attractive. As it should be.

With the introduction of RAY, Charge Amps puts the user in full control. the future. From the seemingly easy solutions of adding a built-in flashlight to guide your way in the dark, to the complex security measures that works, but does not show.

Plug

Control box

EV Connector


CHARGE AMPS

HOW TO USE RAY

Read Safety Precautions first

Charging current

You should always have good knowledge about the electrical installation before you start charging to make sure the installation handles the load correctly. Charging with high current requires that the outlet is rated for the load continuously and that the cable dimensions between the electric central and the outlet is of adequate size. You should also make sure that the installation and outlet are in good shape and can handle the continuous load. If you are uncertain about the quality or capacity of the electrical installation, consult your certified electrician. See safety precautions for more information.

To start charging

1. Connect RAY to an outlet socket.
2. RAY will start and indicate the selected charging current on the display.
3. Make sure RAY cable is not creating a coil.
4. Select the desired charging current by manoeuvring the touch sensors. Settings (gear-wheel) and then adjust current with the up/down arrows and end with OK (green check).
5. Insert RAY into the EV. Charging starts automatically. The display will begin to show a charging graphic.

To stop charging

To prevent arching and wear on plugs and outlet, the order of removal is important. The following procedure minimizes the risk of arching.

1. Unlock your car.
2. Grab the connector to open the locking latch. If the latch can not be opened automatically, for example when RAY is not connected to an outlet, use a finger or a screw driver to open the latch manually. Avoid opening the latch manually when RAY is charging.
3. Remove RAY from your car.
4. Remove the socket plug from the outlet.

Open the latch by placing your palm on the connector

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SAFETY PRECAUTIONS

Warning

Due to mishandling a dangerous condition might occur such as electric shock or fire

- Before you connect RAY make sure the correct charging current is selected. You must ensure that the outlet and circuit have enough current capacity to charge your vehicle safely. The outlet and circuit must be earthed and protected by a dedicated circuit breaker (max 16A) or fuse (max 16A). If in any doubt, consult a qualified electrician. Overloading an outlet may result in fire.
- Do not use an extension cord or adapter.
- Always connect RAY to an RCD protected outlet. RAY is equipped with a RCD to protect the cable, connector and car from ground faults, but always use a RCD protected outlet for your personal safety.
- Do not disassemble or try to repair. Contact vendor if service is required.
- Stop using RAY if a failure or abnormality occurs or the cable is damaged.
- Stop using RAY if the display shows any faults.
- Stop using RAY if it gets very hot. RAY will get warm during charging, this is normal.
- Keep the plug dry and take appropriate care when operating in wet conditions.
- Do not touch the electric terminals of RAY.
- Do not use RAY if any parts are broken, worn, cracked, and open or show any indication of damage. Contact vendor if you are uncertain if it is safe to use your RAY.
- Not for use by children.
- Ensure the electrical supply is 220-240V 50/60Hz.
- Handle RAY with care; do not drop and do not pull the cable strongly.
- Ensure that RAY is placed to avoid submersion in water.
- Do not hang RAY in the cable.

Caution

Parts could be damaged due to mishandling

- Prevent foreign matter from getting into the terminal parts of RAY.
- Avoid stepping on, folding, driving over, or putting tight kinks in the cable.
- Avoid using RAY during electrical storms or thunderstorms.
- Do not place heavy objects on RAY.
- When charging, make sure RAY is not covered by objects preventing cooling of RAY.
- Do not drop RAY.

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TROUBLESHOOTING

Warning symbols on the display:

	Relay weld	Detection of one or more welded relays in the In-Cable-Control-Box. Try starting Ray without being connected to the car. If problem is persistent, contact vendor. Do not touch the terminals of the EV Connector.
	Ground fault	The RCD has tripped. This indicates a ground fault in the car. Reset Ray by disconnecting power supply. Examine connected car for ground fault.
	Unknown error	An uncategorized error has occurred. This includes car requesting ventilation while charging, which is not supported.
	Communication error	The communication between the EV Connector and the In-Cable-Control-Box is not working properly. Check cable for damages and reset Ray by disconnecting power supply.
 	High Normalized	The temperature sensor in the wall plug has detected a high temperature. Current will be decreased while charging and thermometer will be shown as normalized on the screen until power is removed.
	Faulty sensor	The temperature sensor is faulty. RAY will continue to charge at 6A. Please contact support@charge-amps.com

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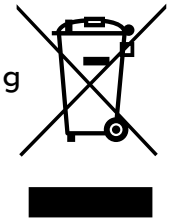
TECHNICAL SPECIFICATIONS

Voltage	220-240 V
Frequency	50/60 Hz
Current	16 A
Vehicle interface	SAE J1772 (IEC TYPE 1)
Cable length	7,5 m
Ground fault protection	RCD type A, <30 mA This IC-CPD shall not be used for vehicles which may cause smooth d.c. residual currents under first fault conditions.
Self-tests	Self-test of the RCD is performed at the insertion into the car. The relays are continuously monitored for welding.
Protective earth conductor	Non-switched
Standby power	< 5 W
Power requirement while charging	< 10 W
Indoor ventilation	Not supported
Encapsulation	IP66
Operating temperature	-25 °C - + 45 °C
Altitude	<2000 m
Relative Operating humidity	<75 % at 40 °C, <95% at 20 ºC
Standards	IEC 61851-1 Ed.3 IEC 62196-2 IEC 62752:2016

CE
2016

CHARGE AMPS

DISPOSAL



RAY contains electronics and should be recycled as such.
Contact your local community centre for information about recycling and where to dispose your products.

You can also send used items back to Charge Amps for disposal.
Contact info@charge-amps.com for instructions on how to send items for disposal.

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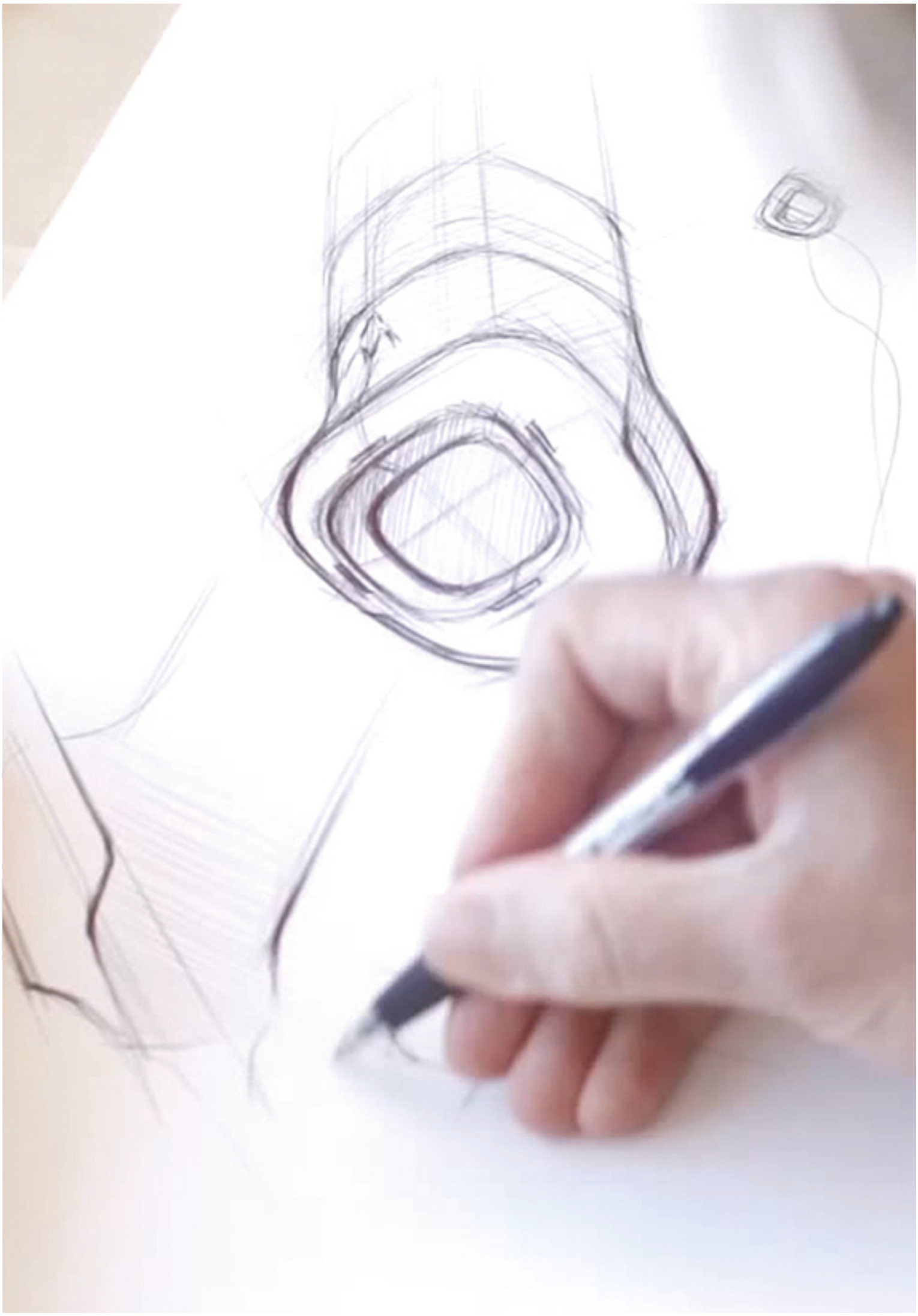
Charge Amps' objective is to create services that ease the transition from todays' fossil fuels dependency to a society that is environmentally sustainable. This should be done without restricting the freedom, or joy, of movement for the people. Charge Amps strives to find opportunities to support entrepreneurship and increase the consumer's freedom with less environmental effect.



BYE BYE FOSSIL FUELS

HELLO RAY!

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