

**INSTRUCTION BOOK**

**COLLINS VERNIER  
TUNING KNOB**



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Figure 1. Tuning Knob Mounted on 75A-4 Receiver

## I. GENERAL DESCRIPTION

The Vernier Tuning Knob (Collins part number 541 6291 00) is specifically designed for use with the Collins 75A-4 Receiver; however, it is perfectly adapted for use with such other units as the KWS-1, 75A-2, and 75A-3. The only requirement is that the shaft to be turned is 1/4 inch in diameter and that it protrudes at least 7/8 inch from the front panel.

The tuning knob is made of black plastic. The gearing mechanism is constructed of brass, aluminum, stainless steel, and other corrosion-resistant materials. The construction is such that it can be readily taken apart for cleaning and lubricating. The gears are machine-cut and spring loaded to eliminate backlash and are designed to obtain a 4 to 1 speed reduction.

## II. INSTALLATION ON A TYPE 75A-4 RECEIVER.

The Vernier Tuning Knob is shipped in two pieces; the vernier mechanism and the knob. Check the knob and ring gear to make certain the setscrews are in place. If they are missing, search the packing material.

Use the following procedure to install the Vernier Tuning Knob Assembly.

1. Refer to figure 2. Using the knob setscrew wrench included with the original purchase of the 75A-4 Receiver, remove the old tuning knob to expose the tuning shaft front bearing plate.
2. Remove the two screws securing the front bearing plate and save them. Screws for installations other than the 75A-2, 3, and 4 are furnished with the knob. Slide the front bearing plate off the tuning shaft and discard it. The frame of the vernier mechanism of the new knob includes a new front bearing for the tuning shaft.



Figure 2. Step 1



Figure 3. Step 2

3. Figure 3 shows the parts necessary to install the new tuning knob. Arrange these parts as shown and set all others aside.

4. Refer to figure 4. Enter the tuning shaft into the ring gear hole and slide the vernier mechanism back to where the tuning shaft is about to enter the frame bearing. Carefully press the frame downward until the bearing in the frame is aligned with the tuning shaft then slide the frame onto the shaft. (Because of the antibacklash spring, the frame bearing will not ordinarily be aligned with the tuning shaft until a small amount of pressure is exerted.) Slide the assembly back on the tuning shaft and align the two mounting holes with the old bearing plate mounting holes. Insert the bearing plate mounting screws which were saved and tighten them. Slide the ring gear back until there is about 1/32 inch clearance between the back of the ring gear and the frame casting. If the ring gear is not positioned correctly, it will not clear the shim washer located behind the pinion gear and backlash may result. Tighten the two shaft setscrews. Turn the ring through several revolutions to make sure it does not rub anywhere.

5. Place the new tuning knob onto the knob shaft (shown in figure 4). Slide the knob on the shaft as far as it will go and tighten the two setscrews.

6. Release the DIAL DRAG knob. It is no longer used.



Figure 4. Step 3

### III. MAINTENANCE

#### 1. LUBRICATION.

If, at any time, the knob loses its smoothness or begins to feel toothy, there is a possibility that the lubricant has become dirty or dried out. Remove the entire assembly from the receiver and wash the vernier mechanism in carbon tetrachloride or gasoline. Clean out the back of the tuning knob with a clean lintless cloth. Coat the ring gear teeth with a thin film of light grease such as Lubriplate, or Vaseline. Disassemble the pinion from the pinion collar by releasing the two collar setscrews and withdrawing the pinion shaft. Wash the parts in carbon tetrachloride then reassemble after first coating them with the light grease. Squeeze the pinion and the pinion collar together and tighten the setscrews. Assemble the remainder of the knob.

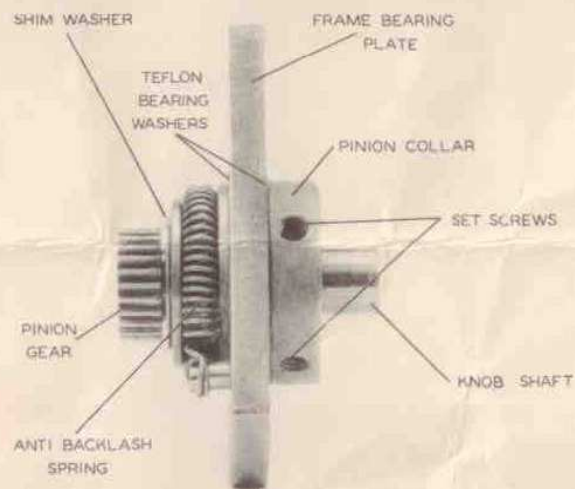


Figure 5. Vernier Mechanism, Right Side View

#### 2. ADJUSTMENT.

If the tuning knob feels wobbly, remove the knob, release the pinion collar setscrews (see figure 5) and squeeze the pinion and pinion collar together then tighten the setscrews and replace the knob. If the tuning knob binds as it is rotated, remove the knob, release the pinion collar setscrews (see figure 5) and loosen the pinion and pinion collar. Tighten the setscrews and replace the knob.

Continue adjusting the pinion and pinion collar until the knob turns freely with a minimum of wobble.

The main dial should not move when the BFO control is rotated. If it does, tighten the pinion and pinion collar as described above.

The Vernier Tuning Knob assembled and installed on a 75A-4 Receiver is shown in figure 1.

Use the same procedure for installing the Vernier Tuning Knob on a Collins Type KWS-1 Transmitter. For other types of equipment, refer to figure 6 for mounting dimensions and drilling information.

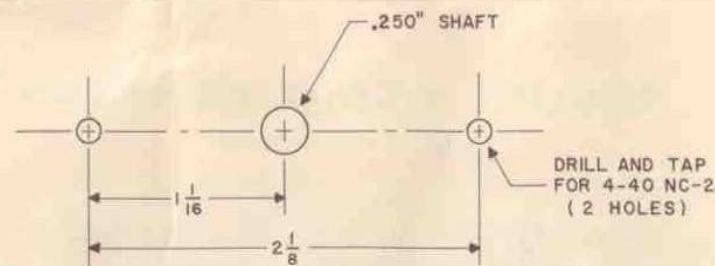


Figure 6. Mounting Dimensions and Drilling Template