Tuning the R7
With Jim Maccari's R7/HW30 Kit

Before I begin, I'd like to thank Jim Maccari, Tom Gaylord, Robert Nault, and Russ Best, who all helped get this tune in my gun.

> I am also writing an account of shooting the tuned gun. Additional information on dissassembling and lube tuning the R7 is available in "Beeman's R7: We Tune a Classic" in the February 1999 *The Airgun Letter.* This article has some schematics of the Rekord trigger (same as p. 116 of Gaylord's *The Beeman R1 Supermagnum Air Rifle*) and explanation of cleaning and lubing the trigger. This back issue is available from the publishers of the *Airgun Letter* for US$2.00.
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> I wrote some instructions on building the spring compressor you see used below.

Jim Maccari's tune kit for the R7, as I purchased it, includes a spring with fitted guide, moly lube, and Maccari's Velocity Tar. These should really be all the parts necessary for a tune. You can see it as it arrived at my doorstep in the photo below.

The comments on the envelope are all the instructions that are provided with the kit, so you'll need to know how to disassemble the gun, what tools to use, etc. This is what I hope to provide on this page. Of course, you should know something about spring airguns before beginning, as this procedure can damage your gun. *I assume no responsibility for any mistakes, or any errors on this page that lead you to make mistakes, so proceed carefully and at your own risk.*

The first step in disassembling your gun is to remove the large screw on the underside of the stock and the two screws in the trigger guard. This should allow you to free the action and barrel from the stock. You will need to use a large screwdriver on the front trigger guard screw; I found that Sears has a large, black-handled screwdriver that works just fine.

The next step is to remove the Rekord trigger assembly. First use a 1/8" pin punch to drive out the rear (shorter) pin holding in the trigger assembly; drive this out from the right side of the gun to the left (the left has the red end of the safety). Use a rubber mallet for driving this out--they are cheap and useful, and also do not damage parts. Then swing the trigger assembly forward while holding the safety pin in. The safety will then pop out into your hand; remove it, noting the how its spring is positioned. Then drive out the front trigger retention pin and pull the trigger assembly from the receiver. You will notice that the trigger is full of grease. You'll want to clean that out with a straightened paper-clip or something; doing so really improves the trigger.

Next, you'll need to put the gun into a spring compressor to remove the spring.

To remove the spring, apply pressure with the spring compressor to the endcap then unscrew the single screw that holds the endcap into the gun.

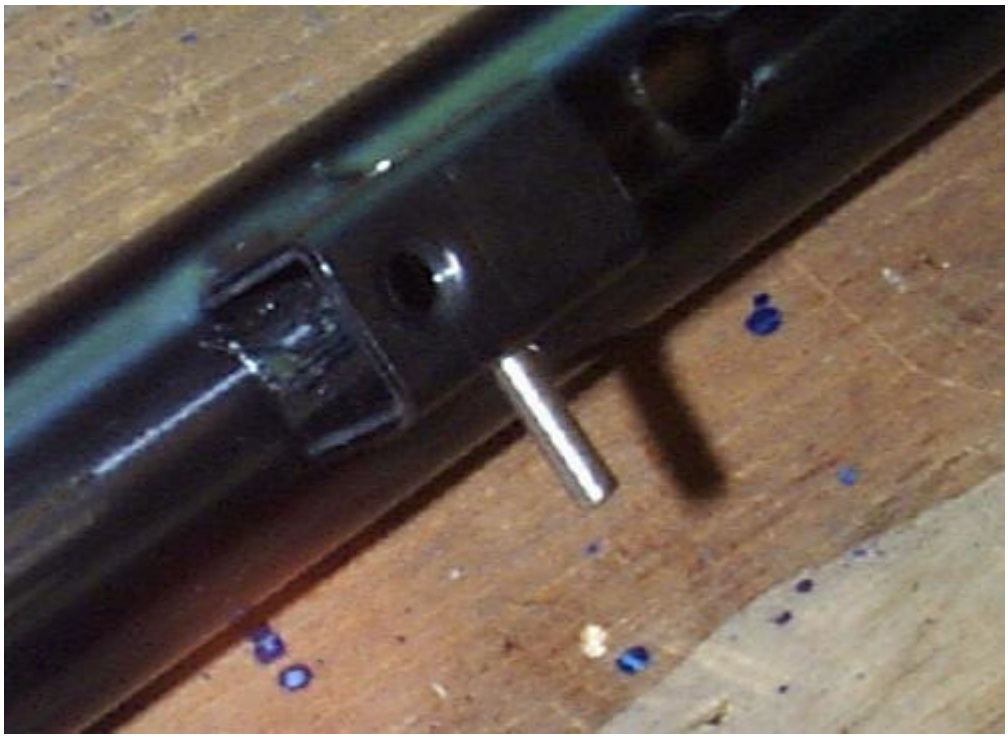
Slowly back off on the compressor and the spring will unload. The endcap is quite long and will stabilize the spring for you, so don't be too nervous about it. You only have two inches or so of travel to worry about, as you can see below.

Slide out the spring and set it aside on some newspaper or something. As you can see below, the original Weihrauch spring from my R7 was severely canted, either from bad steel in the spring or a loose spring guide.

As you can see in the next photo, Maccari's spring is slightly longer than the Weihrauch spring, and it's got a thicker flange on the spring guide. The Weihrauch spring guide is more loosely fitting.

In the next photo you can see that the holes for the rear trigger retaining pin in the endcap of this gun were not correctly cut; one side is slightly lower than the other resulting in a not a hole but two sharp metal prongs. Despite this, the gun functions fine.

Remove the action from your compressor. Next you'll need to remove the cocking link so that you can free the piston. Begin by driving out the little bridge pin that retains the cocking arm--use the 1/8" punch and rubber mallet again here.



Doing so will allow you to lift up the cocking foot from the receiver body. Then unscrew the barrel pivot nut on the right side of the gun, then the barrel pivot bolt on the left side. Don't lose the little lock rings or the two spacers.

Now remove the barrel assembly from the receiver and slide the piston out of the receiver. Use the punch or a screwdriver to sort of help it along; don't let the piston seal be damaged on any of the sharp edges of the holes cut in the receiver. Because these holes are sharp, don't use your finger for any of this, but the tools just listed.

At this point, your gun should be in about as many pieces as you want to get it. So it's clean and lube time. I cleaned and degreased everything with rubbing alcohol, including the seal. I also used a light stone on my Dremel tool to take off some of the sharp edges on the receiver. Cleaning the inside of the receiver and the compression chamber is easy if you wrap toilet paper around a dowel; just wrap it evenly with about 2/3 on the dowel and 1/3 off, then you can slip it right into the receiver and scrub away. When it's dirty/full, pull off a layer or two and go back to work.

After you've got the gun all clean, it's time to lube up the new parts. Moly the sides of the piston seal and piston. Don't put it on too thick, but do put on enough to allow for losing some against the receiver wall as you slide the piston home. Be careful to avoid cutting the seal on any openings in the receiver tube. Save tarring the spring for a minute.

Next reinstall the barrel. Begin by reinserting the cocking foot into the receiver tube, after putting a little moly on it. Then drive home the bridge pin. Clean the sides of the breech block and the part of the receiver that holds it--don't want any grit in there! I didn't do this well, and now I have a nice shiny scratch to look at. Clean the spacer disks. Put moly on the breech block and on the spacer disks, then slide the whole slippery mess into the receiver.

Using your punch or something pointy and sharp, pull the disks into proper alignment. Insert the bolt, remembering that it goes in from the left, and it's nut and lockring attaches from the right. Just snug it down to prevent fall-apart.

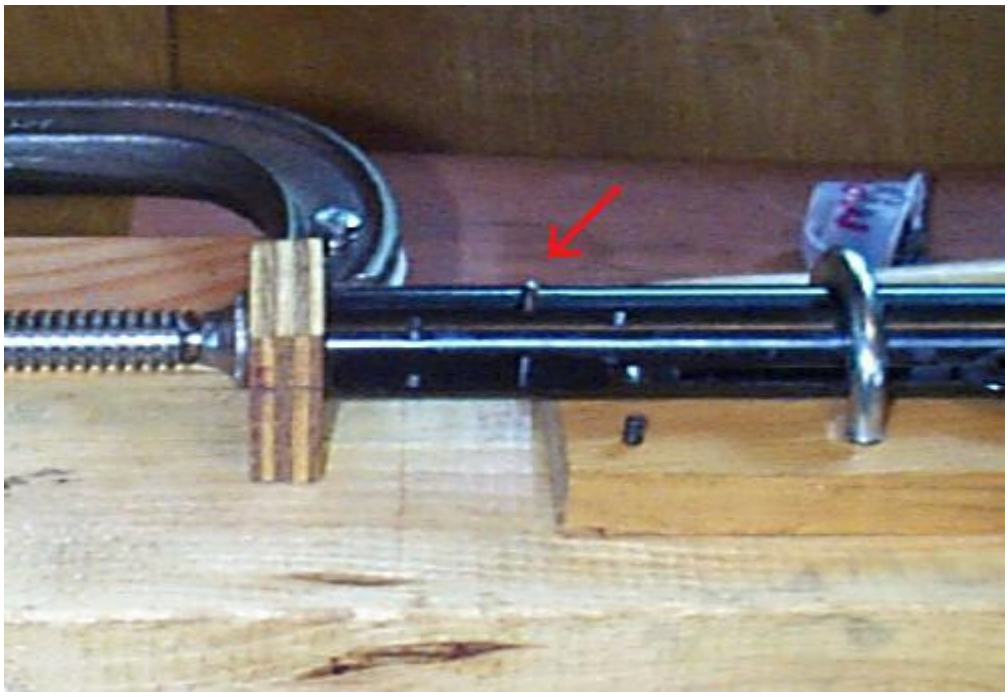
Now tar the spring. Spread the tar over the outside diameter only in an even coat. You have to use your finger. A Q-tip will get little cotton fibers everywhere. The tar cleans up with something like 409 or even better with paint thinner.

Slide the spring into the receiver and into the piston. That's a nice, safe place to keep it while you clean your hands and get your spring compressor ready. Compress in the spring and

endcap. Stop just a minute.

A word on that little screw you're about to install into the receiver to retain the endblock: from what I hear on Anything Goes, it is frequently stripped unnecessarily. When installing it, there is no need to use much force at all. If you find yourself having to use force, stop and realign your parts before proceeding.

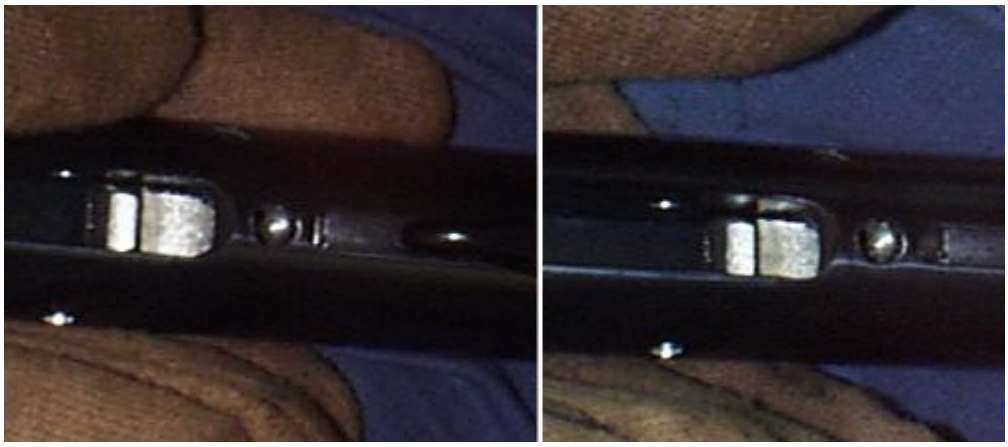
Now, my solution is this. I inserted the endcap roughly as it should line up, with its slot for the trigger lining up with the one in the receiver. It of course turned a little during installation. So, while the compressor is still holding it in, with no pins or screws installed yet, I take the end of a wrench or something and stick it in the trigger slot and rotate it to line up perfectly with all the little matching holes in the receiver. Next, I take the long trigger retaining pin and drive it in. Your screw hole should line up now.



It may not be perfect, so go gently as you try to screw it in. If it doesn't want to go with almost no pressure applied to it, use your wrench or whatever to wiggle the endcap--there is some play around the pin. You should easily get the screw to start with this procedure. When you've got it started, don't go ahead and tighten it down, but just snug it--the stock will keep it from backing out anyway.

Remove your gun from the spring compressor and drive out the trigger retaining pin.

Check to see if you will have good sear engagement by "cocking" the gun without the trigger in the way. Using some shop gloves with good traction, like those little rubber dots, will help you get a good grip and avoid cuts. Make sure that almost the whole notch in the piston rod clears the receiver wall inside the trigger cut-out. If it doesn't, Maccari's guide will be too long to allow you to get proper lock-up when cocking the gun. This, apparently, is rare, but it happened with my gun; the piston is slightly longer than is usual. You can see how much you need in the comparison below.



The picture on the right is the engagement you can get with the Weihrauch spring; the picture on the right is Maccari's. It's not clear in this picture, but on the right, with the factory spring, almost the entire cut of the notch has emerged--just a hair of it remains concealed. About 1/16" inch or slightly less of the notch is concealed when using Maccari's spring and guide. If this is the case for you, I will provide a solution at the end of this account.

But, assuming all is well, it's time to install the trigger.

The Beeman R1 Book recommends installing the trigger cocked. I don't. Leave it uncocked, slide it into the receiver until the hole for the long pin lines up. Install the long pin. Then slide the safety into its little nest, not losing the spring in the process. Then rotate the trigger up toward proper alignment with the other retaining pin hole while feeling for proper engagement with the safety shaft. The upper rear sear lock should slide into the notch in the safety. Once you've got proper engagement, the upper rear sear lock will hold the safety in place while you slip the second (and final) pin into position.

At this point, it's a good idea to test fire the gun. Holding the receiver and barrel firmly--cock the gun. See if the safety has set itself. If it has not, you may have a gun with a longer piston. If the safety and trigger don't work flawlessly, you may also have a gun with a longer piston, or you may have installed the safety incorrectly. If later your trigger doesn't work after putting on the stock, that may be because you've overtightened the rear trigger guard screw.

But assuming all is well, it's time to get ready to put the stock back on. But first, clean off your fingerprints with a nice preserving oil like RemOil. Then moly-lube every place that looks galled (worn by metal to metal contact). Lube around the cocking slot; lube the places on the receiver where the cocking arm has been digging itself a new home--if it has on your gun. If you have something like Beeman UltraLube, lube the pivot points on the cocking arm. Tom Gaylord recommends spreading moly on the bottom of the cocking arm where it rubs against the bridge pin--I did that too, although I noticed no wear in that area.

Put your stock on, don't overtighten any screws. Adjust the barrel tension so that it either holds itself still or gently drifts down when you leave it broken after cocking. Now go shoot your gun. Don't chrony it for a while or expect great groups until all the new parts have had a break-in period. I'll provide a decription of the tune's effects after my gun has been through this break-in period, but for now I can say that it shoots much, much smoother with less twanging and a faster recoil cycle.

If you have a long cylinder...
You will need to take some material off the end of your piston opposite the piston seal, or

you will need to see if you can return your tune to Maccari. I chose to take 1/16" off the end of my piston. I cut a 1/16"-deep depth-checking notch in its skirt end with a stone on my Dremel tool. Then I chucked it into a drill and used a file to remove the material until my notch disappeared. Then I cut a chamfer on the edge with the file and smoothed the edges a little. You'll need a second pair of hands for this.

Then I reassembled the gun. Everything worked fine. If you choose to do this, please be careful; don't apply a lot of pressure with the file or you can injure yourself and do harm to the bearings on your drill. You may not need to remove as much material as I did; you could experiment with that.

I'd like to add that Jim Maccari bent over backwards to help me with getting this kit installed; he offered refunds and information and was a true class act.

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