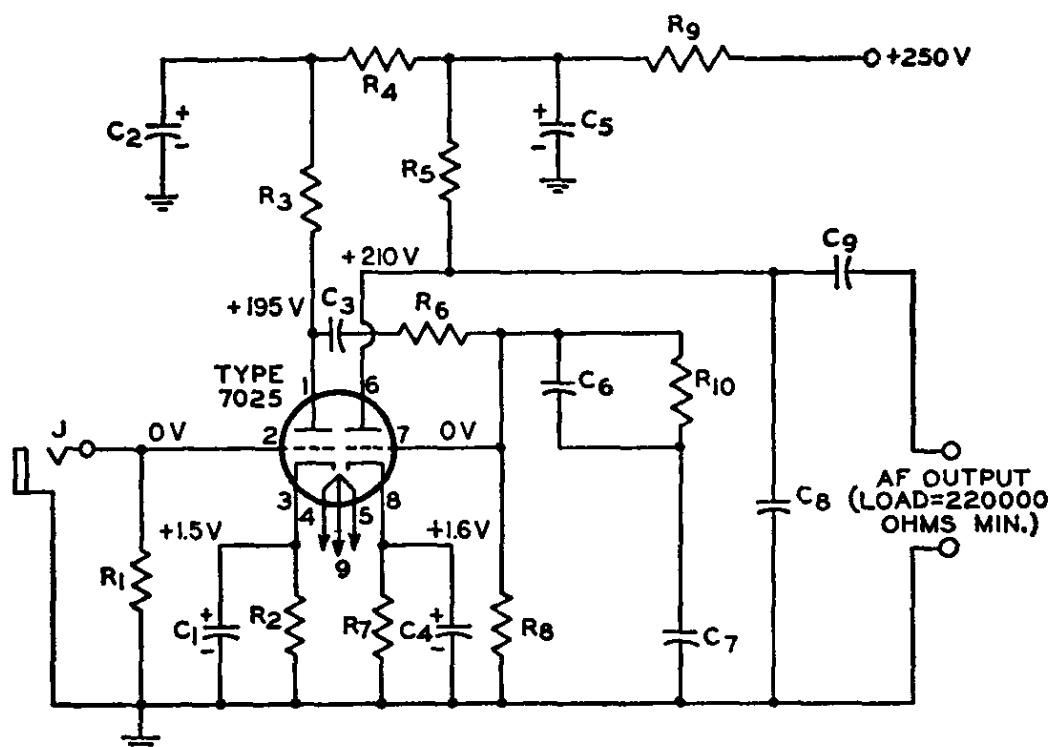


29-16 PREAMPLIFIER FOR MAGNETIC PHONOGRAPH PICKUP

With RIAA Equalization



Sensitivity=3 millivolts rms input for output of 0.55 volt at frequency of 1000 Hz.

Parts List

C₁, C₄=25 μ F, electrolytic, 25 V

C₂, C₅=20 μ F, electrolytic, 450 V

C₃=0.1 μ F, paper, 600 V

C₆=0.0033 μ F \pm 5 per cent, paper, 600 V

C₇=0.01 μ F \pm 5 per cent, paper, 600 V

C₈=180 pF \pm 5 per cent, ceramic or mica, 500 V (includes capacitance of output cable)

C₉=0.22 μ F, ceramic, 500 V
J=Input connector, shielded, for high-impedance magnetic phono pickup (10 mV output, approx.)

R₁=Value depends on type

of magnetic pickup used. Follow pickup manufacturer's recommendations

R₂, R₇=2700 ohms, 0.5 watt
R₃, R₅=0.1 megohm, 0.5 watt
R₄=39000 ohms, 0.5 watt
R₆=0.47 megohm, 0.5 watt
R₈=0.68 megohm, 0.5 watt
R₉=15000 ohms, 1 watt
R₁₀=22000 ohms, 0.5 watt

Circuit Description

This two-stage audio preamplifier is intended for use with high-fidelity magnetic phonograph pickups. The two amplifier stages provide an overall circuit gain of approximately 150. The 7025 twin triode used in the circuit features exceptionally low hum and noise and is designed especially for use in high-fidelity circuits that operate at low signal levels. The preamplifier is ideally suited for use as the low-level input stage for audio power amplifiers such as the 50-watt unit, circuit 29-11. For use with audio power amplifiers such as the 15- and 30-watt units, circuits 29-9 and 29-10, which require higher input signals, another low-level amplifier (e.g., the tone-control amplifier, circuit 29-20) must be inserted between the preamplifier and the

power amplifier to obtain the full rated output. The heater and dc operating power required for the preamplifier can usually be obtained from the power-supply circuit for the power amplifier.

The audio signal from the phonograph pickup is applied to J and coupled through a length of shielded cable to the control grid of the input stage of the preamplifier. The inter-stage coupling between the two amplifier sections of the preamplifier includes an RIAA equalization network (R₁₀ and C₆). This network compensates for the Orthophonic recording characteristic* introduced into a record disc by the manufacturer. The output from the preamplifier is coupled from the plate of the second stage by output coupling capacitor

29-16

PREAMPLIFIER FOR MAGNETIC PHONOGRAPH PICKUP (Cont'd)

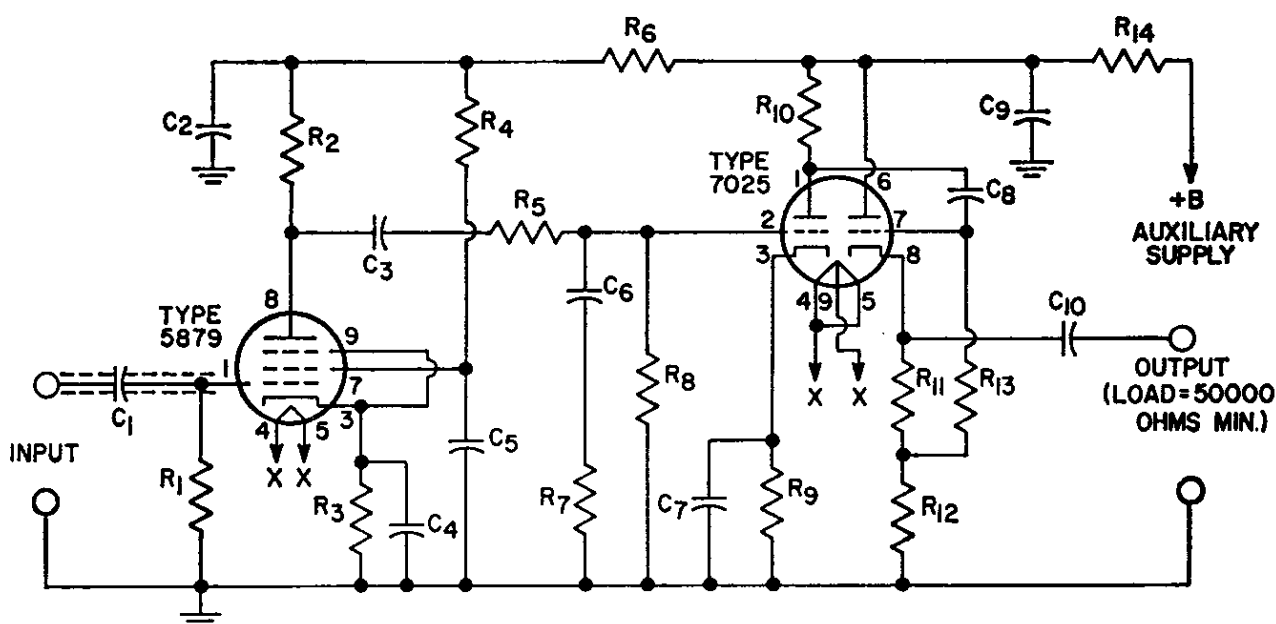
Circuit Description (Cont'd)

C_s to the input of a tone-control amplifier (if used) or directly to the input of the power amplifier. Because of its relatively high output impedance, the preamplifier is recommended for use in systems in which the preamplifier is mounted on the same chassis as the power amplifier and/or tone-control amplifier. The preamplifier may be used at distances up to 6 feet from the following amplifier provided that the capacitance of capacitor C_s is reduced approximately 30 picofarads for each foot of shielded cable used for the audio-frequency connection between the preamplifier and the following amplifier.

* To achieve wide frequency and dynamic ranges, manufacturers of commercial recordings use equipment which introduces a non-uniform relationship between amplitude and frequency. This relationship is known as a "recording characteristic." To assure proper reproduction of a high-fidelity recording, therefore, some part of the reproducing system must have a frequency-response characteristic which is the inverse of the recording characteristic. Most manufacturers of high-fidelity recordings use the RCA "New Orthophonic" (RIAA) characteristic for discs and the NARTB characteristic for magnetic tape.

29-17

HIGH-FIDELITY PREAMPLIFIER FOR TAPE-HEAD PICKUP With NARTB Equalization



Sensitivity=3 millivolts rms input for output of 0.55 volt at frequency of 1000 Hz.

Parts List

$C_1=0.047 \mu\text{F}$, ceramic, 400 V
 $C_2=40 \mu\text{F}$, electrolytic, 450 V
 $C_3=0.1 \mu\text{F}$, ceramic, 400 V
 $C_4=25 \mu\text{F}$, electrolytic, 25 V
 $C_5=0.22 \mu\text{F}$, ceramic, 400 V
 $C_6=0.015 \mu\text{F}$, ceramic, 400 V
 $C_7=25 \mu\text{F}$, electrolytic, 25 V

$C_8=0.22 \mu\text{F}$, ceramic, 400 V
 $C_9=40 \mu\text{F}$, electrolytic, 450 V
 $C_{10}=0.47 \mu\text{F}$, ceramic, 400 V
 $R_1=1 \text{ megohm}$, 0.5 watt
 $R_2=0.1 \text{ megohm}$, 0.5 watt
 $R_3=1000 \text{ ohms}$, 0.5 watt
 $R_4=0.47 \text{ megohm}$, 0.5 watt
 $R_5=0.22 \text{ megohm}$, 0.5 watt
 $R_6=22000 \text{ ohms}$, 0.5 watt

$R_7=3300 \text{ ohms}$, 0.5 watt
 $R_8=3.3 \text{ megohms}$, 0.5 watt
 $R_9=1500 \text{ ohms}$, 0.5 watt
 $R_{10}=0.1 \text{ megohm}$, 0.5 watt
 $R_{11}=1500 \text{ ohms}$, 0.5 watt
 $R_{12}=15000 \text{ ohms}$, 0.5 watt
 $R_{13}=0.47 \text{ megohm}$, 0.5 watt
 $R_{14}=4700 \text{ ohms}$, 0.5 watt