

Watts Electronics
8335 West Henrietta Rd
Rush NY 14543
Bird 43 PEP Adaptor kit- user notes

1. **CAUTION** – **DO NOT OPERATE** the on board **calibrator** (reference) switch **SW1** while the wattmeter has an element or slug in it. **REMOVE** the element entirely from the line section before operating the on board calibrator. **NEVER** operate the on board calibrator with anything in the element part of the line section – make sure the line section is not shorted (meter dampen position).

2. Attach the board to the meter. If your meter does not have exactly 1.5 inch spacing between its posts, you can file out the negative a little bit to make it fit. **DO NOT** “file out” the positive side – only the negative side. It helps to place flat washers on both sides of the board to give it more strength – remember, it’s only being supported by the two meter posts.

3. You can mount the switches and LED in one of the side holes in the wattmeter case or you can drill the case and mount them that way.

4. Fasten the 9 volt battery connector with the hot glue or epoxy to the bottom of the wattmeter case – or you can just tie wrap it to the line section or stuff it in the meter case somewhere.

5. Calibration is easy –

A. With the switch in the **CW** or **AVERAGE** position and the **RANGE EXTENDER** switch in the “center” position, press the **CALIBRATE** (**SW1**) button and adjust **VR3**, for full scale deflection.

B. Then, switch to **PEP** or **SSB** position and adjust **VR1**, for full scale deflection.

C. Return to **CW** position and switch the **RANGE EXTENDER** switch to **UP**. For a 2- times extension, adjust **VR4**, to read 50 on the 100 scale on the Bird 43.

D. Set the **RANGE EXTENDER** switch to **DOWN** and for 5- times extension, adjust **VR5**, to 20 on the 100 scale. If you want something other than a 2x and a 5x extensions, then adjust **VR4** and **VR5** to suit your requirements.

E. **VR2**, sets the amount of “hang time” in the **PEP** mode-adjust to suit yourself.

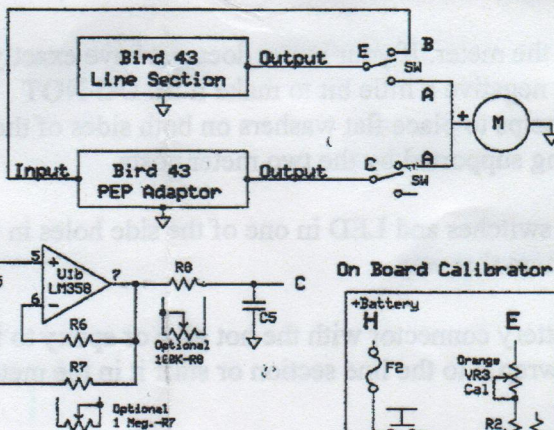
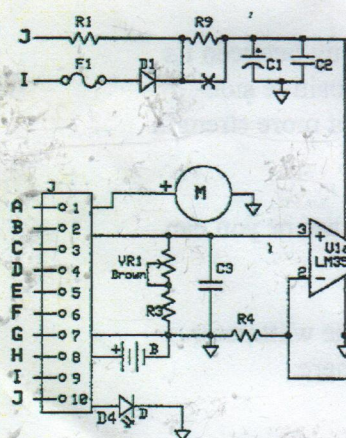
6. Current draw from a fresh 9 volt battery is about 1.2ma with the LED and only about 0.4 ma with out the LED. The brightness of the LED is determined by the value of **R1** – this board uses a 10K resistor to keep current low. You can lower this by just paralleling another resistor across **R1** to increase the brightness of the LED but you will also increase the total current draw.

7. **REMEMBER- NEVER** operate the **CALIBRATE** button – **SW1**- with an element in the line section!!

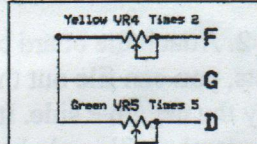
B & M Distributors, LLC

P.O. Box 6227

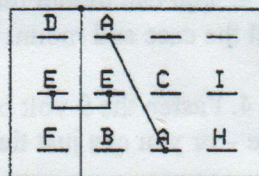
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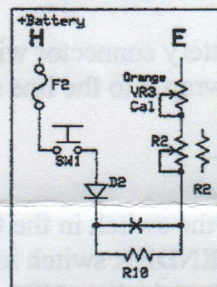
Element Range Extender



Rear View of Switches



On Board Calibrator



| Meter | R2 | R7 | R8 | VR3 | Range (ua) |
|--------|------|-------|-----|------|------------|
| 30 ua | 100K | 1 Meg | 73K | 500K | 20 - 50 |
| 100 ua | 75K | 819K | 55K | 100K | 50 - 120 |
| 200 ua | 56K | 560K | 30K | 100K | 160 - 270 |

B = 9v Battery or Plug-in Transformer

C1 = 220 to 470 uf, 16v to 25v

C2, C3, C5 = 0.01 uf

C4 = 10uf/16v to 50v

D1, D2 = 1N4001....1N4007

D3 = 1N4148 or 1N914

D4 = 5mm Red, LED

F1, F2 = Fuse, 1 ohm, 1/4 watt

Meter = 30ua, 100ua, or 200ua

U1 = IC, LM358, DIP

R1 = 1K to 10K ohm, 1/4 watt Dropping resistor for LED, D4

R2, R7, R8, VR3 = see chart

R3 = 100 ohm to 2K ohm, 1/4 watt (may be Fixed or Variable)

R4, R5 = 20K ohm, 1/4 watt

R6 = 10K ohm, 1/4 watt

R9, R10 = not needed on Rev. 8.7.xx and higher

VR1 = 1K ohm or 2K ohm trim pot

VR2, VR3 = 500K ohm trim pot

VR4, VR5 = 5K ohm trim pot

SW1 = SPST, Push-on, Momentary

SW2 = 3PDT, On-Off, Toggle

SW3 = SPDT, On-Off-On, Toggle

R2 - May be Fixed or Variable

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