

## 1.7.3 KX 155A VOR CONVERTER AND INDICATOR REQUIREMENTS

- A. The indicator shall meet all applicable requirements of TSO C40c.
- B. The bearing error shall be less than  $2.5^\circ$  with a 95% probability under all environmental conditions listed in RTCA Paper DO-196, Minimum Performance Standards -- Airborne VOR Receiving Equipment, Paragraph 2.1, sub-paragraph 2.1.2, Bearing Accuracy.

**NOTE**

For older converters/indicators, the Bearing Error shall be less than  $2.7^\circ$  with a 95% probability under all environmental conditions listed in RTCA Paper DO-114, MINIMUM PERFORMANCE STANDARDS -- AIRBORNE VOR RECEIVING EQUIPMENT, Paragraph 2.1, Sub-paragraph B, BEARING ACCURACY.

- C. The course deviation pointer shall visibly deflect at least  $\pm 1/2$  inch (for DO-196) or  $3/8$  inch (for DO-114) along its scale when the input current is changed from zero to  $\pm 150 \mu\text{A}$ .
- D. Deflection Linearity  
The deflection shall be proportional to the change in phase between the two components of the standard VOR test signal, within 20% of the deflection produced by a  $10^\circ$  ( $\pm 150 \mu\text{A}$ ) change in phase. This requirement shall be met at all deflections produced when the phase difference is varied from plus  $10^\circ$  to minus  $10^\circ$  of that producing an "on course" indication.

The pointer deflection shall not decrease as the phase difference is increased from producing an "on course" indication to that producing an indication which is equivalent to  $\pm 80^\circ$  from "on course".

- E. Deflection Response  
When the difference in phase between the two components of an "on course" standard VOR test signal is abruptly changed, the pointer shall reach 70% of its ultimate position within 3 seconds and the pointer overshoot shall not exceed 20%.
- F. The input impedance of the indicator for both the bearing error and warning signal shall be  $1 \text{ K}\Omega \pm 5\%$ .
- G. A warning signal input current of  $125 \mu\text{A}$  or less shall produce a fully visible warning flag. A warning signal input current of  $266 \mu\text{A}$  or greater shall produce a fully concealed warning flag.
- H. The input impedance of the TO/FROM indicator shall be  $200 \Omega$ s  $\pm 200 \mu\text{A}$  sensitivity.

## 1.7.4 KX 165A VOR INDICATOR REQUIREMENTS

- A. The indicator shall meet all applicable requirements of TSO C40c.
- B. The bearing error shall be less than  $1.9^\circ$  with 95% probability under all environmental conditions listed in RTCA Paper DO-196, Minimum Performance Standards -- Airborne VOR Receiving Equipment, Paragraph 2.1, sub-paragraph 2.2.1, Bearing Accuracy.

## NOTE

For older indicators, the Bearing Error shall be less than 2.7° with a 95% probability under all environmental conditions listed in RTCA Paper DO-114, MINIMUM PERFORMANCE STANDARDS -- AIRBORNE VOR RECEIVING EQUIPMENT, Paragraph 2.1, Sub-paragraph B, BEARING ACCURACY.

- C. The course deviation pointer shall visibly deflect at least  $\approx 1/2$  inch (for DO-196) 3/8 inch (for DO-114) along its scale when the input current is changed from zero to  $\pm 150 \mu\text{A}$ .
- D. Deflection Linearity  
The deflection shall be proportional to the change in phase between the two components of the standard VOR test signal, within 20% of the deflection produced by a 10° ( $\pm 150 \mu\text{A}$ ) change in phase. This requirement shall be met at all deflections produced when the phase difference is varied from plus 10° to minus 10° of that producing an "on course" indication.  
The pointer deflection shall not decrease as the phase difference is increased from the producing an "on course" indication to that producing an indication which is equivalent to  $\pm 80^\circ$  from "on course".
- E. Deflection Response  
When the difference in phase between the two components of an "on course" standard VOR test signal is abruptly changed, the pointer shall reach 70% of its ultimate position within 3 seconds and the pointer overshoot shall not exceed 20%.
- F. The input impedance of the indicator for both the bearing error and warning signal shall be  $1 \text{ K}\Omega \pm 5\%$ .
- G. A warning signal input current of  $50 \mu\text{A}$  or less shall produce a fully visible warning flag. A warning signal input current of  $350 \mu\text{A}$  or greater shall produce a fully concealed warning flag.
- H. The input impedance of the TO/FROM indicator shall be  $200 \Omega \pm 200 \mu\text{A}$  sensitivity.

## 1.7.5 KX 165A LOCALIZER INDICATOR REQUIREMENTS

- A. The indicator shall meet all applicable requirements of C36e.
- B. The localizer centering current to be  $0 \pm 3.2 \mu\text{A}$  with a 95% probability under all environmental conditions listed in RTCA DO-195, Minimum Performance Standards -- Airborne ILS Localizer Receiving Equipment, Paragraph 2.2.1, sub-paragraph B, Centering Accuracy.
- C. The course deviation pointer shall visibly deflect at least  $\pm 3/8$  inch along its scale when the input current is changed from zero to  $\pm 90 \mu\text{A}$ .
- D. Deflection linearity over the range from zero to  $\pm 90 \mu\text{A}$  shall be within 10% of being proportional to the difference in depth of modulation of the 90 and 150 Hz signals, or the deflection shall be within 5% of standard deflection ( $\pm 90 \mu\text{A}$ ) of being proportional to the difference in depth of modulation, whichever is greater.  
Additionally, as the difference in depth of modulation is increased beyond that producing full scale deflection ( $\pm 150 \mu\text{A}$ ) to a value of 0.4 ddm, the course deviation pointer deflection shall not decrease.