RAM-SHELL

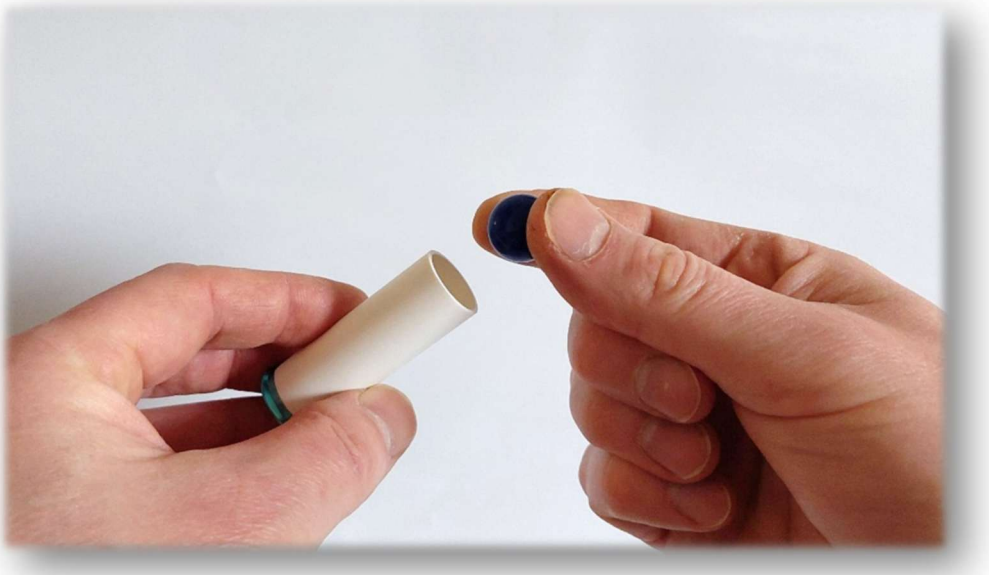
Maintenance Overview

1. Introduction

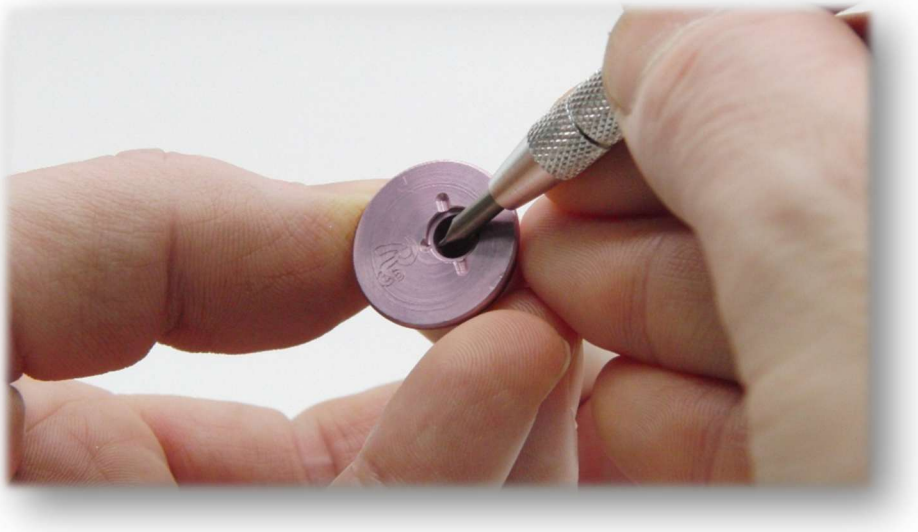
The Ram-Shell unit is made from durable 6061-T6511 Aluminum with a thin layer of Polyolefin plastic (wrap) over the hull section and a Type I, Class 2 Anodizing layer on the base.

The maintenance described in this document deals with these cases:

1) Charge-Pocket too loose
2) Charge-Pocket too tight
3) Dirt & Debris
4) Torn/Discolored hull
5) Discolored Base
6) Dented / Damaged Hull
7) Dented / Damaged Base

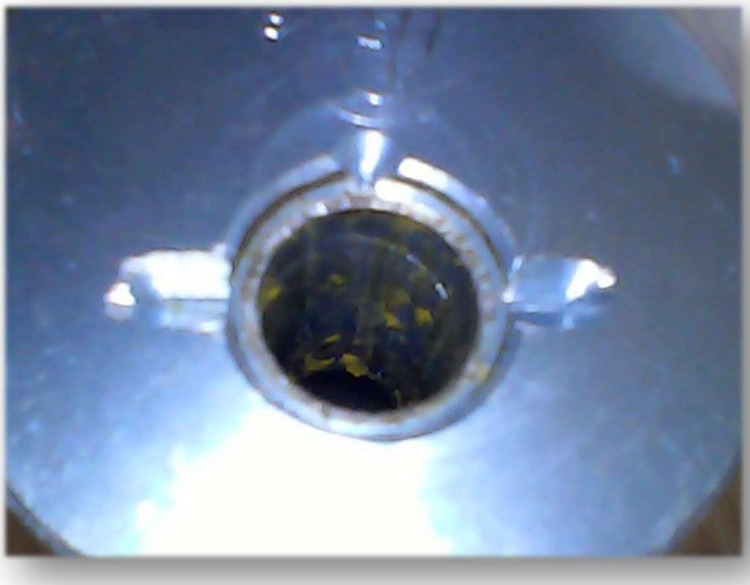


2. Charge-Pocket too loose



- The pocket that holds the Ramset charge by means of friction is a high-precision machined feature. Indeed, the tolerance applied is on the order of .0001” [0.0025mm]. Each unit is factory tested to meet this value. Nevertheless, it is possible that off-brand charges and some older ones do not meet the exact size (diameter ranges of as little as .0002” can make the difference between a loose and tight fit). If this happens or, over time, the material is affected by weathering or cleaning, it is possible to restore the grip that the shell exerts on the charge.
- The approach relies on the use of a sharp tipped instrument, such as a scribe, awl or similar. Knives and similar can be used, though it is recommended that something with a sharp pointed tip be used rather than an edge.
- The tool is forced (lightly, with about the amount of force you would use to puncture a sheet of paper with a dull No2 pencil – you can always increase the force, so start lightly) into the side of the wall where the charge sits (see image). This should be done about 1/8” [3mm] below the step machined into the base. Orientation is not of importance, but if multiple indentations are made they should be spread out along the perimeter.
- The intent of this is to create a very small “crater” where the material is forced into the base and thereby creating a small region around it where it is raised. This change is microscopic, yet enough to change the shell from a loose fit to a tight fit. If a first crater isn’t enough, a second one can be added at a different angle (when looking down the axis of the shell). By adding two or even three, a very tight fit can be obtained when previously the charge may not have been held in place.
- If the pocket becomes too tight in this way, it can be re-enlarged using the drill method described in the next section. This process can be repeated often to maintain a good fit.

3. Charge-Pocket too tight



- Over time, it is possible and likely that debris will start to coat the interior of the charge pocket. The image above shows a cartridge that had been fired 30 times with a Level 4 Ramset and the yellow residue (possibly from the paint of the charge) is visible and makes loading a Ramset charge more difficult.
- Use of a cotton swab or similar with a small amount of gun oil or a similar cleanser (WD40 is acceptable) is one possible way of cleaning this. Alternatively, use of a suitable drill bit can restore the pocket to near factory new condition:

- When using a drill bit (or anything with a hard, sharp cutting action), it should never be used with a power-tool, only by hand. The correctly sized drill bit is available from Ram-Shell or

alternatively, either a #2 Drill bit (nominal size 0.221” [5.613mm]) or 5.7mm drill (available for purchase) are suitable. DO NOT use a drill larger than 5.7mm (a #1 drill will damage the base). A 7/32” Drill bit (.219” [5.56mm]) may be used though this is markedly smaller and the results might be limited.

- Only a few turns by hand are generally needed to remove any build-up of paint, dirt or similar. The base (including pocket walls) has a very hard layer of aluminum-oxide (the anodizing) but this layer is very thin (<.0002”) so is easily damaged when a tool is forced into it. Though some damage is tolerated, performance and handling may suffer if the surface is being consistently scratched.

4. Dirt & Debris

- In general, the shell is highly tolerant to dirt and similar and can be cleaned using a mild detergent and water and then air dried.
- Of particular attention is the pocket where the Ramset charge sits. If it is not cleaned properly, the charge may not sit sufficiently deep and thus a discharge might not be reliable. Using a nylon brush (an old toothbrush is perfect for this) is all that is needed. In general, this pocket should be protected by a spent charge once it is ejected, so dirt is less likely to foul this area, but a visual inspection prior to loading is recommended.

5. Torn/Discolored hull

- The hull is covered by a thin layer of plastic. The primary purpose of the plastic is to be a protective layer that prevents the hull from marking the barrel and also from the shotgun’s action damaging the hull.
- Additionally, it helps in sealing gases during discharge when higher pressures are encountered (obturation) and helps in handling of the shell.
- The material is a standard polyolefin shrink wrap. It is user replaceable and there are alternative colors that can be purchased through Ram-Shell or elsewhere.
- If the plastic is replaced, it is important that the material be thin-walled (.04” maximum thickness) and adhesive free (not the marine grade). Cut to length options are available and sized so that after axial shrinkage it can be trimmed to size. Alternatives can be applied and a length of 53mm is recommended with an ID of 0.75”.

6. Discolored Base

- The color of the bases is a user choice and does not affect functionality. Discoloration over time is to be expected when exposed to the environment or oxidizing agents.
- The anodizing dye used is an environmentally safe, non-toxic pigment that is less resistant to degradation than some less aggressive or toxic options. As the color is purely cosmetic, use of less costly and easier to dispose materials was a logical choice.
- If color fading is beyond acceptable, the only option is to have the units returned and re-anodized or replaced.

7. Dented / Damaged Hull

- The hull is generally a strong and resistant design but it is possible that it becomes deformed. If any dimensional changes prevent it from reliably loading and cycling, it should be discarded.
- If the hull has been bent (such as dropped or stepped on), it can be forced back into a round shape by means of loading a suitably sized projectile (if the dent is at the nose of the cartridge, use of a larger projectile is appropriate; at the base, use a smaller projectile).
- Any damage that brings into question the integrity of the hull should prompt a disposal of the unit.

8. Dented / Damaged Base

- The base is a dense aluminum part. Scratches and nicks, provided that they do not interfere with the action of the shotgun, are considered cosmetic issues that are likely to occur during normal use.
- The most likely region to be affected are the rim where it interfaces with the extractor and the base where the ejector pushes against it. Provided that suitable extraction can proceed, this is an acceptable level of wear.
- The only regions where the base may warrant discarding, is the rim of the pocket. If there are sharp protrusions, it is recommended that the unit be replaced as any such items may inadvertently discharge the Ramset charges during loading and are thus a safety concern.

9. Other Maintenance

In general, there is little additional maintenance required. The Ram-Shell is intended to be useful for dozens to hundreds of discharge cycles and in general only limited by the handling and possible issues incurred based on higher power loads or impact damage when ejected. It is up to the user to visually inspect the unit prior to charging and use and to make an assessment as to whether the unit appears fit for the intended purpose.

Legal & Safety Notes

Ramset® is a registered trademark of its respective owner; no affiliation or endorsement is implied.

This product is intended for training and test use only. Always verify local laws and range rules. Distinguish training components via color/markings as appropriate.

Discharging any firearm generates potentially toxic gases and substances. Always use appropriate safety equipment (at a minimum hearing and eye protection and wash hands prior to eating or drinking).

Ram-Shell is an inert metal container. It is up to the user to understand that adding a potentially explosive device in a manner it was not originally intended may put the user at harm if basic safety protocols are not observed. This is not a toy and should at all times be treated as lethal ammunition.

Contact: support@ram-shell.com • https://ram-shell.com