January 27, 1984

HM-9 Bulletin No:
QRP Wattmeter HM-9-1

Update for Manual #595-2979
R1, R8, and M1

R1 has been changed

from: [PN 6-4991-12], 4990 ohms, 1%
to: [PN 6-5231-12], 5230 ohms, 1%

And,

from: [PN 6-6341-12], 6340 ohms, 1%
to: [PN 6-6651-12], 6650 ohms, 1%

R8 has been changed

from: [PN 6-2872-12], 28.7 Kohms, 1%
to: [PN 6-2742-12], 27.4 Kohms, 1%

The meter [M1] has been changed

from: [PN 407-762]
to: [PN 407-767]

Change the manual to reflect these updates on the following pages:

Page 6,
Page 8,
Page 11, left and right columns,
Illustration Booklet, Page 5, R and C Chart on the schematic.

Thats everything I show up to 1989 that covers the HM-9. Enjoy!

August 14, 1973

HM-102 Bulletin No:
Watt Meter/SWR Bridge HM-102-1

Possible Shorts Due To Mounting Hardware

The circuit board mounting bolt near R4 - [100K] is extremely close to the adjacent foil. There is a very good possibility this foil could be accidentally grounded.

By eliminating the lockwasher and substituting the G-32X1/4" flat head bolt with a 6-32 X 1/4" round head bolt, [PN 250-31], the problem is eliminated.

December 23, 1974

HM-102 Bulletin No:
Watt Meter/SWR Bridge HM-102-2

Service Notes

Problems originate because a 50 ohm load is not used for calibration; even though the kit manual says to use a 50 ohm load, customers use

antennas and even light bulbs. A clue that this is what is being done wrong is an inablility to null during SWR adjustments. Another clue is abnormally high power output readings.

If a customer cannot null during SWR adjustment, and he is using the proper load, suggest replacing the toroid coil and D-1 through D-3 which seems to be the magic cure-all for 90% of all the problems encountered with this unit.

C-4 has been some problem, but this capacitor has been changed to a husky one [PN 31-57]. The watt meter portion of the unit will not adjust properly until the SWR balance has been done properly and a good null is obtained. The indication here is R-6 not adjusting properly. Again, the toroid coil and D-1 through D-3 is suspect.

Some customers will ask about use of 75 ohm lines. The SWR will be higher, but collar readings will be within specs. It can be recalibrated and used with a reasonable degree of accuracy.

A common complaint is the high and low power readings not agreeing. Explain to the customer the specifications on the meter accuracy which is plus or minus 10% of full scale.

March 7, 1980

HM-102 Bulletin No:
Watt Meter/SWR Bridge HM-102-3

C4 Destroyed

The SWR null capacitor, C4, can be destroyed when using the HM-102 RF Meter with a linear on a high SWR antenna line. To prevent this,

Change: C4 to a 1-20 pF, 750 V trimmer [PN 31-94]

To make room for this trimmer, change the three 6-32 X 3/4" spacers to 6-32 X 0.875" spacers [PN 255-21].

Since this is a 20-turn trimmer, it will also allow finer adjustment of the SWR.

Thats everything I show up to 1989 that covers the HM-102. Enjoy!

March 2, 1973

HM-2102 Bulletin No:
VHF Watt Meter HM-2102-1

Calibration Problems

Reports have been received of the inability customers are having in calibrating HM-2102 on watt meter readings. This can be cured by scraping the area around the hole on the ground foil where the small spacer fits, when mounting the long bracket. See detail 3B page 7 of the manual. A good ground connection will make calibrating power readings no problem.

August 10, 1973

HM-2102 Bulletin No:
VHF Watt Meter HM-2102-2

Inaccurate SWR Null

The shell of the input coax connector is in close proximity to the brass eyelet come in contact, the SWR cannot be accurately nulled. This is a problem area worthy of checking before any alignment is accomplished.

Repositioning circuit board on angle mounting brackets will eliminate this problem.

September 17, 1974

HM-2102 Bulletin No:
VHF Watt Meter HM-2102-3

Calibration Circuit Correction

Perform the modification as shown in the above Pictorial.

(((Pictorial shows foil side of board. Instructions state to: Place C-2A close to foil side of board, solder to leads of C-2 and foil pads, then cut off excess lead length. It also lists the following values:

2 Meters	6 Meters
C-2 - 15pF - [PN 20-118]	C-2 - 15pF - [PN 20-118]
C-2A - 1pF - [PN 28-2]	C-2A - 2.2pF - [PN 28-1])))

This modification will correct for the internal calibration problem and make the unit more accurate with respect to actual power input. This modification should only be done on units which have a glass epoxy board.

Capacitor C2 is increased to 16 pF for 2 meters and 17 pF for 6 meters. New 16 pF and 17 pF capacitors will be in the line in the future and this modification may be used until the new capacitors are available.

February 11, 1976

HM-2102 Bulletin No:
VHF Wattmeter HM-2102-4

Separate High Power Calibration

An article in HAM RADIO magazine [February 1976] described a modification to permit separate calibration of the high power scale.

The article is reprinted below for information only; it is ***NOT*** a production change or service modification.

HIGH POWER CALIBRATION FOR THE HEATH HM2102 VHF WATTMETER

The great crowds of two-meter FM enthusiasts will no doubt provide the Heath Company with a continuing market for their HM2102 vhf watt meter. This dandy piece of equipment provides two switch selectable power ranges of 25 and 250 watts full scale, in the 50 to 160 MHz range, and also includes a built-in swr bridge.

In checking out my wattmeter I found that everything worked fine with the exception of a noticeable discrepancy in the accuracy of the high

power [250 watt] range. Checking further, I found that the problem was due to the fact that R8, a 68k resistor which is used as a meter multiplier in the 250 watt range, was out of tolerance. The problem could have been cured by replacing R8 with a new resistor, but it occurred to me that even greater accuracy could be obtained by replacing R8 with a variable 100k resistor to allow separate calibration of the high power range.

This modification is easily done and works out very nicely. The small trim pot may be supported by using short pieces of solid hookup wire inserted in the PC board holes formerly occupied by R8. The adjusting slot should bace upward in the same direction as potentiometer R6. A hole in the cover plate allows access to R8 when the cover is in place. This access hole can be labeled high for high power adjust, and the hole already in the plate for R6 can be labeled "low".

The original calibration procedure calls for adjusting R6, a 50k pot, in the low power position, which also affects the high power calibration. With the addition of a 100k pot for resistor R8, the new calibration procedure is as follows:

1. Using a known power source in the 10 to 25 watt range, and/or comparing with another wattmeter of known accuracy, adjust R6 for the correct meter indication in the 25 watt range.

2. Switch to the 250 watt range, and again using a transmiter with known output, and/or a comparison wattmeter, adjust R8 for correct meter indication.

Both ranges are now individually calibrated. Any further adjustment of R6 will require readjustment of R8.

June 5, 1978

HM-2102 Bulletin No:
VHF Wattmeter HM-2102-5

Calibration Problem

If a calibration problem exists, such as power calibration and SWR null, change:

C3 from 7.7 pF to 1.5 pF [PN 28-4] and

R7 from 10k ohm to 5.6k ohm [PN 1-113]

January 27, 1982

HM-2102 Bulletin No:
VHF Wattmeter HM-2102-6

SWR Cannot Be Nulled

To correct, replace the 10-pF capacitor, C16, with a [PN 31-71] trimmer capacitor. See the partial schematic and the pictorial for installation. Make this change only when necessary.

((Shows C16 being replaced on the foil side of Circuit Board)).

Thats everything I hold up to 1989 that covers the HM-2102. Enjoy!

May 16, 1980

HM-2140 Bulletin No:
HF Dual Wattmeter HM-2140-1

Inoperative

Check for an open connection in the power jack, J1 [PN 436-49]. Replace if necessary.

August 13, 1980

HM-2140 Bulletin No:
HF Dual Wattmeter HM-2140-2

Battery Meter Pegs And Unit Will Not Null

If the negative battery terminal and the battery case are connected together the battery meter pegs and unit will not null. Refer to the diagram below and perform the following steps to correct the problem.

1) Remove the battery holder from the circuit board.

2) Carefully remove the ground foil around the two indicated holes with a knife or ream with large [1/2”] drill bit. Remove only enough foil so the battery holder hardware does not make contact with the foil when it is installed.

[[Diagram indicates the two center holes where battery holder was located as the ones to be reamed out]]

3) Reinstall the battery holder.

Make this change to all units received for service,

January 27, 1984

HM-2140 Bulletin No:
HF Dual Wattmeter HM-2140-3

PEP Readings Inaccurate

Make the following changes to the remote sensor and main unit. Recheck the calibration after installing these changes. New production will have these changes included.

Remote Sensor [PN 100-1749]: Change C106 and C107 to .0027 uF [PN 27-141].

Do not disturb any control settings after making the change. Be sure to reseal the sensor using a service sticker.

Main Unit: **Change**: C17 to .022 uF [PN 27-128]
C18 to .033 uF [PN 27-138]

Note: The only accurate method of checking PEP calibration is by using a two-tone test generator. The FCC standard tones for the two tone test are 400 Hz and 1800 Hz. A whistle represents only one tone and will give the same output as a steady carrier [CW] signal. Voice modulation may give a slightly different reading since the voice is composed of

many tones. The PEP readings should be very close if the AVERAGE power readings are close. [PEP does not have an accuracy specification.]

August 13, 1980

HM-2140 Bulletin No:
HF Dual Wattmeter HM-2140-4

PN 253-89 "D" Washer Subbed With PN 253-739 Flat Washer

Heath Parts Replacement is now using the PN 253-739 flat washer as a sub for the no longer available PN 253-89 "D" washer.

The "D" washer was placed over the cable clamps to secure them to the cabinet/chassis. Since they were no longer being made, Heath switched to an oversized #6 flat washer as a replacement.

Thats everything I hold up to 1989 that covers the HM-2140. Enjoy!

August 13, 1980

HM-2141 Bulletin No:
VHF Dual Wattmeter HM-2141-1

Battery Meter Pegs and Unit Will Not Null

If the negative battery terminal and the battery case are connected together the battery meter pegs and unit will not null. Refer to the diagram below and perform the following steps to correct the problem.

1) Remove the battery holder from the circuit board.

2) Carefully remove the ground foil around the two indicated holes with a knife or ream with large [1/2”] drill bit. Remove only enough foil so the battery holder hardware does not make contact with the foil when it is installed.

[[Diagram indicates the two center holes where battery holder was located as the ones to be reamed out]]

3) Reinstall the battery holder.

Make this change to all units received for service,

Thats everything I show up to 1989 that covers the HM-2141.

Okay - that is it for the HM-XXXX Series [1966-89].

73 de Joe W7LPF/4 [NNN0KUU]
QWCA - SOWP - NCVA - FISTS - RCC
Gordonsville, Va 22942 [Orange Co]