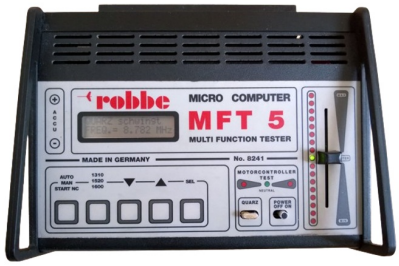
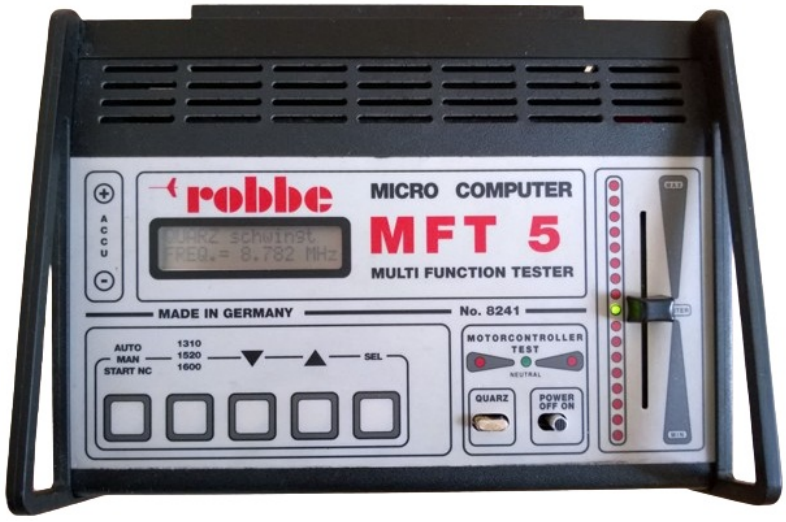


robbe MFT5 Multi Function Tester Instruction Manual

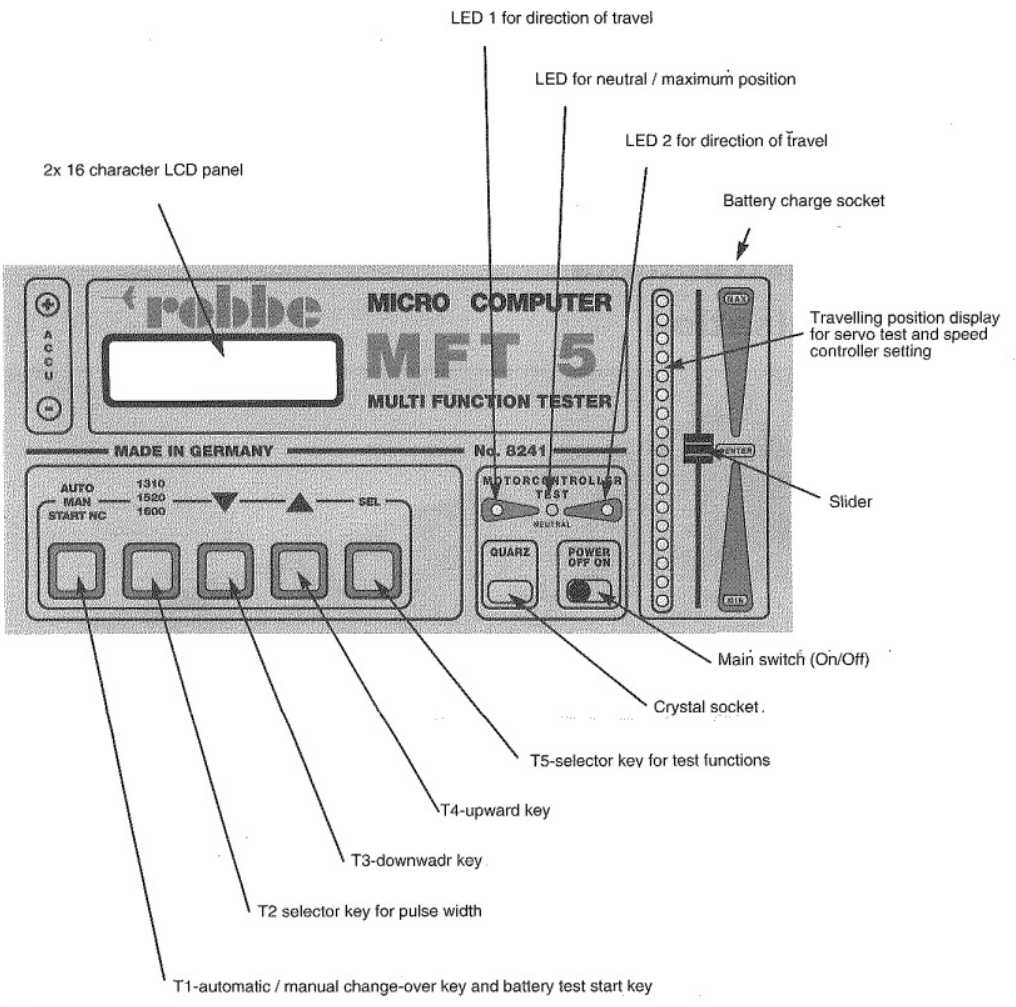
MFT5
Operationg Instruction

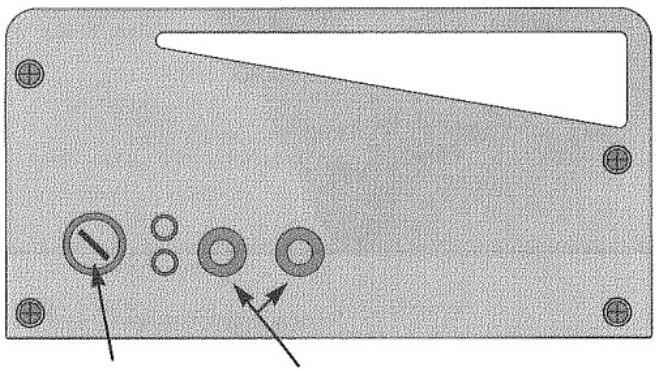


NO. 8241

Contents

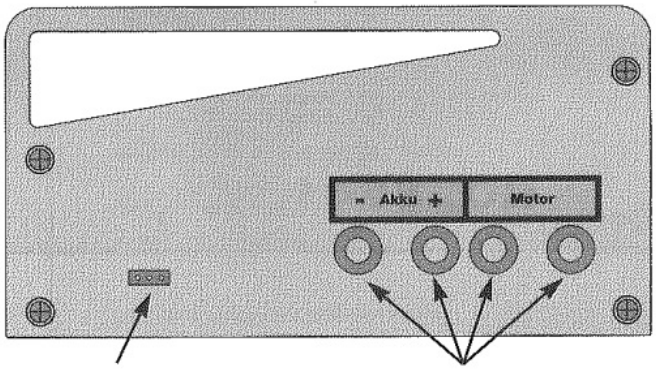
MFT5 Multi Function Tester





Fuse holder for 2 A fuse

Battery test sockets



Socket for servo and speed controller leads.

Speed controller sockets

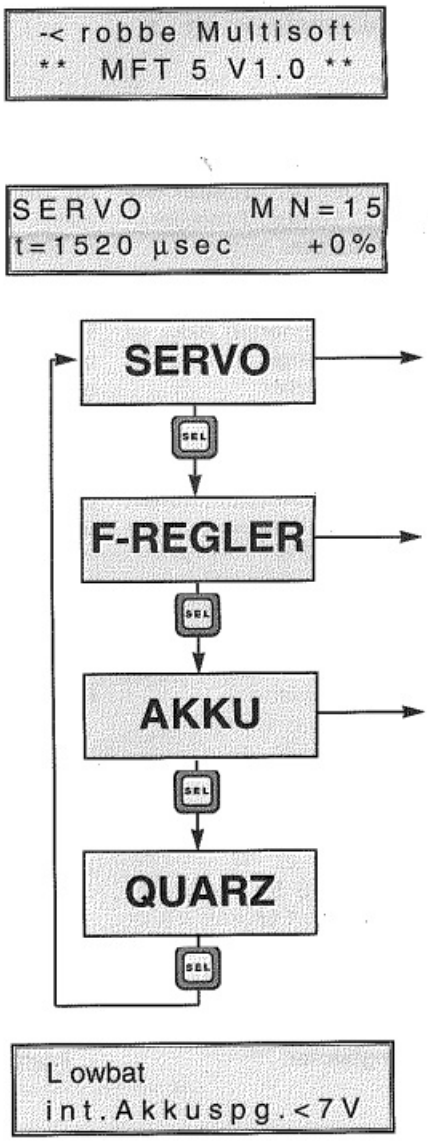
Technical description:

The MFT 5 multi-function tester is a micro-processor controlled service test device which provides a simple method of checking important radio control system components including servos, speed controllers, batteries and crystals.
With its integral battery the MFT 5 is independent of the mains supply and can be used anywhere. All data and information is displayed in the clearly legible LCD text panel. Extensive protective te atures provide excellent security when using the MFT 5.
The MFT 5 incorporates the following protective features:
– Short circuit protected servo connections
– Battery output for speed controller connection fitted with 2A fuse
– Battery test connections polarised and protected against short circuit
– Low voltage monitor for internal battery
– Polarised charge socket for internal battery.

Using the unit for the first time

Before using the Tester for the first time the internal battery must be charged: connect the charge lead to the charge socket on the back of the MFT 5. Take care over polarity: red = positive (+), black = neqatlve t-),
If you connect the lead the wrong way round you will not damage the unit, but the internal battery will not be charged. The charge current must not exceed 2 A; higher currents may ruin the unit. It is possible to use the MFT 5 while the battery is being charged, but the charge period will be longer due to the lost energy.

Charge lead for MFT 5: transmitter charge lead No. F 1415
Charger: any Rabbe continuous charger, e.g. Charger 5r (No. 8303) or MTC 51 (No. 8235).



Switching on

Switch the MFT 5 on by moving the main switch to the “ON” position. A buzzer will sound, and the basic display will appear on the screen.

After about a second the buzzer switches off and the servo test function display (manual mode) appears.

If you wish to call up a different test function you can do this by leafing through with the (T5-SEL). The sequence of test functions is shown in the diagram alongside

Internal battery – low voltage monitor

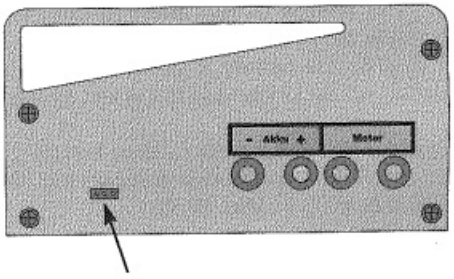
If the power supply falls to a certain point (internal battery voltage below 7V) then the display shows “Lowbat” and the buzzer sounds. Confirm the message with the SEL key and end the test function. The internal battery. can now be recharged via the integral charge socket.

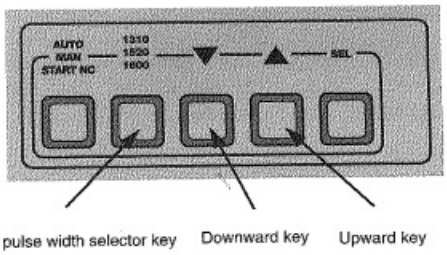
Servo test function

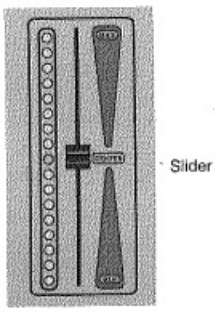
This function is designed to test the condition of servos.

The unit can cope with virtually any make of servo. The servo test function is called up automatically when you switch on the M FT 5.

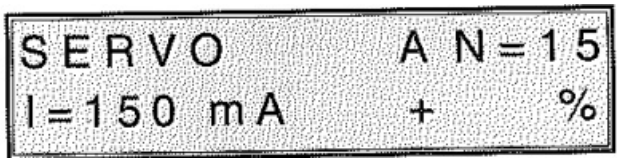
To test a servo, plug the servo connector into the socket on the side of the unit. To test a non Robbe/Futaba servo you will need a suitable adaptor lead (e.g. Robbe plug to Graupner socket). Enter the neutral pulse width to suit the servo make, using the keypad. The default setting is 1520 µsec, which matches all Robbe/Robbe-Futaba servos made since 1989 and Graupner servos (pulse width 1500 µsec). For Robbe servos made before 1989 set a pulse width of 1310 µsec.







Servo testing – manual mode
In the manual mode the servo can be controlled either to an accuracy of 1 µs from the keypad, using the upward downward keys, or via the slider (10 µs).
The servo's travel is shown both in the display(%) and via the row of 17 LEDs. The green LED indicates the neutral position.



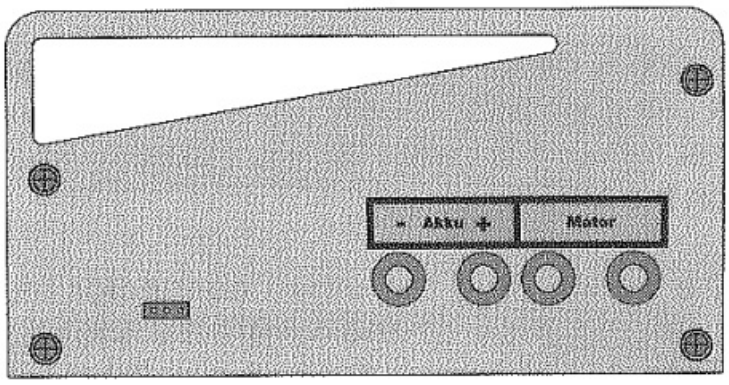
The manual mode is designed for checking
– the neutral position of a servo
– the maximum servo travel
– smoothness and linearity of servo travel

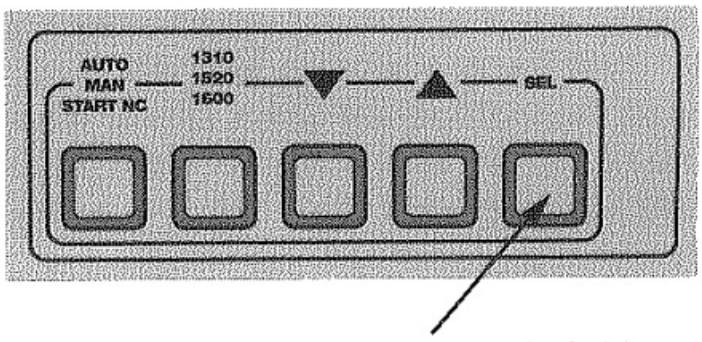
Servo testing – automatic mode
In the automatic mode the servo is controlled automatically by the unit. You can vary the speed of control using the slider. The display shows an indication of the average current consumption of the servo. This value varies according to the speed at which the servo is moved.
The automatic mode is designed for checking
– the servo gearbox
– the servo pot

– the servo motor
A table of average current drains is printed on the penultimate page. This can be removed and placed by the MFT 5.

Speed controller test function

This function provides a means of checking electronic speed controllers without requiring them to be installed in a model. It can also be used as a very easy way of setting the neutral, minimum and maximum positions of the speed controller.
Connect the receiver connector to the socket on the side of the unit and connect the battery input and motor output from the speed controller to the appropriate sockets on the MFT.



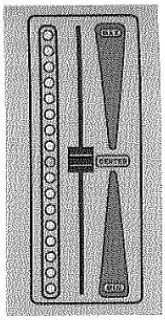


Selector key for calling up testfunktion

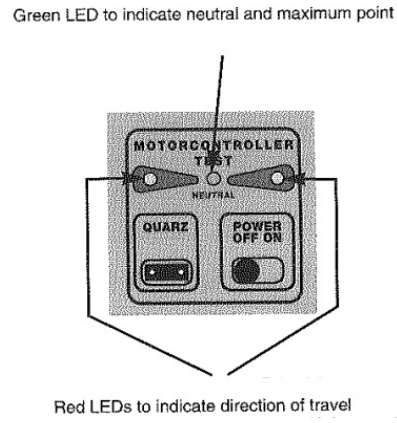
Caution:
Take care with the connections! If you mix up the motor and battery leads, or connect the battery connector with reversed polarity, the fuse will blow.

To start the soeed controller test select the appropriate test with the “” (TS) .

Speed controller testing, manual mode
This test function is designed for checking
– the correct function of the speed controller
– and adjusting
– the neutral point
– the maximum point
– the minimum point
You can hear the effect of the speed controller by means of an internal electric motor.



Slider



Adjusting the neutral point

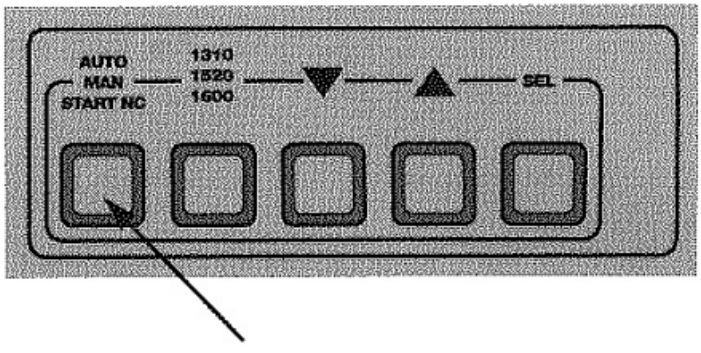
Connect the speed controller and set the desired soeed controller setting using the slider or the upwards ▲ and downwards ▼ keys (normally 0%). Rotate the adjuster pot on the speed controller to the point where the green LED (Motorcontroller test) lights up.

Adjusting the maximum I minimum point

Set the desired speed controller setting (stick position) using the slider or the upward ▲ downward ▼ keys, and the red LED (Motorcontroller Test) for this direction of travel will light up. Rotate the “maximum” adjustor pot on the speed controller until the centre LED (green) changes from flashing to a continuous glow. To adjust the minimum point {reverse I brake) repeat the process – as described for maximum adjustment – but move the slider to the point where the second red Motorcontroller LED lights up.

Speed controller test function – automatic mode

This test function is designed for simple checking of the speed controller’s behaviour during
– soft start
– braking

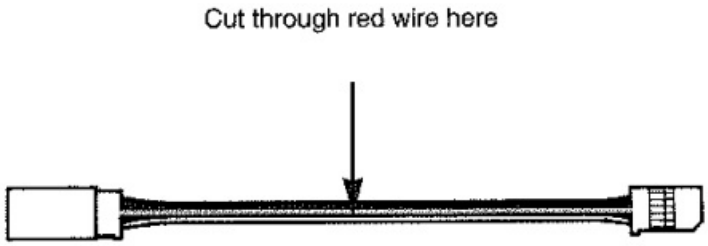


Selector key for automatic or manuel mode

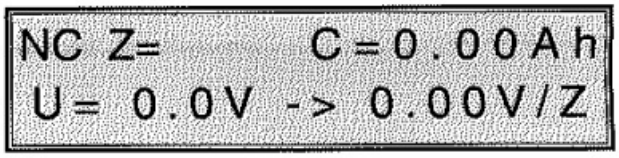
and checking of neutral and maximum point.

To do this switch the unit to automatic mode with the Auto/Man key (T1) and then set the slider to the speed you want. You can interrupt the automatic process by moving the slider to the “Min” end-point.
The value for the last setting is then retained.

Checking the BEC system
To check the BEC system a two-core adaptor lead (e.g. servo extension F1419 with the red wire cut through) must be connected between the MFT 5 and the speed controller receiver lead. If the BEC system is faulty the speed controller will then not work.

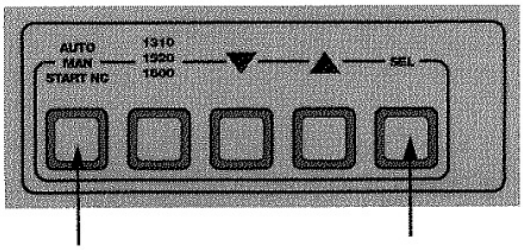


Initial display, battery test



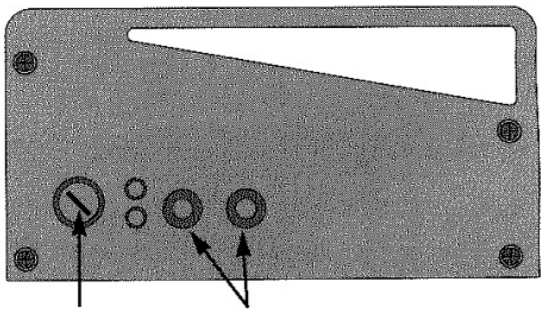
Battery test function

This function is designed to check the condition of a battery, and can also be used for selecting individual cells. The MFT 5 discharges the pack at a constant current of 1 A (this equates to the current consumption of around 3 – 4 servos at moderate load). Batteries consisting of 1 – 1 O NC cells can be checked in this way. With more than 10 NC cells or a battery voltage of more than 15.5 V it is not possible to discharge the pack, and the function cannot be started.



Battery test start key

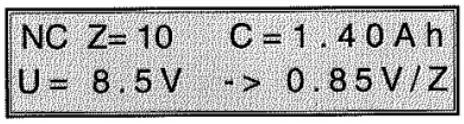
Selector key for test functions



2A fuse

Battery connection sockets

Example: final battery test display



To test a battery follow this procedure:

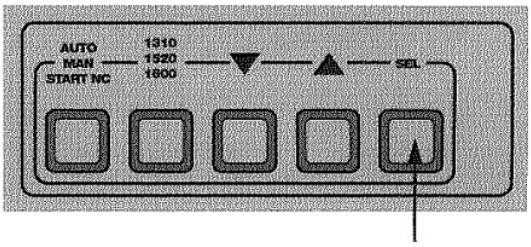
1. Call up the battery test function with the selector key (SEL)
2. Enter the number of cells using the upward /downward keys
3. Connect the fully charged NC pack

The display will show the battery voltage and the voltage per cell.
To start the discharge process press the start key.
Note that the battery can only be discharged if the voltage per cell is greater than 0.85 Volts. During the discharge process the display shows a flashing “Cec.ccxh”. You will hear an audible signal at the end of the discharge, and the V/cell display flashes.
So long as the battery remains connected these values continue to be shown in the display. This test function runs in the background, i.e. all other test functions can be carried out in parallel with it.

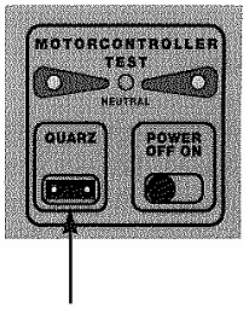
Crystal test function

This function is designed to check whether a crystal vibrates or is faulty. It is only possible to check crystals in the 26 MHz, 27 MHz, 35 MHz, 40 MHz, 41 MHz and 72 MHz bands.
Plug in the crystal in the crystal socket and call up the crystal test function with the selector key 8 (SEL). The display shows the fundamental frequency at which the crystal in the MFT 5 vibrates. Please note that this does not tell you the channel, as this varies according to the internal circuitry of the transmitter and receiver.
A table showing the frequency ranges in which Robbe/Futaba crystals are designed to vibrate is provided on the penultimate page. This can be removed and placed by the MFT.
If no crystal is plugged in, or the frequency is lower than 1 KHz (faulty crystal) then the display shows: “FREQ.=0.000 MHz”. If the frequency is higher than 99.9 MHz the display shows: “FREQ.= -.– MHz”. If a crystal vibrates but not at a constant frequency, the

display will show “QUARZ DEFEKT”.



Selector key for calling the test function



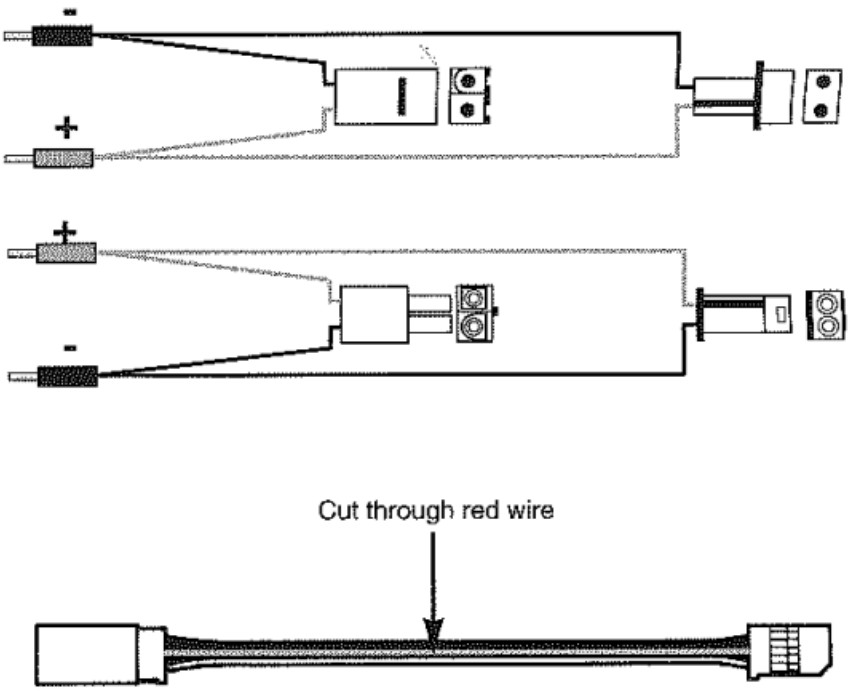
Crystal socket

Fault detection with the MFT 5

By using the MFT 5 to check the individual components of your radio control system it is possible to narrow down the location of any fault to particular items. A table showing a number of common faults and their possible causes is printed on the last page. This can be removed and placed by the MFT.
We hope you appreciate the useful features of your MFT 5 service tester.

Yours – the Robbe Team
We reserve the right to alter technical specifications where the changes improve our products. We accept no liability for errors and printing mistakes.

If you wish to be able to make use of all the test functions of the MFT 5 we recommend that you make up the following adaptor leads:
For battery testing:
Lead with banana plugs and Tamiya socket, same with AMP socket, or AMP charge lead No. 8253 and TAM charge lead No. 8192.
For speed controller testing:
– Lead with bananaplugs as for battery test.
– Lead with bananaplugs and AMP plug, same Tamiya plug



F 1419

For BEC-System:
Servo extension lead with red wire cut through
For servo test:
Servo lead with robbe plug and socket to match servos of other makes (Graupner I Multiplex etc.)

Crystal and servo table
Crystal table

robbe/Futaba crystals shoud vibrate within the following limits:

Frequency band	Transmitter crystal	Receiver crystal	OS receiver
26 MHz AM	8,930 – 8,970 MHz	8,780 – 8,820 MHz	
26 MHz FM	13,400 – 13,460 MHz	8,780 – 8,820 MHz	—
27 MHz AM	8,990- 9,090 MHz	8,840 – 8,940 MHz	—
35 MHz FM	17,500 – 17,610 MHz	11,510 – 11,590 MHz	—
35 MHz FM B	17,910 – 17,960 MHz	11,790 – 11,820 MHz	8,090 – 8,17
40 MHz AM	13,550 – 13,670 MHz	13,400 – 13,520 MHz	8,370 – 8,41
40 MHz FM	13,550 – 13,670 MHz	13,400 – 13,520 MHz	9,980 – 10, 1
41 MHz AM	13,660 – 13,740 MHz	13,510 – 13,590 MHz	9,980 – 10,1
41 MHz FM	13,660 – 13,740 MHz	13,510 – 13,590 MHz	10,090 -10,1
72 MHz AM	12,000 – 12,090 MHz	11,920 – 12,010 MHz	10,090 -10,1
72 MHz FM	14,400 – 14,510 MHz	14,300 – 14,420 MHz	

For you fill in

Frequency band	Transmitter crystal	Receiver crystal	OS r
26 MHz AM 26 MHz FM 27 MHz AM 35 MHz FM 35 MHz FM B 40 MHz AM 40 MHz FM 41 MHz AM 41 MHz FM 72 MHz AM 72 MHz FM			

Summary of average current consumption for robbe/Futaba servos

Average current drain (± 20 %) for robbe/Futaba servos when the slider is at centre:

Model	Current	Model	Current
8100 8125 8132 S132SH 8135 S143 S148 S3001 S3002 S3301	110 mA 110 mA 70 mA 60 mA 70 mA 80 mA 110 mA 90 mA 110 mA 90 mA	S3302 S3501 S5101 S910T S9201 S9301 S9302 , S9401 S9601	110 mA 90 mA 190 mA 80 mA 70 mA 80 mA 80 mA 70 mA 80 mA

Fault description

Fault	Cause
Servos Jerky movement Servo runs to end-point, then fails to work and current consum to high Current consumption too low (approx. 20 mA) and servo does not work Current consumption too high and servo does not work Current consumption too high – Zero current consumption **Speed controller** • Neutral pulse width cannot be adjusted – Maximum/Minimum cannot be adjusted • Int. motor does not work Speed controller provides no control, switches immediately to maximum – Speed controller does not work Speed controller with adaptor lead does not work, works without adaptor lead **Batterre test** • Bat ery test fail to start **MFT5** MFT 5 cannot be switched on	– Pot fault – Wire disconnected at pot – Faulty motor – Faulty motor – Stiff or faulty gearbox, sha – Servo lead faulty – Electronics faulty ‘ ~ Pot fau – Pot au – Electronics faulty – Qutput stage faulty – Cable faully – Electronics faulty – BEC system faulty – More than 10 NC cells con – Battery voltage over 15.5 \ – Battery voltage under 0,85 – Fuse faulty . – MET internal battery deep-

robbe Form 40-3422 BBJC

Documents / Resources

	robbe MFT5 Multi Function Tester [pdf] Instruction Manual MFT5 Multi Function Tester, MFT5, Multi Function Tester, Function Tester, Tester

References

- User Manual