COLLECTORS' CORNER

No. 2 — The Yaesu FRG 7

This month in Collectors' Corner, we feature the Yaesu Musen FRG7, an analog frequency reading receiver which has enjoyed considerable popularity since its introduction in 1976.

PHOTO 1: Front view of the Yaesu FRG7 receiver.

The FRG7 is an all solid state synthesised triple conversion superheterodyne communication receiver designed to cover the entire high frequency spectrum from 500 kHz to 29.9 MHz. This receiver was one of the first to incorporate the "Wadley Loop" principle utilizing a synthesised heterodyne oscillator for excellent stability.

Good selectivity is provided for SSB, AM and CW using a ceramic filter in the 455 kHz IF circuits, while a tone switch on the front panel of the FRG7 provides varying audio response in any one of three ways.

In the normal position, the audio amplifier passes frequencies of 250 Hz through 3000 Hz, at narrow 400 Hz through 2500 Hz and at low 250 Hz through 1500 Hz.

Early models of the FRG7 did not incorporate any means of varying the received frequency other than by adjusting the main tuning dial, a rather hazardous manouevre when trying to remain on a particular frequency accurately.

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SPECIFICATIONS

Frequency Range:
0.5 MHz ~ 29.9 MHz

Type of Emission:
AM, SSB (USB or LSB), CW

Sensitivity:
SSB/CW: Better than 0.7 μV at S/N 10 dB
AM : Better than 2 μV at S/N 10 dB

Selectivity:
±3 kHz at −6 dB, ±7 kHz at −50 dB

Stability:
Less than ±500 Hz at any 30 minutes after warm up

Antenna Impedance:
High impedance for 0.5 MHz ~ 1.6 MHz
50 ohm unbalanced for 1.6 MHz ~ 29.9 MHz

Speaker Impedance:
4 ohms

Audio Output:
2 watts

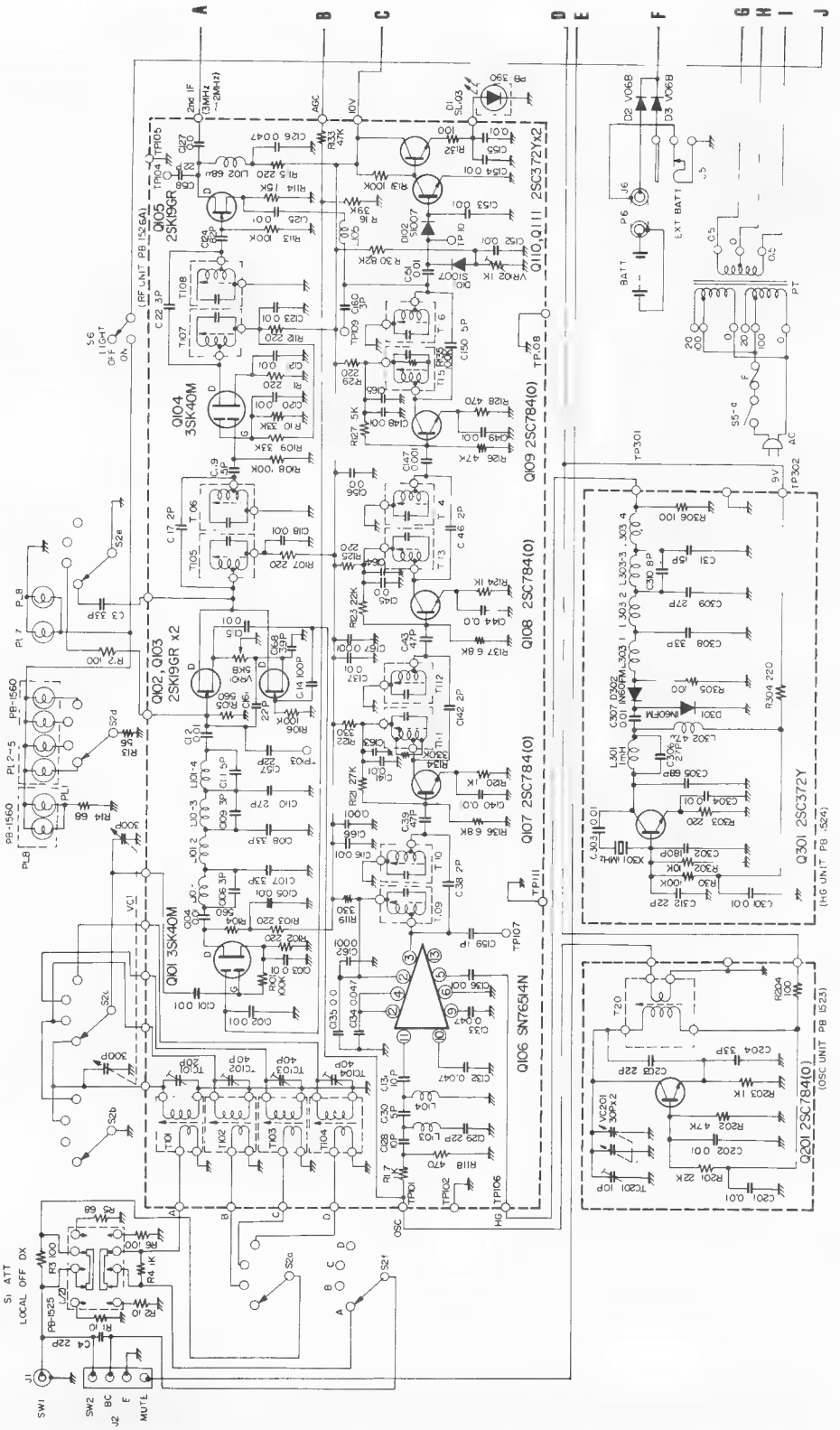
Power Requirement:
100/110/117/200/220/234 volts AC 50/60 Hz, 12 volts DC external or internal dry cell UM-1 x 8

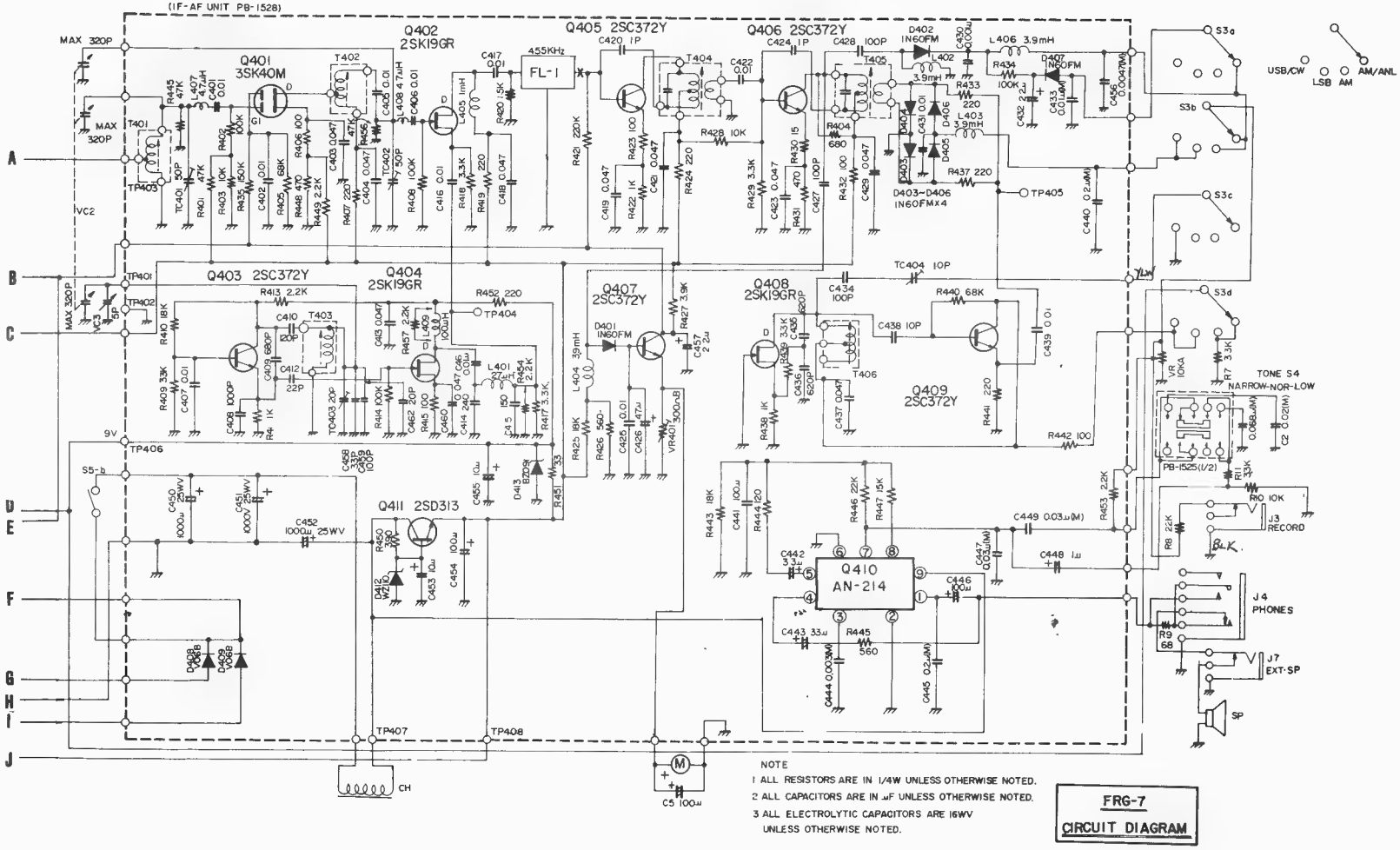
Power Consumption:
AC 14VA

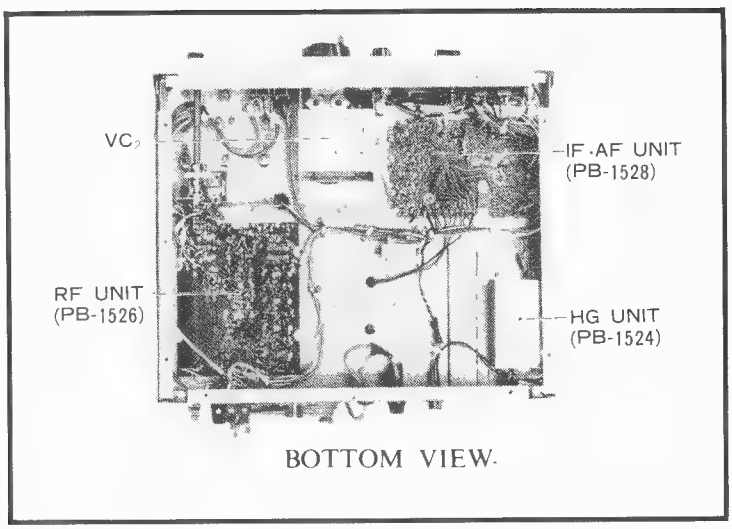
Size:
340 (W), 153 (H), 285 (D) mm

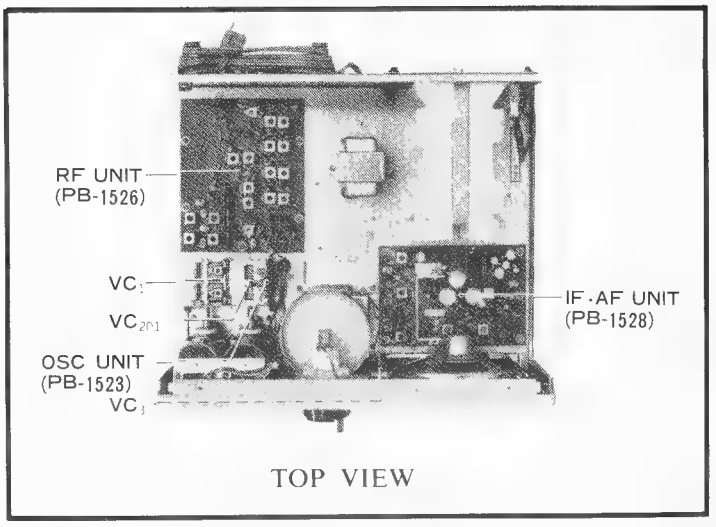
Weight:
Approx. 7 kg without batteries

FRG 7 Circuit Diagram




(IF-AF UNIT PB-1528)
Q402 2SK19GR
Q405 2SC372Y
Q406 2SC372Y
Q401 3SK40M
Q403 2SC372Y
Q404 2SK19GR
Q407 2SC372Y
Q408 2SK19GR
Q409 2SC372Y
Q410 AN-214
Q411 2SD313
FL-1
455KHz
D401 IN60FM
D402 IN60FM
D403~D406 IN60FMx4
D407 IN60FM
TP401
TP402
TP403
TP404
TP405
TP406
TP407
TP408
S3a
S3b
S3c
S3d
USB/CW
LSB
AM
AM/ANL
TONE S4
NARROW-NOR-LOW
PB-1525(1/2)
J3 RECORD
J4 PHONES
J7 EXT·SP
SP
CH
VC2
VC3
S5-b
9V
A
B
C
D
E
F
G
H
I
J
NOTE
1 ALL RESISTORS ARE IN 1/4W UNLESS OTHERWISE NOTED.
2 ALL CAPACITORS ARE IN μF UNLESS OTHERWISE NOTED.
3 ALL ELECTROLYTIC CAPACITORS ARE 16WV UNLESS OTHERWISE NOTED.
FRG-7
CIRCUIT DIAGRAM





(continued from page 25)

PHOTOS 2 and 3 (above and left): Views of the FRG7 internally. HG unit — harmonic generator.

Later models of the FRG7 incorporated receiver incremental tuning (RIT). This feature consisted of a 5 pF variable capacitor wired in parallel with the main VFO tuning capacitor, thus providing a means of netting on stray stations in a net or for listening either up or down without shifting the main dial from a frequency required.

Like most receivers the FRG7 provides the listener with a headphone jack for private listening, together with a record output jack for those wishing to preserve transmissions heard for posterity or perhaps to provide an amateur with an accurate appraisal of his transmissions. The output level is kept constant at 50 mV regardless of the setting of the FRG7 volume control.

In any receiving station the antenna is perhaps the most important tool to the SWL. The FRG7 will readily accept a balanced 50 ohm line for listening with an antenna resonant at a particular frequency, or random wires may be connected via two terminals at the rear of the unit for use on Short Wave frequencies or for monitoring broadcast stations on Medium Wave. A MUTE facility is also provided to disable the receiver while transmitting.

The FRG7 includes a self-contained three-way power supply for 100/110/117/200/220/234 volts AC 50/60 Hz, an internal battery or external 12 Volt DC. If the AC power source fails, the unit switches automatically to an internal battery which uses eight UM-I cells. The receiver is ideally suited for home or portable use. To save battery consumption, the dial lamps can be switched off. Cells for the internal battery arrangement are not included when purchasing an FRG7.

For modifications to the FRG7 prospective or current owners are advised to read Amateur Radio, March, 1977, page 21, and Amateur Radio, March 1980, page 18.

For further information on the FRG7 contact Bail Electronics, 38 Faithful Street, Wangaratta 3677. Ph. (057) 21 6260 or any of their authorised distributors. ■

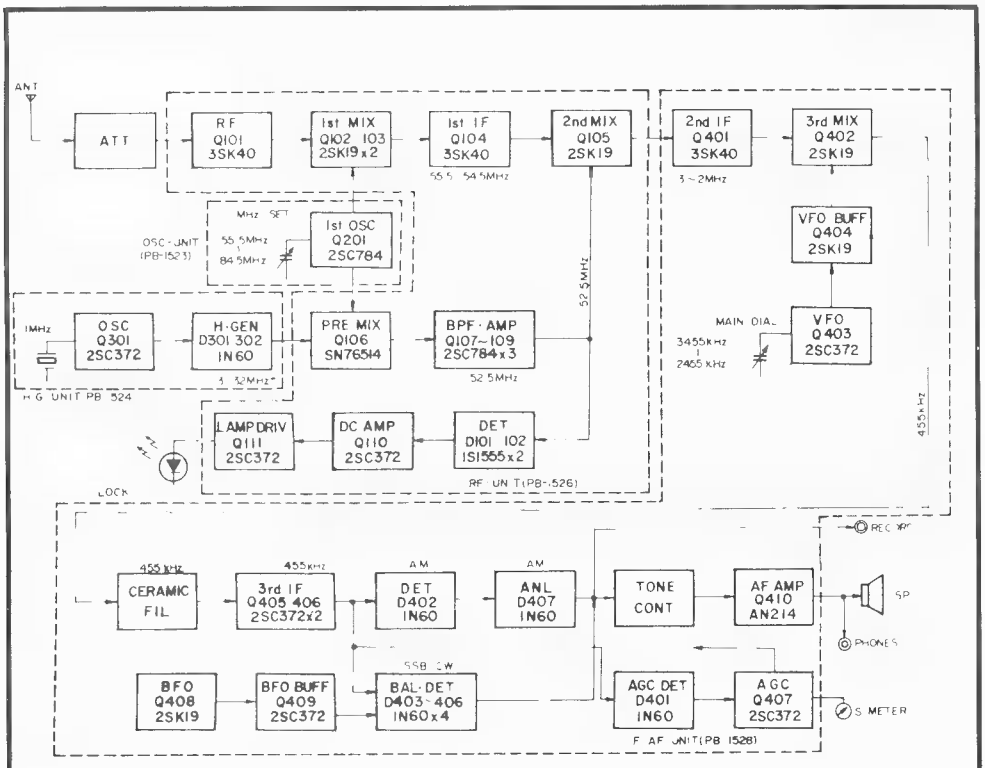


FIGURE 1: Block diagram of the FRG7.

MORSE EXAMS

Candidates for morse exams are specially reminded that the morse sending or receiving of letters is not adequate in itself. There is a space of 7 dots between words and this has to be observed so that whatever is sent or written down should be in understandable composition English. Thus, to omit a space between two words is one error. Many errors could be recorded against you if, for example, in receiving morse, you write down a string of letters not separated into discrete words. This reminder is given to dispel any rumours to the contrary and to alert candidates to the official requirements. ■