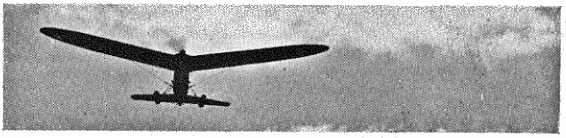
RADIO CONTROL NOTES ON



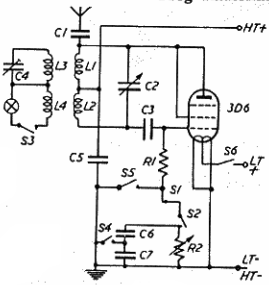
Transmitters

THE R/C transmitter is, comparatively speaking, a simpler and less critical unit than the receiver. A good transmitter will not normally give any trouble as regards operational efficiency, provided battery voltage is checked regularly and attention is given to the condition of the switching leads. A ground range of half a mile is more than adequate for model aircraft use as this will be considerably greater when the model is in the air.

Some transmitters are subject to drift, such as could be caused by physical displacement of unsupported coils. Also performance will tend to vary depending on where the transmitter is set down or its distance above the ground. Signals are not, however, directional on the 27 megacycle band with a conventional rod aerial (although theoretically there is a "dead" spot immediately overhead). The only attention required to the aerial is to ensure that all joints are kept clean (e.g., on plug-in aerial lengths) and a good tight fit in the transmitter socket. The socket itself may tend to work loose in time and should be tightened up as necessary. Conventionally it is bolted to the transmitter case for rigidity.

Even an absolute beginner should experience no trouble with any of the current commercial transmitters, provided he follows the instructions and pays attention to the simple points of maintenance mentioned in the following notes.

Frog Radiomaster Transmitter



This is a very compact unit housed in a red enamelled steel case. The case consists of two identical pressings, hinged together. The top unit carries the transmitter circuitry and components, mounted on an aluminium chassis plate and the bottom the batteries. A metal plate blanks off and completely protects the transmitter itself from accidental damage. A carrying handle is fitted to the top of the case. The aerial plugs into the top of the case and can be either quarter-wave (8 ft.) or eight-wave (4 ft.)

All controls are mounted on the top of the case, and consist of four push-buttons, two switches and a knob. For aircraft work, in particular, it is a little inconvenient to operate these with the unit on the ground, but otherwise the unit has the advantage of extreme compactness and portability.

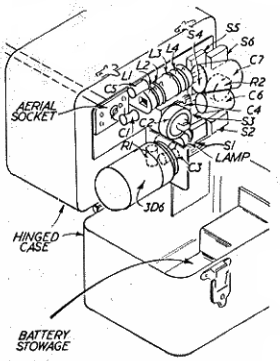
The circuit has been designed by G. Somerhoff and can generate either an unmodulated carrier wave or a pulsed carrier wave in which the pulse rate can be varied (by the knob control) between 1 to 10 and 1.2 to 1. Operation of the pulse is controlled by an on-off switch. A separate push-button (blue) increases the pulse rate from about 2 per sec. to approximately 40 per sec.

Valve is a 3D6. The circuit incorporates a built-in pre-set absorption wavemeter by means of which the set can be tuned and the frequency checked by observation of the brightness of the indicator lamp (on the Mark I), brought into operation by pressing the white button. On the Mark II receiver this serves as a check on radiation strength. The Mark II receiver is intended principally for export and incorporates a crystal for frequency stabilisation.

Data

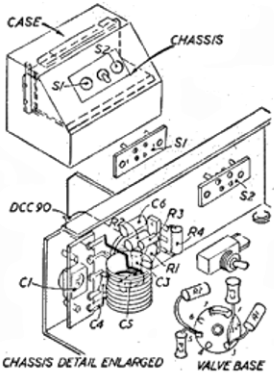
Size: $8 \times 5\frac{1}{2} \times 4\frac{1}{4}$ in.
Weight: 9 lb. (with batteries).
Batteries: H/T—90 volts (Ever Ready B 117). LT—1.5 volts (Ever Ready AD 4).

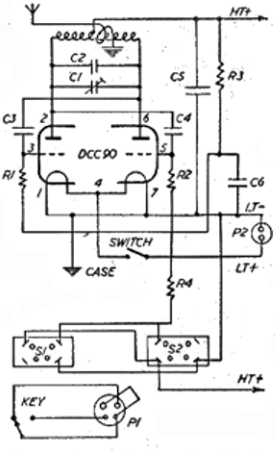
Component values:
C1—not identified.
C2—variable.
C3—not identified.
C4—variable.
C5—0.01 mfd.
C6—8μF.
C7—1.0 μF.
R1—3.3 kΩ.



E-D Mark II

This is a dual purpose transmitter, capable of transmitting either a normal carrier signal (switched on and off for conventional single channel control); or carrier on switching on or off a modulated tone. The type of circuit





gives a rather crude form of modulation in which it is difficult to control the energy content of the pulses, but this is probably quite acceptable for the type of operation this transmitter is intended. Alternative operation is provided simply by plugging the keying lead (P1) into either S1 or S2. All connections to plugs and sockets are drawn on the circuit diagram viewed from the soldering side. A DCC 90 valve is employed.

Battery requirements are 120 volts H/T and 1.5 volts L/T, these batteries being accommodated in the metal case, although efficient operation is maintained down to 100 volts H/T. A 4 ft. aerial is standard, plugging on to an aluminium tube mount fitted to the side of the case.

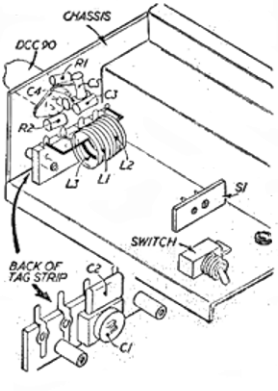
A point to watch is that with the transmitter switch off and the keying lead plugged in a small H/T current can still flow through the circuit. When not in use, therefore, the keying lead also should be withdrawn, although this is not necessary between normal periods of operation.

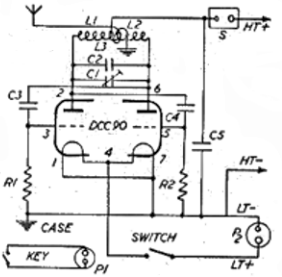
Component values:—
R1—10 kilohms.
R2—10 kilohms.
R3—180 kilohms.
R4—4.7 kilohms.
C1—variable trimmer.
C2—not identified.
C3—50 $\mu\mu$F.
C4—50 $\mu\mu$F.
C5—not identified.
C6—0.1 μF.

E-D Mark III

This is a carrier only transmitter for normal single channel operation, based on a DCC 90 valve. In the accompanying circuit diagram all connections to plugs and sockets are as viewed from the soldering side. P1, on the end of the keying lead, plugs into socket "S." The earth connection is made to the case.

The transmitter is mounted on an aluminium chassis, fixed inside a $9\frac{1}{2} \times 7\frac{1}{2} \times 7$ in. rectangular aluminium outer case, the remaining space being for accommodation of the batteries. An aerial mount is fitted to the side of the case to take an aluminium tube (sectioned) aerial of 4 ft. or 8 ft. length, as required. A carrying strap is fitted to the top of the case. Construction of the transmitter is conventional, with the coils L1, L2 and L3 wound from 16 s.w.g. enamelled wire, unsupported by a former. It is important, therefore, that these coils are not displaced mechanically by handling.



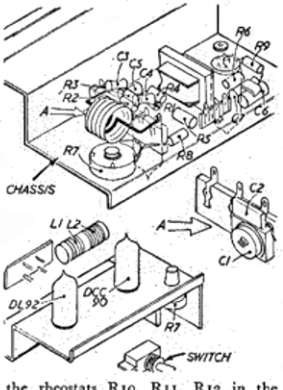


Battery requirements are 120 volts H/T and 1.5 volts L/T.

Component values:—
R1—10 kilohms.
R2—10 kilohms.
C1—variable trimmer.
C2—10 $\mu\mu$F.
C3—50 $\mu\mu$F.
C4—50 $\mu\mu$F.
C5—not identified.

E-D Mark IV

This unit incorporates a twin triode (DCC 90) and a pentode (DL 92) in a modulated carrier circuit. In the normal condition, switched on, a carrier wave is transmitted.[4] One of three modulated tones can then be superimposed, as required, but only one at a time. Each tone is independently adjustable via



the rheostats R10, R11, R12 in the control box circuit. Overall adjustment is provided by the variable resistance R7 in the transmitter circuit.

All connections to plugs and sockets on the circuit diagrams are drawn from the soldering side. SIS2 in the control box consists of a double-pole double-throw wafer switch. S3 is a push-button switch. Plug P on the control

(Continued on page 210)

wing with his combat models, decided to build a flying wing in micro-film and it flew; quite well ! (so well indeed he broke the indoor record at the Manchester meeting).

Some people who haven't been bitten by the micro-film bug are continuing to play with " old fashioned " team racers and combat jobs. The new Norman Long engine the " Viper " is being used by some of the team race enthusiasts. Combat models are still being built and pranged with remarkable rapidity; it always seems that the oldest models survive.

CROYDON & D.M.A.C.

Our annual gala is to be held at Chobham Common on September 8th. The usual classes of unlimited power, rubber and glider (both tow and throw) also include slope soaring which in previous years has attracted a very large entry since almost any type of model can be used. Flight maximum for this class only is 1 min. and last year three maximums and a fly-off of over four min. were needed to win this event. As in previous years Croydon members will not be competing.

NORTH LINCS M.A.C.

Special features of our second exhibition included a compressed-air model built by a World War I ace, Flt. Lt. Woods (who shot down 17 E.A. in his Nieuport) believed to have been flown in 1911, and still in working order. Nationals winner in radio, John Nixon had his model and both the radio trophies on show; a MODEL AIRCRAFT Max Holste Broussard was operated round the pole by designer E. Fearnley, the A.M.25 substituted by a Mills .75 fitted with silencers and an oil sump to reduce mess and noise. An electrically-operated half-speed device was fitted to it by E. Cartwright. On the last day this model was removed and the Colonial Skimmer substituted, when it almost broke through the sound barrier (in more ways than one !).

Special displays were put on by the R.A.F. recruiting centre, B.O.A.C. through the local travel agency, and Mason Bros., the local model shop, the proprietor nearly killing himself in his efforts to assist the club. (Yes, we know how lucky we are !)

Best in show winner of the HAW trophy was Roland Craggs with a radio control delta (one of 15 radio models on show !). Best junior was J. Clements with a pylon job. This won him the Fearnley trophy ! ! ? ? A new member, Mr. Gosling from Leamington won glider, Tony West solids, and E. Fearnley scale, Alan Ely, control line, Bill Brown sport section.

The club membership is now 70 plus, and meetings are held at our full time club room every Thursday, address 149, Welholme Road, Grimsby. Everyone welcome.

CHANGE OF ADDRESS

HUDDERSFIELD D.M.A.C., A. Bradley, 32, Roundway, Hanley, Huddersfield.

NEW CLUBS

583 SQDN., A.T.C. AEROMODELLING CLUB. C. Claxton, 4, Concrete Houses, Pill, Milford Haven, Pembrokeshire.

STRATFORD-ON-AVON M.A.C. S. Richardson, 4, Kendall Avenue, Stratford-on-Avon.

CHANGE OF SECRETARYSHIP

SUNDERLAND M.A.C. R. Hepple, 4, Romney Avenue, Sunderland, Co. Durham.

PEN PALS WANTED

For 17-year-old Canadian, Alec Stenson, A3, St. Josephs Buildings, Robinson Road, Hong Kong, who is mainly interested in C/L and solid scale models.

And for Czech enthusiast Pavel Janihelka, V. Surich 12, Prague 2. Czechoslovakia, who would like to correspond, in English, with a youngster on aircraft subjects in general.

EXCHANGE OF MAGAZINES

We have two requests from Czech enthusiasts who would like to exchange modelling magazines with someone in this country. If you want to find out what's going on in Eastern Europe, then get in touch with either George Kubicka, 690, Gottwaldova Street, Roudnice, n./L, Czechoslovakia, or Milan Vydra, Vratislavova 28, Prague, Czechoslovakia.

CONTEST RESULTS

INDOOR MEETING, MANCHESTER

MICRO FILM UNDER 100 sq. in.

1.	R. Monks	Birmingham	13 : 53	7.	M. Grimmett	West Brom.	7 : 13
2.	J. O'Donnell	Whitefield	12 : 38	8.	G. Walker	Birmingham	7 : 04
3.	P. Read	Birmingham	11 : 16	9.	J. Hartley	Wolves	6 : 12
4.	D. Poole	Birmingham	10 : 46	10.	T. Titley	Birmingham	6 : 09
5.	A. King	Australia	8 : 21	11.	A. Spurr	Middlesbro'	5 : 42
6.	R. Parham	Worcester	8 : 09	12.	T. Chambers	Stockton	1 : 12

MICRO FILM OVER 100 sq. in.

1.	J. O'Donnell	Whitefield	11 : 50
2.	R. Copland	Northern Heights	11 : 46
3.	P. Read	Birmingham	9 : 42
4.	R. Monks	Birmingham	9 : 04
5.	D. Poole	Birmingham	8 : 24

TISSUE COVERED Max. Weight 2 oz.

1.	D. Poole	Birmingham	6 : 53
2.	P. Read	Birmingham	5 : 12
3.	R. Monks	Birmingham	4 : 43
4.	R. Parham	Worcester	4 : 33

CHUCK GLIDER Maximum Weight ½ oz.

1.	J. H. Dixon	Unattached	0 : 30	7.	T. Titley	Birmingham	0 : 17
2.	J. O'Donnell	Whitefield	0 : 27	8.	M. Grimmett	West Brom.	0 : 18
3.	R. Monks	Birmingham	0 : 26	9.	D. Morley	Lincoln	0 : 14
4.	H. O'Donnell	Whitefield	0 : 22	10.	B. Jukes	West Brom.	0 : 15
5.	J. Hartley	Wolves	0 : 19	11.	A. Ward	Whitefield	0 : 07
6.	M. Watson	Whitefield	0 : 19	12.	E. Lord	Accrington	0 : 03

S.M.A.E. CUP. A.2 ELIMINATOR

1.	V. Jays	Surbiton	13 : 15	7.	P. J. Crossley	Blackheath	12 : 23
2.	G. Tideswell	Baildon	13 : 07	8.	B. Rowe	St. Albans	12 : 22
3.	K. Oliver	Foresters	13 : 01	9.	J. Cartwright	Hull Peg.	12 : 22
4.	G. Cameron	Baildon	12 : 49	10.	R. Burwood	Surbiton	12 : 00
5.	G. LeFever	South Essex.	12 : 48	11.	L. Burrows	Blackheath	11 : 49
6.	B. Dowling	Wayfarers	12 : 29	12.	D. Greaves	Leamington	11 : 45

GAMAGE CUP

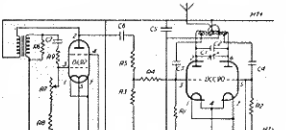
1.	E. A. Barnacle	Leamington	7.39
2.	E. E. Wiggins	Leamington	6.54
3.	R. Lennox	Birmingham	6.45
4.	T. B. Chambers	Stockton	6.06
5.	J. O'Donnell	Whitefield	6.03
6.	L. E. Moore	Leamington	5.57
7.	D. Greaves	Leamington	5.57J
8.	S. Taylor	C/M	5.46
9.	P. Morley	Lincoln	5.31
10.	A.W.F. Alexander	Cowley	5.26
11.	P. Giggle	Southampton	5.09
12.	J. Punter,	Cowley	4.45J

KEIL TROPHY

1.	Coventry		37 : 04
2.	Baildon		35 : 56
3.	Whitefield		30 : 57
4.	Surbiton		28 : 21
5.	Walsall		26 : 40
6.	Birmingham		25 : 56
7.	Thameside		25 : 44
8.	Ashton		25 : 02
9.	Henlow R.A.F.		22 : 16
10.	Lough. College		21 : 44
11.	Wigan		19 : 00
12.	Novocastria		18 : 09

Transmitters—(*Continued*)

box circuit plugs into socket S on the transmitter. A quarter wave aerial is standard for the transmitter, fitting on to a standard E-D type mount on the side of the case. Size of the case is approximately 10 × 8½ × 7½ in. and total weight (with batteries) 11½ lb.



The control box is 6 × 5 × 2½ in. and weighs 1¼ lb.

Battery requirements: H/T 120 volts. L/T 1.5 volts.

Component values:

R1—10 kilohms.
R2—10 kilohms.
R3—10 kilohms.
R4—10 kilohms.
R5—10 kilohms.
R6—12 kilohms.
R7—100 kilohms (variable).
R8—10 kiloms.
R9—10 kilohms.
R10, R11, R17 variable.
C1—variable trimmer.
C2—10 μμF.
C3—50 μμF.
C4—50 μμF.
C5—not identified.
C6—not identified.
C7—not identified.