

COLLINS HF TRANSMITTER

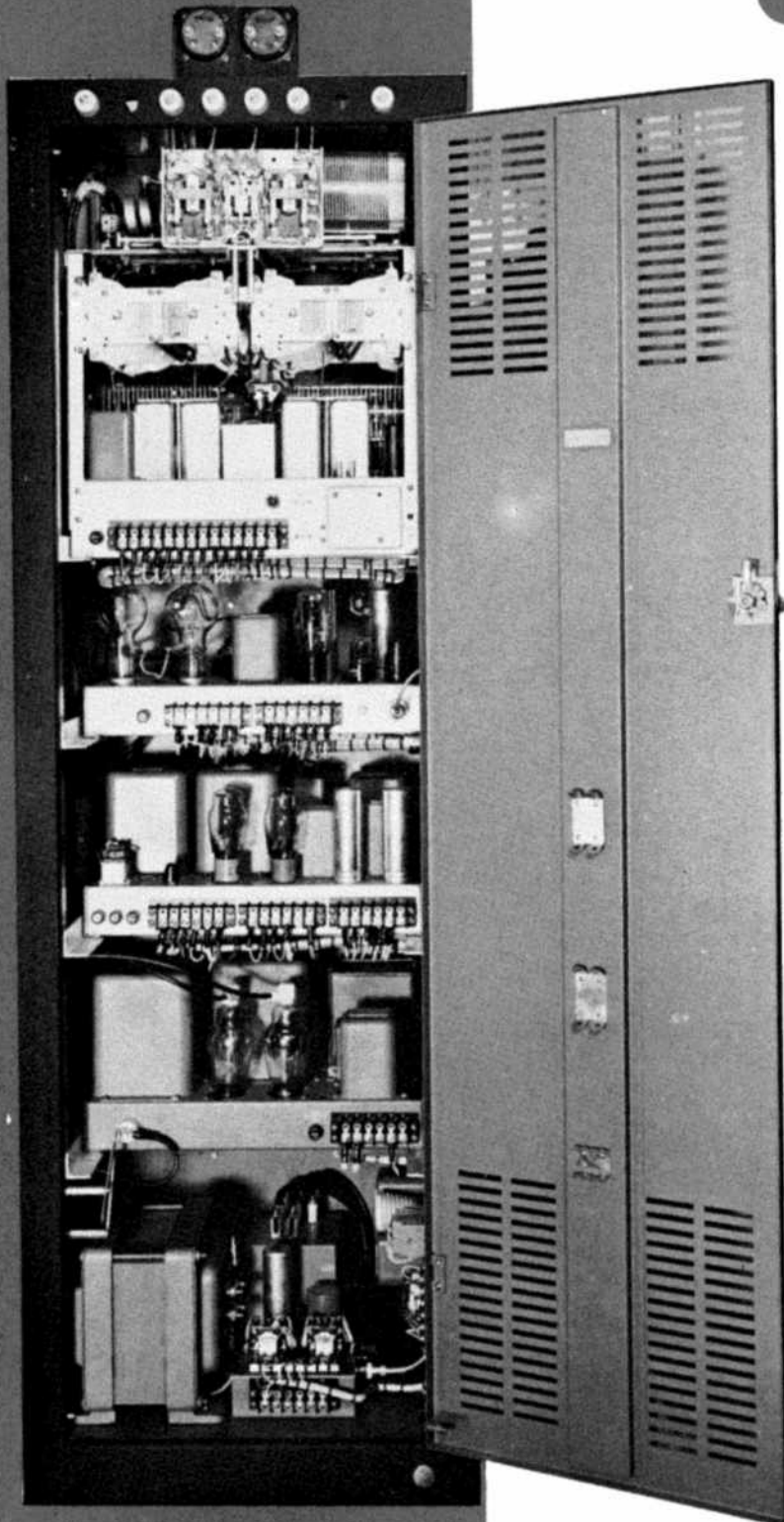
30K-5



CREATIVE LEADER IN COMMUNICATION

COLLINS HF TRANSMITTER

30K5



The Collins 30K ground station transmitter has two channels, each of which can be pretuned to any frequency between 2.0 mc and 30.0 mc. Quartz crystals are utilized for frequency control. The frequency stability is within .004% from 0° to +50°C. Channel switching is accomplished instantaneously by means of relays. The audio circuit is designed especially for voice communication. Components in the 30K are of highest quality, designed for extreme long life.

RF DESIGN

The highly stable oscillator circuit employs a type 6AG7 tube. An 807 serves as a buffer, doubler, and driver. An Eimac 4-125A high efficiency tetrode is used in the output stage. All RF stages have dual tank circuits, one for each frequency. Relays connect the desired tuning elements into the circuit.

Dual pi networks in the output stage are used for tuning the final amplifier and loading it into the antenna. Only two controls, designated TUNING and LOADING, are required for each network.

Relays make it possible to use the 30K on either one or two antennas.

Plug-in coils for RF stages provide maximum efficiency at all frequencies, with a saving of space and operating controls.

A relay keys the plate circuit of the crystal oscillator for cw operation. Keying speeds up to 80 WPM may be obtained.

ANTENNA MATCHING

The output networks will match an extremely wide range of single wire antenna impedances with excellent efficiency. At lower frequencies, and for antennas less than a quarter wave in length, provision is made for load coils which will assist in matching the antenna impedance.

Unbalanced antennas and single wire or concentric transmission lines can be matched directly.

Self-contained antenna changeover relays are provided to switch the antenna from the transmitter to the companion receivers.

AUDIO CIRCUITS

The audio frequency response of 150-2700 cycles per second is especially suited for voice communication.

300 WATTS OUTPUT FULL 2 - 30 MC FSK, REMOTE OPERATION

An audio peak clipping circuit is incorporated to improve the intelligibility when the atmospheric static level is high or when frequencies are congested.

The clipper permits an unusually high level of modulation. The peak power of vowel sounds is held at a low level; at the same time the consonant sounds, which provide intelligibility, are allowed to produce maximum power. The sideband power is greatly increased, but the clipper prevents overmodulation.

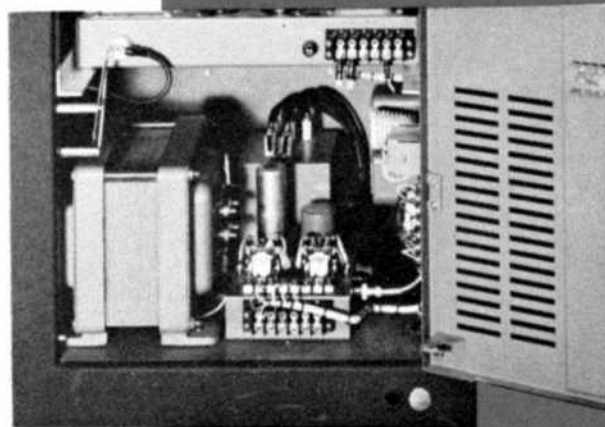
A low-pass audio filter follows the clipper, thus attenuating audio frequencies above 3000 cps. Amplitude distortion, with clipper and filter disconnected, is less than 10% at 100% modulation.

TRANSMITTER CONTROLS

- Filament ON-OFF switch
- Plate ON-OFF switch
- Phone—cw switch
- Audio gain control
- Filament voltage adjustment
- Low voltage—tune—operate switch
- Test key switch
- Channel selector switch
- Local—Remote switch
- Crystal Frequency—Channel 1
Channel 2
- 2—Oscillator Plate Tuning
- 2—Multiplier Plate Tuning
- 2—Power Amplifier Plate Tuning
- 2—antenna loading

TUBE LINE-UP

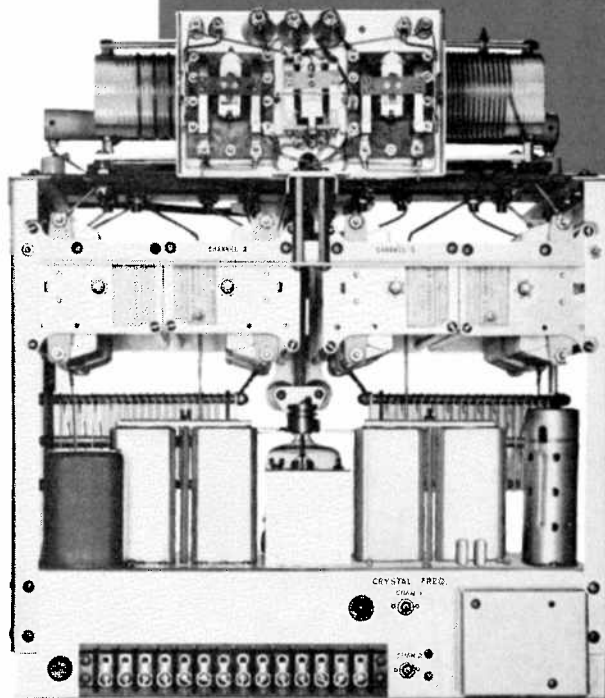
- 1—6AG7 oscillator
- 1—807 buffer-doubler
- 1—4-125A RF power amplifier
- 1—6SJ7 speech amplifier
- 1—6SN7 audio amplifier
- 1—6H6 speech clipper
- 1—6B4G modulator driver
- 2—75th class B modulators
- 1—5R4GY bias rectifier
- 1—5R4GY low voltage rectifier
- 2—866A high voltage rectifiers



Bottom section. All connections are brought to clearly marked terminal strips.



177L-2 Remote Control Unit



The entire RF section is removed as a unit for maintenance or servicing.

REMOTE OPERATION

When the length of cable from the operating position (microphone, push-to-talk switch, key, relay control) to the transmitter is 50 feet or less, no additional equipment is required.

A remote control unit, Collins type 177L-2, working in conjunction with the Collins type 175V-2 relay control unit (both available as accessories) placed in the bottom compartment of the 30K permits operating the transmitter from a distance greater than 50 feet. Functions of the remote unit are:

1. Filament ON-OFF
2. Plate ON-OFF
3. Keying
4. Microphone preamplifier
5. Channel selection
6. Emission selection
7. Push-to-talk

Output of the remote unit is fed to a standard telephone line. A db meter is incorporated so that the

operator can properly control the speech level. The complete interconnecting cable consists of two pairs of telephone lines and a ground. The resistance of any wire and ground return must not exceed 125 ohms. Line loss must not exceed 25 db. For standard No. 19 gauge telephone line, the remote line can be about 3 miles long. For No. 12 gauge telephone line, the remote line can be about 15 miles long.

METERS

Exciter grid current, PA grid current, PA plate current, modulator plate current, PA filament voltage, two RF ammeters.

FSK OPERATION

Accessory adapters are available for frequency shift keying of one or both channels.

Note: for continuous duty, additional cooling of the transmitter interior is required. To accomplish this, a fan kit is available for installation in the top of the cabinet. All mounting holes, etc., are already provided for this purpose.

SPECIFICATIONS

FREQUENCY RANGE:	2.0-30.0 mc.
NUMBER OF CHANNELS:	Two
FREQUENCY CONTROL:	Quartz crystals
FREQUENCY STABILITY:	.004% from 0° to +50°C.
POWER OUTPUT:	300 watts cw, 250 watts voice from 2 mc to 15 mc. 250 watts cw, 200 watts voice from 15 mc to 24 mc. 225 watts cw, 150 watts voice 24 to 30 mc.
AUDIO FREQUENCY RESPONSE:	Constant within 3 db from 150 to 2700 cps.
AUDIO FREQUENCY DISTORTION:	Less than 10% at either 400 or 1000 cps at 100% modulation (with clipper and filter inoperative).
AMBIENT TEMPERATURE RANGE:	0° to +50°C.
ALTITUDE FOR RATED VOLTAGE:	6000 feet.
WEIGHT:	385 pounds approx.
CABINET DIMENSIONS:	22" w, 16½" d, 66½" h.
POWER REQUIREMENTS:	Standby—160 watts on cw, 220 watts on phone. Operating—1000 watts on cw, 1350 watts on phone.
POWER SOURCE:	115 or 230 volt ±10% AC, 60 cps, single phase. On special order, transmitter can be operated from other supply voltages and 50 cps.

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