

# Frosting for the FT-901DM

## — simple improvements for Yaesu's superb performer

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One of the hottest and most exciting rigs presently on the amateur market is Yaesu's FT-901DM transceiver. The outstanding performance of this "no compromise" unit is rivaled only by the enthusiasm, interest, and technical prowess of its stateside representatives and distributors.

Before delving into the collection of 901 modifications I've gathered via

several sources, I must emphasize that this unit is a star performer as it stands, and you can expect long-term enjoyment regardless of your decision whether or not to try any of these options. I'm complimenting the rig, not discrediting it in any way.

### Speech Compressor

The FT-901DM's speech compressor does a superb job, but its response is tailored for high-pitched Japanese voices rather than the lower-pitched American voices.

If you would like to see the speech compressor become a real tiger, change

C218 on PB1703 from a 100 pF to a .01-uF mylar™ or paper capacitor. PB1703, the ALC/speech compressor board, is located third from the rear on the rig's left side. C218 is located on PB1703's bottom center, and its solder connections are almost directly beneath the clear plastic-insulated jumper on the circuitry side of this board. This modification extends the compressor's low frequency range and allows it to operate more efficiently.

While discussing audio response of the 901, I might also suggest that amateurs searching for a quality mike try the Shure 526 (less transistor preamp) with the 901. I've tried a bundle of mikes with mine, and this one performed head-and-shoulders above all others.

### ALC

If you would like smoother ALC action (or if you've been concerned about meter readings in the green part of the ALC scale), this simple modification will ease your mind

and produce very good results. Remove the 901's bottom cover and locate the socket for board PB1703. Connect a 68k, 1/4-Watt resistor between the ground and pin 16 of this socket, then bypass the resistor with a 2.2-uF tantalum capacitor.

This is a good time to tweak dot-dash ratios on the Curtis Keyer, if desired. The keyer's PC board is also located on the 901's bottom side.

### Low 40-Meter Output

If your 901 produces an output of less than the usual 100 to 120 Watts on 40 meters, try this simple procedure. Add a .01-uF 500-volt disc capacitor from C22 to ground. C22 is a feedthrough capacitor located in the power supply.

### Flickering LEDs

The memory LED in some 901s (located above the digital frequency read-out exhibits a very slight flicker when the unit is originally turned on and a frequency isn't loaded in

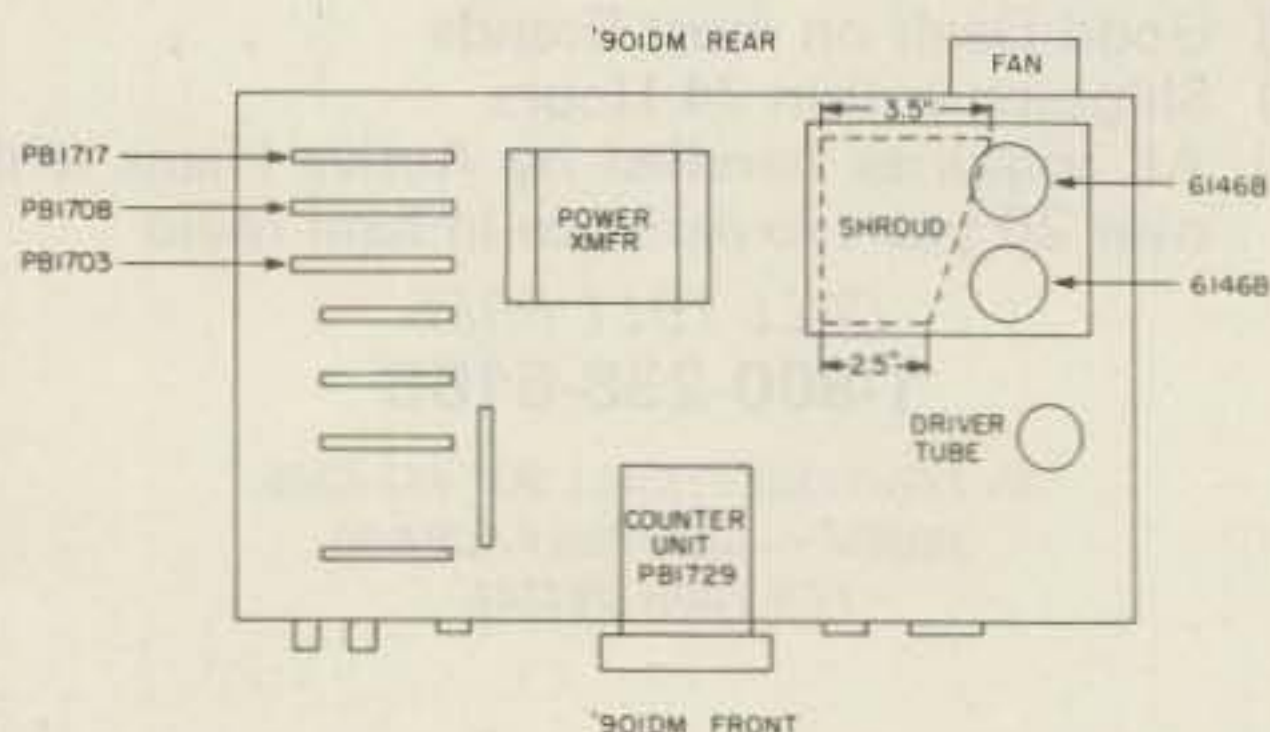


Fig. 1. Placement of 6146B cooling shroud and printed boards, as described in the text.



memory. There are two simple solutions to this situation: 1) Simply tap the memory button and load a frequency into memory, or 2) change C61 on the memory board from .33  $\mu$ F to 4.7  $\mu$ F. A tantalum capacitor is suggested.

### Fan Noise

Since I'm accustomed to the total silence of Rotron Whisper fans, I found the Yaesu fan a mite loud for my sensitive ears. A close inspection of the fan revealed a slightly off-center armature. This situation was visible when holding the fan proper up to the light and looking through its rotating armature to assure symmetrical alignment. I found the most accurate way to adjust this fan involved carefully applying 110 volts to the removed fan and slowly positioning its armature for minimum noise. If you prefer an absolute death-quiet fan, Rotron's small Boxer fan can be substituted here. The fan in my 901 may have been one in a hundred, so use your own discretion with this modification. Fortunately, this fan unplugs and unbolts from the outside of the 901's rear, so you need not open the rig for this modification.

### Cooling Shroud For 6146B Finals

While the Japanese are very proficient in electronic technology, they seem somewhat limited on air ducting and cooling techniques. Erskine Jackson W4CEC solved this problem quite easily. He cut a triangular sheet of aluminum 2.5 inches by 3.5 inches and installed it above the final amplifier compartment as shown in Fig. 1. This shroud prevents "short circuit" air being pulled from atop the tube compartment and alternatively pulls it across the 6146Bs from the compart-

ment's sides. This superb technique also has been used with Kenwood gear.

### 6146 Finals

A problem has been noted with the GE-brand 6146Bs installed in many 901DMs. The screen grid would fall against the plate and apply +900 volts to the +210-volt screenline. Yaesu recently switched to Toshiba 6146Bs and this problem has been eliminated. If your 901 has GE finals, you would be wise to make this switch also. Pursuing this situation a step further, Yaesu has developed a modification to protect the 210-volt supply from this problem. Here's the information:

Install a diode as shown in Fig. 2. This is included in lots 006 and higher, with lot 007 using a new etch pattern that includes this modification.

**Modification:** (1) Remove the bottom cover on the FT-901; (2) attach a soldering post to the chassis with a tapping screw as illustrated; (3) solder a 10D10 diode to the post—*note the diode polarity*; (4) remove the yellow wire from the printed circuit board (PB-1715A) and solder it to the diode installed in step 3; (5) connect the other end of the diode to the printed board where the yellow wire was removed; and (6) replace the bottom cover.

### Reducing Excess Baggage

Most of the 901's heat is generated in its left back corner. This heat comes from the bleeders on top of PB1717 and from the choke and components on PB1708. Since several capacitors and resistors are physically located above the choke on PB1708, they may become hot and change value and eventually fail. Realizing this problem, Yaesu suggests R13 (47k, 1/2-Watt) and R03 (470 Ohms, 1 Watt) on

PB1708 be changed to the same resistance in 2-Watt resistors. Further investigation of this particular circuit revealed that its only function is as part of a filter section for a 160-volt line going to the 901's rear accessory jack. Since W4CEC and I have no immediate plans to use this jack, we disconnected our circuits by pulling one end of diode D03 loose from the board. We also removed our black plastic "board cover" to permit air flow. The results have been quite gratifying, and our 901s now run quite cool, even when used for long periods of time.

### Counter Protection

It has been found that capacitor C2954 on the counter unit (PB1729) was installed backwards in early 901DMs, and this may lead to failure in various segments of the digital display. You can quickly check this in your unit in the following manner. Locate the counter unit behind the digital display and pry up its snap-on cover. C2954 is a small, blue capacitor on the unit's left side. Its markings should face the rig's rear (toward the power transformer). If the capacitor's markings face the rig's front, simply remove and reverse it.

You'll gain a wealth of knowledge on 901 construction when investigating this modification. The enclosed PLL unit (PB1709)

and the rf unit (PB1702) must be removed before the counter unit and digital display can be slid back and removed. All screws on these units stay intact when freed, thus eliminating the lost-screws-or-spacers dilemma. You'll also notice that the plug-in digital displays are readily available, inexpensive units.

### Conclusion

The modular construction of Yaesu's 901 makes servicing a relatively simple task. Few rigs offer this capability. That fact, coupled with the large number of technically-oriented amateurs owning 901s, has resulted in the modifications presented in this article. It's logical to assume that additional modifications or improvements on this rig will continue the collection presented here. This leads me to believe that the original "Fox Tango Club" may soon reach its greatest days. The FT-901DM is the most outstanding rig I've ever owned or operated.

I would like to thank Bernie Tower W6RNW of Yaesu and Don Langston WB4JYV of Long's Electronics for their support and assistance with information concerning the FT-901DM. A special thanks to Erskine Jackson W4CEC for his ideas, suggestions, and assistance as we modified our 901s. Thanks also to my XYL, Sandy WB4OEE, for typing this article. ■

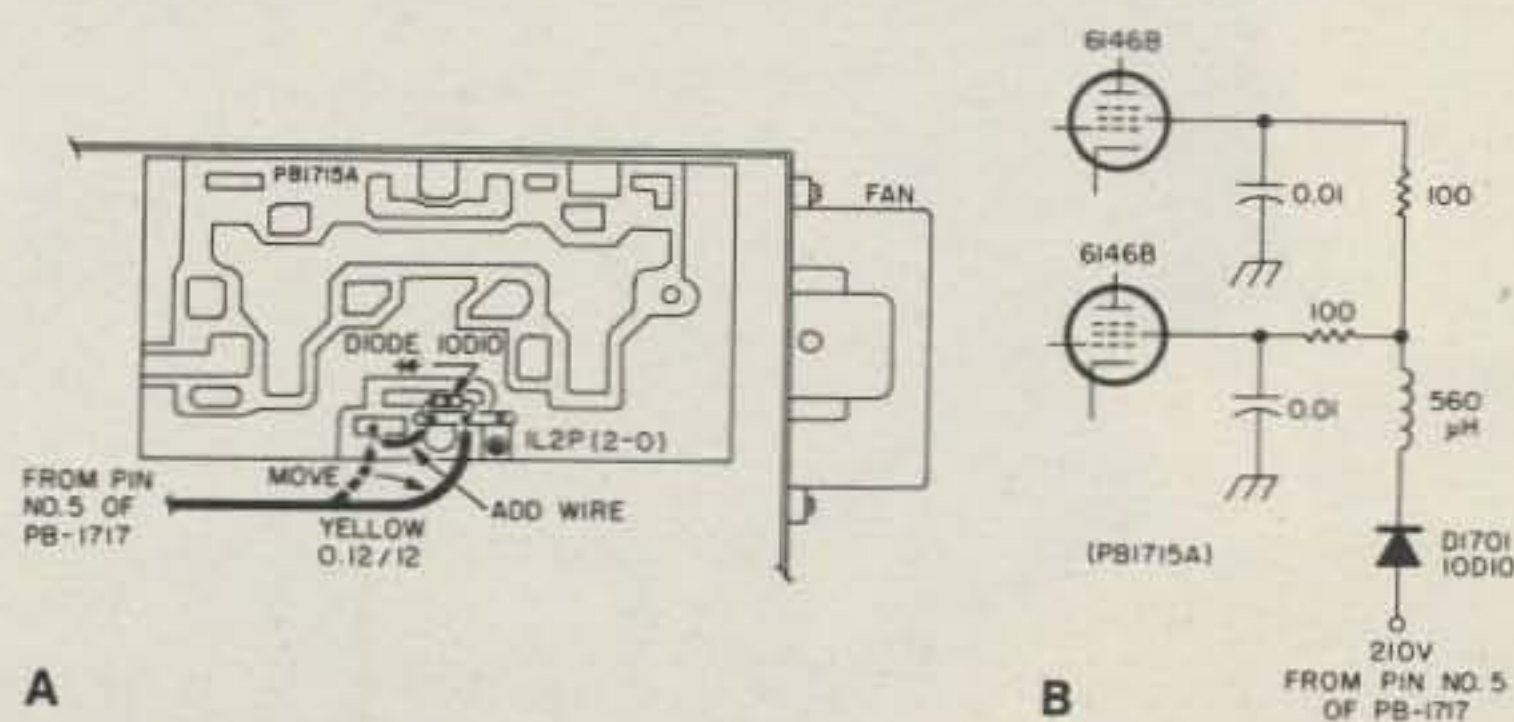


Fig. 2. (a) Illustration for screen-to-plate short protection described in the text. (b) Schematic for this modification.