

ZVM LIMIT COMPARATOR Operating Instructions



Made in the
United States of America

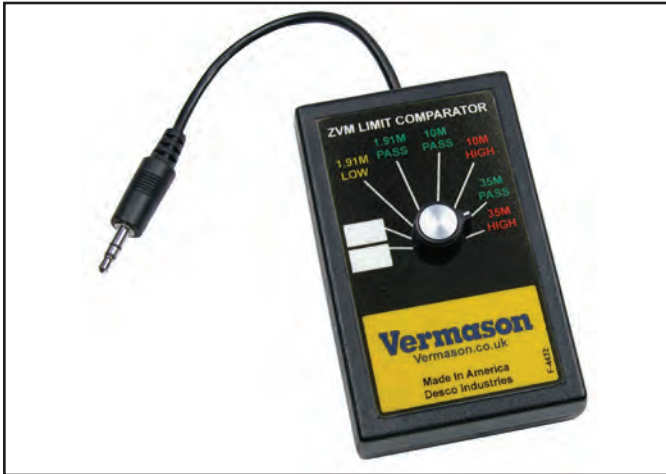


Figure 1. Vermason [222770](#) ZVM Limit Comparator

1. The purpose of the ZVM Limit Comparator is to verify the calibration of the 222755 Zero Volt Monitor by checking four operator conditions: FAIL LOW, PASS (low limit), PASS (high limit), and FAIL HIGH.
2. There are 10 resistor settings on the Limit Comparator, which can be set using the rotary switch. Positions 3 through 8 have installed values. Positions 1, 2, 9, and 10 can be installed by the user for one set each of custom low and high limits. The standard settings are as follows:

POSITION:

- 1.) optional low limit fail low
- 2.) optional low limit pass
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- 3.) 1.91 Megohms FAIL LOW
- 4.) 1.91 Megohms PASS (ZVM default settings)
- 5.) 10 Megohms PASS
- 6.) 10 Megohms FAIL HIGH
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- 7.) 35 Megohms PASS
- 8.) 35 Megohms FAIL HIGH
- 9.) optional high limit pass safe
- 10.) optional high limit fail high

PLEASE NOTE THAT THE ZERO VOLT MONITOR OPERATOR LIMIT COMPARATOR IS USED TO CHECK ONE OPERATOR AT A TIME

3. Ensure that the Zero Volt Monitor to be checked is set up as described in the operating instructions and has power.
4. Connect the plug from the limit comparator into the OPERATOR 1 remote jack.

5. Turn the rotary knob on the Limit Comparator to “x Ohms LOW” (select $x = 1.91$ Megohms or the optional low limit fail low, according to what operator low limit the Zero Volt Monitor is calibrated). Observe the operator 1 LED display on the front of the Zero Volt Monitor. The yellow LED should be on and the audible alarm should sound, indicating the fail low condition.
6. Turn the rotary knob on the Limit Comparator to “x Ohms PASS” (select $x = 1.91$ Megohms or the optional low limit pass safe, according to what operator low limit the Zero Volt Monitor is calibrated). The green LED on the Zero Volt Monitor operator 1 display should be on, indicating the low limit pass safe condition.
7. Turn the rotary knob on the Limit Comparator to “x Ohms PASS” (select $x = 10$ Megohms, 35 Megohms or the optional high limit pass safe, according to what operator high limit the Zero Volt Monitor is calibrated). The green LED on the Zero Volt Monitor operator 1 display should be on, indicating the high limit pass condition.
8. Turn the rotary knob on the Limit Comparator to “x ohms HIGH” (select $x = 10$ Megohms, 35 Megohms or optional high limit fail high, according to what operator high limit the Zero Volt Monitor or is calibrated). The red LED on the Zero Volt Monitor operator 1 display should be on and the audible alarm should sound, indicating the fail high condition.
9. Disconnect the Limit Comparator plug from the operator 1 remote jack. Plug the Limit Comparator plug into the operator 2 remote jack and repeat the four tests in steps 5 through 8 to test operator 2.
10. The correct color LEDs must light for each step for the Zero Volt Monitor to completely pass the calibration check. If an incorrect LED comes on during any portion of the test (example: expecting the green LED to light in step 7 but the Zero Volt Monitor red LED is on) recalibrate the Zero Volt Monitor and test each operator again with the Zero Volt Monitor cal limit comparator.

INSTALLING OPTIONAL LOW AND HIGH LIMIT RESISTANCES

- A.) Use a hex wrench to remove the rotary switch knob. Unscrew the 2 screws on the back of the unit and disassemble the unit.
- B.) Two resistances must be installed for each limit: one for PASS and another for FAIL. These two resistances should be $\pm 10\%$ of the calibrating resistance. For example:

LOW LIMIT CALIBRATION RESISTANCE	LOW LIMIT FAIL LOW RESISTANCE [1M - (1M x 10%)]	LOW LIMIT PASS RESISTANCE [1M + (1M x 10%)]
1 Megohm	900Kilohms	1.1 Megohms
HIGH LIMIT CALIBRATION RESISTANCE	HIGH LIMIT PASS RESISTANCE [15M? - (15Megohms x 10%)]	HIGH LIMIT FAIL HIGH RESISTANCE [15Megohms + (15M x 10%)]
15 Megohms	13.5 Megohms	16.5 Megohms

- C.) The table below specifies which numbered resistances on the circuit board correspond to the optional low limit and the optional high limit. Solder the appropriate resistors in these places.
- D.) Assemble the unit and mark the appropriate places on the label for the optional limits.
- E.) It is recommended to turn the rotary switch to the optional positions and measure the resistance from the tip to the body of the plug with an ohmmeter to verify the resistances.

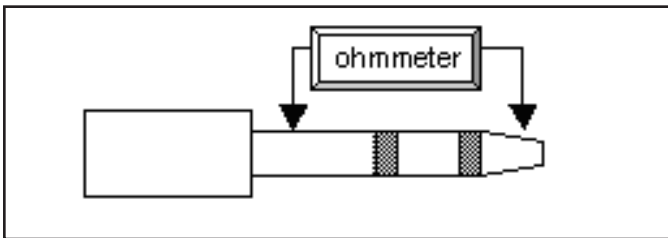


Figure 2.

Optional low limit	Designated resistors on circuit board
Low limit fail low	R1, R1A (*connected in series)
Low limit pass	R2, R2A (*connected in series)

Optional high limit	Designated resistors on circuit board
High limit pass	R9, R9A (*connected in series)
High limit fail high	R10, R10A, R10B (*connected in series)

NOTE: Two (three for position 10) resistor locations are connected in series are provided in case resistors need to be added to achieve the desired total resistance. Solder a shorting wire across the resistor locations that are not used.

MAINTENANCE

Wipe the plug periodically with alcohol.

Limited Warranty

Vermason expressly warrants that for a period of one (1) year from the date of purchase, Vermason Limit Comparators will be free of defects in material (parts) and workmanship (labor). Within the warranty period, a credit for purchase of replacement Vermason products, or, at Vermason's option, the product will be repaired or replaced free of charge. If product credit is issued, the amount will be calculated by multiplying the unused portion of the expected five year life times the original unit purchase price. Call our Customer Service Department at 0044 (0) 1462 672005 for a Return Material Authorization (RMA) and proper shipping instructions and address. Please include a copy of your original packing slip, invoice, or other proof of date of purchase. Any unit under warranty should be shipped prepaid to the Vermason factory. Warranty replacements will take approximately two weeks.

If your unit is out of warranty, Vermason will quote repair charges necessary to bring your unit up to Vermason factory standards. Call Customer Service at 0044 (0) 1462 672005 for proper shipping instructions and address. Ship your unit freight prepaid.

Warranty Exclusions

THE FOREGOING EXPRESS WARRANTY IS MADE IN LIEU OF ALL OTHER PRODUCT WARRANTIES, EXPRESSED AND IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHICH ARE SPECIFICALLY DISCLAIMED. The express warranty will not apply to defects or damage due to accidents, neglect, misuse, alterations, operator error, or failure to properly maintain, clean or repair products.

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