

E. F. JOHNSON COMPANY

Viking Valiant Information Bulletin #1

This information bulletin has been issued to provide Viking Valiant transmitter owners with complete information regarding changes or modifications which have been made in the equipment up to the present date. This is in line with the well accepted Johnson policy of updating equipments in the field by keeping customers informed.

The modifications to be described are not of major nature but have been made to improve general adjustment, operation or to eliminate difficulties which show up in occasional units. All parts are readily available from local radio parts jobbers so no modification kit will be available.

It is recommended that modifications not be made unless specific difficulties have been experienced.

R36 Infrequently, units with higher than average gain tubes may exhibit signs of feedback. The plate load resistor of V14, R36, has been reduced to 4.7 K, 1/2 W, from 10K, 1/2 W to reduce overall audio gain. In some cases where poor microphone cable shielding or RF grounding of the transmitter exists, a tube shield placed over V12 or V15 will eliminate RF feedback.

R11 - R65 - R66 R11 is changed to 100 K 1/2 W from 33 K 1/2 W in the grid of the 6CL6. R65 and R66 are 1 meg ohm 1/2 W resistors. They are connected from terminal 10 of SW2, R65 to terminal 1 of SW2 and R66 to terminal 2 of SW2. These changes improved keying when crystals are used.

R9 and R60 Some reports of falling grid drive have been received. Changing R9 to 1 W and R60 to 2 W ratings helps this problem.

R64 (added component) In a very few cases, C40 and C53 in conjunction with wiring inductance become broadly resonant near the 40 meter band as evidenced by an odd tuning characteristic. R64, 56 ohm, 1/2 W., has been added at the 6146 amplifier screens to "de Q" this circuit as follows:

The red-white lead connected to the center connection of the leads to pins 3 of V5, V6 and V7 was removed and connected to terminal 4 (vacant terminal) of terminal strip TS12, the nearby terminal strip. R64 was connected between terminal 4 of TS12 and the center connection point of pins 3 of V5, V6 and V7.

C-105 (added component) C105 a 50 mmfd. 500 volt mica capacitor is connected from terminal 4 of TS12 to the ground lug nearest terminal 7 of TS12.

MODULATOR-FINAL AMPLIFIER BIAS

The common bias resistor, R22 which used separate taps for modulator and final amplifier bias has been changed to separate bias legs as shown in the new schematic. This eliminates interaction between final grid current and static modulator plate current. Potentiometers are used to facilitate making the bias adjustments.

The 50 watt bias resistor, R22, is removed and two 3/8" holes drilled in the area where R22 was located (see drilling sketch on back of schematic) for the mounting of the bias potentiometers, R61 and R62. R61 is a 5 K, 2 W unit (Ohmite type AB, CU5021, or equivalent) and R62 is a 5 K, 4 W unit (Mallory M5MPK or equivalent). The potentiometers should be mounted using double nuts so that the shafts project through the chassis a minimum amount in order to avoid their striking the cabinet. The potentiometer orientation and wiring is shown pictorially on the back of the schematic.

After modification, adjust R62 so that -52 V.D.C. to ground is measured at the center arm of R62 with FIL switch on with no drive to final (switch Oscillator to vacant crystal position). This completes the RF amplifier bias adjustment.

The modulator bias is adjusted by first turning R61 fully counter-clockwise. Tune and load the transmitter in the AM position to 330 ma plate current with 8 ma grid drive. Audio gain setting should be "O". Adjust R61 for 40 ma static plate current on the modulator which completes this adjustment.

It should be noted that the above modification does not improve the performance of the equipment but merely facilitates bias adjustments and eliminates the interaction that appears to worry some operators. Since there is no difference in power output or quality of emitted signal with grid current as low as 5 ma (8 ma nominal) a simple procedure (leaving the bias circuitry in the original form) is to adjust the static modulator current to 40 ma with 8 ma grid current and 330 ma plate current. If the grid current is then permitted to drop, there should be no concern as long as the grid current is above 5 ma and the static modulator current does not exceed 80 ma.

FINAL AMPLIFIER PLATE CURRENT READING

The "PLATE" meter switch position reads total cathode current of the 6146 output stage and is designated "PLATE" because it is used to determine plate circuit loading. In the AM mode the meter also reads the voltage regulator current (V9 and V10) of approximately 30 ma. It is permissible to load in AM mode to a meter reading of 360 ma rather than the 330 ma normally specified. This will result in approximately 20 watts more power input.

The VR tube wiring has been changed so that the regulator current will not be read on the meter. To make this change, remove the wire from pin 2 of XV9 (socket of V9) to ground lug of XV9. Remove the black wire from pin 2 of XV9 and connect it to the ground lug of XV9. Connect a wire from pin 2 of XV9 to the rearmost terminal of terminal strip TS12 (TS12 mounts R18 and R17, to right of 6146 tube sockets, Figure 3, Operating Manual). After this modification, load transmitter to 330 ma on AM.

VALIANT AS AUDIO DRIVER

To remove B+ from the secondary of the modulation transformer when the Valiant is used as an audio driver, disconnect the red lead of T3, modulation transformer, from terminal 3 of TS25 (TS25 is the terminal strip directly to the right of XV16, Figure 3, Operating Manual). Connect the red lead to empty terminal 4 of TS25. Train a wire along the wiring harness and connect it from terminal 4 of TS25 to terminal 2 of TS18. TS18 is the four terminal strip adjacent to the coaxial output connector, J6, and terminal 2 is the third terminal inward from the chassis flange.

After this modification, the Valiant may be used as a transmitter in normal manner without change in the jumper plug, P8.

FUSE F1

Fuse F1 has been changed to 1.6 ampere Slo-Blo from 1.5 ampere.

KEY CLICKS AND KEYING WAVEFORM

A few reports of key clicks, usually reported by very close local stations, seem to indicate that misadjustment of the clamper control tube may be the cause. In addition, some cases have been the result of driving high-powered amplifiers which use greater than cutoff bias and appreciably sharpen the Valiant keyed waveform with resultant key clicks.

Some operators adjust the key-up plate current to more than the recommended 10 ma in the belief that a higher current will soften the keying. This is not true as such adjustment tends to sharpen the keying. The preferred method of adjusting potentiometer R13, the clamper tube control, is to load the transmitter to 450 ma "PLATE" current with 8 ma grid current (CW mode) and then adjust R13 to the point just short of where R13 causes the plate current to decrease. Under key-up conditions there will now be no plate current reading.

If, after the above adjustment, close proximity to local stations or sharpening by a high-powered amplifier require softer keying, changing C89 to 0.5 mfd will result in very soft keying as increasing the value of C89 will round-off (soften) both the leading and trailing edges of the keyed waveform. High-powered amplifiers should be operated with no more than cutoff bias in order to prevent undesirable sharpening.

Remove R6 470 ohm, 1/2 watt resistor and C-87 .005 ceramic disc from pin 1 of XV3, 6CL6 socket and the terminal strip TS6. Replace with an insulated wire.

Remove 5 turns from L5 at the end farthest from the chassis.

Turn the slug in L17 counter-clockwise until it is all the way out.

Dress plate lead from L5 directly over socket to pin 6 of 6CL6.

Adjust slug in L5 to obtain adequate drive on 20 through 10 meters.

