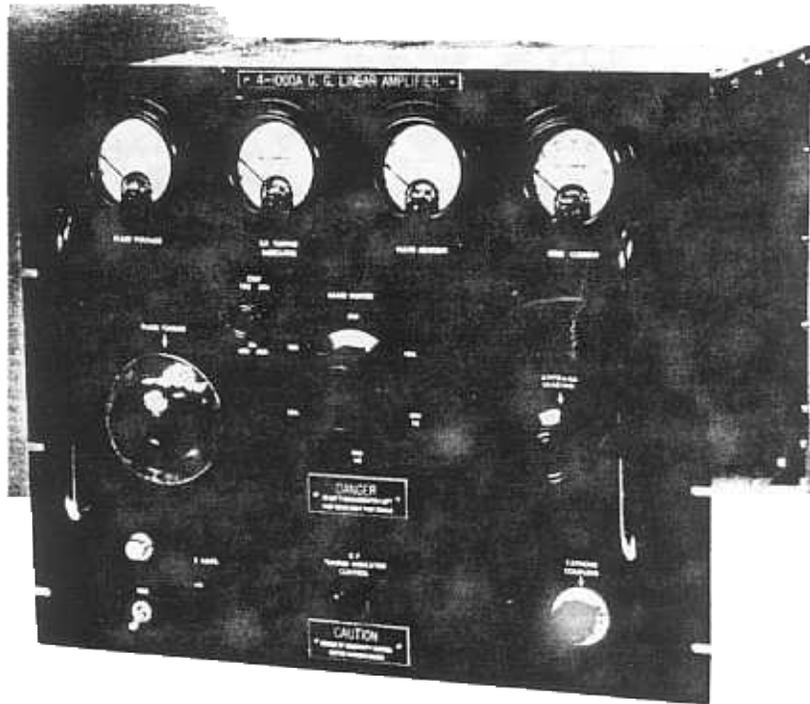


Fig. 1—K9LKA's kilowatt 4-1000A grounded-grid amplifier. Meters across the top of the panel are, from left to right, for plate voltage, relative r.f. output, plate current and grid current. The band-switch control is in the center, flanked by the plate tuning control and capacitor switch  $S_2$  on the left, and the output loading control on the right. Along the bottom are the filament switch, panel lamp and fuse; r.f.-indicator sensitivity control, and the input tuning control.



*Most high-power triodes available at surplus prices do not have a sufficiently high amplification factor to permit zero-bias operation. Tetrodes may be converted to high- $\mu$  triodes by connecting the screen to the control grid. However, in the case of most tetrodes, this connection results in excessive control-grid dissipation at the driving-power level required to obtain normal rated output. The 4-1000A is one of the few exceptions to this rule<sup>1</sup> and is also one that is available in usable condition at relatively low cost from a number of sources. The triode connection results in considerable circuit simplification, especially in grounded-grid operation, since regulated bias and screen supplies are eliminated and neutralization is not required.*

## Zero-Bias Triode Operation in a 1-Kw. Linear

By LARRY KLEBER,\* K9LKA

**M**ANY construction articles describe radio gear that is almost impossible to duplicate with facilities available to the ordinary ham because of unusual mechanical requirements. Complicated gearing, chain drives or special metal shapes that require power tools found only in machine shops sometimes cause an otherwise excellent article to be passed by. In addition to the mechanical problems, cost is frequently completely out of reach for the would-be constructor.

Here is a kilowatt linear amplifier covering 10 through 80 meters that has several features to recommend it to the fellow who wants to increase power. First of all is the cost. Using all new parts, except the meters which are readily

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<sup>1</sup> The Eimac data sheet on the 4-1000A as a grounded-grid triode qualifies this by adding, "... if a plate voltage of at least 3000 volts is used." — Editor.

available from used- or surplus-equipment sources, the total expenditure will be less than \$150 plus the cost of the tube. If you are willing to do some horse trading, scrounging and junk-box raiding, you can do it for considerably less. Type 4-1000As from broadcast or police radio transmitters are readily available at prices from \$20 to \$50. Surplus JAN tubes are listed by several *QST* advertisers, and they are regularly offered in Ham-Ads. Remember, the Eimac 4-1000A is built like a Mack truck and, once you have acquired one of these tubes in good condition, you can expect years of satisfactory service if you don't abuse it by overdriving the grid. That is why a grid-current meter is mandatory.

Secondly, construction is extremely simple. All mechanical work can be performed with ordinary hand tools. An electric drill will cut the con-