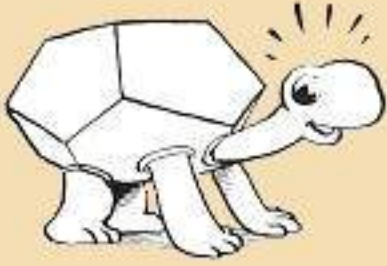




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## Introduction



The cybernetic "turtle" is now accepted as the ideal tool for introducing children to computer programming. It is the gateway into the powerful programming language LOGO, which is becoming accepted as standard in primary education.

The Valiant Turtle is the world's first mass-produced, remote-controlled Turtle. It performs a range of activities impossible for a "cord controlled" Turtle.

Infra-red signals from the computer are converted into moves, turns and pen action by the Turtle's logic control.

The red lights inside the Valiant Communicator and on the Valiant Turtle's pentagonal control board go on and off, indicating that instructions are being transmitted and received. The Valiant Turtle is powered by two stepper motors which can be adjusted to give maximum accuracy during drawing.

The ten rechargeable nickel-cadmium batteries can be recharged by plugging a power adaptor into a socket on the Valiant Turtle. The Valiant Turtle's two illuminated eyes serve as power indicators.

The Valiant Turtle can be interfaced with most popular microcomputer systems. Valiant provide an interface disc to enable it to run from popular versions of LOGO. Some manufacturers incorporate driver routines for the Valiant Turtle in their versions of LOGO.

The Valiant Turtle draws with all types of Berol pen except the Finesline and the Highlighter. The Valiant Turtle normally moves in units of 1cm.

Some versions of LOGO allow programming of multiple turtles, or "sprites". Up to four Valiant Turtles can be independently programmed from one computer.

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Mark II Valiant Turtle from serial no. 01/5940

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## Unpacking

The Valiant Turtle comes ready for use with any compatible micro-computer system that has a disc drive or cassette recorder.

The complete Turtle package comes in three boxes, which can be bought separately.

The smallest box contains equipment and software which should correspond to the make of your microcomputer and software. Consult your dealer if in doubt.



### A) The largest box, labelled "THE VALIANT TURTLE", contains:

1. The Valiant Turtle, containing two rechargeable battery packs.
2. Two manuals: User Guide and "Penup", an introduction to LOGO and the Valiant Turtle for parents, teachers and children.
3. A comic for children, "Turtle Talk".
4. Berol pen.
5. Screwdriver, for adjusting the wheels.



### B) The smaller box labelled "VALIANT TURTLE COMMUNICATOR AND POWER ADAPTOR" contains:

1. The infra-red communicator. This is a flat plastic box with a transparent red screen on the front. It connects to a port on the computer and transmits infra-red signals to the Turtle.
2. The power supply adaptor. This is a black box with two cables attached. This performs two separate functions: to connect the infra-red communicator to the mains power supply, and to connect the Turtle to the mains power supply when recharging the batteries. The hollow jack-plug on the end of the thin cable connects to sockets on the communicator and the Turtle.

Connect the adaptor to the power supply using a 13 amp plug WITH A 3 AMP FUSE.



### C) The smallest box labelled "VALIANT TURTLE INTERFACE KIT," contains:

1. Disc or cassette with LOGO interface software. Copy this immediately in case the original becomes damaged.
2. Leaflet with instructions on how to run the Valiant Turtle with your machine and software.
3. The lead to connect the Valiant Communicator to your computer.

If the contents of any package are missing or damaged consult your dealer.



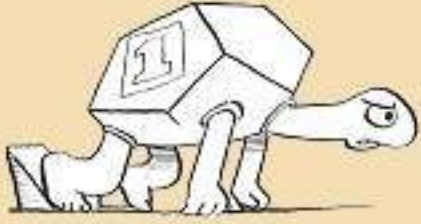
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## Starting



Before starting the Turtle for the first time charge the batteries as described in [charging the batteries](#). THE COMPUTER SYSTEM SHOULD BE SWITCHED OFF.

1. Connect the Communicator to the computer. The method of connection will depend on the make of machine. Consult the machine specific instructions in the Interface Kit.

2. Connect the power adaptor to the mains power supply and turn on power.

DO NOT CONNECT THE POWER ADAPTOR TO THE COMMUNICATOR YET.

3. Put your pen in the Turtle, removing the cap.

4. Switch on your computer system.

5. Load the LOGO software.

If the LOGO software requires an interface disk, load as described in the software documentation.

Check that the small coloured switches underneath the Turtle and on the side of the Communicator are in the appropriate positions for use with your software as described in the machine specific instructions in the Interface Kit.

6. Connect the jack plug from the power adaptor to the socket at the rear of the Communicator. A red light behind the Communicator screen will go on. If not, check the power is on and re connect the Communicator. If after several attempts the light still does not go on, consult your dealer.

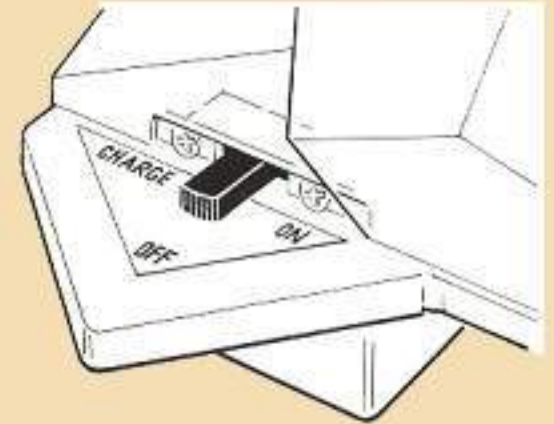
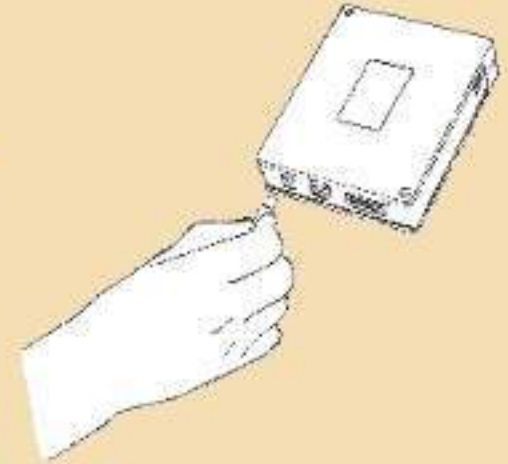
7. On the left rear flipper of the turtle is a three way switch, labelled ON, OFF and CHARGE. Move the switch to the ON position. The turtle's eyes will glow and a small red light on the pentagonal control board inside the turtle will illuminate.

Before giving any command to the Turtle, instruct it to raise the pen (usually PENUP). This synchronises the Turtle with the software.

The Turtle is ready to go.

If the eyes do not glow the Turtle needs recharging.

8. Running the Turtle. The software documentation will show how to instruct the Turtle.



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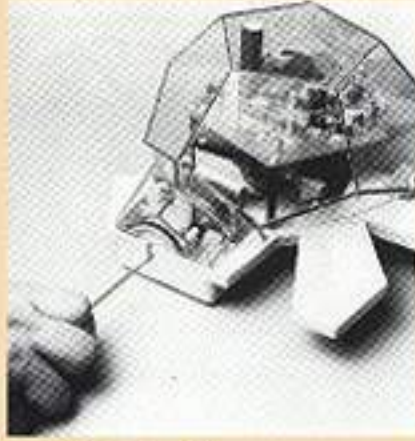


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## Adjusting the Accuracy

There are two U-shaped slots in the base which give access to screws on the wheel hubs (See below). Using the screwdriver supplied, turn the screws to adjust the wheels in the method described so that the Turtle performs with maximum accuracy.

Turn each screw up to 1/4 of a revolution at a time when adjusting the wheels. Do not over-turn. The mechanism is designed for only 3 or 4 complete 360° turns.



1. Switch on the computer system and the Turtle.

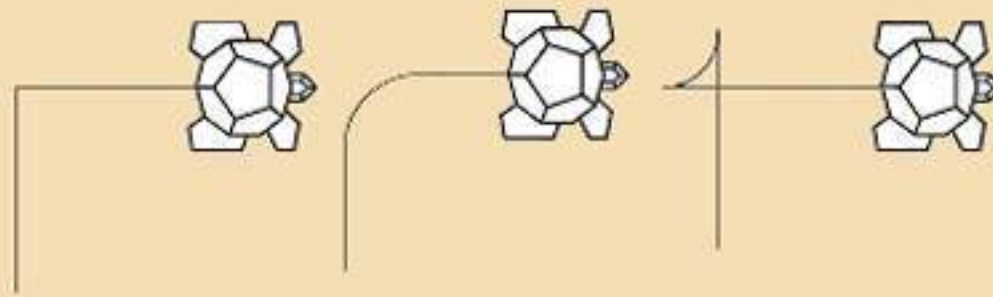
2. Place the Turtle on a smooth piece of paper, on a level surface, lower the pen, and command it to move, turn RIGHT through 90 degrees and move again. E.g. PD (to lower the pen) FD 10 RT 90 FD 10.

If a sharp angle is drawn (See below) the pen is centred, so proceed directly to section 3, "Checking the angle."

If a convex curve is drawn (See below) turn the screw over the left hub anti-clockwise or the screw over the right hub clockwise.

If a concave curve is drawn (See below) turn the screw over the left hub clockwise or turn the screw over the right hub anti-clockwise.

Adjust the wheels until a sharp angle is produced.



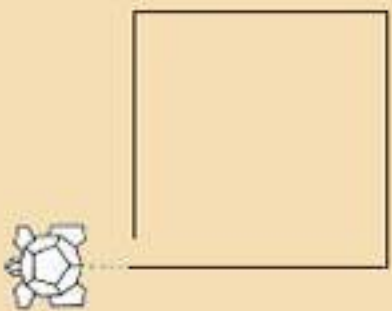
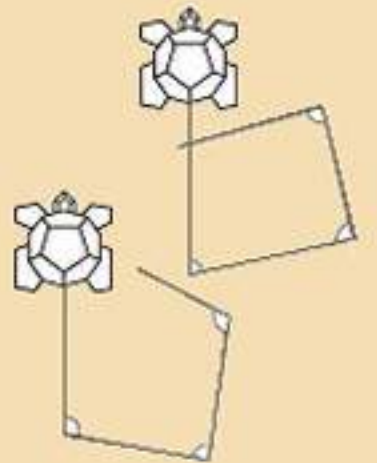
3. Checking the angle.

Command the Turtle to draw a square. E.g. REPEAT 4 [FD 30 RT 90]

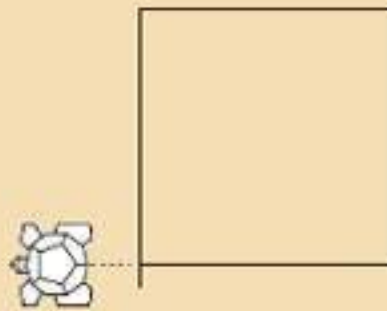
If the Turtle closes the square neatly it is correctly adjusted.

If the Turtle draws angles less than 90 degrees (See opposite) turn the screws on the wheel hubs anti-clockwise. Ensure that you turn each screw the same amount.

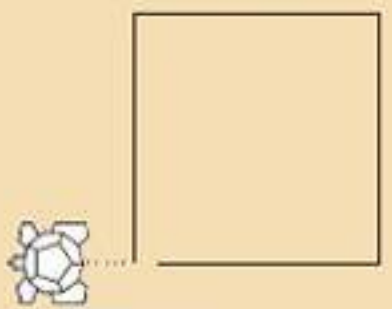
If the Turtle draws angles more than 90 degrees (See opposite) turn the screws clockwise. Again ensure that each screw is turned the same amount.



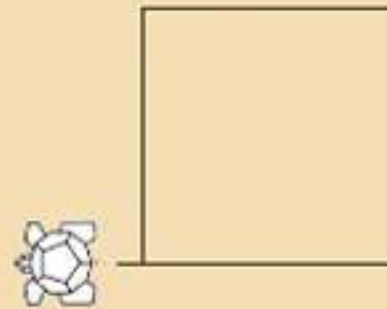
SYMPTOM: Square not closed.  
CAUSE: Error in 'Y' axis.  
REMEDY: Right wheel to be screwed in. (Clockwise turn).



SYMPTOM: Square overlapped.  
CAUSE: Error in 'Y' axis.  
REMEDY: Right wheel to be screwed out. (Anti-clockwise turn).



SYMPTOM: Square not closed.  
CAUSE: Error in 'X' axis.  
REMEDY: Left wheel to be screwed in. (Clockwise turn).



SYMPTOM: Square overlapped.  
CAUSE: Error in 'X' axis.  
REMEDY: Left wheel to be screwed out. (Anti-clockwise turn).

Adjust the wheels in this way until the Turtle closes a square accurately.

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## Operating Conditions

The Valiant Turtle is robustly built. If carefully looked after it will last for many years. Pressure should not be applied to the top of the turtle. This can bend the axles. Children should not try to ride on it.

The Valiant Turtle should be run on a firm, flat, surface.

Murphy's law states, "If you run the Valiant Turtle on a table it will fall off." If you run the Turtle on a table, watch it carefully at all times, or put a rim around the table's edge.

If there is no suitable floor surface place the paper on a piece of laminated board.

Running the Valiant Turtle in strong direct sunlight, or near to an electric fire, may interfere with the infra-red signals and cause inaccuracy.

Do not run the Turtle on deep pile carpets. Hair and fluff will tangle around the axles. Inspect the axles at regular intervals and remove any fibres.

Always lower the pen (usually PENDOWN) before removing it from the Turtle.

Switch the Turtle off if it is not being used for a period of time. It can be turned off and on without reloading the software or re-connecting the Communicator. Remember to raise the pen before giving any other commands.

Do not raise and lower the pen many times in succession without any commands in between. This is not good for the pen mechanism.



The power adaptor should be connected to the mains before the jack plug is connected to the Communicator.

The Communicator operates over a range of about 6 metres. Do not point the Communicator directly at the Turtle if it is less than 2 metres away. If the signal is being interrupted, point the Communicator at the ceiling or a wall. The signal will then bounce around the room. Walking between the Communicator and the Turtle will not usually hinder its performance.

If the Communicator is used on a table place the front over the edge.

Never remove the Turtle's shell or the Communicator cover. This will invalidate the warranty. Consult your dealer about any problems.

Never remove the cover of the power adaptor. This could result in a severe electric shock.

Never cover the Communicator when it is switched on, as this will cause it to overheat.

To change the pen: Use any type of Berol pen (except Fineline and Highlighter). Turn the Turtle upside down. The socket for the pen is in the centre of the Turtle between the two wheels. Pull the old pen out and push the flat end of the new pen into the pen socket with a gentle twisting motion. Do not force the pen.

The stabiliser ball under the Turtle's head is ferrous metal and can rust. It helps to:

(i) Keep it clean. Wipe it if it gets dirty or covered with Berol pen ink. But don't leave it damp.

(ii) Lightly oil it (2 pinhead-size drops) with a VERY THIN OIL (like 3-in-1 oil or Singer sewing machine oil). You should use only a very small amount.

If you carry out occasionally the above recommendations, the Turtle will continue to run smoothly and will not squeak!

To remove dirty marks from your Turtle wipe it with a soft, damp cloth. NEVER use any type of solvent cleaner as this may attack the plastic.



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## Recharging & Changing the Batteries

The Valiant Turtle will run continuously for up to 3 hours. Allowing programming time, one full charge should run the Turtle for a day. The Turtle's eyes act as a battery charge indicator by flickering when the power is low. When flickering starts you may need to recharge the Turtle. Flickering eyes does not stop the Turtle being used and by studying your Turtle, you can establish its rundown time.

### BASIC CHARGING "RULES"

1. If the Turtle is discharged (i.e. not enough power to move), then **FAST CHARGE** method is best:
  - (i) Move the control switch on the Turtle's left rear flipper to CHARGE. The small yellow light on the pentagonal control board inside the Turtle may illuminate.
  - (ii) Plug the power adaptor into the mains electricity supply and switch on the power.
  - (iii) Connect the hollow jack plug from the power adaptor to the socket above the Turtle's left driver wheel.

#### Notes :-

a) The Turtle's batteries are "fast charging" only if the yellow light is illuminated. You will probably notice this yellow light subtly brighten as you connect the jack plug from the power adaptor to the Turtle. If the yellow light goes out when you connect the jack plug to the Turtle, your Turtle has gone into "slow charge" instead. To remedy this turn the Turtle OFF and remove the jack plug. Turn the Turtle back to CHARGE, making sure the yellow light is on. Reconnect the jack plug.

b) The yellow light goes out after about 2 hours when the Turtle is nearly fully charged, however the Turtle may be run after a much shorter charge.

2. If a 'top-up' is required (e.g. if the Turtle's eyes are flickering but it is still moving satisfactorily), use the SLOW CHARGE method:

- (i) Plug the power adaptor into the mains electricity supply and switch on the power.
- (ii) Connect the hollow jack plug from the power adaptor to the socket above the Turtle's left driver wheel.
- (iii) Move the control switch on the Turtle's left rear flipper to CHARGE. The small yellow light on the pentagonal control board should NOT illuminate.
- (iv) The Turtle should be left on charge for at least 16 hours.

3. You may leave your Turtle charging overnight or for longer periods without fear of any damage occurring.

4. If the power is turned off at the mains supply while the Turtle is being charged, and remains off, any charge in the batteries will be drained and your Turtle will be fully discharged when you come to use it.

If the power is turned off momentarily during charging but then turned on again without the Turtle set-up being touched, the batteries will be automatically "slow charged" from the moment the electricity supply is restored.

5. There are three occasions when the Turtle will need a **CONDITIONING CHARGE**: when it is first delivered, when it has been fitted with a new battery pack, and when it has not been used for a while (e.g. during school holidays of, say, 4 weeks or more).

It will also be helpful to carry out this **CONDITIONING CHARGE** as a matter of course every 2 or 3 months. This will ensure the battery pack is maintained in optimum condition.

- (i) Completely discharge your Turtle. To do this, run it until it is discharged (i.e. cannot move) and then leave it switched on for several hours (e.g. overnight).
- (ii) Then recharge the Turtle using SLOW CHARGE (paragraph 2) but **LEAVE THE TURTLE ON CHARGE FOR AT LEAST 24 HOURS**.

Note:- In isolated cases the battery pack may appear not to have charged even after this period. If this ever happens, charge the Turtle again using FAST CHARGE (see 1).

6. The battery packs in your Valiant Turtle will last for between 500 and 1000 full recharging cycles. Do NOT change them until they are at least one year old. They will probably not need changing within the first 2 or 3 years of the Turtle's delivery, even with constant use.

7. Eventually if it seems as though your battery packs may need changing (i.e. your Turtle's running time is lessening as if the batteries are not holding their charge), then **FIRST** carry out a **CONDITIONING CHARGE** (See 5.)

Having done so, if you still believe your battery packs need replacing, contact your dealer/supplier/Valiant **QUOTING SERIAL NUMBER OF YOUR VALIANT TURTLE**. Any order given for battery packs cannot be serviced without this information.

8. To replace the battery packs:

- (i) Turn the Turtle upside down. Two black rectangular plates will be visible, each secured by two screws. Remove these plates.
- (ii) Remove the old battery packs. Take great care NOT to tug the wires, nor to bend the metal contact strip attached to the wires.
- (iii) Separate the connectors, again taking care not to tug on the wires.
- (iv) Connect up each new battery pack.
- (v) Fold the wires (concertina fashion). Fit the new battery packs into the Turtle, sliding the folded wires into the unoccupied space.
- (vi) Replace the black plates. Ensure their pips fit the notches in the Turtle base before screwing down.
- (vii) Charge the Turtle using **CONDITIONING CHARGE** (see 5).

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## Troubleshooting

We hope you will never have to refer to this section, but we have tried to make the information as helpful as we can. If you have tried all the remedies below and your problem has not been solved, please contact your dealer for assistance. Thank you.

**PROBLEM** After the software has been loaded the Turtle does not respond.

**CAUSE 1** Low battery voltage, indicated by Turtle's eyes not illuminating.

**REMEDY** Recharge the batteries. (See **Recharging**).

**CAUSE 2** If the light inside the Communicator does not respond to instructions by "flickering", the Communicator system has failed to initialise (i.e. synchronise itself with the computer).

**REMEDY** Disconnect the Communicator, switch off the Turtle, return to the software instruction to switch on. Try again. Type PENUP before any other instruction. Refer to the machine specific instruction sheet.

**CAUSE 3** Communicator incorrectly positioned.

**REMEDY** Remove obstruction and/or refer to the Operating Conditions, page 7.

**CAUSE 4** Turtle is out of range.

**REMEDY** Move it nearer to the Communicator.

**CAUSE 5** Faulty electricity supply.

**REMEDY** Check electricity supply by plugging in another appliance. Check connection and fuse in the plug of the Valiant power adaptor.

**CAUSE 6** The small coloured switches on the side of the Communicator and underneath the Turtle are set incorrectly.

**REMEDY** Check the relevant positioning of the switches with the machine specific instruction sheet and reset, loading up the software again.

**CAUSE 7** Non transmission of instruction by the Communicator, or non reception of instruction by the Turtle.

**REMEDY** Reset the Communicator (see the machine specific instructions). Check that the Turtle is switched on.



**PROBLEM** Turtle behaves erratically.

**CAUSE 1** Communicator incorrectly positioned.

**REMEDY** Remove obstruction and/or refer to the **Operating Conditions**.

**CAUSE 2** Turtle is out of range.

**REMEDY** Move it nearer to or away from the Communicator.

**CAUSE 3** Low battery voltage.

**REMEDY** Recharge the batteries.

**CAUSE 4** The Communicator has failed to initialise (i.e. synchronise itself with the computer).

**REMEDY** Disconnect the Communicator, switch off the Turtle, return to the software instruction to switch on. Try again. Type PENUP before any other instruction. Refer to the machine specific instruction sheet.

**CAUSE 5** Infra red interference.

**REMEDY** Remove Turtle from direct sunlight or any other strong source of infra red e.g. electric fire.



**PROBLEM** Battery charge diminishes quickly.

**CAUSE 1** Batteries need conditioning.

**REMEDY** Carry out Conditioning Charge. (See **Recharging**)

**CAUSE 2** Old batteries.

**REMEDY** Consult your dealer/supplier/Valiant for replacement pack.

**CAUSE 3** New battery pack defective.

**REMEDY** Contact your dealer/supplier/Valiant.



**PROBLEM** Turtle squeaks.

**CAUSE** Stabiliser ball dirty.

**REMEDY** Clean stabiliser ball. (See **Operating Conditions**)

**PROBLEM** Turtle draws inaccurately.

**CAUSE 1** Wheels set incorrectly.

**REMEDY** Adjust the wheels (See **Adjusting the Accuracy**)

**CAUSE 2** Wheel obstruction.

**REMEDY** Remove any hair etc from axle. Clean tyres.

**CAUSE 3** Damaged axles.

**REMEDY** Contact your dealer.



**PROBLEM** Turtle is dirty.

**REMEDY** Clean Turtle with a soft, damp cloth (see **Operating Conditions**).

**PROBLEM** Pen will not raise.

**CAUSE 1** Pen not fully in socket.

**REMEDY** Push it fully in.

**CAUSE 2** Incorrect pen type.

**REMEDY** Change pen (see **Operating Conditions**).

**CAUSE 3** Uneven drawing surface.

**REMEDY** Tape paper to flat surface.

**CAUSE 4** Damaged pen mechanism.

**REMEDY** Consult your dealer.

