50-Watt VHF Telephone Transmitters

Types HX 315 and HX 316

DESIGNED for single channel continuous duplex operation, (with an associated receiver), the Types HX 315 and HX 316 provide amplitude modulated transmissions in the frequency range 70–95 Mc/s. They are intended for operation as permanent installations and are eminently suitable for use in point-to-point links or as control stations working to mobile units. The transmitters may also be used, with associated receivers, as repeaters.

The equipment is housed in a metal rack type cabinet, with shock absorber mountings. The transmitter is divided into four main units which are withdrawable to facilitate maintenance. Control is effected from a desk unit similar to a normal telephone set.

FEATURES

Automatic modulation level control prevents over-modulation and consequent distortion.

Line amplifier permits operation from a remote point.

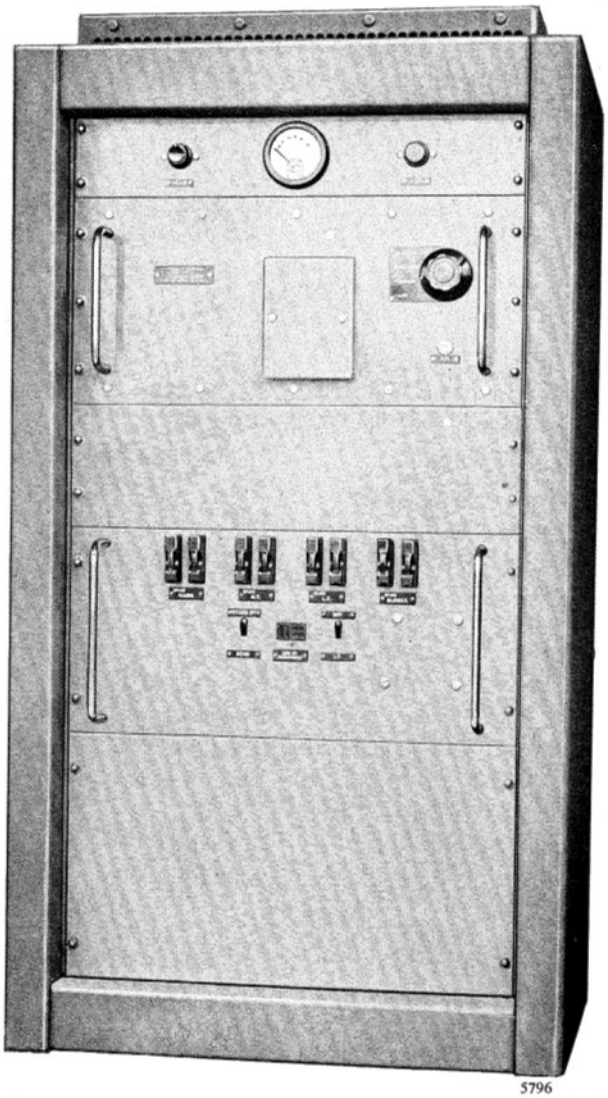
Low-power 'tune' condition.

Unit type construction—units readily withdrawable for maintenance.

Comprehensive built-in metering facilities.

CIRCUITS

A crystal operating at one sixth of the final radiated frequency operates in series resonance to provide the drive. A tuned circuit in the anode lead of the maintaining valve selects the third harmonic of the oscillator frequency and in the



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Type HX 315 (70–78 Mc/s) passes it direct to a frequency doubler. In the Type HX 316 (78–95 Mc/s), however, the frequency doubler is fed *via*

an amplifier stage. In both types the next stage is an intermediate amplifier which feeds a push-pull stage. This drives the push-pull final stage, the valves being cooled by a blower fan. Anode and grid inductances consist of lengths of tuned transmission line.

The modulator unit comprises a four stage amplifier with a Class B push-pull output stage. A pentode amplifier drives a second pentode to which negative feedback is applied, and this in turn drives a cathode follower. Transformer coupling is used so as to provide a low impedance drive to the push-pull modulator stage; anode modulation being employed. A double diode rectifies the modulator output and, over a pre-set level, feeds back a voltage which reduces the gain of the first amplifier stage. Over-modulation is thus prevented.

The power supply unit, which forms the lower section of the cabinet, incorporates a delay valve to prevent premature application of HT. All supply lines are fully fused, and indicator lamps show when the equipment is in operation.

A meter with selector switch is provided to simplify testing and the alignment of the circuits. Tuning controls are brought out on to the front panel, but are normally covered by a plate to prevent meddling by unauthorised personnel. A safety switch prevents the opening of rear doors until all supplies are disconnected.

DATA SUMMARY

Frequency ranges: Type HX 315 70–78 Mc/s.
Type HX 316 78–95 Mc/s.

Power output: 50 W.

Output impedance: 75 Ω unbalanced.

Frequency stability: ±0·01% from −10°C to 30°C.

Spurious radiations: 2nd Harmonic more than 60 db below carrier level. Other spurious responses more than 70 db below carrier level.

Modulation depth: Up to 100%.

Modulation input level: Local; not more than 1·5 V RMS into 40 Ω for 100 Ω modulation. Remote; −15 dbm into 600 Ω for 100% modulation.

AF response: Level to within ±3 db between 200 and 5,000 c/s. relative to the level at 1,000 c/s

Modulation level control: Modulator output kept level within 2·5 db of threshold value for input change of 22 db.

Power supplies: 200–250V, 45–65 c/s single phase AC mains.

Power consumption: 660 VA.

Dimensions:

Height	Width	Depth	Weight
4 ft 2 in. (127 cm)	2 ft ½ in. (62 cm)	2 ft (61 cm)	400 lb (182 kg)

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