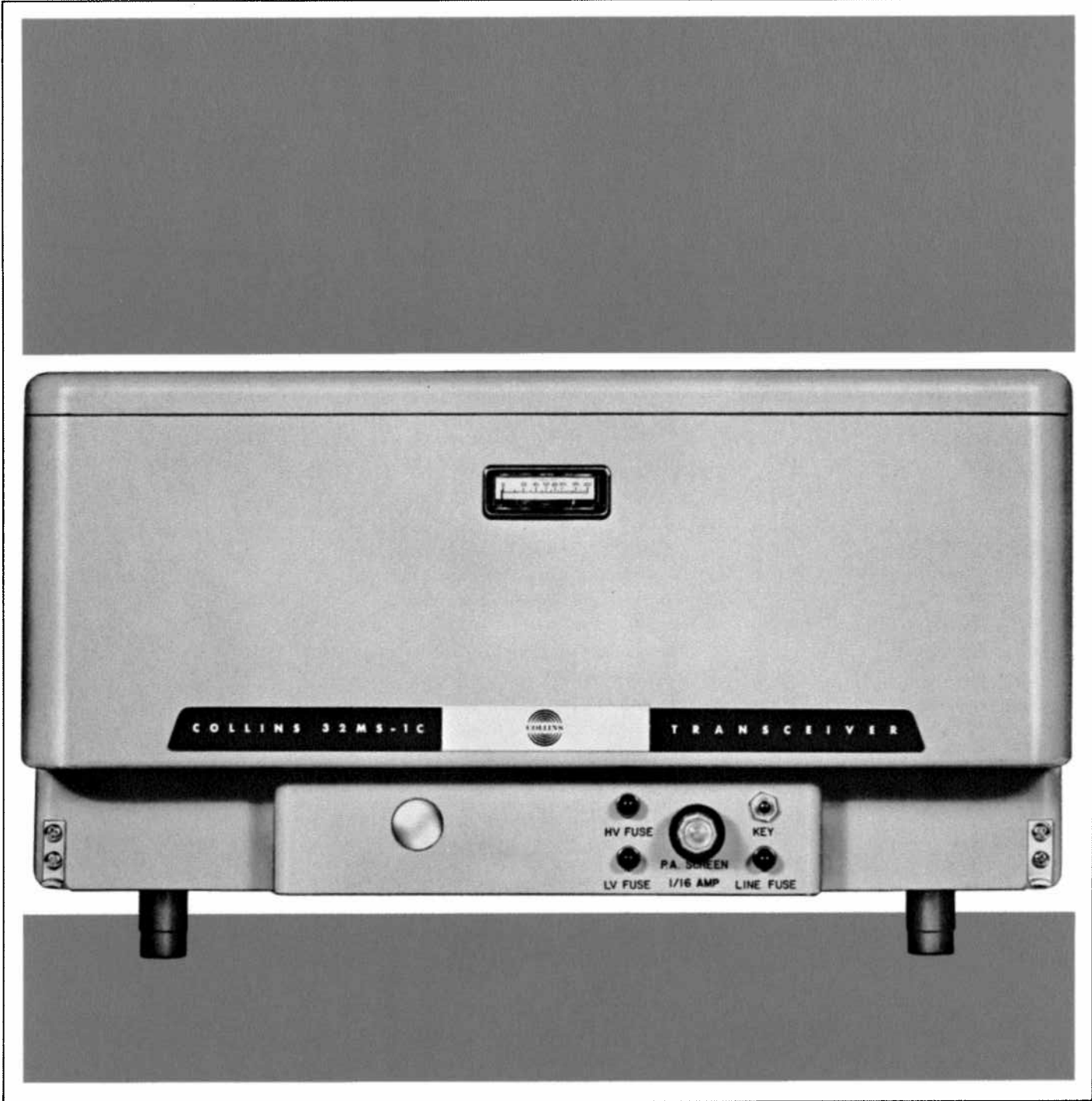


**Collins 32MS-1C**

**Mobile SSB Transceiver**



# Collins 32MS-1C Mobile SSB Transceiver

The 32MS-1C Mobile SSB transceiver offers the mobile operator increased communication capability and talking power with reduced bandwidth, improved speech intelligibility and lower primary power drain.

The 32MS-1C and its associated accessory equipment permit a choice of either single sideband (SSB) or compatible AM emission and reception on any of four preset frequencies in the 1.6-15.0 MHz range. All operating functions including channel selection are controlled by push-buttons on the separate control unit.

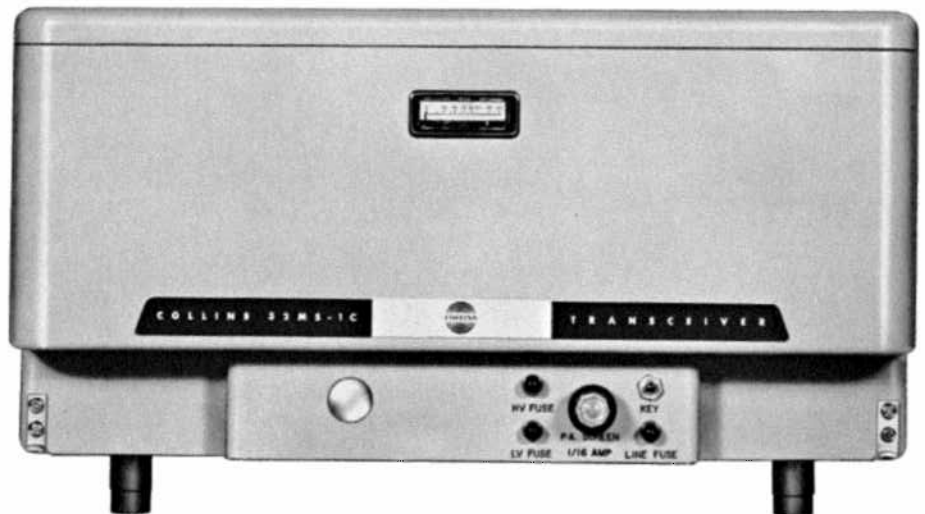
Collins Mechanical Filters are used in both the SSB and AM modes which greatly enhance selectivity characteristics of the transceiver.

The 32MS-1C 100 watt PEP SSB system offers greater effective talking power for a specific power consumption than standard AM equipment of 200 watt rating under normal operating conditions. In addition, lower susceptibility to selective fading, increased spectrum conservation and higher frequency stability are basic characteristics of SSB installations.

Plug-in power supplies provide for operation from either 12 v dc, 28 v dc, or 115/230 v ac, 50-400 Hz single phase power sources, and permit use of the 32MS-1C as the basic equipment for land or maritime mobile and fixed station use.

The 32MS-1C input audio circuitry includes a speech clipping circuit operating on both positive and negative peaks to provide increased effective modulation. The clipper threshold is  $-3$  dbm on AM and  $+8$  dbm on SSB. Both RF feedback and Automatic Load Control are used in the RF amplifier section to insure good linearity and reduced distortion.

The 32MS-1C is housed in a welded aluminum case. Cooling is by convection,



32MS-1C

with air entering through perforations in the bottom cover and flowing out through openings in the side of the cabinet. When the 32MS-1C is transmitting, a blower forces air directly on the PA tubes and effects general air circulation throughout the cabinet.

All tubes and controls for initial adjustments and tuning are easily reached by removing the top and bottom cover. The tune-up procedure is straightforward. All tuning adjustments are continuous, and the technician is not directly exposed to high voltage while maintaining the equipment.

High stability frequency generation circuits are common to the transmitter and receiver sections to simplify overall circuitry and operation and to insure transmission and reception of signals on identical frequencies.

The transceiver, control unit, antenna tuner and associated antenna comprise an easily installed system. All system electrical interconnections are made by plugs or cable connectors.

*The 48B-2SW Control features pushbutton mode and channel selection. It has an integral solid state amplifier and speaker for receiver monitoring.*



## Accessories

### 180V-2 ANTENNA COUPLER

The 180V-2 is a preset, automatically switched, four channel tuner for coupling the 32MS-1C to an antenna. It will load single wire or whip antennas longer than 50 ft. over the 1.6-15.0 MHz range, or longer than 30 ft. over the 2.5-15.0 MHz range. The 180V-2 is housed in a weatherproof cabinet which may be located directly at the antenna base in fixed installations to provide maximum RF radiation efficiency. The antenna coupler weighs 13 lbs. (5.89 kg) and is 12" W, 7 $\frac{7}{8}$ " H, 12" D (30.48 cm W, 20.0 cm H, 30.48 cm D).

### 390L-1A SHOCKMOUNT

The 390L-1A provides vibration and shock isolation of the 32MS-1C transceiver for mobile installations. A kit of shock isolators, the 390N-1, is also available for the 180V-2 Antenna Coupler.

### AUTOMATIC GAIN CONTROL BOARD

This unit controls receiver background noise when no signal is present. When voice power is small, the Automatic Gain Control board (AGC) senses noise near the high end of the voice frequency range. This noise produces additional AGC bias voltage which adjusts receiver gain so that noise output is held to a low value when no signal is present.

### 437P-1 MOBILE HF TUNABLE ANTENNA

The 437P-1 is a four channel, vertically polarized whip antenna designed for vehicular communications. The antenna consists of an eight-foot stainless steel

whip mounted on a tubular base loading coil assembly. Tuning and matching are preset at any four frequencies within the band of 1.6-15.0 MHz. The 437P-1 will match a 50 ohm transmitter output with a VSWR of less than 2:1 on each preset channel. The antenna weighs 6 lbs. (2.72 kg) and requires power from a 12 v dc source only when the channel is being changed.

### LONG WIRE ANTENNA KIT

A Long Wire Antenna Kit is intended for applications which do not have the proper space arrangement required for installations of dipole antennas. All materials with the exception of the towers and guy wires, together with complete instructions, are supplied.

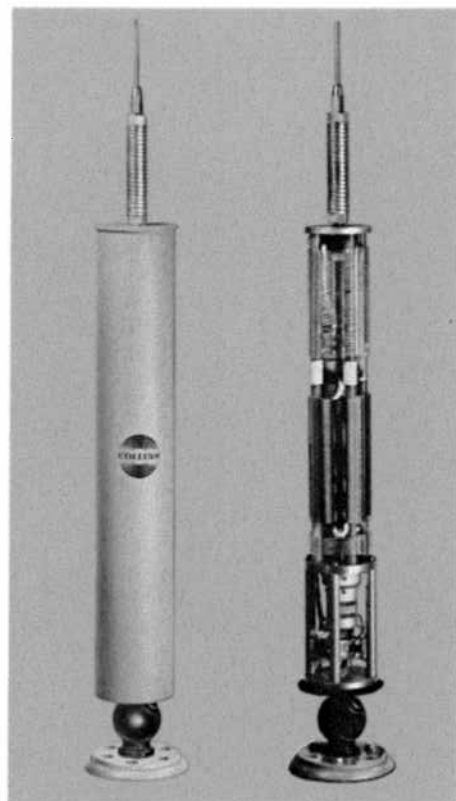
### DIPOLE ANTENNA KIT

For operation on a single frequency using a resonant dipole antenna, a Dipole Antenna Kit is recommended since impedance characteristics best match those of the 32MS-1C. The kit provides installation instructions and all the materials for antenna construction with the exception of the towers and coax feedline.

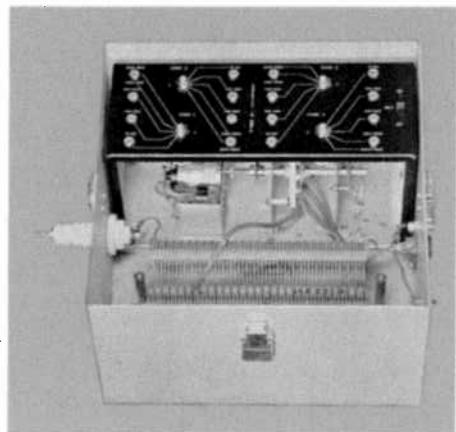
### WHIP ANTENNA KIT

Operation on up to four frequencies can be accomplished by use of the nonresonant whip antenna. The whip is available in either aluminum or stainless steel versions and has a length of 35 ft. 7 in. (10.85 meters).

*The 180V-2 Antenna Coupler will tune ► either low or high impedance antennas. It is designed especially for long wire, long whip antennas.*



*The 437P-1 Mobile Antenna (the base loading coil assembly is shown) can be bumper or rear-deck mounted. It also may be used in fixed station locations where space is limited.*



# Specifications

## AGC CHARACTERISTICS

Output audio change is less than 6 db for input variations from 10-100,000 uv.

## RECEIVER IMAGE REJECTION

1.6-12.0 MHz, more than 50 db; 12-15 MHz, more than 40 db.

## RECEIVER AUDIO OUTPUT POWER

0 dbm output for 1 uv input, SSB; or 3 uv, 30% modulation, 1000 Hz AM.

## RECEIVER AUDIO DISTORTION

Less than 10% harmonic distortion.

## RECEIVER AUDIO FIDELITY

Overall  $\pm 3$  db, 400-2700 Hz for SSB;  $\pm 3$  db, 300-3000 Hz for AM.

## PRIMARY POWER

Power supplies available for operation from either 115/230 v, 50-400 Hz, 28 v dc or 12 v dc.

## POWER REQUIREMENTS

At 117 v ac — 3 amps nominal transmitting test tone. 2.4 amps transmitting average speech. Receive 1.2 amps.

At 14 v dc — Transmitting test tone, 22.5 amps nominal. Transmitting average speech, 17 amps. Receive, 7 amps.

At 28 v — Transmitting test tone, 11.5 amps nominal. Transmitting average speech, 9 amps. Receive, 3.8 amps.

## SIZE

15 $\frac{3}{8}$ " W, 7 $\frac{1}{2}$ " H, 21 $\frac{5}{8}$ " D (39.05 cm W, 19.05 cm H, 54.93 cm D).

## WEIGHT

With ac supply — 48 $\frac{3}{4}$  lbs. (22.11 kg).

With 28 v dc supply — 36 $\frac{3}{4}$  lbs. (16.67 kg).

With 12 v dc supply — 36 $\frac{1}{2}$  lbs. (16.56 kg).

## ENVIRONMENTAL CONDITIONS

Ambient temperature range (operating) — From  $-20^{\circ}$  C to  $+55^{\circ}$  C.

Altitude — 30,000 feet (9,144 m).

Humidity — 0-95%.

Vibration — Mounted on 390L-1A Shock-mount, and vibrated according to MIL-E-5400-E Curves 1 and 3, fig. 5, up to 250 Hz.

## MODE

Single sideband or AM with reinserted carrier.

## STABILITY

$\pm 1$  part per million under standard conditions.

## TRANSMIT POWER OUTPUT

SSB — 100 watts PEP with two-tone input, using the ac power supply, or 80 watts PEP with two-tone input, using dc power supplies.

AM — 50 watts average with single tone input, using ac power supply, or 40 watts average, using dc power supplies.

## TRANSMIT OUTPUT IMPEDANCE

50 ohms with SWR of less than 2.5:1.

## HARMONIC AND OTHER SPURIOUS

### RADIATION

Second harmonic — At least 45 db below rated PEP.

Carrier — At least 50 db below rated PEP, static.

Unwanted sideband — At least 60 db below rated PEP.

Two tone distortion products — At least 27 db below rated PEP.

All other spurious radiation — At least 50 db down from rated PEP.

*Note: When the 32MS-1C is used with the 180V-2 Antenna Coupler, all harmonic and other spurious products are 60 db down.*

## TRANSMIT AUDIO INPUT

Telephone handset at control box or balanced 600 ohm input with 0 dbm input level.

## SPEECH CLIPPING LEVEL

-3 dbm on AM; +8 dbm on SSB.

## AUDIO FREQUENCY RESPONSE

Transmitter, overall  $\pm 3$  db, 400-2700 Hz measured across 50 ohm resistive load.

## NOISE LEVEL

More than 40 db below rated power output.

## AUTOMATIC LOAD CONTROL

Capable of at least 6 db compression.

## RECEIVER BANDWIDTH

SSB — 3 kHz, determined by Mechanical Filter.

AM — 6 kHz, determined by Mechanical Filter.

## RECEIVER SENSITIVITY

Less than 1 uv input signal for 10 db signal-to-noise ratio in SSB service; less than 3 uv, modulated 30% at 1000 Hz for 10 db signal-to-noise ratio in AM service.

## DOT APPROVAL

Approved under Radio Standard Specifications 122 and 123. DOT Approval Nos.

RSS 122 111 221 018

RSS 123 111 231 077

Specifications subject to change without notice.

