Theoflex

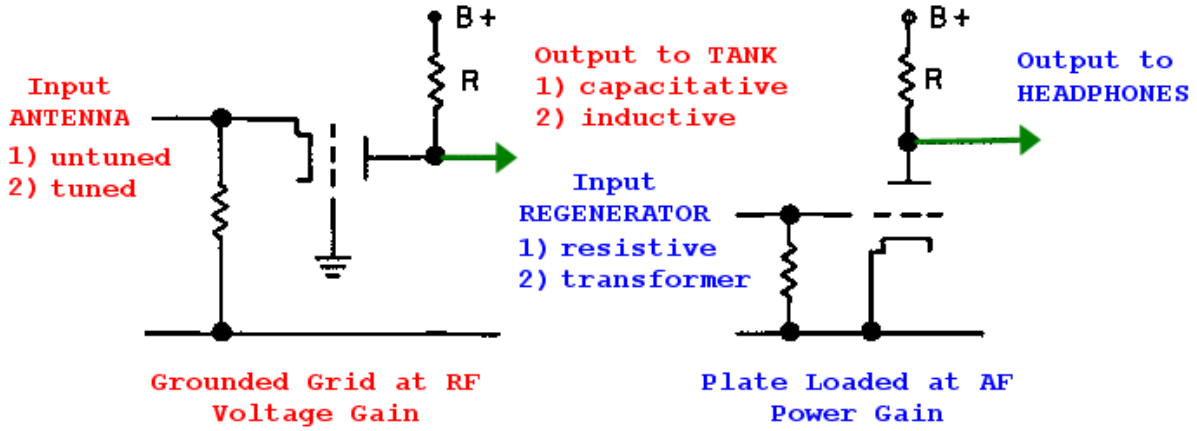
GG RF / PL AF REFLEXIVE AMLIFIER

VERSION 1 ©2008

The information below is not guaranteed to be free of errors.

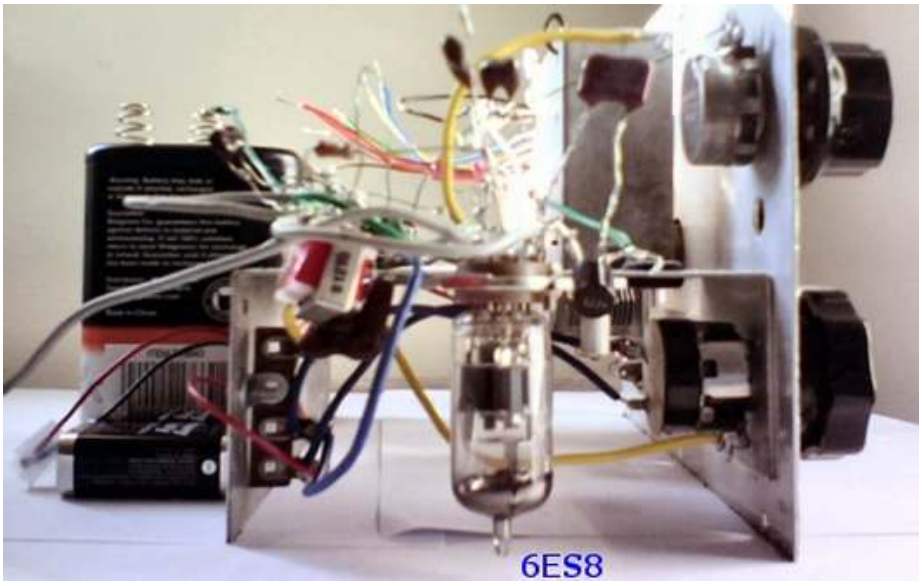
1. INTRODUCTION

The Theoflex is a single-tube reflex amplifier that can be added to any regenerator. RF gain occurs via grounded grid (voltage gain) while AF gain is via plate loading (power gain). Theoflex is a great way to turn your regenerator from 1AD to 2AD. The grounded grid RF amplifier will isolate the tank from the antenna. Input can be tuned or untuned and may contain attenuation: resistive or capacitative. The plate loaded AF amplifier is for power gain. Additional gain can be achieved by utilizing a transformer. I have showcased the Theoflex in my 2 triode Hellenedyne II shown below.



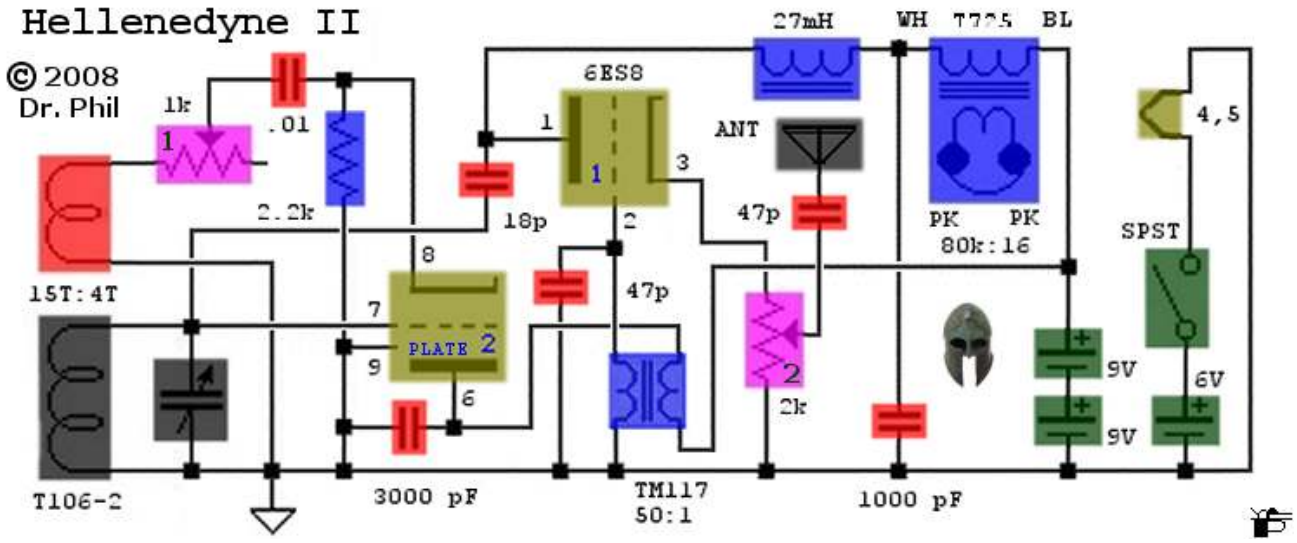
2. 6ES8 DUAL TRIODE

The $7 B9A-base 6ES8 is a variable-Mu dual-triode that packs a punch at lower voltage. It was found using my power output model. At 20 V I calculate the 6ES8 to have an Ia of 6.0 mA at 0 V grid; Rp of 3110 ohms; and Gm of 9060 µMHOs. Heater is 6.3 V at 365 mA. The receiver was running off one "6V lantern" and two "9V batteries. The lantern lasted 30 hours and was replaced with a DC adapter (heater power). The 6ES8's triodes have one of the highest Gm values at 20 V.



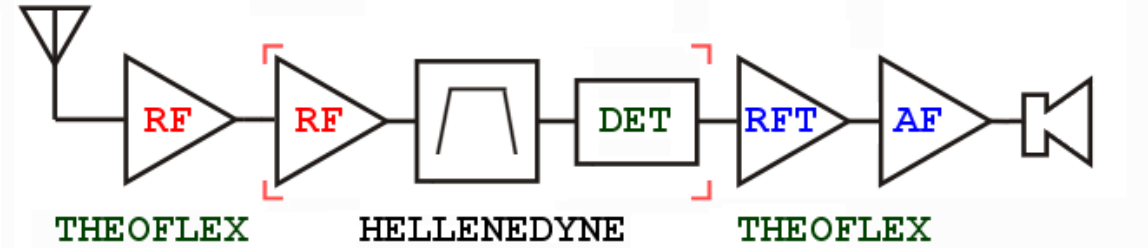
NOTE: mount your 6ES8 or 4ES8 upright.

The majority of runs carry RF: make wiring as short as possible!



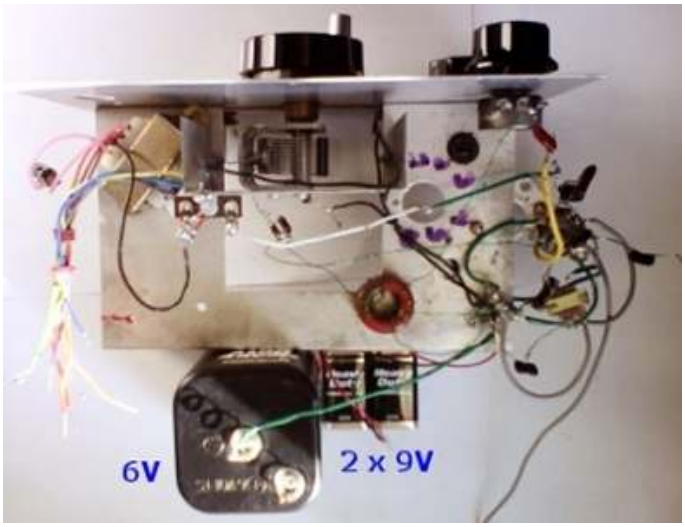
3. HELLENEDYNE II CONFIGURATION / CIRCUIT

Hellenedyne II configuration: Incoming RF is grounded-grid amplified[1], and appears at the tank. Tuned RF energy is cathode-follower amplified[2], and sent to the tickler. Audio detection uses grounded-grid Plate Detection[2], is TM117 transformer amplified, and then plate-loaded amplified[1]. It is an ideal gain model: RF voltage gain, RF regen current gain, AF voltage gain, AF power gain.

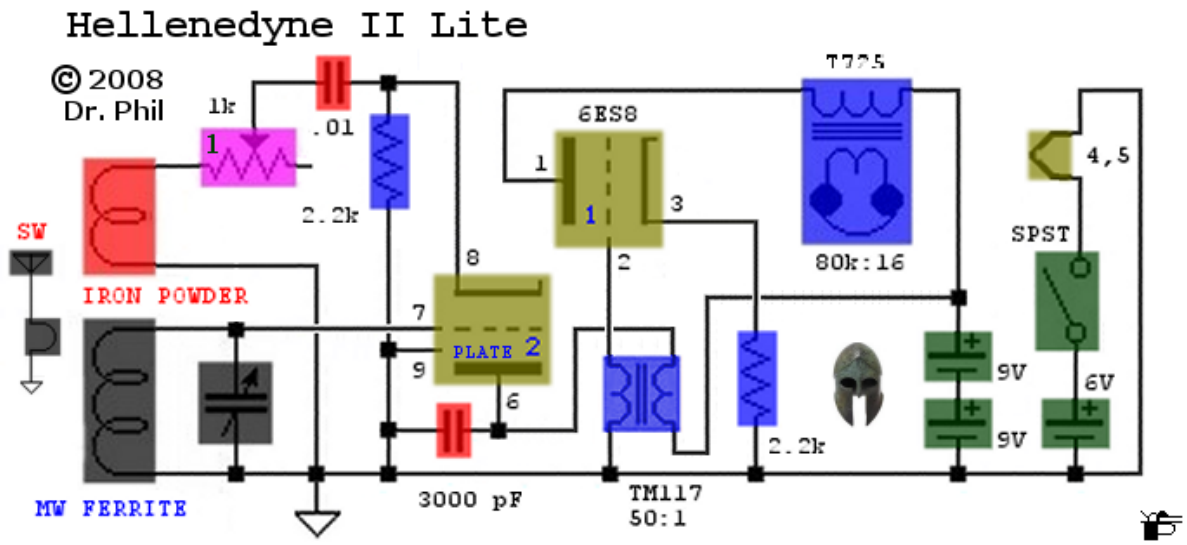


The Hellenedyne II uses a *single* dual-triode tube to create four stages of gain. Two stages are at radio-frequency: an isolating RF amplifier, then *Hellenedyne-style* regeneration (bandwidth limiting and voltage gain). Two stages are at audio-frequency: transformer-driven AF preamplifier, then AF power amplifier. You can hear the world with this simple, single-valve "radio in a bottle".

The Hellenedyne II covers the 31M, 41M, 49M, and 60M bands but could be built for BCB. I recommend Koss Sparkplug earbuds with +112 dB SPL per 1 mW for DXing. Use a 6ES8 (6.3 volt) or 4ES8 (4 volt). Please keep B+ under 35 volts for safety! NOTE: If your tank does not regen you can alter the 2.2k ohm DC resistor with a 10k pot and alter the 0.01 uF tickler cap to your liking!!!



4. HELLENEDYNE II LITE CIRCUIT



The Hellenedyne II Lite is the MW (BCB) or "light" SW version of the Hellenedyne II radio. This circuit was created because: 1) MW/BCB noise can be as high as 10 dBµV or 3.16 µV or S5; 2) RF amplifiers on MW are counterproductive because ferrite rods are directional; 3) I wanted a simpler version of the Hellenedyne II; and 4) some may wish to maintain antenna-tank coupling methods on their SW sets. This is a simple 1-valve daily listener. I dedicate these circuits to God. Have a suggestion? Please write me! I will update this copyrighted PDF and credit all contributors.

A is regeneration; B is RF attenuator and power; and C is tuning.

WARNING: Designs subject to improvement.

Special thanks to Arnie Coro of *Radio Havana Cuba* for his interest in my designs.

REFERENCE

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See my other PDF articles at:
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