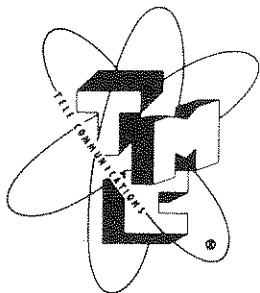
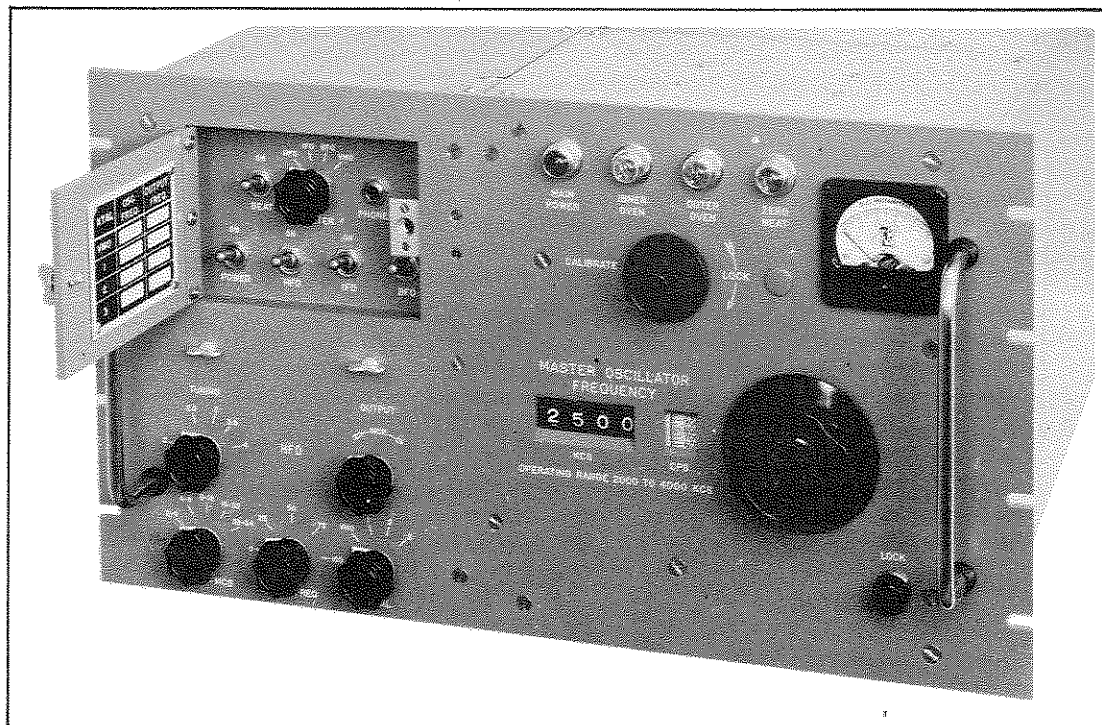


## SALES SERVICE BULLETIN NUMBER 134B



TMC Variable Frequency Oscillators,  
Models VOX  
Oscillator, Radio Frequency  
0-330( )/FR



The TMC Model VOX Variable Frequency Oscillator is a new, improved direct reading precision variable frequency device, designed to replace the crystal oscillator of a Diversity receiver or of a transmitter. The VOX is also used as a secondary standard.

The outstanding features of the Models VOX are as follows:

- A. Continuously variable output over the range of 2 to 64 Mcs, DIRECT READING in the basic range.
- B. Better than .002% long term stability.
- C. Temperature controlled Crystal reference, provides aural and visual calibration.
- D. Three (3) Crystal controlled HFO positions, 2 to 64 Mcs.
- E. Two (2) Crystal controlled BFO positions, 300 to 1,000 Kcs.
- F. One (1) Crystal controlled IFO position, 3.2 to 3.9 Mcs.

The Model VOX incorporates a highly stable direct reading oscillator with a large, accurate counter type dial. The first four significant figures (Kcs) are shown as large, easily read numerals on the counter face and the last three figures (cps) are read on a clearly engraved dial. This feature completely eliminates use of charts or

interpolations and means that the most inexperienced operator can simply dial the correct frequency without extensive instruction.

Check points against the 100 Kcs built-in reference are available every 50 Kcs, plus other sub-harmonics, both aurally (phone jacks in front and rear panels) and visually (neon indicator on front panel). This crystal reference is contained within the double oven assembly with the oscillator itself. Use of this oven assembly with its large mass of metal and insulating material distributed through its cross section produces a high heat inertia with extremely stable oven temperature.

The vernier calibrate control has been incorporated in this series, providing a broad, smooth operating adjustment enabling the operator to calibrate the oscillator to a precise frequency. Once calibrated, the oscillator can be set to output frequency, the dial locked and the operator may be sure of long term extremely stable output.

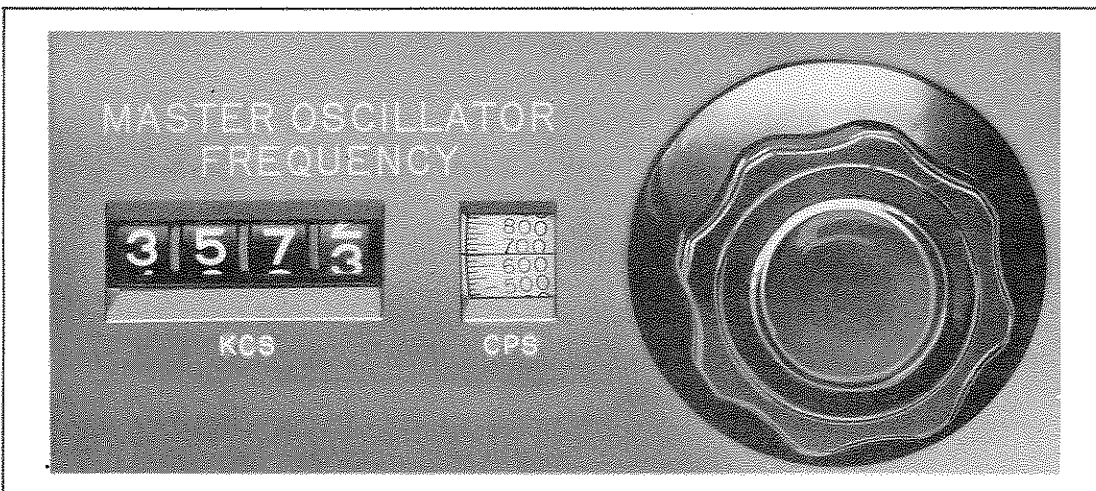
The Models VOX in this series are available in two forms, depending upon customer requirements as follows:

- Model VOX-4 WITH Motor drive assembly, A-1005.
- Model VOX-3 WITHOUT Motor drive assembly.

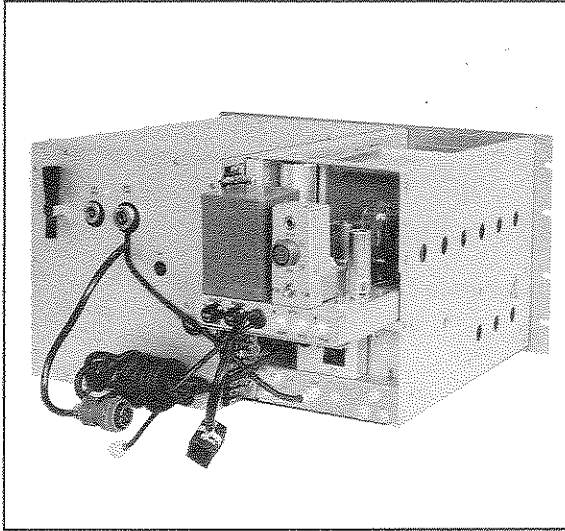
There are no other differences in the equipments, and in either case the frequency dial may be manually operated.

In the Models VOX, the following improvements have been incorporated:

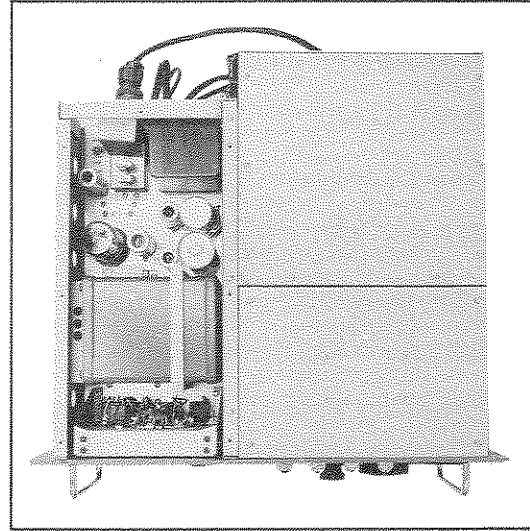
- A. A new larger counter, TMC Part CY-104 showing the first four significant figures of the oscillator output.
- B. The Beat Frequency Oscillator (BFO) has been revised in circuitry to permit (a) the use of a wider range of crystal frequencies, i.e., 300 to 1,000 Kcs., and (b) permit the paralleling of many receiver BFO's from the single oscillator.
- C. A visual Zero Beat Indicator has been added in the form of a flashing neon lamp to complement the aural indication also used.
- D. The IFO Crystal Unit Sym Y201, formerly with wire leads, is now plug-in type CR-18/U so that the user may select intermediate oscillator frequency.
- E. A phone jack has been added to the rear panel to permit monitoring of the check points from the rear of the equipment.



Close-Up View of Counter



Rear View of VOX



Top View of VOX

## TECHNICAL SPECIFICATIONS:

### A. HF OSCILLATOR

Frequency Range:	2 to 64 megacycles continuous.
Output Impedance:	75 ohms coaxial.
Output Level:	2 watts throughout basic range of 2 to 4 megacycles and 0.5 watts 4 to 64 megacycles adjustable.
Output Connections:	Three BNC RF Connectors.
Crystal Frequencies:	2 to 4 megacycles for output frequencies of 2 to 64 megacycles.
Crystal:	CR-18/U.
Crystal Position:	3 each, available on front panel switch.
Output Voltage:	Sinusoidal with no spurious frequencies.
Stability:	20 cycles per megacycle for 0 to 50 degrees change in ambient temperature.
Calibration:	Direct reading calibration in cycles per second from 2 to 4 megacycles.
Resettability:	20 cycles per megacycle to a calibrated frequency.
Line Voltage Change Effect:	10 cycles for plus/minus 10% change in line voltage.
Humidity Effects:	No appreciable change for 50 to 95% humidity.
High Frequency Oscillator Calibration:	Against 100 kc crystal oscillator at 50 kc points.

## B. BEAT FREQUENCY OSCILLATOR

Frequency Range: 300 to 1,000 Kcs.  
Output Level: 6 volts across 1000 ohms w/output level control.  
Output Connections: Three BNC RF Connectors.  
Crystal Type: CR-46/U or equivalent.  
Crystal Position: Two, on rear panel, selectable.

## C. INTERMEDIATE FREQUENCY OSCILLATOR

Frequency Range: 3.2 to 3.9 Mcs.  
(SP-600J uses 3.5 Mcs.)  
Output Level: 2 volts into 75 ohms coaxial.  
Crystal Type: CR-18/U.  
Output Connections: Three BNC RF Connectors.

## D. GENERAL

Controls:

1. Primary Power switch.
2. HFO Plate Switch.
3. BFO Plate Switch.
4. IFO Plate Switch.
5. Beat ON/OFF.
6. Meter Switch.
7. Multiplier Tuning Control.
8. HFO Output Control.
9. Band Switch.
10. Crystal Padding Condenser.
11. HFO Crystal Selector Switch.
12. Calibrate Control.
13. Master Oscillator Frequency Control.
14. Motor Drive Switch. (when applicable)
15. BFO Crystal Switch.
16. BFO Output Control.

Metering:

1. HFO Output
2. BFO Output
3. VMO Output
4. VMO Output

Zero Beat Indicator: Flashing Neon at check points.

Primary Power: 115/230 volts, 50/60 cps, approximately 100 watts average or 250 watts peak depending upon cycling of oven heating element.

Size: 19" x 16" x 10-1/2" high.  
29" x 30" x 20" packed for Export

Weight: 67 lbs. Net.  
157 lbs. Packed for Export

Mounting: WE Relay Rack Mounting.

**Tube Complement:**

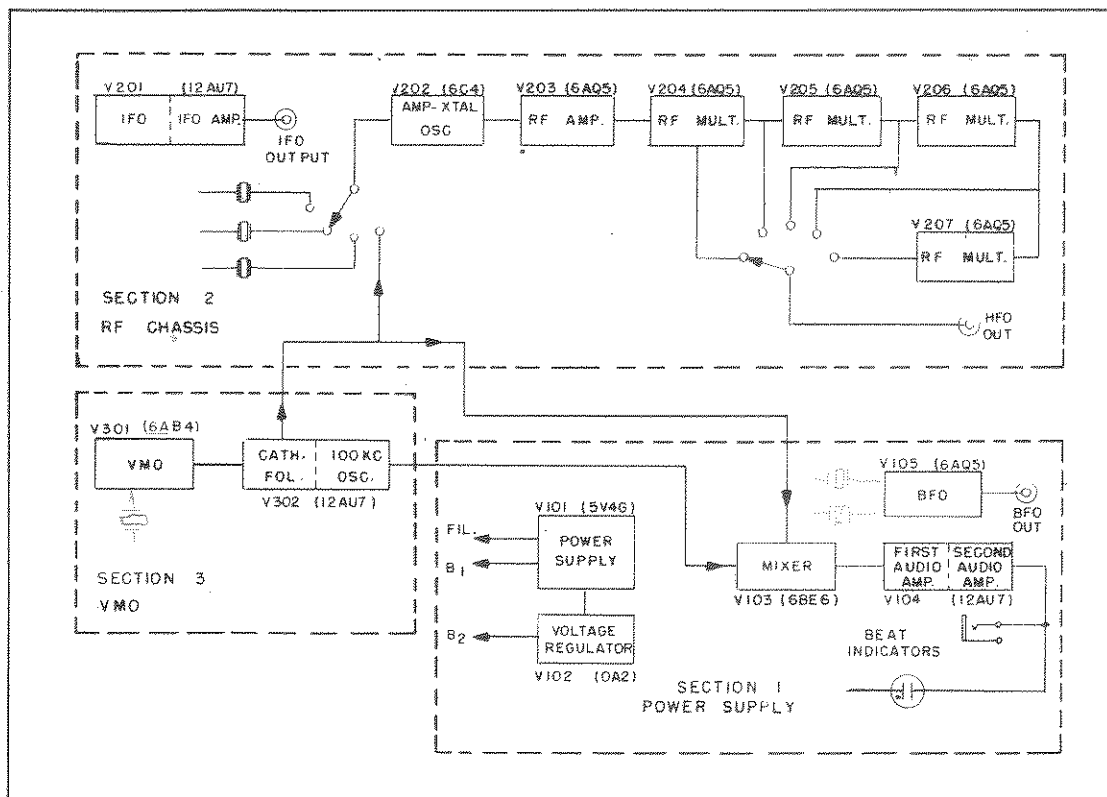
SYMBOL	TYPE	CIRCUIT
V101	5V4G	High Voltage Rectifier.
V102	OA2	Voltage Regulator.
V103	6BE6	Mixer.
V104	12AU7	Audio Amplifier.
V105	6AQ5	BFO.
V201	12AU7	IF0 and Amplifier.
V202	6C4	Crystal HFO or RF Amplifier.
V203	6AQ5	R.F. Amplifier.
V204	6AQ5	Multiplier.
V205	6AQ5	Multiplier.
V206	5AQ5	Multiplier.
V207	6AQ5	Multiplier.
V301	6AB4	VMO.
V302	12AU7	Crystal Oscillator and Cathode Follower.

**Cables:**

Three 6 ft. long service cables, TMC numbers CA-108, CA-109 and CA-502, are supplied with each Model VOX.

**Components and Construction:**

Equipment is manufactured in accordance with JAN specifications, wherever practicable.



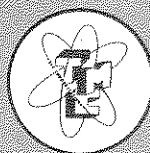
**Block Diagram of the VFO, Model VOX**

# THE TECHNICAL MATERIEL CORPORATION

700 FENIMORE ROAD

MAMARONECK, NEW YORK

CABLE  
TEPEI  
MAMARONECK, N.Y.



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