DGL3000 - Electronic Auto Dual Grade Laser
Earthmoving & Civil Construction Laser

RedBack™ Lasers

DGL3000

Instruction Manual

www.redbacklasers.com.au

CONTENTS

User Safety

- Laser output sign lies near the output aperture.
- Do not stare directly into laser beam.
- Do not disassemble the instrument or attempt to perform any internal servicing. Repairs and service should be performed only authorised service centres of Redback Lasers.
- This instrument complies with the safety Classification standards of laser radiation.

CAUTION: Class II laser <1mW at 635nm. Do NOT stare into laser beam or aim at another person.

Follow relevant Australian Standards

Congratulations on purchasing the DGL3000™ an electronic self levelling dual grade rotating laser level built tough to handle the harshest of job sites.

The DGL3000™ is ideal for earth moving and drainage, simply set it up on a tripod, turn on, it electronically self levels and the laser starts rotating. Then using the supplied LR715 receiver you can set up your levels or grades.

The DGL3000™ has fully automatic dual grade setting capability simply punch in the desired grade to three decimal places and the laser does the rest. The sophisticated grade and levelling technology can continually re level and re-set the grade if required

The DGL3000™ also features "Quadrant Beam Shield" making it ideal for use on sites with other lasers or in situations when the laser beam needs terminating in certain directions.

The DGL3000™ comes with rechargeable Ni-mh batteries but can also use Std "D" Size batteries if needed and comes with a Two Year Redback Warranty. (See page 16)

DGL3000™ Included Accessories

- DGL3000™ Laser Unit
- Protective Carry Case
- Rechargeable Ni-mh Batteries
- Charger
- Laser Receiver LR715
- Receiver Staff Clamp
- Grade Alignment Scope
- Remote Control
- Instruction Manual

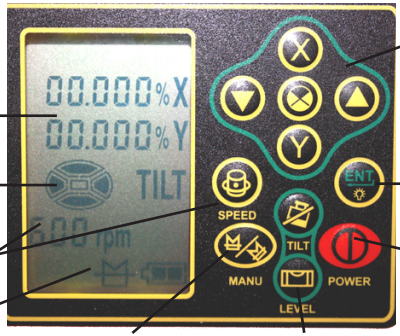
EM623™ Laser Unit

RedBack™ Lasers

DGL3000

1. Alignment Scope
2. Scope Mount
3. Rotating Head
4. Heavy Rubberised Casing
5. Keypad
6. LCD Display

Keypads



Setting Grades & Quadrant Beam Shield

Grade/Slope Input Display

Quadrant Beam Shield

Enter Button (Grades) & Backlight

Rotation Speed

Power On/Off

Manual Mode Battery Charge

Manual Mode

Tilt On/Off & Re-Level

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Re-Level
(after tilt)

Quadrant Beam Shield
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Power/Standby Button

Calibration Controls
(For Service Technicians Only)

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LCD Display
(Repeated on rear)

Bubble Vial

Display back light

Magnetic Mounting

Reception Sensors

Fine/Coarse Mode

Speaker Control

Power On/Off

Battery Instructions

The DGL3000 has two battery options either 4 x standard "D" size Alkaline or the Ni-mh rechargeable pack. For standard 4 x "D" alkaline operation simply insert into the battery recess in the direction indicated and tighten the locking screw.

To use the rechargeable battery pack first remove standard batteries if inserted and place rechargeable into the same battery recess. Plug cables onto terminal as shown and replace cover tightening locking screw.

To charge this battery pack simply inserting the charger plug into the charging socket found just under the model number sticker. The LED is illuminated red during the charging process and will turn green once the batteries are fully charged.

When the power symbol on the LCD shows low or flashes, the rechargeable batteries needs recharging or standard batteries need replacing. Note the charger will only charge the supplied rechargeable battery packs.

Handy Hints

- *Prior to initial use, charge the rechargeable batteries for at least 8 hours.*
- *Running rechargeable batteries completely flat will increase battery life.*
- *The DGL3000™ can operate off mains by plugging the charger (for indoor use only) into the unit.*
- *Remember the DGL3000™ can operate using standard batteries when rechargeable pack is out of charge.*

Turning Laser On

Press Power button on the keypad to turn on the DGL3000™. Batteries are low if power bar on the LCD panel is showing low. After turning the laser on, the laser will auto level and rotate. The power button on the remote will not operate until the laser has been powered up from the keypad direct, the power button on the remote then acts as a standby button. The DGL3000™ has a large self levelling range, if the laser happens to be set up outside this range, a warning will sound and the laser will flash. The LCD panel will flash "LEV" and the axis it is out on will also flash, re-set the laser more level if this occurs.

Tilt Mode

Tilt mode is somewhat similar to tilt on a pinball table in that if when running the DGL3000 detects significant disturbance or movement that could effect the accuracy of your work the laser will "Tilt" (stop working) and the laser beams and the word "TILT" on the LCD screen will flash.

Tilt mode automatically activates after 30 seconds of laser operation. To turn the tilt feature off use the "tilt" button on either the keypad or the remote control. The word "TILT" will come up on the LCD screen when activated.

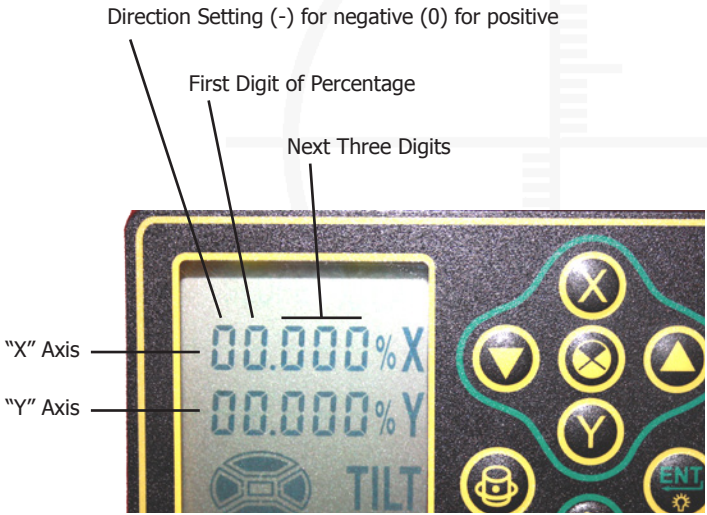
If during operating the laser "tilts" then you will need to re level the laser by pressing the level button on the remote or keypad, wait a few seconds to level and then re-check your work to maintain maximum accuracy.

It is recommended to use tilt mode when optimal accuracy is required or when there is a chance that machinery or worker may interfere inadvertently with the lasers level.

Setting Slope/Grades (refer to diagram page 9)

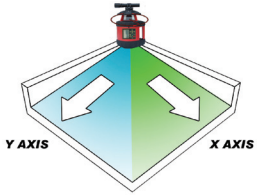
The DGL3000™ is the grade expert with fully automatic digital dial a grade in percentage to three decimal places. In Slope (Grade) Mode you can set a Grade in either the X or the Y Axis of up to 7.999% see the markings on top of laser for axis alignment. In Slope (Grade) mode the "TILT" and "Quadrant Shield" features can still be used. The DGL3000 is dual grade capable, so a grade can be set on the X and Y axis simultaneously. (all Slope/Grade features are accessed by the laser's keypad only)

- Turn the laser on, allow to level and begin rotating.
- To select a grade on the "X" axis (see markings on top casing) press the "X" button (X) on the keypad.
- To select a negative grade i.e slope up in the direction of the "-X" (on casing) press the down arrow button (▼) to change back to a positive slope press the up arrow button (▲). On the display the first digit on the X line will change between a "-" or "0" to indicate -ve or +ve slope.
- Next press the "X" button again to shift the active digit one place to the right. Use the up arrow (▲) to increase the number of degrees required and use the down arrow (▼) to reduce it. For example we want to set a 1.666% slope so set this digit to "1".
- Press the "X" button to shift the active digit another place to the right and use the up and down arrows to select the required number, in this example "6". The repeat the operation again "X" button and arrows to select the next two digits until we get the 1.666% in our example.
- Short press the Enter button (ENT) (Note: long press turns on illumination) this sets the laser into slope mode and the entered grade is now set and the laser begins rotating.
- To set a grade on the "Y" axis press the "Y" button (Y) and select the direction of grade and percentage in the same manner described previously and finishing by a short press "Enter" (ENT). Note you do not have to enter all decimal places once you have the grade that you want press enter (or move to the other axis complete that and then press enter). Also note that you can set and change either grade at any time without needing to re-start the DGL3000™.



The "Tilt" feature enables automatically after 30 seconds at which point the laser will stop rotating if detecting any major movement or vibrations, the DGL3000™ will then need to be re-levelled by pressing the "level" button . This both re-levels and re-sets the previous grade although note the height of the laser may have changed with a major movement.

With "Tilt" disabled see page 7 the DGL3000™ will continuously self level and retain the entered slope gradients, this may be useful in high winds or next to vibrating machinery and when absolute accuracy is not essential.



Rotation Speed Setting

The DGL3000™ has 3 rotation speeds; 300rpm, 600rpm and 1100rpm with the default being 600rpm. For most situations this default value will be ideal but when using machine receivers (MR706/D, MR701) better results may be achieved with higher rotation speeds at greater distances.

LCD Display Light

The DGL3000™ has a backlight feature for the LCD display which is turned on and off with the Enter/Light button 

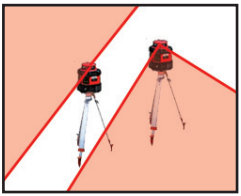
a long press with toggle between on and off.

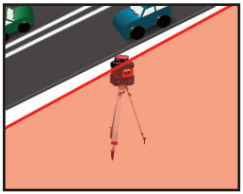
Quadrant Beam Shield Feature

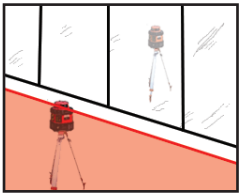
The DGL3000™ has a feature called "Quadrant Beam Shield" which gives the user the ability to turn the laser beam off during certain quadrants or segments of each rotation. The rotation is segmented into 4 sectors or quadrants and each of these quadrants can be turned on or off in order to prevent the laser beam shining in those particular directions.

There are a number of advantages of this feature;

1. The DGL3000™ can be used on site with other rotating lasers without interfering with the receivers of those lasers.
2. You can set up the DGL3000™ next to a busy road and shield the users of that road from the laser beam.
3. On sites with large reflective surfaces such as windows you can set the quadrants off to prevent getting reflected laser readings on you receiver.







The DGL3000™ quadrant beam shield feature can be set from either the control keypad on the laser or by the remote control.

Turn on the DGL3000™ as normal so that it self levels and begins to rotate, then press the quadrant feature button the outer line of the first quadrant flashes. If you wish to disable the laser output on this quadrant press the down arrow and the dark inner indicator will go out (if you need to turn it back on again press the up arrow and indicator will go black again). If this is the only quadrant you want to disable press the enter button (short press).

To set multiple quadrant (maximum of three) use the quadrant feature button again to move the active (flashing outer line) on next quadrant and use the down arrow to select to disable. Continue above process until all quadrant you want disabled are selected and press the enter button all outer lines will stop flashing and the selected quadrants will no longer have the laser beam shining.

LCD and photo showing one quadrant turned off.

Note that the receiver operates normally when located within the quadrants of rotation that are left turned on. Also note that all other features and functions such as "Tilt" and "Grade/Slope" can be used at the same time as Quadrant Beam Shield.

Laser Receiver LR715 (refer to diagram page 5)

The LR715 is a heavy duty dual sided display rotating laser receiver, it can be either hand held or with the staff bracket clamped onto a staff. The bubble vials can be used to keep the receiver level.

- A press of the power button toggles the receiver on and off.
- The Speaker button toggles through 3 speaker volumes.
- Pressing the Coarse/Fine Mode button toggles through 3 levels the first being fine mode indicated by on the LCD the accuracy of level is at its highest with 1mm tolerance movement by the receiver before showing it off level. The next coarser mode allows 2mm before showing off level the third press shows no symbol on the LCD and allows 3mm before showing off level, these two coarser modes are more suitable for general site levelling.
- The Back Light button toggles the LCD display back light.

The LR715 has two large LCD displays with progressive bars indicating when the laser gets closer to the level mark. Move the receiver up and down slowly and watch the display change when the solid tone is heard and the centre line is shown then the receiver is at the height of the laser beam plane. The receiver will auto power down after 10 minutes when not receiving laser pulses. Note receivers do not work in Scan mode.

Technical Specifications

Laser Wavelength	635nm <1mW
Laser Class	II
Range with Receiver	600m Diam Rotating
Horizontal Accuracy	±1mm/20m
Gradient Setting	Single Axis ±7.99% (max) Dual Axis <=10%
Rotation Speeds	300rpm, 600rpm, 1100rpm
Self Levelling Range	±5°
Temperature Range	-20°C - 50°C
IP Dust Water Resistance	IP66
Power	4 x "D" Alkaline or Ni-mh pack
Low Power	LCD Display
Size	220x200x280mm
Weight	5Kg

Calibration & Self Check

All Redback Lasers have been checked for calibration and certified by one of our technicians here in Australia prior to despatch and should under normal conditions not go out of calibration. A calibration certified sticker with the date and name of technician is located on the laser itself. It is worth checking calibration from time to time particularly after any known knocks or drops. An easy way to continually check calibration is to always double check you work with the laser located in a different position or use an alternate vertical line. Various other methods for checking calibration can be found at **www.redbacklasers.com.au/downloads** or the laser can be returned to our service department for checking and re-calibration. We at Redback Lasers provide a once off free calibration and check within the duration of the warranty period see page 16 for details.

Care & Maintenance

- Keep laser and accessories stored in protective case.
- Make sure laser is stored dry, dry out before storage to prevent damage.
- Remove batteries when not used for an extended period of time to prevent leakage.
- The DGL3000™ is a precision instrument and should not be subjected to excessive knocks, drops or vibrations.
- Self check calibration from time to time. See page 13
- For service contact Redback Lasers. **www.redbacklasers.com.au**

Trouble Shooting - FAQ

Q. ***I press the Enter button to set a grade but does not rotate***

A. *Note this button has two uses short press enters a grade and long press (2 seconds) turns on the LCD display illumination.*

Q. ***I have difficulty using the remote control!***

A. *When you press a button each tone is equal to one press, so on a toggle button like the power button if you press and hold and hear 2 tones then it will have turned it on and then off again.*

Q. ***The Laser does not power up!***

A. *Check the rechargeable batteries are charged and connected correctly and or replace standard "D" size Alkaline batteries and check they are inserted correctly and pack fully tightened up into recess.*

Q. ***Using the receiver I get multiple heights showing as level!***

A. *This is a common problem with all laser levels and is usually due to the laser being reflected off a window or other reflective surface. So the original laser beam plus the reflection are both hitting the receiver at slightly different heights. To prevent this, set the laser unit up so that you cannot see a reflective surface from where you are holding the receiver i.e. Any glass behind receiver not the laser.*

Notes

REDBACK LASERS WARRANTY

Duration of warranty is fixed and automatic, when we advertise 2 years on a particular model, its two years. No drop down to a lesser time if you forget to register, registration is NOT required just proof of purchase showing date.

Although the duration of our warranties are for a particular period it does not mean we will charge you for a genuine warranty failure a month or two outside that warranty period, we believe in a fair go.

Even though a product shows signs of accidental damage, scratches and the like, we will not automatically fail the warranty claim, if the fault is NOT caused by a drop or misuse and is a genuine warranty failure then we will cover it.

Calibration is not covered by warranty much the same as the wheel balance on your car is not covered by warranty, we do however offer a one off free re-calibration service during the period of warranty, conditions and details below.

CMI Industries Pty Ltd provides consumers with a warranty to our products, this is in addition to requirements of any relevant legislation such as the Competition and Consumer Act 2010. Definitions:

"CMI", "We" or "Our" refers to CMI Industries Pty Ltd (ABN 29 102 713 922) of 8 Autumn St, Geelong West, Victoria 3218 ph (03) 5228 0777

"You" or "Consumer" refers to the initial purchaser of the product.

"Product" refers to goods manufactured by or for CMI Industries Pty Ltd under the brands of RedBack Lasers, Level1Laser and CMI Lasers.

"Material" refers to material or component used in the construction and manufacture of the product.

"Workmanship" refers to handling, assembly and manufacturing processes done by or for CMI Industries Pty Ltd in order to manufacture the products.

"Warranty Period" For the DGL3000 Two Years. Warranty period is from original purchase date, no extension is made in the event of warranty replacement products supplied or time spent being repaired.

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure. Ni-Mh Battery & Charger have 1 Year Warranty.

CMI warrants that our products will be free from defects in material and workmanship for the warranty period.

CMI promises to repair or replace, free of charge, the product or part of product if found to be faulty due to defective workmanship or materials within the duration of the warranty as long as the following terms and conditions are met;

- Product must not have been misused or abused, must not have incurred accidental damage or had un-authorised repair or tampering that has caused or contributed to its fault or failure.
- You must contact CMI by phone, mail or email immediately when a fault or defect has become apparent and within the warranty period.
- Product must be returned to store of purchase or directly to CMI, we will cover cost of postage only when sent by our reply paid Australia Post service (Australian Main land and Tasmania only) details will be provided upon phone, post or email communications with us.
- CMI will cover cost of freight back of repaired or replaced product to original purchase store or you directly (depending on how it was sent Australian Main Land and Tasmania only).
- CMI will determine whether to repair or replace the product or part of product on a case by case basis.
- Further exclusions in this warranty include damage or defect caused by use of non-original accessories or parts, damage in transportation, normal wear and tear, damage through moisture, damage due to electric surge, failure due to neglect or damaged caused by adjustments not outlined in CMI's instructions.

Subject to the requirements of all applicable Australian Acts or legislation and to the extent permitted by law, CMI accepts no liability (whether expressed or implied) of any nature whatsoever for any loss of earnings, hiring of replacement equipment, Inaccurate work carried out by the consumer or agent, damage or injury arising as a result of any fault in the product. It is the consumers responsibility to maintain good working practices and regularly test their tools for accuracy and serviceability.

Calibration of the product is not covered by warranty subject to the requirement of all applicable Australian Acts or legislation and to the extent permitted by law, CMI does however offer a free re-calibration service (once within the period of the warranty) you are liable for the cost to send the product to us then we will recalibrate and return the product to you free of charge. Note this offer is invalid if the product shows signs of misuse or accidental damage that has caused it to go out of calibration.

A CMI product returned that fails to fall within the terms and conditions of this warranty will be quoted for repair.

RedBack Lasers™ distributed by CMI Industries Pty Ltd
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