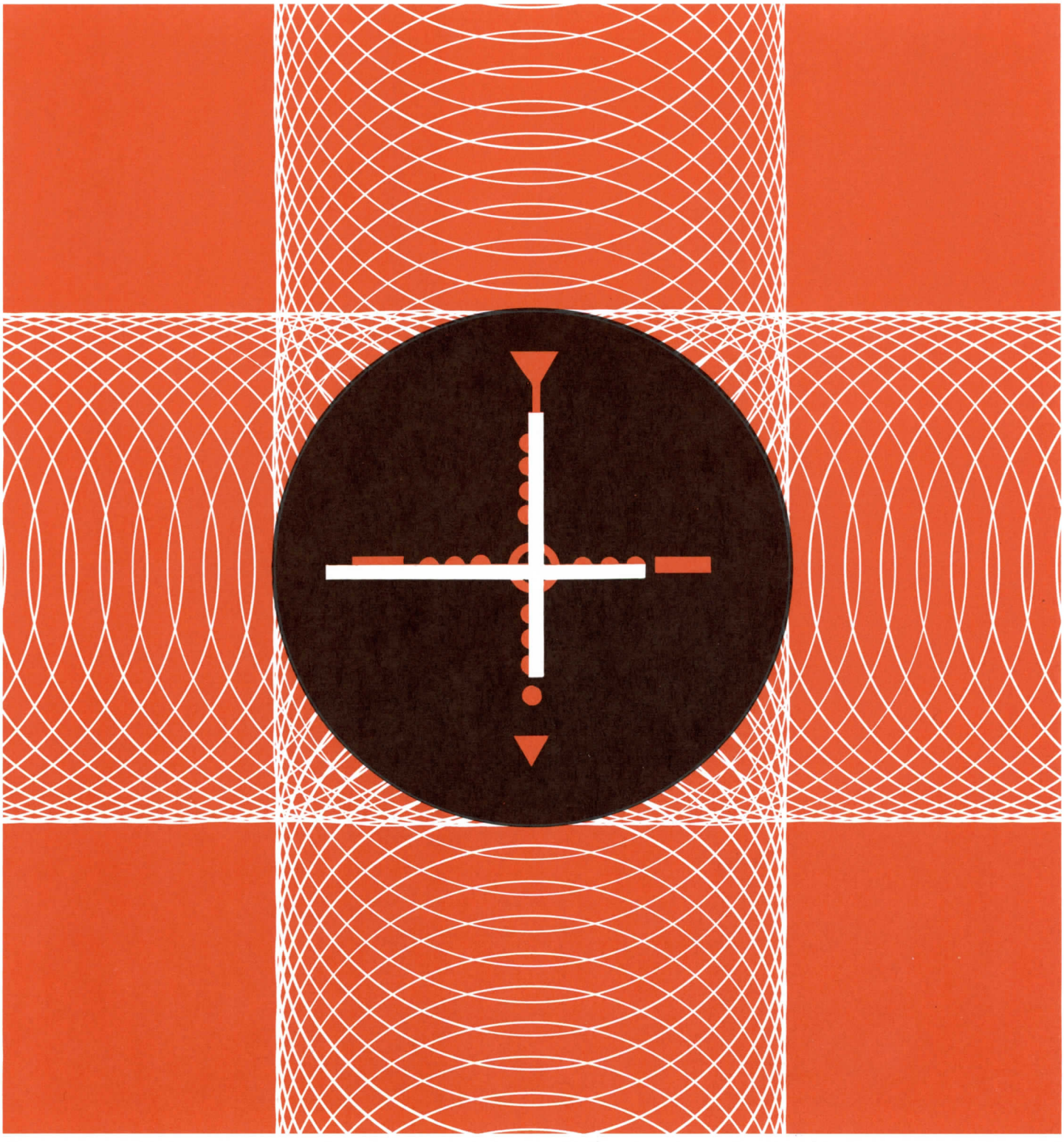
Collins 51R-7A,-8A

VHF NAV/COMM Receivers



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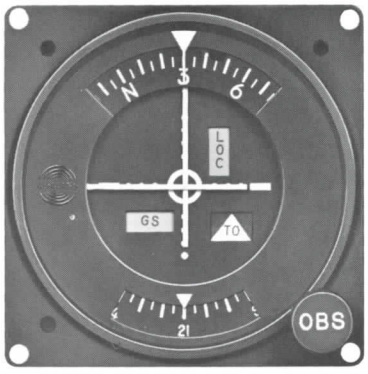


331H-3G Course Selector Indicator

332C-4 RMI

331A-3G Course Indicator

Collins 51R-7A is a VHF navigation and communication receiver. The 51R-8A includes all of the characteristics of the 51R-7A, plus the added feature of automatic VOR station bearing and RMI compass card servo amplifier.

All the essential features contributing to ruggedness, dependability and accuracy found in Collins airline systems are retained in the Collins 51R-7A, -8A receivers. Solid state construction results in a significant reduction in size, weight and power consumption.

Fifty kHz channel spacing provides 200 navigation channels from 108.0-117.95 MHz and 180 communication channels from 118.0-126.95 MHz. A two-out-of-five binary selector system allows the receivers to be paralleled from a common control.

Form Factor

The form factors of both the 51R-7A and 51R-8A were determined after extensive analysis of the space availability in present and planned aircraft. This allows equipment to be installed in space formerly too small for standard size equipment.

Compact Size

The functions of a power supply, VOR/LOC navigation receiver, VOR/LOC instrumentation unit and VHF communication receiver are combined in each 51R-7A and 51R-8A.

VOR Self-Test

Both the 51R-7A and 51R-8A have a built-in VOR self-test. The VOR test permits an inflight check of the components of the VOR system.

Extended Reliability

Absence of tubes and utilization of solid state devices provide a substantial increase in reliability over that of conventional radios.

Low Power Comsumption

Solid state design of the 51R-7A requires only 0.80 amp at 27.5 v dc, or 1.0 amp at 27.5 v dc for the 51R-8A. In the event of generator failure, the receiver can be operated by battery for extended periods. Because of low power consumption, heat dissipation problems are negligible.

Ease of Installation

A receiver is mounted in a simple tray which fastens directly to the airframe with four screws. This can be installed in any attitude. If necessary, either receiver can be reversed in the mount so that the connectors are at the rear. Front connectors allow direct wiring and preformed cable assemblies. No junction box is required. Although these receivers are normally rigid mounted, isolators for shockmounting are available for helicopter installations.

Maintenance Ease

Removal of the dust cover exposes all adjustment points, grouped together at the rear of the radio. Plug-in transistors and point-to-point wiring facilitate replacement of any component.

Multiple Load Capability

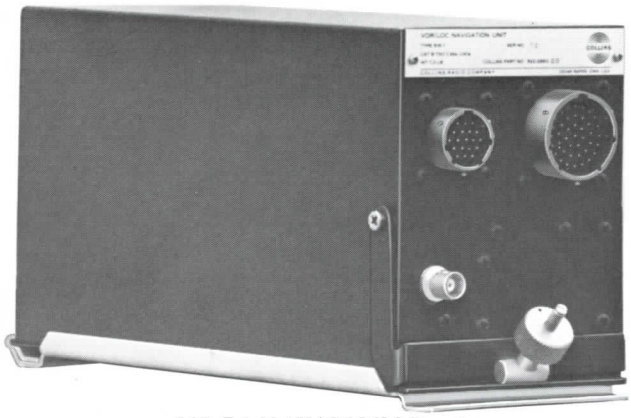
Output of the 51R-7A is adequate to drive two to-from pointers, five cross-pointers and five warning flags. This capability gives the pilot the option of using the 51R-7A to furnish information to pictorial navigation devices and autopilots in addition to the conventional indicator without degrading performance. The 51R-8A has the same outputs and loading capabilities plus RMI outputs to drive two pointers and an RMI servo amplifier output to drive one RMI compass card.

Instantaneous Channeling

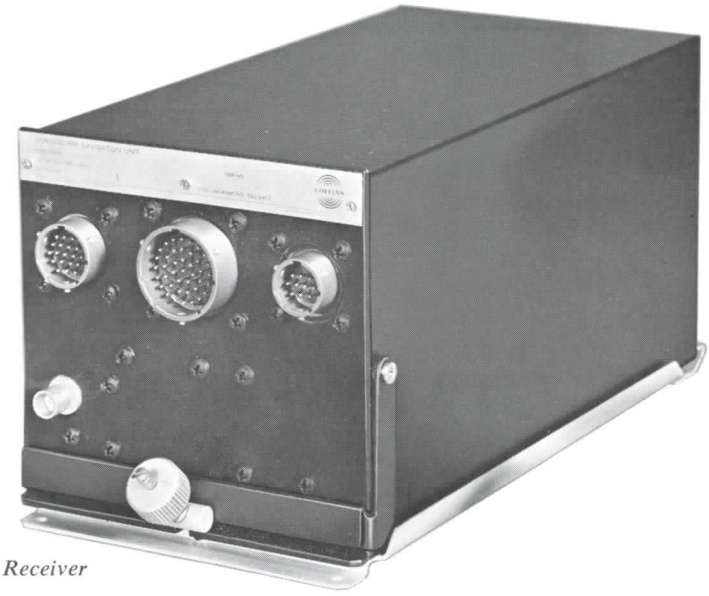
Solid state switching and varactor tuning provide instantaneous channeling.

Basic Instrumentation

Minimum equipment required for the basic instrumentation includes 51R-7A VOR/LOC Receiver, 51V-5 Glideslope Receiver, 137X-1 COMM/NAV Antenna, 37P-4 Glideslope Antenna, 331H-3G Course Selector Indicator and one of the 313N series controls.

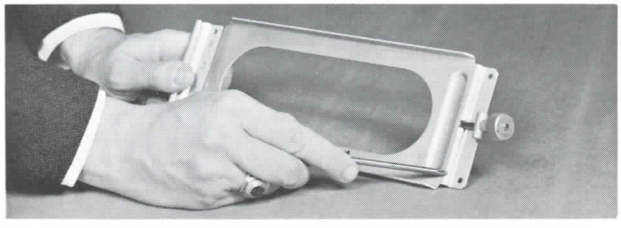


51R-7A NAV/COMM Receiver



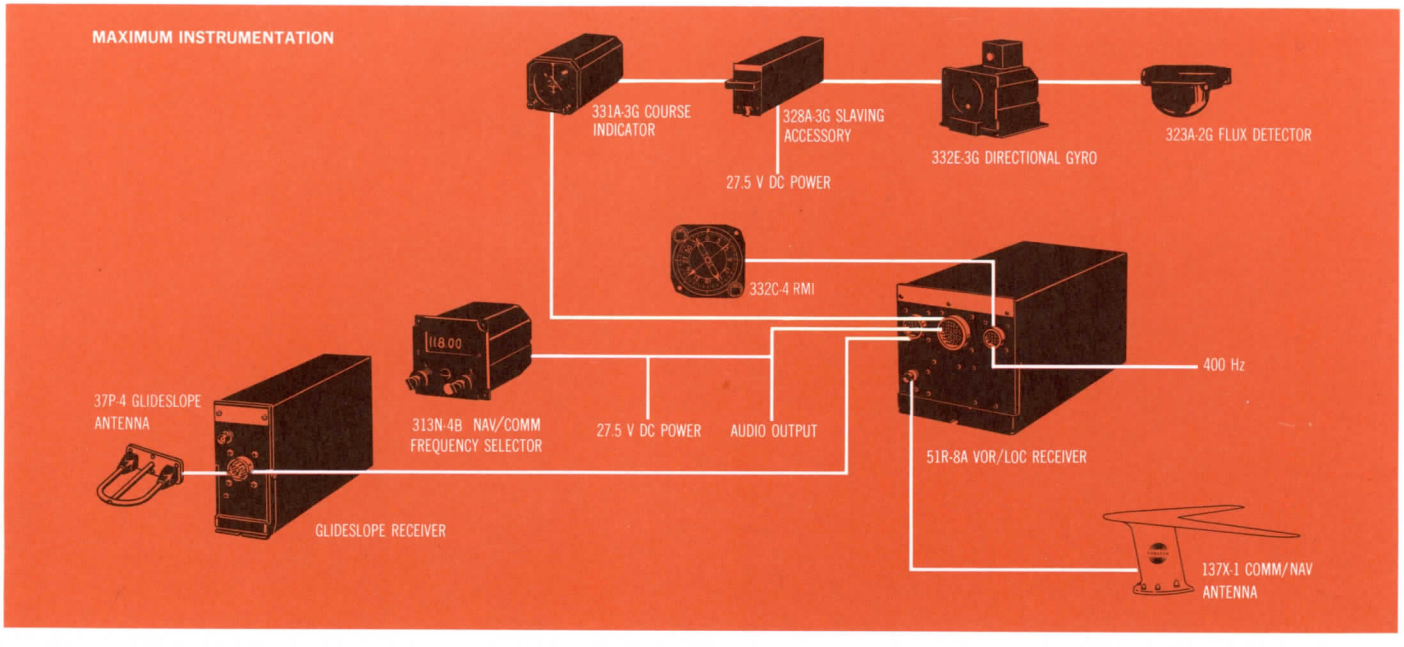
51R-8A NAV/COMM Receiver

313N series of controls
(313N-4B shown here)



Mounting Tray

MAXIMUM INSTRUMENTATION



Specifications

TSO COMPLIANCE:
Meets applicable portions of C36b, C38b and C40b.

FREQUENCY RANGE:
108.0-117.95 MHz with 50 kHz channel spacing for navigation; 118.0-126.95 MHz with 50 kHz channel spacing for communication.

VOR SENSITIVITY:
3 uv standard VOR test signal as defined in RTCA Paper 48-62/DO-114.

COMM SENSITIVITY:
At least 6 db S+N/N for 3 uv signal. (Standard test signal in series with 50 ohms.)

VOR ACCURACY:
Under standard conditions the manual bearing error does not exceed ±0.5°.

LOCALIZER ACCURACY:
Under standard conditions the localizer centering does not vary more than ±2.5 ua.

SPURIOUS RESPONSE:
All undesired responses including images at least 60 db down.

AGC CHARACTERISTICS:
Audio output does not vary more than 3 db with RF input from 5 uv to 50,000 uv.

NAVIGATION LOADS:
VOR deviation output — up to five 1000-ohm crosspointer movements. Localizer deviation output — up to five 1000-ohm crosspointer movements. VOR/LOC flag output — up to five 1000-ohm flag movements. VOR to-from output — up to two 200-ohm to-from movements. RMI outputs (51R-8A only) — up to two bearing pointers; one compass card drive.

AUDIO OUTPUT LEVEL:
300 mw into a 300-600 ohm load.

AUDIO RESPONSE:
VOR — 30-9960 Hz ±3 db; 1000 Hz reference.
COMM — 350-2500 Hz ±6 db; 1000 Hz reference.

AUDIO DISTORTION:
Not more than 5% with 30% modulation of 1000 Hz.

POWER REQUIREMENTS:
51R-7A — VOR Mode, 0.73 amp at 27.5 v dc; COMM Mode, 0.80 amp at 27.5 v dc. 51R-8A — VOR Mode, 0.91 amp at 27.5 v dc; COMM Mode, 1.0 amp at 27.5 v dc. For either mode, 6 va at 26 v ac with 0.386 power factor.

POWER SOURCE:
27.5 v dc +10%, −20% (negative lead grounded to chassis); 26 v, 400 Hz.

AMBIENT TEMPERATURE:
Continuous operation −55° C to +55° C. Short time operation (30 minutes) up to +71°C.

HUMIDITY:
Up to 95%.

ALTITUDE:
45,000 ft.

	SIZE			WEIGHT
	W	H	D	
51R-7A	*3¾" 9.53 cm*	*5" 12.7 cm*	*10" 25.4 cm*	*7.5 lbs., ±0.5 lbs. 3.4 kg, ±0.23 kg*
51R-8A	*5¼" 13.34 cm*	*5" 12.7 cm*	*10" 25.4 cm*	*10.9 lbs., ±0.5 lbs. 4.94 kg, ±0.23 kg*

Specifications subject to change without notice.

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