



Model 4300-400 Modification Kit

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Introduction

The Bird Model 4300-400 modification kit is designed for easy installation in any Bird Model 43 Wattmeter to convert the instrument to read peak power in AM, SSB, and certain limited pulse applications. Installation of the kit does not affect the model 43's ability to read CW power (no amplitude modulation).

No special elements are required for peak power measurements. However, element power ratings must match the peak power to be read. For example, if power output peaks of 1000 W are to be measured, a 1000 W element should be used in the meter.

How to Use

After the 4300-400 kit is installed, there will be a PUSH ON - PUSH OFF switch on the right hand side of the meter. To read PEAK, push the switch in and note the red Light Emitting Diode (LED) lights up. The meter will now read peak power.

To read CW (no AM modulation), push the switch in again to OFF. Note that the red LED is no longer lit. The meter will once again function as a CW reading Model 43.

Peak Detector Response

The electrical time constant of the peak detector circuit is set at one second, although the actual response time may be slightly longer than this due to meter damping. Therefore, a short delay may be noticed between the time that the transmitter is energized and the meter reading stabilizes. This delay will also be noticed upon transmitter de-energization as the meter needle sweeps back to zero. Additionally, the meter reading may be expected to waver approximately 2-3 minor scale divisions when voice modulation is used, as the peak detector attempts to follow peak power variations associated with voice modulation.

Bird Model 43P Specifications (Model 4300-400 Modification Kit installed)

RF Frequency Range	0.450 2300 MHz, depending on element selected
RF Power Range	100 mW to 10 kW, depending on element selected
Accuracy^a	CW mode $\pm 5\%$ of full scale PEP mode $\pm 8\%$ of full scale
Power Requirement	(2) 9 V alkaline batteries (NEDA 1604)
Battery Life	Approx 48 operating hours
Weight: Model Kit Only Installed on Model 43	Approx 1 lb with batteries Approx 4 lb (1.8 kg)

- a. When measuring pulse power, the following parameters must be observed:
- Duty Cycle - 2% minimum
 - Rep. Rate - 100 pps minimum
 - Pulse Width - 200 μ sec. minimum

Installing the Model 4300-400 Modification Kit

Qty	Description	Part Number
1	PC Board	4300A402
2	Brass Spacers	4300-411
2	No. 8 Brass Washers	--
2	9 V Alkaline Battery	5-1375
1	4-40 x 1/4 inch Phillips Head Screw	--
1	Plug/Insert,	4300-407 with pn 4300-408 label attached

1. Remove the four No. 8 Phillips flat head screws on the sides of the Model 43.
2. Pull the rear cover straight out to expose the interior.
3. Loosen and remove the two outer nuts, cable lugs, and washers from the studs on the meter.
4. Unwind the cable from the meter.

Note: *Do not loosen or remove the nuts holding the studs to the meter case.*
5. Remove the line section from the housing by removing the two No. 10 Phillips oval head screws from the front of the Model 43.
6. Slide the line section backwards out of the housing.
7. Reroute the cable from the line section connector to run up between the line section and the housing.

Note: *Recoil excess cable around the meter.*
8. Replace the line section and secure it with the two No. 10 Phillips® oval head screws.

Note: *Do not reconnect the cable to the meter.*
9. Refer to Figure 1 on page 3 to determine which type of meter is used in the Model 43.

Note: *The type of meter will determine what hardware (washers and spacers) to place on the meter studs to assure a properly aligned PC board in the installation.*
10. Install the hardware and the PC board on the studs per the appropriate drawing.
11. Align the board to locate the push switch and LED assembly in the empty hole on the side of the case.

Note: *Use the upper or lower holes in the boards that match the studs.*
12. Bring the DC cable with terminals along the left of the case.
13. Place the washers and nuts over the studs, but do not tighten yet.

Note: *In some Model 43 Wattmeters, slight variations in the housing dimensions may affect the alignment of the ON-OFF switch/LED assembly in the side hole of the case. These variations affect the hole location in the front-to-back dimension. To compensate for the variations, add or subtract flat washers, as installed in Step 13, to align the switch/LED assembly in the side hole.*
14. Install the plug insert (with the label) over the switch cap and LED.

Note: *Be sure to line it up with the PC board mounting block.*
15. Install the 4-40 phillips head screw through the plug, matching it up with the mounting block, and then tighten.
16. Install the DC cable lugs to the terminal board (TB1) screw terminals.

Note: *The black wire connects to negative (-) and the center conductor of the cable assembly connects to the terminal marked positive (+).*

Note: *Some Model 43 Wattmeters were manufactured using terminal lugs on the meter cable that are slightly wider than the lugs presently being used. These wider lugs will not fit between the barriers on the terminal board (TB1) mounted on the PC board. Use diagonal cutters or side cutters to trim about 1/32 inch off each side of the lug so that it will fit between the barriers of the terminal board.*
17. Tighten the meter stud nuts.
18. Connect the batteries by pushing on the battery connectors.
19. Perform a calibration check.

Note: *Refer to the calibration instructions.*

Calibrating the Model 4300-400 Modified Unit

1. Insert the modified Model 43 between an RF (CW) signal source and a 50 ohm load.
2. Insert an element for the appropriate power and frequency range into the Model 43 and turn the element in the direction to read forward power.
3. Place the mode switch on the side of the Model 43 in the CW position (LED off).
4. Turn on the signal source.
5. Adjust power to give a stable reading on the Model 43 Wattmeter in the upper half of the scale.
6. Switch to the PEAK mode (LED on).

Note: The RF power reading should remain the same. If it does not read the same, adjust R9 - top center on the PC board - until the PEAK reading is the same as the CW reading.

Note: When the CW and PEAK readings are the same, calibration is complete.

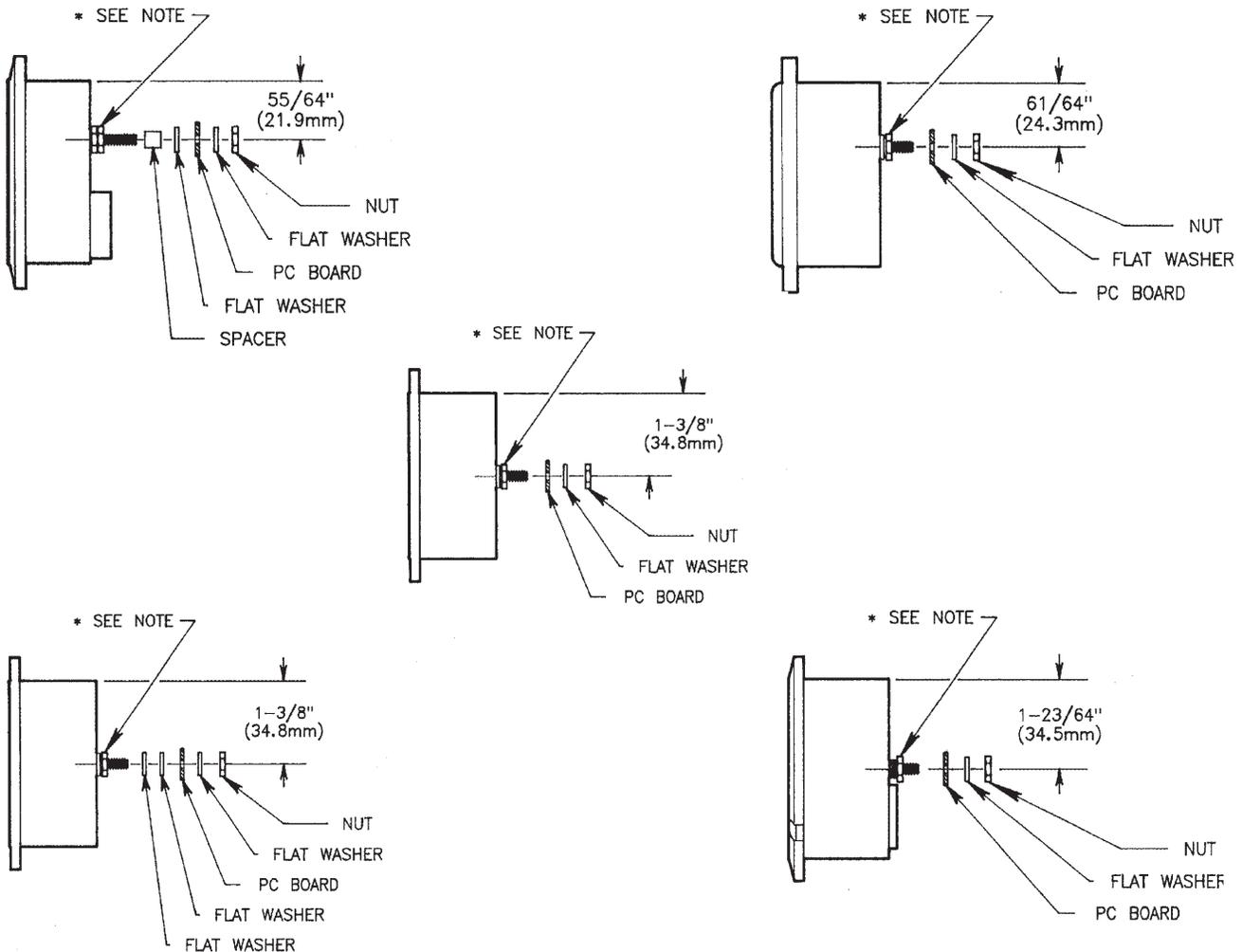
7. Replace the back cover, using the four No. 8 Phillips flat head screws.

Battery Replacement

Note: While in peak mode if the unit does not function or proper calibration cannot be achieved, the possible cause could be low battery voltage.

Replace the batteries with new ones, preferably alkaline or lithium type.

Figure 1 Meter Outlines



*** DO NOT REMOVE THIS NUT FROM STUD ON METER**

Figure 2 4300-400 Kit

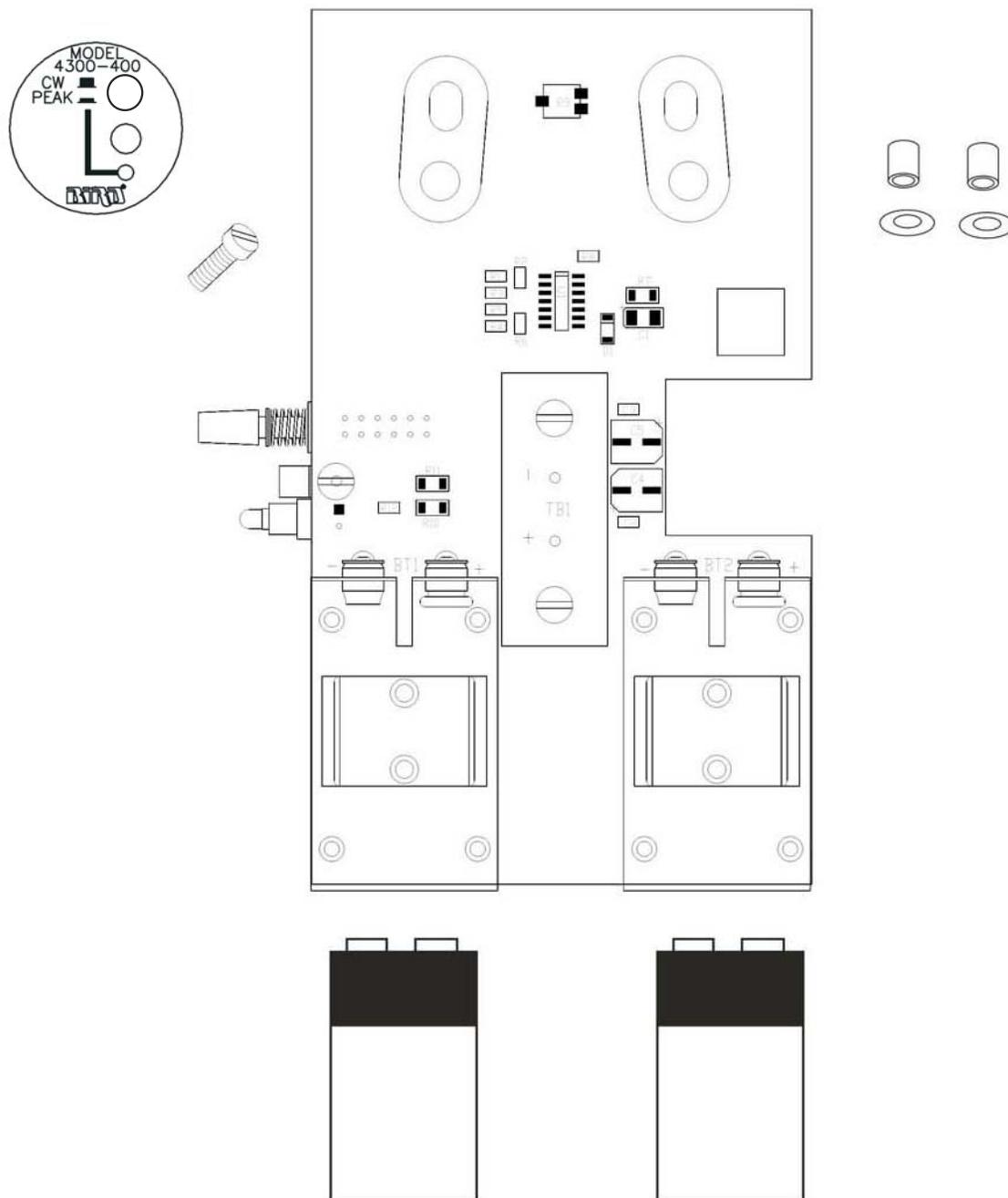


Figure 3 Model 43P Open Showing 4300-400 Kit Installed

