OLDHAM

DL16

CAP LAMP SYSTEM

The Powerful Choice

THORNE & DERRICK INTERNATIONAL
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INSTRUCTION MANUAL

WARNING

This manual, including the warnings and cautions inside, must be read and followed carefully by all persons who use or maintain this product, including those who have any responsibility involving its selection, application, service, or repair.
This cap lamp system will perform as designed only if used and maintained according to the instructions, otherwise it could fail to perform as designed and persons who rely on this product could sustain serious personal injury or death.

DL16 CAP LAMP SYSTEM

TABLE OF CONTENTS

IMPORTANT

Pay close attention to Warnings and Cautions in this manual.
A WARNING describes a condition that may cause severe personal injury or death if allowed to happen.
A CAUTION describes a condition that may cause moderate injury or property damage if allowed to happen.

GENERAL DESCRIPTION

The DL16 cap lamp systems consists of a cap mounted headpiece powered by a Li Ion battery.

The basis of the headpiece in which some of the internal connections are integral is as follows:
A selector switch is incorporated, which can switch on either the main LED light source or the small emergency LED. The reflector fits over the small LED and has a rubber gasket around the rim to seal against the headpiece lens.

PREPARING THE DL16 CAP LAMP FOR FIRST TIME USE

The battery is packaged separately to the lamptop and needs to be connected before use.

Tool kit required is M614830

NOTE: THE BATTERY IS TRANSPORTED IN A PARTIALLY CHARGED CONDITION - EVERY BATTERY MUST BE FULLY CHARGED BEFORE FIRST USE.

Remove the battery from the shipping box and check for damage. The battery is supplied with the encapsulated fuse fitted, terminal nuts and washers.

Remove the nut and washer from the positive end of the fuse (marked +). Place the ring terminal of the red wire onto the terminal post, replace the spring washer and nut, and tighten to 0.5Nm.

Remove the nut and washer from the negative terminal (not connected to the fuse) and place the ring terminal of the black wire onto the terminal post, replace the spring washer and nut, and tighten down to 0.5Nm.

Hook the cable exit end of the battery cover onto the battery.

Check that the cables are not trapped under the edge of the cover then press down into position.

Secure the cover in place with the clip and M4 mushroom head socket screw.

- **Battery charging**

WARNING

Li Ion batteries must only be charged on a specific charger with a Li Ion charge profile. If the battery is charged on a standard GT caplamp charger the battery will be damaged.

For charger information and how to convert existing charger software please consult the Caplamp Charger Manual.

Every battery must be charged before it is used for the first time.

Never discharge completely!

IMPORTANT NOTE:
The L16 battery is supplied with a factory fitted "OCBL-T" fuse (M455323), required for protection of the internal battery circuitry.
Use of any other fuse type could result in damage and will invalidate any warranty claim.

Charging before first use:

1. Allow the battery to remain on charge for 24 hours.

2. After a working shift, the battery should be placed on the charger, following the instructions included with the charger, and left to charge. The charger automatically switches off when the battery is completely charged

3. If cap lamp needs cleaning, use a mild detergent and wipe. Do not submerge in water.

➢ **Battery Storage**

All stored batteries should be given a 24-hour boost charge 3 months after receipt and thereafter at 6-monthly intervals until use, where they should again be fully charged before being placed into regular service.

Recommended storage temperature: 0^{o}C to 27^{o}C.

➢ **Replacing battery**

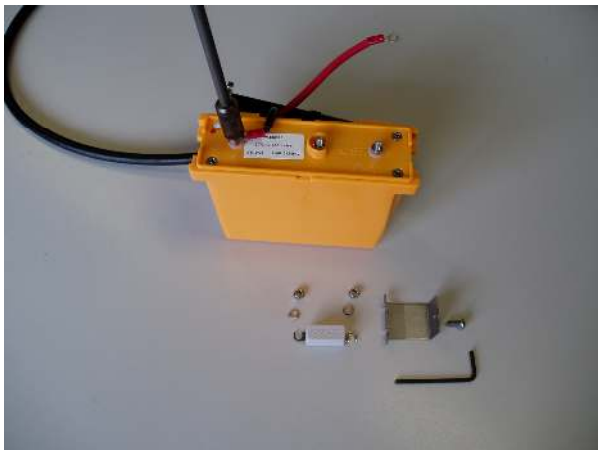
1. Remove one M4 button head socket screw from the end clamp holding the cover as shown.

2. Un-clip the clamp and slide off the cover to cable end.

3. Remove the positive cable lead (red)

4. Remove the fuse

5. Remove the negative lead (black)



➢ **Replacing battery cover**

1. Replace the fuse; fit the nuts to hold the fuse in place

2. Connect the red cable to the positive battery terminal.

3. Connect the black cable to the negative battery terminal to ensure correct polarity.

4. Tighten the cable leads down with terminal nuts to 0.5Nm.

5. Replace the battery cover.

Note:
Ensure that the cable leads lie properly on the battery top without being trapped or pinched.

USING THE DL16 CAP LAMP SYSTEM

The DL16 headpiece is made up of the lamp-housing which contains the following parts:
- Bezel (ring)
- Lens (glass)
- Gasket
- Reflector
- Main LED
- Secondary LED
- Circuit board and switch

The on-off-on switch knob is located on the headpiece. The down position operates the main LED and up position the secondary LED.

➢ Repairing the headpiece

TOOLS:
G & D type spares and tools kit – M614830
D type Headpiece fastening & cable lock kit - M259683

The switch should be placed in the off position and the battery fuse removed **(see section "cap lamp system")** before disassembly of the headpiece.

- **Replacing Cable**

1. Remove the cable from the battery terminals.
2. Cut the cable tie around the cable under the battery cover and pull the cable out from the battery cover gland.
3. Unscrew the M3 socket head mushroom screw from the headpiece cable lock.
4. Use a small screw driver to “flick” the cable lock off the retaining boss. Take care not to lose the o-ring under the boss as this is required for reassembly.
5. **Replace the mushroom head socket screw. This is important to ensure the circuit board support in the headpiece does not become loose.**
6. Hold the lens glass down while unscrewing the bezel ring.
7. Remove the lens glass and reflector.
8. Unscrew the 2 off M3 slotted screws.
9. Remove the cable
10. To replace the cable reverse the above procedure.

Note:- Always ensure that one screw is fixed into the positive cable terminal or the cable lock. This ensures the circuit board support does fall out of position

- **Replacing the reflector**

1. Remove the bezel ring and lens.
2. Remove the reflector

3. Remove gasket around reflector.
4. Place the gasket around the new reflector. The reflector is located by two projections which fit either side of the main LED; the hole in the reflector goes over the secondary LED.

   The bezel ring should be screwed down firmly while holding the glass down with your thumb.
5. Reassemble the lens and bezel ring (see “Reassembling the bezel ring”).

- **Replacing the circuit board**

The circuit board can be replaced in the event of damage to the switch or electronic failure of the board. This procedure should be carried out by a person with experience of soldering on small circuit boards.

1. Remove the cable as described above
2. De-solder the wire connections to the LED at the circuit board.
3. Carefully bend the cables away from the circuit board.
4. Use an open ended spanner M204942 to remove the nut securing the switch. Remove the washer and rubber backed sealing washer.

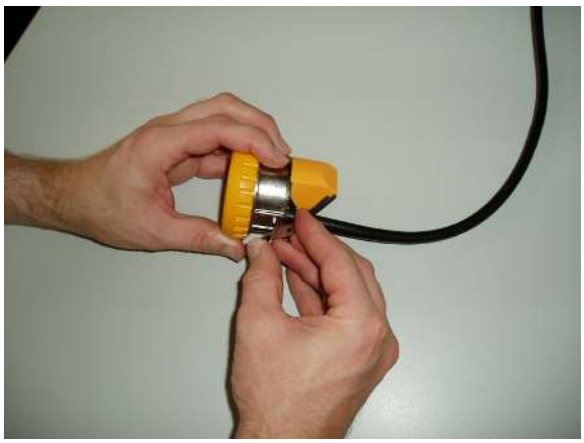
5. Pull the old circuit board out from the front of the main housing.
6. Put a 10mm spacer in the positive hole before replacing the board.
7. Replace the circuit board, pull in the threaded switch boss to ensure it is fully located in the socket at the back of the headpiece housing.
8. Replace the sealing washer and nut, tighten with the open ended spanner.
9. Re-solder the wires from the main LED.
10. Replace the cable and reassemble the reflector, lens and bezel ring.

➢ **Reassembling the bezel ring**

1. When the lens is in position over the reflector, the bezel ring is screwed onto the headpiece housing, and locked in position by the stainless steel cable lock.

2. Ensure the cut-outs in the bezel ring line up with the cable lock.

3. Hook the cable lock into the slot under the cap hook support. Press down so the cable is in position, replace the o-ring and then clip over the boss on the side of the headpiece.



4. Secure with M3x10 mushroom-head screw.

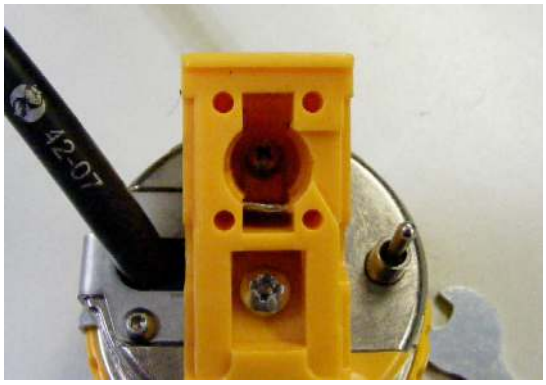
➢ **Replacing the lock barrel**

If the lock barrel is damaged it may become difficult to connect the lamp to the charger. In this case, the lock barrel must be replaced (M259983 – lock contact spares kit).

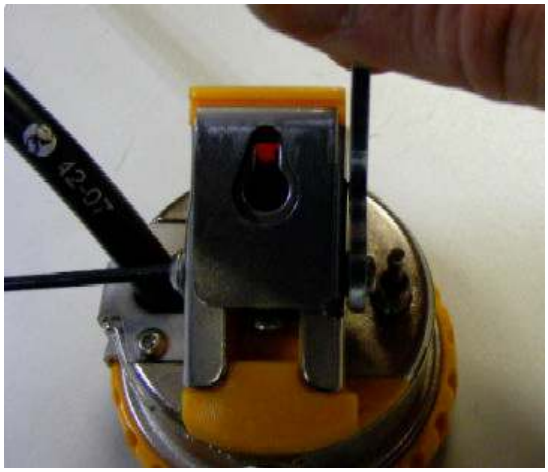
1. Undo the M4 lock nut and remove the dome-head screw that runs through the charging contact housing.

2. The metal cap-clip can be lifted off and set to one side (take care not to lose the spring clip).

3. Remove the lock barrel and ensure that the charging contact housing is clear of any debris before inserting the replacement lock barrel.



4. Holding the lock spring in position, refit the cap-clip cover, insert the dome-head screw and re-tighten the M4 lock nut.



DL16 Expanded Diagram, Tools and Spare Parts List

M261951
D-type Lamptop complete
(with cable and battery cover)

M259483
D-type Headpiece complete (less cable)

M259121X
Bezel ring (D-type)

M200131X
Glass lens

M200411X
Sealing channel

M259127X
Reflector (D-type)

M259383
LED CC circuit board

M260116
Cable 1.6m (D-type)

M454323X
Fuse

M259683
D-Type Headpiece Fastening & Cable Lock kit

M205083
D and G Cable Terminal Spares kit

M259983
D-Type Lock Contact Spares kit

M204783
D and G Cap-clip Spares kit

M455045
Plastic Battery Cover (complete)

Clip for standard cover
Screw for plastic cover
Cable gland
Cable tie

M456323
L16 Li-Ion 16Ah battery

M614830
TOOL KIT

Small tools and spares kit, suitable for all “G” and “D” type lamps comprising :-

Cable outlet gland key
Allen key for headpiece lock pin
Insulated screwdriver
Spring screwdriver
Spanner for T-type battery terminal nuts
Spanner for L16 battery terminal nuts
Topping up bottle (for T5 battery only)
Spanner for D-type switch
Two “OCBL” battery fuses

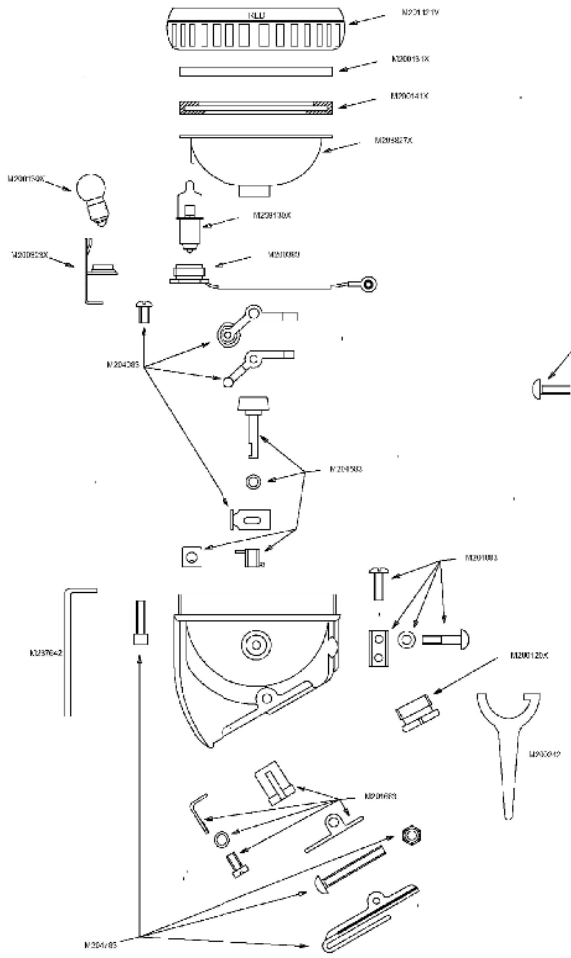
Note: Only certain replacement items above may be purchased individually. All others, as noted above, must be purchased in kit form as this ensures that other associated parts are also available for replacement at the same time.

IF IN DOUBT ASK

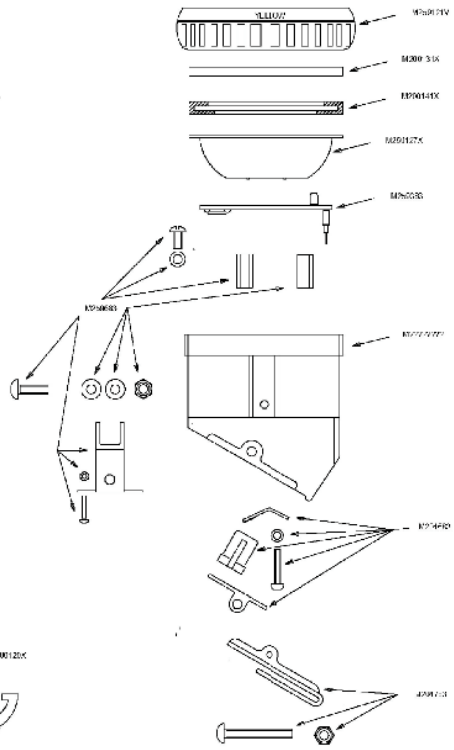
DO NOT SCALE

THIRD ANGLE PROJECTION

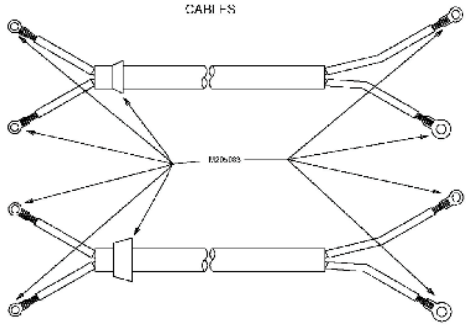
G SERIES



D SERIES



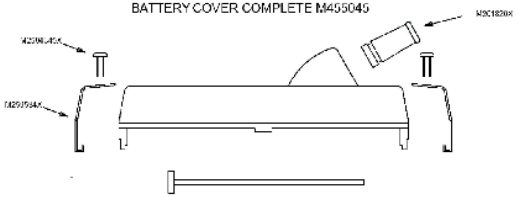
CABLES



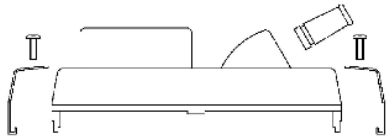
G SERIES
1.6M M203456PV
1.7M M203283V

D SERIES
1.6M M260116V

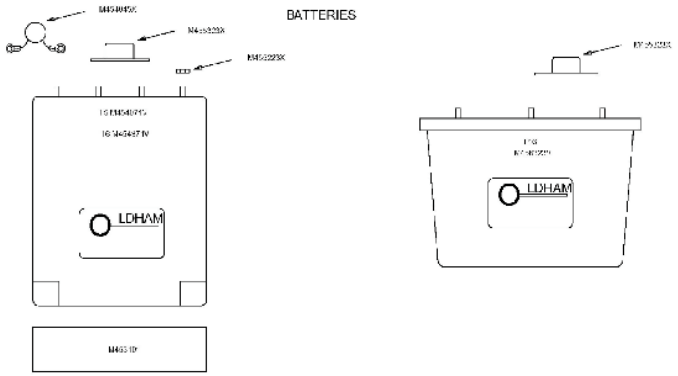
BATTERY COVER COMPLETE M455045



BATTERY COVER WITH POWER TAKE-OFF M456223



BATTERIES



TROUBLESHOOTING

PROBLEM	CAUSE
LED is dim or fails to light 1) Both LED's are dim / fail to light 2) Main LED is dim / fails to light	1. Loose connections: a. Check the connections on the top of the battery to make sure they are tight. b. Check the headpiece terminals and the electrical connections inside the headpiece in the same manner as those on the battery.
	2. Loose connections: a. Gently wiggle or pry each connection on top of the battery to make sure it is tight and working properly. b. Check the cables for broken conductors by twisting or pulling it at various points along its length. c. Check the headpiece terminals and the electrical connections inside the headpiece in the same manner as those on the battery. d. Make sure the bulb is secure and making good contact. e. If the light flickers or dims when any of the preceding items are being checked, that item should be repaired or replaced.
Battery appears "dead" and will not operate	a. Check that the fuse has not blown b. Check the cross volts of the battery, if no voltage is recorded the battery has been over discharged and must be recovered on a nursery charger. c. Detach the battery from the headpiece and reconnect to the nursery charger via the ring terminals, red positive**+** and black negative**-** , leave on charge for 8 hours before reconnecting to the lamp top and putting back on the normal charger for 24 hours.
Battery capacity	a. The 16 Ah Li Ion battery is designed for 12 hour operation. Failure to achieve this is probably due to a high resistant joint in the circuit. b. Check Headpiece charging connections c. Check charger. d. Check battery connections.

IMPORTANT : ALWAYS RECHARGE THE LAMP AFTER USE.

ENSURE THAT ONLY CHARGERS WITH THE CORRECT LI-ION CHARGE PROFILE ARE USED.

Certification, equipment marking and instructions for compliance with ATEX standards:-

The DL16 range of cap lamps are certified for use in Mines where potentially explosive atmospheres may exist. The lamps are suitable for M2 Mining applications.

Certification codes are:-
ATEX: EPSILON 07 ATEX 2151
IECEx: IECEx ITS 08.0019

Mining Group I:- EEx I (Ta = 0°C to +40°C)

Lamp Type Reference:-

The lamps can be assembled in a variety of combinations to satisfy customer requirements. The assembly combination is stated on the certification label and this combination should not be changed without consultation of Enersys Ltd., Swinton, Manchester UK.

The type code sequence is as below:-

1	**2**	**3**
Lamptop type	*Battery Cover type*	*Battery type*
D Standard	**P** Plastic Cover	**L16** Li Ion Battery
	L Hand Lamp	
	R Remote Take Off	

	1	**2**	**3**
Sample type code:-	**D**	**P**	**L16**

Use of equipment:-

The user must ensure that the lamp supplied meets the safety standard required for the Zoned area:-

1. This equipment must only be used in a Category M2 zone without undertaking a full risk assessment for mine rescue use.

2. Check the temperature classification and ensure the correct main bulb is fitted.

3. Check that the operating temperature range is in the range 0°C to +40°C for Mining.

4. The lamp must not be disassembled in a hazardous area.

5. The lamp must not be charged in a hazardous area.

6. The cap light and battery casings are manufactured from polycarbonate and ABS with nitrile rubber seals. The performance of these materials, with respect to attack by aggressive substances that may be present in the hazardous area, shall be taken into account before the equipment is used.

7. Plastic surfaces may cause propagating brush discharges. Propagating brush discharges are caused by non-conducting fluid flow over a non-conducting plastic surface. The cap lights shall not be used in areas where a high fluid flow over the plastic surfaces may occur (for example in the case of a ruptured process pipe or compressed air pipe).

EnerSys

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