MERCURY

THE JOURNAL OF THE ROYAL SIGNALS AMATEUR RADIO SOCIETY

NUMBER 15 APRIL 1966

OFFICERS OF THE SOCIETY

PRESIDENT: **Brigadier R.H.E ROBINSON, OBE, ERD, Director of Telecommunications**

VICE PRESIDENT: **Major General E.S. COLE, (RETD), CB, CBE.** **CALL SIGN G2EC**

TREASURER: **Captain M.Q.M GREAVES, Royal Signals,**
24 Signal Regiment,
Catterick Camp,
Yorkshire.

HQ SECRETARY: **Lieutenant Colonel (Retd) J.S. MARTINSON**
Signals 1(A),
Defence Signal Staff,
Ministry of Defence,
LONDON, S.W.1.

FIELD SECRETARY: **Mr. J.E. HODGKINS,** **CALL SIGN G3EJF**
2 Squadron,
8 Signal Regiment,
CATTERICK CAMP,
Yorkshire.

HEADQUARTER STATION - CATTERICK CAMP - GB3RCS/G3CIO

CONTENTS

EDITORIAL

Probably the least read page of MERCURY is the inside front cover. It is quite some time since we had to change the make-up of that page, however a change has now taken place and we have a new Treasurer. Nobody knows as well as your Editor the amount of work Mike Priestley put into the job and every member should be grateful for his efforts. We hope he has enjoyed his tenure of office, we know that he is now an expert on the Small Lotteries and Gaming Act. In his place we welcome Mike Greaves whose baptism of fire is our Fund Raising Draw. Mike has the RAE and is struggling up to that fatal twelve words a minute test. We hope that he will soon be fully qualified to join the operators of G3CIO.

As this issue goes to press the mail is full of crossed postal orders and requests for more tickets and the problem arises of how we are going to publicise the result of the Draw. Obviously we shall write to the lucky winners straight away, otherwise our intentions are as follows. The result will be given in the July issue of MERCURY but we shall send the news by Air Mail to the following: - WO I Maurice Caplan 9V1MK of 249 Squadron in Singapore, S/Sgt Tom Hicks VS9ATH of 15th Regiment in Aden and WO I Les Kynch ZC4LK of 9th Regiment in Cyprus. For those of us nearer home in U.K. or B.A.O.R.; if you are eager to know who has won send us a stamped addressed postcard and we will fill it in and post it the day after the draw. Please make it a postcard, it will make our task so much easier.

73

ECHO JULIET FOXTROT

ACTIVITY PERIODS

On the LAST SUNDAY OF EACH MONTH from 1000-1200 and 1400-1600 UK time.

Approx. Frequencies: - 3530, 14050 and 21050 Kc/s on CW
3700, 14120 and 21150 Kc/s on Phone (AM or SSB)

UK members are particularly asked to attempt to contact overseas members on 14 and 21 Kc/s during these periods.

Ring these dates on your calendar: -

Apr 24th May 29th June 25/26th (Old Comrades) July 31st

BCNU

TALKING BOOKS

Most readers of MERCURY will have benefited at some time or other from the Generosity of the Nuffield Trust; many unit radio clubs have been equipped with money granted by the Trust. Less well known is the Nuffield Talking Book Library for the Blind, which provides many hours of pleasure for thousands of sightless people throughout the United Kingdom. The blind person rents or buys a machine from the library and can then borrow any of the thousands of books which have been recorded by well known voices, actors, BBC announcers and so on.

The machines take two forms. Firstly, there are the disc machines; these are basically a portable record player fitted with an ingenious pick up arm control which allows the reader to position the pick up in the first groove or alternatively to lift it from the disc and replace it in the same place should he be interrupted midway through a disc. The discs look like ordinary twelve-inch long playing records and operate at similar speeds. Disc machines are gradually being replaced by tape machines. The complete tape recording of a book together with the play-back head comes in a cassette which fits onto the machine. Once the reader comes to the end of a track he presses a button to move the head to the next track and turns the cassette over, thus reversing the direction in which the tape moves. With up to 17 tracks on the extra wide tape and a maximum of 75 minutes playing time per track quite long books can be contained in one cassette.

One of the greatest difficulties of a scheme of this sort is the maintenance and repair of the machines themselves, It is obviously absurd to have to return the machine to a central workshop when all that is wrong is that the spindle needs a drop of oil or the mains lead is broken. For several years the writer was one of the thousands of Servicing Volunteers who maintain and repair the machines of blind readers in their area. This was not an onerous task, despite the two large towns in the area calls for assistance were few and far between. Often six months went by without a call and never more than one a month was received. What is the procedure? A form arrives by post from the Library's Headquarters saying that Mr. Smith of 99 Any Street is having trouble with his machine, You may find that you can fix it on the spot but let's suppose a component needs replacing. Forward the faulty component to HQ and they send you a replacement within a few days. Having completed the repair you send off the report form provided, claiming any expenses incurred and the job is finished. Not a lot, once every few months, is it? Have you ever turned over the page of a book to find that someone has torn the next page out just as you were finding out who the murderer was? If so imagine the blind reader whose machine packs up just as a story reaches its climax.

The Nuffield Library still needs Servicing Volunteers. You don't need to be a Foreman of Signals or have completed a T.E. course, anyone with a little technical background could do the job. The vast majority of the faults are simple things which had the reader not been sightless he could probably have fixed himself. If you come up against a really difficult one, a faulty motor perhaps, you merely replace it. Full technical details, circuit diagrams etc. are issued to all volunteers. Some parts of the country are well covered, others are not. Would you be prepared to give up an hour or two a month, it isn't likely to be more than that. Ex-members of the Corps and members of TA and AER units are obviously in the best position whereas regular soldiers liable to posting may find it difficult to help.

The writer remembers a blind reader saying "It doesn't often go wrong but it's always at an exciting part when it does". Will you help to save others like him from being kept in suspense?

If so drop a line to the Honorary Organiser of Servicing Volunteers.

Mr. D. Finlay-Maxwell A.M.I.E.E.,
J.Gladstone & Co. Ltd.,
Wellington Mills,
Huddersfield.

SOCIETY NEWS FROM SINGAPORE

Although Singapore has counted as a separate country since August 65 its new prefix, 9V1, only came into use on the first of February 1966.

Royal Signals activity on the island decreased suddenly when three of the gang left at much the same time but things are looking up with John Passmore's TA33 atop Princess Mary Officers mess putting out the RF from 9V1NK. Dave Jack 9V1ML runs a DX 40 to a ground plane and Maurice Caplan 9V1MK adds to the QRM.

The Club station, 9VlRS, has been the subject of such an intensive do it yourself campaign that its members feel insulted when anyone refers to the place as a shack. With Maurice Caplan as the only operator the club was active during the CQ WW Contest. Forty-eight hours operation produced a beard, a nervous twitch and 149,000 points from 487 contacts. Assisted by log keepers/bottle openers Ian Morris, Bill Matthews and Dave Garrity, Maurice worked 70 countries the only RSARS station being 9J2W who contributed a most useful multiplier. Fingers were being worn crossed in the hope that the points scored will bring the club its first sheepskin.

OLD COMRADES WEEKEND

This year's Reunion will be held on June 25th and 26th. At this early date it is not possible to detail activity from the Society's HQ but GB3RCS will certainly be on the air as in past years. It is hoped to give details over the RSGB News Bulletin Service and in the RSGB Bulletin and Short Wave Magazine.

The Field Secretary would be glad to hear from any Old Comrades attending the Reunion and would like to spend part of the time operating the HQ Station.

FOOD FOR THOUGHT

According to figures published by the GPO Engineering Dept (presumably for 1964) only 82 of the 15,134 cases of interference investigated were caused by Radio Amateurs. Hair Dryers caused 210 cases and overhead power lines 1, 237. How many of those 82 cases were reported by the amateurs themselves, the usual cures having failed, we wonder!)

PRACTICAL POWER SUPPLY DESIGN

R. Walmsley DL2DD

The pages of MERCURY are much too valuable to be squandered on a long preamble which isn't necessary. This article deals with the design of power supplies by the use of simplified calculations which will remove much of the guesswork usually associated with the subject.

Transformers are rated in R.M.S. values. A transformer of say 300V at 200mA should give that voltage when supplying a current of 200mA. If only 50mA is drawn the output voltage will be somewhat higher and this small load value will vary from transformer to transformer. It's a good idea to produce a graph for the transformer you are going to work with; two values of current are enough as with any self-respecting transformer the result should be a straight line as shown in Fig 1. The two values may be zero and full rated current; the latter may even be assumed and hence the graph can be produced by the simple expedient of taking one measurement - the off load voltage. If the current to be drawn from the transformer is not much different from the rated value, drawing a graph is unnecessary.

The peak secondary voltage ($\hat{V}_s$) will be 1·4 times the R.M.S. voltage. In the case of our 300V transformer this yields 420V and if the transformer were connected in the half wave arrangement shown in Fig 2, in the absence of the load R_L the capacitor C should charge to this peak value and V_{dc} would be 420V.

When the load is connected V_{dc} will fall and a ripple voltage will be produced - their values depending upon how great is the load current I_{dc}. This is illustrated by the simplified diagram in Fig 3. It can be seen from the diagram that V_{dc} will now have a value of' $\hat{V}_s$ minus the peak ripple voltage $\hat{V}_r$.

$$\text{i.e. } V_{dc} = \hat{V}_s - \hat{V}_r$$

Equation 1.

The magnitude of the peak ripple voltage will vary in direct proportion to the load current I_{dc} : the greater I_{dc} the greater will be the ripple. On the other if C is increased the ripple will be decreased. In fact $\hat{V}_s$ given by: -

Equation 2. $\hat{V} = \frac{I_{dc}}{2fC}$

where f is the ripple frequency and will be 50c/s for half wave rectification. When full wave rectification is used the ripple frequency is doubled; hence the value of C may be halved for the same ripple voltage.

The use of these two simple equations can best be illustrated by examples.

Suppose from our 300V transformer we require a voltage of 250Vdc at a load current of 170mmA.

What value of C should we use with (a) half wave and (b) full wave rectification.

From Equation 1 $\hat{V}_r$ = 170V

Solving Equation 2 for C but putting $\hat{V}_c = 170$ we get

$$C = \frac{170mA}{2 \times 50 \times 170}$$

$= 10$ microfarads (case a)

or $= 5$ microfarads (case b)

The greater the voltage required, the greater will be the value of C for a given current. What about the ripple? This can be reduced to a small value by means of an LC filter as indicated in Fig. 4 which will be dealt with in more detail later.

Consider that happens when the load is removed. The output voltage will jump from 250V to 420V. This means that if the load is fluctuating, as in a Class B amplifier for example, the output voltage will fluctuate. In other words the regulation of this circuit is poor. Full wave offers better regulation than half wave, but the complete answer lies in the Choke Input circuit which we wil1 consider next.

For reasons of economy, half wave rectification is never used with choke input circuits therefore only the full wave circuit will be considered. The arrangement is as shown in Fig 5.

As long as each diode conducts in turn over a complete half-cycle, the cathode voltage V_k will be as shown in Fig 6. Such a waveform will have an average value imagine climbing the sides in a pair of spiked boots and knocking the tops off with a big hammer to fill in all the spaces. This voltage is V_{dc} and will have a value of 0·637 $\hat{V}_s$. i.e. for every 1V we get 0·637V dc.

To save the trouble of working out the peak voltage of the transformer we can express V_{dc} in terms of V_{rms} such that: -

$$V_{dc} = 0{\cdot}9V_{rms} \qquad \text{Equation 3.}$$

Knowing V_{dc} the magnitude of the ripple voltage $\hat{V}_{100c/s}$ is given by:-

$$\hat{V}_{100c/s} = \text{⅔}\, V_{dc} \qquad \text{Equation 4.}$$

Consider carefully what this means. As long as we can maintain the cathode waveform, irrespective of the load current drawn, the output voltage will be the same. But no soon as the diodes fail to conduct over each complete half cycle the output voltage will rise and the circuit will behave like the capacity input circuit we have previously considered.

In terms of our 300V transformer, in this circuit we can obtain a good regulated 270V dc (from Equation 3) and the ripple we have at the cathode will be 180V at 100c/s (from Equation 4.). The ripple will be filtered by the action of L and C of course and again this is left to be dealt with later.

How can we maintain the waveform at the cathode? The answer lies in the value of the inductance L and the minimum current that is drawn through it, which is explained below.

Referring back for a moment to Fig 5, the total current leaving the cathode (I_t) can be considered to be comprised of two components - a ripple current $\hat{I}_{100c/s}$ and a load current I_{dc}. As long as the reactance of the capacitor C is very small at 100c/s compared with the load R_L the current will be mainly governed by the value of the reactance of L(X_L). Similarly, I_{dc} is mainly governed by the value of R_L. By Ohms Law we can therefore write:-

$$\hat{I}_{100c/s} = \frac{\hat{V}_{100c/s}}{X_L}$$

and $$I_{dc} = \frac{V_{dc}}{R_L}$$

Fig 7 (i) shows I_{dc} greater than $\hat{I}_{100c/s}$, (ii) $I_{dc} = \hat{I}_{100c/s}$ and (iii) shows I_{dc} smaller than $\hat{I}_{100c/s}$.

Notice carefully that in (iii) the diodes are no longer conducting over the complete half-cycles and therefore the cathode waveform has not been maintained. The limiting condition then is that I_{dc} must be equal to or greater than the ripple current $\hat{I}_{100c/s}$.

Using the two Ohms Law expressions we evolved above, the condition we require is when:-

$$\frac{V_{dc}}{R_L} \text{ is equal to or greater than } \frac{\hat{V}_{100c/s}}{X_L}$$

and substituting for $\hat{V}_{100c/s}$ from Equation 4

$$\frac{V_{dc}}{R_L} \text{ is equal to or greater than } \frac{2V_{dc}}{3X_L}$$

V_{dc} cancels from both sides and $X_L = 2\pi fL$ so we get

$$\frac{1}{R_L} \text{ is equal to or greater than } \frac{2}{3 \times 2\pi fL}$$

and by making L the subject of the equation

$$\text{L must be equal to or greater than } \frac{R_L}{1000} \text{ Henries} \qquad \text{Equation 5.}$$

This value of L is usually referred to as L(min). R_L must be calculated from the smallest load current. The behaviour of the circuit is best summarised by the use of a graph as shown in Fig 8.

Example

A power supply has to deliver 40mA to 200mA at 400V. What is the value of L(min)?

The smallest load current is 40mA and R_L at this current will be 10 Kohm.

$$\text{Therefore L(min)} = \frac{10K}{1000} \text{ Henries} = 10 \text{ Henries}$$

The capacitor C can have any value from about 4 microfarads or so upwards. The greater its value the less will be the ripple appearing with the output voltage. Another LC smoothing section can be added to reduce the ripple voltage further.

It may well be that the minimum load current drawn from a power supply is zero. In this case the output voltage would rise to V_S whatever the value of L. Or again, for a given value of minimum load current, the value of L (min) may be prohibitive. In both cases a Bleeder Resistance can be effectively employed. A resistor can be placed across the load as in Fig 9 to draw a current all the time. In the example given, when the load current is zero, a minimum current of 40mA still flows through the Bleeder Resistance and hence L(min) will be 10 Henries N.B. the power supply now has to deliver 40mA more, i.e. up to 240mA.

Smoothing Circuits

In Fig 10 V(in) and V(out) represent ripple voltages and the object is to reduce V(in) by means of L and C to some smaller value V(out). The Ratio of these two voltages is known as the Ripple Reduction Factor (RRF) and is vary useful.

i.e. $RRF = \frac{V(in)}{V(ou}$

For the half wave rectifier circuit $RRF = 0{\cdot}1\,LC$ Equation 6.

and for the full wave $RRF = 0{\cdot}4\,LC$ Equation 7.

where L and C are in Henries and microfarads respectively.

As an example, suppose L had a value of 10 Henries and C was 10 microF. In the half wave case the RRF would be 10, i.e. for every 10 volts of ripple into the filter we should get 1 volt of ripple out. Compare this to the full wave case where the RRF is 40. For every 10 volts of ripple into this filter we would only get 0·25 volts out.

Another example may be as follows:- Design a filter circuit to reduce 64 volts of ripple at 100c/s to 1 volt.

$$RRF = 64 = 0{\cdot}4\,LC$$

therefore LC = 160 i.e. 10 H and 16 microF or 16H and 10 microF etc. or whatever you have in the junk box that gives a product of 160 (bearing in mind that the minimum value of L may be fixed if we are using a choke input circuit).

Very often to reduce the ripple voltage to the required level it becomes necessary to employ two sections of smoothing as shown in Fig 11. If the shunting effect of the second section is assumed to be negligible, the two sections may be considered as separate sections and the overall RRF will be the product of the two.

Overall RRF = (RRF of 1st section) x (RRF of 2nd section)

If we make $L_1 = L_2$ and $C_1 = C_2$ both RRF's will be equal and we get:-

Overall RRF = (RRF of one section)^2 Equation 8

Example

Let the RRF required be 400 and use two sections of filtering. One section must therefore have an RRF of 20.

$$\text{RRF} = 0{\cdot}4LC \quad \text{(fullwave)}$$

$$\text{therefore } LC = 50$$

We can use 10 Henries and 5 microfarads.

Alternatively of course, we could use a single section having an RRF of 400. This time we find LC = 1,000 and e.g. 20 Henries and 50 microfarads could be used.

The smoothing action of either method would be identical, however notice that for the same total inductance of 20 Henries, a total of 10 microfarads is doing the job of 50 microfarads in the two section filter.

There is one more filter circuit worthy of mention, the RC section shown in Fig 12. It is used only for small load currents normally, as regulation is very poor and because of the voltage drop across the resistor.

The RRF for the RC filter is approximately 0·6RC for full wave or 0·3RC for half wave (note that R is expressed in Kohms and C in microF). An account of the use of RC smoothing circuits appeared in a recent issue of MERCURY.

The following is a summary of the essential material extracted for easy reference.

Capacity input

$$V_{dc} = \hat{V}_s - \hat{V}_r$$

$$\hat{V}_r = \frac{I_{dc}}{2fC}$$

Note that f is 50c/s for half wave and 100c/s for full wave rectification.

Choke input

$$V_{dc} = 0{\cdot}9V_{rms}$$

$$\hat{V}_{100c/s} = \text{[illegible]}\, V_{dc}$$

$$L(\min) = \frac{R_L}{1000}$$

Note that R_L is the value for the smallest load current.

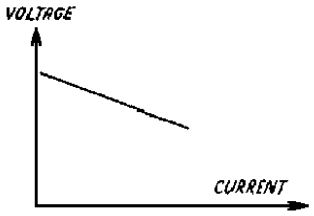


FIG 1

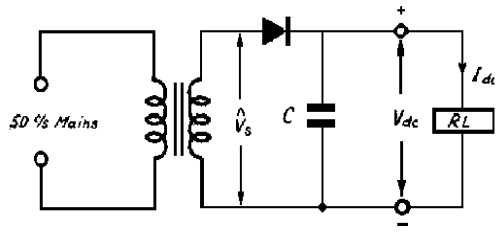


FIG 2

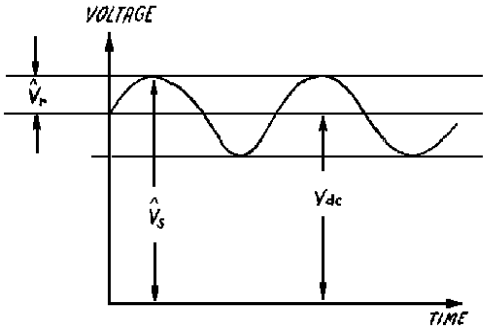


FIG. 3

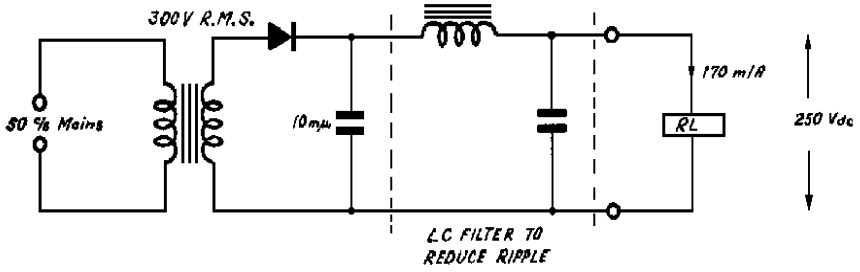


FIG. 4

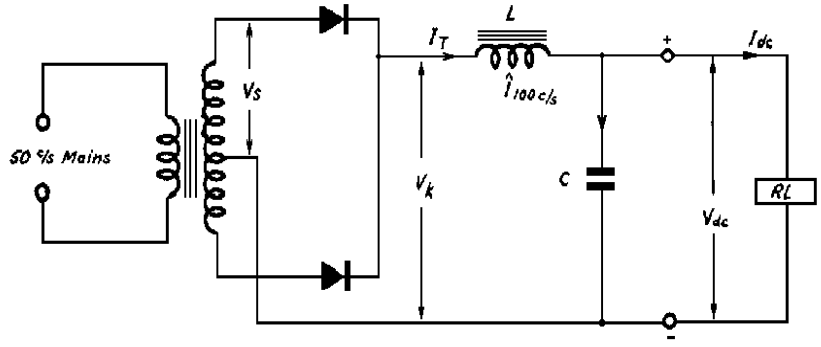


FIG. 5

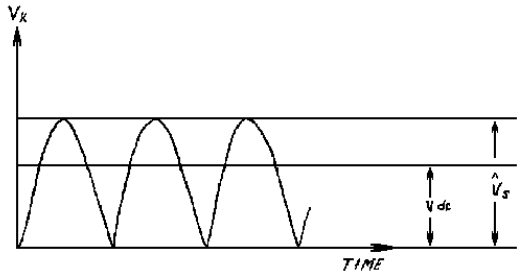


FIG 6

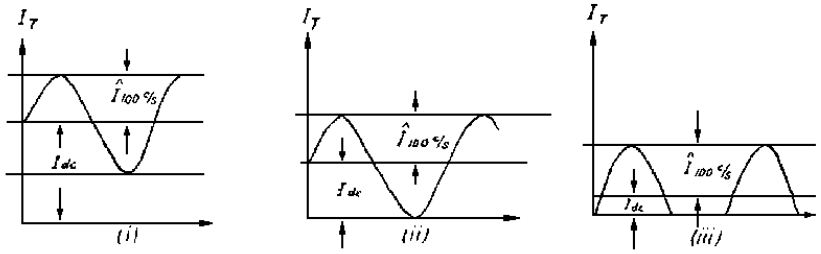


FIG. 7

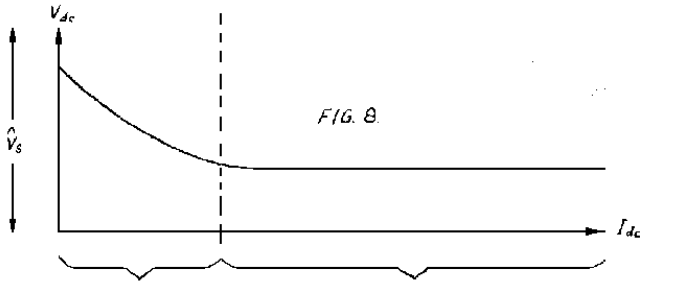


FIG. 8

I_{dc} IS SMALLER THAN $\hat{I}_{100\,c/s}$. BEHAVES LIKE A CAPACITOR INPUT CIRCUIT.

I_{dc} GREATER THAN $\hat{I}_{100\,c/s}$ AND REGULATION OVER THIS PORTION IS VERY GOOD. V_{dc} WILL FALL VERY SLIGHTLY DUE TO THE RESISTANCE OF THE CHOKE, ETC.

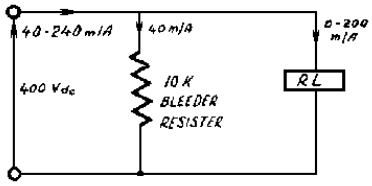


FIG. 9.

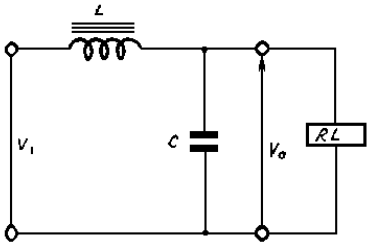


FIG. 10

Smoothing (LC)

RRF = 0·1 LC for half wave

RRF = 0·4 LC for full wave

Overall RRF for two equal sections = (RRF of one section)^2

Note that RRF is the ratio $\frac{V(in)}{V(out)}$ where V(in) and V(out) are ripple voltages

Smoothing (RC)

RRF = 0·6RC for full wave.

RRF = 0·3RC for half wave.

Note that R is in Kohms and C is in microfarads.

Let us now consider two typical examples of the design of power supplies in the average shack.

In the first example let us assume that we have a 300 - 0 - 300V transformer rated at 200mA. Also available are two 10 Henry chokes and an odd assortment of capacitors. Our requirement is to provide 350V dc at 200mA with a ripple of 0·005V or better.

Our first step is to decide which type of power supply we are going to build - capacitor or choke input. This must obviously be capacitor as the voltage required is greater than the RMS voltage of the transformer (using choke input our output voltage would be in the region of 270V dc).

Step two - what value of input capacitor? The peak voltage will be 1·4 times the RMS value of 300V = 420V. To allow for the resistance of the two chokes with a current of 200mA the output voltage at the capacitor must be about 20V higher than the 350V dc required at the load. Therefore V_{dc} = 370V

From Equation 1 $\hat{V}_r$ = 50 (i.e. 370 = 420 = $\hat{V}_c$)

Using this value in Equation 2 and solving for C when I_{dc} = 200mA we find that C = 20 microfarads

The problem now is to reduce the 50 volts of ripple to 0.005V.

We know that the RRF required = $\frac{50}{0·005}$ = 10,000

For this re can use two sections each with an RRF of 100.

RRF = 0·4LC = 100

LC = 250

Using our two 10 Henry chokes sets the value of C at 25 microfarads (or greater if that's what happens to be in the junk box).

The final circuit is shown in Fig 13.

Next consider the design of a power supply using choke input and incorporating RC filtering. The design requirements are (a) to provide 450V dc with good regulation over a load current range of 25 to 150mA with a ripple of less than 1$\hat{V}$, and (b) to supply also 200V dc at 50mA with less than 0.01$\hat{V}$ ripple.

The obvious circuit arrangement is shown in Fig 14.

The first step is to determine the value of $L_{(min)}$. The minimum current at any time is going to be 25 + 50 = 75mA. Hence the maximum effective load resistance will be 6Kohms. Using this value in Equation 5 gives the value of $L_{(min)}$ as 6H.

For a value of V_{dc} of 450V, from Equation 4 the ripple voltage $V_{100c/s}$ = 300V. Capacitor C1 must reduce this to 1 volt, the RRF of L and C1 must therefore be 300.

From Equation 7 $300 = 0{\cdot}4\,LC1$

Putting L = 6H $LC1 = 750$

$C1 = 125$ microfarads.

Note that any value of inductance greater than 6H is suitable and 10H with 75 microfarads is also a possible combination. It may also be more convenient to employ a double section filter with an overall RRF of 300. From Equation 8 the RRF of one of two similar sections will be the square root of 300 = 17·3 and LC1 = 43 (approx.) and if we use our minimum value of 6H for each of the two chokes two 7 microfarads capacitors may be employed. (In practice 8 microfarads would be used - remember there is no need to split hairs with values as the components used will be 20% tolerance in any case).

Resistance R must drop the voltage from 450 to 200V. This fixes its value at 5Kohms 12·5 watts (15 watts in practice). To reduce the ripple from 1$\hat{V}$ to 0.01$\hat{V}$:-

$$100 = 0{\cdot}6RC2$$

$$C2 = 33{\cdot}3 \text{ microfarads (32 microfarads in practice).}$$

Finally what about the transformer? Equation 3 solves this problem:-

$$450 = 0{\cdot}9V_{rms}$$

$$V_{rms} = \frac{450}{0{\cdot}9} = 500V_{rms}$$

In practice it is wise to allow a little for the voltage drop across the inductance. If this had a resistance of say 50 ohms, at the maximum current of 200mA the voltage lost across it would be 10V. Again if valve rectifiers are employed, because of their high internal resistance compared with silicon diodes, manufacturers data must be consulted to determine the voltage drop at the current drawn.

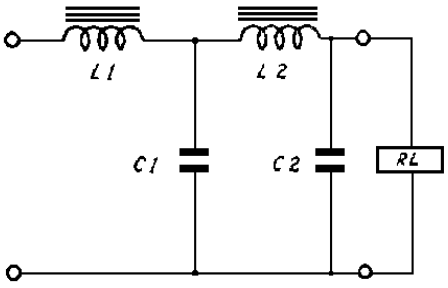


FIG. 11

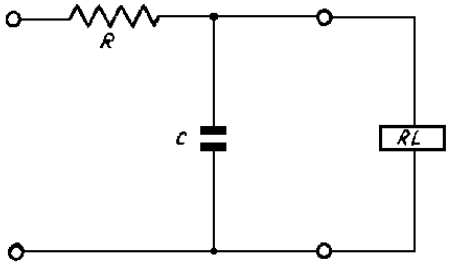
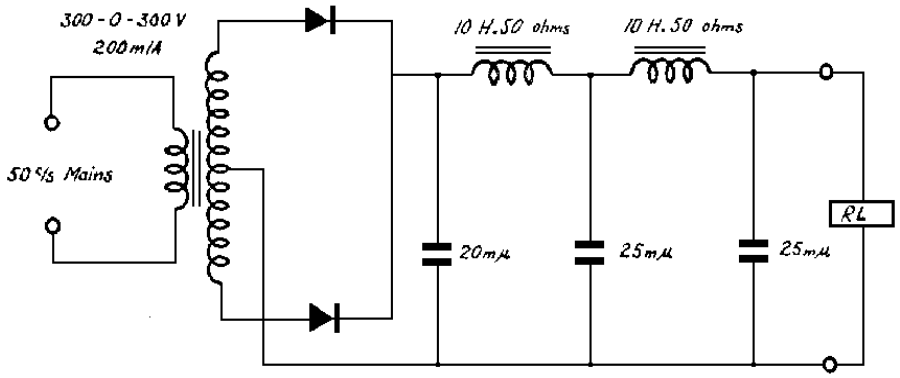


FIG. 12



OUTPUT VOLTAGE 350 VOLTS RIPPLE 0.005 V

FIG. 13.

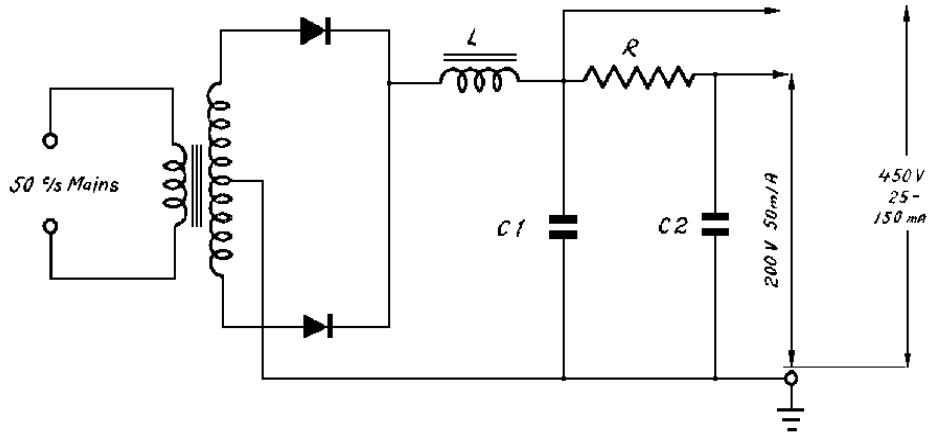


FIG. 14

Assuming silicon diodes are employed the transformer must be rated at 510-0-510V R.M.S. at 200mA.

In conclusion it must be stated that once the few equations have been used in practice a few times they very quickly become learned and in the writer's case have proved to be invaluable.

POINTS FROM YOUR LETTERS

QSL Cards

Just how does one twist the arm of the other fellow - I have sent cards for all contacts (worked 26, confirmed 11). I see however that two are for club stations which makes it even more difficult. The characters I contacted may have departed for other spheres - could one appeal to the consciences of members to send cards even if they wait for the other guy to send one first, club stations to send one immediately after the QSO.

From the few in attendance on the bands it would seem that a great many Royal Signals and ex-Royal Signals just hibernate. What about showing up on Activity Dates and show the organisers just how easy the Award is. With a membership of around 250 callsign holders we may need a special sticker for 100 and 150. Assuming always that the characters who have had their arms broken in order to extract cards get back on the air again PDQ.

73
Bill Windle G8VG

Contests

I am not a Contest man but I did enter last year's Society affair and thoroughly enjoyed myself.

Please therefore do not abolish the Contest in favour of Activity Periods. Why cannot we have both?

73
Allen Herridge
G3IDG

(WELL WHAT DO YOU THINK? PLEASE LET US KNOW - Editor)

I would like to support Terry Quinn and Bill Windle in their suggestions for widening the scope of the RSARS contests to enable DX members to take part. However in view of the small numbers of RSARS DX members would the venture be worthwhile?

How about a three-cornered world wide contest between RNARS, RAFARS and RSARS? I can't think of a contest likely to produce keener competition. The contest could be designed to produce a winning station or A winning service or both.

Anyone prepared to call "CQ RNRAFRSARS"?

73
Maurice Caplan
9V1MK

NEWS FROM HEADQUARTERS

Undoubtedly the biggest event in the history of the Society is the presentation by The Marconi Company of a complete D11/R234 installation. Brief mention of this generous gift was made in the minutes of the A.G.M. in our last issue but it was not possible to give the full story at that time.

The first news of this generous gift was a telephone call to the Field Secretary from the President last September. When the Field Secretary attempted to pass on the news to other members of the HQ station staff he was greeted with derisive and often bawdy comments, it seemed too good to be true. It isn't often that one is offered a complete station capable of giving SSB, AM, CW and RTTY on the 3·5, 7, 14 and 21 Mc/s bands.

Eventually during the first week of the New Year the station was delivered and with the assistance of a mobile crane placed alongside the station building. Fortunately the Catterick weather was at its kindest, a few weeks before the site had been covered by a deep snowdrift but on the day it didn't even rain.

Whilst most serving members of the Corps will be familiar with the equipment a brief description for the benefit of ex-service readers will not come amiss. The D11 transmitter, or to give its maker's designation, the HS27, covers from 2 to 21·999Mc/s in a series of 1 Kc/s steps. Once the Phase Locked Oscillator has been locked to the frequency synthesiser a drift of less than one-third of a cycle is claimed. On SSB the Peak Envelope Power Output is 350 watts. A built-in oscilloscope monitors the outgoing signal whilst a reflectometer maintains continuous watch on the SWR on the antenna feeder.

The accompanying receiver, the R234 or HR28 covers 2 to 28 Mc/s continuously and has built in 100 and 10 Kc/s calibrators. On modes other than SSB an Automatic Frequency Control system follows the other fellow when he drifts.

The whole station is housed in a vehicle box body container panelled with Formica and lit by strip lighting along the walls. An extractor fan can cope with the worst fug that the operators can manage whilst the insulation is such that a 1 Kw tubular heater gives "shirtsleeves" temperatures even in the coldest weather.

Centrally placed above the SWR Meter is a plaque which reads: -

Presented by
THE MARCONI COMPANY
to the
ROYAL SIGNALS AMATEUR RADIO SOCIETY
to commemorate the many years of close
association between
the COMPANY and the CORPS.

Once the mains supply had been connected we tried to go on the air only to find that the SWR on some of our antennas was so high that the automatic cutout wouldn't stay in. After some pruning things were better and results so far have convinced us of the efficiency of the equipment.

Unfortunately gale damage to the Quad has limited operation on the HF bands but before this occurred RTTY contacts were made on 14 Mc/s with several countries, W7 being the best DX so far. On 3·5 Mc/s several G RTTY stations and some Europeans have been contacted but it was just our luck to be able to print a VK on 14 Mc/s at a time when we had no antenna for that band. RTTY being a new mode for most of the G3CIO operators we are like kids with a new toy. If anyone wants to try to sked we can cope with both 45·5 and 50 Baud transmissions but as most of the gang here are technicians the teleprinter operating tends to be of the "search and peck" variety.

On SSB it is comforting to be able to assure the other fellow that it isn't us who have drifted and reports on this mode to date have been most encouraging. It was unfortunate that the damage to the Quad occurred the night before our January Activity Period thereby confining us to the LF bands for which dipoles were available. Although considerable repair work is needed before we are able to re-erect the Quad this is in hand and we hope to be back among the DX before this copy of MERCURY reaches you.

The writer has heard of people who are frightened by the complexity of the controls of the D11/R234. A few hours use of the equipment on the amateur bands soon breeds familiarity. We hesitate to recommend this as a method of training operators but you are quite welcome to quote our experience.

It is intended that a Presentation Ceremony shall be held at the end of March when the Society will have the opportunity to express its gratitude to representatives of The Marconi Company.

NEWS OF MEMBERS

G3NMQ, "Bing" Crosbie, is operating from up-country Sierra Leone as 9L1BC. Look for him on CW on 14026 and 21039 Mc/s.

Thinking of emigrating to or just visiting Canada? If so our member Jim Jarvie of 650 Broadway Avenue, Toronto 17, would be only too pleased to help in any way he can. As a Radio Inspector in the Regulations Branch he is particularly well placed to acquaint amateurs with the licence regulations in VE-land.

By the time you receive this issue of MERCURY the Royal Signals Dxpedition to Kamaran Island will be over but if you worked VS9KRV it was operated by Sgt Ray Vasper VS9ARV, Sgt Doug Higgins VS9ADF and Cpl Ron Ford VS9AFR.

NEWS OF MEMBERS

Another Royal Signals DX-pedition is planned for April, several of the Singapore gang are heading for VS5. No details are available as we go to press but it is expected they will appear in the Amateur Radio Magazines in due course.

Coming nearer home it is hoped that GB3RCS will be operating from a Royal Signals Recruiting Display in Golden Square near the Strand during July. Lt. Col. J.C. Clinch G3MJK has this in hand and it is hoped to find sufficient operators from local Regular, TA and AER units to ensure considerable activity.

Licence news from Cyprus - facilities now exist for candidates to take the RAE at local Army Education Centres and the Morse Test may be taken at a service Unit which has been authorised for the purpose. With ZC4 licences in line with GPO requirements it should be easier to convince the GPO of one's qualifications for a G ticket.

The Field Secretary and Jean Hodgkins would like to express their thanks for the many Christmas cards received from members at home and overseas.

It is with deep regret that we have to announce the death, on November 22nd, of Bill Short G2HNP. Bill served with Royal Signals during the war and was one of the first to join Royal Signals Amateur Radio Society, being Member No 12.

Our member G3BID has sent along a most interesting Publication of the Amateur Radio Mobile Society on the subject of Reciprocal Licences. After reviewing the history of the long struggle to obtain permission to operate for British Amateurs visiting the continent on holiday it goes on to give details of how to go about getting a ticket in Austria, Belgium, Luxembourg and the Netherlands. Details of Licence Conditions, local TV channels and other useful information are given and the leaflet ends with a few tips on how to avoid embarrassment when faced with a suspicious local policeman.

While the Field Secretary would be pleased to pass this information to any interested member it is suggested that if you contemplate mobile operation either at home or on the continent you should contact the ARMs whose secretary is Mr. I. A Fitch, G3FPK, 79 Murchinson Road, London E.10.

AGONY - "Have worked 19 members and had only 3 confirmed, how about a gentle dig in the next MERCURY - G3UEV".

G3NOT and the 7 Mc/s CW Contest

by Sgt Dan Tanner

The contest was scheduled to begin at 061800Z, the equipment was just a few hours old and consisted of a KW2000A and PSU with a bug key aligned to the best of my ability. All existing antennas were taken down that morning, the mast was cleaned and an extra piece of wood added for that extra bit of height and the 40 metre dipole put up and pruned for the lowest SWR on the KW match, almost 1 to 1. I felt more than pleased as the XYL had given ma a place in the sitting room alongside the fire and the equipment and I were raring to go. After completing all the work I sat down to make a special log already serialised from 001 to 100; I thought this would be sufficient for the contest, I usually give up when things don't go as planned.

An agreement was reached with the XYL on tea and peace and quiet from my two harmonics so at approx. 1400 I thought let's give the antenna a quick try-out then keep away until 1800 hrs. A quick CQ brought back hosts of answers and I triumphed with the ability of the transceiver to sort them out, that Incremental Tuning, how I had managed with the NCX3 I don't know, anyhow worked a few Europeans and threw the big switch reports being excellent. I pottered about all afternoon checking the time with the Signal Centre, wasn't going to miss a second if possible. I then got on the settee for a shut-eye leaving strict instructions to be brought back to life at 1730 hrs.

Got my gear switched on, had some food at the operating table and waited. 1800 hrs and I called my first CQ Test, back come 0H3ZN 599001; first 25 points; QSO's, were then obtained rapidly and in one hour I had 25 QSO’s, not too pleased with myself but I had over 400 points up to 1922 hrs. Started to dream of the DX, then 1947 hrs and my first VK, VK2NN giving me 75 points for that one contact. Then ZB2A0, W2JAE, 7X2AH, 9HlAB, W8JIN and 0A4KY. At 0145 the band was in poor shape so I thought I'd get some sleep so I set the alarm and got back on the settee. The alarm was set for 0430 at which time a cup of tea was made while the set and if truth be known, the operator, warmed up. So with a nice jug of tea on the table I paddled the bug for the 76th contact at 0501 with LA2AQ, my first LA so another 25 points. At 0640 W2IWP called in with 559005 followed by K3JCT and WB2CKS. So I went through the day without a stop, meals served at the table, knocked off Europeans by the dozen until there was nobody new to work and my morse was dropping off in standard. I stuck it out until at just before 071800 YU1MV got 589194 from me. So I exceeded the hundred serial numbers for the first time on my own, operated in all 21¾ hours for 194 contacts in 30 countries for 1830 points.

I sat back still hearing morse with the set switched off (I dreamt morse and contacts that night, a DX nightmare) and wondered whether it was worth it. The worst was still to come, I borrowed a typewriter from work and sat down and typed it out neatly on foolscap paper then instead of sending it there and then I put it all away safe and sound to package it up and send it away. Two weeks later my XYL asked me if I had sent my logs up. I hurried to find them only to discover that my youngest harmonic had beaten me to it, there were my logs covered from top to bottom with beautiful houses and gardens drawn in glorious colours with those felt pens. Needless to say my old logs were left still in their shambles, couldn't face that typing again. So CUAGN in next year's 7 Mc/s CW Contest.

HELP WANTED

Captain Laurie Wood of 22 Signal Regiment, BFPO 16 would be glad of the circuit and any other gen on the BC 610 E. We’ve none at Catterick, can you help?

LATE NEWS

How's your Award score coming on?

VS9ARV	8 worked	7 confirmed
VE3CLV	15 worked	9 confirmed
G8VG	34 worked	18 confirmed
G3EJF	22 worked	13 confirmed
SWL J. Harvey	5 heard	

The Society QSL Card

At the rate these are selling we shall soon have to be thinking of re-ordering so the time is ripe to canvas members' ideas on the card.

One member has suggested that we should have a pictorial card on the lines of those used by RAFARS and RNARS. The difficulty is choosing one scene that would be acceptable to all members. Do you think such a card is a good idea? If so what should the photo show, Field Radio, High Power equipment, a lineman up a pole, a Teleprinter Operator or what? The Field Secretary would be pleased to have your views.

Tried 28 Mc/s lately?

The Aden gang run a Sunday morning net on 28.6 Mc/s at 0800 GMT. Contacts with G's are not unknown so it's worth listening.

There are six VS9 Royal Signals stations: - ACC, ADF, ARF, ALB, ARV, ATH.

DXCC

Major Desmond Barry has made DXCC during his stay at Royal Canadian School of Signals. He looks for members during the Activity Periods from Kingston, the callsign is VE3CLV.

Club news from Belfast

GI3PUE at 66(Ulster) Signal Regiment TA now has a KW 2000 and a Cubical Quad thanks to financial assistance from the T.A.F.A. and RSARS. One of the first QSO's with the new rig was with LA7PC, himself a student of Belfast University some time ago and a friend of the Belfast operator. The Quad is mounted on a 50ft tower and several members report the new slim look after climbing up and down during the erection of the antenna under the expert guidance of GI3KYP.

Members in the News

Don Bradshaw, G3TKI, got himself in the news recently by being first with the news of the coup in Ghana. He worked 9G1TV at 0645 GMT and was asked to pass on the news to the proper authorities.