



# PAG Freelancer

## All-Chemistry Charging System

### Instruction Manual

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## SECTION 1

### SAFETY

- 1.1 This manual contains important safety and operating instructions. Please read these fully and note all warnings before using the charger. Please follow all instructions and retain this manual for future reference.
- 1.2 Freelancer chargers are not intended for any use other than the charging of batteries as detailed in Section 2 - 'Specification'.
- 1.3 **IMPORTANT:** Use only on AC supplies 100-250V, 50/60Hz. Supply connection to the unit should be made using only the standard lead supplied with this equipment.
- 1.4 Protect the power cord from being walked on or pinched, particularly at plugs. Unplug this apparatus during lightning storms or when unused for long periods of time.
- 1.5 Ensure that the ventilation slots are not obstructed when in use, e.g. do not site the charger on a deep pile carpet, or cover when in use.
- 1.6 **WARNING:** Indoor use only. To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.
- 1.7 Although the charger is reverse polarity and short circuit protected, extreme care should always be taken not to short circuit the battery itself. Rechargeable batteries can deliver power at a very high rate, and short circuiting even a partially charged battery could result in a fire or personal injury. PAG supplies a range of connector leads for most charging requirements, and does not accept responsibility for any other form of charging connection.
- 1.8 Do not disassemble the charger. There are no user-serviceable parts inside. Incorrect re-assembly may result in a safety hazard.
- 1.9 Double Insulation: When servicing use only identical replacement parts.
- 1.10 Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as the supply cord or plug, when liquid has been spilled, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped. In this event you should seek advice from your nearest PAG Dealer, or direct from PAG Ltd., London, by telephoning +44 (0)20 8543 3131.

**SECTION 2****SPECIFICATION**

- 2.1 Model:**  
Model No. 9613:  
  - ▶ Two sequential charging channels.
  - ▶ Two PAGlok connectors.
- 2.2 Range of Batteries Charged:**  
  - ▶ Nickel-Cadmium batteries having nominal voltages of between 12V and 14.4V, and nominal capacities of between 1.5Ah and 10Ah.
  - ▶ Nickel-Metal Hydride batteries of reputable manufacture having nominal voltages of between 12V and 14.4V, and nominal capacities of between 1.5Ah and 10Ah.
  - ▶ PAG Lithium-Ion batteries.
- 2.3 Battery Connections:**  
PAGlok patented professional locking connector compatible with all PAGlok batteries. Incorporates self-cleaning military-type beryllium-copper leaf contacts.
- 2.4 Main Charge Program:**  
  - ▶ Nominal 1.5A main charge program.
  - ▶ Li-Ion voltage-charge program (only available with PAG Li-Ion batteries). PAG Li-Ion batteries automatically control their own charge regime.
- 2.6 Recovery Charge:**  
This special program will automatically recover a PAG Li-Ion battery where the output has been shut down. To select the Recovery Charge program, disconnect the charger from the supply, connect the battery, then insert the mains lead and power the charger up. The Recovery Charge program will run automatically from power up.
- 2.7 Ancillary Charging Programs:**  
The following programs may be automatically entered after charging:  
  - ▶ Pre-Charge
  - ▶ Balancing Charge.
  - ▶ Self-adjusting Maintenance Charge (not applied to PAG Li-Ion batteries).
- 2.8 Self Test Program:**  
The internal microcomputer constantly monitors the battery under charge or process as well as the operation of the charger's own functions which will be shut down to a safe condition should any of the tests fail.
- 2.9 Mains Input:**  
100-139V or 140-250V ~ autoselected. Frequency 50-60 Hz. Maximum power consumption 50W.

- 2.10 Output Protection:**  
Charger protected against short circuit, open circuit, and excess battery voltage.
- 2.11 AC Mains Failure Protection:**  
Should mains failure occur during a charging program, or whilst the charger is connected, it will shut down to a safe condition.
- 2.12 User Interface**  
Comprehensive LED indication of battery and charger status. The charger is fully automatic in operation and no user controls are provided.
- 2.13 Safety:**  
Designed to comply with electrical safety standard BS EN 60065 and UL6500. NOTE: U.K. mains leads are fitted with a 1" fuse to BS1362 rated 5A as standard.
- 2.14 European Union Directives:**  
Complies with the following EU Directives:  
  - ▶ EMC Directive 89/336/EU.
  - ▶ Low Voltage Directive 73/23/EU.
- 2.15 Operating Temperature Range:**  
0°C to 40°C (+32°F to +104°F).
- 2.16 Overall Dimensions:**  
133mm high x 112mm wide x 53mm deep.  
(5.25" x 4.4" x 2.0" approx.).
- 2.17 Weight:**  
434g (1.0lb approx.).
- 2.18 Typical Battery Charging Times:**

Battery Capacity	Charge Time
2Ah	1hr 20mins
4Ah	2hr 40mins
5Ah	3hr 20mins
7Ah	5hr
PAG NMH60	3hr 15mins
PAG L95	5hr 40mins

*These times are approximate only, and assume the battery is fully discharged. Charging times will be less if the battery is already partially charged.*

*NOTE: PAG intelligent batteries communicate with the charger, and automatically optimise the charging output to enhance performance and safety.*

## SECTION 3





### INSTALLATION

- 3.1 PAG Freelancer chargers are fitted with a mains input socket conforming to CEE22 (IEC socket). Mains supply connection to the charger should only be made using the standard lead supplied with this equipment.
- 3.2 PAG Freelancer chargers have been designed for use on AC mains supplies world-wide, and automatically accept supplies in the range 100-139V or 140-250V ~ autoselected. Mains supply frequency must be in the range 50-60 Hz.
- 3.3 PAG Freelancer chargers may be operated from a vehicle 12V battery using the PAG Vehicle Battery-Power Converter, Model No. 9774.
- 3.4 **PAG TECHNICAL SALES AND INFORMATION DESK:**  
For further information, contact the PAG Technical Sales and Information Desk by telephoning +44 (0)20 8543 3131 or contact your nearest PAG Authorised Service Centre. Alternatively, visit the PAG website at [www.paguk.com](http://www.paguk.com)

## SECTION 4

### OPERATING INSTRUCTIONS

- 4.1 **IMPORTANT:** Note Section 4.10, Supply Failure. PAG Freelancer chargers may be disconnected from the supply at any time in complete safety and without damage to the charger or any batteries connected.
- 4.2 Connect the charger to a suitable supply using the standard lead. The blue mains LED will illuminate.
- 4.3 On power-up the charger will automatically run a self test program and then the Recovery Charge program. Any batteries that are connected to the charger but which do not require the Recovery Charge program will be charged as normal.
- 4.4 With no batteries connected, battery status indicators will not be lit ('absent' indication).
- 4.5 The first battery to be connected, irrespective of the channel chosen, will be the first battery to be charged.

RED	Constant	=		WAITING
YELLOW	Flashing	=		CHARGING
GREEN	Constant	=		READY
RED	Flashing	=		FAULTY

- 4.6 Charging will automatically commence and the battery status indicator will blink YELLOW ('charging' indication) to show that the charging program is being executed. The battery status indicator will light RED ('waiting' indication) on the other channel if it has a battery connected.
- 4.7 The battery status indicator will light GREEN ('ready' indication) when a battery has received as much charge as it can safely accept.
- 4.8 The charger will now select the battery connected to the other channel, and the charging process will be repeated.
- 4.9 When charging of batteries is complete, the PAG Freelancer will apply a maintenance charge to them. Batteries may be removed, and others connected at any time, without affecting the operation of the charger.

- 4.10 The charger will continue to monitor the status of all charging channels. It will not attempt to charge batteries which are ready or faulty. If a battery is now disconnected, the battery status will revert to the absent state. If a new battery is connected to the free channel, the status will change to waiting and the charging sequence will be initiated automatically. The order in which batteries are connected is therefore immaterial; the charger will ensure that both batteries are charged in due course.
- 4.11 If the charger detects a severely faulty battery while the charging program is running, the battery status indicator will flash RED ('faulty' indication). This could be caused by one of several conditions, such as a very old or damaged battery, a short circuit battery, or an excessively high or low voltage battery.
- 4.12 The charger cannot tell the difference between a disconnected battery and one that is open-circuit. If the charger indicates that a battery is disconnected even though it is plugged in, check the battery fuse, adaptor and lead before suspecting the charger of a fault.
- 4.13 The charger will not recognise the connection of a battery which has a voltage substantially outside of its range.
- 4.14 If a PAG Li-Ion or NiMH60 battery is too hot or too cold to charge, the waiting indicator will be lit and the battery will automatically be charged when it comes within the acceptable temperature range.
- 4.15 If the internal protection circuit of a PAG Li-Ion battery should turn off for any reason, the battery display will not operate, and there will be no voltage at the battery terminals. The PAG Freelancer incorporates a Recovery Charge program which will automatically turn the protection circuit back on again. To select the Recovery Charge program, disconnect the charger from the supply, connect the battery, then insert the mains lead and power the charger up. The Recovery Charge program will run automatically.
- 4.16 If the charger should become too hot during use the microcomputer will shut the charger down to a safe condition and this will be shown by the battery status indicators cycling with a continuous colour change (see Section 5.4 'Servicing and Repairs' Page 8).
- 4.17 If the AC mains power fails during operation, the charger will shut down safely; no damage will occur to either the charger or the batteries. When the mains power is restored the charger will default to the 'Recovery' charge program.

## SECTION 5

### SERVICING & REPAIRS

- 5.1 **Warning:** To reduce the risk of electric shock, do not attempt any servicing or repairs unless you are qualified to do so. Refer all servicing or repairs to qualified servicing personnel. The Freelancer contains advanced electronics that do not require periodic maintenance. Consequently there are no user serviceable parts inside.
- 5.2 Qualified electronics engineers who wish to gain access to internal assemblies should note that parts of the power circuit retain a high voltage even after the mains supply has been disconnected. Wait for a period of five minutes following disconnection before commencing disassembly and be aware of charged capacitors.
- 5.3 When the charger is correctly connected to a mains supply and the display is not functioning, it may be that a supply fuse has become open circuit. Equipment supplied for use in the UK is supplied with a standard UK mains cordset, complete with a moulded, fused plug. If this fuse has become open circuit it should be replaced by another of the correct rating (see 'Specification' Section 2.13). **USE ONLY A FUSE OF THE CORRECT RATING.** If the replacement of the fuse fails to correct the above symptoms, do not attempt further fuse replacement. It is likely that a fault has developed. Seek advice from your nearest PAG dealer or direct from PAG Ltd., London, by telephoning +44 (0) 20 8543 3131.
- 5.4 PAG Freelancer chargers feature a fail-safe shutdown mode. In the unlikely event of an internal malfunction, the battery status indicators will cycle with a continuous colour change and the blue mains indicator will blink a number of times to show that the charger is in shutdown mode. This could be the result of any number of undesirable situations from which the system is protecting itself, such as the obstruction of ventilation slots causing inadequate cooling, or the microcomputer's detection of an internal fault. In these cases the charger should be disconnected from the supply, any obstruction of the air vent system removed, and the unit allowed to cool before reconnecting to the supply. Should the charger re-enter the fail-safe shutdown mode, more detailed investigation is required. The mains indicator will blink a number of times (the pattern is repeated continuously). Make a note of the number of blinks in the sequence (the 'error message'), and seek advice from your nearest PAG dealer or direct from PAG Ltd., London.
- 5.5 If the blue mains indicator flashes on/off rapidly (twice per second) but the battery status indicators are functioning normally and the charger appears to be operating correctly in every other respect, then it is likely that the charger requires re-calibrating. In this event it should be serviced by your nearest PAG dealer or by PAG Ltd., London.

- 5.6 Unqualified personnel should not attempt further investigation (see paragraph 5.1, Page 8). Any such interference would invalidate the guarantee and invariably cause more damage than the original fault.

## SECTION 6

### WARRANTY

- 6.1 Notwithstanding any provision of any agreement the following Warranty is exclusive: PAG Limited warrants each Freelancer Charger it manufactures to be free of defects in material and workmanship under use and service for TWO YEARS from the date of purchase. This warranty extends only to the original purchaser. This warranty shall not apply to fuses or any product or parts which have been subject to misuse, neglect, accident or abnormal conditions of operation.
- 6.2 In the event of failure of a product covered by this warranty, PAG Limited will repair and calibrate equipment returned to an authorised Service Facility within the period of the warranty, provided the warrantor's examination discloses to its satisfaction the product was defective. The warrantor may, at its option, replace the product in lieu of repair. With regard to any equipment returned within this period, said repairs or replacements will be made without charge. If the failure has been caused by misuse, neglect, accident or abnormal conditions of operation, repairs will be billed at a nominal cost. In such a case, an estimate will be submitted before work is started, if requested.
- 6.3 The foregoing Warranty is in lieu of all other warranties, express or implied, including but not limited to any implied warranty or merchantability, fitness or adequacy for any particular purpose or use. PAG Limited shall not be liable for any special, incidental, or consequential damages, whether in contract, tort, or otherwise.