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# RAW Converting Calibers:

## RAW HM1000X (.25 to .30 cal)

**A Step by Step guide to switching calibers on the RAW HM1000x platform.**

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## Introduction

I'll spare all the gory details as to why, but I decide to send my perfectly awesome RAW HM1000X 50 fpe, .25 caliber gun back to RAW to have it converted to a 60 fpe, .25 caliber polygon barrel version of the same gun. Since the conversion required internal modifications for the increased power level, I decided to request a second barrel / probe setup to allow me to convert to .30 cal and back, whenever I desired. The good folks at RAW-as has become their reputation-did a fantastic job with the conversion, and an excellent job with communications during the process (and I can be a pestering pain in the rump too, I might add!).

Once I received my gun back from the upgrade, I was anxious to try out the two new calibers, and get to know them a bit. When I received the gun back, it was setup for .30 caliber, and all ready to shoot. A few days later, after having a chance to get to know the .30 cal a bit, I was anxious to try out the new polygon barrel setup in .25 caliber-thus it was time to change the setup over-something I have never done previously, on any gun.

Therein lies the reason for this 'conversion aid': this is simply a document to share with the reader my experiences when converting the gun from one caliber to the other. I'll spare the lengthy disclaimers, but suffice it to say that you should really seek out the experience of the RAW team to answer questions, or perhaps a qualified gunsmith if you have any concerns about doing this type of work yourself. If it makes you nervous, save up and simply buy a second gun in the desired caliber from RAW or one of their excellent dealers. Having said all that, as I'm about to show, I didn't find the conversion terribly difficult-even if I did have a moment or two of uncertainty during the process. Now that I've done the conversion myself several times, I can swap back over in about about 5 minutes (under 7 minutes including scope removal and remounting)-it's really an easy process. For my first time, however, I took it slow to take photos and document while not rushing the process.



**Fig 1: Various steps of the conversion process**

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## Getting Started

Before we begin, please note that there are instructions 'official ones' located on the [www.rapidairweapons.com](http://www.rapidairweapons.com) website, under the 'help zone' and 'information downloads' sections. Links I found useful include the following two: [TM Barrel removal and Bolt adjustment](#) & [HM Bolt Adjustment](#). These two links tell the overall process and should be reviewed carefully prior to starting the conversion work-though I've tried to summarize the info adequately here in this one guide.

Tools needed for this swap were pretty simple: you need three Allen wrenches (Hex wrench): a 5/32" (for the three barrel retaining screws), a 3 mm (for removing the scope mounts-yours may be different), and a 1.5 mm (to loosen the two bolt to probe retaining screws to swap the probe). Aside from that, you just need a clean place to work.

Before we begin, ensure the barrel that you are removing, and the barrel you will be installing is unloaded before proceeding with the steps listed in this guide. Always treat the weapon as though it were loaded-even after confirming no projectiles are loaded in the barrel(s).

## The Conversion Process

Rather than speaking all the steps here, I've decided to simply bullet the list, and add comments and photos for each step, that I think is important to know-because there are some interesting nuances that weren't immediately clear to me when I got to various steps.

Please note: getting access to the 3 barrel securing screws on top of the action requires any scope that was mounted to be removed and reinstalled after the conversion process. This isn't particularly troubling because the ballistics of the new caliber will certainly be different-requiring a new sight-in for the new caliber / pellet anyway.

Once you get used to the process, it will go very smoothly and quickly. After swapping calibers 3-4 times now, I've been able to complete the entire process in under 7 minutes total (that includes removing the scope, removing the barrel, removing the probe, installing new probe, installing new barrel, confirming transfer port alignment, tightening up the new parts, and reinstalling the scope back onto the action). Really, the process is a breeze once you're used to it.

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1. Prepare the gun for conversion. Gather up the appropriate parts. You will need the currently assembled RAW HM1000X, the new barrel assembly, and the corresponding probe assembly that is mated to the new caliber.



**Fig 2: RAW HM1000X, awaiting conversion from .30 cal to .25 cal.**

2. Remove the magazine or single shot tray (SST), if installed. Simply cock the action, remove the magazine (or SST), and de-cock the action. (Note: if you are unaware, the action can be 'de-cocked' by simply opening the 'bolt', holding onto it firmly with one hand, while gently pulling the trigger with the other hand, and then gently letting the bolt return to its resting position, releasing the trigger and then closing the cocking lever).

3. Photograph the current scope placement, and then remove the scope from the gun. Simply loosen up the scope mount screws enough to open the mounts and gently wiggle

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the scope out of Picatinny slots. Note: the 'pre' photo is to help you position the scope in the same location once the conversion is complete.

4. Per the instructions linked earlier in this document, the next step requires you to use a 5/32" Allen (hex) wrench and remove (completely) the rear-most (closest to the breech) retaining screw from the action. See fig 3 below. Set aside in a safe place-it will need to be reinstalled later in the process.



**Fig 3: Removal of Rearmost Barrel Set Screw.**

5. With the rearmost screw completely removed and set safely aside, loosen the two remaining barrel set screws, but do not remove completely (it's not necessary). See Fig 4.



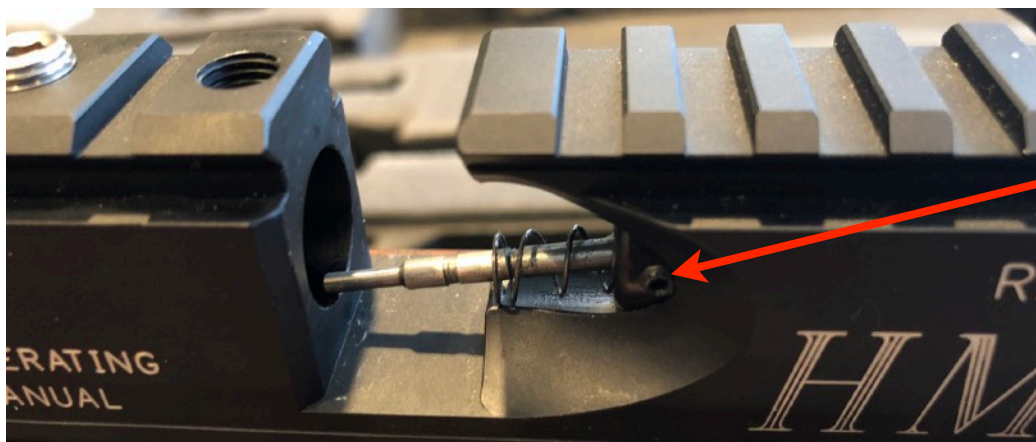
**Fig 4: Loosened Barrel Set Screws.**

6. Carefully slide the barrel out of the action (forward) and set aside in a safe location. Please note the orientation of the port on the barrel as it is pulled out of the gun-it should be located downward, 180 degrees away from the first set screw (the one that was removed). See Figs 5-7, below.



**Figs 5-7: Removing Barrel From RAW Action**

7. Locate the two probe retaining screws on the bolt body. Feel them to witness the initial position of these screws-they are just flush with the outside of the bolt body. While holding probe, loosen the two set screws on the bolt body (black colored piece with two set screws, 180 degrees apart-use 1.5 mm Hex wrench.). See Fig 8, below.



**Note: Loosen, but don't remove, these two screws. Before loosening second screw, hold onto the probe so it doesn't spring forward-into the breech block.**

**Fig 8: Probe, After Removal. Shows 'Inner Probe', & 'Probe Spring'.**

8. Carefully slide existing probe forward, out of the bolt body, and gently push out the front of the HM1000X action. Remove from front of action, where barrel was just removed. See Figs 9 & 10 below.



**Figs 9: Removal of Probe thru front of Action.**

9. After removing probe from initial caliber (.30 cal in my example), set aside in a safe location for storage. Retrieve probe for the new caliber (.25 cal in my example), and reverse the actions of step 8 (above), by feeding probe [nose facing forward] into the action. Guide the probe back to the inner probe and spring by using an Hex wrench or similar item.

10. Slide new probe over inner probe, compressing the probe spring in the process. Guide the new probe into position within the bolt body deep enough that probe's 'retaining step' (shown at the top of Fig 10), is beyond the two small retaining screws that were loosened in step 7. While holding the probe in this position, begin to thread in one of the probe retaining screws loosened in step 7. Note: these screws will NOT bottom out against anything-they are to be threaded in only deep enough to be flush with outer surface of bolt body-no more than that. They will **NOT** feel 'tight' or torqued once in proper position. Repeat process on other screw on the opposite side of bolt body.

11. Ensure that the bolt body freely moves back into the action while cocking the gun (don't cock the action-just cycle it far enough to ensure the set screws from step 10 don't cause the action to not cycle). Similarly, grab the silver probe, and push it inboard (slightly) gently compressing the spring [do NOT push it back in very far-just ensure it

**Probe's Retaining Step**



**Fig 10: Both Probes (.25 & .30 cal)**

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moves freely into the bolt body]. The silver part of the probe should also be free to rotate around the 'inner probe' without binding. See Fig 11 below.



**Fig 11: New Probe Installed in Bolt Body.**

12. Retrieve new barrel assembly and slide into the front opening on the action where the previous barrel was removed. Note: the transfer port on the barrel, nearest the breech end, should be facing downward (180 degrees away from set screw that was completely removed in step 4). On my barrel, there was a small drill point to locate the side opposite the transfer port on the barrel. If it is not present on yours, then place a small mark with a permanent marker opposite the port to help aid in rotational alignment. Seat the barrel fully into the action-until the carbon fiber barrel sleeve contacts the action (or until the back of the barrel is flush with the breech block, if the barrel doesn't have a sleeve).

13. Once the barrel has been fully seated into the action, and rotational alignment of the transfer port has been ensured, tighten down center set screw, snugging it firmly with the hex wrench (best to apply torque to the very short end as to not over torque the screw). Do not over-tighten, but do not leave lightly torqued either.

14. Reinstall set screw removed in step 4. Snug up front and rear barrel set screws in the action in the same way the center screw was just tightened (ref step 13 above).

15. Open the action using the bolt. Close the action, ensuring that the cam lock mechanism is starting to feel resistance when it is about 20-30 degrees away from closing

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fully. Reference RAW's instructions for further details on how to adjust, if needed (my parts didn't need adjusting).

16. [Optional step-proceed at own risk] Prior to remounting optics, go to a safe area, load a pellet into the breech (single shot tray, or otherwise) and, while pointing gun's muzzle towards a safe target, release the trigger, paying attention to where the gun is pointed, but also to the interface between the probe and the barrel-watching and listening for any blowback from the barrel that could indicate a probe adjustment is needed.

Again, if needed, refer to RAW's instructions for details on how to adjust the probe assembly properly, or call RAW (or dealer) directly for technical assistance.

17. Re-mount optics carefully positioning them in the same location as they were prior to removal for the barrel swap.

## Conclusion

Now that the barrel swap is complete, store the original parts in a safe, dry location until you desire to reinstall them. If you run into any concerns that aren't addressed in these instructions, please contact RAW or a RAW dealer directly to get your questions properly answered.

Again, I do not take any responsibility for any damage done to your gun should you decide to undertake this procedure on your own. Nor do I take any responsibility for any injuries resulting from following any of these instructions. This guide is meant to be a helpful aid for anyone who would like a little assistance in converting their own gun's caliber. Use only genuine Rapid Air Weapons parts, and always ensure the barrel that you are removing, and installing is unloaded before proceeding with the steps listed in this guide.

