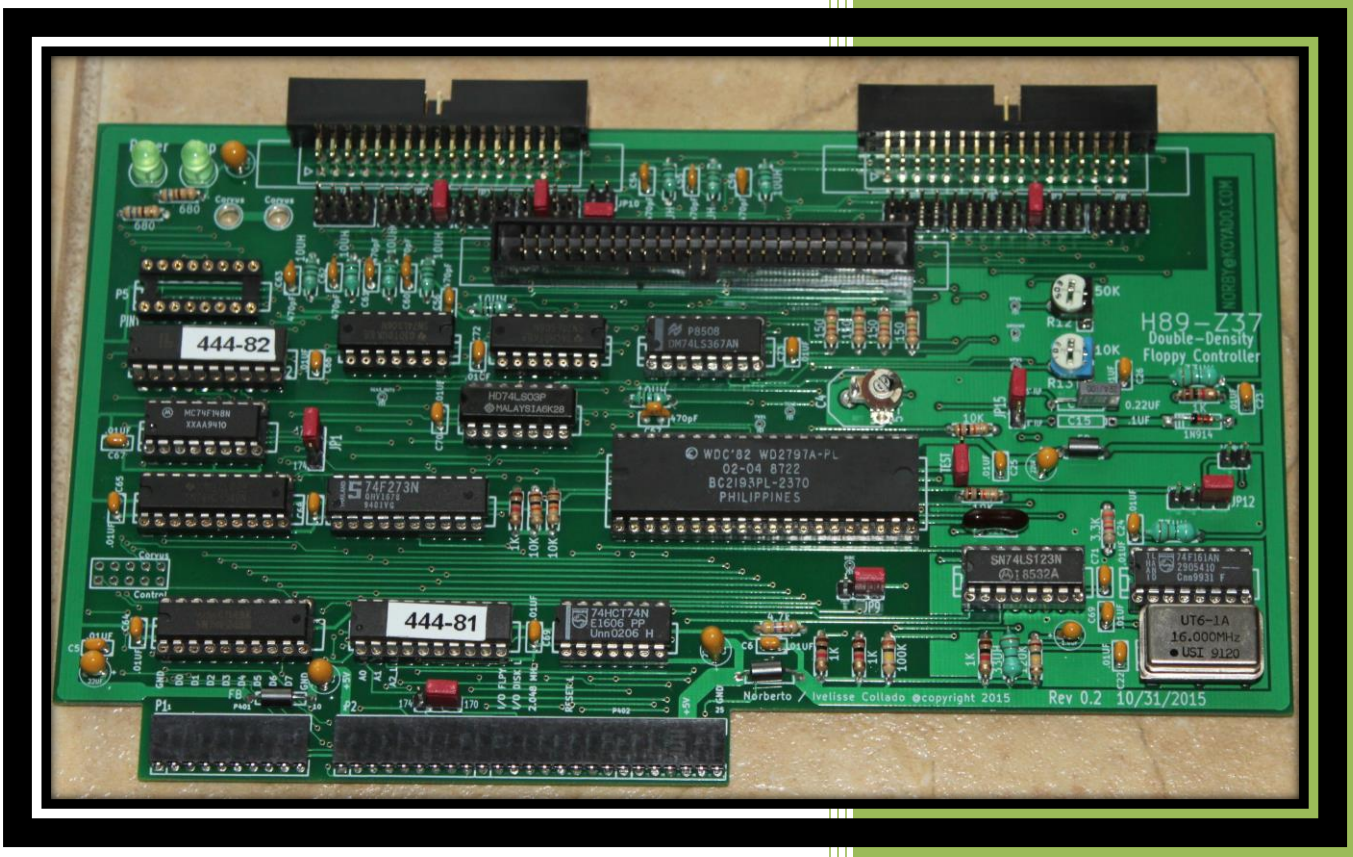
2015

H89-Z37-FLOPPY CONTROLLER CALIBRATION



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Revision History and Disclaimer

Revision History		
Revision	**Date**	**Comments**
1.0	05/02/2015	Initial draft by Norberto Collado
1.1	09/09/15	Implemented feedback from Steven.

The purpose of this document is to allow the surviving classic computers to continue to function.

Please don't use any of this material for any purpose other than personal hobby/interest without checking with the owner of the material.

Thank you for your understanding and consideration.

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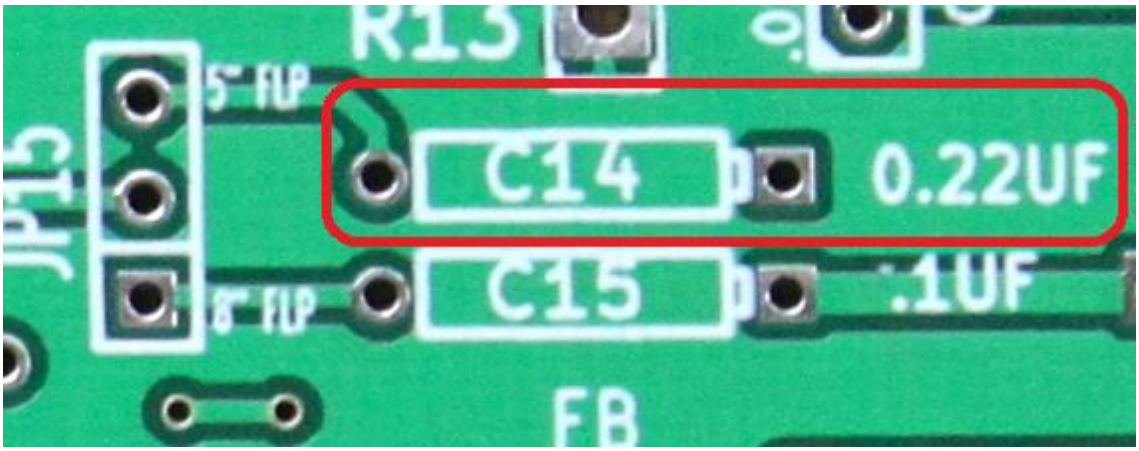
Introduction

This document provides details on how to calibrate the H8-Z37 floppy controller board design by Norberto Collado for the Heathkit H8 Computer. The calibration assumes that a ***0.22uF*** is used in location ***C14*** when using the 5” floppy drives.

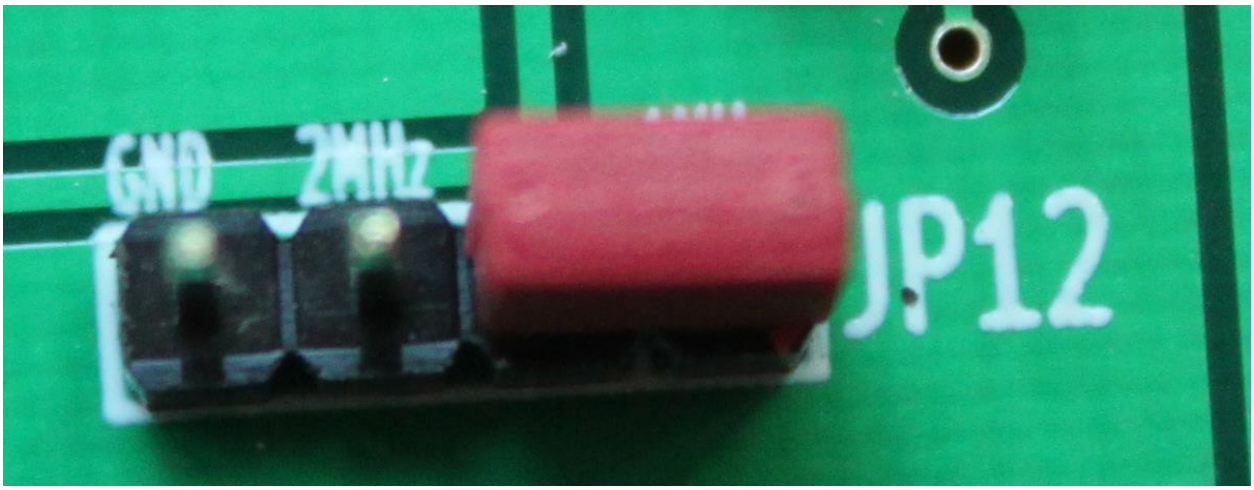
Same procedure applies when using a 0.1uF capacitor to support the 8” floppy drives (C15).



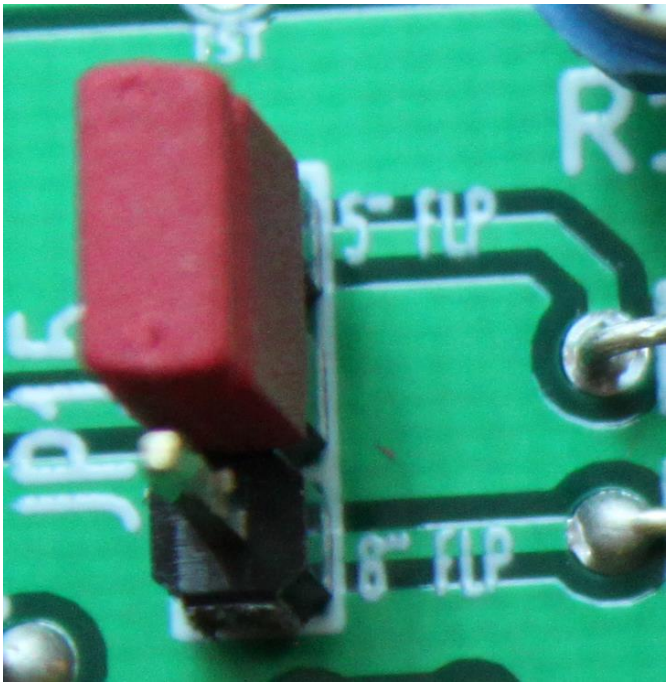
Floppy Disk Controller Alignment with Oscilloscope

Write Precompensation Adjustment

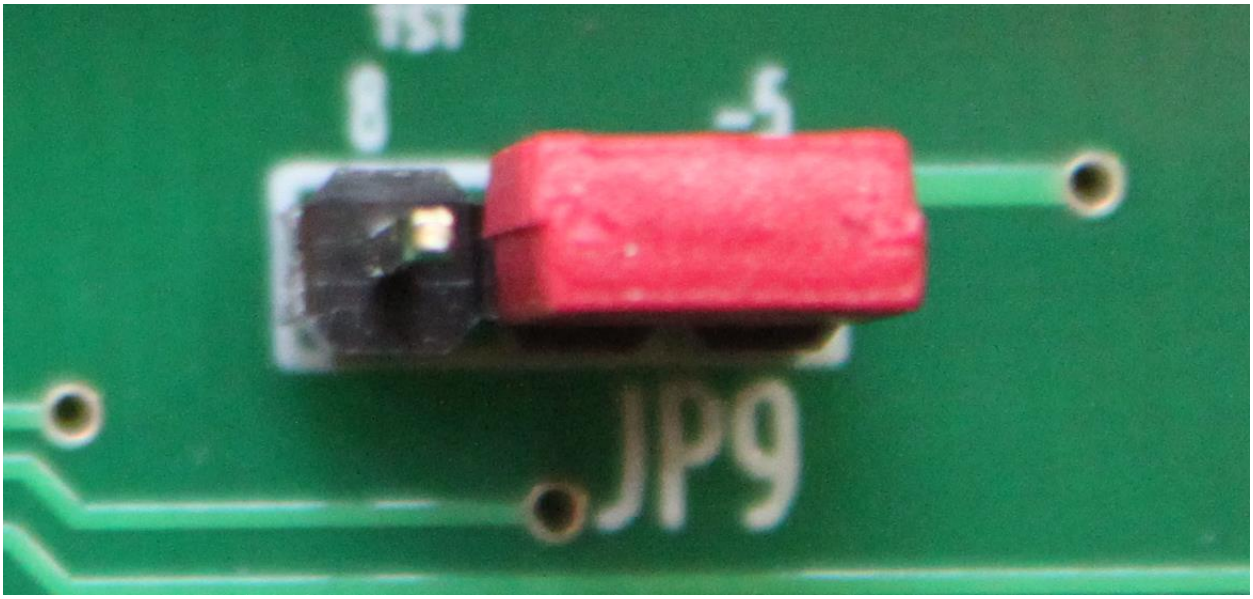
1. Make sure the following jumpers are installed correctly before starting the calibration process. JP12 selecting 1 MHz clock



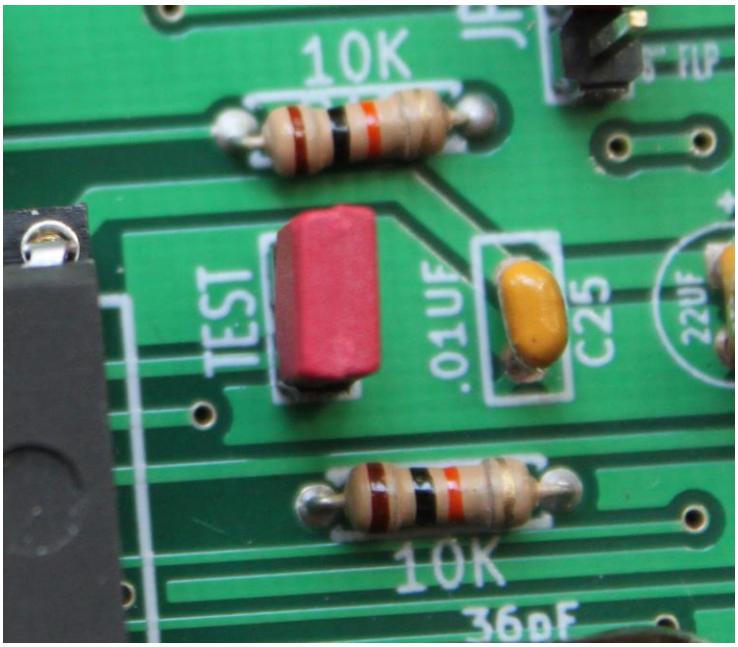
JP15 selecting 5” floppy calibration. Capacitor = 0.22uF.



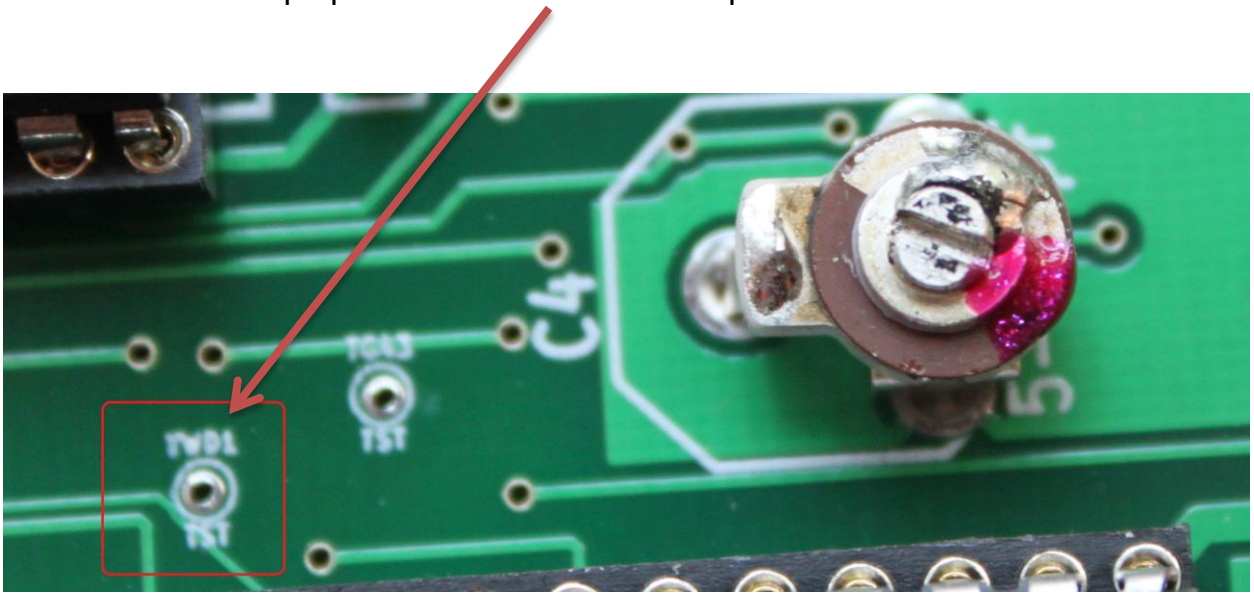
JP9 jumper selecting “-5” setting.



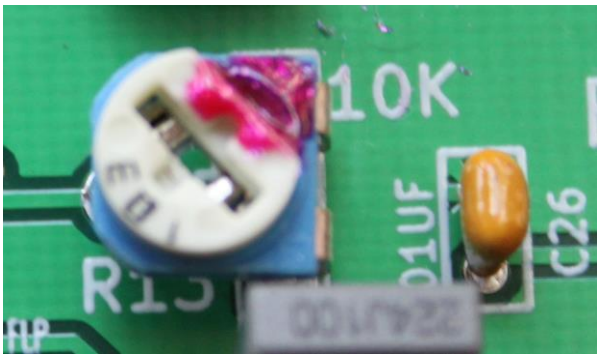
2. Power-on H89 computer
3. Warm up the Computer for a minimum of 15 minutes with the lid closed
4. Reset the H89 system to strobe the MR pin.
5. Insert the “TEST” jumper as illustrated below

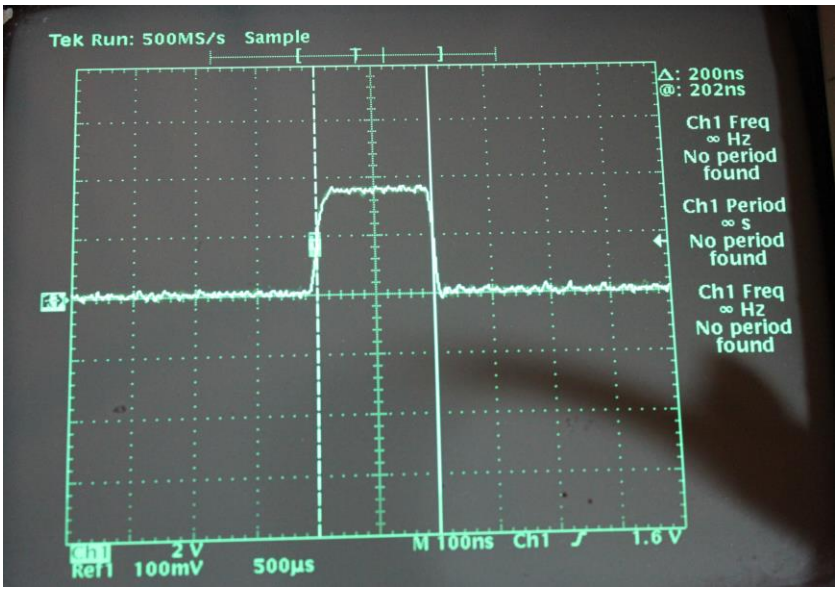


6. Connect scope probe to the “TWD1” test pin as shown below



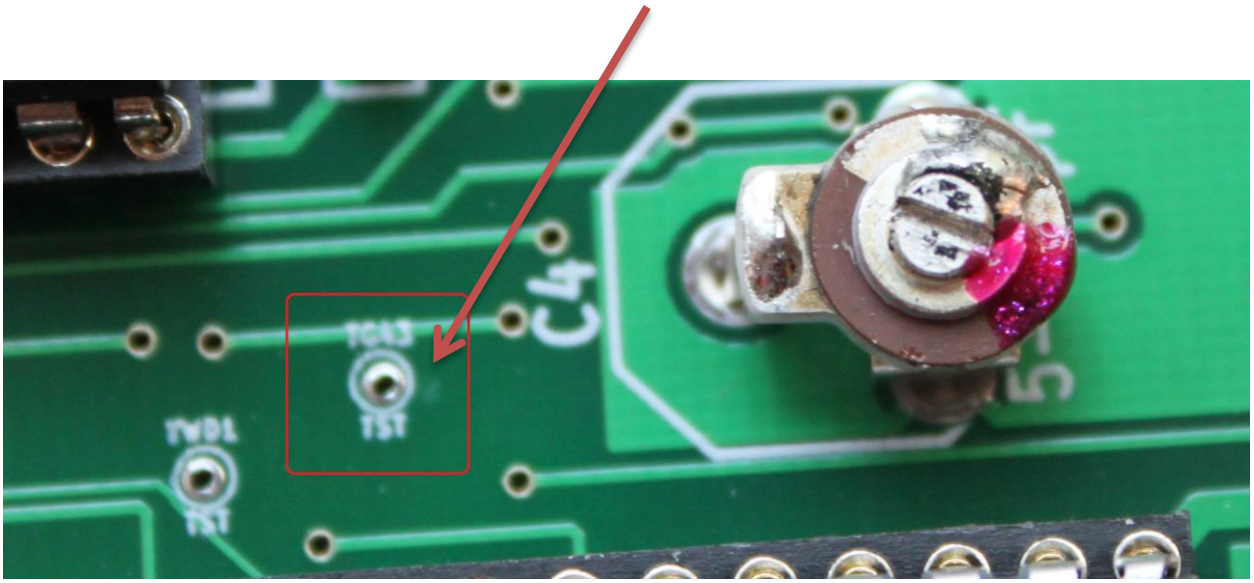
7. Adjust WPW potentiometer (R13) for the desired pulse width of 200ns as shown below.



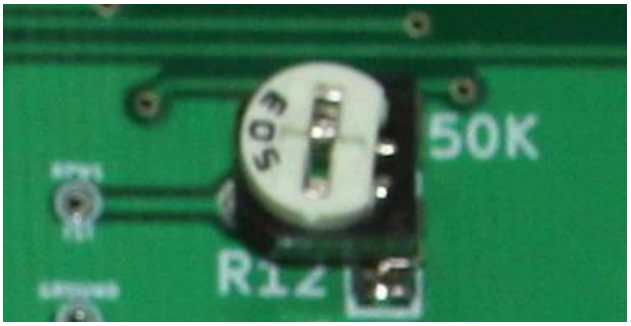


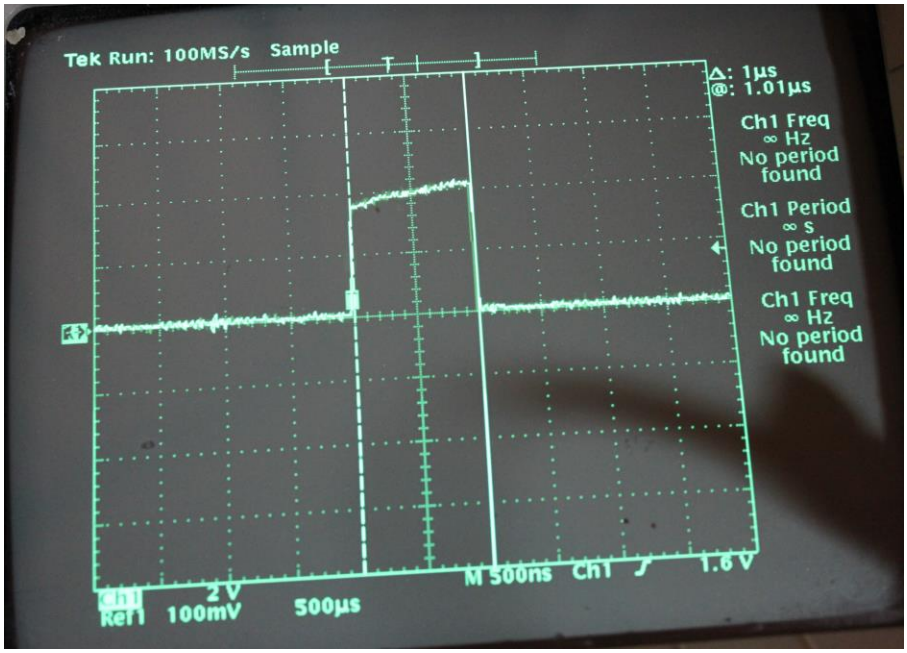
Data Separator Adjustment

1. Observed the pulse width on the “TG43” test pin as shown below



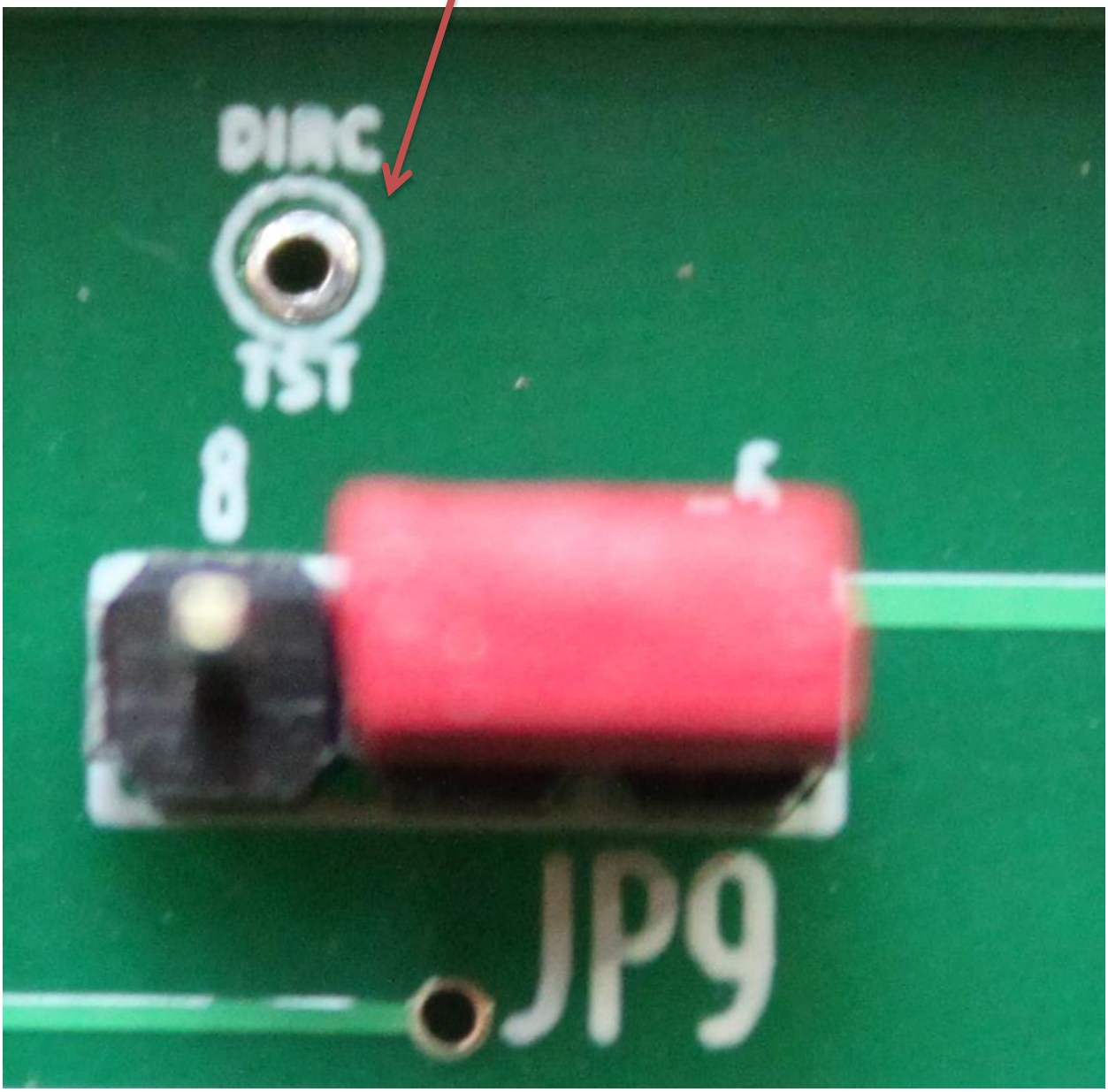
2. Adjust the RPW (R12) potentiometer for 1us as shown below.

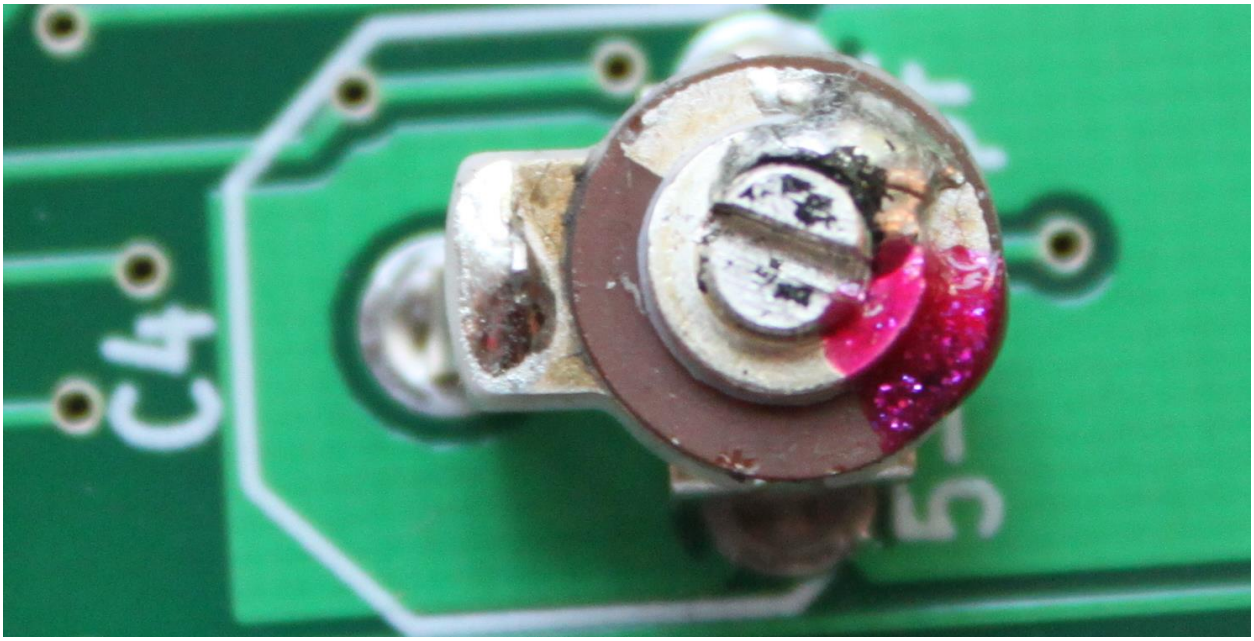


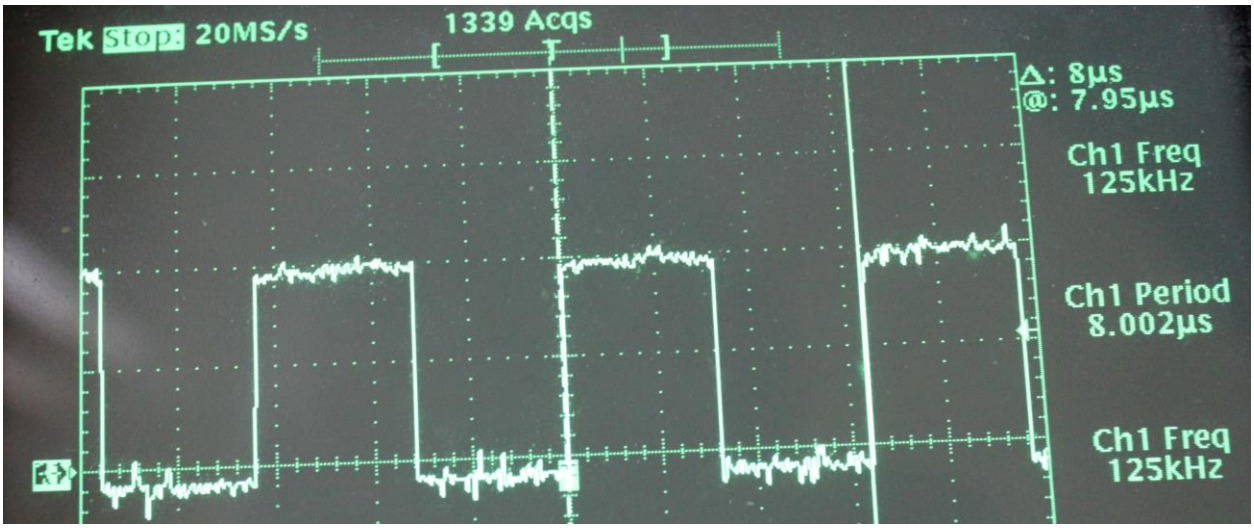


VCO Center Frequency Adjustment

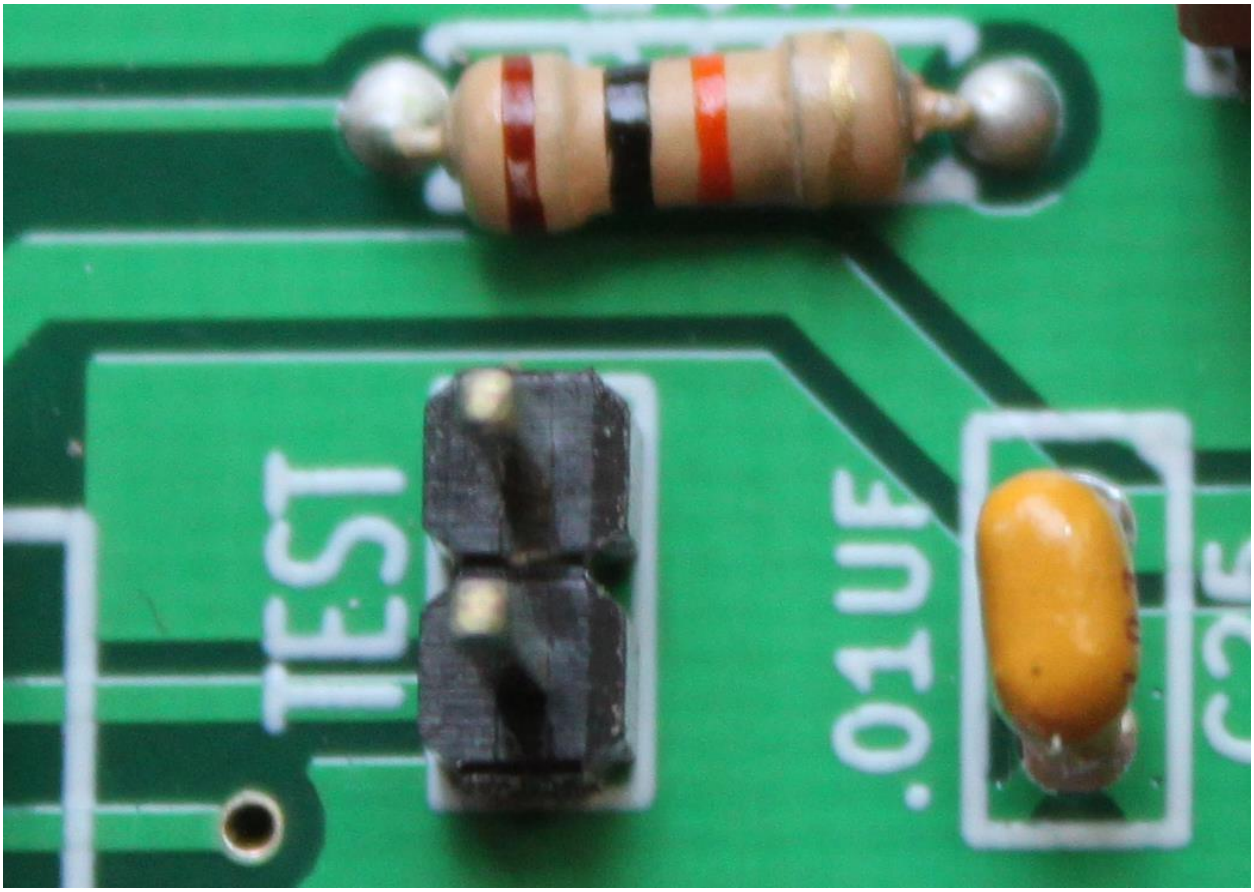
1. Observed the pulse width on the “DIRC” test pin as shown below



2. Adjust the variable capacitor (C4) for a period of 8us as shown below.
3. 



4. Remove the “TEST” jumper as shown below.



Note: If planning to seal the potentiometers and the variable capacitor, then repeat all the steps above to verify proper calibration.

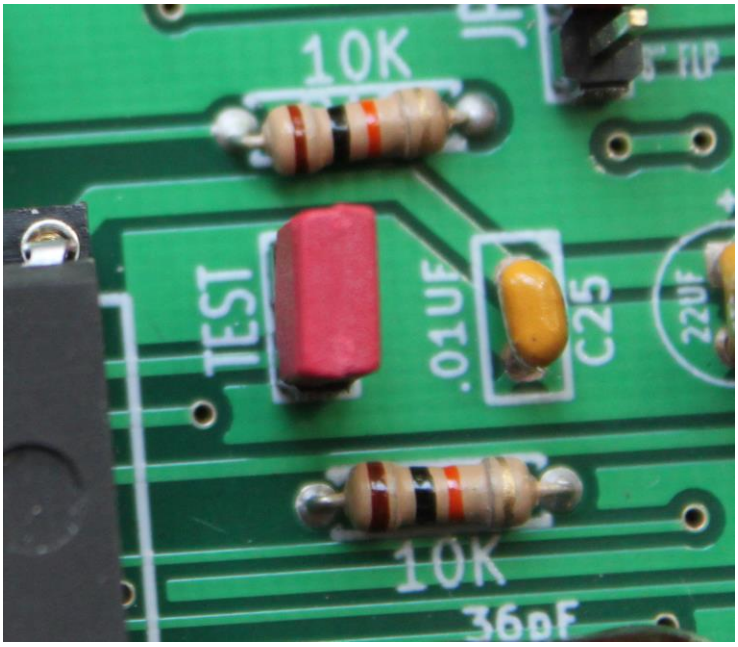
5. Reset the H89 Computer for normal operation.

Floppy Disk Controller Alignment with a Digital Volt Meter (DVM)

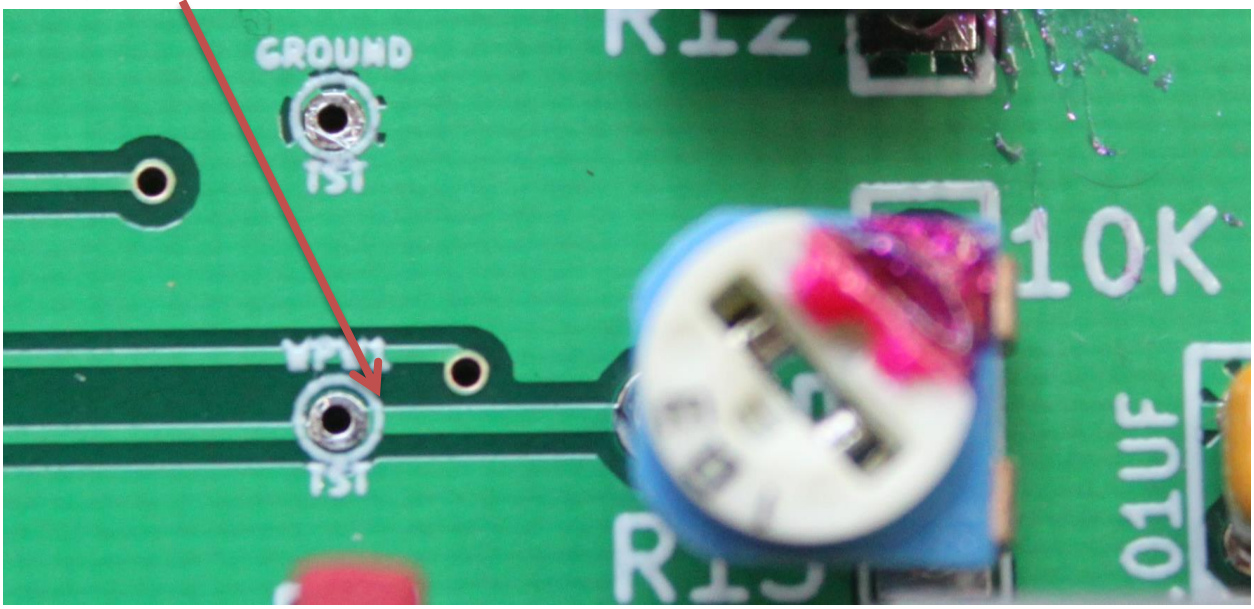
Write Precompensation Adjustment

1. Power-on H89 computer
2. Warm up the Computer for a minimum of 15 minutes with the lid closed
3. Reset the H89 computer to strobe the MR pin

4. Insert the “TEST” jumper as illustrated below

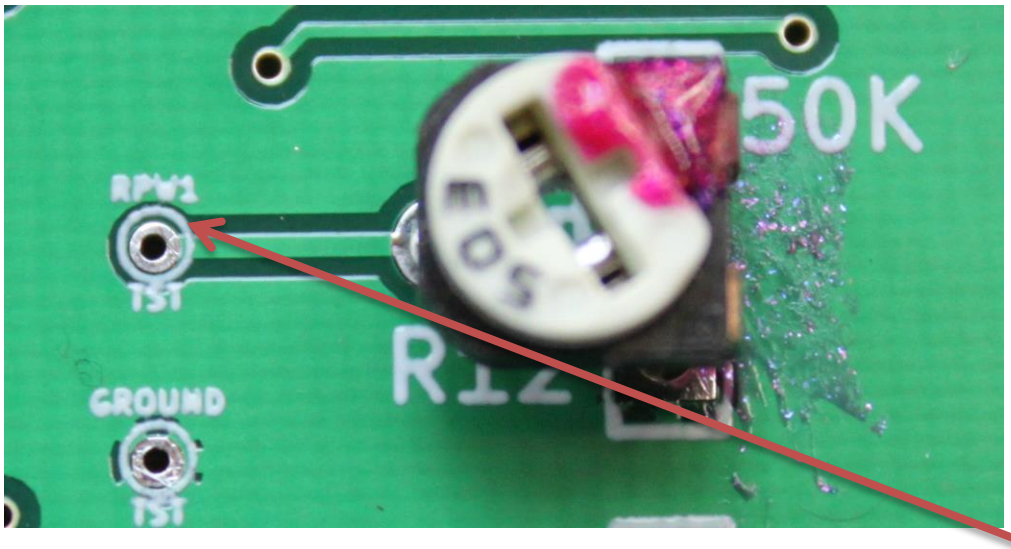


5. Using the DVM observed the voltage on the “10K” test point (WPW1) and ground as shown below. Adjust WPW potentiometer (R13) for the desired voltage of **1.340** volts



Data Separator Adjustment

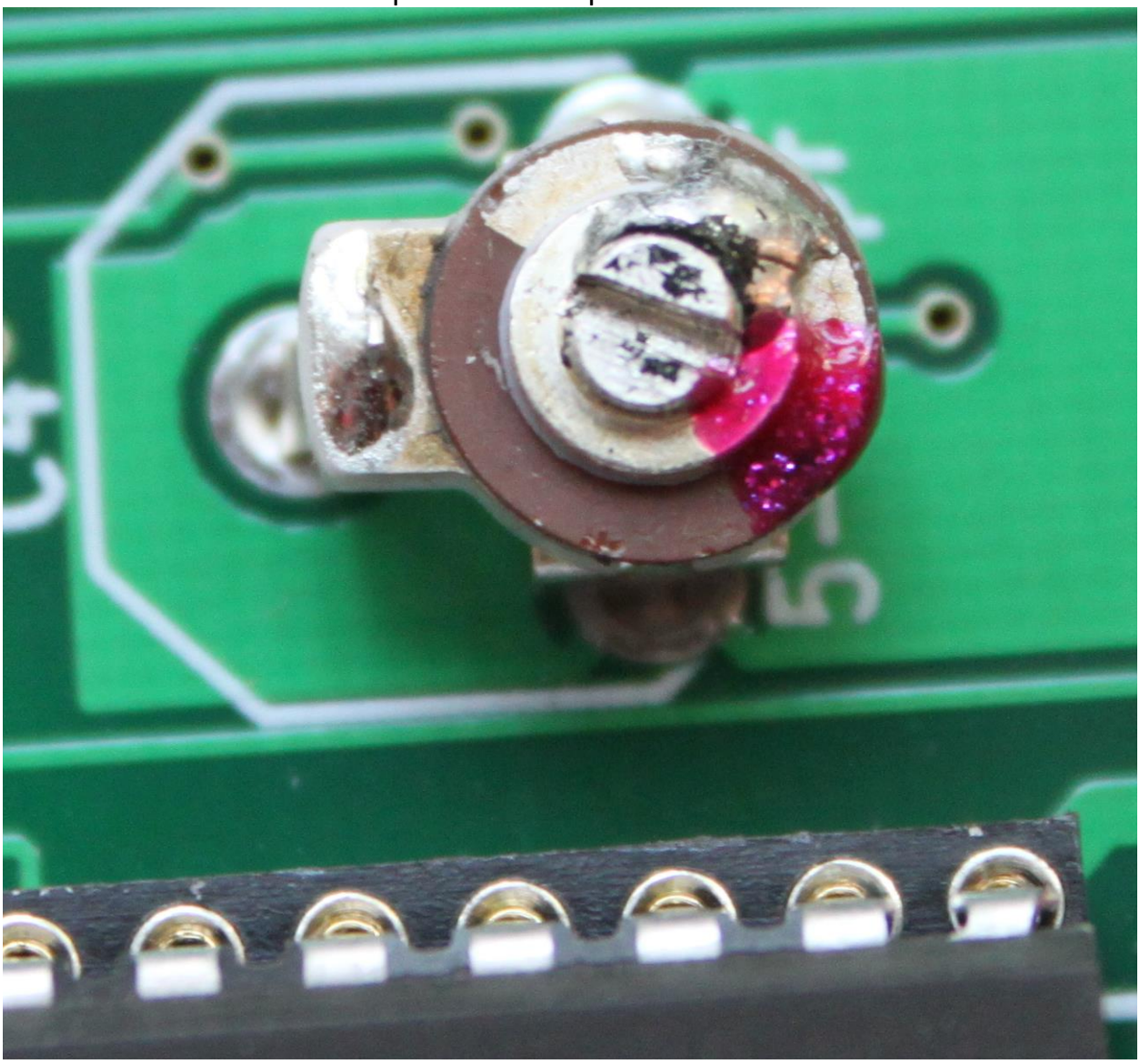
1. Using the DVM observed the voltage on the “50K” test point (RPW1) and ground as shown below.



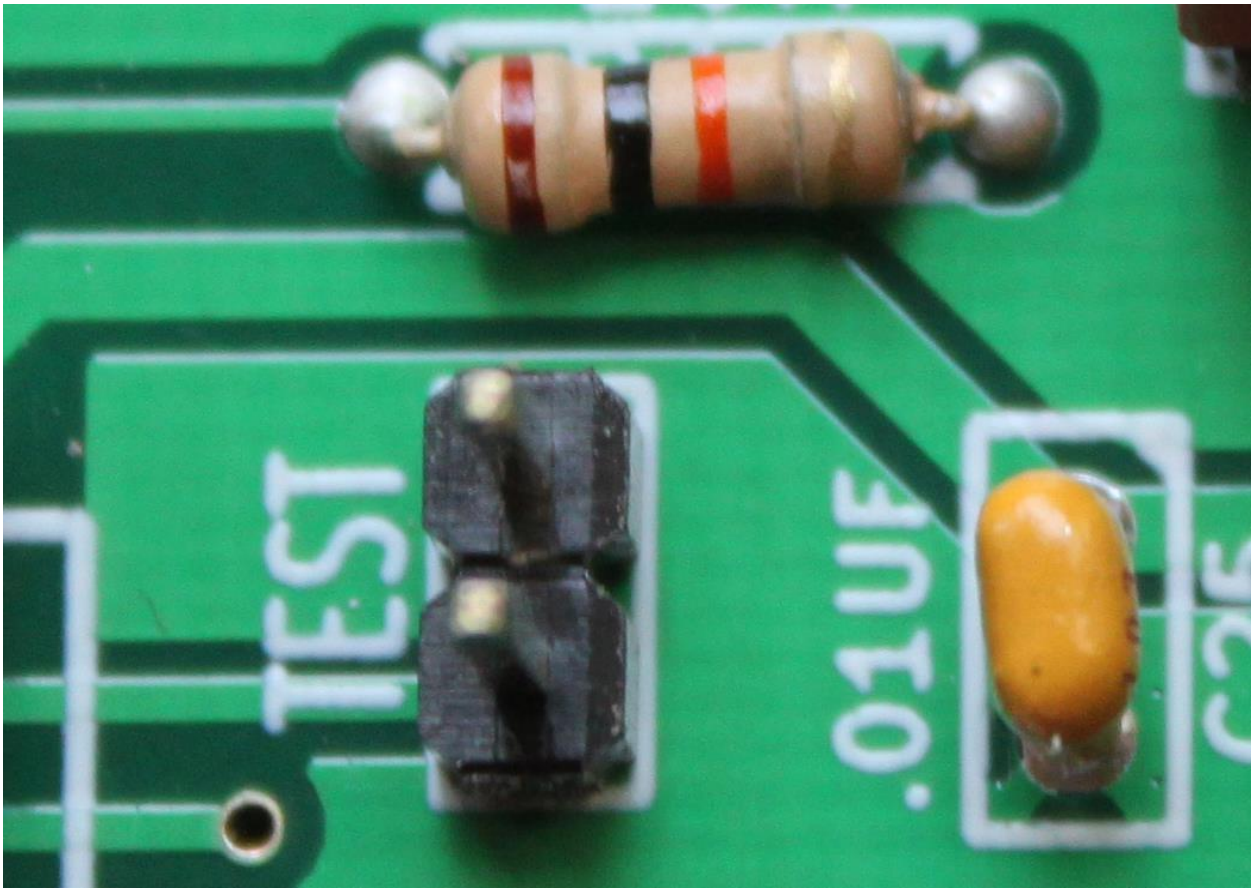
3. Adjust RPW potentiometer (R12) for the desired voltage value of **1.516** volts

VCO Center Frequency Adjustment

1. Rotate the variable capacitor to the position as shown below



2. Remove the “TEST” jumper as shown below



Note: If planning to seal the potentiometers and the variable capacitor, then repeat all the steps above to verify proper calibration.

3. Reset the H89 Computer for proper operation.