

## Instruction For Pro38 Pellet Trimming

April 12, 2019

Recently a manufacturing defect of the ignition pellets has been discovered which affects the Cesaroni Pro38-1G & Pro38-2G line-up. A significantly higher ignition pressure spike has been observed. To resolve this issue a simple field modification is required for all reloads purchased between Apr 1, 2017 to April 15, 2019. This should also be applied to any reloads purchased after April 15, 2019 which will have been labelled specifically by the Dealer for any of their current inventory. Any reloads manufactured by Cesaroni Technology Inc after April 15, 2019 have made the necessary changes/modifications conducted to the pellet and **DO NOT** require this procedure/modification.

*NOTE: This recall date **does not** apply based on the propellant date code stamped on the reload but on the date of purchase of the product.*



Figure 1: Modified pellet example

### CAUTION

Work in a tidy area, away from other rocket motors and materials, well away from any open flame or heat source.  
Perform this procedure in the field during rocket preparation and is safer done outside.  
Follow all precautions and details as outline in the standard Pro38 Instructions [www.pro38.com/pdfs/Pro38Instns.pdf](http://www.pro38.com/pdfs/Pro38Instns.pdf)

### Pellet Removal:

1. Remove the reload kit from its packaging.
2. Remove the forward closure (Delay/Ejection Module) from the liner (as shown in Figure 2). Place the forward closure in a safe/clean location for re-assembly later.



Figure 2: (LEFT) Forward closure removal (RIGHT) sliding grain out from liner in vertical position.

3. Remove/slide the propellant grain from the liner. Place the liner in a safe/clean location similar to the forward closure for re-assembly later.

NOTE: If the grain does not slide out easily;

- i. The nozzle can be removed from the liner allowing the grain to be pushed out.
- ii. If the nozzle is removed place it in a safe/clean location until the grain is extracted.
- iii. Use your finger to apply gentle pressure to slide the grain out of the liner.
- iv. After the grain is extracted re-assemble the nozzle into the liner and **be very careful** no damage occurs to the o-ring on the nozzle.
- v. Ensure the o-ring is **fully** seated into the liner
- vi. Do this before proceeding to the next step.



Figure 3: Optional removal of nozzle to extract propellant grain.

4. The propellant grain will have a pellet located in the forward section. The forward side of this grain will have a bevel shape on its face, and the aft section will be flat. (NOTE: for the classic propellant ONLY a bevel will be on both sides and orientation will not matter).



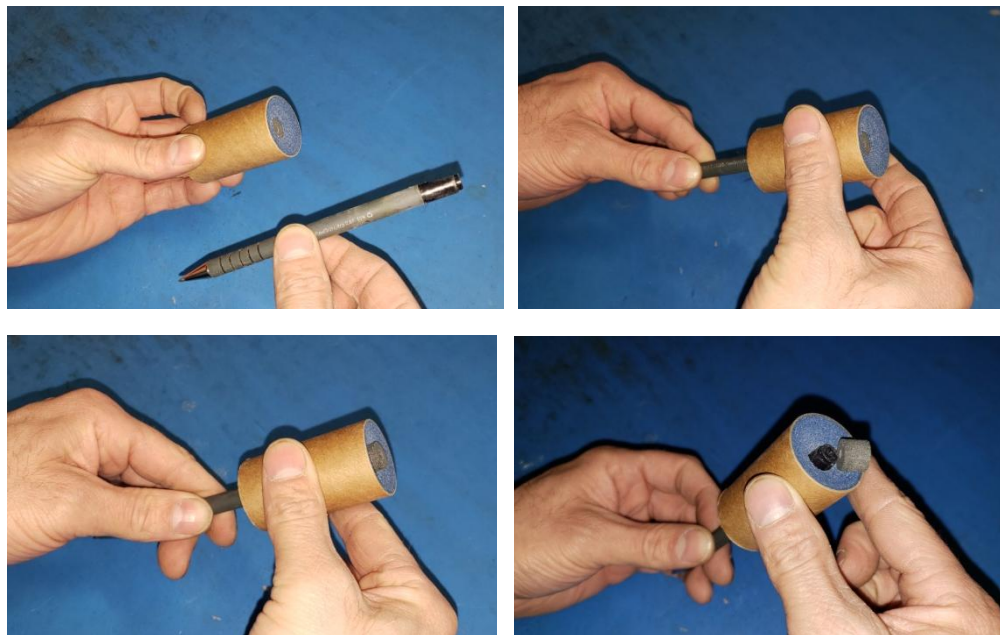
Figure 4: Grain with pellet assembly in forward section (i.e. bevel).

5. Remove the pellet installed into the grain. To conduct this procedure use an instrument/tool which will can be inserted through the aft bore of the grain. This will assist in pushing the pellet out the top/forward of the grain. Apply a constant pressure evenly on this tool to extract the pellet. **DO NOT** bang, hammer, pound, etc on the pellet since they are brittle. Only a few pounds of force are required to dislodge the pellet (See Figure 6).

- a. The instrument/tool can be any rod with a smaller diameter than the bore of the propellant grain (i.e.  $\varnothing 7/16$ in).
- b. The instrument/tool **MUST** have a flat top (such as the back of pen, wooden dowel, etc). Ensure it is not pointed or sharp which may cause the brittle pellet to break up



**Figure 5:** Types of tools to use



**Figure 6:** Pellet removal from grain.

6. Place the grain (now without a pellet) in a clean & safe location away from where the "Pellet Trimming" will go on within the next steps

*NOTE: occasionally a very small amount of propellant tailings may be left after removal. These are not of concern and simply discard the small excess propellant tailings.*

### Pellet Trimming (approx ½ size):

- Using a sharp X-Acto knife cut the pellet into approximately half. The best method for cutting the pellets is to set the pellet on a flat surface (preferably wood) with it oriented like a tire on the ground. Then place the knife blade on the pellet's outer diameter where the cut is to occur (i.e. approx half the axial distance).

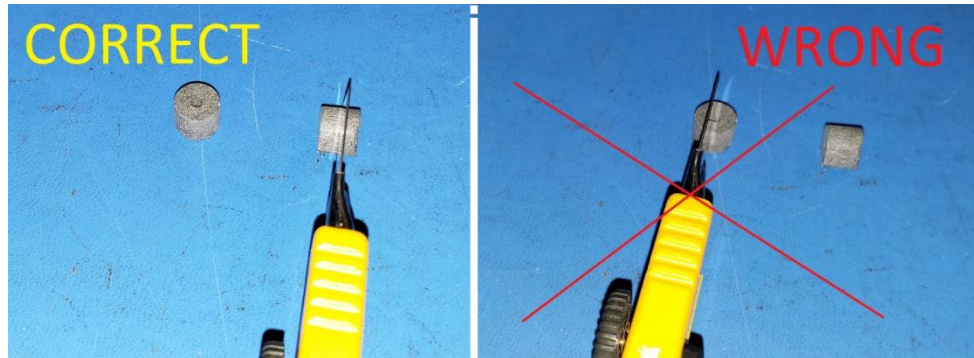
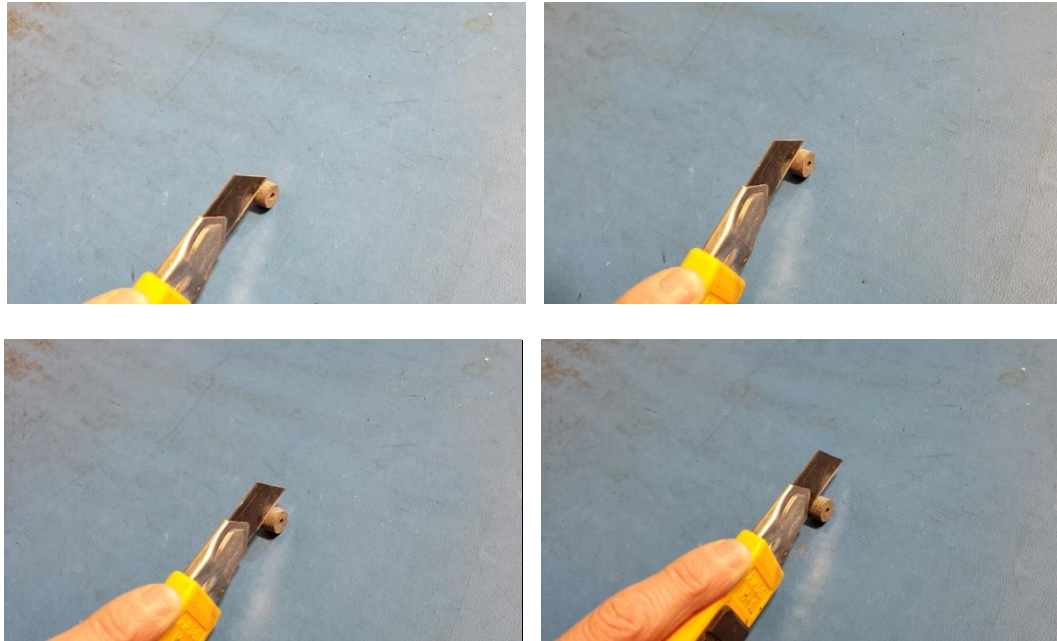


Figure 7: Pellet cutting orientation

With the blade resting on the pellet apply a **light** amount of pressure to the knife blade and slowly roll the pellet effectively “scoring” the outside edge of the pellet. Do not try to completely cut through the pellet in one motion. Instead continue to roll the pellet until 3-4 complete revolutions are done while still applying the same light amount of pressure on the knife.



Figure 8: Pellet cutting procedure.



**Figure 9:** Scoring the OD of the pellet by rolling with light pressure on the knife.

Once the entire OD is scored then more pressure can be applied downward on the knife to completely cut the pellet in half (See Figure 10)



**Figure 10:** Pellet final cutting

8. The ideal size for the final pellet would be approximately 40% (3/16" length or 0.5g by weight). CTI has successfully conducted testing of Pro38-1G motors using both 60% & 30% size pellets. Therefore detailed measurement of the final dimensions or weight is not required and a simply visual judgement is sufficient for determining the final pellet size.

*Note if one side of the pellet is damaged or broken beyond use, the second half of the pellet can also be used.*

9. Only use one half of the pellet (the small side typically). If the pellet is not cut perfectly due to the brittleness of the pellet (or if the remaining pellet is larger than  $\frac{1}{2}$  the original size) this is not an issue. The pellet can still **easily** be further trimmed (anywhere from  $\frac{1}{2}$  to  $\frac{2}{3}$  is satisfactory). Simply hold the pellet firmly and with light pressure run the knife blade against the surface just cut previously (essentially scraping or shaving the pellet). This will allow the face to be

“squared” and/or remove any excess pellet surface which is greater than half. Continue to reduce the pellet size until approx 40% of the original pellet is left.



**Figure 11:** Pellet examples after cutting (LEFT) not cut perfectly and oversized (CENTER) additional trimmed pellet (RIGHT) as cut pellet approx 50%.

10. Dispose of any extra portion of the pellet or granulars from the trimming process in compliance with all relevant state/federal laws & regulations. Powder can be burned in very small quantities and in very thin layer and must only be ignited from a safe distance. Please see the Pro38 instructions for similar disposal methods with disposal of the delay/ejection charge.

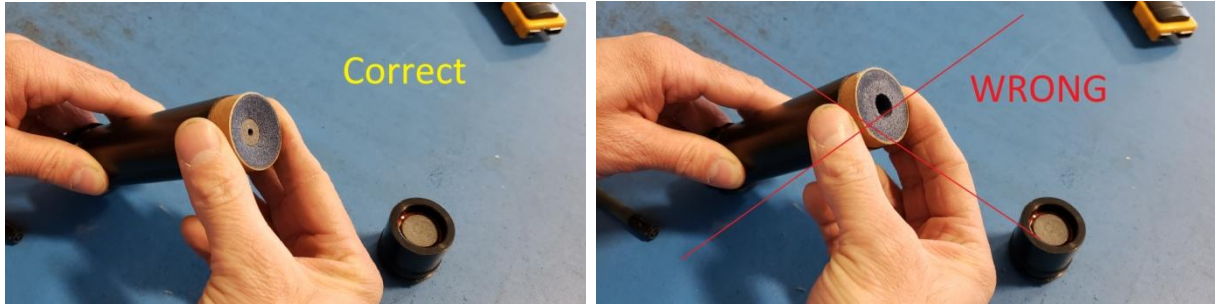
### Re-Assembly of Motor

11. Insert the newly trimmed pellet back into the forward end of the grain (i.e. bevel section) where it was originally removed from. Ensure the pellet is fully seated. The top of the pellet should be flush with the bore edge.



**Figure 12:** Pellet cutting procedure, scoring the OD by rolling the pellet with light pressure

12. Insert the propellant grain/pellet assembly back into the forward end of the liner. The pellet (i.e. bevel) side MUST be located in the forward section of the reload. See Figure 13.
13. Push the propellant grain down until it bottoms out on the nozzle. Ensure the nozzle does not come apart from the liner.



**Figure 13:** Re-assembly of propellant grain (LEFT) correct forward facing orientation (RIGHT) wrong orientation

14. Re-assemble the forward closure from step 2 and insert it into the liner. Press the forward closure into the liner until it bottoms out on the liner and ensure the o-ring is properly seated into the liner. Take care to ensure there is no damage done to the o-ring.



**Figure 14:** Re-assembly of propellant grain (LEFT) correct forward facing orientation (RIGHT) wrong orientation

15. The reload is now ready for use in its nominal configuration. Please follow the standard Pro38 instructions for preparation of flight <http://www.pro38.com/pdfs/Pro38Instns.pdf>.

**FOR USE ONLY BY CERTIFIED HIGH-POWER ROCKETRY USERS 18 YEARS OF AGE OR OLDER  
FLAMMABLE MATERIAL – KEEP AWAY FROM OPEN FLAME, CIGARETTES OR OTHER HEAT SOURCES AT ALL TIMES**

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