



205B Konrad Cres.  
Markham, Ontario  
L3R 8T9  
Phone 905-513-1550  
Fax 905-513-1557  
[www.chargers.ca](http://www.chargers.ca)

Instruction Manual  
Model 75  
(602U24C1)  
Portable Fast and Slow Automotive Battery Charger

---

For use on 115 volt 60 cycle A.C. supply, having a maximum D.C. output of 75/60/40 amps at 6/12/24 volts, 3/6/12 cells.

This Battery Charger is a full-wave selenium plate type, equipped with Automatic Reset Circuit breaker as protection against overload or short circuit.

1. Determine condition of battery (ies) by first testing , either with a Voltmeter or Hydrometer.

## 2. PREPARATION OF BATTERY (IES) FOR FAST CHARGING

Adjust battery (ies) electrolyte level to the height above the separators as specified by the battery manufacturer. Do not overfill, as too high a level will cause bubbling over, or extreme gassing.

Battery cells must always be vented either by their special vent caps or by removing caps and setting loosely over vent openings.

Note: It is possible on some batteries, or under certain conditions that extreme gassing or bubbling over of the electrolyte may occur. To remedy this, reduce the charging rate until this condition stops.

## 3. PREPARING CHARGER

Place Timer in off position. Next, set Raise Control Knob to off position, extreme left. You are now ready to plug A.C. Cord into 115 volt, 60-cycle outlet.

## 4. CONNECTING BATTERY AND STARTING FAST CHARGE

Connect RED handle to (+) positive (large) post and BLACK to (-) negative (small) post of battery. Be sure connections are clean, solid and tight. If sparking occurs when making connections, this indicates either reverse polarity or that the Charger Controls are not in their OFF positions.

Battery may be charged in the automobile and starter used while Charger is connected, without any harm, as your Charger is protected by a D.C. Circuit Breaker which will trip open in the event of overload or reverse polarity. If the Breaker should trip open, wait approximately 3 minutes for it to reset.

5. Set voltage Selector Switch to corresponding battery voltage. Next, set Timer to desired number of minutes - up to 2 hours for length of charge.

Adjust raise Control Knob by advancing to the right, to desired charging rate.

WARNING: do not charge in RED ZONE. When charge is finished, return Toggle Switches to their OFF position.

## 6. SLOW CHARGING

From one to ten (1 to 10) 6 volt batteries may be charged at one time - hooked in parallel - positive of one battery to positive of the next and so on, with all negative posts hooked together. Twelve and twenty-four volt batteries may be inter connected, bearing in mind that the battery voltage on the string is kept balance. DO NOT EXCEED 24 VOLT ACROSS CHARGER CLAMPS.

Connect Charger Clamps to batteries, red to positive combination and black to negative combination of posts. Next, set Timer to "hold" position which places the charger on manual operation.

Advance RAISE CONTROL KNOB to desired charging rate. To determine rate of charge per battery, divide by the number of batteries on charge.

EXAMPLE - Ten 6 volt batteries at 75 amps will be approximately 7.5 amps per battery.

## MAINTENANCE:

This Charger is designed and built for rugged used and to give the best battery charging at the least upkeep cost. Keep Charger case clean and avoid damp locations. Keep Charger Handles clean and free from corrosion. Your Charger should be blown out with compressed air from time to time, so as to remove dust from the Rectifier and Fan Blade. Your Fan Motor is equipped with oil-lite bearings for longer life and smoother operation. A drop of S.A.E. No. 10 oil every 3 or 4 months is recommended. ALWAYS be sure the fan is operating, for if not, your machine will overheat, resulting in failure of your Rectifier.

### Important Safety Instructions

1. Save these instructions. This manual contains important safety and operating instructions.
2. Working in the vicinity of a lead-acid battery is dangerous. Batteries generate explosive gases during normal battery operation. For this reason it is of utmost importance that each time, before using your charger, you read and follow instructions provided exactly.
3. To reduce the risk of battery explosion, follow these instructions and those marked on the battery.
4. Never smoke or allow an open spark or flame in the vicinity of the battery or engine.
5. Use the charger for charging a lead-acid battery only. It is not intended to supply power to an extra-low-voltage electrical system or to charge dry-cell batteries. Charging dry-cell batteries may cause them to burst and cause injury to persons and damage to property.
6. Never charge a frozen battery.
7. If necessary to remove battery from vehicle to charge, always remove grounded terminal from battery first. Make sure all accessories in the vehicle are off in order to prevent an arc.
8. Study all battery manufacturer's specific precautions such as removing or not removing cell caps while charging and recommended rates of charge.
9. For charger types with different voltage settings, determine the voltage of the battery by referring to the vehicle owner's manual and make sure the output voltage is set at the correct voltage. If the charger is a single voltage type, do not use the charger unless the battery voltage matches the voltage output rating of the charger.
10. Never place the charger directly above or below the battery being charged: gases or fluids from the battery will corrode and damage the charger. Locate the charger as far away from the battery as the D.C. cables permit.
11. Do not operate the charger in a closed-in area or restrict ventilation in any way.
12. Connect and disconnect D.C. output clips only after setting any charger switches to OFF position, and removing A.C. cord from electric outlet. Never allow clips to touch each other.
13. Follow these steps when battery is installed in vehicle. A spark near battery may cause battery explosion. To reduce risk of a spark near battery:
  - (a) Position A.C. and D.C. cords to reduce risk of damage by hood, door, or moving engine parts.
  - (b) Stay clear of the fan blades, belts, pulleys and other parts that can cause injury to persons.
  - (c) Check polarity of battery posts. Positive (POS, P, +) battery post usually has larger diameter than negative (NEG, N, -) post. Fill cells with clean water to level indicated on battery, if required.
  - (d) Determine which post of battery is grounded (connected to the chassis). If negative post is grounded (as in most vehicles) see item (e), if positive post is grounded, see item (f).
  - (e) For negative grounded vehicle, connect positive (red) clip from battery

charger to positive (POS, P, +) ungrounded post of the battery. Connect negative (black) clip to vehicle chassis or engine away from battery. Do not connect clip to carburetor, fuel lines, or sheet metal body parts. Connect to a heavy gauge metal part of the frame or engine block.

- (f) For positive grounded vehicle, connect negative (black) clip from battery charger to negative (NEG, N, -) ungrounded post of battery. Connect positive (red) clip to vehicle chassis or engine block away from battery. Do not connect clip to carburetor, fuel lines, or sheet metal body parts. Connect to a heavy gauge metal part of the frame or engine block.
- (g) Connect charger A.C. supply cord to electric outlet.
- (h) When disconnecting charger, turn switches off disconnect A.C. cord, remove clip from vehicle chassis, and then remove clip from battery terminal.

14. Follow these steps when battery is outside vehicle. A spark near the battery may cause battery explosion. To reduce risk of a spark near battery:

- (a) Check polarity of battery posts. The positive (POS, P, +) battery post usually has a larger diameter than the negative (NEG, N, -) post.
- (b) Attach at least a 24 inch long #6 gauge (AWG) insulated battery cable to negative (NEG, N, -) battery post.
- (c) Connect positive (red) charger clip to positive (POS, P, +) battery post.
- (d) Position yourself and free end cable as far away as possible, then connect negative (black) charger clip to free end of cable.
- (e) Do not face battery when making final connection.
- (f) Connect charger A.C. supply cord to electric outlet, and
- (g) When disconnecting charger, always do so in reverse sequence of connecting procedure and break first connection while as far away from battery as practical.

### Polarity Control Circuit

YOUR Battery Charger is equipped with built-in Polarity Controller, to provide protection when charging a battery in Alternator Equipped vehicle.

In operation, before switching to ON position, connect the “RED” Positive Clamp and “BLACK” Negative Clamp to the corresponding battery posts. Next, plug charger cord into 120 volt 60 cycle single phase A.C. supply, and if Clamps are connected in the correct polarity the indicator lamp will light. To commence charging follow the steps outlined in the Charger Operating Instructions – set timer and adjust charging rate.

NOTE: The control circuit is energized from the battery and if properly connected, will start the charge automatically providing there is a minimum of 3 volts in the battery/ A 6 or 12 volt battery, of below 3 volts would be near the end of its usefulness. However, to charge such a battery (below 3 volts), make sure the charger clamps are properly connected – Red to Positive – Black to Negative. Now, to energize the control circuit, place charger switches to ON position and then depress the low battery momentary switch until the Charger starts to pick up. Read ammeter and adjust if necessary.

WARNING: Should there be any doubt as to the clamps not being in their correct polarity, disconnect battery cables in vehicle before starting the charge by use if the low battery switch or a blown Alternator may result.

#### REVERSE BATTERY CONNECTIONS

1. No harm to Alternator as Charger cannot be automatically energized to charge in reverse. Pilot lamp will not light.
2. Sparking may occur at the clamps, but without harm to the Charge as it is protected by an Automatic Reset Breaker.
3. Visual warning - meter needle will fluctuate.
4. Do not energize control circuit with low battery switch unless clamps connected in proper polarity.

## Battery Charger Performance

Should the charging rate of your battery charger be lower than the specified rate of charge – do not condemn the unit too hastily as there are several reasons for this condition.

Battery Chargers are manufactured so as to give their rated capacity only when all conditions are normal. Conditions that affect charger output are line voltage, battery condition and temperature.

Line voltage is very important, as should your line voltage be low, the output of the charger will drop accordingly. In most instances a charger is built for operation on 120 volts of A.C. current and maximum ampere rating is obtained at this voltage. It has been observed, there is a drop of 1 to 2 amperes for every 1 volt drop in line voltage.

By line voltage, we mean line voltage under load. The line must deliver 120 volts while the charger is operating. Very often, line voltage will test 120 volts with no load, but as the charger load is applied, the line voltage drops. This is particularly true if the circuit to which it is connected is overloaded with other equipment, or where a long undersized extension cord is being used.

Battery condition also plays a very important part in the output of a charger. Chargers are generally designed to deliver their maximum output on a fully discharged battery. If the battery is partially charged, you will not get maximum output, as the higher battery voltage oppose the charger voltage and a lower rate results. The output of a charger can vary considerably, depending on the state of the battery charged.

Cold or sulphated batteries have high internal resistance and the normal output voltage of the charger cannot force the full rated current into the battery, because of this high internal resistance. The rate therefore will be low.

Another cause of a low charging rate is a battery whose specific gravity of its electrolyte is down around 1.100 or below. This low sp. gr. will offer a high degree of resistance to the initial charging rate due to the fact that the conductivity of the electrolyte is very nearly that of water. As the battery in this condition is charged, however, the specific gravity of the battery will rise and the charging rate will rise as the conductivity increases.

Should you have the combination of a low line voltage and unfavorable battery condition, the output of any charger will be extremely low. This combination can reduce the output of an honestly rated charger as much as 60 to 75 percent.

It is therefore recommended that, if a charger has a low D.C. output, the unit be check as follows:

1. Discharge a normal, healthy battery to 1.120 or 1.130 sp. gr.
2. Connect the charger and start the charge.
3. Check line voltage while the charger is operating. It should be 120 volts to obtain maximum D.C. output.

If the test is conducted as above, with the battery reading 1.120 or 1.130 sp. gr., the temperature normal (70-80 degrees), having a full 120 volts of AC current while the charger is operating, the test results are conclusive. If the test is conducted in any other manner, they are not conclusive and no charger should be condemned as having low output when so tested.

## Replacement Parts List

### **MODEL 75 CANADIAN (602U24C1)**

<u>PART NO</u>	<u>DESCRIPTION</u>
602K241	Transformer
KBTPN75K24x2	Rectifier silicon bridge assy.
480-017	Silicon positive diode only – 2 required
480-018	Silicon negative diode only – 2 required
4720-0001	Surge suppressor
220-001	2 hour electric timer
240-501	Knob
602K5P	Positive charging lead with clamp
602K5N	Negative charging lead with clamp
602K5AP	Brass (pos) charging clamp only with insulators
602K5AN	Brass (neg) charging clamp only with insulators
602K5B	Charging clamp insulators
2500-2201	Charging clamp spring
350-003	Fan motor
260-005	Fan blade
510-103	Control tap switch
240-501	Knob
600-801	A.C. Cord
2500-2104	Rubber tired wheel 8”
2500-0318	Wheel retainer push nut
K110K17	Axle
295-019	Ammeter
2500-1502	D.C. cord bushing #7P
2500-1502	A.C. cord bushing
430-110	D.C. circuit breaker
KPC2275x2	Polarity kit assy.
510-301	Low battery switch
246-002	Neon indicator lamp amber
510-203	Rocker selector switch 6/24 volt

### **MODEL 76 CANADIAN (602U24CA1)**

In addition to the above parts the following parts are used on the Model 76:

<u>PART NO</u>	<u>DESCRIPTION</u>
510-203	AUTO-NORM-AUTO rocker switch
6FA	Transistorized voltage control – 12 volt
12FA	Transistorized voltage control – 24 volt

## **Warranty**

THIS CHARGER IS WARRANTED to be of proper material and first class workmanship throughout. Our liability shall be discharged by replacement or repair of any part found to have been proven defective under normal and proper use within 1(one) year - excepting the transformer and rectifier which are covered by a further 2 (two) years against complete failure. Labour for warranty work is for 1 (one) year only and will be paid for by Vulcan Electric Co. Limited only when Charger is returned to the factory or a service depot that may be designated.

TRANSPORTATION to and from factory or service depot is customer's responsibility.

WARRANTY DOES NOT COVER damages done in shipment. The carrier is responsible and claims should be filed against same. WARRANTY does not cover accident, abuse, neglect, dirty or corroded clamps, worn parts or damage due to normal service.

## **Garantie**

Le materiel et la main-d'oeuvre employes pour la fabrication de ce chargeur sont garantie pour etre de premiere qualite.

Notre responsabilite consiste a remplacer ou a reparer chaque piece qui aura ete trouvee defectueuse pendant la premiere annee en autant, que ce chargeur aura ete employe d'un facon normal et pour son propre usage.

Sauf pour le rectifier et transformer qui sera couvert par cette garantie pendant une autre (2) deux annee contre toutes defectuositees.

Le temps de main-d'oeuvre est garanti pour (1) une annee seulement an autant que le chargeur aura ete retourne par le client a Vulcan Electric Co. Limited ou a un depot de service autaurise. Le transport aller et retour est la responsabilite du client.

Cette garantie ne couvre pas les dommages causes dans le transport. La compagnie de transport est responsable et une plainte doit etre portee contre elle.

Cette garantie ne couvre pas les accidents, les abus, la negligence, la salete ou la corrosion sure les pinces, ni l'usure.