

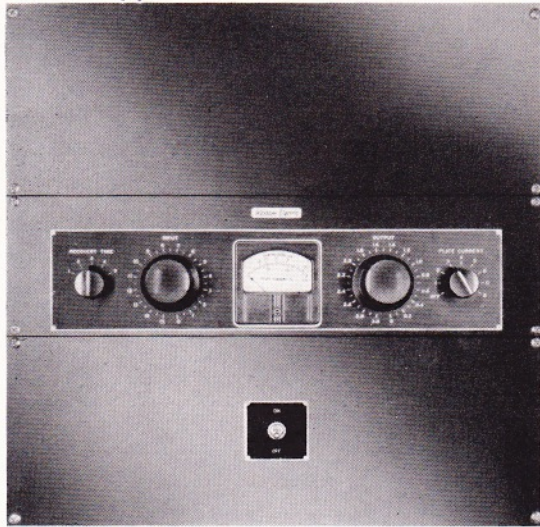
# PROGRAM

AMPLIFIER

1126A

*Western Electric*

# AMPLIFIER



## PROGRAM OPERATED LEVEL GOVERNING AMPLIFIER

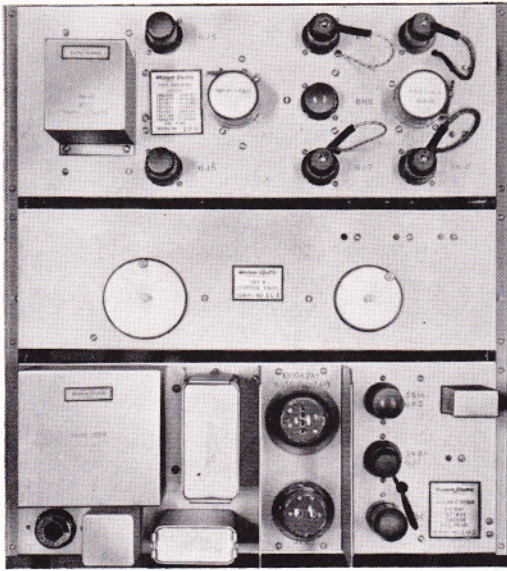
**T**HE 1126A AMPLIFIER is the successor to the pioneer limiter — the widely used Western Electric 110A Program Amplifier. The 110A and 1126A are mechanically and electrically interchangeable. The new amplifier not only gives the increased coverage that the 110A does, but also provides better overall transmission characteristics and complete freedom from overmodulation.

The 1126A has considerable versatility in action and can be applied, for example, as a volume limiter, peak limiter and line amplifier.

The 1126A has an entirely new limiting circuit with far faster operation. It has an extremely short attack time (in the order of 1/10,000 second) and a high compression ratio. This makes possible transmission at higher average program levels, with consequent increased coverage, but without risking the detrimental effects caused by peak levels of program exceeding the load capacity of the transmission channel. It is entirely suitable for either AM or FM transmitters. Its signal to noise ratio is in excess of 70 db and distortion is less than 1% for all operating conditions, even during compression.

Heretofore limiter circuits were too slow in operation to prevent at least a few cycles of a sudden peak, particularly of the higher audio frequencies, from passing through the limiter circuit before it could act to reduce gain below the point

*Western Electric*



necessary to prevent overload or overmodulation. The 1126A is so fast in attack, that the user can eliminate the following representative results of overloading by peaks:

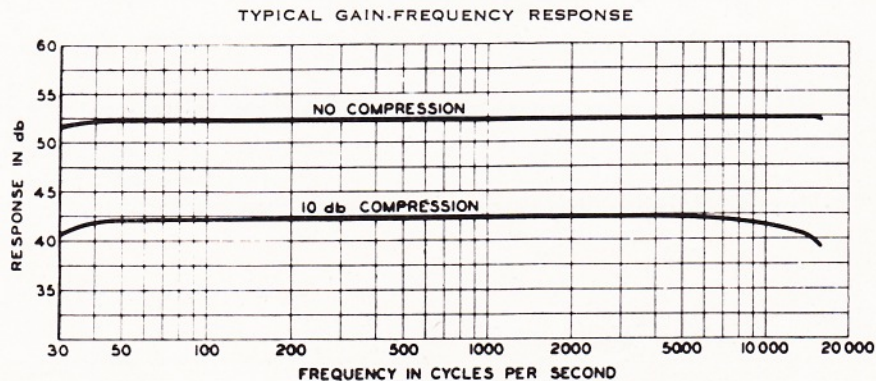
1. Splash or short interval adjacent channel interference due to instantaneous overmodulation of AM transmitter as, for example, the rhythmic tattoo of noise produced in adjacent standard broadcast channels by a hot brass orchestra.
2. Overswing in FM transmission which may cause the guard band to be overridden and also distortion to occur in the receiver.
3. Instantaneous overload and consequent distortion of other transmission systems.

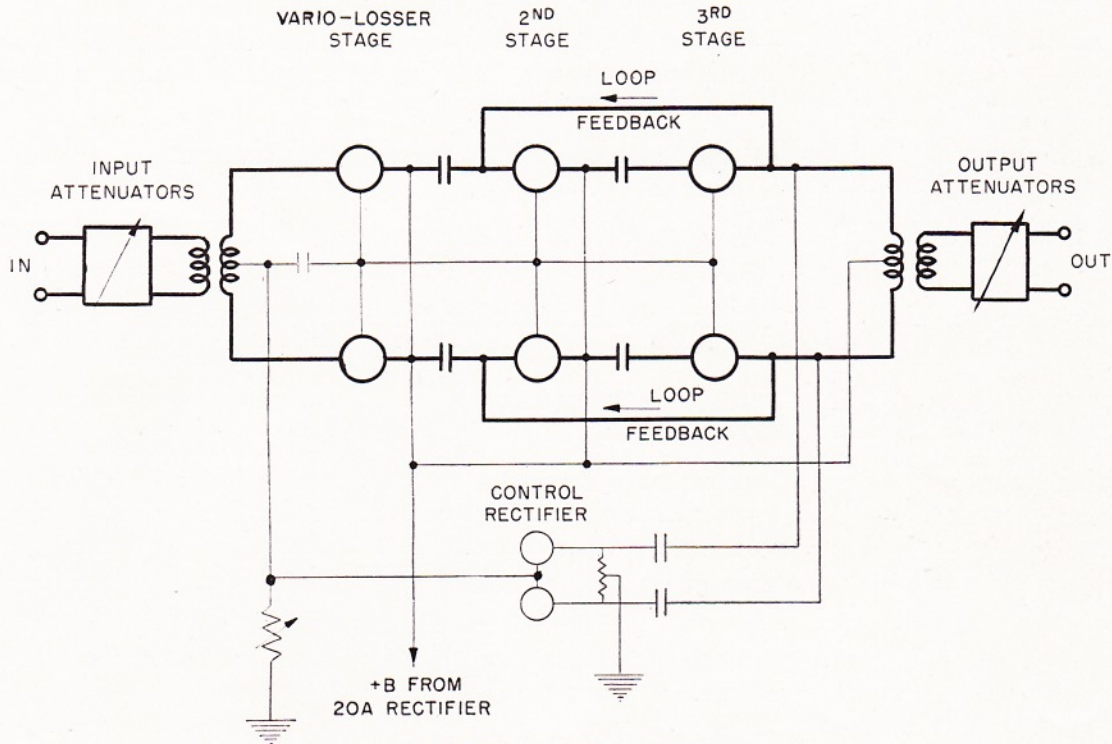
Where the 110A Program Amplifier provided a 3 db increase in signal strength for high quality transmission in AM transmitters, the 1126A will provide as much as a 5 db increase for like conditions.

A self-contained, instantaneously operating, automatically regulated power supply stabilizes the operation of the 1126A for a wide range of power supply conditions.

For convenience in installation, the 1126A Amplifier can be separated into three units. The control panel may, for example, be mounted in a control desk and the power supply unit at the base of the bay containing the remainder of the circuit equipment, thus lending useful flexibility in installation.

There are many other new features that operators will like such as: No appreciable change in frequency response or distortion between the conditions of no compression and compression; meter indicating degree of compression; self-contained attenuators for wide range of input and output levels; plate current checking and improved accessibility.





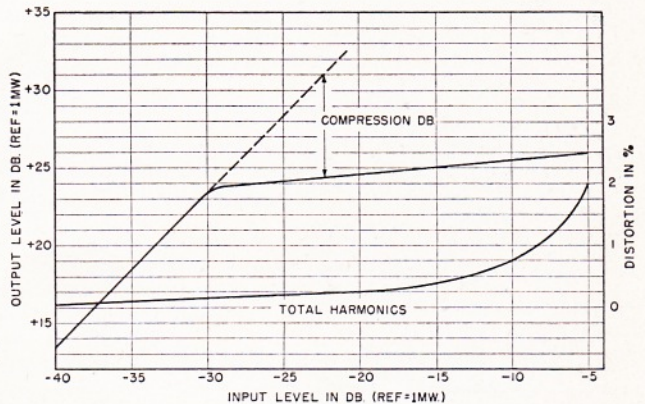
FUNCTIONAL SCHEMATIC

TYPICAL TECHNICAL DATA\*

|                                  |   |
|----------------------------------|---|
| <b>Gain</b>                      | 53 db working from 600 ohms into 600 ohms, all attenuators at zero attenuation. |
| <b>Frequency Response</b>        | Uniform within one db of 1000 cycle value over range of 30-15,000 cycles.       |
| <b>Operates from</b>             | 600 ohms.   |
| <b>Internal Input Impedance</b>  | 600 ohms.   |
| <b>Operates Into</b>             | 600 ohms.   |
| <b>Internal Output Impedance</b> | 600 ohms.   |
| <b>Input Level Range</b>         | From approximately -27 dbm** to +13 dbm.  |
| <b>Output Level Range</b>        | From approximately -6 dbm** to +20 dbm.   |
| <b>Output Distortion</b>         | For Program: less than 1% for all operating conditions up to 5 db compression.  |

For Single frequency tone:  
 (a) Below compression; less than 1% for all frequencies.  
 (b) For 5 db compression; less than 1% for all frequencies above 200 cycles and not more than 13/4% for frequencies as low as 50 cycles.

TYPICAL 1000 Ω LOAD & DISTORTION CHARACTERISTICS



\*More detailed discussions of the new amplifier were given in a paper presented before the I.R.E. Convention in January 1941 and in the May 1941 issue of "Pick-Ups".  
 \*\*dbm = single frequency level referred to 1 milliwatt.

|                     |   |
|---------------------|---|
| Output Noise        | —45 dbm** unweighted. At point where compression starts, output level is approximately +24 dbm resulting in operating signal to noise ratio of at least 69 db.  |
| Power Supply        | 105-130 volts, 60 cycle AC; draws 80 watts; automatic regulator incorporated.   |
| Input Gain Control  | Variable in steps of 0.5 db over a range of 15 db. Incorporates fixed attenuators to provide an additional variation of 35 db in 5 db steps.  |
| Output Gain Control | Variable in steps of 0.1 db over a range of 3 db. Incorporates fixed attenuators to provide an additional variation of 29 db in 1.5 db steps.   |
| Meter               | Reads db of compression, also checks plate current of vacuum tubes and plate voltage of power supply.   |
| Limiting Range      | Recommended maximum compression is 5 db for high quality program transmission. A maximum of 25 db compression may be obtained with increased harmonics. For <u>input</u> signals 15 db above point of operation of limiting, an auxiliary peak-chopping circuit normally functions to restrict peaks sharply. |
| Recovery Time       | Variable in 5 steps through a range from .20 to 1 second to suit reverberation and program characteristics.   |
| Weight              | 49 pounds.  |
| Mounting            | Recessed panel type for standard 19" relay rack (occupies 19¼" vertical space same as 110A Program Amplifier).  |
| Chassis Finish      | Bright Aluminum Lacquer.  |
| Mat Finish          | Black Japan — 1126A-3.<br>Dark Aluminum Gray — 1126A-15.  |

VACUUM TUBES (Not included as part of amplifier)

| <u>Quantity Required</u>       | <u>Western Electric</u>     | <u>Commercial Receiver Types</u> |
|--------------------------------|-----------------------------|----------------------------------|
| Two . . . . .                  |                             | 1612                             |
| Two (Amplifier) . . . . .      |                             | 6J7-G                            |
| One (Rectifier only) . . . . . | 348A . . . . . or . . . . . | 6J7-G                            |
| Two . . . . .                  |                             | 6J5-G                            |
| One . . . . .                  |                             | 6H6-G                            |
| One . . . . .                  | 274A . . . . . or . . . . . | 5Z3                              |
| One . . . . .                  | 351A . . . . . or . . . . . | 6X5-G                            |
| One . . . . .                  | 313C                        |                                  |
| One . . . . .                  | 300B . . . . . or . . . . . | 2A3                              |

(One No. 46 Mazda Lamp required for meter illumination)

\*\*dbm = single frequency level referred to 1 milliwatt.

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