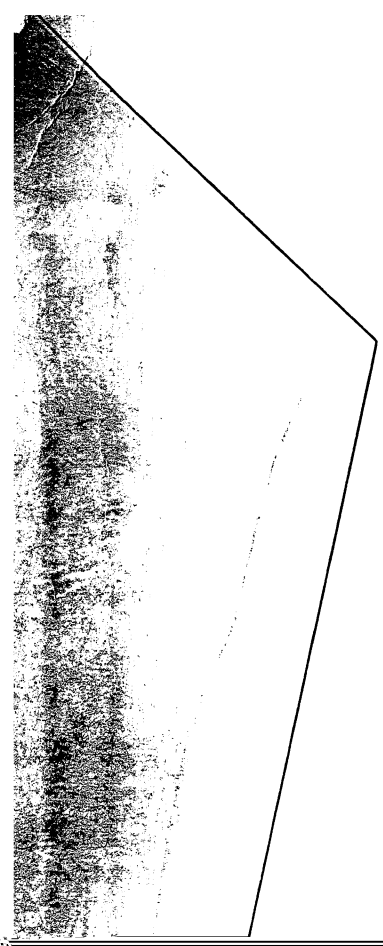

Collins

INSTRUCTION BOOK

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[redacted]

Collins agrees to repair or replace, without charge, any equipment, parts, or accessories which are de-

[redacted]

prepaid, provided

(a) Notice of the claimed defect is given Collins within one (1) year from date of delivery and goods are returned in accordance with Collins' instructions.

[redacted]

CUSTOMER

This Instruction Book contains all essential information for the installation, operation and maintenance of your Collins Radio Equipment.

Collins' Research and Development and Manufacturing Divisions have designed and built equipment of the highest possible quality for your use. Many pieces of information have been assembled by the Publications Engineering Department; this book has also been tested against a similar quality standard.

With these production goals achieved, it would be easy to regard all tasks as completed.

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INSTRUCTION BOOK

COMMUNICATIONS RECEIVER

51J-4

CEDAR RAPIDS, IOWA, U.S.A.

520 5014 00
4th Edition, 1 September 1958
Printed in the United States of America

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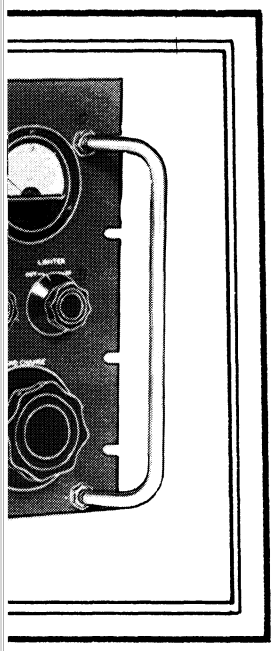
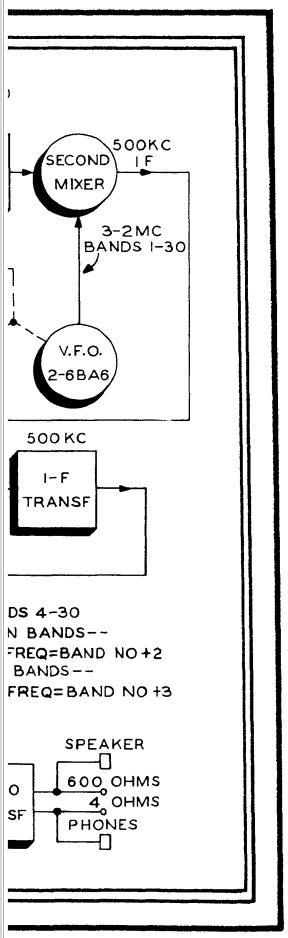
SECTION 5 - MAINTENANCE

SECTION 5 - MAINTENANCE (CONT.)

ISTRATIONS




SECOND MIXER
500KC I F
3-2MC BANDS 1-30
V.F.O. 2-6BA6
500 KC
I-F TRANSF
DS 4-30
N BANDS--
FREQ=BAND NO+2
BANDS--
FREQ=BAND NO+3
SPEAKER
600 OHMS
4 OHMS
PHONES

:am

PTION

TER OUT-IN — METER OUTPUT-INPUT
TRIM — CAL (100 K-C ADJUST-
STAL FILTER — MENTS)
LECTIVITY — FILTER SELECTOR

operating range of 540 kc to 30.5 mc is
by 30 one-megacycle bands that are selected
and switch knob and indicated by a slide rule
ing graduations of one-tenth megacycle (100-
vals. The main tuning control covers each
megacycle ranges with 10 turns of a 100
dial calibrated at one-kilocycle intervals.
eiver's frequency stability is consistent with
ly divided calibration even at the highest
cies.

r-ohm headphone jack and a 600-ohm speaker
provided on the front panel. The antenna
or, 50-ohm i-f output connector, breakin
rminals and four-ohm and 600-ohm audio
erminals are provided-on the rear. A heavy
power cord extends from the rear of the
.

LECTRICAL. - When advantageous, the
1J-4 Communications Receiver uses single,
or triple conversion in tuning the entire
cy spectrum of 540 kc to 30.5 mc. Nineteen
hree of which are dual, are employed in the
r. With the exception of the rectifier tube,
of the miniature type.

he receiver r-f circuits tune from .5 to 30.5
s Band 1 is referred to as covering the range
5 mc. However, the lower end of the
g range is considered to be 540 kc rather
) kc because of the questionable operation in
eme low end of the band where frequencies
h the receiver i-f frequency of 500 kc.
operation at the extreme low end is possible
newhat reduced performance.

he frequency range of the 51J-4 Receiver,
.5 mc, is divided into 30 one-megacycle
y a system of switches and coils which form
amplifier and first mixer circuits. Band
g consists of moving powdered iron "slugs"
coils in one megacycle steps until inductance
f the coils are reached, then changing coils
eating. Injection voltage for the first mixer
ned from the fundamental or harmonic output
cillator, the frequency of which is controlled

espectively,
variable i-f
mixer

econd mixer
ed inter-
nechanical
0 kc is
nal from a
fference of
ner band of
70E-15
ng control

assured by
erating in

duce automatic
amplification
s provided
detector.
over signal
icrovolts
noise
. This
strong noise

NS MBER
4 096
4 086
4 00

the 51J-4.

NS MBER
9 00
3 004
0 002
9 003
9 002
0 002
8 002
9 002
3 00

ruits just described.

FUNCTION
dio-frequency amplifier
rst mixer
nd 1 mixer
libration oscillator
gh-frequency crystal oscillator
cond mixer
rst 500 kc i-f amplifier
cond 500 kc i-f amplifier
ird 500 kc i-f amplifier
urth 500 kc i-f amplifier
tector and A.V.C. rectifier
V.C. amplifier and i-f output cathode follower
ise limiter and first audio amplifier
dio power amplifier
at frequency oscillator
wer rectifier
ltage regulator
riable frequency oscillator
cillator isolation amplifier

ilocycles

temperature is within 300 cps if the nearest 100 kc
to adjust the fiducial.

t with 10 db s/n
watt with 10 db s/n
acteristics is given in paragraph 5.3.7. of this book.
40 db
b increase in audio power output with an increase in
5 to 125,000 uv
db above AVC threshold and -10 to +6 db audio level

o stage
with less than 15% distortion
re than 3 db at 200 cps and not more than 7 db at 2500
en 6 kc filter is used

a high impedance whip or single-ended antenna
70 cps. Same power required when reconnected for
tion
s wide, notches for standard rack mounting