

## VALIANT TURTLE TESTING PROCEDURES

TEST T1

8.10.84

[illegible]

## VALIANT TURTLE TESTING PROCEDURES

### A. TEST T1

1.0 T1 is a thorough functional test designed to test every aspect of the Turtle and its operation.

#### 2.0 TEST EQUIPMENT

The test equipment consists of:

- a) A variable d.c. power supply capable of supplying up to 1 Amp and 30 volts.
- b) A 1 metre long twin 7/0.25mm cable capable of connecting the power supply to the on-board power supply of the Turtle.
- c) A cable with a connector capable of connecting the power supply to the Turtle's recharging socket.
- d) A Valiant Communicator.
- e) A Valiant Power Adaptor.
- f) An appropriate computer and software capable of driving the Communicator - programmed with the test routines of T1

OR

- g) A discreet electronic circuit capable of driving the Communicator in T1 modes.
- h) Valiant Turtle Test Software.

#### 3.0 VISUAL CHECK

This is an inspection procedure intended to ensure:

- a) All work has been done and is satisfactory.
- b) The quality of workmanship is good.
- c) The appearance and finish are excellent.

A checklist in Appendix A should be completed for each Turtle to ensure all aspects of the product are inspected.

#### 4.0 CHARGE CIRCUIT TEST

Part 1: a) Switch the Turtle into CHARGE mode.

- b) Connect the power supply to the Turtle recharging socket.
- c) Set the voltage supply to 20 volts.
- d) Complete the Part 1 Charge Circuit section of the checklist in Appendix A.

Part 2: e) Switch the Turtle switch to OFF.

- f) Increase the voltage (up to a maximum of 30 volts) until the yellow LED goes out on the PCB.
- g) Complete the Part 2 section on the check list in Appendix A.

## 5.0 PEN TEST

### 5.1 TEST PROCEDURES (HIGH VOLTAGE 14V)

- a) The power supply should be set on 14 volts.

### 5.2 TEST PROCEDURES (LOW VOLTAGE 10.5V)

- a) The power supply should be set on 10.5 volts and connected to the PCB's power system.
- b) A pen should be inserted into the pen holder.
- c) The Turtle should be switched on.
- d) The computer and the Valiant Communicator should be powered up and the test program software loaded (see VDL1/ ).
- E) The T1 pen test program should be activated.
- f) The pen should be raised and lowered ten times.

N.B. ON NO ACCOUNT SHOULD THE PEN BE RAISED AND LOWERED WITHOUT THE "PAUSE" INSTRUCTION BETWEEN EACH COMMAND.

- g) Complete the checklist of Appendix A.

## 6.0 DRIVE UNIT TEST

- a) With the computer and Valiant Communicator and Turtle set up with the pen inserted into the Turtle pen tube, activate Pen Test routine on the computer.

- b) Make sure the pen is down (i.e. lowered for drawing).
- c) Set the power supply to 10.5 volts.
- d) The Turtle should move forward in a series of move-and-stop motions and return along the same line.
- e) If there is a significant difference between the forward and return lines, the Turtle drive mechanism needs adjustment.
- f) Complete the checklist of Appendix A.

#### 7.0 MOTION TEST

- a) With the set up as as the previous section, activate TIM routine.
- b) Complete the checklist of Appendix A.

N.B. IT IS NOT NECESSARY TO ADJUST THE TURTLE'S ACCURACY.

#### 8.0 EYE TEST

- a) Connect the Turtle to the power supply.
- b) Set the power supply to 12 volts.
- c) Switch on the Turtle.
- d) Reduce the voltage from 12 volts to 10 volts.
- e) Complete the checklist of Appendix A.

APPENDIX A

TURTLE TEST T1 CHECK LIST

TURTLE TEST T1 CHECK LIST  
cont.

WIRING

Connections

- (a) Stepper Motor Port
- (b) Stepper Motor Starboard
- (c) d.c. motor
- (d) Eyes
- (e) DIL switch
- (f) Main loom


Loose Wires

- (a) Stepper motor port
- (b) Stepper motor starboard
- (c) d.c. motor
- (d) Eyes
- (f) DIL switch
- (g) Main loom


Untidy Screws

Loose Screws

- (a) PCB mounts
- (b) Switch mounts
- (c) Battery pods top
- (d) Battery pods bottom
- (e) Stepper motor port
- (f) Stepper motor starboard
- (g) d.c. motor screws
- (h) Headcover


TURTLE TEST T1 CHECK LIST  
cont.

MISCELLANEOUS

- (a) Switch operation
- (b) Fuse in place
- (c) Charge resistor fixed down
- (d) General workmanship
- (e) Quality of finish

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CHARGE CIRCUIT TEST

Part 1

- (a) Is charge light on (Yellow LED) after switching into CHARGE
- (b) Is current between            and            mA
- (c) If the turtle is switched off is the current less than            mA

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Part 2

- (a) Does charge light (Yellow LED) go out before 30v is reached

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PEN TEST

High Voltage (14v)

- (a) Is pen raised and lowered once
- (b) No evidence of pen sticking

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Low Voltage (10.5v)

- (a) Is the pen raised and lowered            times
- (b) No evidence of the pen mechanism sticking
- (c) Is the pinion securely stuck to the pen motor

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TURTLE TEST T1 CHECK LIST  
cont.

DRIVE UNIT TEST

- (a) No significant difference between the  
two lines of driving

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MOTION TEST

- (a) Are all movements smooth

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EYE TEST

- (a) Do the eyes go out at voltage.

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INSPECTOR'S COMMENTS

PASS

DATE

INSPECTOR'S SIGNATURE

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## TURTLE TEST T1 CHECK LIST

TURTLE SERIAL NO.

### VISUAL CHECK

Please indicate in the box whether the check is ✓ satisfactory or X not satisfactory.

#### DRIVE UNIT

Starboard

Port

- (a) No backlash in gear unit
- (b) Wheel joint not broken
- (c) No adhesive on tyre
- (d) Traction wheel assembly/  
base joints not broken

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#### STABILISER

- (a) Ball bearing free to move
- (b) Ball bearing not too loose
- (c) No rust on ball bearing

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#### LABELS

##### Nameplate

- (a) Label on
- (b) Serial number on label

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##### ON-OFF-CHARGE Label

- (a) Labels on
- (b) Label correctly positioned
- (c) Letters correct

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#### PEN

- (a) Easy to load
- (b) Easy to unload

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#### EYES

- (a) Eyes fixed
- (b) Eye rings in place

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