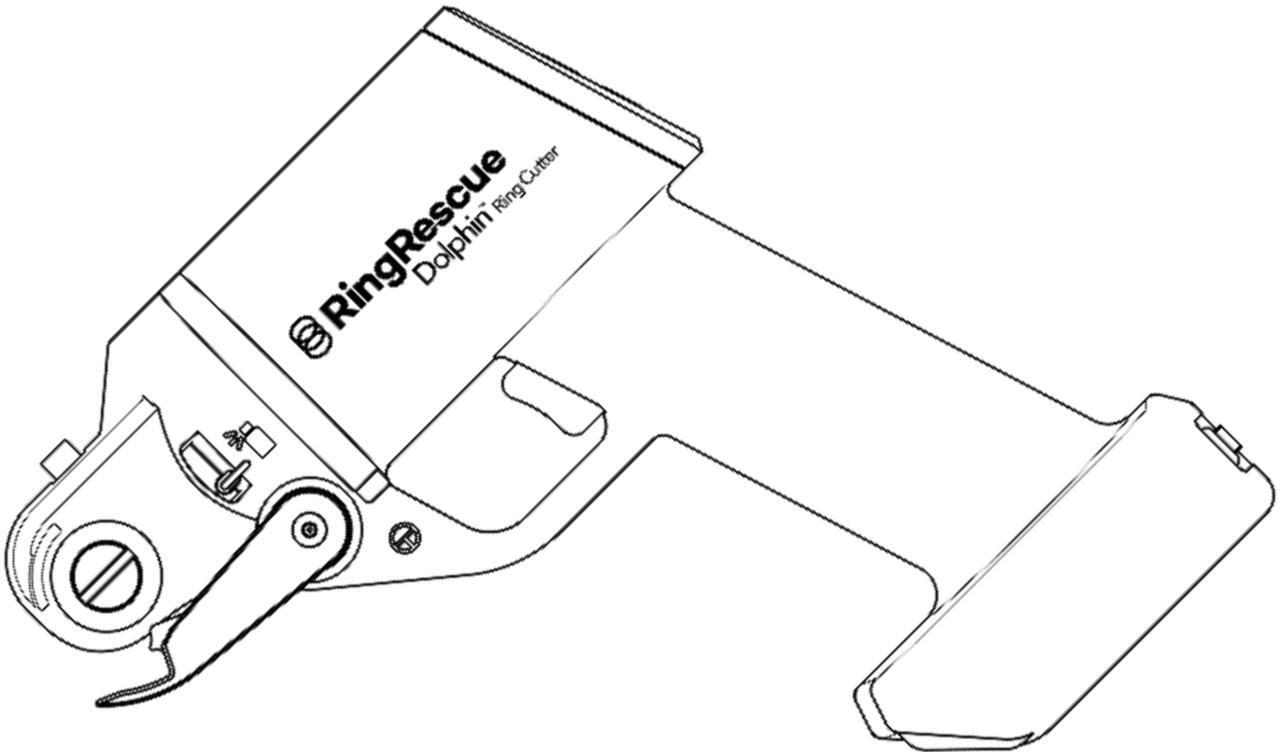


Technical Reference Manual



Ring Rescue | Dolphin™ Ring Cutter



RDD01-P078-V4

Ring Rescue | Dolphin™ Ring Cutter

REF RDD-AI-UC

FEI Number: 3015542886

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US and International Patents Pending



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 Made In Canada with domestic and imported parts

Introduction

This Technical Reference Manual contains knowledge pertaining to the safe and effective use of the Ring Rescue Dolphin™ Ring Cutter. This manual is intended to be used by professionals that are tasked with entrapped ring removal and seek to use this product. Always keep a reference of this manual available for consultation during the life of the product.

Before using this product, please consult the provided Ring Rescue Dolphin™ Ring Cutter *Quick Start Guide* and become familiar with its operation by following the link:

ringrescue.com/tutorial

Alternatively, scan the QR code below and watch the instructional videos.



Background

The Ring Rescue Dolphin™ Ring Cutter has been designed to safely cut rings made from the most common ring materials. It uses the same cutting disc for all common ring materials, and requires a new cutting disc be used for each ring being cut. It is designed to minimize heat generation from the cutting process, reducing patient burn risks.

Indications for use

The Ring Rescue Dolphin™ Ring Cutter is intended for use in cases of finger ring entrapment, where ring removal is deemed necessary, and use of a Compression Device (such as the Ring Rescue Compression Device) is either contra-indicated, unsuccessful with ring removal, or otherwise not recommended. It is intended to be used by professionals who would reasonably be expected to perform ring removal as a part of their job.

Directions for Use

Before using this product, please consult the Ring Rescue Dolphin™ Ring Cutter *Quick Start Guide* and the instructional videos available at:

ringrescue.com/tutorial

Contraindications For Use

If a physician or other health care Professional determines that ring removal is emergent and ring cutting is the preferred method, no contraindications exist.

Definitions

The symbols located on the equipment and/ or labeling are defined in this section or in the *Symbol Definition Chart*. See the *Symbol Definition Chart* supplied with the equipment.

Symbol	Definition
	General warning sign
	Keep away from the rain
	Refer to instruction manual/ instructions for use
	"ON"/"OFF" (push button)

	Status indicator
	Lubrication indicator
10 min / 10 min	Device duty cycle. 10 minutes on, 10 minutes off
	Type B Equipment: Equipment providing a particular degree of protection against electric shock, particularly regarding allowable leakage current and reliability of the protective earth connection. Internally Powered Equipment: Equipment able to operate from an internal (removable) electric power source
	In accordance with European Directive 2002/96/EC on Waste Electrical and Electronic Equipment, this symbol indicates that the product must not be disposed of as unsorted municipal waste, but should be collected separately. Refer to your local distributor for return and/or collection systems available in your country
	For indoor use only

Caution

As part of the cutting process, this device creates cutting debris. Some ring material debris can cause skin irritation. In the case of open wounds or lacerations, preventative measures should be taken to avoid ingress of debris into the wound or laceration. After completing ring cutting and ring removal, care should be taken to ensure all debris is cleared or flushed from the skin, including any debris that may have entered any wound or laceration. In all other cases, regular hand washing should be used to remove debris and lubricant from the skin after ring removal is complete. If possible, avoid any interventions that may cause skin damage prior to ring cutting.

Ring cutting is inherently a destructive process. Damage to the ring is inevitable if the ring cutting process is undertaken. The decision to proceed with ring cutting using the Ring Rescue Dolphin™ Ring Cutter indicates that this is understood, and that ring repair may or may not be possible.

Ring cutting can cause sharp edges at the site of the cut. Take care when manipulating a ring that has been cut, to avoid lacerations or other tissue damage.

Eye protection is recommended for any individual who is in proximity of the ring cutting operation.

Ensure the device has an adequate battery charge prior to beginning any ring cutting operations. If in doubt, use direct plug-in as the power source. This device is designed to operate using battery-only power and also while plugged in. Once the Battery Charge Level Indicator reaches 1 out of 3 lights, recharge the device fully. The device can be used for ring cutting concurrently while charging. See the Ring Rescue Dolphin™ Ring Cutter *Quick Start Guide* and tutorials for more information on power management.

The battery will gradually discharge during storage, and prolonged storage times will require recharging prior to battery-only use. We recommend periodically checking device charge level and fully charging the device when necessary.

This device contains no user serviceable parts.

 **Warning**

Use only Ring Rescue approved accessories and components (such as Ring Rescue AssureCUT™ Discs and Ring Rescue Ring Lubricant) with this product. DO NOT modify this product or its accompanying accessories in any way. Modifications to this device or its accessories will void the warranty and may cause damage or harm.

This device has been designed to reduce burn risks during ring cutting operations, however, it is the responsibility of the operator to monitor ring temperature during ring cutting procedures. Heat from the cutting process is still generated and may cause burns if not monitored appropriately.

When not in use or charging, always place the product back in the supplied case. Always transport the product using the supplied case. This product is intended for use in dry locations only.

As part of the cutting process, this device creates cutting debris. Some ring material debris can cause skin irritation. In the case of open wounds or lacerations, preventative measures should be taken to avoid ingress of debris into the wound or laceration. After completing ring cutting and ring removal, care should be taken to ensure all debris is cleared or flushed from the skin, including any debris that may have entered any wound or laceration. In all other cases, regular hand washing should be used to remove debris and lubricant from the skin after ring removal is complete. If possible, avoid any interventions that may cause skin damage prior to ring cutting.

Two applications of Ring Rescue Ring Lubricant are required when indicated by the device during cutting operations, as described in the Ring Rescue Dolphin™ Ring Cutter *Quick Start Guide* and tutorials. To reduce the risk of airborne debris and over-temperature events during cutting operations, use only Ring Rescue Ring Lubricant and use according to the provided directions.

Clean the product before and after each use in accordance with the provided instructions.

DO NOT force the cutting disc into the ring. Cutting is intended to progress automatically and at a rate determined by the device. An information signal will sound and the amber lights will illuminate if the device detects improper use. If detected improper use continues, the device will cease cutting for a brief interval. The user should take care to use this product in keeping with proper techniques, and should investigate and mitigate any warning events. A list of improper uses can be found in the Ring Rescue Dolphin™ Ring Cutter *Quick Start Guide* and tutorials.

While the device is operating do not attempt to touch or engage with the cutting disc.

Use only Ring Rescue AssureCUT™ Discs with the Ring Rescue Dolphin™ Ring Cutter. Ring Rescue AssureCUT™ Discs are SINGLE USE. Use a new disc for every ring cutting operation. It is intended that one cutting disc be used per stuck ring. If the user believes the cutting disc has become dull or ineffective, for example in longer cuts or larger rings, more than one cutting disc may be required to complete ring removal. In no event should a cutting disc be re-used following ring cutting, and used cutting discs should be discarded after use into an appropriate container. Consult the Ring Rescue Dolphin™ Ring Cutter *Quick Start Guide* for instructions on how to remove and install cutting discs.

Use of accessories, transducers and cables other than those specified or provided by the manufacturer of this equipment could result in increased electromagnetic emissions or decreased electromagnetic immunity of this equipment and result in improper operation.

Cleaning Instructions

Before and after each use, clean the device and its components by wiping with 70% alcohol or 0.5% accelerated hydrogen peroxide wipes. Do not use any other chemicals or cleaning substances. Do not submerge the device in liquid or allow liquid splashes onto the device. Always wear gloves when cleaning. A dedicated tool for assisting with cleaning of the metal finger guard is included with the Ring Rescue Kit. See the Ring Rescue Dolphin™ Ring Cutter *Quick Start Guide* and tutorials for further cleaning instructions.

Keep the device out of direct sunlight or ultraviolet light.

Tutorials

Scan the QR code or visit the link below for Ring Rescue Dolphin™ Ring Cutter instructional videos:



ringrescue.com/tutorial

Product Expiry

Consult the Product label, located on the underside of the device, for device manufacture and expiry information.

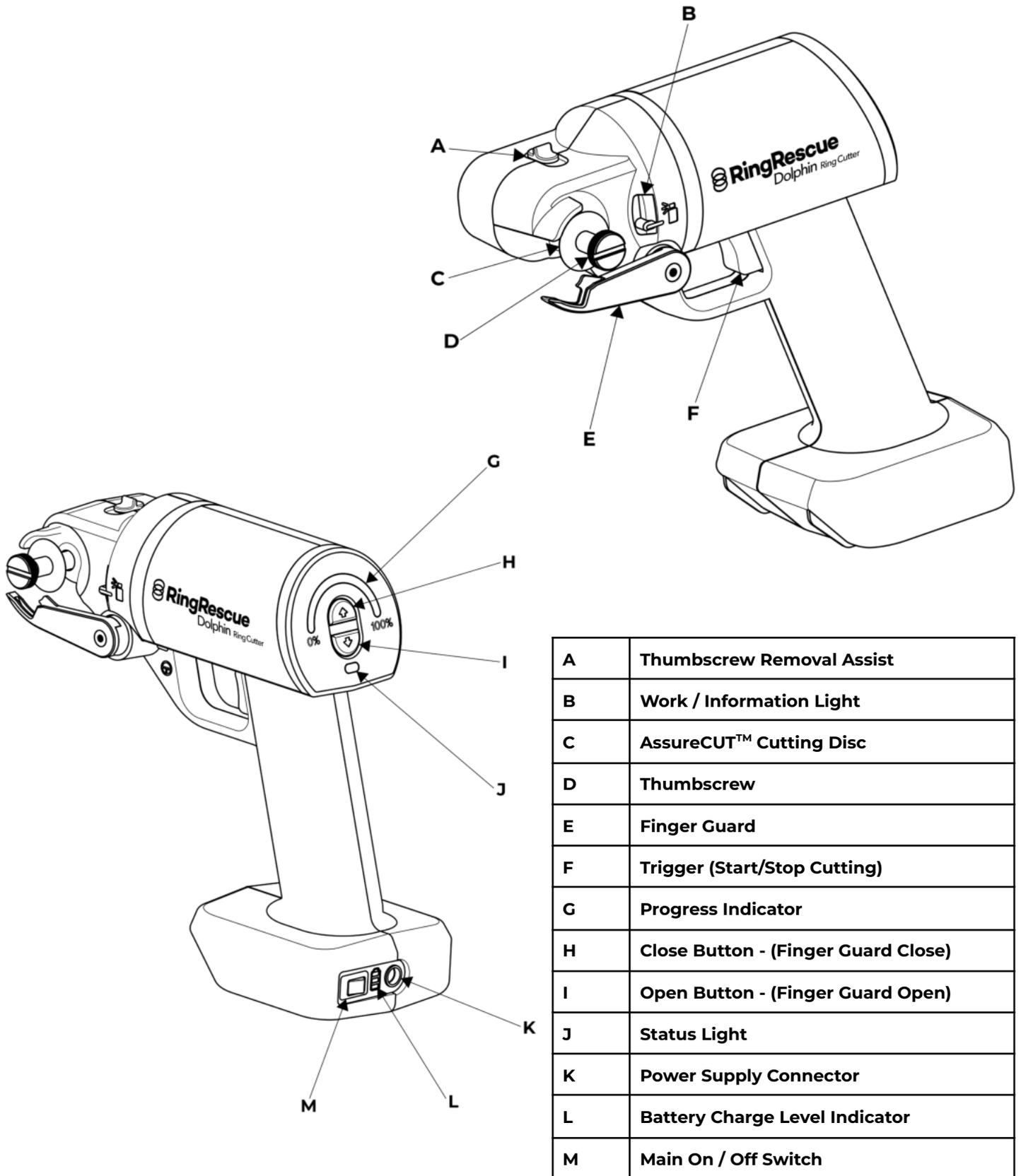
Warranty

When operated and maintained according to all instructions supplied, should the Dolphin™ Ring Cutter fail due to a defect in material or workmanship within one year from the date of original retail purchase, the product will be repaired or replaced, at the option of Ring Rescue Incorporated, at no charge. Be sure to read the *Limited Warranty Detailed Information* at ringrescue.com for a full warranty description.

This warranty covers defects in material or workmanship and excludes the following:

1. Ring Rescue Inc. does not guarantee ring removal results, as circumstances and conditions may not allow for ring removal to be carried out.
2. Misuse, neglect, alteration, accident, or improper care.
3. Damage or failure of the Dolphin™ Ring Cutter if not operated or maintained according to all instructions provided with the product, including but not limited to the required use of Ring Rescue AssureCUT™ Discs and Ring Rescue Ring Lubricant. Re-using cutting discs, using alternate cutting discs and/or lubricant voids this warranty.

Product Overview



A	Thumbscrew Removal Assist
B	Work / Information Light
C	AssureCUT™ Cutting Disc
D	Thumbscrew
E	Finger Guard
F	Trigger (Start/Stop Cutting)
G	Progress Indicator
H	Close Button - (Finger Guard Close)
I	Open Button - (Finger Guard Open)
J	Status Light
K	Power Supply Connector
L	Battery Charge Level Indicator
M	Main On / Off Switch

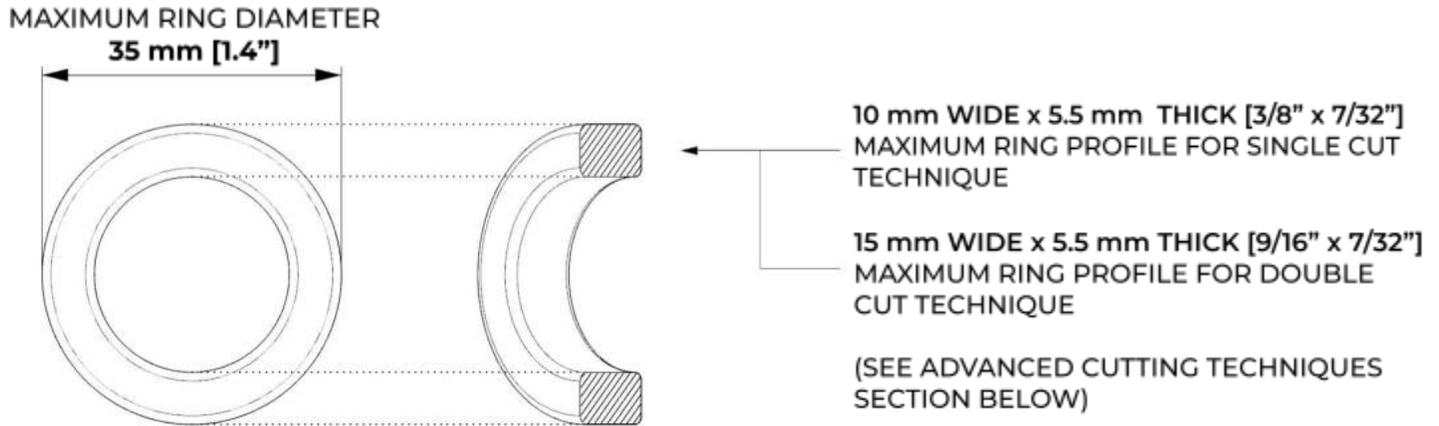
Information Signals

This section provides a complete list of the information signals the operator may encounter during operation.

Status Light (J)		
	SOLID	Ring Cutter is ready for use
	FLASHING	Indication of Improper Use Possible examples of improper use include: <ul style="list-style-type: none"> • Insufficient lubrication • Use of Open/Close Buttons during cutting • Moving or maneuvering the Ring Cutter during cutting • Forcing the cutting disc into the ring
	SOLID	Improper use has not been corrected. The device will pause operation for 10 seconds
	FLASHING	Lubrication Reminder: Apply Ring Rescue Ring Lubricant to cutting disc
	OFF	Critically low battery. Note: When the battery is critically low, the disc will not spin but Open/Close buttons still function. Charge device to restore normal operation.
Work/Information Light (B)		
	FLASHING	Lubrication Reminder: Apply Ring Rescue Ring Lubricant to cutting disc
	FLASHING	Indication of Improper Use Possible examples of improper use include: <ul style="list-style-type: none"> • Insufficient lubrication • Use of Open/Close Buttons during cutting • Moving or maneuvering the Ring Cutter during cutting • Forcing the cutting disc into the ring
	SOLID	Improper use has not been corrected. The device will halt operation for 10 seconds
Progress Indicator/ Information Light (G)		
	FLASHING	Lubrication Reminder: Apply Ring Rescue Ring Lubricant to cutting disc
	SOLID	Improper use has not been corrected. The device will pause operation for 10 seconds
	SOLID	Indicates cut progress from 0-100%
	FLASHING	Cut is complete

Maximum Ring Dimensions

The Dolphin™ Ring Cutter has been specifically designed to cut finger rings up to US size 13.5. For uncommon rings, please use the reference below to determine if the Dolphin is suitable for the ring being cut.



Aside from ring size, ring width is the most common measurement given. It is defined as the distance between the front and back of the ring along the finger. Ring thickness is also an important factor and is defined as the distance between the inner and outer diameters of the ring. Together, these quantities define the ring profile. The maximum profile that can be cut depends on the technique used to perform the cut. The figure above illustrates the maximum dimensions for each cut technique.

Advanced Cutting Techniques

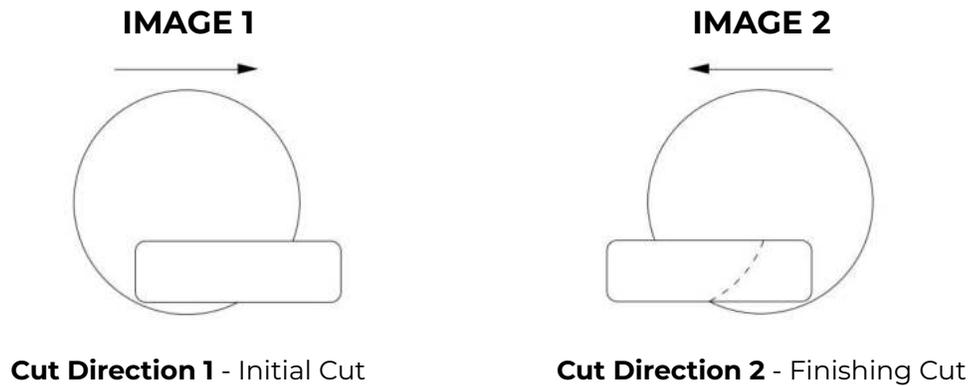
When cutting rings with unique geometries please refer to these advanced techniques to help ensure you are successful in ring removal.

Double Cut Technique

When the Double Cut Technique is used, rings with a width of up to 20 mm [0.68"] can be cut using the Dolphin™ Ring Cutter. Please note, if this technique is used you will need to discard the disc after the initial 2 cuts. To complete the ring removal an additional double cut 180 degrees from the initial cut will be needed. This will require the use of an additional AssureCut™ Disc.

Directions

Make an initial cut in the ring from one side. Make sure to continue cutting until the progress indicator is flashing green. This ensures that the initial cut is as deep into the ring as possible (see **IMAGE 1**). Please note that the ring will only be partially cut at this point. Next, make a finishing cut from the opposite side of the ring. Take care in setting up the finishing cut to align the disc so it will intersect with the first cut (**IMAGE 2**). Begin the cut and continue cutting until the progress indicator is flashing green.

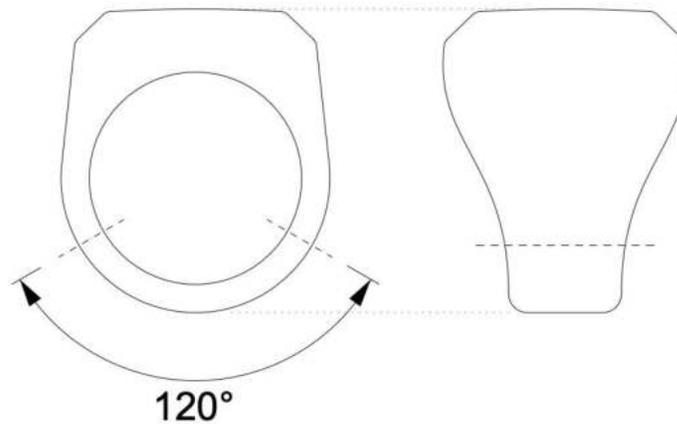


Rings with Unique Geometry (Championship Style Rings)

As with standard rings, always attempt to separate cuts by 180 degrees. When ring geometry restricts the maximum separation angle between the 2 cuts, always separate the cuts as much as possible.

Directions

Select a section of the ring that meets the requirements in the Maximum Ring Dimensions section above - 10 mm x 6 mm for single cut and 20 mm x 6 mm for double cut. Perform the cuts using the image below as a guide. For best results, attempt to separate the 2 cuts by a minimum of 120 degrees.



Specifications

Warning

ALWAYS consult labeling that accompanies accessories for instructions on proper use and storage.

Caution

ALWAYS store this equipment within the specified environmental limits described in this manual.

Note

Specifications are approximate and may vary between devices or as a result of power supply fluctuations.

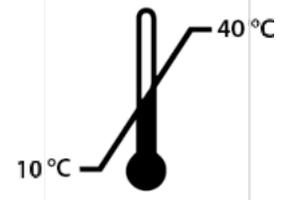
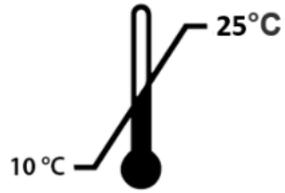
Model:	Dolphin™ Ring Cutter (REF - RDD-AI-UC)
Dimensions:	Height: 187 mm [7.4 in] Length: 197 mm [7.8 in] Width: 94 mm [3.7 in]
Mass:	0.79 KG (1.74 lb)
Speed:	275 - 325 rpm
Electrical Rating:	7.4V 
Power Supply:	GSM36U12-P1J 12V  3A, 36W MAX.
Class II Equipment	
Mode of Operation:	Non-continuous
Duty Cycle:	10 minutes on, 10 minutes off
Applied Parts:	Finger guard, thumb screw, AssureCut™ Disc
Ingress Protection	IPX0
Equipment Type:	 B Type Applied Part

Environmental Conditions:

Operation

Transportation and Storage

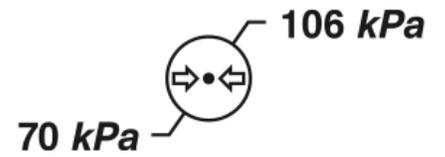
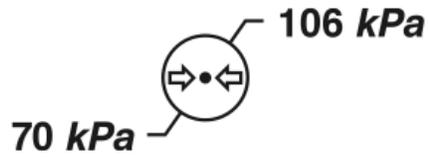
Ambient Temperature Limitation



Relative Humidity



Atmospheric Pressure



Specifications (continued)

Guidance and manufacturer's declaration - electromagnetic emissions		
<p>The Dolphin® Ring Cutter (REF RDD-A1-UC) is intended for use in the electromagnetic environment specified below. The customer or the user of the Dolphin® Ring Cutter (REF RDD-A1-UC) should assure that it is used in such an environment.</p>		
Emissions Test	Compliance	Electromagnetic environment - guidance
RF emissions CISPR 11	Group 1	The Dolphin® Ring Cutter (REF RDD-A1-UC) uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class A	<p>The emissions characteristics of this equipment make it suitable for use in industrial areas and hospitals (CISPR 11 class A). If it is used in a residential environment (for which CISPR 11 class B is normally required) this equipment might not offer adequate protection to radio-frequency communication services. The user might need to take mitigation measure, such as relocating or re-orienting the equipment.</p> <p> WARNING: This equipment/system is intended for use by healthcare professionals only. This equipment/system may cause radio interference or may disrupt the operation of nearby equipment. Mitigation measures may be necessary, such as reorienting or relocating the Dolphin® Ring Cutter (REF RDD-A1-UC) or shielding the location.</p>
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/flicker emissions IEC 61000-3-3	Complies	

Specifications (continued)

Guidance and manufacturer's declaration - electromagnetic immunity			
<p>The Dolphin® Ring Cutter (REF: RDD-A1-UC) is intended for use in the electromagnetic environment specified below. The customer or the user of the Dolphin® Ring Cutter (REF RDD-A1-UC) should assure that it is used in such an environment.</p> <p>NOTE: The values provided in the table below have changed due to 60601-1-2 4th Edition requirements.</p>			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Electrostatic discharge (ESD) IEC 61000-4-2	± 8 kV contact ± 8 kV air	± 8 kV contact ± 8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	± 2 kV	Performance Criterion: A	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	± 2 kV common mode	Performance Criterion: A	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	100 % for 1 cycle 100 % for 0.5 cycles @ 0°, 45°, 90°, 135°, 180°, 225°, 270°, 315° 30% for 25/30 cycles	Performance Criterion: A	Mains power quality should be that of a typical commercial or hospital environment.
Power frequency (50/ 60 Hz) magnetic field IEC 61000-4-8	30 A/m	Performance Criterion: A	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

Specifications (continued)

Guidance and manufacturer's declaration - electromagnetic immunity			
The Dolphin® Ring Cutter (REF RDD-A1-UC) is intended for use in the electromagnetic environment specified below. The customer or the user of the Dolphin® Ring Cutter (REF RDD-A1-UC) should assure that it is used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Conducted RF IEC 61000-4-6	3 and 6 V _{rms} 150 kHz to 80 MHz	Performance Criterion: A	<p>IEC 60601-1-2 3rd Edition:</p> <p>Portable and mobile RF equipment should be used no closer to any part of the Dolphin® Ring Cutter (REF RDD-A1-UC), including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.</p> <p>Recommended separation distance: $d = 1.2\sqrt{P}$ - 80 MHz to 800 MHz $d = 2.3\sqrt{P}$ - 800 MHz to 2.5 GHz</p> <p>Where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m).</p>

Specifications (continued)

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Radiated RF IEC 61000-4-3	10 V/m, 80 MHz - 2700 MHz	10 V/m	<p>IEC 60601-1-2 4th Edition:</p> <p> WARNING: Portable RF equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of the Dolphin® Ring Cutter (REF RDD-A1-UC), including cables specified by the manufacturer. Otherwise, degradation of the performance of this equipment could result.</p> <p>Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey,^a should be less than the compliance level in each frequency range.^b Interference may occur in the vicinity of equipment marked with the following symbol:</p> <p> (Non-ionizing electromagnetic radiation)</p>
<p>NOTE 1: At 80 MHz and 800MHz the higher frequency range applies.</p> <p>NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.</p>			
<p>^a Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the Dolphin® Ring Cutter (REF RDD-A1-UC) is used exceeds the applicable RF compliance level above, the Dolphin® Ring Cutter (REF RDD-A1-UC) should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating Dolphin® Ring Cutter (REF RDD-A1-UC).</p> <p>^b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 10 V/m.</p>			

Revision History

Version	Date	Details	Name
RDD01-P078-V1	2022/08/22	Initial Release	B.MacKeil
RDD01-P078-V2	2022/08/23	Minor grammar and format updates	B.MacKeil
RDD01-P078-V4	2023/06/23	Updated with EMC test data, minor UI changes, maximum ring cutting dimensions	P.Hennessey