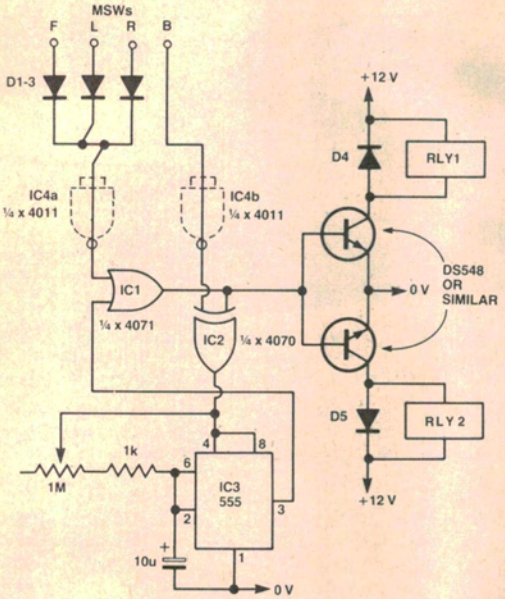
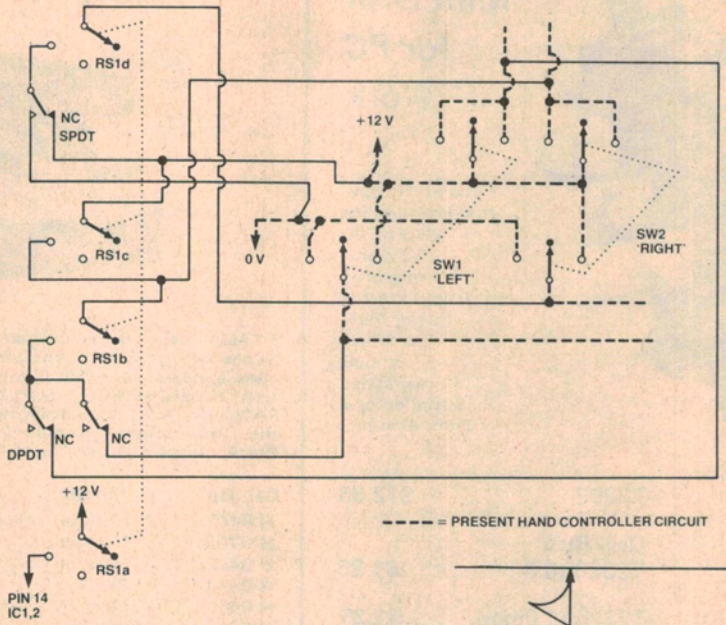




Self discipline for the Turtle robot ☆

Mark Harwood, Dural NSW
Age: 14 years

The circuit was designed to 'fit in' with the Turtle robot hand controller. As the title suggests, when the robot runs into something it will 'discipline' itself by reversing at an angle, then going forward again.

If the Turtle backs into an object while reversing, it will immediately go forward.

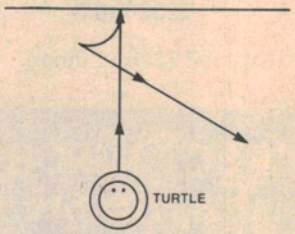
The circuit is basically a timer which reverses the right stepper motor and is triggered by microswitches around the Turtle.

D1-3 are simply to stop shorting between the LEDs already on the hand controller. IC4 is optional. The circuit is designed to work on a 'high' at the 25-pin connector when a microswitch is bumped. However, if the opposite is the case, D1-3 can be reversed and IC4a and b can be included.

If no microswitches have been bumped the output of IC1 is low and both motors are in forward gear.

However, if the left, right or front microswitch is bumped, the output of IC1 will go high, making the output of IC2 high also. This triggers the timing circuit which latches IC1 with its output. This supplies the relay driver transistors, activating both relays.

The relay contacts are merely bypassing present switches on the hand controller (see diagram). Relay 1 normally holds the right stepper motor forward. When it is activated it puts the motor into reverse.. Relay 2 normally holds the left stepper motor in forward. When it is activated it stops the motor completely.



If the Turtle should back into an object the output of IC2 will go low, resetting the timer and the Turtle will go forward immediately.

RS1 is an off/on switch for the whole circuit.

The time for which the Turtle reverses is set by the 1M potentiometer in the timing circuit.