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A Division of ECI (An NCR Subsidiary)

SIGNAL/ONE MODEL CX7

IMPORTANT INSTALLATION, ADJUSTMENT, AND OPERATING NOTES.....

It is extremely important that a few basic procedures and precautions be observed in order to derive from your new CX7 the high level of performance designed into it, as well as to avoid damage to the power amplifier. PLEASE READ THE FOLLOWING TWO PAGES CAREFULLY, as well as the applicable portions of the instruction manual, before operating.

USING THE CX7 WITH A SEPARATE LINEAR AMPLIFIER

SSB: The inherent transmit-receive switching speed of the CX7 is necessarily extremely fast in order to permit full CW break-in operation. Typical relays used in high powered amplifiers, however, require up to 10 milliseconds or more to close. During the closing period, an open-circuit load is reflected back to the CX7, resulting in very high momentary peak voltages which can damage the power amplifier or even the interconnecting coaxial cable fittings.

To avoid this problem in the CX7 during SSB (and AM) operation, a time delay of 10 milliseconds is introduced on the build-up of RF output after switching to "TRANSMIT" manually or by PTT or VOX operation. It is extremely important that the CX7 not be operated in the BROADBAND P.A. mode with a separate amplifier until it is determined that the amplifier's changeover relays complete closing within 10-12 ms. A monitor scope in the CX7 RF OUTPUT line will indicate existence of an excessively slow P.A. relay as follows: while feeding into the MIKE jack an audio tone sufficient to yield full transmitter output (or by whistling continuously into the mike), operate either the PTT switch on the mike or the CX7 manual TRANSMIT push-button. If the leading edge of the RF envelope appears smooth and slightly rounded, no problem exists. If a short "spike" appears, the amplifier relay is excessively slow and you should contact SIGNAL/ONE Customer Service for information on how to correct the problem.

CW: The CX7 operates full break-in on CW, with envelope rise and fall times on the order of 2-3 milliseconds. Any accompanying power amplifier must complete its internal relay closure within this period (which is generally impossible except for carefully selected vacuum-type relays), must be used with an electronic "T/R" switch, or must be manually switched before operating the key (as with a foot switch, for example).

"It Speaks for Itself"

ADJUSTMENT OF "CLIPPING" AND "OUTPUT" CONTROLS

CLIPPING: With the OUTPUT control full CCW (minimum) and the CLIPPING meter button depressed, adjust the CLIPPING control until the meter just deflects off "0" on peaks while speaking in a normal voice. This set-up corresponds to approximately 5-10 db of RF clipping, which is appropriate for most operation under medium to strong signal conditions. To minimize background noise, it is highly desirable to use a good cardiod mike (such as the EV 664 or 674 or SHURE 545) and to close-talk it. Under difficult conditions, transmitting effectiveness may be enhanced by increasing the CLIPPING control until the meter swings to half scale on occasional peaks. The use of more clipping than is required under any given circuit conditions will increase audio distortion, rather than intelligibility, at the receiver. For any given microphone and operator's voice, the setting of the CLIPPING control is quite consistent and non-critical, so that the knob setting for various degrees of clipping may be once noted and then adjusted as required thereafter, without need to monitor the meter CLIPPING indication.

OUTPUT: With the CLIPPING control set for 5-10 db normal clipping as described above, the OUTPUT control should be advanced (with the DRIVE meter button depressed) until the meter just deflects off "0" on peaks. It should not swing higher than "1" on the upper meter scale under any conditions, and no benefit can ever be derived (except excessive background noise) by doing so. When EXTERNAL ALC is fed back from a separate power amplifier into the CX7, the OUTPUT control should be turned only to the point of slight meter deflection described above with the linear in operation.

METER INDICATIONS UNDER NORMAL CX7 OPERATION

TUNE CONDITIONS: To determine if load SWR is sufficiently low to permit safe and efficient BROADBAND operation of the CX7 P.A., depress REV PWR push button and slowly increase OUTPUT control until meter indicates S-3 or fails to increase further with increased OUTPUT setting. Push FWD PWR button. If meter reads S-9 or greater (for REV PWR at or below S-3), BROADBAND operation will not damage the CX7. NEVER OPERATE THE CX7 IN THE BROADBAND P.A. POSITION IF THE RATIO OF FWD PWR READING TO REV PWR READING IS LESS THAN 3:1!

At full power output in TUNE, normal meter readings are:

CLIPPING: 0. (Deflects in 0 to S-9 range on peaks when transmitting voice, depending on CLIPPING setting).
DRIVE: 0 to S-3 (S-1 maximum on voice peaks).
PLATE: 2 to 3 (upper scale). (1.5 - 2.0 on voice peaks).
SCREEN: 0.5 to 2.0 (upper scale). (0 to 1.0 on voice peaks).
FWD PWR and REV PWR: See preceding paragraph.