



Storno

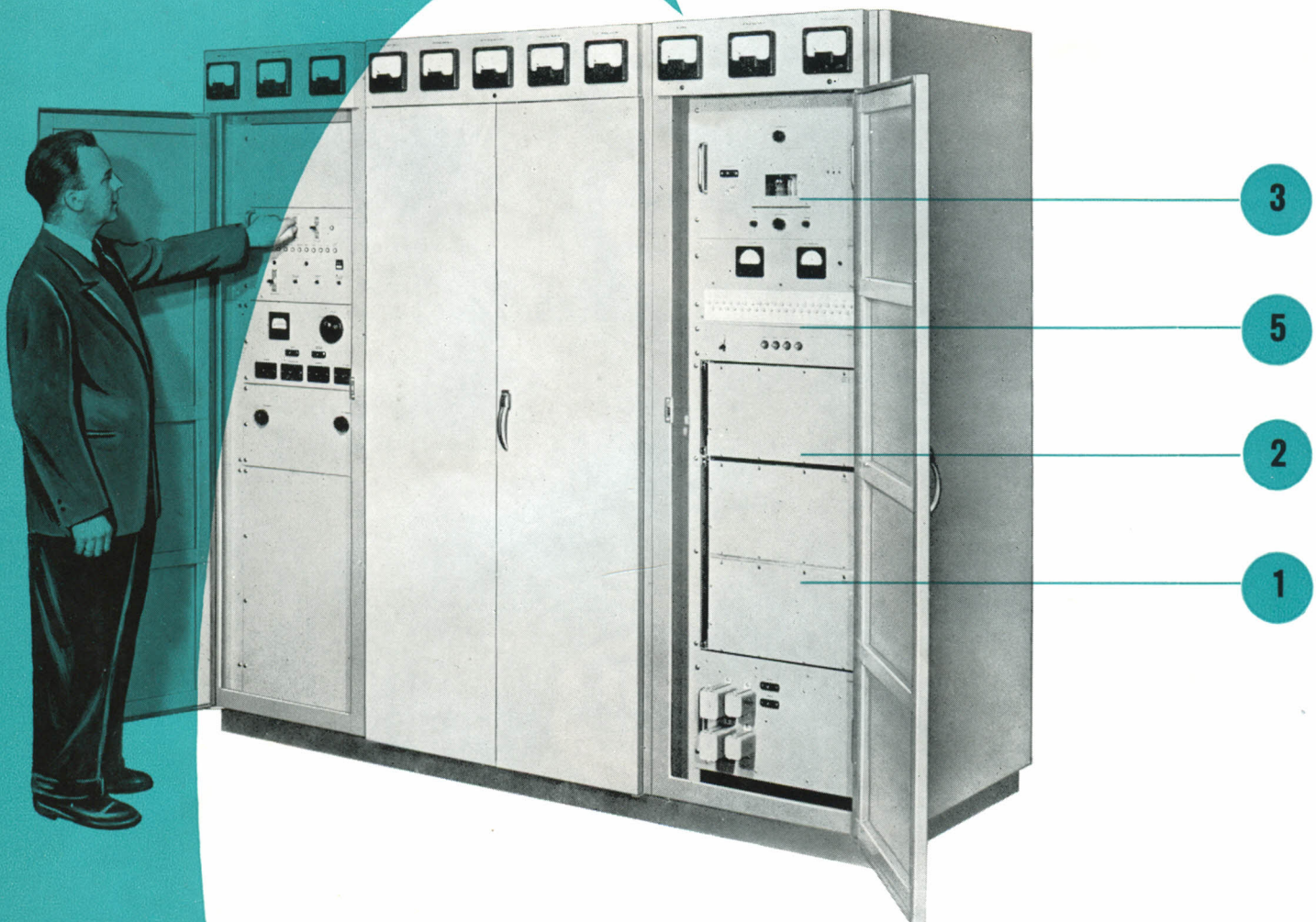
**FM-BROADCASTING TRANSMITTER
TYPE BTF46**

FM-BROADCASTING TRANSMITTER

250 Watt - 1 kW - 5 kW

Type BTF46

87.5 - 100 Mc



THE STORNO FM-BROADCASTING TRANSMITTER TYPE BTF46 is developed to meet the demand from the broadcast services for exceptional frequency stability and very high modulation quality.

As specialists with many years of experience in the manufacture of FM equipment, STORNO has been able to pay special attention to those details which are of vital importance to a reliable operation and a high-class performance.

The basic unit of this station is a 250 Watt transmitting equipment forming a complete transmitter. - If more power is required, an output of 1 or 5 kW respectively may be achieved by applying separate output stages. - The above illustration shows a complete 5 kW transmitter with the low power stages and modulator to the right, the 5 kW output stage in the middle and, to the left, a panel containing power supplies and a special control panel for operation of the high power circuits combined with controls for automatic supervision and switching-over to a spare equipment in case a failure should occur. To facilitate the maintenance, the equipment is provided with a control unit fitted with 40 push-buttons, giving centralized meter readings of all important circuits.

The equipment is completely air-cooled and thermal as well as airflow controlled switches gives protection against over-heating.



The 250 Watt equipment is housed in a cabinet with the dimensions: 77×35×251/2 inches and comprises the following units:

1. Oscillator/Modulator type MO46
2. Driver-transmitter type EX46
3. 250 Watt Power amplifier type PA46-3
4. Power supply for the 250 Watt stage
5. Push-button control panel
6. Meter panel

1. The oscillator/modulator unit is the heart of the station. The oscillator is directly crystal controlled. — Two crystals are employed, one operating and one spare. Both are placed in thermostats to ensure a stability better than ± 1 kc/s on the transmitting frequency. The modulator is of a quite novel design employing direct phase-modulation of the crystal oscillator. This modulator system has several advantages over systems using direct frequency modulation with crystal control. It is remarkable by an extremely low distortion, low internal noise and a negligible amplitude modulation. Once correctly adjusted no further adjustment will normally be required. — The frequency deviation is ± 75 kc/s. — The linear distortion is better than ± 1 db from the pre-emphasis curve between 30 and 15000 c/s and the non-linear distortion is less than 1.5 % within 30-100 c/s and 1.0 % within 100/15000 c/s. To enable inspection during operation, the unit is provided with a swing-chassis.

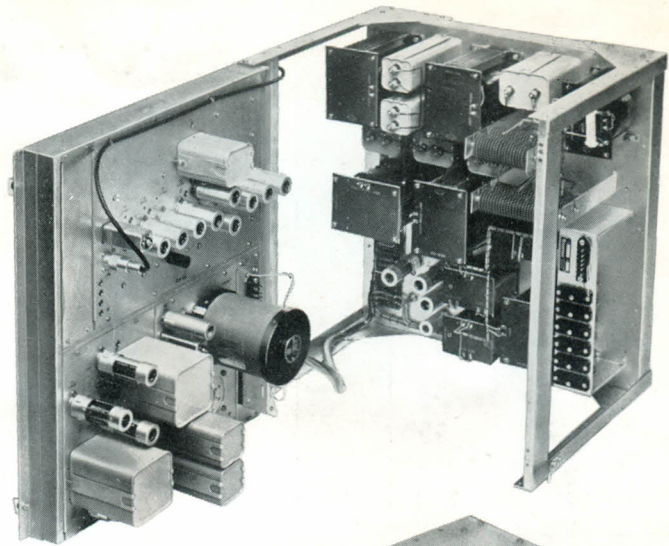
2. The driver transmitter type EX46 multiplies the output frequency of the oscillator up to the final frequency. The output is sufficient to exit the 250 Watt stage. All circuits are conservatively rated and designed to give a low phase distortion and max. attenuation of spurious frequencies. The panel may be swung out for inspection during operation.

3. The 250 Watt power amplifier is a push-pull amplifier with two stages. It may be used either as the final stage in the low power transmitter or as an exiter stage for a high power transmitter.

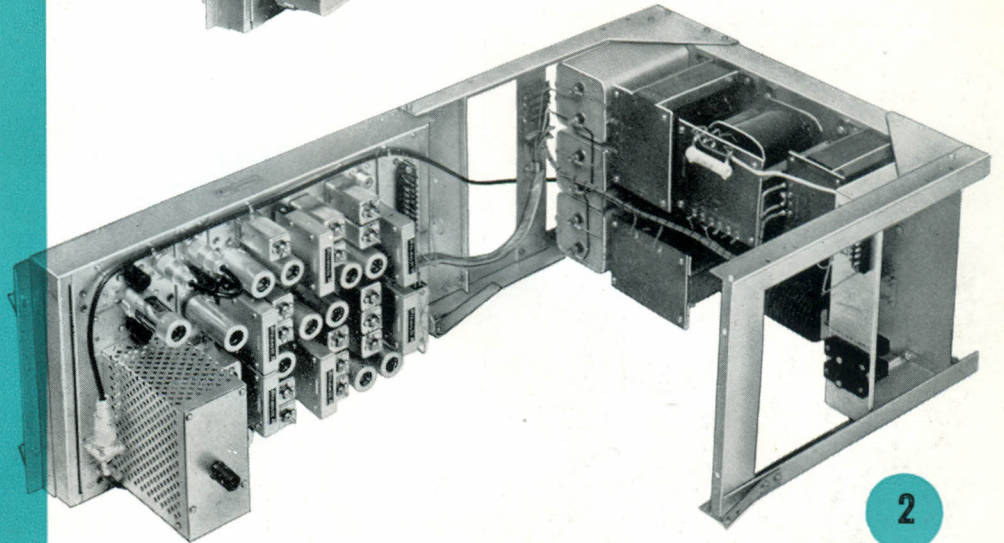
4. The power supply type RU46-3 delivers the power to the 250 Watt stage. To ensure reliable functioning only selenium rectifiers and oilfilled condensers are used. Thermal fuses with re-settings are used for protection against overloading.

5. The control panel is fitted with 40 push-buttons and an associated meter for easy control of all important circuits. — Every button is marked in such a way that immediate identification can take place, stating circuit and unit.

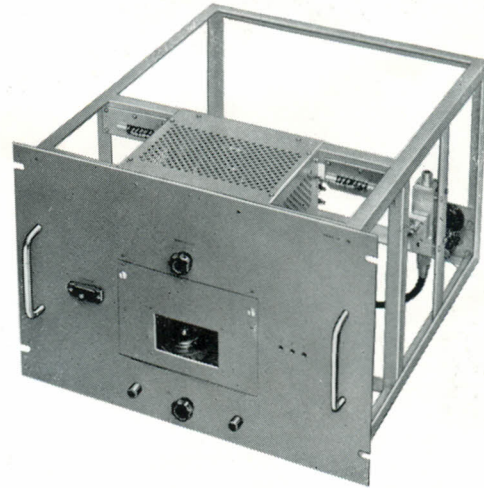
6. The meter panel comprises meters for measuring of the grid currents of the crystal oscillator, the frequency multiplier and the power amplifier.



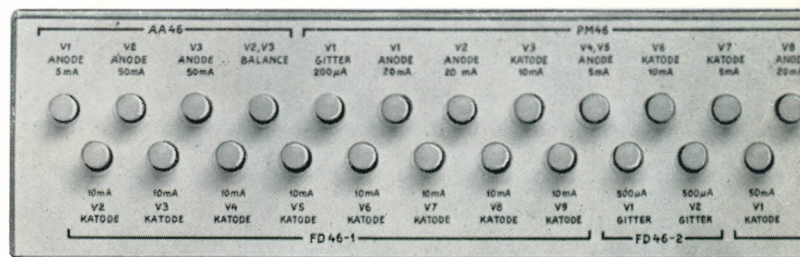
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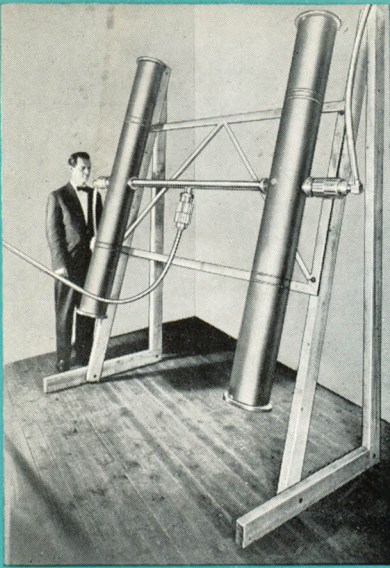


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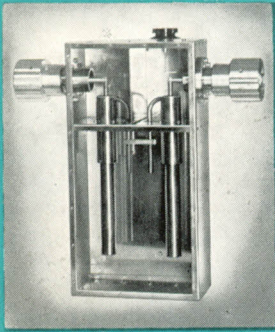


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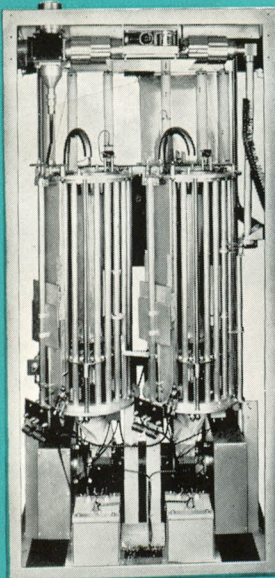
Specifications



Diplexing arrangement for operating two transmitters on a common aerial



Harmonic filter for suppression of harmonic radiation



5 kW output stage comprising final and penultimate stages arranged as grounded grid amplifiers resulting in high overall efficiency

Frequency range:	87.5 to 93.5 Mc/s or, alternatively, 93.5 to 100 Mc/s.
Power output:	Alternatively 250 Watt, 1 kW or 5 kW into a 50 ohms resistive load.
Modulation:	Frequency modulation (corrected phase-modulation).
Deviation:	+ 75 kc/s max.
Multiplication:	972 times.
Frequency stability:	Better than ± 1 kc upon the output frequency.
Pre-emphasis:	50 μ Sec.
FM-noise level:	At least 70 db below the level corresponding to full modulation.
AM-noise level:	At least 55 db below the level corresponding to 100 % amplitude modulation.
Distortion:	Linear: better than ± 1 db measured from the pre-emphasis curve within 30-15000 c/s. Non-linear: less than 1.5 % from 30-100 c/s. less than 1.0 % from 100-15000 c/s.
AF-input:	Full deviation for 1.6 V across 600 ohms at 1000 c/s.
Consumption:	By 250 Watt output: 1.1 kW. By 1 kW output: app. 3.5 kW. By 5 kW output: 10.5 kW.
Dimensions:	Height: 6' 5". Depth: 2' 11/2". Width: 250 Watt panel: 2' 11". Final stage: 5' 10". Power stage: 2' 11".
Weights:	Of 250 Watt panel: 750 lbs. Of 5 kW panel: 1200 lbs. Of power panel: 1450 lbs.
Harmonic filter:	Attenuation of the second harmonic: at least 60 db. Attenuation of the third harmonic: at least 30 db. Bandpass loss: less than 0.1 db.
Diplexer:	Separation between the two transmitting frequencies: min. 4 Mc/s. Attenuation: 57 db at the center frequency. 44 db \pm 100 kc/s from center frequency. Bandpass loss: less than 0.2 db.

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