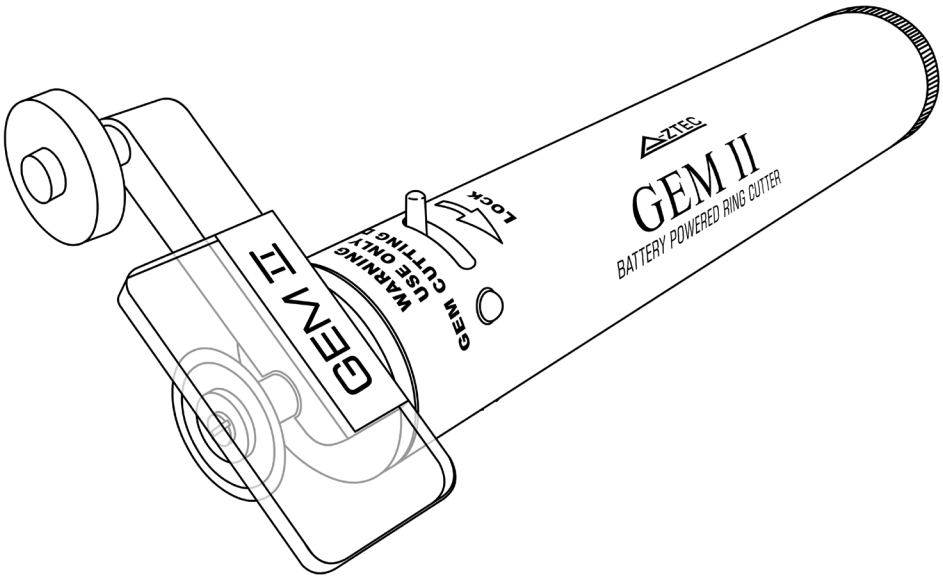
GEM II

Battery Powered Ring Cutter

Ref. A-Z 300 & A-Z 300/R

UK Pat. 2249273 - German Pat. G9113614.8



Version 1.0

Carbide Cutting Disc

x 2

GEM II Battery Cassette

Disc Locking Screwdriver

Diamond Cutting Disc

GEM II Finger Guard

1. Select and mount appropriate cutting disc for GEM II ring cutter. Move 'locking switch' to lock position. Insert correctly loaded battery cassette in to GEM II body.

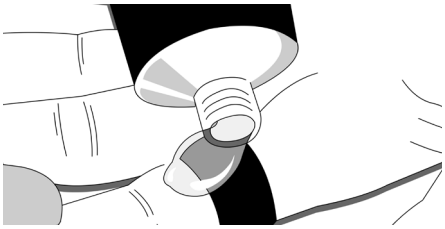
Carbide Cutting Disc

Soft Metals
(Gold, Silver, Copper)

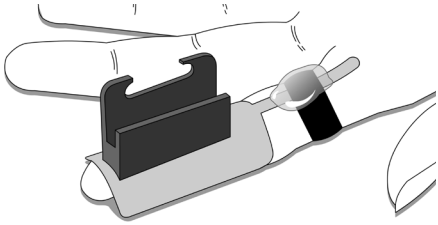
Diamond Cutting Disc

Hard Metals
(Iron, Steel, Platinum)

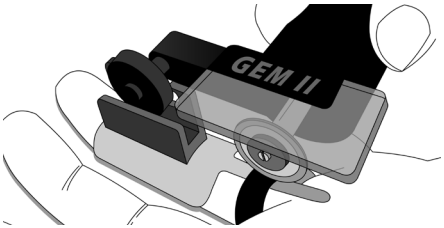
2. Apply a generous quantity of water based gel to ring surface.



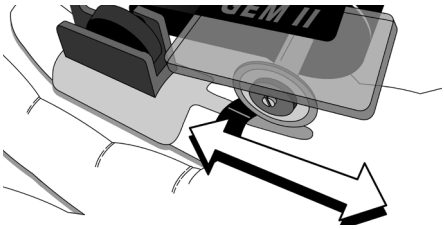
3. Slide finger guard under ring.



4. Insert GEM II guide arm disc into finger guard guide block. Rest cutting disc on ring surface. Activate motor allowing the weight of the GEM II cutting head alone to provide the necessary downward pressure onto the cutting disc.

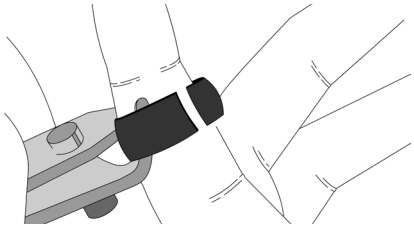


5. Move GEM II back and forth along guide block so that cutting disc traverses the entire width of the ring. A sudden increase in rotation speed indicates ring has been cut through.



6. If patient warns of heat build-up stop cutting immediately, clean gel from ring surface and re-apply fresh gel and continue with cutting process.

7. Use GEM II ring spreader pliers or forceps to remove ring.



For a more detailed demonstration of the cutting process watch the GEM II Battery Powered Ring Cutter DVD

Safety Instructions

READ INSTRUCTIONS BEFORE USE

Light eye protection should be worn by operator and patient. 

- Never use ring cutter without finger guard or Perspex shield in place or if either component is damaged.
- Never use any power source other than domestic AA size batteries capable of delivering a maximum voltage of 6v DC.
- Never modify the ring cutter to run on mains power.
- Never examine a rotating cutting disc except through the Perspex shield.
- Never reuse damaged or badly worn discs.
- **Never start cutting through a ring without first applying a significant quantity of water based gel to the ring surface. The gel acts as a heat sink, traps cut ring debris and impedes trajectory of particles from a rotating disc.**
- Never operate the ring cutter in an atmosphere where a spark could cause an explosion.
- Never use or re-use a cutting disc if either one or both plastic washers supporting the disc are missing.
- Always engage the “Lock” immobiliser switch to deactivate the motor when:

  a) Mounting or disconnecting a cutting disc.

  b) Engaging the finger guard.

  c) Pausing during cutting to examine the cutting progress.

  d) Wiping away used gel and reapplying fresh gel.

  e) When ring cutter is not being actively used or left unattended when stored.

Always:

- Examine cutting discs prior to use. Discard any damaged or badly worn discs.
- Rest the cutting blade on the ring surface before activating the motor.
- **Warn the patient that the cutting process generates heat and that the patient should warn the operator if the heat build-up is causing discomfort. If this happens the cutting process must stop. The water based gel wiped from the ring surface and fresh cold gel reapplied before re-starting the cutting process.**
- Clean finger guard unit after use.
- Remove battery holder from GEM body after use.
- **Stop motor after 10 minutes of continuous use and allow motor to cool down for 15 minutes before re-starting.**

Maintenance Instructions

The ring cutter may be wiped down with any decontamination solution but must not be soaked in fluid or autoclaved.

DISC CARE
Remove disc (RETAIN LOCKING SCREW). Examine disc for damage or excessive wear - if this is the case, replace disc.

FINGER GUARD CARE
Clean up finger guard and guide channel of finger guard. Examine metal guard; make sure disc hasn't cut through. If so replace metal guard.

PERSPEX SHIELD CARE
Wipe any residue from Perspex shield.

After use, examination and cleaning, always return the GEM II Ring Cutter and its components back to their allotted spaces in the GEM II presentation case.

Technical Specifications

Model A-Z 300 Series 101	
Motor Re 280/3 Dry Bearing Weight:	44 gms
Hand Piece Weight:	127 gms
Power Source:	6 volt DC (4xAA) Batteries
No Load Speed:	3 v 8,800 rpm 6 v 16,000 rpm
Torque:	3 v 63 gcm 6 v 120 gcm
Stall Torque:	3 v 126 gcm 6 v 240 gcm
Sound Pressure:	61.08 dB (A)
Sound Power:	73.58 dB (A)
Vibration Levels:	3.2 m/s2

Declaration of Conformity

THE DECLARATION OF CONFORMITY

We declare under our sole responsibility that this product is in conformity with the following standards or standardised documents. EN 55014 in accordance with Directives 2004/108/EC, 2006/42/EC and EN 60745

CE

Christopher MacGregor

Head of Quality Assurance

WEEE compliant registration no. WEEE/DG 3326 WV

Recycling & Disposal

Only dispose of electrical/electronic/battery items in separate collection schemes, which cater for the recovery and recycling of materials contained within.

Your cooperation is vital to ensure the success of these schemes and for the protection of the environment.

Guarantee

Dear Customer,

In the unlikely event that your device develops a fault, please contact our customer service department.

1. These guarantee terms cover additional guarantee rights and do not affect your statutory warranty rights.

2. Our guarantee covers problems caused by material or manufacturing defects, and will result in the repair of these defects or replacement of the device.

3. The following are also excluded from our guarantee:

    a) Faults due to accidents, customer misuse, or unauthorised repairs.

    b) Consumable parts such as blades.

    c) Failure due to lack of routine maintenance.

    d) Failure as a result of not using the equipment in accordance with the manual and safety instructions.

    e) Any unauthorised modifications to the device or its components.

4. The guarantee is valid for a period of 2 years starting from the purchase date of the device. Guarantee claims should be submitted before the end of the guarantee period within two weeks of the defect being noticed. No guarantee claims will be accepted after the end of the guarantee period. The original guarantee period remains applicable to the device even if repairs are carried out or parts are replaced. In such cases, the work performed or parts fitted will not result in an extension of the guarantee period, and no new guarantee will become active for the work performed or parts fitted.

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TROUBLE SHOOTING	
Motor fails to operate	**Check batteries are loaded into the battery cassette correctly.** **Check that retaining springs in battery cassette are sound and holding batteries firmly in place.** **Check batteries are in a charged condition.** **Check that 'Lock' switch on GEM II unit is not engaged.**
Motor stalls during cutting	**Operator applying excessive force during cutting process.** **Batteries are depleted, change for fully charged batteries.**
Cutting disc makes little progress in cutting through ring	**Wrong disc selected for ring metal type** • Use Diamond cutting disc (Ref. A-Z 223) for hard metals i.e. Iron, Steel, Platinum. • Use Carbide cutting disc (Ref. A-Z 224) for soft metals i.e. Gold, Silver, Copper. **Disc is badly worn, change for new disc** <u>Diamond cutting disc (Ref. A-Z 223)</u> To check if disc is worn, run finger around cutting disc edge. If smooth to touch the diamond grit is worn away, replace disc.

Cutting disc makes little progress in cutting through ring (Continued)	Carbide cutting disc (Ref. A-Z 224) If cutting disc is worn down to plastic spacers, replace disc.
Locking screw unwinds during operation	**Batteries have been loaded into battery cassette incorrectly. Re-load batteries into cassette in the correct order and make sure the arrows on the battery cassette and the GEM II unit are aligned.**

F.A.Q's	
1. How many rings will a cutting disc cut through?	**A carbide disc acting on a soft metal, i.e. Gold wedding ring approximately 4mm wide by 1mm thick will cut through 10-15 rings.** **A diamond disc acting on a hard metal, i.e. steel 4mm wide by 1mm thick would be capable of cutting through approximately 6 rings allowing for the fact that a hard metal requires cutting in 2 separate locations on the ring.** **N.B. The cutting surface of the ring must be kept as cool as possible to preserve the diamond grit on the cutting edge of the disc. This is achieved by cutting for 3 or 4 seconds, pausing for a second and repeating the process.**
2. Why is it necessary when cutting through hard metals to make a cut half way through the ring on one side and then all the way through in a position directly opposite the first cut?	**Rings made of hard metals when cut through tend to close up trapping the cutting disc. This is due to the high tensile strength in the metal. Partially cutting through a ring significantly reduces the tension in the ring so that when the ring is cut through on the opposing side to the first cut the ring won't collapse in on itself and trap the cutting disc.**

3. Why is it necessary to supply two types of cutting disc why not just use a diamond disc for all ring cutting?	**In fact either disc could be used for all the cutting procedures. However if a carbide disc is deployed to cut through a hard metal i.e. Steel it will wear down rapidly and require to be replaced several times during the process of cutting through a single ring. If a diamond disc is used on soft metal the metal starts to clog up the diamond cutting facets effectively blunting the discs cutting edge.**
4. The motor keeps stalling and I am certain that I am following the cutting procedure outlined in the instructions i.e. not pressing down too hard on the cutting disc as I move it backwards and forwards across the ring surface. Also the alkaline batteries used were virtually new.	**If you are not forcing the cutting process the fault lies with the power source. Although Alkaline batteries are an excellent power source when fresh the GEM II ring cutter does drain the power from them quite rapidly and if one of the four batteries is below strength it will have a marked effect on the performance of the ring cutter motor. A more consistent and reliable power source these days are provided by re-chargeable NiMh batteries which are widely available and inexpensive. They can store and deliver more power over a longer period of time than their Alkaline equivalent. Re-chargeable NiMh hold their charge for up to 6 months and can be re-charged at any time as they do not suffer from the memory effect shown by the old NiCd rechargeable batteries.**
5. How do I check a used diamond disc to ensure that is serviceable?	**Simply run a finger around the outer rim of the disc. If 50% of the surface feels rough to the touch the disc has just enough diamond grit to be serviceable. If not it must be replaced. A worn disc will cut very little but generate a great deal of frictional heat.**
6. Although we have used water based gel as per the instructions we still receive complaints from a few patients about heat build-up in the ring.	**Cutting generates frictional heat. It can't be prevented but it can be controlled to acceptable levels.**

	First if using a diamond disc check conditions of the disc (See Question 6). **It is important to warn the patient that there will be a heat build-up in the ring and that as soon as they feel the ring getting warm to notify the operator. The operator should stop immediately wipe away the gel from the ring and re-apply fresh cold gel before continuing the cutting process. Normally by this stage the ring will be virtually cut through so that the second phase of cutting will be short lived.**
7. What if a ring has to be removed from an unconscious patient?	**According to a research study in the brain journal of Neurology 125 issue 3 pp. 501-510 on 'Pain Threshold on Normal Skin!' The range of warm sensation is 37.8 ± 28°C. Redness of the skin equivalent to sun burn occurs around 44-45°C. In tests we have carried out on rings that have water based gel applied to the ring surface prior to cutting after 60 seconds of continuous cutting temperature on the surface of a ring made of brass 4mm x 1mm thick measured 38-39°C. After a further 60 seconds the surface temperature had reached 44-45°C. A sensible precaution to take would be to cut for 60 seconds, stop, wipe away old gel and replace with fresh cold gel and re-start the cutting process for a further 60 seconds. As the cutting process has been interrupted the ring surface temperature would not reach 44°C. It is unlikely a 3rd phase of cutting would be required.**
8. What if water based gel is not available. Is there another product commonly available that can be used?	**We have found that liquid soap from a soap dispenser works well. It helps to lubricate the ring area and makes inserting the metal guard section of the finger guard much easier. It also collects the debris from the cutting process.**

9. Is it acceptable to bend the metal finger guard to get it under a ring?	**The guard is designed to be flexible.**
10. I noticed that on the metal section of the finger guard that is inserted under the ring that a number of scuff marks and gouges have appeared. Is it safe to use the finger guard in this condition?	**With usage, scuff and gouge marks naturally develop. The finger guard is safe to use as a barrier still exists between the ring and the patients skin. However if the guard has been cut through it must be replaced.**
11. I noticed that the guide disc doesn't run as smoothly along the groove in the finger guards black plastic block as it did when new. Does this indicate that the guard needs replacing?	**No. This indicates that dried gel and metal debris have formed a coating on the walls of the groove in the guide block and need removing by cleaning thoroughly.**
12. From the safety notice I see that after 10 minutes of continuous usage the ring cutter has to be left to cool down for 15 minutes before it can be started up again. Why is this necessary?	**This is a precautionary requirement. During use heat builds up in the motor and over time can reach a temperature where the insulation on the motor windings starts to break down. This can cause a short circuit to develop resulting in the heating up of the retaining springs in the battery cassette, which at a certain temperature will collapse and cut off the power to the motor.**
13. We have noticed that our ring cutter has become rather noisy compared to when it was new. Does this mean the ring cutter motor is wearing out and needs replacing? Is there anything we can do to reduce the noise?	**A noisy motor does not automatically indicate that the motor needs replacing. A drop of lubricant on the drive shaft bearing at the front of the motor and another on the bearing at the back of the motor should help to reduce noise.**

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