TC2 LI-ION
CAP LAMP

MAINTENANCE AND
TROUBLE SHOOTING NOTES

FIRST NATIONAL BATTERY
A DIVISION OF METINDUSTRIAL PTY LTD
REG. 1949/031259/07

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The new FNB TC2 Lithium Cap Lamps are state of the art robust equipment designed to work in the toughest underground mining / tunneling conditions but also suited for many different applications.

The power source utilizes a Li-ion maintenance free battery, with enhanced features such as Intrinsic Safety, Over-charge, Over-discharge and Short-circuit protection.

The headpiece features a hi-tech LED as a light source that operates at full brilliance with the brightest light during shift.

The Lamps are fully waterproof and each lamp tested for water ingress before shipping. Lamps are 30% smaller, 60% lighter and lasts 30% longer because of the approximate 50000 hours life span of the LED. Battery requires only 10 hours of charge to reach fully charged state.

**PRODUCT DESCRIPTION**

**PRODUCT TECHNICAL SPECIFICATION**

<table>
<thead>
<tr>
<th>FEATURE</th>
<th>UNIT</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Voltage</td>
<td>Volt</td>
<td>3.7</td>
</tr>
<tr>
<td>Rated Capacity</td>
<td>Amp hour</td>
<td>7.0</td>
</tr>
<tr>
<td>Operating Times, Light Only, Fully Charged Battery</td>
<td>Hours</td>
<td>24</td>
</tr>
<tr>
<td>• Main Light Only</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Auxiliary Light Only</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak light Output Levels</td>
<td>Candela</td>
<td>&gt; 6 000</td>
</tr>
<tr>
<td>• Main Light</td>
<td>Candela</td>
<td></td>
</tr>
<tr>
<td>• Auxiliary Light</td>
<td>mA</td>
<td>250</td>
</tr>
<tr>
<td>Current draw</td>
<td>mA</td>
<td>120</td>
</tr>
<tr>
<td>Battery Design Life @ 25°C</td>
<td>Cycles</td>
<td>800 – 1 000</td>
</tr>
<tr>
<td>Battery Recharge Time (from 90% discharged)</td>
<td>Hours</td>
<td>10 max</td>
</tr>
<tr>
<td>LED Design Life</td>
<td>Hours</td>
<td>50 000</td>
</tr>
<tr>
<td>Operating Temperature Range</td>
<td>Celsius</td>
<td>0° - 50°</td>
</tr>
<tr>
<td>Protection</td>
<td>Ex ia I/IIC T4</td>
<td></td>
</tr>
<tr>
<td>Model TC2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lamp Weights (Excluding Auxiliary Devices)</td>
<td>gm.</td>
<td>690</td>
</tr>
<tr>
<td>Battery Dimensions:</td>
<td>mm</td>
<td></td>
</tr>
<tr>
<td>• Length</td>
<td>110</td>
<td></td>
</tr>
<tr>
<td>• Width</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td>• Height</td>
<td>108</td>
<td></td>
</tr>
<tr>
<td>Head Piece and Cable Weight</td>
<td>gm.</td>
<td>305</td>
</tr>
<tr>
<td>Cable Length</td>
<td>mm</td>
<td>1 600</td>
</tr>
</tbody>
</table>
CAPLAMP CONSTRUCTION

Cap lamp assembly consists of the following:

- I.S. Battery Assembly
- LED Headpiece Assembly
- Cable

CAPLAMP OPERATION

The On / Off / Auxiliary switch of the cap lamp is located on the side of the headpiece, and will be activated by turning the knob. Switch can rotate a full 360° and will activate the main LED / off / Auxiliary LED.

IMPORTANT NOTE:

The battery is supplied at 65% charge to comply with shipping regulations. Before using lamp for the first time, lamp room attendant must fully charge unit before it is supplied to a miner going underground.

REPAIR AND SERVICE

- The battery does not require any maintenance except to be kept clean and to be recharged.
- If the battery is found to be faulty within the 6 months warranty period, return to FNB for warranty claim.
- If battery assembly needs cleaning, use a damp cloth and wipe – do not submerge.

WASTE DISPOSAL

Disposal of redundant batteries must be done in accordance to the mandatory laws of waste disposal to prevent environmental pollution – must be returned to First National Battery.

BATTERY CHARGING

The TC2 batteries can be charged on the existing charging racks. There are multi and single point chargers available from FNB on request. All batteries must be charged after each period of an 8 hour discharge shift in the following manner:

1. Fit headpiece to charge key on charging rack and rotate clockwise until locked in position ready for charge.
2. Once charger is fully loaded with batteries start charging cycle.
3. Allow batteries to remain on charge until it is fully recharged.
1. It is recommended that a quantity headpieces complete with cables be assembled and kept ready to be fitted to replace lamps which are handed in as faulty. The advantages of this system are:
   a. Minimal time is lost in returning the lamps to their charging positions.
   b. This method ensures that the replacement headpiece and cable has been completely overhauled and should function as new.
   c. The repair staff has sufficient time available to overhaul the faulty headpiece and cable for the following day/night shift.

2. The lamp room supervisor should examine a percentage of repaired lamps daily to ensure repairs are being done correctly.

3. Visually inspect all lamps after these have been placed on charge and check for loose or damaged outer covers, damaged headpieces or cables and unsealed headpieces. Also do random checks to ensure that the headpieces have been correctly inserted for correct charging.

4. For good accumulator life and recharge performance, lamp room to lamp room working shifts should not exceed 20 Hours using 7Ah Lithium battery.

5. It is important to record all repairs done and the date of these repairs to keep a control on the quality of the repair work, to eliminate the misuse of lamps by the users, and to prevent the loss of certain spares.
The first time a user switches on the lamp at the start of the shift, the lamp will signal that it has been fully charged, by automatically flashing between high and low beam for 60 seconds. To cancel the flashing earlier, the user simply switches it off and on again. If it does not flash this way, the battery is not fully charged and may not last the full shift. This must be reported to the lamp room attendant who must determine the cause and fix the problem:

- Check that the charge point voltage is correct
- Test the charge point with another lamp to confirm it is charging correctly
- Check for loose connections on the battery and the head piece of the lamp.

Users must pay attention when switching on, as the lamp will only give this signal once. Any lamps put back on charge with the light still switched on, will automatically switch off when charge commences. When removed from charge the next day, the lamp will automatically switch on again without flashing. To confirm that it has been fully charged, it must be switched off and on again. Flashing will then operate as normal.

These batteries do not require cycling for hospitalisation purposes. However, as all cycling batteries lose capacity over their service life, it is recommended that a monthly burn down be done to ensure the lamps’ burning times remain above that required for the shift duty. Replace the batteries of any lamps that do not meet this burning time, with new batteries that have been fully charged.

It is important to register the serial number of the new battery fitted to the lamp, as this is required for intrinsically safe devices.

When changing batteries, take care to reconnect correctly, as the LED light and control circuits are polarity sensitive.

The TC2 battery is fitted with a 7.0Ah lithium-Ion cell. Damage to the inner lid covering the battery compartment will render the battery unsafe for service. The battery has a compartment available for gas sensing, communication and anti-vehicle collision warning equipment.
Lamp & battery storage

All batteries and lamps that are not put into immediate use must be given a 12 hour charge within two weeks after receipt and thereafter at 3 to 4 monthly intervals until used, when they should again be given a 12 hour charge before being put into service. For best performance, store at or below 25°C Celsius in a clean, dry environment.

For maximum life, lithium ion batteries should be stored in a partial state of charge. This is achieved by the safety circuit within the battery remaining operative, drawing a small current at all times. Conversely, this also limits the storage times between full recharges to a theoretical maximum of 300 days at 25°C. At higher temperatures and in practice, we recommend recharge no less frequent than every three to four months.

The graph below is useful to check the state of charge of batteries in storage. Never allow a battery to drop below a 25% state of charge whilst in storage.

![Battery Open-Circuit Voltage Vs. SOC](image)

Burn Down Procedure

The lamp room attendant is to perform a minimum of 8 hours burn down and monitor if the light flashes within this time frame.

- If the light starts flashing, the battery must be replaced.
- If not, the battery is still good for shift duty.
**Important Facts to remember**

- A lamp that has switched off automatically on “low battery”, can only be switched back on by connecting it to a charger with a Volt output of 4.95 – 5.05V.
- A lamp that has switched off automatically on “low battery”, must also be placed back on charge within 21 days, or the battery will be rendered unusable.
- A lamp that is not used for 7 days, will go into “sleep mode” to reduce the quiescent current draw. The lamp can then only be “awakened” by connecting it to a charger with a Volt output of 4.95 – 5.05V.
- If a battery is allowed to discharge down to 2.5 Volts open circuit, the safety circuit will drop out and disconnect it for good, thus rendering the battery useless.
- Spent Lithium ion batteries must be disposed of in a certified facility in accordance with ISO14000.

**Headpiece Maintenance**

The headpiece requires specialised tools for opening and repair work. Attempts to open it by any other means may result in irreparable damage to parts thereof. Refer to the section covering tools below.

This lamp is fitted with an Impact Ring which is available in a number of different colours. The standard colour of issue is blue. It can be changed without affecting the integrity of the head piece. This is done by hand by unhooking the Impact Ring from the locating groove, and pulling it from headpiece as shown below. The impact ring is not necessary for the operation of the lamp and using a lamp without an impact ring is permissible.

**Impact Ring Location Groove**

**Removing the Impact Ring**

Note: The light emitting diode (LED) is sensitive to moisture and contamination, and the optic can be irreparably damaged by scratching, abrasion or the use of solvents. Ensure your hands and working area are clean when working inside the head piece and if needed, wipe only with a clean dry cloth.
Removing the Lens Ring

NB! Do not attempt to tighten the lens ring by any means other than the specialized tool P/N 105260 available from FNB. Failing to do so may damage the lens ring, prevent proper sealing of the lens surface to the optic gasket and render the headpiece susceptible to ingress of water and contaminants.

NB – Make sure when replacing the lens ring to align the thread of the ring to the thread of the headpiece.

Before starting to re-assemble it, make sure the head piece is completely free of moisture inside. Ensure the cable clamp is at all times in position and the cable fully clamped over the outer sheath. A loosely clamped cable will work loose and put strain on the terminals, rendering the lamp unreliable.

When reconnecting the cable leads, take care to reconnect correctly, as the LED light is polarity sensitive.

When re fitting the optic assembly, insert the two wings of the optic holder into the slots provided in the head piece moulding to prevent the optic from rotating when tightening the lens ring.
Optic locating wings to slide down slots in headpiece moulding

For the same reasons, ensure the cable securing seal and bush, as well as the switch knob O ring seal are properly fitted and maintained using the correct tools. Ensure all O-rings have been lubricated using a light coating of ONLY Swift 500-H paste before assembly.

HEAD PIECE MAINTENANCE CHECK LIST

<table>
<thead>
<tr>
<th>Item</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the LED fail to illuminate with power applied?</td>
<td>Y</td>
</tr>
<tr>
<td>Is there evidence of moisture in the head piece?</td>
<td>N</td>
</tr>
<tr>
<td>Is head piece moulding cracked or damaged?</td>
<td>Y</td>
</tr>
<tr>
<td>Is lens ring cracked or damaged?</td>
<td>Y</td>
</tr>
<tr>
<td>Is Optic seal worn or damaged</td>
<td>Y</td>
</tr>
<tr>
<td>Is switch knob O ring worn or damaged</td>
<td>Y</td>
</tr>
<tr>
<td>Is cable securing bush worn or damaged?</td>
<td>Y</td>
</tr>
<tr>
<td>Is Cable O ring seal worn or damaged?</td>
<td>Y</td>
</tr>
<tr>
<td>Is the Impact ring worn or damaged?</td>
<td>Y</td>
</tr>
<tr>
<td>Is the lens ring worn, cracked or damaged?</td>
<td>Y</td>
</tr>
<tr>
<td>Optic sealing gasket worn or damaged?</td>
<td>Y</td>
</tr>
<tr>
<td>Optic damaged or badly scratched?</td>
<td>Y</td>
</tr>
<tr>
<td>Glass lens chipped or scratched?</td>
<td>Y</td>
</tr>
<tr>
<td>Cap hook worn or damaged?</td>
<td>Y</td>
</tr>
<tr>
<td>Is the lock contact worn or damaged?</td>
<td>Y</td>
</tr>
<tr>
<td>Is the lock barrel worn or damaged?</td>
<td>Y</td>
</tr>
<tr>
<td>Is the lock spring worn or damaged?</td>
<td>Y</td>
</tr>
<tr>
<td>Worn or corroded switch connection?</td>
<td>Y</td>
</tr>
<tr>
<td>Worn or corroded switch blade?</td>
<td>Y</td>
</tr>
<tr>
<td>Worn or damaged switch knob?</td>
<td>Y</td>
</tr>
<tr>
<td>Worn or damaged O ring?</td>
<td>Y</td>
</tr>
</tbody>
</table>

Note:

Whenever O-ring seal at cable entry into the headpiece were disturbed, cable must be moved approx. 5mm inward, to provide a new seal surface on the cable for the O-ring.
Cable Maintenance

CABLE MAINTENANCE CHECK LIST

<table>
<thead>
<tr>
<th>Condition</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable securing bush worn or damaged?</td>
<td>Y Replace bush</td>
</tr>
<tr>
<td>Cable O ring (Headpiece) worn or damaged?</td>
<td>Y Replace O ring seal</td>
</tr>
<tr>
<td>Cable outer sheath damaged?</td>
<td>Y Replace cable</td>
</tr>
<tr>
<td>Cable length &gt; safe minimum?</td>
<td>N Replace cable</td>
</tr>
<tr>
<td>Is the cable SANS 1438 marked?</td>
<td>N Replace with SANS marked cable</td>
</tr>
<tr>
<td>Do all the cable leads test* for continuity?</td>
<td>N Replace cable</td>
</tr>
<tr>
<td>Faulty insulation on cable ends?</td>
<td>Y Repair if long enough, replace cable if not</td>
</tr>
<tr>
<td>Corroded terminal lugs?</td>
<td>Y Repair if long enough, replace cable if not</td>
</tr>
<tr>
<td>Cable clamp kit fitted &amp; in good working order</td>
<td>N Fit new cable clamp kit</td>
</tr>
</tbody>
</table>

*Note: Test for continuity (ohm) using multi-meter
Replace cable clamp kit whenever cable is replaced.
Cable clamp kit screws should be tightened until there is no gap between the two halves of the clamp, taking care not to over tighten

Outer Cover Maintenance

OUTER COVER MAINTENANCE CHECK LIST

<table>
<thead>
<tr>
<th>Condition</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outer cover worn, cracked or damaged?</td>
<td>Y Replace outer cover</td>
</tr>
<tr>
<td>Cable grommet worn, cracked or damaged?</td>
<td>Y Replace cable grommet</td>
</tr>
<tr>
<td>Outer cover retaining screw in good order?</td>
<td>N Replace retaining screw</td>
</tr>
</tbody>
</table>

Tools required for maintaining the FNB cap lamp

It is important that the tools specially designed for this lamp type are used during its maintenance and repair work. This will ensure the lamps remain safe and can be repaired over a long period without any loss in operational performance. Contact your nearest FNB branch or distributor, for stock of these tools.
<table>
<thead>
<tr>
<th>Description</th>
<th>Tool Code</th>
<th>Associated Part</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Maintenance Tool Kit</td>
<td>105283</td>
<td>All Tooling inclusive of case</td>
</tr>
<tr>
<td>2) Tool Case Only</td>
<td>105278</td>
<td>General use</td>
</tr>
<tr>
<td>3) Flat Nose Pliers – 115mm</td>
<td>102033</td>
<td>General use</td>
</tr>
<tr>
<td>4) Long Nose Pliers – 115mm</td>
<td>102032</td>
<td>General use</td>
</tr>
<tr>
<td>5) Side Cutter – 115mm</td>
<td>102034</td>
<td>General use</td>
</tr>
<tr>
<td>6) Wire Stripper</td>
<td>105281</td>
<td>105207</td>
</tr>
<tr>
<td>7) Lens Ring Key</td>
<td>105260</td>
<td>105203</td>
</tr>
<tr>
<td>8) Lock Contact Screw Driver</td>
<td>105264</td>
<td>105214</td>
</tr>
<tr>
<td>9) Outer Cover Retaining Screw Tool</td>
<td>105268</td>
<td>105246</td>
</tr>
<tr>
<td>10) Cap Hook Screw Tool</td>
<td>105263</td>
<td>105226</td>
</tr>
<tr>
<td>11) Cable Securing Bush Spanner</td>
<td>105261</td>
<td>105220</td>
</tr>
<tr>
<td>12) Terminal Nut Driver</td>
<td>105269</td>
<td>105249</td>
</tr>
<tr>
<td>13) Charge Contact Driver</td>
<td>105262</td>
<td>105210</td>
</tr>
<tr>
<td>14) Switch Blade Grub Screw Driver</td>
<td>105266</td>
<td>105219</td>
</tr>
<tr>
<td>15) Contact Screw Assembly Tool</td>
<td>105282</td>
<td>105217 / 105272</td>
</tr>
<tr>
<td>16) 6mm Combination Offset Spanner</td>
<td>105280</td>
<td>General use</td>
</tr>
<tr>
<td>17) USB Memory Stick</td>
<td>105280</td>
<td>Documents</td>
</tr>
<tr>
<td>18) Stanley Knife</td>
<td>105279</td>
<td>General use</td>
</tr>
</tbody>
</table>
Local Toolbox Kit:

<table>
<thead>
<tr>
<th>Description</th>
<th>Tool Code</th>
<th>Associated Part</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Maintenance Tool Kit</td>
<td>105283L</td>
<td>All tooling incl. of case</td>
</tr>
<tr>
<td>2) Toolbox Only</td>
<td>105278L</td>
<td>General Use</td>
</tr>
<tr>
<td>3) ¼” Driver Handle</td>
<td>105262L</td>
<td></td>
</tr>
<tr>
<td>4) ¼” Terminal Nut Socket</td>
<td>105269LA</td>
<td>105210</td>
</tr>
<tr>
<td>5) ¼” Socket Adaptor</td>
<td>105269LB</td>
<td>105249</td>
</tr>
<tr>
<td>6) ¼” Cap Hook Screw Bit</td>
<td>105263L</td>
<td>105226</td>
</tr>
<tr>
<td>7) ¼” Outer Cover Screw Bit</td>
<td>105268L</td>
<td>105246</td>
</tr>
<tr>
<td>8) ¼” Contact Screw Bit</td>
<td>105282L</td>
<td>105217 / 105272</td>
</tr>
<tr>
<td>9) ¼” Lock Contact Screw Bit</td>
<td>105264L</td>
<td>105214</td>
</tr>
<tr>
<td>10) Grub Screw Allen Key</td>
<td>105266L</td>
<td>105219</td>
</tr>
<tr>
<td>11) TC Lens Ring Key</td>
<td>105260L</td>
<td>105203</td>
</tr>
<tr>
<td>12) Cable Bush Combo Spanner</td>
<td>102016L</td>
<td>105220</td>
</tr>
<tr>
<td>13) 6mm A/F Combination Spanner</td>
<td>105280L</td>
<td>105212</td>
</tr>
</tbody>
</table>
TC2 HEADPIECE MAINTENANCE

Is Headpiece damaged
NO

Is the protective bezel ring fitted
YES

Worn lock contact
YES

Worn lock barrel
YES

Worn lock spring
YES

Worn/corroded switch connections
NO

Worn/corroded switch blade
YES

Worn/damaged switch knob
YES

Worn/damaged positive charging contact
YES

Is "O" ring damaged or missing
NO

Damaged lens ring
YES

Damaged or worn LED sealing gasket
YES

Scratched/damaged LED Optic
NO

Chipped or scratched glass lens
NO

Damaged or worn cap hook
YES

Replace

Fit Bezel Ring

Replace

Replace

Replace or install "O" ring

Replace

Replace

Replace

Replace

Replace

Replace: For change out of LED – Refer WI-27-65

Replace
### CABLE MAINTENANCE

Is the cable securing bush damaged
- **YES** → Replace
- **NO** → Next step

Is the cable “O” ring (headpiece) damaged or missing
- **YES** → Replace / install “O” ring
- **NO** → Next step

Is the cable outer sheath damaged
- **YES** → Replace Cable
- **NO** → Next step

Is the cable the correct length
- **NO** → Replace
- **YES** → Next step

Is the cable to SANS 1438 standard
- **NO** → Replace
- **YES** → Next step

Does the cable test for *continuity
- **NO** → Replace
- **YES** → Next step

Faulty insulation on cable ends
- **NO** → Next step
- **YES** → Replace

Corroded terminal lugs
- **NO** → Next step
- **YES** → Replace terminal lugs

Is sleeving fitted over cable ends
- **NO** → Next step
- **YES** → Fit sleeving on all cable ends

* Note: test for continuity (ohm) using multimeter

### OUTER COVER MAINTENANCE

Is the cover worn or damaged
- **YES** → Replace – be cautious not to over tighten cover retaining screw

Is the cable grommet damaged
- **YES** → Replace

Is the cable clamp fitted and in good order
- **NO** → Replace or fit new clamp

Is the outer cover retaining screw in good order
- **NO** → Replace
TC 2 ACCUMULATOR HOSPITALISATION PROCEDURE

1. Is accumulator physically damaged?
   - YES: If damaged, No Warranty
   - NO: Continue

2. Is battery voltage to spec? – See Note 1
   - YES: Continue
   - NO: Connect a good headpiece to the Accumulator – See Note 2

3. Connect a good headpiece to the Accumulator – See Note 2

4. Accumulators: Charge at 5.0 V for min 8 hours and max 12 hours

5. Discharge batteries using LED headpiece for 12 hours

6. Final voltage below 3.7V
   - Final voltage above 3.7V
   - Final voltage above 4.2V

7. Repeat steps 4, 5, 6

8. Voltage above 4.2V return to service
   - Voltage below 3.7V
   - Voltage above 4.2V

Notes:
1. Measure battery voltage – check voltage over LED (Pos) and GND (Neg) terminals = 3.7V
2. When checking voltages, allow a rest period of at least 2 minutes before taking voltage readings.
3. When accumulators are being hospitalized, connect the charge cable crocodile clip from positive charge terminal to positive connection plate & Negative GDN terminal to the charge key on the charger as follows:

Dispose of as per mandatory laws of waste disposal to prevent environmental pollution.

If out of warranty period

Replace
# Maintenance for Stainless Steel Charging Frame

**Is the frame securely fastened down?**
- **NO**: Bolt down securely

**Are charging keys:**
- **Worn**: Replace
- **Clean**: Clean
- **Tight**: Tighten and Align

**Are positive clips:**
- **Clean**: Clean
- **Tight**: Tighten
- **Tension OK**: Replace

**Check for operation of charging positions without cap-lamp on charge**

**Red L.E.D. – Note 1**
- **Off**: Replace P.C.B.
- **On**: Place cap-lamp – Note 2 on charging position

**Green L.E.D.**
- **Off**: Replace P.C.B.
- **On**: Switch on cap-lamp.

**Charging position OK**
- **YES**: Replace P.C.B.

**Notes:**
1. Should the RED L.E.D. indicate ON when the cap-lamp is placed on charge – the lamp/accumulator is faulty – check accumulator and headpiece for polarity and for short circuits.
2. To test the charging positions ensure that a fully charged accumulator is used. The cap-lamp must be in good working condition.
3. On a regular basis check the charger D.C. output voltage and charging position voltages, which must read between 4.95 and 5.05 volts. Should, at any charging position, the L.E.D.’s flicker or charging positions read low voltages the P.C.B. must be checked for loose connections.
MAJOR CAP-LAMP CHARGER
For LED 4V Lead-Acid Lamps

Service Conditions
The equipment is suitable for operation in ambient temperatures not exceeding 40°C or
temperatures ranging between 10 – 35°C at altitudes from sea level to 2000m above sea level.

A.C. Input
The equipment is designed to operate from a three phase 50 Hz A.C. supply, having a nominal
voltage of 380 – 525 volts. The voltage may vary by a maximum 10% without materially effecting
the output of the charger.

D.C. Output
The equipment has been designed to recharge 2 cell, 4.0V nominal Lead-Acid accumulators and
can also recharge the TC2 3.7V Li-ion accumulators.

Maximum output current - 300 amps at 5.0V nominal;
C.V.C. voltage - adjustable between 4.95 volts and 5.05 volts
Lamp capacity - recommended 204 cap-lamps maximum

Maintenance
The charger requires no preventative maintenance apart from occasional cleaning to prevent
“tracking” due to a build-up of conductive dirt.

Cabling
The D.C. supply cable from the charger output to the charging frame must not be less than
70mm² and must be firmly bolted at the charger and frame connection points. The lugs should
preferably be soldered and not crimped.

Charger Protection
3 Phase circuit breaker in the A.C. input.
Fuse protection in the diode circuit.
Transient suppression network.

The unit is factory pre-set and should not be tampered with by unauthorised personnel. Incorrect
adjustment can damage the charger or accumulators. If the charger is suspect, contact a
qualified electrician.

Warning
High voltage testers, meggers, etc. should not be used for checking the charger or frame
circuitry as this will damage the electronic circuits.
SWITCH MODE POWER SUPPLY CAP LAMP CHARGER
For LED 4V Lead-Acid Lamps

Service Conditions
The equipment is suitable for operation in ambient temperatures not exceeding 40°C or temperatures ranging between 10 – 35°C at altitudes from sea level to 2000m above sea level.

A.C. Input
The equipment is designed to operate from a single phase 50 Hz A.C. supply, having a nominal voltage of 200 – 240 volts.

D.C. Output
The equipment has been designed to recharge 2 cell, 4.0V nominal Lead-Acid accumulators and can also recharge the TC2 3.7V Li-ion accumulators.

Maximum output current - 200 Amp at 5.0V nominal;
Voltage - 4.95 volt ~ 5.05 volt
Lamp capacity - recommended 102 cap-lamps maximum

Maintenance
The charger requires no preventative maintenance apart from occasional cleaning to prevent “tracking” due to a build-up of conductive dirt. Also ensure that the internal fan is in clean working order and free from dust build up.

Cabling
Each unit is factory assembled and all cabling conforms to specifications.

Charger Protection
2 Pole circuit breakers installed at the A.C. supply.
Transient suppression network.
The unit is factory pre-set and should not be tampered with by unauthorised personal.
Incorrect adjustment can damage the charger or accumulators. If the charger is suspect, contact a qualified electrician.

Warning
High voltage testers, and meggers etc. should not be used for checking the charger or frame circuitry as this will damage the electronic circuits.