

Replacement of Tempo 2020 PA compartment Bandswitch shaft coupler

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The PA compartment Bandswitch shaft coupling inside the PA compartment is made of insulating plastic formed onto two brass collars. The material appears to be Delrin, an engineering plastic in the acetal family. The two 6mm diameter (approximately 0.235") shaft components that it connects are separated by a "wall" between the two end holes that is approximately 2mm thick. Four Phillips screws hold it in place on the shafts. If using a non-standard replacement shaft coupling, make sure that adequate spacing is maintained between the two shafts (in addition to the spacing, the plastic dielectric material provided by the two separate sections of the collar provides additional insulation). The insulated coupling is slightly less than 0.75" long. It would be extremely difficult to use any longer coupling than this using these instructions. There would not be sufficient clearance between the coupling and the front wall of the compartment.

For this procedure, a coupling from a "spares unit" Tempo 2020 was used to replace a broken one in the working transceiver. Note that other shaft couplings in the transceiver are slightly shorter at about 0.70" long, and these couplings use four #6 star screw inserts, which are probably not sufficient to handle the torque loading on the PA Bandswitch section.

Note: Delrin is a "slippery" plastic, and it does not accept any type of glue well.

Tools required:

- Standard blade and Phillips screwdrivers
- an L-shaped Phillips screwdriver with a maximum "bent" length of less than 1"
- a #6 star (Torx) bit tool
- medium wattage soldering iron
- needle-nosed pliers
- sharp soldering aid tools (to assist in removing leads from component posts)
- forceps or long tweezers.

This procedure assumes that the PA Bandswitch knob and two potentiometer knobs have been removed and the front panel has been dropped down. A #6 star (Torx) bit is necessary for this.

Refer to the set of annotated the end of this document for reference.

1. Remove the triangular shaft support plate (2 screws).
2. Remove the PA compartment cover plate.
3. Remove the two 6146B tubes.
4. Using a the soldering iron, a sharp soldering tool and needle nose pliers, remove the 3 leads from the back of the Plate Tune capacitor (C1037). (White insulated wires from the plate tank coil and the front section of the bandswitch; and the square molded mica capacitor lead).

5. Using the soldering iron and a sharp soldering tool and needle nose pliers, remove the rectangular molded mica capacitor's (C1038) lead from the post on the neutralizing capacitor (on the bottom of the compartment).
6. Using a #6 Star bit tool (Torx bit) remove the Plate Tune capacitor shaft coupling.
7. Using an L-shaped Phillips screwdriver, remove the three screws and washers holding the Plate Tune capacitor (C1030) to the compartment wall, and remove the capacitor. Be careful to not disturb the tuning coils on the driver circuit board.
8. Using an L-shaped Phillips screwdriver, remove the screw and washer on the outside of the PA compartment holding the coin-shaped 150 pF 3 kV capacitor (C1031) to the PA compartment front wall.
9. A strap connects the Plate Load capacitor, the Plate Tune capacitor and the coin-shaped 150 pF 3 kV capacitor. Using the soldering iron, heat the strap at the junction at the bottom of the Plate Tune capacitor, and pull the capacitor out of the compartment.
10. The next steps assume that the PA Bandswitch shaft coupling is not broken, i.e., being removed from a donor rig. If it is broken (i.e., being removed from the recipient rig), modify the steps accordingly.
11. Using a standard screwdriver, rotate the bandswitches to the 7.0 MHz position (position #4). If the sprocket drive is intact, the transmit and receiver board and PA bandswitches will all rotate.
12. The next 4 steps are involved in removing the 4 screws that secure the coupling to the PA bandswitch shafts. It is important to know what position the PA bandswitch is in before and after replacement. Using a Phillips screwdriver remove the two screws now positioned on the top of the shaft coupling of the PA Bandswitch. If the coupling is broken, rotate the back section screw such that the screw is on top of the shaft, and remove it. This will place the PA bandswitch in the 28.0 MHz position.
13. Rotate the Bandswitch shaft to the 28.0 MHz position (position 6).
14. Loosen the Allen screw on the PA Bandswitch shaft spur gear that engages the bandswitch chain drive.
15. Remove the two remaining screws from the coupling, and if the coupling is broken, pull the PA Bandswitch shaft forward so that the rear brass hub may be slid forward and off the PA Bandswitch. If the coupling is broken, also slide the front brass hub off the end of the brass shaft.
16. Using appropriate small wrench or pliers, fully loosen the PA Bandswitch nut and washers on the protruding shaft to enable it to be slid back.
17. Carefully pull the bandswitch to the rear until there is room to remove the coupling from the shaft (assuming the coupling was intact). Do not damage the plate choke while pulling the switch back.

18. While pulling back the switch, slip the new coupling (with screws partially inserted) onto the protruding switch shaft. This will be easier with the transceiver tilted back, so that the washers and nut do not slide off the shaft.
19. This step is best performed with the transceiver vertical. Pushing the bandswitch forward slightly with one hand, carefully rotate the nut until it engages with the thread. I found that a pair of forceps were handy for this.
20. Fully tighten the nut on the bandswitch.
21. The bandswitch should still be in the 28.0 MHz position, and the shaft coupling screws should be on top of the shaft. (From the front of the transceiver, these will be the pair of screws that are furthest counter-clockwise on the coupling).
22. Pushing the PA Bandswitch shaft backward toward the rear of the transceiver to make sure that it is fully inserted into the coupling, tighten the two screws on top of the coupling at this point.
23. Retighten the spur gear Allen screw with a #6 star bit.
24. Rotate the bandswitch to the 7.0 MHz position.
25. Tighten the two screws that are now on top of the coupling.
26. Perform steps 9 through 1 in reverse to complete the job. Before retightening the PA bandswitch sprocket, it is important that it and the other 2 shafts are synchronized such that all bandswitch sections are selected to the same band.

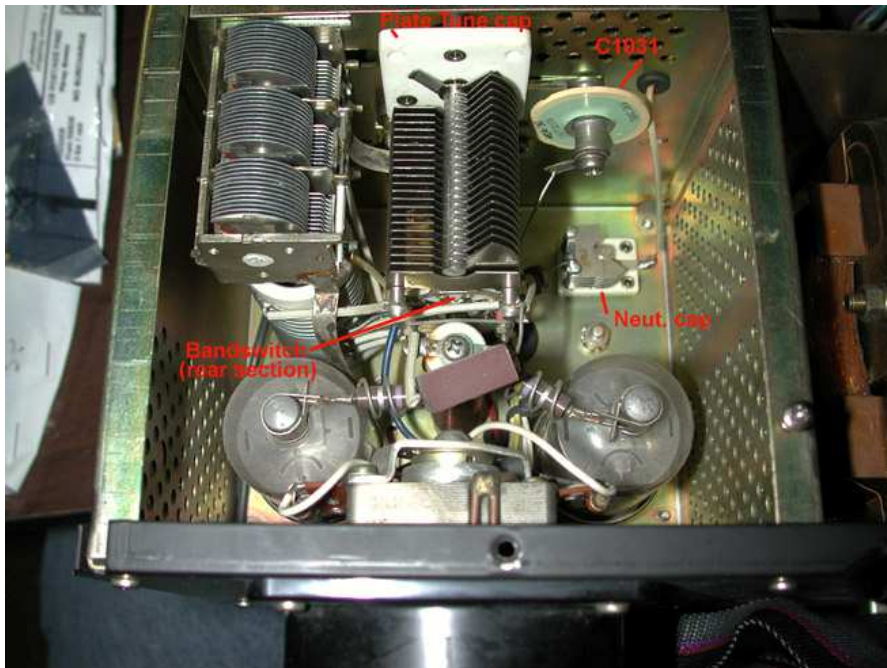


Photo 1 – View of PA compartment from top rear

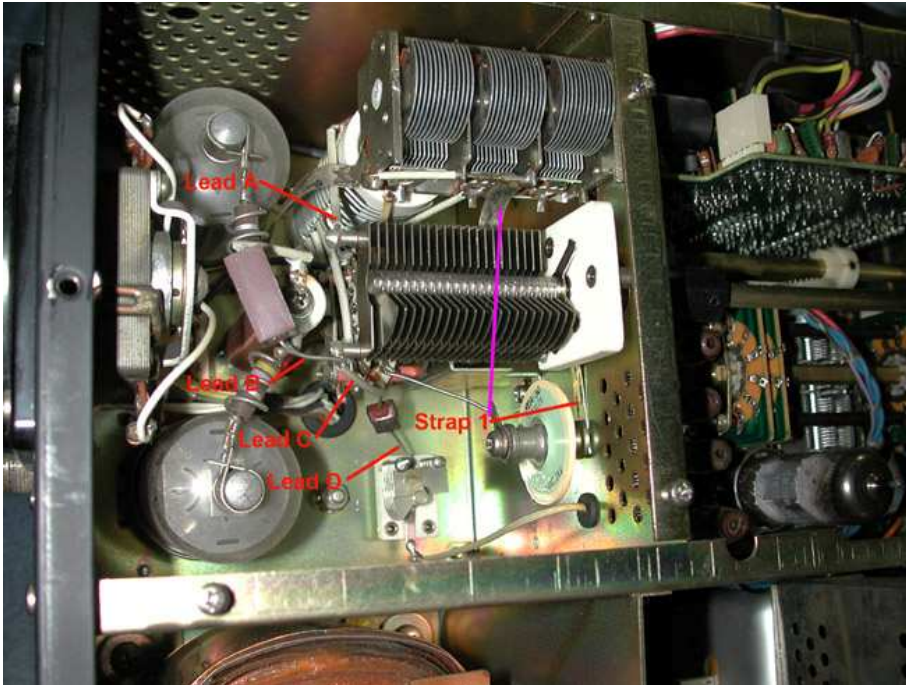


Photo 2 – View from top side

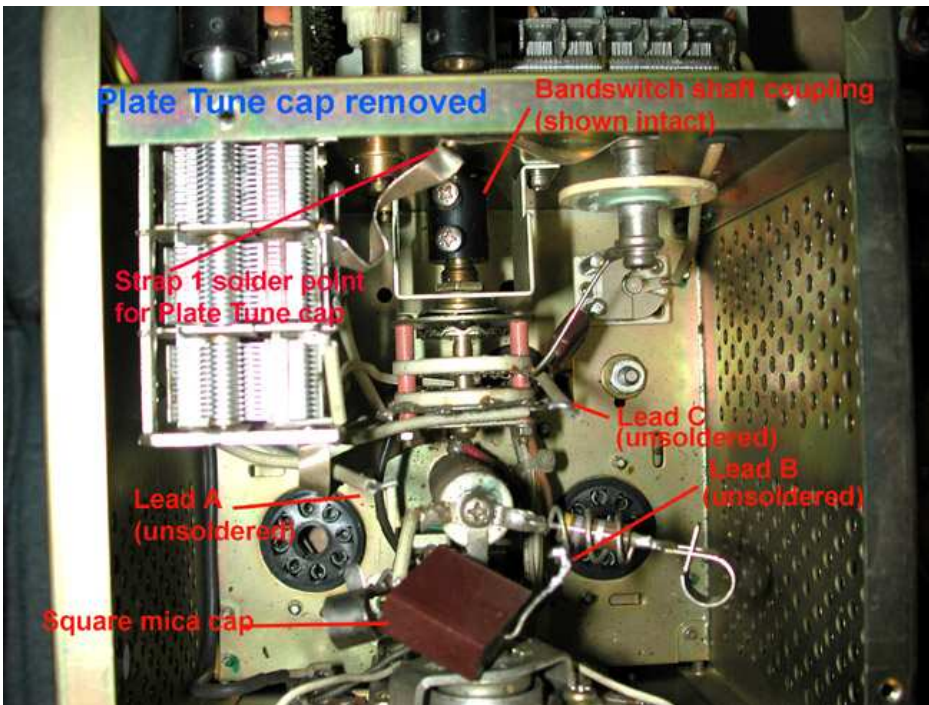


Photo 3 – Plate Tune cap removed, bandswitch now visible

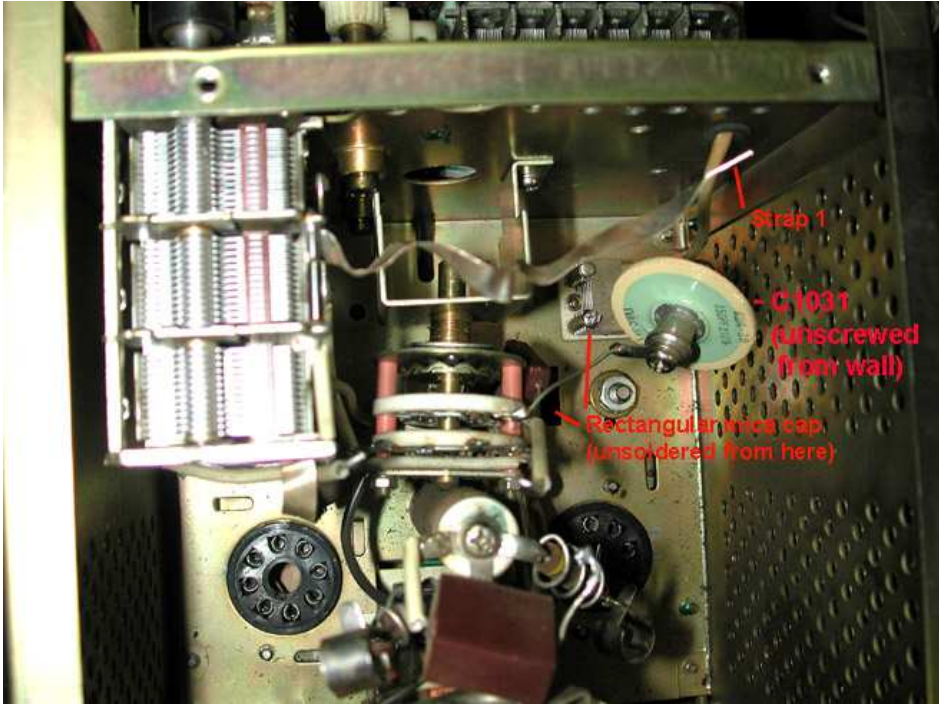


Photo 4 – Coupling removed, bandswitch pulled back