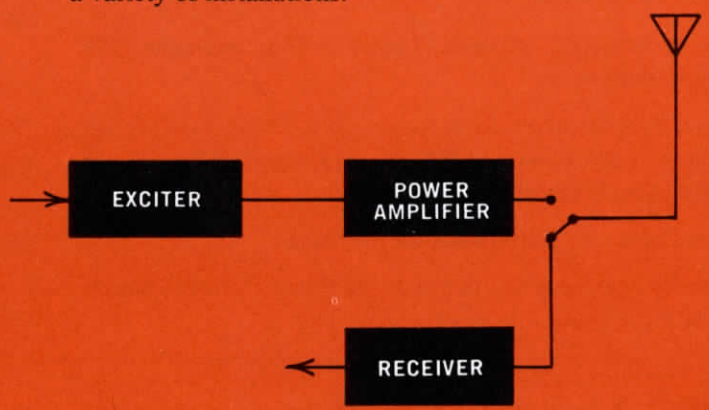
Amateur Radio Equipment

Behind the prestige of Collins amateur equipment is research and development for the world's finest communication systems. The S/Line is a complete station, system-engineered for the advanced amateur. The 32S-3 Transmitter and 75S-3B,-3C Receivers can be operated separately or as a transceiver in which the receiver controls the transmitter frequency. The 30L-1 or 30S-1 Power Amplifier provides high power levels with greatly simplified operation. The KWM-2,-2A Transceivers incorporate time-proven and advanced communication concepts. A complete line of operational accessories facilitates superior single sideband performance in a variety of installations.



30L-1 Linear Amplifier

Features	Applications
Automatic Load Control	*Fixed Station*
RF Inverse Feedback	*Transportable*
Silicon Rectifiers	*Shipboard*
Self-contained Power Supply	*Mobile*
	Airborne

The 30L-1 Linear Amplifier provides 1000 watts PEP input on SSB and CW on all bands. The linear amplifier is designed to be driven by the Collins KWM-1 and KWM-2 Transceivers, as well as the 32S-3 Transmitter. Most other 70-100 watt CW/SSB exciters will also drive the linear.

The 30L-1 has a self-contained power supply with safety interlock circuits for shorting the high voltage to ground if the cover is removed. Automatic antenna switching from exciter to amplifier or receive to transmit and instant warm-up are also features of the 30L-1. The linear amplifier is completely self-contained and designed for table top use. It is easily transported in a CC-2 Carrying Case.

Specifications

FREQUENCY RANGE: 3.4-30.0 mc, covering 80, 40, 20, 15 and 10 meter amateur bands. By retuning input circuit as necessary, the following general coverage bands can be used:

Frequency Band	*Total Coverage*
3.5 mc	3.4-6.0 mc
7.0 mc	6.0-9.5 mc
14.0 mc	9.5-16.0 mc
21.0 mc	16.0-22.0 mc
28.0 mc	22.0-30.0 mc

MODE: SSB or CW.

TYPE OF SERVICE: Attended operation SSB continuous; CW 50% duty cycle.

POWER REQUIREMENTS: 115 v or 230 v, 50-60 cps; CW, key closed, 1200 watts ac; SSB, no modulation, 300 watts ac; SSB, speech modulated, 550 watts ac.

DRIVE POWER: 70-100 watts for full output.

PLATE POWER INPUT: 1000 watts PEP on SSB; 1000 watts on CW on all bands.

POWER OUTPUT: Not less than 500 watts PEP into a 50 ohm load on all bands.

HARMONIC AND OTHER SPURIOUS RADIATION: Second harmonic —40 db; third order distortion —30 db at full power.

NOISE LEVEL: 40 db below one tone carrier.

AMBIENT TEMPERATURE: 0°-50° C.

AMBIENT HUMIDITY RANGE: 0%-90%.

OUTPUT IMPEDANCE: Variable. Normally 50 ohms unbalanced with not more than 2:1 SWR on the amateur bands.

AUDIO COMPRESSION CHARACTERISTICS: ALC operates from the RF input voltage and is factory set for proper input to output voltage ratio.

ALTITUDE: 0-10,000 ft.

PROTECTIVE DEVICES: All removable panels interlocked. Input line fused 8 amps on each side.

SIZE: With feet, 14¾" W, 7¾" H, 13¾" D (37.47 cm W, 19.69 cm H, 34.93 cm D).

WEIGHT: 38 lbs. (17.24 kg).

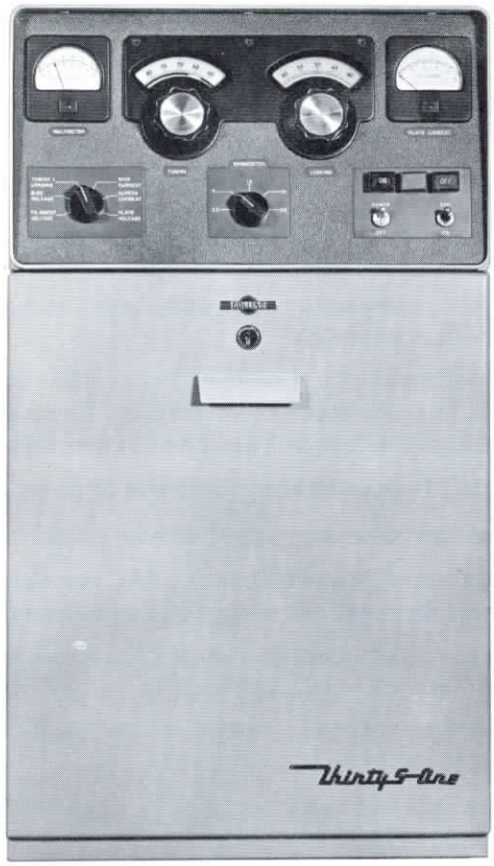
30S-1 Linear Amplifier

Features	Applications
RF Inverse Feedback	*Fixed Station*
Instant Switching	
Quick and Accurate Tuning	
Automatic Load Control	

The 30S-1 is a completely self-contained, linear amplifier. Requiring 70-100 watts input (from 32S-3 or KWM-2), it provides 1 kw PEP output on SSB, CW or RTTY.

An Eimac 4CX1000A is employed as a grounded grid linear amplifier. The 30S-1 can be used on any frequency between 3.4 mc and 30.0 mc. A special comparator circuit allows tune-up at low power.

All operating controls are easily accessible on the front panel, allowing the linear amplifier to be tuned swiftly, surely and easily. Power level can be switched instantly from the 100 watt power level of the associated S/Line transmitter to the full output of the 30S-1 by the push of a button. The 30S-1 can also be tuned to frequencies outside the amateur bands. Automatic load control voltage from the 30S-1 is fed back to the transmitter to assure maximum talking power without



30S-1 Linear Amplifier

overdriving and distortion. Other design features include self-contained power supply, an automatic antenna relay, an efficient and quiet cooling system, and tube and component protective circuitry.

Specifications

FREQUENCY RANGE: 3.4-30.0 mc, including 80, 40, 20, 15 and 10 meter amateur bands.

MODE: SSB, CW or RTTY.

POWER REQUIREMENTS: 115 v or 230 v, 50-60 cps, single phase, 2000 watts maximum.

DRIVE POWER: 70-100 watts for full output.

POWER OUTPUT: 1000 watts.

HARMONIC AND OTHER SPURIOUS RADIATION: Second harmonic —40 db; all others at least 50 db down.

NOISE LEVEL: 40 db below one-tone carrier.

AMBIENT TEMPERATURE: 15°-45° C.

AMBIENT HUMIDITY RANGE: 0%-90%.

OUTPUT IMPEDANCE: 52 ohms with SWR of 2:1 or less.

ALTITUDE: 0-6000 ft.

SIZE: 17″ W, 30⅝″ H, 18¾″ D (43.18 cm W, 77.79 cm H, 47.63 cm D).

WEIGHT: 160 lbs. (72.58 kg).

32S-3 Transmitter

Features	Applications
Dual Conversion	*Fixed Station*
Automatic Load Control	*Transportable*
RF Inverse Feedback	*Shipboard*
Mechanical Filter	*Mobile*
	Airborne

The 32S-3 is an SSB or CW transmitter with nominal output of 100 watts from 3.4-30.0 mc (except 5.0-6.5 mc). Choice of thirteen 200 kc bands covers all amateur bands except 10 meters, where one 200 kc band crystal is supplied with provision for two additional crystals. The 32S-3 can be operated on MARS (Military Affiliate Radio Service) frequencies. The transmitter features Mechanical Filter sideband generation, permeability-tuned VFO, crystal-controlled HF oscillator, as well as RF inverse feedback and automatic load control. CW features include grid block keying, spotting control, keying hardness control and sidetone level adjust.

The high degree of frequency stability permits the 32S-3 to be used for RTTY communication.

The 32S-3 can be operated as a transceiver by using oscillator injection voltages supplied by a companion Collins 75S Receiver.

Specifications

FREQUENCY RANGE: 3.4-5.0 mc and 6.5-30.0 mc; with crystals furnished, bands are as follows:

80 meters — 3.4-3.6 mc, 3.6-3.8 mc and 3.8-4.0 mc.

40 meters — 7.0-7.2 mc and 7.2-7.4 mc.

20 meters — 14.0-14.2 mc and 14.2-14.4 mc.

15 meters — 21.0-21.2 mc, 21.2-21.4 mc and 21.4-21.6 mc.

10 meters — 28.5-28.7 mc.

MODE: SSB (either sideband selectable) or CW.

TYPE OF SERVICE: SSB continuous; CW 50% duty cycle.

POWER REQUIREMENTS: 115 v, 50-60 cps using 516F-2 AC Power Supply. Power can be delivered by an external supply which must furnish 800 v dc at 220 ma for PA plates, 275 v dc at 175 ma for PA screens and low voltage B+. Bias voltages adjustable between −60 v and −80 v dc; 6.3 v ac at 7.7 amps or 6.0 v dc at 6.0 amps or 12.0-14.0 v dc at 3.0 amps or 24.0-28.0 v dc at 1.5 amps. CW, key closed, 320 watts ac or 25 amps at 12 v. SSB, no modulation, 230 watts ac, 15 amps at 12 v. SSB, speech, 255 watts ac, 20 amps at 12 v.

PLATE INPUT: 175 watts PEP on SSB; 160 watts on CW.

POWER OUTPUT: 100 watts PEP (nominal) into 50 ohms.

HARMONIC AND OTHER SPURIOUS RADIATION: Carrier suppression −50 db; unwanted sideband −50 db; oscillator feedthrough and/or mixer products −50 db. Second harmonic −40 db. Third order distortion −30 db.

NOISE LEVEL: 40 db below one tone carrier.

AMBIENT TEMPERATURE: 0°-50° C.

AMBIENT HUMIDITY RANGE: 0%-90%.

ALTITUDE: 0-10,000 ft.

PROTECTIVE DEVICES: Primary fuses provided in the companion 516F-2 ac power supply to be used with the equipment.

FREQUENCY STABILITY: Within 100 cps after warm-up.

CALIBRATION ACCURACY: 1 kc.

BACKLASH: Not more than 50 cps.

VISUAL DIAL ACCURACY: 200 cps on all bands.

OUTPUT IMPEDANCE: Variable 50 ohms nominal, capable of matching up to 2:1 SWR.

CW SIDETONE: Provision for monitoring keying in receiver. Sidetone level is adjustable.

KEYING CHARACTERISTICS: Grid block keying is free of chirp and clicks. Modified break-in CW provided. Keyed carrier used for CW keying. Envelope rise and decay time adjustable.

AUDIO INPUT: High impedance microphone or phone patch.

AUDIO FREQUENCY RESPONSE: 300-2400 cps ±6 db.

AUDIO COMPRESSION CHARACTERISTICS: ALC operates on IF and RF amplifier stages with 10 db of compression capability.

RF FEEDBACK: Approximately 10 db of RF feedback around PA and driver for improved PA linearity.

SIZE: Transmitter with feet — 14¾″ W, 7¾″ H, 11½″ D (37.47 cm W, 19.69 cm H, 29.21 cm D).

WEIGHT: 16 lbs. (7.26 kg).

75S-3B, -3C Receivers

Features	Applications
Rejection Tuning	*Fixed Station*
Variable BFO	*Transportable*
Optional Mechanical Filters	*Shipboard*
Zener Regulated Oscillators	*Mobile*
	Airborne

The 75S-3B,-3C provide SSB, CW and AM reception between 3.4 and 30.0 mc (except 5.0-6.5 mc) by selection of the appropriate HF heterodyning crystals. Crystals furnished cover HF amateur bands except the 10 meter band, where one crystal is supplied plus provision for two more.

Features incorporated in the 75S-3B,-3C include dual conversion with a crystal-controlled first heterodyning oscillator; bandpass first IF; stable, permeability-tuned VFO; RF amplifier designed to minimize cross-modulation products; 2.1 kc Mechanical Filter; excellent AGC characteristics; both product and diode detector; rejection notch filter; manual and crystal-controlled BFO, and AGC time constant control. The advanced design of the 75S-3B,-3C includes the use of silicon diodes in lieu of conventional high vacuum rectifier; and the choice of two degrees of CW selectivity with optional plug-in filters (also optional Mechanical Filters for AM). Provision for obtaining power from a dc power supply is also made.

The 75S-3C is an extended frequency version of the 75S-3B which includes an additional crystal board located beneath the chassis. In this board is placed the standard complement of amateur band crystals normally received with the equipment. The upper board can be used for up to 14 additional crystals. This permits ease of operating for MARS (Military Affiliate Radio Service) and other military and commercial applications. A front panel switch allows switching between the two crystal boards.

A conventional RTTY converter and printer can be used with the receiver. Fine tuning for this mode is provided by the variable BFO adjustment.

The 75S-3B,-3C are compatible with Collins 32S-3 Transmitter and 312B-4 Station Control to make a completely in-

tegrated amateur radio station. They are capable of supplying oscillator injection voltages to the companion 32S-3 Transmitter. No auxiliary coupling units or wiring changes are necessary. The two units are patched together with six cables. A switch on the panel of the 32S-3 allows the choice of either transceive or separate VFO operation.

The 75S-3B,-3C can also be conveniently used with other transmitters including Collins' KWS-1, as well as with the KWM-1 or KWM-2 Transceivers. Muting is also provided by the 32S-3 and KWM-2,-2A.

Specifications

FREQUENCY RANGE: 3.4-5.0 mc and 6.5-30.0 mc; with crystals furnished, bands are as follows:

80 meters — 3.4-3.6 mc, 3.6-3.8 mc and 3.8-4.0 mc.
40 meters — 7.0-7.2 mc and 7.2-7.4 mc.
20 meters — 14.0-14.2 mc and 14.2-14.4 mc.
WWV — 14.8-15.0 mc.
15 meters — 21.0-21.2 mc, 21.2-21.4 mc and 21.4-21.6 mc.
10 meters — 28.5-28.7 mc.

MODE: Selectable SSB, CW or AM.

POWER REQUIREMENTS: 115 v, 50-60 cps; approximately 85 watts. Power can be provided by an external supply which delivers 185 v dc at 125 ma and —62 v dc at 5 ma. Filament power can be ac or dc as follows: 6-7 v at 5.5 amps, 12-14 v at 2.75 amps, or 24-28 v at 1.4 amps.

HARMONIC AND OTHER SPURIOUS RESPONSE: Image rejection better than 50 db. Internal spurious signals below 1 uv equivalent antenna input.

AUDIO NOISE LEVEL: Not less than 40 db below 1 watt.

AMBIENT TEMPERATURE: 0°-50° C.

AMBIENT HUMIDITY RANGE: 0%-90%.

ALTITUDE: 0-10,000 ft.

CALIBRATOR: 100 kc crystal.

FREQUENCY STABILITY: Within 100 cps after warm-up.

CALIBRATION ACCURACY: 1 kc.

BACKLASH: Not more than 50 cps.

VISUAL DIAL ACCURACY: 200 cps on all bands.

SENSITIVITY: 0.5 uv for 10 db signal-plus-to-noise-to-noise ratio in SSB mode.

SELECTIVITY: SSB — 2.1 kc at 6 db down; 4.2 kc at 60 db down. AM — 5 kc at 6 db down; 25 kc at 60 db down.

OPTIONAL FILTERS: 200 cps, 500 cps, 800 cps, 1.5 kc for CW and RTTY. 3.1 kc, 4.0 kc and 6.0 kc for AM.

Q MULTIPLIER: Rejection notch depth 50 db nominal, 40 db minimum.

VARIABLE BFO: Tunes 452-458 kc.

AUTOMATIC GAIN CONTROL: AGC threshold — 1.5-3.0 uv; 1.5 uv nominal. Selectable AGC time constant, Fast, Slow and Off. Attack time is 0.8 milliseconds in both Fast and Slow. Fast release time is 300 milliseconds. Slow release time is 600 milliseconds.

AUDIO OUTPUT LEVEL: 1.0 watt at AGC threshold. 3.0 watts maximum.

ANTENNA INPUT: 50 ohms.

AUDIO OUTPUT CIRCUITS: 500 ohms ±20% and 4 ohms ±20%. Panel jack is on divider off of 500 ohm winding.

AUDIO DISTORTION: Not more than 10% at 1 watt.

MUTING: By opening an external ground on mute terminal.

SIZE: Receiver with feet — 14¾″ W, 7¾″ H, 12½″ D (37.47 cm W, 19.69 cm H, 31.75 cm D).

WEIGHT: 20 lbs. (9.07 kg).

KWM-2, -2A 175 Watt Transceivers

Features	Applications
Automatic Load Control	*Fixed Station*
Inverse RF Feedback	*Transportable*
Permeability-Tuned Oscillator	*Shipboard*
Easy-to-Read Dial	*Mobile*
	Airborne

The KWM-2 and KWM-2A are compact HF single sideband transceivers. The equipments have been used in rugged field and air operations with combat units of United States and allied military forces. The KWM-2 provides fourteen 200 kc bands between 3.4 mc and 30.0 mc. The KWM-2A has a second crystal board for selecting frequencies outside the amateur bands. These additional 14 crystals provide ease of operation for MARS (Military Affiliate Radio Service) and other military and commercial applications. A front panel switch permits switching between the two crystal boards. The plate power input of the KWM-2,-2A is 175 watts PEP

KWM-2A Transceiver

on single sideband or 160 watts nominal on CW. Nominal power output is 100 watts. Automatic load control (ALC) maintains the signal level at rated PEP, resulting in an increase in average talk power. Inverse RF feedback improves linearity, reducing distortion products and signal splatter.

Other features include filter-type SSB generation, a permeability-tuned variable frequency oscillator, crystal-controlled double conversion and VOX/ANTI VOX circuits. Collins Mechanical Filter, RF amplifier, all tuned circuits and several tubes function in both transmit and receive.

Specifications

FREQUENCY RANGE: 3.4-5.0 mc and 6.5-30.0 mc; with crystals furnished, bands are as follows:

80 meters — 3.4-3.6 mc, 3.6-3.8 mc and 3.8-4.0 mc.
40 meters — 7.0-7.2 mc and 7.2-7.4 mc.
20 meters — 14.0-14.2 mc and 14.2-14.4 mc.
WWV — 14.8-15.0 mc.
15 meters — 21.0-21.2 mc, 21.2-21.4 mc and 21.4-21.6 mc.
10 meters — 28.5-28.7 mc.

MODE: SSB (either sideband selectable) or CW.

TYPE OF SERVICE: SSB continuous; CW 50% duty cycle.

FREQUENCY STABILITY: Within 100 cps after warm-up.

CALIBRATION ACCURACY: 1 kc.

BACKLASH: Not more than 50 cps.

VISUAL DIAL ACCURACY: 200 cps on all bands.

POWER REQUIREMENTS: With companion 516F-2 or PM-2 AC Power Supply, 115 v, 50-60 cps, or 400 cps with minor changes; power consumption approximately 235 watts in receive function and approximately 475 watts in transmit. In mobile operation, 800 v dc required at approximately 175 ma; low voltage 275 v at 230 ma; a bias supply adjustable between —50 v and —80 v; and 6 v, 12 v or 24 v dc at 11.0, 5.5 or 2.75 amps respectively.

SIZE: With feet, 14¾″ W. 7¾″ H, 14″ D (37.47 cm W, 19.69 cm H, 35.56 cm D).

WEIGHT: 18 lbs. 3 oz. (8.25 kg).

TRANSMITTING CHARACTERISTICS

PLATE INPUT: 175 watts PEP on SSB; 160 watts on CW.

POWER OUTPUT: 100 watts PEP (nominal) into 50 ohms.

HARMONIC AND OTHER SPURIOUS RADIATION: Carrier suppression —50 db; unwanted sideband —50 db; oscillator feedthrough and/or mixer products —50 db; second harmonic —40 db; third order distortion —30 db.

NOISE LEVEL: 40 db below single tone carrier.

ALTITUDE: 0-10,000 ft.

OUTPUT IMPEDANCE: Variable, 50 ohms nominal, capable of matching up to 2:1 SWR.

KEYING CHARACTERISTICS: Keying is free of chirps and clicks. Break-in CW and sidetone provided.

AUDIO INPUT: High impedance microphone or phone patch.

AUDIO FREQUENCY RESPONSE: 300-2400 cps ±6 db.

AUDIO COMPRESSION CHARACTERISTICS: ALC operates on IF and RF amplifier stages and is capable of 10 db compression.

RF FEEDBACK: Approximately 10 db of RF feedback around PA and driver for improved linearity.

RECEIVING CHARACTERISTICS

RECEIVER SENSITIVITY: 0.5 uv for 10 db signal-to-noise ratio in amateur bands.

RECEIVER SELECTIVITY: 2.1 kc bandwidth at 6 db down; 4.2 kc bandwidth at 60 db down.

RECEIVER SPURIOUS RESPONSE: Image rejection 50 db nominal. Internal spurious below 1 uv equivalent antenna input.

RECEIVER OUTPUT LEVEL: 1.0 watt maximum.

AUTOMATIC GAIN CONTROL: The audio output level does not change more than 20 db as the input signal is changed from 5 uv to 1 v. Fast attack and slow release provide excellent AVC action on voice and CW.

Amateur Equipment Accessories

136B-2 NOISE BLANKER

The 136B-2 is designed for use with the KWM-2 under mobile operating conditions. This noise blanker provides effective reduction of impulse-type noise. It differs from simple audio clipping circuits or series-type limiters by silencing ahead of the selective sideband filters. All necessary hardware and instructions are furnished for simple installation in the KWM-2. The 136B-2 requires a 40 mc antenna which can be used as a whip for the car radio. *Weight:* 1¼ lbs. (0.567 kg).

180S-1 ANTENNA TUNER

The 180S-1 is basically a 1 kw pi network for matching various antenna impedances to a 50 ohm coaxial transmission line in the range of 3-30 mc. In most cases it is used as an L network, but when the L network cannot match the desired antenna, the complete pi circuit is used. The variable vacuum capacitor employed in the output circuit may be connected either in series or shunt with the antenna. The 180S-1 is useful for tuning trailing wire antennas on large aircraft.

302C-3 DIRECTIONAL WATTMETER

The 302C-3 is valuable for checking the antenna system. It measures forward and reflected RF power. Two scales are provided: 0-200 watts and 0-2000 watts accommodating both high and low power transmitters. The 302C-3 is contained in two units: the coupler for connecting into a 50 ohm transmission line and the meter panel which is styled to match the S/Line.

312B-3 SPEAKER

The 312B-3 contains a 5″ x 7″ (12.7 cm x 17.78 cm) speaker and connecting cable and is styled to match the S/Line and KWM-2. *Size:* 10″ W, 7¾″ H, 8″ D (25.4 cm W, 19.69 cm H, 20.32 cm D). *Weight:* 4 lbs. (1.81 kg).

312B-4 SPEAKER CONSOLE

The 312B-4 integrates the 75S-3, 32S-3, 30S-1 and accessories into an operating system. The KWM-2 and 30S-1 can also be integrated into an operating system by the 312B-4. A speaker, RF directional wattmeter with 200 and 2000 watt scales, and a phone patch are included in the console. *Size:* 10″ W, 7¾″ H, 12¼″ D (25.4 cm W, 19.69 cm H, 31.12 cm D). *Weight:* 8½ lbs. (3.86 kg).

312B-5 VFO CONSOLE

Designed for use with the KWM-2 in fixed station operation, the 312B-5 provides limited separation of receive and transmit frequencies, phone patching facilities and a directional wattmeter. It includes a 5″ x 7″ permanent magnetic speaker. The PTO control selector can be set as follows: (1) Receive KWM-2, Transmit 312B-5; (2) Transceive KWM-2; (3) Transceive 312B-5. Other control functions are Voice Operated, Receive Only, Transmit Only, Phone Patch On-Off, and Station Mute. Cables are furnished for connections to the KWM-2. *Size:* 10″ W, 7¾″ H, 12¼″ D (25.4 cm W, 19.69 cm H, 31.12 cm D). *Weight:* 8½ lbs. (3.86 kg).

351D-2 MOBILE MOUNT

The 351D-2 provides secure mounting for the KWM-2 in most automobiles. Cantilever arms fold out of the way when the KWM-2 is removed. The connector at the right end is the power plug; the connector at the left end can be used for control of antennas having band switching circuitry. Cables 20 feet in length are attached to each plug.

351E MOUNTING PLATES

The 351E can be used to secure the S/Line or KWM-2 equipments to bench or table in shipboard, airborne or vehicular installations. The 351E-1 will accommodate either the 75S-3B,-3C Receiver or the 32S-3 Transmitter; the 351E-2 will mount either the 516F-2 Power Supply or the 312B-4 Station Control; the 351E-3 will mount the 312B-3 Speaker. The 351E-4 has two snap-in clamps for secure installation of the KWM-2. The equipment can be easily unclamped for removal without the use of tools. The unit is removed by pulling forward and lifting from the mounting plates.

351R RACK MOUNTING ADAPTERS

The 351R-1 is a matching gray rack panel for mounting the 75S-3B,-3C, 32S-3, KWM-2, 30L-1, 62S-1 or 51S-1. The 351R-2 Rack Adapter is a panel for mounting the S/Line and KWM-2 accessories. The 516F-2, 312B-4 and 312B-5 can be mounted in the 351R-2. Both adapters are 8¾″ H and 13 13/16″ D (22.23 cm H and 33.5 cm D) behind the front panel. A supporting shelf holds the unit securely. Mounting hardware is furnished with each rack mount.

440E-1 CABLE KIT

The 440E-1 is similar to the cable which is supplied with the Collins 351D-2 Mobile Mount. This cable can be used to connect the KWM-2 with the MP-1 or 516E-2 Power Supply when the mobile mount is not used.

440F-1 CABLE

The 440F-1 Cable is five feet in length and can be used to connect either the S/Line or the KWM-2 to the 516F-2 Power Supply, allowing the 30S-1 to be placed a greater distance from other units of the S/Line and permitting greater flexibility of fixed station installations.

516F-2 AC POWER SUPPLY

The 516F-2 can be used with the 32S-3 and KWM-2, supplying all voltages for them; 115 v, 50-60 cps, 400 cps with minor change. *Size:* 10″ W, 7¾″ H, 12″ D (25.4 cm W, 19.69 cm H, 30.48 cm D). *Weight:* 28 lbs. (12.7 kg).

CC-2 CARRYING CASE

The CC-2 is designed to hold the components of a portable Collins SSB or CW station. The KWM-2 plus the PM-2 Power Supply, the KWM-2 alone, the 30L-1 or the 51S-1 can be transported in the case. The CC-2 is adapted from the Samsonite Silhouette and includes a shock-resistant interior for the equipment. *Weight:* 9.5 lbs. (4.31 kg) empty.

CC-3 CARRYING CASE

The CC-3 is a specially built case for accessory components of a portable Collins SSB or CW station. The CC-3 has the same styling features as the CC-2. A molded interior allows the CC-3 to accommodate a 312B-5 (or 312B-4) Station Control Console, a 516E-2 (or MP-1) Power Supply, a TD-1 Dipole Antenna, as well as a supply of spare tubes and fuses. *Weight:* 10 lbs. (4.54 kg) empty.

CP-1 CRYSTAL PACKET

The CP-1 contains a set of crystal grippers and all the crystals for operation of the S/Line receiver, S/Line transmitter or the KWM-2,-2A throughout the complete operating range. The crystals not supplied are those for the range of 5.0 to 6.6 mc and those which are already provided with the equipment. The packet is of a waterproof plastic material containing a pouch for each crystal and one for the grippers. Each pouch is marked with appropriate band information and crystal frequency. The complete packet can be fastened into the CC-2 Carrying Case.

DL-1 DUMMY LOAD

The DL-1 is a 100 watt resistive load which can be used for various tuning functions without putting the transmitter on the air. The DL-1 can be switched in and out of the circuit by a front panel switch or can be remotely controlled by the addition of another switch in the operating position. This unit reduces tune-up and testing QRM and requires no additional connecting or disconnecting of wires prior to operation. *Weight:* 2 lbs. (1.3 kg).

MM-1 MOBILE MICROPHONE

The Collins MM-1 is a pressure-operated dynamic microphone designed to fit your hand comfortably. This mike is engineered for maximum voice response, and its die cast case is finished in brushed satin chrome. With its mounting button on the front, the MM-1 slips easily into a dashboard bracket supplied with the mike. When the MM-1 is removed from the dashboard bracket, the microphone is in position for instant transmission. A five-foot length of Koiled Kord with mike plug supplied with the 22 ounce microphone. The MM-1 has a frequency response from 200-10,000 cycles per second and has an output level of —48 db.

MM-2 MICROPHONE

The Collins MM-2 includes a high impedance reluctance microphone and single earphone which can be used in either a fixed station installation or with a mobile unit. The MM-2 has a frequency response from 100-7,000 cycles per second and an output level of —50 db. In mobile use, the ear-piece and microphone unit permit the driver to operate his car with both hands while carrying out radio voice communication. Although it weighs only 3½ ounces (0.099 kg), the Collins MM-2 is built to withstand the strenuous demands of daily mobile operation. Its microphone boom has a 360° adjustment making it possible to angle the mike to the best pickup position. The MM-2 Microphone has a magnetic stray field shield to exclude unwanted noises. For optimum reception of signals, an adjustable tone arm in the MM-2 pipes sound directly into the operator's right or left ear, but does not cover the ear as conventional earphones do. The MM-2 comes equipped with both mike and phone plugs.

MP-1 MOBILE POWER SUPPLY

The MP-1 converts a 12 volt automobile, aircraft or boat battery to the voltages required for the KWM-1, KWM-2 or KWM-2A. The MP-1 includes a high voltage supply for the transmitter PA, bias, and a low voltage supply for the amplifier. *Size:* 5¾" W, 3¾" H, 11" D (14.61 cm W, 9.53 cm H, 27.94 cm D). *Weight:* 7½ lbs. (3.4 kg).

PM-2 PORTABLE POWER SUPPLY

The PM-2 is a lightweight, limited duty cycle power supply providing voltages needed for the KWM-2. The PM-2 quickly slides into place and connects to the rear of the KWM-2, ready to operate in minutes from either 115 v ac or 220 v ac at 50-400 cps as a complete portable SSB or CW station. Both transceiver and power supply can be packed in the lightweight CC-2 Carrying Case for portability. A small auxiliary speaker is included in the PM-2 for emergency use. *Size:* 14¾" W, 7¾" H, 4" D (37.47 cm W, 19.69 cm H, 10.16 cm D). *Weight:* 13.5 lbs. (6.12 kg).

SM-1 DESK TOP MICROPHONE

Collins SM-1 is a high impedance, nonmetallic dynamic mike with a frequency response from 100-3500 cycles per second. It has an output level of —53 db. Finished in brushed satin chrome, this compact microphone is equipped with a rubber isolated stand and a five-foot length of Koiled Kord.

SM-2 MICROPHONE

Collins SM-2 is a slender, gray and chrome desk top unit which blends perfectly with Collins' other station equipment. The SM-2 is omnidirectional and provides excellent transmission for the amateur operator. The frequency response of the SM-2, 200-3,000 cycles, matches that of the S/Line and KWM-2. The SM-2 has an output level of —53 db and is equipped with a five-foot length of Koiled Kord and plug. It is mounted on a rubber isolated stand. A swivel permits a 60° swing for position adjustment.

TD-1 DIPOLE ANTENNA

The TD-1 is designed for use when portability and operation on different frequencies are primary considerations. The molded plastic housing holds two steel tapes calibrated in meters, decimeters and centimeters. These tapes can be extended to the required length for a given frequency and locked in place. A permanent frequency-to-meters conversion chart is attached to the antenna housing. Each end of the tape is attached to a length of nylon line which acts as an insulator and a means for securing the antenna to structures of suitable height and positioning. A directional wattmeter should be used for initial tune-up to insure the proper frequency setting.