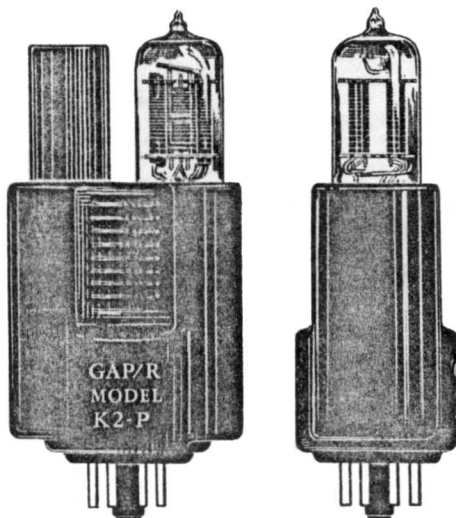


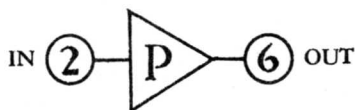
Model K2-P Stabilizing Amplifier



Model K2-P is a chopper amplifier intended to stabilize an Operational Amplifier such as Model K2-W or K2-X. The low drift rate of the K2-W or K2-X (5 Millivolts per day) has been found acceptable in a large majority of applications. However, when drift must be held to a minimum, the combination of the K2-P and K2-W or K2-X comprises a Stabilized Operational Amplifier in which drift is reduced to a sub-millivolt level.

The appearance of the K2-P is similar to that of the other Model K2 Plug-in Components, having the same case structure and octal base. The Chopper, an Airpax Model A-175 or equivalent, is a miniature 7-pin unit which plugs into one of the top sockets of the K2-P. The Amplifier is designed around a single 12AX7 occupying the other top socket.

OPERATIONAL SYMBOL



BASE PIN CONNECTIONS

- | | | |
|------------------|-----------------|-----------------------|
| 1: No connection | 4: Ground | 7 & 8: Heaters |
| 2: Input | 5: Plus 300 VDC | and Chopper Drive |
| 3: No connection | 6: Output | 6.3 V - 50 to 60 cps. |

GENERAL SPECIFICATIONS

GAIN: 1000 DC

POWER REQUIREMENTS:
2.4 Milliamps at 300 VDC
0.45 Amperes at 6.3V 50-60 CPS

TUBE COMPLEMENT: 1 12AX7

OUTPUT IMPEDANCE:
22 Megohms and 1 mf
Output range ± 30 V

BASING: Octal plug

CASE: Black plastic

CHOPPER: Airpax Model A-175
or equivalent

STABILITY: Inherently below 0.1 MV

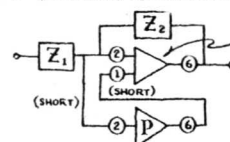
INPUT IMPEDANCE: 2 Megohms DC;
Input offset less than 1 MV

APPLICATIONS

The Model K2-P is used to convert Models K2-W or K2-X into Stabilized Operational Amplifiers, for augmenting their already excellent DC gain and stability. Such usage also permits the optional inclusion of a blocking capacity in the grid circuit of the Operational Amplifier, to reduce the grid current virtually to zero and thus further to increase the accuracy of computation (see III below).

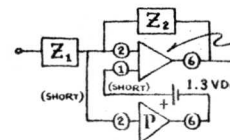
Among many possible combinations with Models K2-W or K2-X, the following are suggested.

I Direct Connection

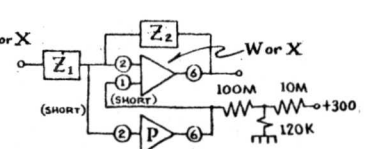


Since 1.3 volts is required at + input (1), an offset error to $\frac{1.3}{1000} = 1.3$ millivolts will exist.

II Direct Biasing Arrangements



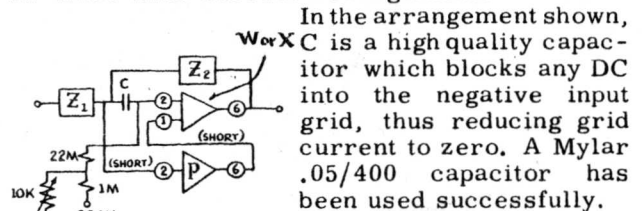
a) Battery



b) Voltage Divider

Either of these arrangements will reduce offset to zero. Arrangement b) may be easily made adjustable.

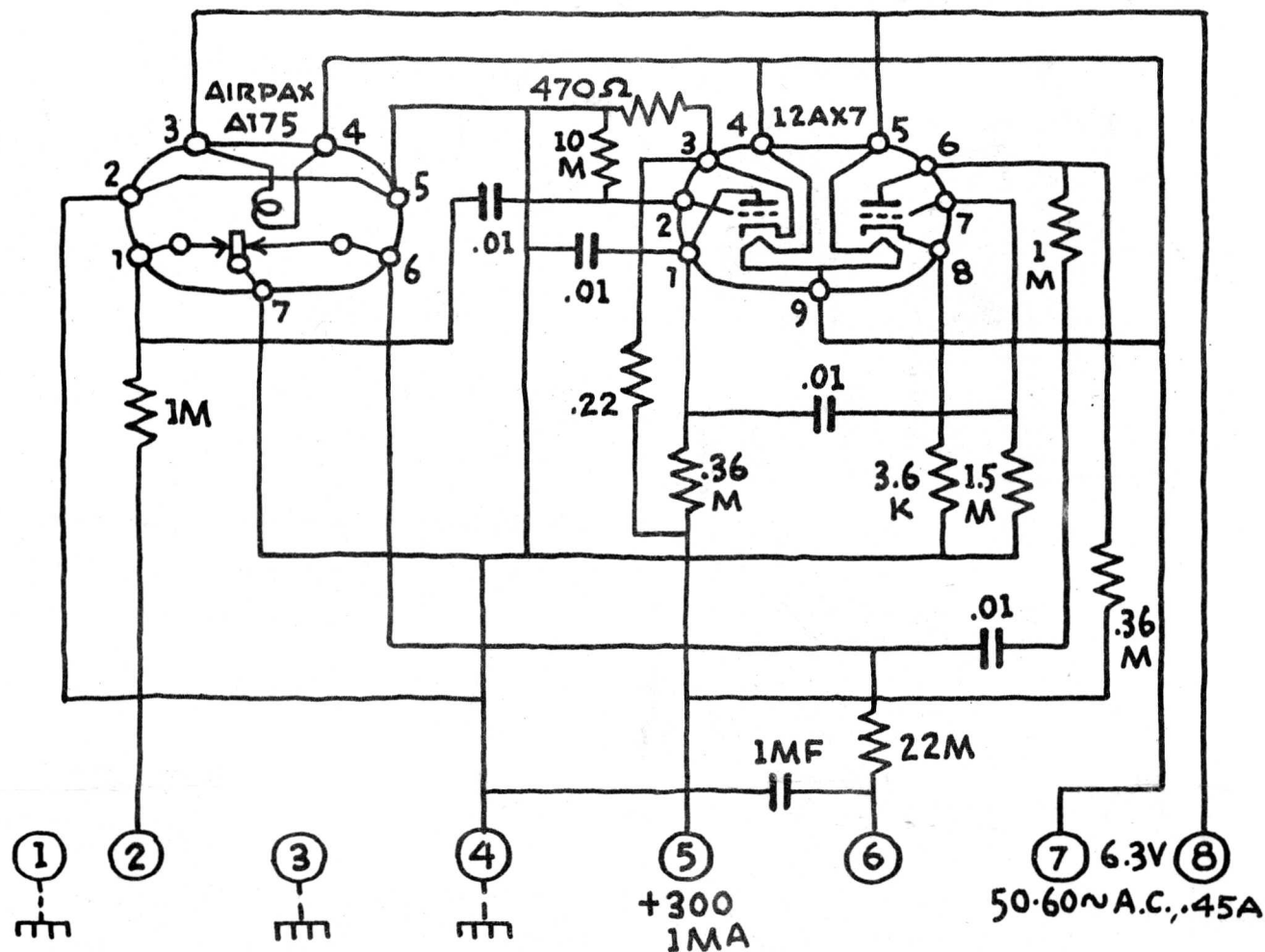
III Zero Grid Current Arrangements



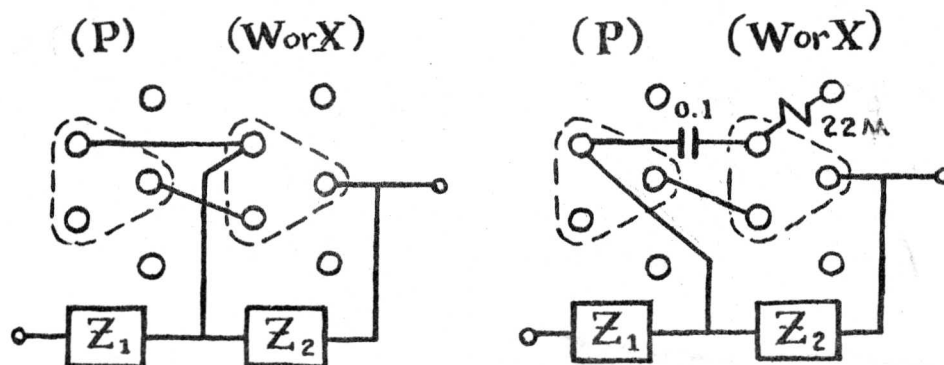
In the arrangement shown, $W_{or} X C$ is a high quality capacitor which blocks any DC into the negative input grid, thus reducing grid current to zero. A Mylar .05/400 capacitor has been used successfully.

Note that during computation, to avoid errors, an amplifier being stabilized this way should not be allowed to limit.

GAP/R MODEL K2-P



INSTALLATION IN MANIFOLDS LIKE HK, MK, etc.



When the Model K2-P is installed in conjunction with a K2-W or K2-X in any of the GAP/R Manifolds (HK, MK, etc.), the manual biasing adjustment at the K2-P socket should be set fully counter clockwise to add in zero voltage, and the manual adjustment at the Operational Amplifier may be used for a vernier low-level stabilizing adjustment.