

THE KW VICEROY SPECIFICATION

THE KW VICEROY

Bands Covered	3.5, 7, 14, 21 and 28 mc/s.		
Frequency Ranges	3.5-4.0 mc/s; 7-7.3 mc/s; 14-14.5 mc/s; 21-21.5 mc/s; 28-28.6 mc/s; 28.6-29.2 mc/s		
Mic Input	High Impedance.		
Output Impedance	50-80 ohms.		
Power	180 watts P.E.P. input; 150 watts C.W. 90 watts AM.		
V.F.O. Stability	Better than 100 cycles after warm up.		
Power Supply	200-250 volts, 45-65 cycles, 350 watts. 105-125 volts input, to order.		
Meter	PA Anode Current Calibrated 0-300 m/a. PA Grid 0-1 m/a. RF output.		
Front Panel Controls	Tuning, Waveband, Meter Switch, Audio gain, Net and Carrier Insertion, Mixer Input, Driver, PA Bandswitch, PA Tune, Aerial Coupling. Send/Receive Switch (for MOX operation only), Function Switch.		
Rear Panel (Transmitter)	Power Socket, Octal Connector for external circuits, VOX Sensitivity, VOX Threshold, Antenna Socket, ALC adjust, Anti-trip.		
(Power Supply)	P.A. bias adjust.		
Function Switch	Switch-CW/SSB/VOX/Tune/Manual.		
Tube Complement (Transmitter)	12AU7 Carrier Osc. and phase splitter 2 x OA 79 Crystal diodes—Bal. Mod. 12AX7 Audio Amp. and Cathode follower. EF89 (6AD6) 435 kcs. Amp. 12AT7 1st Mixer (2nd Bal. Mod.) 12AT7 VFO and cathode follower	EF80 (6BX6) VFO Amp. EF80 (6BX6) 2nd Mixer. EF80 (6BX6) Crystal osc./multiplier. 6CL6 Driver. 6146 Final Amp. 6146 Final Amp.	6AL5 ALC. GD5 (or OA79) Crystal diode—Rf meter. OA2 Voltage Regulator. 12AU7 VOX amp. and Audio Cathode follower. 6AL5 VOX and Anti trip diode. 12AU7 Anti-trip amp. and D.C. amp.
Power Supply	Requirements for Transmitter only. 700v. at 250 m/a; 220v. at 175m/a;—150v. at 25 m/a. —60/50 v. variable at 50 m/a; 2 x 6.5v. A.C. 4 A.		
Rectifiers Complement	4 x 80 AS High Voltage Supply.	4 x DD 006 Low Voltage Supply.	
Dimensions	Transmitter. (Mk. II) 21½" x 11" x 11" (54.5 x 27.8 x 27.8 cm.) Weight. 35 lbs. (approx 16 Kg.). Shipping weight. 80 lbs. (approx 36 Kg.) in wooden case. Power Supply (Mk. II) 9" x 11" x 11" (22.8 x 27.8 27.8 cm.) Weight 38 lbs. (approx 18 Kg.). Shipping weight. 80 lbs. (approx 36 Kg) in wooden case. Transmitter (Mk. III) 21½" x 11" x 16" (54.5 x 27.8 x 41.2 cm.) Weight 70 lbs. (approx 32 Kg.) Shipping weight 120 lbs. (approx 56 Kg.) in wooden case.		

Shipping weights are reduced for Airfreight by packing equipment in cardboard cartons.



The K.W. 'Viceroy' (Mark III)^a

FEATURES

- 180 watts P.E.P. input
- Unwanted Sideband suppression 40 db down at 2 Kc., or better.
- Optional extra half lattice filter, 50 db sideband suppression.
- Carrier suppression 45 db down or better.
- 5 Bands, 10-30 metres, P1 Output.
- T.V.I. precautions taken.
- All crystals included.
- Automatic Level Control.
- Rugged Construction.
- Full Voice Control System.
- Upper Sideband output on 14, 21, 28 mc/s. LSB on 7 and 3.5 mc/s to comply with International regulations.

^a The Commercial K.W. "Viceroy." The design and quality of this equipment make it a fine SSB transmitter for commercial use. It is available upon special order for operation on 5 bands of 1 mc/s each within the range 3-30 mc/s. Submit specific requirements for proposal and price.

A Superb SSB transmitter for Amateur and Commercial[®] use

THE K.W. "Viceroy" SSB transmitter is the result of over four years of design and development by professional engineers who are themselves Radio Amateurs and know the discriminating requirements for such equipment. The best designs and features have been incorporated in this transmitter normally associated with much more expensive equipment. All operational controls are located on the front panel including a geared precision dial. Ease of operation, dependability and finest performance are special features about the K.W. "Viceroy".

The K. W. 'Viceroy' has been in Production for three years and can be heard operating from all parts of the world—now in use in nearly 60 countries—proof of dependability and success—Truly "tried and tested."

manufactured by—

K.W. ELECTRONICS LTD.
VANGUARD WORKS
1 HEATH STREET, DARTFORD, KENT, ENGLAND

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 TELEPHONE: DARTFORD 23574

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KW ELECTRONICS LTD

VANGUARD WORKS · HEATH STREET · DARTFORD · KENT · ENGLAND

THE K W VICEROY

SSB TRANSMITTER

The K.W. "Viceroy" can be supplied without Power Supply or with a separate Power Supply Unit. The Mk III is completely self-contained with power supply in one cabinet.

CIRCUIT DESCRIPTION

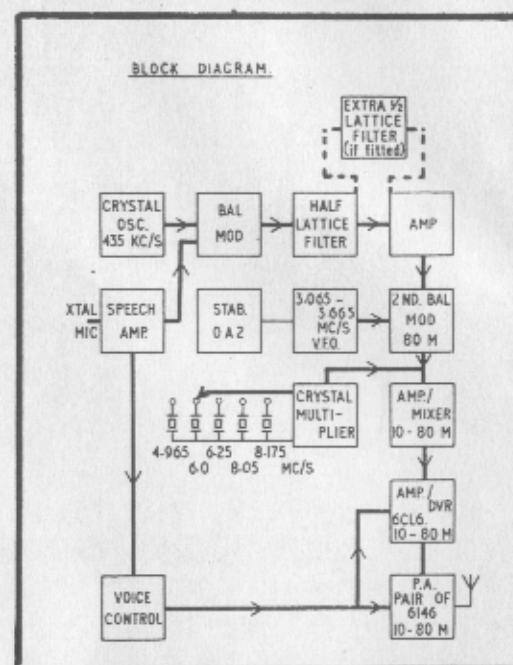
In the adjacent block diagram, the heavy lines indicate the flow of signal through the transmitter.

SSB GENERATOR

The SSB exciter employs a crystal filter. A 12AU7 is used as a 435 kc/s crystal oscillator and phase splitter to drive the balanced modulator at low impedance. The balanced modulator consists of a matched pair of crystal diodes into which audio is fed at low impedance. The modulated signal is then passed through a half lattice filter* which rejects the unwanted sideband and provides a passband flat within 4db between 250 and 2800 c.p.s. Four crystals, vacuum mounted in B7G valve envelopes, are employed (two in the half lattice filter*, one carrier oscillator and one series rejector at carrier frequency). The lower sideband generated is amplified and fed to the grids of a second balanced modulator (or 1st mixer). The output of the VFO is balanced out in the anode circuit of this balanced modulator. The resultant 80 metre output is available for amplification and being lower sideband is suitable for operation on this band.

V.F.O.

The VFO unit employs a Clapp circuit, with temperature compensation, and is extremely stable in operation. A cathode follower circuit isolates the VFO from the



VFO amplifier which feeds into the 2nd balanced modulator. Rugged construction and stabilised H.T. for the VFO also assist towards VFO stability. The Tuning range of the VFO is 3.065-3.665 kc s.

2nd MIXER

For operation on bands other than 80 metres a crystal oscillator/frequency multiplier is switched in automatically by means of the wavechange switch. The output of the oscillator is fed into the 2nd mixer. By selecting suitable mixer crystals, correct sideband output is obtained to meet international requirements, i.e. lower sideband on 3.5 and 7 mc/s, upper sideband 14, 21 and 28 mc/s.

DRIVER

After the 2nd Mixer, the signal is applied to the driver amplifier operating in Class 'A' and provides a signal level sufficient to drive the two final amplifier valves.

FINAL AMPLIFIER

The Power Amplifier is operated under Class AB1 conditions running at approximately 180 watts P.E.P. input and employs a switched Pi-output circuit. The stage is fully neutralised and is completely screened as a TVI precaution.

AUTOMATIC LEVEL CONTROL

A portion of the output of the final amplifier passes to the ALC circuit where it is rectified and used to provide bias to control the gain of the 435 kc/s. amplifier in crystal filter. In this manner an action is provided similar to the AVC in a receiver which results in increased 'Talk Power.' Overloading and frequency splatter are eliminated.

VOICE OPERATED RELAY

A signal from the microphone passing through the audio amplifier is applied to the voice operated relay circuit and causes the VOX relay to close, shorting out a negative bias to the 2nd Balanced Modulator. Also available on the relay are two other sets of contacts for operating external circuitry (e.g. Aerial change-over Relay, Receiver mute, etc.). One set of contacts close on transmit and the second set is a change-over combination.

The VOX control is also equipped with an anti-trip circuit. When receiving, sound from the station receiver's loud-speaker may operate the VOX relay. This is eliminated by the anti-trip circuit which takes part of the audio output

from the receiver and applies it in a manner as to oppose the action of the voice operated relay.

C.W. OPERATION

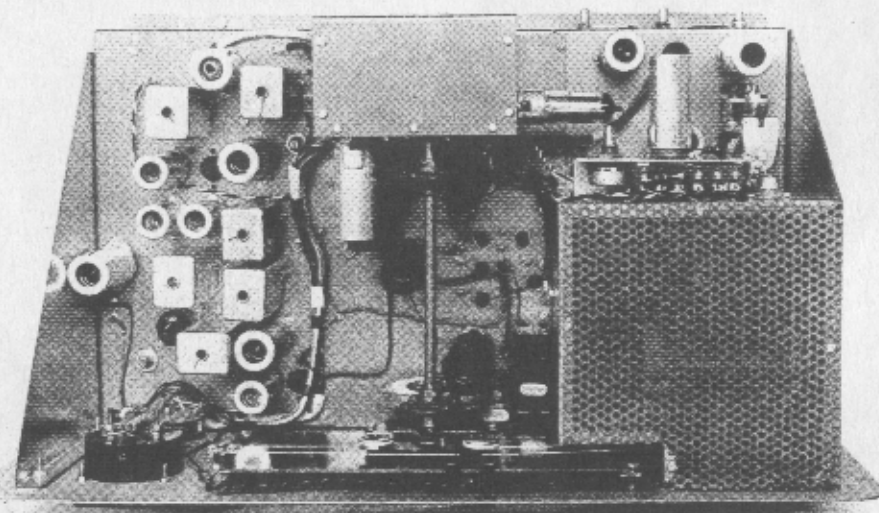
A blocked-grid system of keying is employed operating in the 2nd Balanced Modulator grid circuit. Carrier is provided by inserting a small amount of feedback in the crystal filter which is controlled by the "Carrier Insertion" knob on the front panel. A form of BK Keying is provided—CW transmission commences as soon as the Key is pressed. Relays remain at 'transmit' until there is a pause in transmission. The time constant may be varied by adjusting the VOX threshold control. Ideal CW Keying characteristic is obtained due to the very stable VFO and to the crystal controlled 2nd mixer.

A.M. OPERATION

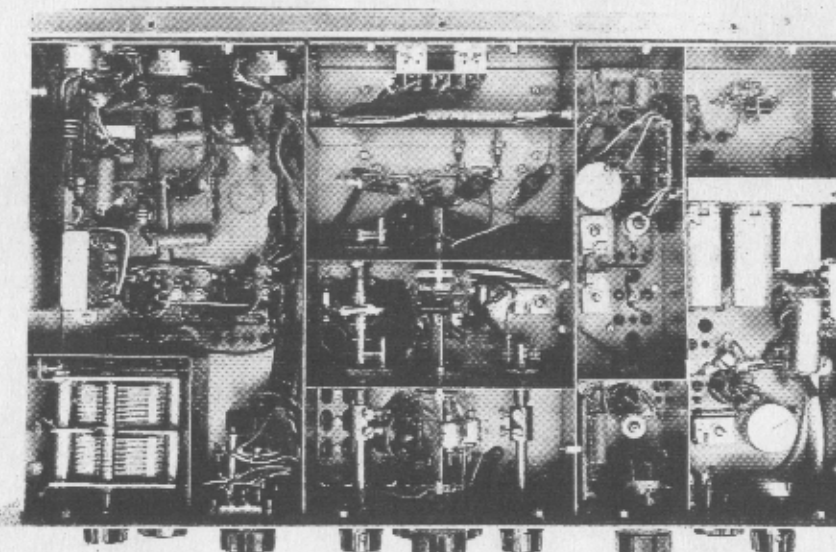
A.M. transmission is permissible by inserting a small amount of carrier and adjusting the audio gain. Under this condition the P.A. operates at about 90 watts input.

POWER SUPPLY UNIT

The power supply for the K.W. 'Viceroy' Mark III can be supplied housed in a separate cabinet. The details of the K.W. 'Viceroy' Power Supply are given in the specification overleaf for those who wish to use existing power supplies and purchase the transmitter alone. The values given should be closely adhered to and must be of good stability and regulation. The 750V H.T. supply may be of a lower value but should never be exceeded.



* An additional half-lattice filter can be fitted as an optional extra



* Fitted extra half-lattice filter