CS-360(D)

Operator's Manual

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SECTION I

General Information and Technical Summary

1-1. Description.

1-2. The CS-360(D) is a VOR Bearing check device designed to measure the accuracy of VOR generators. No other equipment is required to measure VOR bearing accuracy at the RF output port of any generator.

1-3. The CS-360(D) allows bearing checks using either a VOR composite RF signal modulated to 30% ±2% each tone (30 Hz and 9960 Hz), at a level of at least -25 dBm or a VOR composite audio signal of at least 0.5 Vrms on both the 30 Hz and 9960 Hz tones.

1-4. Four cardinal VOR bearing (0, 90, 180 and 270 degrees) may be checked with the CS-360(D) to an accuracy of ±.05 degrees theoretical absolute.

1-5. The model CS-360 bearing error information is displayed on a large, easy to read meter, calibrated in .02 degree increments. Full scale deflection represents ±0.5 degree bearing error.

1-6. The model CS-360D bearing error information is displayed on a 3½ Digit panel meter, calibrated in .001° increments. Full scale indication is approximately ±1°, and is calibrated to indicate up to ±0.7° Bearing error.

1-7. Power requirement is 105 to 120 VAC, 60 Hz, 10 watts.

1-8. Recalibration interval is 6 months.

SECTION II

Operating Procedures

2-1. Introduction.

2-2. The CS-360(D) is a precision device, designed to be used for periodic verification of the accuracy of your VOR generator. It should be handled and operated with care. It should be stored in a clean, dry environment that affords as much temperature stability as possible. Avoid rough handling. Return the unit to the factory for semi-annual recalibration.

2-3. When measuring VOR generator accuracy with the CS-360(D) ident. tones must never be present.

2-4. Equipment Set-up: Connect the CS-360(D) to a 105-120 V AC 60 Hz line using the power cord supplied. Rotate the AC OFF-LEVEL knob clockwise to turn the set on. Allow at least 15 minutes warm-up time after turning the set on before starting measurements. Connect the precision 50 ohm cable supplied with unit to the input connector of the CS-360(D), and the output connector of the VOR generator.

2-5. RF Input Measurements.

2-6. Initial Control Settings:

A. RF - Audio Switch to RF
B. RF Level - TO/FROM switch to RF level
C. 90° - 0° switch to 90°
D. Operate - Zero switch to Operate
E. Generator bearing control to 90 degrees; no ident tones.
F. Generator TO/FROM switch to FROM.

2-7. RF Level. Adjust the generator output attenuator to approximately -25 dBm (12, 600 μV). Select a generator frequency between 108 and 118 MHz. Adjust the generator output attenuator while observing the Set Gain - TO/FROM meter. Adjust the output attenuator until the meter pointer is aligned with the right hand (yellow) Set Gain Mark. (Do not attempt to use the Level Control at adjust RF Gain). Select TO/FROM with the RF Level - TO/FROM switch.

2-8. System Zero. Place the Operate-Zero switch in the Zero position and allow approximately 30 seconds for the system to stabilize. Adjust the Zero control while observing the Bearing Meter. Adjust the zero control to accurately set the indicator for a 0 indication. THE SYSTEM ZERO SHOULD BE CHECKED FREQUENTLY WHILE MAKING MEASUREMENTS, AND MUST BE RESET WITH EVERY CHANGE IN GENERATOR OUTPUT LEVEL. THE LEVEL CONTROL MUST BE ADJUSTED PRIOR TO THE ZEROING OPERATION. Proceed immediately to Bearing Measurement. NOTE: IT IS ONLY NECESSARY TO ZERO THE METER AT 0° FROM OR 90° FROM. DO NOT SET ZERO AT ANY OTHER BEARING.

2-9. 0° Bearing Measurement. Place the Operate-Zero switch in the Operate position and allow approximately 30 seconds for the system to stabilize before reading the generator bearing error on the Bearing meter. Record the reading in the generator technical measurements log. Proceed immediately to TO/FROM Indication test.

2-10. TO/FROM Indication. With the generator VOR bearing control in the 0 degree position and the generator TO/FROM selector in the TO position, note that the CS-360(D) meter indicates in the TO (blue) area of the scale. Selecting FROM on the generator selector should cause the CS-360(D) pointer to move to the FROM (yellow) area of the scale.

2-11. 0° Reciprocal Bearing Measurement. Place the Operate/Zero switch in Operate position. With the generator VOR bearing selector in the 0 degree position, the generator TO/FROM switch in the FROM position, and the CS-360(D) 90°-0° switch in the 0° position, allow approximately 30 seconds for the system to stabilize and read the bearing error on the Bearing indicator.

2-12. 180° Bearing Measurement. Select 180 degrees on the generator VOR bearing selector, set the generator TO/FROM switch to TO. Read the 180 degree bearing error using the procedure specified in paragraph 2-9. The reading should agree with that taken in paragraph 2-11.

2-13. 180° Reciprocal Bearing Measurement. Place the generator TO/FROM switch in the FROM position, with the generator VOR bearing selector in the 180 degree position, read the 180 degree reciprocal bearing error as outlined in paragraph 2-11. The reading should agree with that taken in paragraph 2-9.

2-14. 90° and 90° Reciprocal Bearing Measurements. Place the 90° - 0° switch in the 90° position. Repeat the procedure outlined in Section 2-9 through 2-11, with the generator VOR bearing selector set on 90 degrees.

2-15. 270° and 270° Reciprocal Bearing Measurements. Select 270 degrees on the generator VOR bearing selector and repeat the procedure outlined in paragraphs 2-12 and 2-13.

2-16. Audio Input Measurement. Connect the precision 50 ohm cable supplied with a unit between the input connector of the CS-360(D) and the Demod output of the RF unit or the output connector of the modulator unit to be tested.

2-17. Initial Control Settings.

A. RF - Audio Switch to Audio
B. RF Level - TO/FROM switch TO/FROM
C. 90° - 0° switch to 0°
D. Operate - Zero switch to Operate
E. Generator Bearing control to 0 degrees, no ident tones.
F. Generator TO/FROM switch to FROM

2-18. Audio Level. Adjust the Audio Level control while observing the Set Gain - TO/FROM meter. Adjust the Level control until the meter pointer is aligned with the right hand (yellow) Set Gain Mark.

2-19. System Zero. The System Zero step is conducted as outlined in paragraph 2-8.

2-20. Bearing Measurements. All bearing error measurements are made in the same manner as outlined in paragraphs 2-9 through 2-15, except that no RF Bearing error correction is required.

2-21. Input Level - System Zero Interaction. Note that with RF input and the RF Level - TO/FROM switch in the RF Level position, the meter pointer will move to the FROM (Yellow) Set Gain mark, regardless of the TO/FROM - Bearing relationship of the System. However with Audio input, since the RF Level - TO/FROM switch is in the TO/FROM position, the pointer will move in the appropriate direction. The Set Gain Mark (FROM) must be used to set Audio Level.