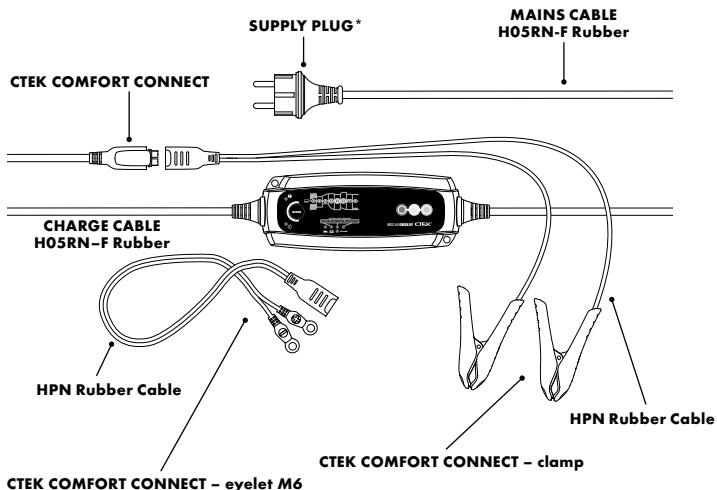


CONGRATULATIONS

on the purchase of your new professional switched mode battery charger and battery check instrument. This charger is included in a series of professional chargers from CTEK SWEDEN AB and represents the latest technology in battery charging.



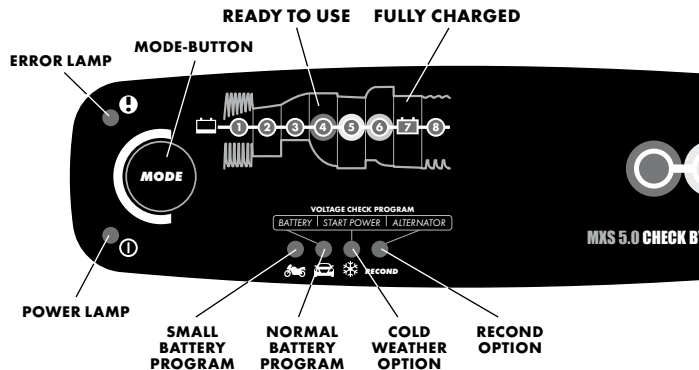
* Supply plugs may differ to suit your wall socket.

HOW TO CHARGE

1. Connect the charger to the battery. Lamp 4, 5 and 6 now start flickering indicating VOLTAGE CHECK PROGRAM. Ignore this and continue with the next step.
2. Connect the charger to the wall socket. The power lamp will indicate that the mains cable is connected to the wall socket. The error lamp will indicate if the battery clamps are incorrectly connected. The reverse polarity protection will ensure that the battery or charger will not be damaged.
3. Press the MODE-button to select charging program.
4. Follow the 8-step display through the charging process. The battery is ready to start the engine when STEP 4 is lit. The battery is fully charged when STEP 7 is lit.

Stop charging at any time by disconnecting the mains cable from the wall socket.

Note: If the charger indicates START POWER VOLTAGE CHECK PROGRAM lamp and BAD lamp press MODE-button for 2 sec to exit VOLTAGE CHECK PROGRAM.



HOW TO SELECT: VOLTAGE CHECK PROGRAM

VOLTAGE CHECK PROGRAM: BATTERY

For accurate results, the battery must rest for at least one hour before test. Select the VOLTAGE CHECK PROGRAM: BATTERY with the MODE-button. If you get a **BAD** or **FAIR** indication, charge the battery.

Note: When the battery is in very cold conditions (under 5°C), the battery voltage will fall, and may be below the level for the green indication, even if it is good. It is always good for the battery to be fully charged so if you do get a **BAD** or **FAIR** indication, recharge the battery.

VOLTAGE CHECK PROGRAM: START POWER

This voltage check program checks the battery's performance when cranking. Select the VOLTAGE CHECK PROGRAM: START POWER with the MODE-button. The test will start with the **OK** indication lit. Run the starter motor for a few seconds or until the engine starts. The VOLTAGE CHECK PROGRAM: START POWER will record the battery's performance during cranking. A **BAD** indication shows that the battery is worn out or discharged. Before replacing the battery try to recharge it.

Note: Even if the check indicates **BAD**, the battery may function in the summer but it will probably fail in the coming winter. To repeat this check, press the MODE-button repeatedly until VOLTAGE CHECK PROGRAM: START POWER is selected again.

VOLTAGE CHECK PROGRAM: ALTERNATOR

This function will check the alternator or generator performance. At this VOLTAGE CHECK PROGRAM, it is good to have a second person available to start the car.

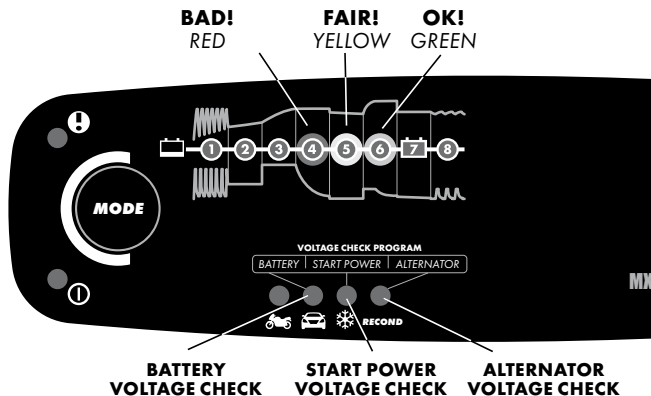
1. Select the VOLTAGE CHECK ALTERNATOR with the MODE-button.
2. Start the engine and run it with high idle speed (2000 RPM).

If you get a **BAD** indication, this means the alternator does not charge the battery good enough. Contact your service garage immediately. Tip: Charge the battery before driving.

If the **FAIR** indication is still lit after running the engine for a minute, the alternator is working but the voltage level is low. Consult your garage. Charge the battery regularly.

HOW TO USE: VOLTAGE CHECK PROGRAM WITH SUPPLY PLUG CONNECTED

1. Connect the charger to the battery.
2. Connect the charger to the wall socket. The power lamp will indicate that the mains cable is connected to the wall socket. The error lamp will indicate if the battery clamps are incorrectly connected. The reverse polarity protection will ensure that the battery or charger will not be damaged.
3. Press the MODE-button for about 2 seconds. The three VOLTAGE CHECK result lamps will flicker, to indicate VOLTAGE CHECK PROGRAM until a selection is chosen. The lamps in the lower row will indicate the VOLTAGE CHECK PROGRAM selected. To select another VOLTAGE CHECK PROGRAM, press the MODE-button briefly. The VOLTAGE CHECK result lamps will flicker again until a result is shown:
RED: Indicates **BAD**
YELLOW: Indicates **FAIR**
GREEN: Indicates **OK!**
4. Exit the VOLTAGE CHECK PROGRAM at any time by pressing the MODE-button for about 2 seconds.
5. To continue charging, press the MODE-button to select a CHARGING PROGRAM or OPTION.



HOW TO USE: VOLTAGE CHECK PROGRAM WITHOUT SUPPLY PLUG CONNECTED

1. Connect the charger to the battery. The battery voltage needs to be higher than 8.0V to be able to use this setup.
2. The VOLTAGE CHECK PROGRAM is automatically selected and the three VOLTAGE CHECK result lamps will flicker, to indicate VOLTAGE CHECK PROGRAM until a program is selected. Select a VOLTAGE CHECK PROGRAM within 30 sek otherwise the VOLTAGE CHECK PROGRAM will exit. The lamps in the lower row will indicate the VOLTAGE CHECK PROGRAM selected. To select another VOLTAGE CHECK PROGRAM, press the MODE-button briefly. The VOLTAGE CHECK result lamps will flicker again until a result is shown:
RED: Indicates **BAD**
YELLOW: Indicates **FAIR**
GREEN: Indicates **OK!**
3. Exit the VOLTAGE CHECK PROGRAM at any time by pressing the MODE-button for about 2 seconds.
4. To use the VOLTAGE CHECK PROGRAM after mains power has been turned off, one of the leads connected to the battery has to be removed for at least 30 seconds.

CHECK THE RESULT LAMPS



If the result lamp is lit:

	BAD	FAIR	OK
CHECK BATTERY	BELOW 12.4V	12.4–12.6V	ABOVE 12.6V
CHECK START POWER	BELOW 9.6V	9.6–10.5V	ABOVE 10.5V
CHECK ALTERNATOR	BELOW 13.3V	13.3–14.0V	ABOVE 14.0V


CHARGING PROGRAMS AND OPTIONS

Press the MODE-button to select between the charging programs and to add charging options. The lamps will indicate which programs and options that are selected. The selected program will be memorised and restarted next time the charger is connected.

Charging Programs

Program	Battery Size (Ah)	Explanation	Temp range
	1.2-14Ah	Small battery program, 0.8A Use for smaller batteries.	-20°C–+50°C (-4°F-122°F)
	14-160Ah	Normal battery program, 5A Use for normal sized batteries.	-20°C–+50°C (-4°F-122°F)

Charging Options

Option	Battery Size (Ah)	Explanation	Temp range
	1.2-160Ah	Cold weather option Use for charging at low temperatures and for power AGM batteries like Optima® and Odyssey®. Cold weather option increases charging voltage	-20°C–+5°C (-4°F-41°F)
RECOND	1.2-160Ah	Recond option Use to return energy to empty batteries. Recond your battery once per year and after deep discharge to maximise lifetime and capacity. The Recond option adds STEP 6 to the selected charging program. Repeated use of the Recond program may cause water loss in the battery and reduce service life of electronics. Contact your vehicle and battery supplier for advice.	-20°C–+50°C (-4°F-122°F)

ERROR LAMP

If the error lamp is lit, check the following:



1. Is the chargers positive lead connected to the battery's positive pole?

2. Is the charger connected to a 12V battery?

3. Has charging been interrupted in STEP 1, 2 or 5?

Restart the charger by pressing the MODE-button. If charging is still being interrupted, the battery...

STEP 1: ...is seriously sulphated and may need to be replaced.

STEP 2: ...cannot accept charge and may need to be replaced.

STEP 5: ...cannot keep charge and may need to be replaced.

POWER LAMP

If the power lamp is lit with a:



1. STEADY LIGHT

The mains cable is connected to the wall socket.

2. FLASHING LIGHT

The charger has entered the energy save mode. This happens if the charger isn't connected to a battery in 2 minutes.

READY TO USE

The table shows the estimated time for an empty battery to reach 80% charge level



BATTERY SIZE (Ah)	TIME TO 80% CHARGED
2Ah	2h
8Ah	8h
20Ah	4h
60Ah	12h
110Ah	26h

CHARGING STEPS

STEP 1 DESULPHATION

Detects sulphated batteries. Pulsing current and voltage, removes sulphate from the lead plates of the battery restoring the battery capacity.

STEP 2 SOFT START

Tests if the battery can accept charge. This step prevents charging of a defective battery.

STEP 3 BULK

Charging with maximum current until approximately 80% battery capacity is reached.

STEP 4 ABSORPTION

Charging with declining current to maximize up to 100% battery capacity.

STEP 5 ANALYSE

Tests if the battery can hold charge. Batteries that cannot hold charge may need to be replaced.

STEP 6 RECOND

Choose the Recond program to add the Recond step to the charging process. During the Recond step voltage increases to create controlled gassing in the battery. Gassing mixes the battery acid and returns energy to the battery.

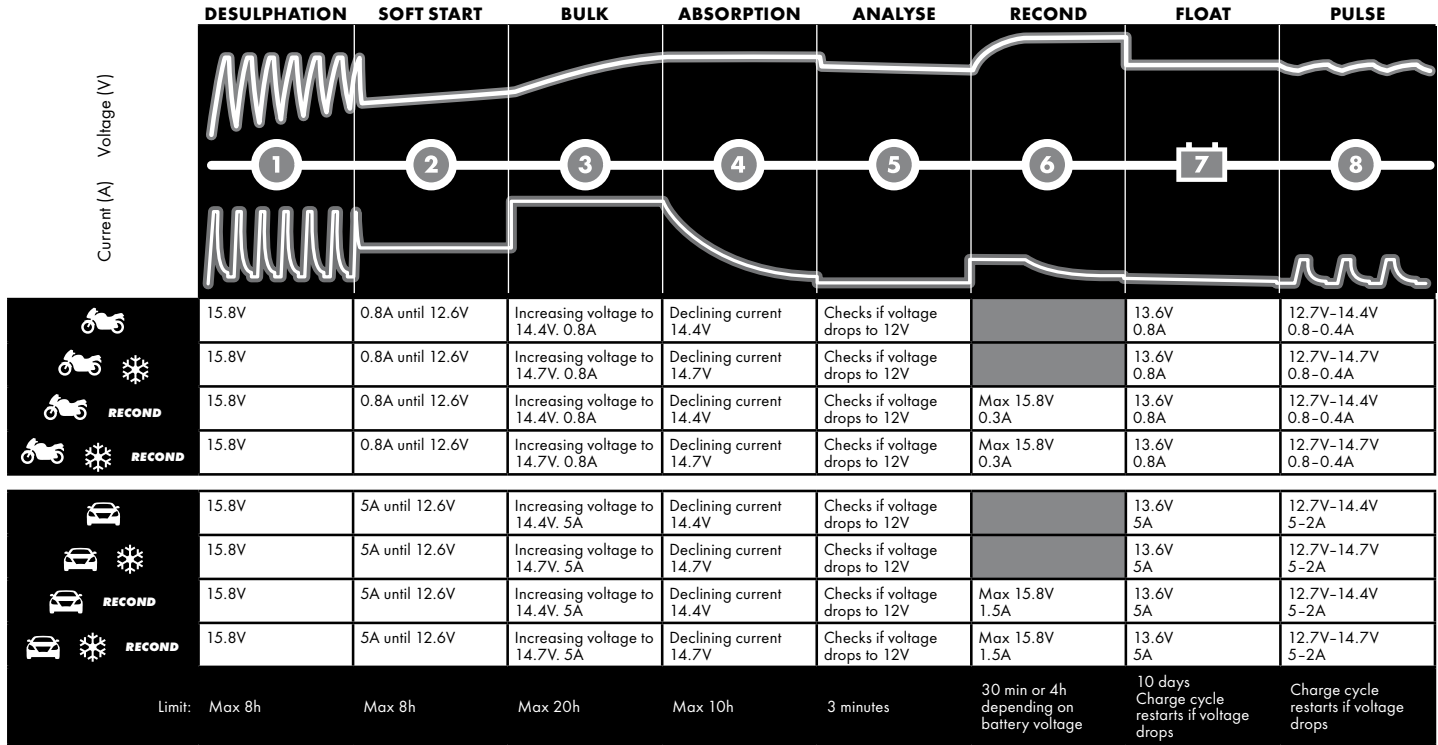
STEP 7 FLOAT

Maintaining the battery voltage at maximum level by providing a constant voltage charge.

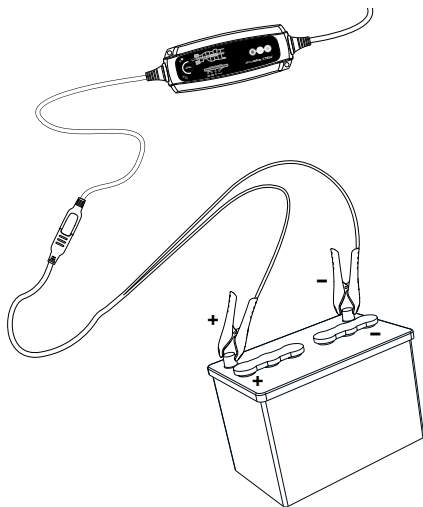
STEP 8 PULSE

Maintaining the battery at 95-100% capacity. The charger monitors the battery voltage and gives a pulse when necessary to keep the battery fully charged.

CHARGING PROGRAMS AND OPTIONS COMBINATIONS



CONNECT AND DISCONNECT THE CHARGER TO A BATTERY



INFO

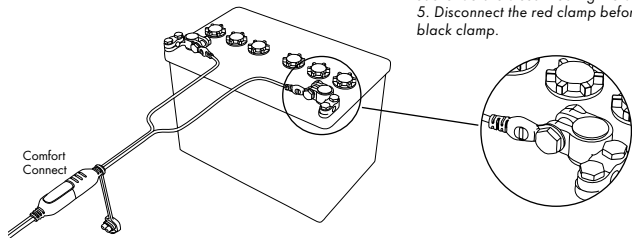
If the battery clamps are incorrectly connected, the reverse polarity protection will ensure that the battery and charger are not damaged.

For batteries mounted inside a vehicle

1. Connect the red clamp to the battery's positive pole.
2. Connect the black clamp to the vehicle chassis remote from the fuel pipe and the battery.
3. Connect the charger to the wall socket
4. Disconnect the charger from the wall socket before disconnecting the battery
5. Disconnect the black clamp before the red clamp.

Some vehicles may have positively earthed batteries.

1. Connect the black clamp to the battery's negative pole.
2. Connect the red clamp to the vehicle chassis remote from the fuel pipe and the battery.
3. Connect the charger to the wall socket
4. Disconnect the charger from the wall socket before disconnecting the battery
5. Disconnect the red clamp before the black clamp.



TECHNICAL SPECIFICATIONS

Charger model	MXS 5.0 CHECK
Model number	1066
Rated Voltage AC	220-240VAC, 50-60Hz
Charging voltage	14.4V, 14.7V, RECOND 15.8V
Min battery voltage	2.0V
Charging current	5A max
Current, mains	0.65A rms (at full charging current)
Back current drain*	<1Ah/month
Ripple**	<4%
Ambient temperature	-20°C to +50°C, output power is reduced automatically at high temperatures
Charger type	Eight step, fully automatic charging cycle
Battery types	All types of 12V lead-acid batteries (WET, MF, Ca/Ca, AGM and GEL)
Battery capacity	1.2-110Ah up to 160Ah for maintenance
Dimensions	168 x 65 x 38mm (L x W x H)
Insulation class	IP65
Weight	0.6kg

*) Back current drain is the current that drains the battery if the charger is not connected to the mains. CTEK chargers have a very low back current.

**) The quality of the charging voltage and charging current is very important. A high current ripple heats up the battery which has an aging effect on the positive electrode. High voltage ripple could harm other equipment that is connected to the battery. CTEK battery chargers produce very clean voltage and current with low ripple.

SAFETY

- **The charger is** designed for charging only for batteries according to the technical specification. Do not use the charger for any other purpose.
- **Never try to charge** non rechargeable batteries.
- **Check the charger** cables prior to use. Ensure that no cracks have occurred in the cables or in the bend protection. A charger with damaged cables must not be used. A damaged cable must be replaced by a CTEK representative.
- **Never charge** a damaged battery.
- **Never charge** a frozen battery.
- **Never place** the charger on top of the battery when charging.
- **Always provide** for proper ventilation during charging.
- **Avoid covering** the charger.
- **A battery being** charged could emit explosive gases. Prevent sparks close to the battery. When batteries are reaching the end of their lifecycle internal sparks may occur.
- **All batteries fail** sooner or later. A battery that fails during charging is normally taken care of by the chargers advanced control, but some rare errors in the battery could still exist. Don't leave any battery during charging unattended for a longer period of time.
- **Ensure that** the cabling does not jam or comes into contact with hot surfaces or sharp edges.
- **Battery acid is** corrosive. Rinse immediately with water if acid comes into contact with skin or eyes, seek immediate medical advice.
- **Always check** that the charger has switched to STEP 7 before leaving the charger unattended and connected for long periods. If the charger has not switched to STEP 7 within 50 hours, this is an indication of an error. Manually disconnect the charger.
- **Batteries consume** water during use and charging. For batteries where water can be added, the water level should be checked regularly. If the water level is low add distilled water.
- **This appliance is** not designed for use by young children or people who cannot read or understand the manual unless they are under the supervision of a responsible person to ensure that they can use the battery charger safely. Store and use the battery charger out of the reach of children, and ensure that children cannot play with the charger.
- **Connection to** the mains supply must be in accordance with the national regulations for electrical installations.

LIMITED WARRANTY

CTEK SWEDEN AB, issues this limited warranty to the original purchaser of this product. This limited warranty is not transferable. The warranty applies to manufacturing faults and material defects for 5 years from the date of purchase. The customer must return the product together with the receipt of purchase to the point of purchase. This warranty is void if the battery charger has been opened, handled carelessly or repaired by anyone other than CTEK SWEDEN AB or its authorised representatives. One of the screw holes in the bottom of the charger is sealed. Removing or damaging the seal will void the warranty. CTEK SWEDEN AB makes no warranty other than this limited warranty and is not liable for any other costs other than those mentioned above, i.e. no consequential damages. Moreover, CTEK SWEDEN AB is not obligated to any other warranty other than this warranty.

SUPPORT

CTEK offers a professional custom support: www.ctek.com.
For latest revised user manual see www.ctek.com. By e-mail: info@ctek.se,
by telephone: +46(0) 225 351 80, by fax +46(0) 225 351 95.
By mail: CTEK SWEDEN AB, Rostugnsvägen 3, SE-776 70 VIKMANSHYTTAN,
SWEDEN.

VIKMANSHYTTAN, SWEDEN 2011-09-01



Bengt Hagander, President
CTEK SWEDEN AB

CTEK PRODUCTS ARE PROTECTED BY

2011-09-19

Patents	Designs	Trade marks
EP10156636.2 pending	RCD 509617	CTM 669987
US12/780968 pending	US D575225	CTM 844303
EP1618643	US D580853	CTM 372715
US7541778	US D581356	CTM 3151800
EP1744432	US D571179	CTM 1461716 pending
EP1483817 pending	RCD 321216	CTM 1025831
SE524203	RCD 000911839	CTM 405811
US7005832B2	RCD 081418	CTM 830545751 pending
EP1716626 pending	RCD 001119911-0001	CTM 1475420 pending
SE526631	RCD 001119911-0002	CTM 1935061 pending
US7638974B2	RCD 081244	V28573IP00
EP1903658 pending	RCD 321198	CTM 1082141 pending
EP09180286.8 pending	RCD 321197	CTM 2010004118 pending
US12/646405 pending	ZL 200830120184.0	CTM 4-2010-500516 pending
EP1483818	ZL 200830120183.6	CTM 410713
SE1483818	RCD 001505138-0001	CTM 2010/05152 pending
US7629774B2	RCD 000835541-0001	CTM1042686
EP09170640.8 pending	RCD 000835541-0002	CTM 766840 pending
US12/564360 pending	D596126	
SE528232	D596125	
SE525604	RCD 001705138 pending	
	US D29/378528 pending	
	RCD 201030618223.7 pending	
	US RE42303	
	US RE42230	