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# FUTABA 9V

SERVICE MENU & MODE CHANGE

Version 2  
Release 2

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### CONTENTS

1. Introduction .....	3
1.1. Document Overview .....	3
1.2. Disclaimer & Warning! .....	3
1.3. Distribution and Use .....	3
1.4. How to Report Errors and Get the Most Recent Version .....	4
2. How to Access the 9V Service Menu & Change the stick Mode .....	5
2.1. Overview .....	5
2.2. Handling PCBs .....	5
2.3. “How to” Hardware Procedures (Main PCB) .....	5
3. The Service and Test Menu .....	7
3.1. Overview .....	7
3.2. Finding out the Password or User ID .....	7
3.3. The Main Test & Service Menu Screen .....	8
3.4. Test Menus .....	8
3.1. Calibration Menus .....	12

## 1. INTRODUCTION

### 1.1. Document Overview

This document explains how to enter the Futaba Service Menu, change the stick mode, test and calibrate the Futaba 9VAP series of transmitters (VAP/VHP). Most of the service procedures contained in this document have been tested on my own Futaba VAP, and they should hold true (in general) for the 9ZHP model.

Finally, there are some people I need to thank. Whilst there was no information on entering the service menu (or the service menu itself), there was a lot of information on the web about service menu's on other Futaba radios. Although the 9VAP is subtly different, without the hints that these wider RC adventurers provided, this document would never have come about. So a really big thanks to all!

### 1.2. Disclaimer & Warning!

If you intend to use this document then you are doing so at your own risk. Note that only some of the procedures have been tested by me, and then only on my own 9VAP. You can damage your radio, yourself and others, so please ensure you read the following:

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<http://www.jamesandtracy.co.uk/howto/9V.htm>.

## 1.4. How to Report Errors and Get the Most Recent Version

If you have downloaded this document from a third party site, the most recent version of this manual can be downloaded at:

<http://www.jamesandtracy.co.uk/howto/9V.htm>

It would be a good idea to download a new copy of this document from the above link in any case, as you will be able to leave your email address. This will allow me to automatically notify you of any major updates, changes, errors or omissions if I become aware of them. I intend to do this, but don't take this as a guarantee. Like everyone, I have a lot else that goes on in my life!

This document release is:

Document: Futaba 9V - Service Menu & Mode Change  
Version: 2  
Release: 2  
Release Date: 09/02/2012

Updates in this version include:

- a. Voltmeter calibration and adjustment images
- b. Improved service menu flow chart
- c. Various text, formatting and presentational changes

This version may contain inaccuracies and omissions. If you find any please let me know by visiting the above hyperlink. You'll not only be helping me, but you'll help others too! If you have any information you'd like to add to this manual, or suggestions for it, please also post a message or contact me.

## 2. HOW TO ACCESS THE 9V SERVICE MENU & CHANGE THE STICK MODE

### 2.1. Overview

The Futaba 9 VAP does not have a CAMPAC and, therefore, you need to open up the transmitter to make a modification to the main PCB (Printed Circuit Board) that boots it into the Futaba Service Menu. Opening the case and the actual modification are both simple and easy (far more so than the CAMPAC method of later transmitters). Likewise a Mode change (e.g. from Mode 1 to Mode 2) requires a modification to the main PCB.

### 2.2. Handling PCBs

Components on printed circuit boards can be damaged by static electricity. I personally have never blown up a chip this way, but it pays to be careful. Make sure you're wearing cotton, if possible do not work in a carpeted area, touch PCBs on the edges, earth yourself by touching a metal bathroom tap before starting work and frequently earth yourself on the metal sub-case of the 9VAP before touching a PCB. If you're really worried you can buy a dedicated earth strap for your wrist very cheaply that you connect to the 9VAP sub-case and it will provide a permanent earth, but I never have and so far everything has been fine. Even without the above precautions it's very unlikely you'd do any damage, but better safe than sorry!

### 2.3. "How to" Hardware Procedures (Main PCB)

The following procedures need to be carried out on the 9V's main PCB to access the service menu, change the stick mode and adjust the voltage calibration:

- a. Open the back of your 9V. It's very easy and only needs a few screws to come off.
- b. Once off you're looking at the main PCB – you don't need to touch any microchips to complete this procedure, so don't (see "handling PCBs" section above)!
- c. **Enabling the Service and Test Menu:** The photo (Figure 1) below shows the single link you need to make to get your 9V to boot into the service mode. You may find (as I did) that this is hidden by a sticker – if so remove it. Once you are done 'servicing' simply break the link. I simply soldered the two snipped ends of the jumper ("J1") on the board back together, and then desoldered them when done.
- d. **Changing the Stick Mode (Mode 1 and 2):** The other link, "JM" in the photo (Figure 1), probably changes the stick Mode of the transmitter, depending on whether it is shorted or not – I didn't test this, but it seems very likely that:
  - Mode 1 = Jumper ("JM") cut or no link
  - Mode 2 = Jumper ("JM") short in place
- e. **Adjusting the Voltage Calibration :** Adjustment for the transmitter and receiver battery voltages you see on the LCD seems to be performed on the main PCB (see Figure 2). Please note that I haven't directly tested this, but it seems likely that:
  - Ext = Adjusts the receiver (external) voltage showing on the LCD
  - Int = Adjusts the transmitter (internal) voltage showing on the LCD

You will need to access the service menu (as above) to read the values from the LCD as you make the adjustments during the test (as described in Section 3.4)

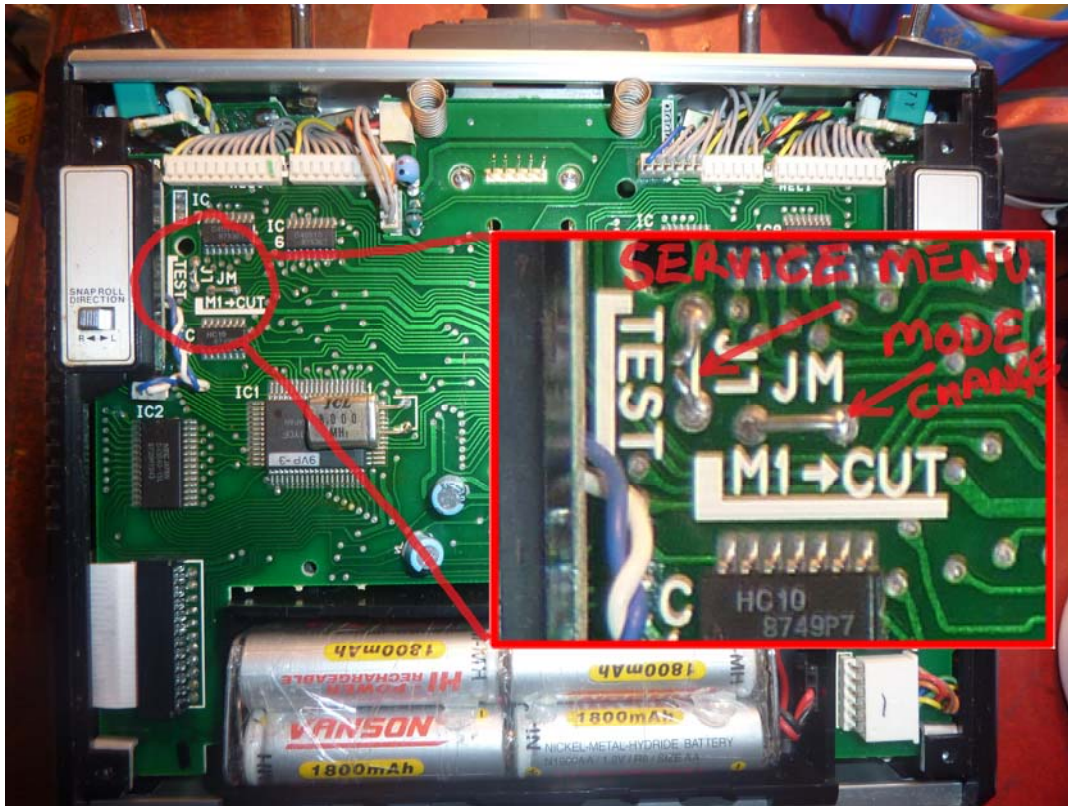


Figure 1 Main PCB with service menu and mode change jumpers

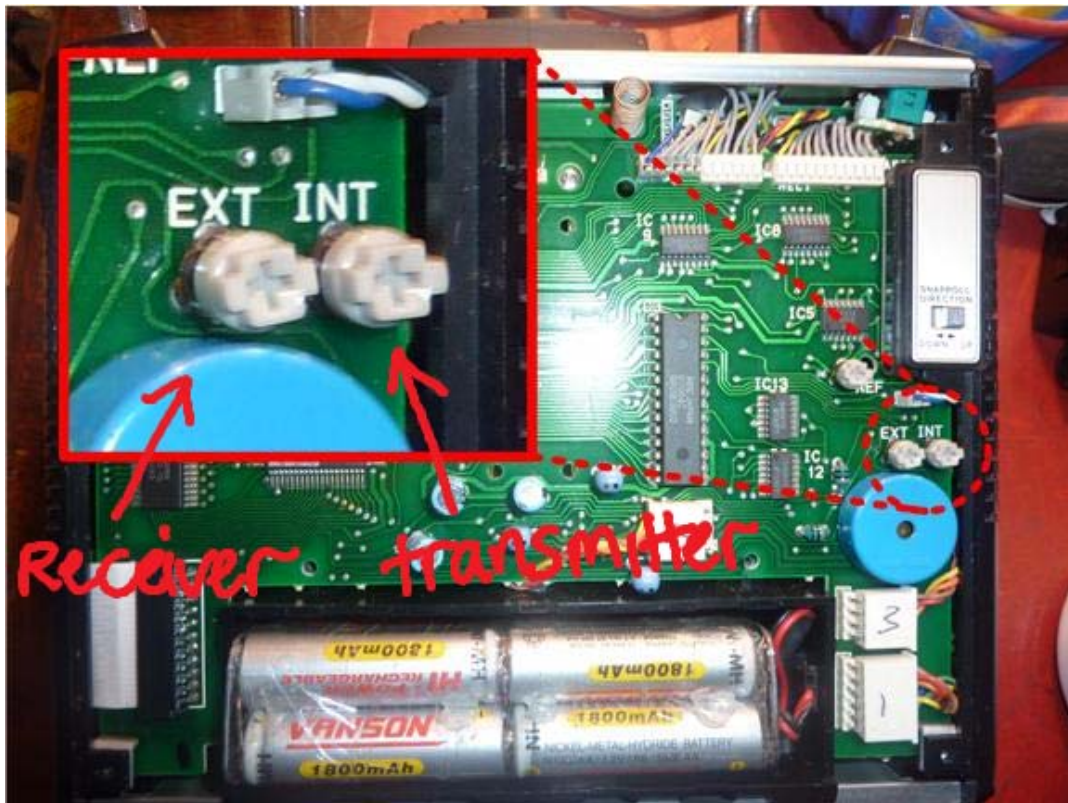
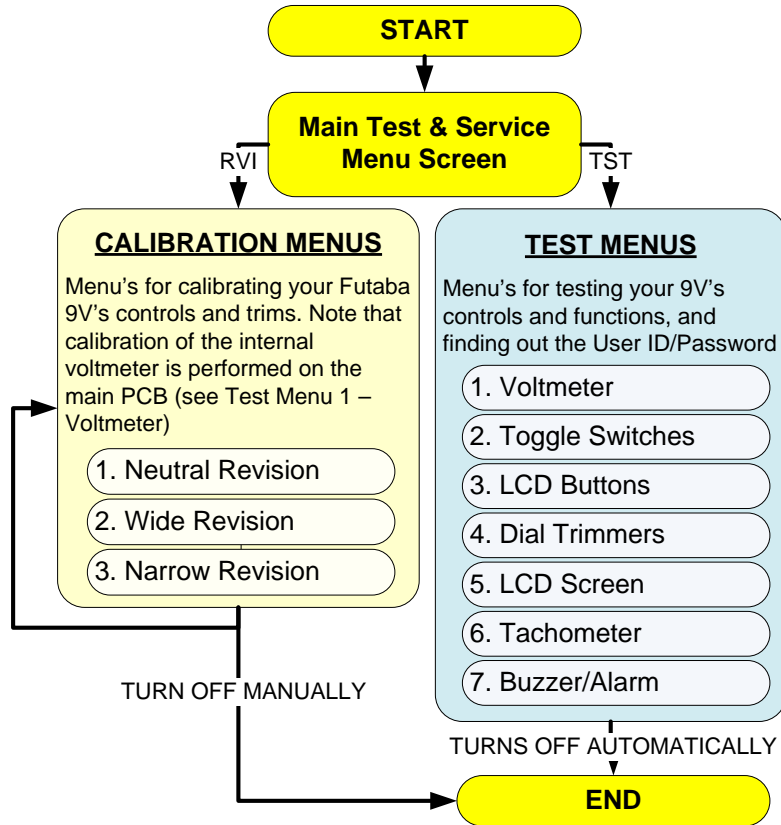


Figure 2 Main PCB with POTS for adjusting the displayed voltage (Tx and Rx)

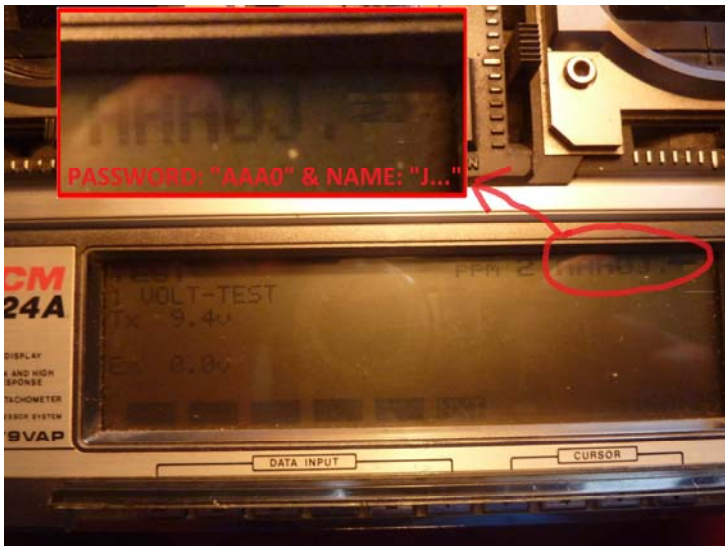
WARNING: THE INFORMATION IN THIS MANUAL IS FOR INFORMATION PURPOSES ONLY AND MAY BE INCORRECT, CAUSE DAMAGE TO YOUR RADIO OR INJURY TO YOURSELF AND OTHERS. IF YOU USE THIS MANUAL YOU DO SO SOLELY AT YOUR OWN RISK.

### 3. THE SERVICE AND TEST MENU

#### 3.1. Overview



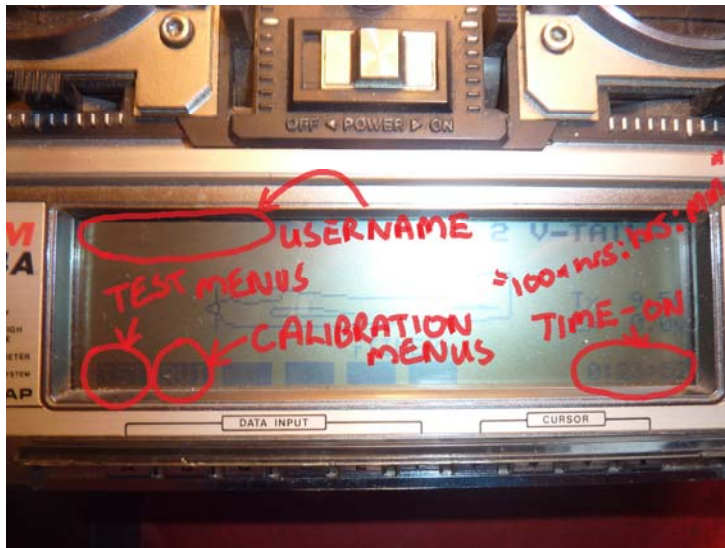
#### 3.2. Finding out the Password or User ID



**User ID or Password:** This can be found on the majority of the Test Menus in the upper right hand corner. The first 4 digits are the password (e.g. “AAA0”) and the following digits are the start of the username (e.g. in this case “J.”).

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### 3.3. The Main Test & Service Menu Screen



This is the initial Test and Service Menu Page - Press TST to enter the Test Menus and RVI for Calibration Menus of joysticks, trimmers and controls

### 3.4. Test Menus

Press "TST" on the Main Test and Service Menu Screen to access these menus.



**TEST MENU 1.** - Voltmeter Test Menu – here you can test whether the 9V is correctly reporting the calibrated voltage inputs you are using. Calibrated power supplies should be:

- Transmitter Battery (8.5v +/- 0.2v through back of TX)
- RX battery (5.0v +/- 0.2v through DSC cable)

I suspect that the two variable pots on the lower right of 9VAP's main PCB can be used to manually adjust calibration until the displayed values match the calibrated voltage (see Figure 2 and Section 2.3)





**TEST MENU 2.** – Transmitter Toggle switches - operate each in turn and the arrows will turn to “OK!”s. Once complete you will proceed to the next menu.



**TEST MENU 3.** – LCD buttons - press each in turn and the arrows will turn to “OK!”s. Once complete you will proceed to the next menu.



**TEST MENU 4.** – Front panel ‘dial’ trimmers for ATL etc. – turn each fully one way, then the other and the arrows will turn to “OK!”s. Once complete you will proceed to the next menu.



**TEST MENU 5.** – LCD Test – This blinks the screen on and off to check for dead pixels. Press ‘NXT’ to proceed to the next menu.



**TEST MENU 6.** – Tachometer test – Press 'NXT' when complete to proceed. You can use a fluorescent light or CRT TV (i.e. Not LED or Plasma). Hold the tachometer close to the TV or fluorescent tube. You should see the following on the screen:

- a. 1500rpm PAL TV (Europe/UK)
- b. 1800rpm NTSC TV (USA)
- c. 3000rpm fluorescent light at 50Hz (Europe/UK)
- d. 3600rpm fluorescent light at 60Hz (USA)



**TEST MENU 7.** – Buzzer/Alarm test – This tests your alarm by sounding it. Press 'NXT' to proceed and exit the Test Menu's loop. Your transmitter will now turn off automatically.

### 3.5. Calibration Menus

Press “RVI” on the Main Test and Service Menu Screen to access these menus.



**CALIBRATION MENU 1.** – Neutral Revision (Controls & trims) – Although you can't see it in the photo, there are 2 sets of numbers that flash on and off beside each “/” (e.g. 100/98). The first relates to your controls (e.g. Joystick), the latter to the associated trimmer for the control. To calibrate:

- a. Center all dials, trimmers, sliders and joysticks (i.e. all at the neutral position). Any control/trimmer that you do not wish to calibrate should be put at an extreme throw.
- b. Press ENT and the controls/trimmers that have been successfully calibrated will stop flashing.

Press ‘NXT’ when complete to proceed.



**CALIBRATION MENU 2.** – Wide Revision (Controls & trims) – You can see 2 sets of numbers that flash on and off beside each “/” (e.g. 133/99) in the photo. The first relates

to your controls (e.g. Joystick), the latter to the associated trimmer for the control. To calibrate carry out the following procedure:

- a. Set all Dials fully clockwise.
- b. Set both Sliders fully down.
- c. Set control trimmers fully right and fully down.
- d. Hold both Joysticks fully right and fully down.
- e. Press ENT and the controls/trimmers that have been successfully calibrated will stop flashing.

Press 'NXT' when complete to proceed.



**CALIBRATION MENU 3.** – Narrow Revision (Controls & trims) – You can just see 2 sets of numbers that flash on and off beside each “/” (e.g. 102/107) in the photo. The first relates to your controls (e.g. Joystick), the latter to the associated trimmer for the control. To calibrate:

- a. Set all Dials fully anti-clockwise.
- b. Set both Sliders fully up.
- c. Set control trimmers fully left and fully up.
- d. Hold both Joysticks fully left and fully up.
- e. Press ENT and the controls/trimmers that have been successfully calibrated will stop flashing.

Press 'NXT' when complete to proceed and return to the start of the calibration menus. Switch off the transmitter manually if you have finished.

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“It is not the length of life, it is the depth”