

SLOW SWEEP SERVO DRIVE FOR GUN CONTROL

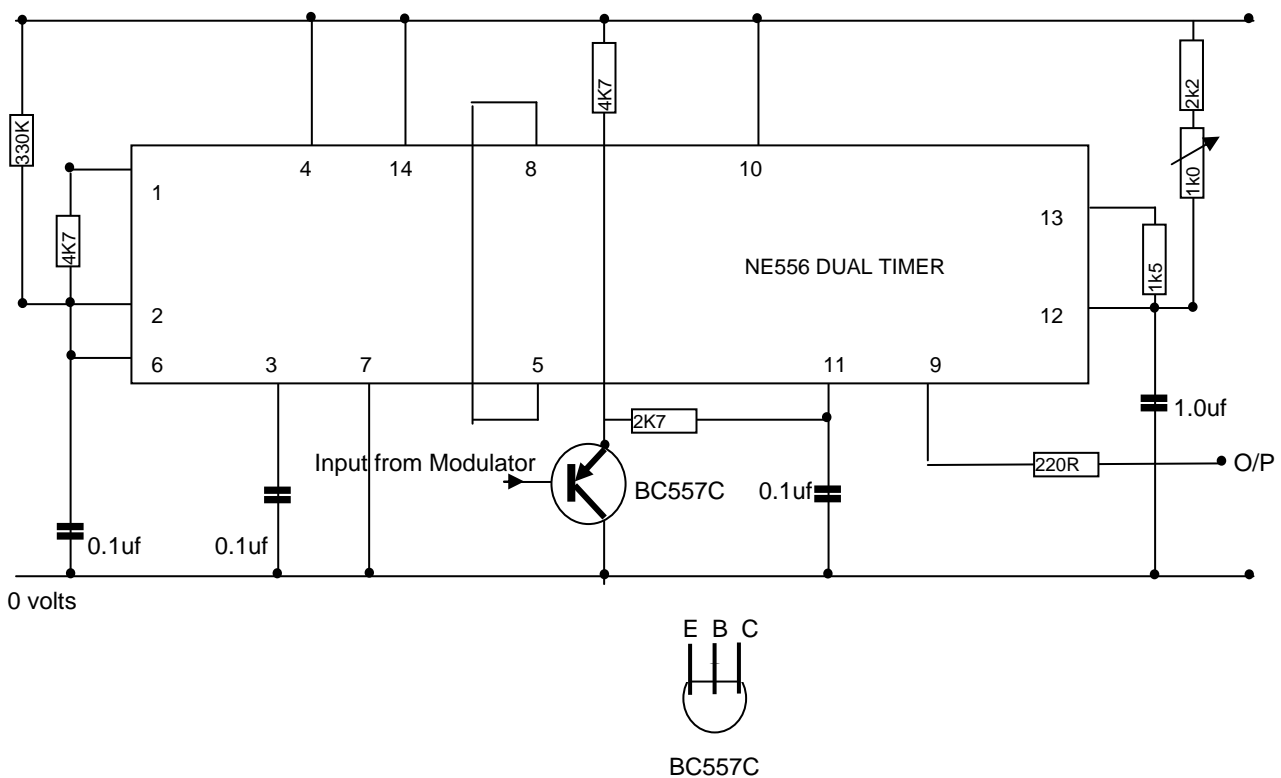
For those of you that have, or are in the process of building a model warship, have you considered controlling the rotation of the gun turrets by using a servo and driving it in a slow sweep. The following electronic device uses two integrated circuits (no software) to perform such a function and it can drive more than one servo, thus it is possible to drive several guns using only one device.

Circuit diagram 'a' below, shows a NE556 dual timer IC (Integrated circuit) which produces a simulated Radio Control pulse this drives the servo(s). Circuit diagram 'b' shows a NE555 single timer IC which produces a ramp waveform, this drives the NE556 device and makes it vary its pulse width slowly between 1 and 2msec, the rate of change being determined by the value of the 220uf and two associated resistors.

CIRCUIT DIAGRAMS

a) RC Pulse Generator with Sweep Modulation Input

+5.0 volts dc



Two methods of manufacture are shown. Firstly an etched printed circuit board layout in figures 1 and 2 and a Vero board (strip board) method of construction is shown in figures 3, 4 and 5.

I have used this circuit to drive the Guns on two of my models, HMS Daring and the Higgins PT Boat.

You can wire this device into your model such that when it is switched on, the guns/servos sweep all the time or the circuit may be combined with a radio controlled electronic switch and therefore the guns/servos will only sweep when activated by the radio control

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Fig 2 Printed Board - Track Master (Scale 1:1) PCB size is 42 x 54mm.

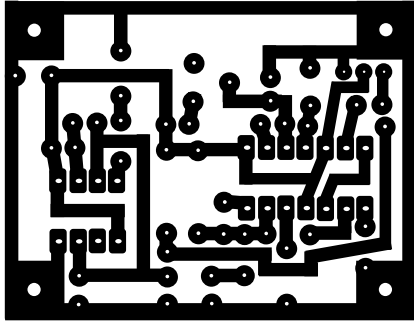


Fig 3 Vero Board – Step 1 cut the tracks (viewed from track side) (Scale 2:1) actual size of board is 40 x 50mm

Holes - vertical centre lines

Holes - horizontal centre lines

Remove copper track here

Copper Tracks

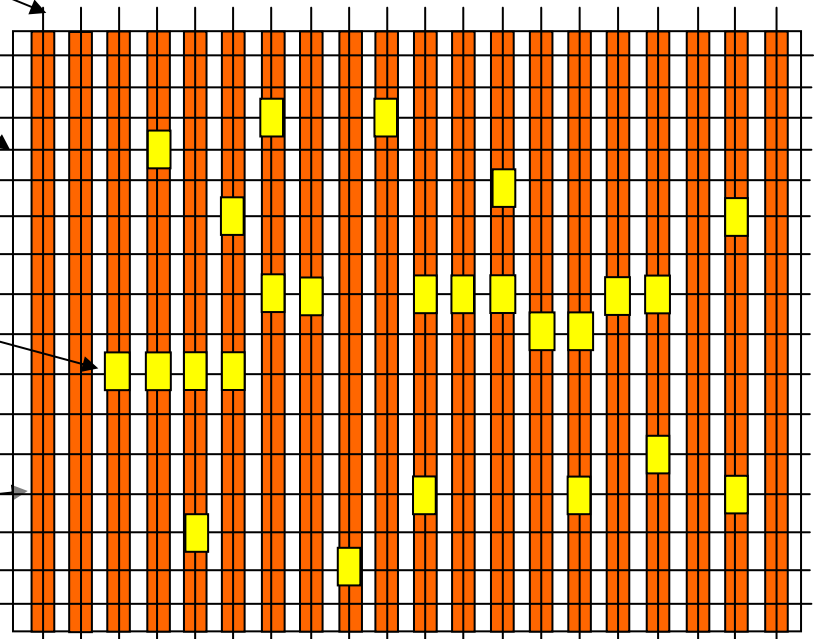


Fig 4 Vero Board – Step 2 add the wire Links (viewed from component side)

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Wire Links (shown green)

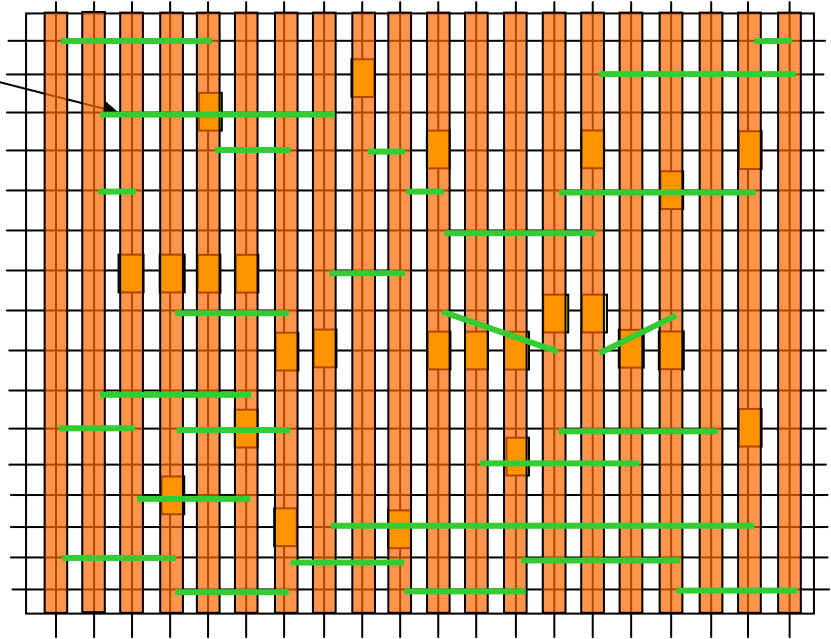
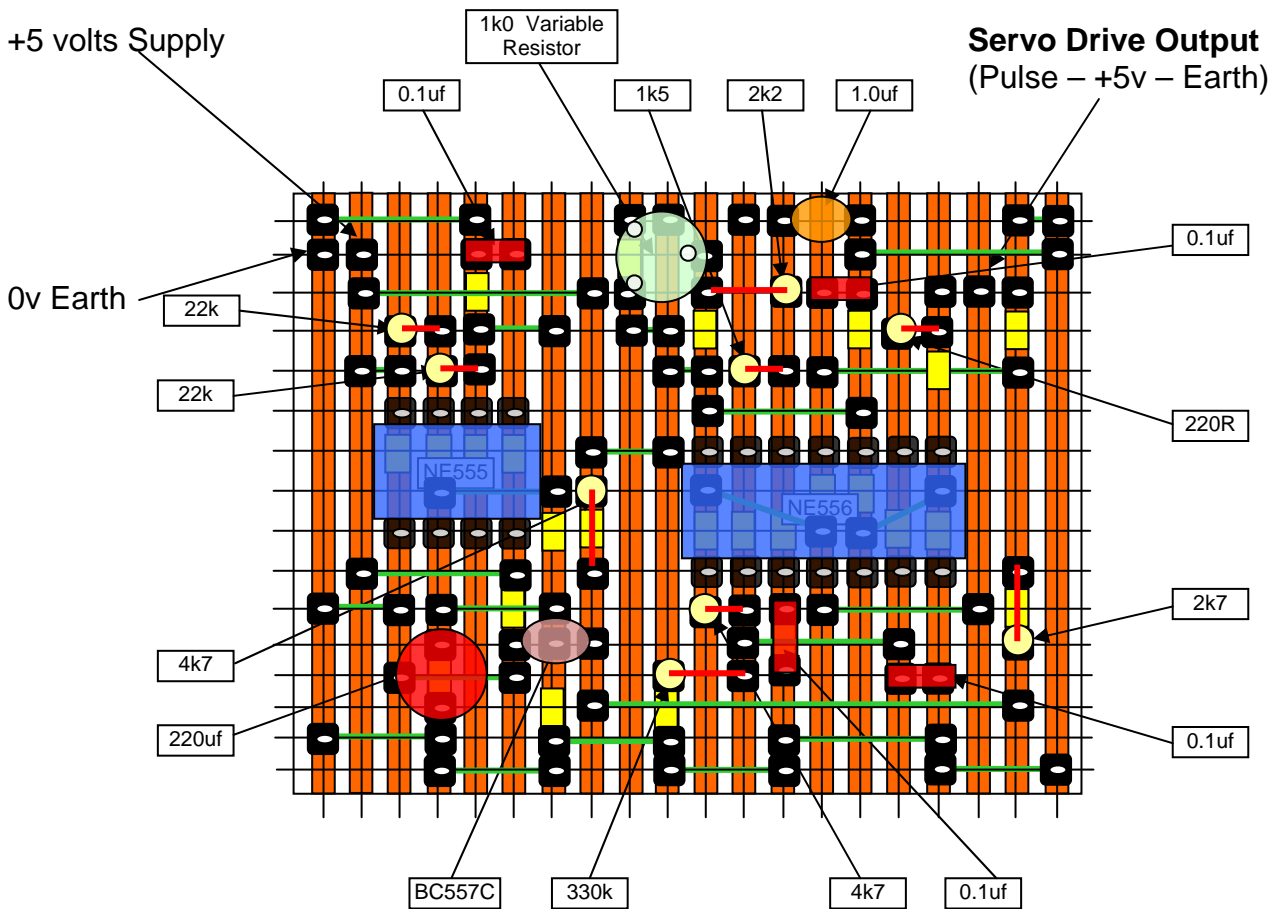


Fig 5 Vero Board – Step 3 fit the components (viewed from component side)



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Component List (This will give an indication to the cost of building the device)

Item	Component	Qty	Maplin P/N	Cost	Technobot P/N	Cost	Notes
1	220R	1	M220R	0.24	2006-220 **	0.50	Resistor **Pack of 100
2	1k5	1	M1k5	0.24	2007-105 **	0.50	Resistor **Pack of 100
3	2k2	1	M2k2	0.24	2007-202 **	0.50	Resistor **Pack of 100
4	2k7	1	M2k7	0.24	2007-207 **	0.50	Resistor **Pack of 100
5	4k7	2	M4k7	0.48	2007-407 **	0.50	Resistor **Pack of 100
6	22k	2	M22k	0.48	2008-022 **	0.50	Resistor **Pack of 100
7	330k	1	M330k	0.24	2008-330 **	0.50	Resistor **Pack of 100
8	1k0	1	WR40T	0.89	2000-423	0.14	Potentiometer
9	0.1uf	4	BX03D	1.24	2013-100	0.24	Capacitor
10	1.0uf	1	WW60Q	0.69	2036-100	0.08	Capacitor Tantalum Bead 35v wkg
11	220uf	1	VH41U	0.21	2018-220	0.10	Capacitor Electrolytic 25v wkg
12	BC557B or C	1	QQ16S	0.34	2300-482	0.08	Transistor
13	NE555	1	QH66W	0.79	2250-030	0.19	Timer IC
14	NE556	1	Not Listed	-	2250-040	0.24	Dual Timer IC
15	Strip Board	1	Not Listed	-	Not Listed	-	Cricklewood CQ64 @ 1.00

Suggested suppliers of components are:-

MAPLINS - either on-line or at a local store

TECHNOBOTS – On line

CRICKLEWOOD ELECTRONICS – On-line or at their shop in Cricklewood - good variety of strip board sizes

I hope there is sufficient information to enable you to construct the device, should you need further information please do not hesitate to contact me at the monthly club meetings or by telephone. Telephone number may be obtained from the Committee page on the club website.

Good luck with the construction – Tony Dalton 01/2011