

# T ECHNICAL INFORMATION



PRODUCT

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**Models No.** ▶ DC1804

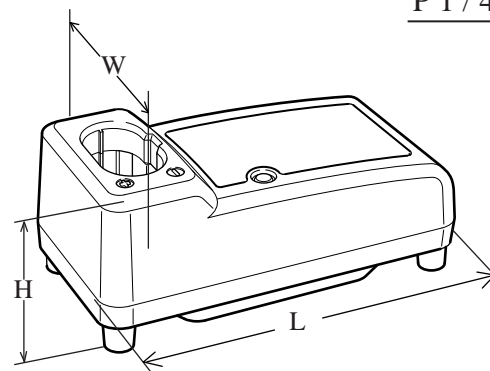
**Description** ▶ Charger

## CONCEPTION AND MAIN APPLICATIONS

Multi voltage charger DC1804 is the renewed model of DC1803.

Its features and benefits are

- (1) Approx. 10-20 minutes shorter charging time in comparing with DC1801. See "Comparison of products:" on page 3/4.
- (2) Maintenance (trickle) charging system keeps the full charged condition for 24 hours, even if the battery is left in this charger after finishing of charging process.
- (3) Downsized ; The dimensions have been reduced to those of DC1413.



Dimensions : mm ( " )	
Length ( L )	193 (7-5/8)
Width ( W )	92 (3-5/8)
Height ( H )	78 (3-1/16)

## ► Specification

Voltage (V)	Current (A)	Cycle (Hz)	Continuous Rating (W)		Max. Output(W)
			Input	Output	
110 - 120		50 / 60	75		
120		50 / 60	75		
220		50 / 60	75		
220 - 240		50 / 60	75		
230 - 240		50 / 60	75		

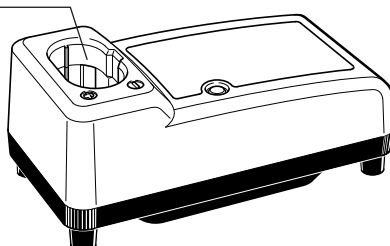
Output voltage DC : V		7.2	9.6	12	14.4	18
Output current : A		2.6				
Charging time : min.	for 1.3Ah Ni-Cd. battery	Approx. 30				
	for 2.0Ah Ni-Cd. battery	Approx. 45				
	for 2.2Ah Ni-MH. battery	Approx. 50				
	for 2.6Ah Ni-MH. battery	Approx. 60				
	for 3.0Ah Ni-MH. battery	Approx. 70				
Protection against electric shock	110V - 120V	grounding (earthing)				
	220V - 240V	double insulation				
Cord length : m (ft )		2.0 (6.6)				
Net weight		0.39 (0.86)				

< Note > The above figures about charging time may differ from condition to condition on batteries' temperature or room temperature.

## ► Features and benefits

Both of Ni-Cd and Ni-MH  
MAKITA batteries  
from 7.2V to 18V can be  
charged.  
See the list on page 2/3.

DC1804



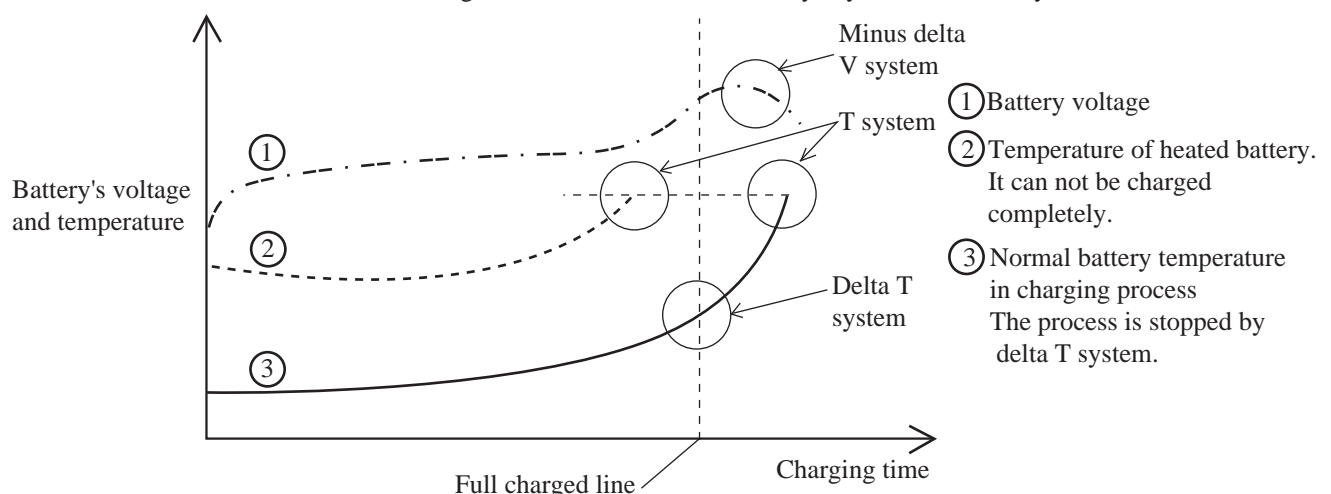
Compact and ergonomic design

Approx. 10 - 20 minutes shorter  
charging time in comparing  
with DC1801.  
See "Comparison of Product" on Page. 3/3.

The list of chargeable batteries and charging time								
			Charging time	Battery's voltage				
				7.2V	9.6V	12V	14.4V	18V
Battery type	Ni-Cd.	1.3Ah	Approx. 30 min.	Battery 7000	Battery 9000 Battery 9100 Battery 9120	Battery 1200 Battery 1210 Battery 1220	Battery 1420	
		2.0Ah	Approx. 45 min.	Battery 7002	Battery 9002 Battery 9102 Battery 9122	Battery 1202 Battery 1202A Battery 1222	Battery 1422	Battery 1822
	Ni-MH.	2.2Ah	Approx. 50 min.	Battery 7033	Battery 9033 Battery 9133	Battery 1233	Battery 1433	Battery 1833
		2.6Ah	Approx. 60 min.	—	Battery 9134	Battery 1234	Battery 1434	Battery 1834
		3.0Ah	Approx. 70 min.	—	Battery 9135 Battery 9135A	Battery 1235 Battery 1235A Battery 1235F	Battery 1435 Battery 1435F	Battery 1835 Battery 1835F

Ideal charging system in this class with the following features

- 1 Controlling by micro computer : The installed micro computer senses the full charged condition, and control the optimum way to stop the charging process, from the followings.
- A) Minus delta V system : Stops the charging process by sensing the drop of battery voltage.
  - B) Delta T system : Stops the charging process by sensing the change of battery's temperature. ( This system is applied to only the charger of 4 terminal-type.)
  - C) T system (Timer) : Stops the charging process by sensing the battery's temperature which is input in the micro computer in advance. For instance, the charging process is to be stopped at 45°C on 1.3Ah batteries, at 60°C on 1.7 - 2.0Ah batteries and 65°C on 2.2 - 3.0Ah batteries.
  - D) Timer system : Stops the charging process in 150 minutes after starting the charge, if the full charged condition is not be sensed by any of the above 3 systems.



- 2 Current transforming system : The built-in "High-Frequency Transformer" supplies the charging current as follows.
1. Converts alternative current into direct current.
  2. Re-converts the above direct current into alternative current of high frequency ( approx. 150 - 160 kHz ) at this stage.
  3. Reduces the voltage to the battery voltage.
- The "High-Frequency Transformer" is more light weighted and more compact in comparison with the existing transformers.
- 3 Constant output current (charging current)  
: By keeping the output current (Ampere) at an uniform level, it is possible to stop the charging process with sensing the drop in battery voltage exactly. And it is "Minus delta V system" mentioned above that senses the fully charged condition.
- 4 Trickle charging mode : Keeps on supplying very small charging current (approx. 40 mA) to the battery left on charger so that it is kept in fully charged condition.

Model No.		MAKITA		
Specifications		DC1804	DC1803	DC1801
Output voltage ; V		7.2 - 18	7.2 - 18	7.2 - 18
Charging time : min.	for 1.3 Ah battery	<b>Approx. 30</b>	Approx. 30	Approx. 40
	for 2.0 Ah battery	<b>Approx. 45</b>	Approx. 45	Approx. 50
	for 2.2 Ah battery	<b>Approx. 50</b>	Approx. 50	Approx. 65
	for 2.6 Ah battery	<b>Approx. 60</b>	Approx. 60	Approx. 75
	for 3.0 Ah battery	<b>Approx. 70</b>	Approx. 70	Approx. 90
Dimensions : mm ( " )	Length	<b>193 (7-5/8)</b>	201 (7-15/16)	201 (7-15/16)
	Width	<b>92 (3-5/8)</b>	105 (4-1/8)	105 (4-1/8)
	Height	<b>78 (3-1/16)</b>	78 (3-1/16)	78 (3-1/16)
Net weight : kg ( lbs)		<b>0.39 (0.86)</b>	0.48 (1.1)	0.48 (1.1)

► **Repair**

< 1 > The circuit board cannot be repaired, because the circuit itself is molded on the board .

It has to be replaced entirely with new one.

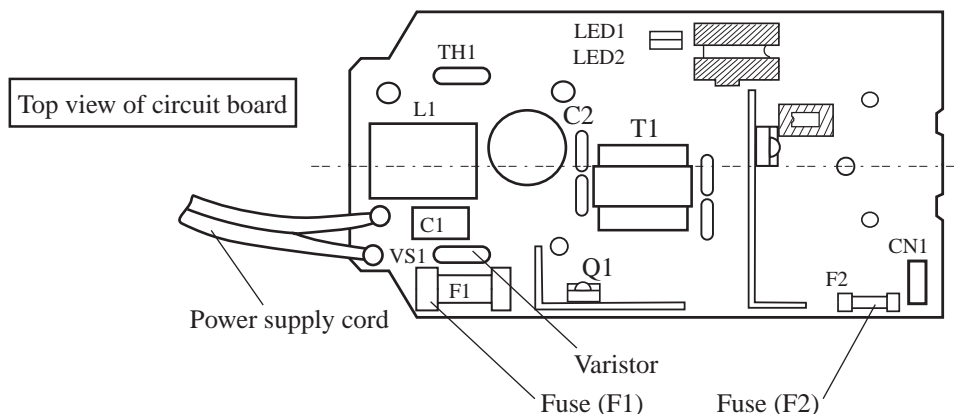
< 2 > In case of damaged varistor or fuse, they can be repaired according to the following procedure without replacing the circuit board.

(1) How to find broken varistor

- In case that the surface of varistor has broken or has become black, and fuse (F1) has been disconnected, the varistor has been damaged.
- Varistor can be damaged easily, if the charger is plugged in a double voltage of the rating one.
- In case of no damaged varistor but disconnected fuse (F1), the charger can be broken for other reason. The circuit board has to be replaced in this case.

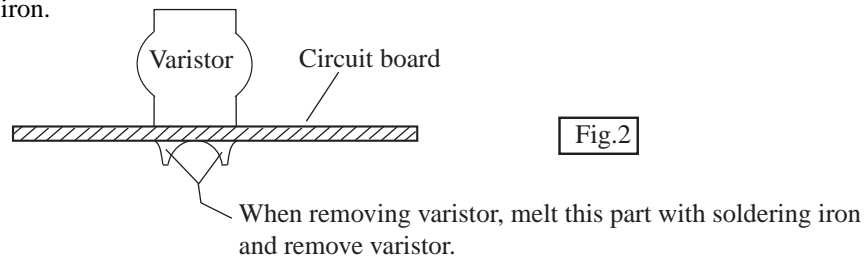
(2) How to find broken fuse (F2)

- If the charging light flashes alternately red and green, when the battery has been inserted into the charger connected with power source, fuse (F2) may be broken.
- If the easily conductive material other than battery would be connected with charger's terminals by mistake, fuse (F2) can be easily broken by short circuit in the charger.
- In case of no damaged fuse (F2) but charging light flashing alternately red and green, the charger can be broken for other reason. The circuit board has to be replaced in this case.

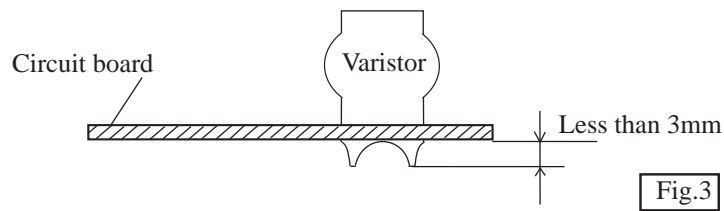


(3) Replacing damaged varistor

- a. Varistor is assembled on circuit board with solder. Remove it from circuit board with soldering iron.



- b. Assemble new varistor to the circuit board by soldering.  
c. Cut the surplus of varistor's wire with nipper.



(4) Replacing damaged fuse

- a. Fuse is assembled on circuit board with solder. Remove it from circuit board with soldering iron.  
b. Assemble new fuse to the circuit board by soldering.  
c. Cut the surplus of fuse's wire with nipper.

