The

# Call Letter

of the Northwest Vintage Radio Society

Vol. 24 June 1998 No. 6

At the May Swap Meet!

In print since 1974

# The Northwest Vintage Radio Society

The Northwest Vintage Radio Society is a non-profit historical society incorporated in the State of Oregon. Since 1974 the Society has been dedicated to the preservation and enjoyment of "Vintage radio" and wireless equipment.

Membership in the Society is open to all who are actively interested in historic preservation. The dues are $15.00 for domestic membership, due on January 1st of each year (prorated quarterly).

The *Call Letter* has been a monthly publication since 1974. It was originated with the founder, Bob Bilbie, and our first president, Harley Perkins. Through several editors and with the assistance of numerous members of the *Call Letter* has continued to be a publication that both informs members of the society's business and that has supported the hobby of collecting, preserving, and restoring vintage radios.

Society meetings are held the second Saturday of each month (except July and August) at the Buena Vista Club House at 16th & Jackson Streets in Oregon City, Oregon. They convene at or about 10 AM for the purpose of displaying radios, conducting Society business, and exchanging information. Guests are welcome at all Society meetings and functions (except board meetings).

Other Society functions include guest speakers, auctions, radio show, and radio sales which are advertised in the *Call Letter* and are held in and around Portland.

## Society Officers:

| | | |
|---|---|---|
| President | David Rutland | (541) 929-4498 |
| Vice-President | George Kirkwood | (503) 648-4809 |
| Treasurer | Ed Charman | (503) 654-7387 |
| Secretary | Liles Garcia | (503) 649-9288 |
| Board member at large | Jerry Talbott | (503) 649-6717 |
| *Call Letter* Editor | Rick Walton | (503) 284-5648 |
| Librarian | Tony Hauser | (503) 629-4836 |

The Society's address is:

The Northwest Vintage Radio Society
Post Office Box 82379
Portland, Oregon 97282-0379

# June 1998
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**On the cover:** Liles Garcia took the photo that graces the front cover this month. The rear inside cover is a scan of the etched circuit board created by Don Hunker in the club's early days. This early club logo will also be used in a slightly different form on the cover of the soon to be released membership roster.

## Call Letter Deadline
## 25th of the month
## prior to publication.

**The May Swap Meet takes the place of the May meeting.**
***Don't* miss the Swap Meet at the Washington Co. fairgrounds in Hillsboro, Oregon.**

**Visit the NWVRS web site at:**
**http://www.peak.org/~wren/nvrs.html.**

# From the Editor

by *Call Letter* Editor, Rick Walton

The Spring Swap Meet is the subject of much of this issue. Don't miss Myron White's excellent report. Then there are the pictures. The photo on the front cover as well as the other photos give some sense of the activity at the Washington County Fairgrounds. Even though I only bought a couple of tubes, I had a great time meandering through the aisles looking at all the radios, tubes, parts, etc.

Inside the rear cover is a rendition of the original club logo by Don Hunker back around 1975. I scanned the logo from an etched circuit board that I found in a notebook stored in the *Call Letter* file cabinets. Dick Karman confirmed that the notebook is one that belonged to Don before he donated it to the club. A full history of the club logo is found in an article by Dick that is reproduced on the club web site.

Finally, there is the article on the synchronous spark from a most interesting little booklet that Bob Campbell sent me called *The Radio Condenser.* The issue is Volume 1, Number 1. I'd love to know if there was ever a subsequent issue because the editor makes so many promises of things to come in that issue, including the name of the article's author.

As a special feature this month we have a "centerfold." No, it's not a racy picture or anything like that. It's an output chart from a transformer data manual, also provided by Bob Campbell. Bob finds that it provides useful information when you're trying to find a suitable substitute transformer that is hard to find.

Sadly, Mike Parker called to explain that a busy work schedule over the past month has prevented him from preparing an article for this issue. We look forward to his return next month "In the Shack."

# 1998 NWVRS Calendar of Events

| | |
|---|---|
| **June 13** | Regular meeting. Monthly feature: "Blackface Sets", 1920-25. |
| **September 12** | Regular meeting. |
| **October 10** | Regular meeting. |
| **October 31** | Fall Swap Meet. National Guard Armory, Washington Co. Fairgrounds, Hillsboro, Oregon. |

# Spring Swap Meet Report

Myron White, Swap Meet Coordiantor

Our last swap meet was held on Saturday, May 19 at the Washington County Fairgrounds in Hillsboro. This is the second time that our Spring meet was held in conjunction with the Portland Amateur Radio Club (PARC). This is a popular combination, with each group having shared interests, and we hope to do it again next year.

The year's meet was the biggest ever, with 3 hundred-and 30 people paying the $2.00 admission fee. NWVRS accounted for 43 tables rented, and PARC had 38. Our club will clear about $200 after paying our share of the expenses.

This was this first time that we had food and refreshments provided by Richies Tacos. This seems to have been very well received, and they will be invited to our next swap in October.

There were many interesting items and vendors in attendance at the meet, and I apologize for not being to mention everyone. Here are a just few that caught my attention:

**Liles Garcia** brought some of his military receivers for display. Even though he said that he did not need any more, I know at least one more receiver "followed him home". (Ed. Note: Liles also commented that his receivers had generated a lot of interest, leading him to conclude that the swap meet was very successful.)

**Harold Helfrich** and his friend sold tapes of old time radio programs. I feel that these programs are always a welcome addition to our swaps.

**Peter Young** was selling some of his collection, for the first time since I have been attending our swaps. He sold a Zenith T/O 3000-1 and a Philco 630 Tombstone, as well as a modern Wallace and Grommet novelty set, which he brught back from a recent trip to England.

**Ken Smith** from Eugene brought an extensive colection of restored sets, including 2 Philco Predicta Televisions. These were actually seen in operation at the swap. Rick tells me he will print a picture of these elsewhere in this issue.

**Robin Miller** brought his radios to our swap for the frst time. He is a tree farmer by profession, and lives in Sweet Home, OR. He is selling his entire collection, and brought quite a few consoles and parts sets.

**Gordon Phillips** seems to be accepting new projects again after a well deserved rest. He bought an ancient Zenith Console in need of TLC, and I am sure that no one will be able to recognize it after it has been in his capable hands.

**Mike Mller** and his brother occupied 5 tables, selling from Mike's extensive collection of tubes. Mike wares are always popular with the HAMS, the tube audio crowd, as well as NWVRS.

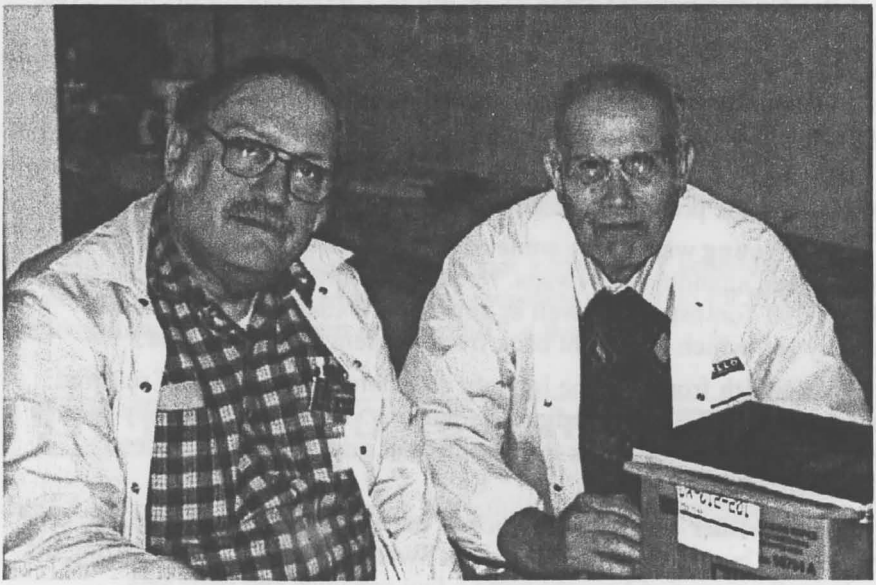
**Dave Vaughn, Charlie Kent,** and **Steve Burgland** shared a block of 6 tables, selling their high quality restorations. I believe Dave sold a very nice high-end Grunow console to a lawyer for a good price.

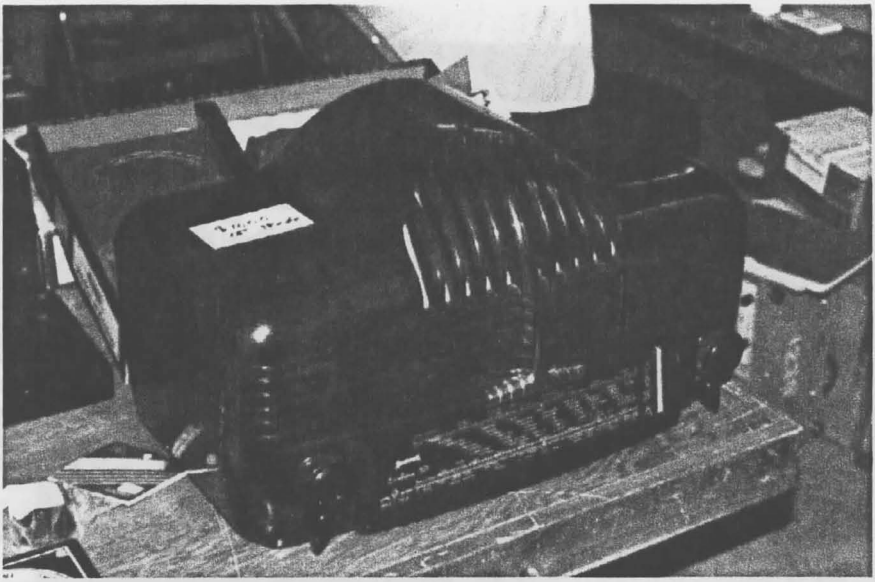
Finally, I would like to thank **Dan Howard**, for selling me a nice T/O brochure, and an unnamed source (you know who you are) for selling me a T/O "bomber" for a reasonable price.

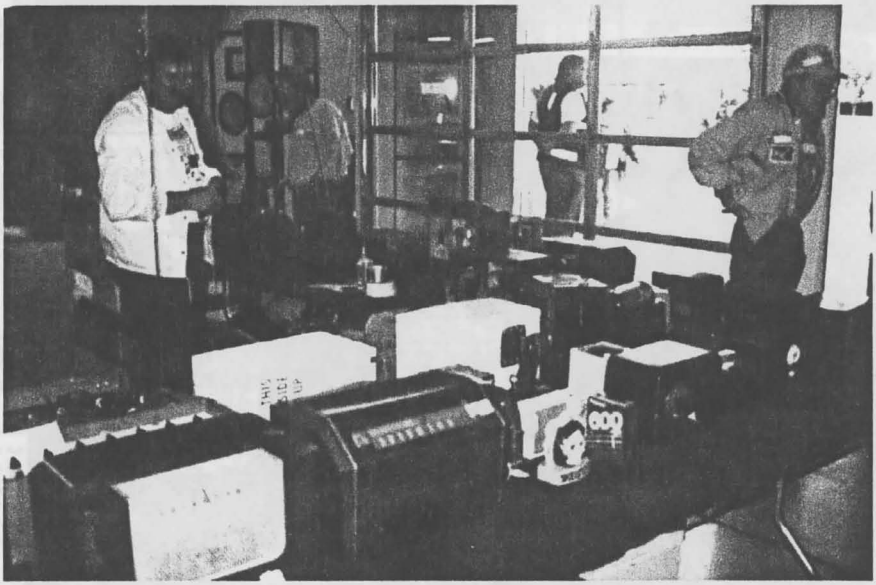
Our **FALL SWAP MEET** will be held on Saturday, October 31, in the National Guard Armory, located next to the Fairgrounds. Tables may be reserved by calling me at (503) 629-5513. The table fee will continue to be $10 each

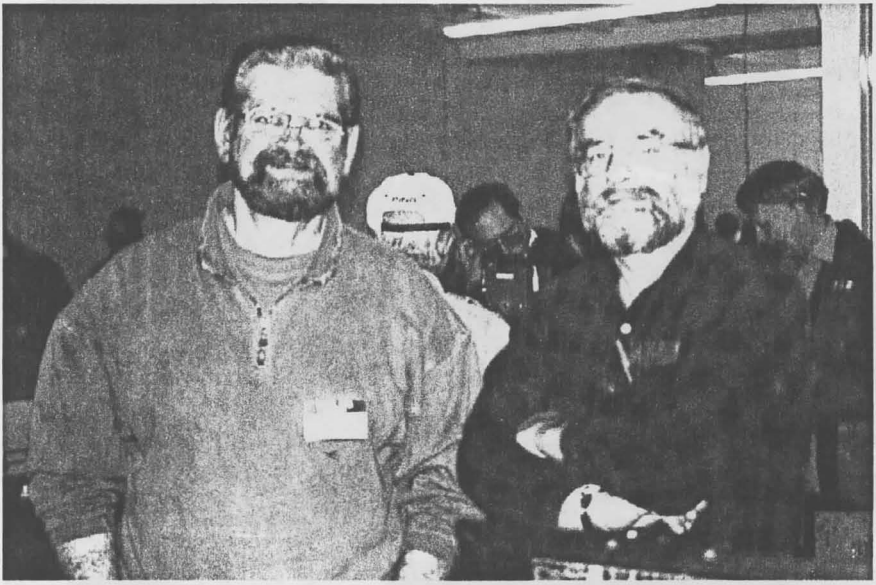
## Photos from the May Swapmeet

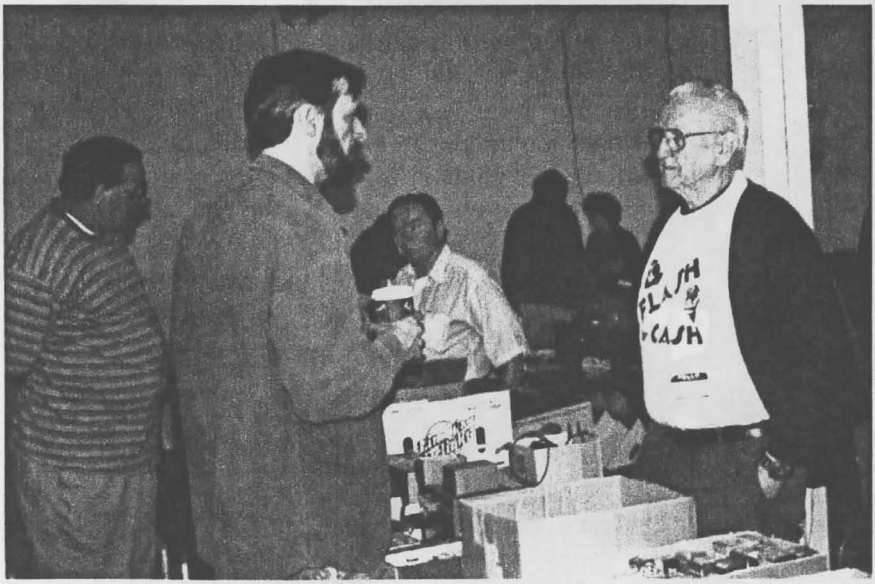
Photography by Liles Garcia and Rick Walton










FLASH
CASH

# Audio Output Transformers

## Output Chart

### TUBE LIST FOR SINGLE PLATE CLASS A APPLICATIONS

| Tube | Plate Load | Watts | Merit No. Exact | Merit No. Universal | Tube | Plate Load | Watts | Merit No. Exact | Merit No. Universal | Tube | Plate Load | Watts | Merit No. Exact | Merit No. Universal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1A5-GT | 25,000 | .115 | A-4102 | A-2999 | 7B5 | 7,000 | 3.0 | A-2931 | A-2903 | 41 | 9,000 | 4.5 | A-2932 | A-2903 |
| 1C5-GT | 8,000 | .240 | A-2927 | A-2900 | 7C5 | 5,000 | 4.5 | A-2930 | A-2902 | 42 | 7,000 | 3.0 | A-2931 | A-2903 |
| 1D8-GT | 12,000 | .200 | A-2934 | A-2999 | 8BQ5 | 4,500 | 5.7 | A-3019 | A-2902 | 43 | 5,000 | 2.2 | A-3026 | A-2998 |
| 1F4 | 16,000 | .300 | A-2934 | A-2999 | 10 | 10,200 | 1.6 | A-2932 | A-2998 | 45 | 4,600 | 2.0 | A-3026 | A-2903 |
| 1F5-G | 16,000 | .310 | A-2934 | A-2999 | 12A5 | 3,300 | 3.4 | A-4103 | A-2903 | 46 | 6,400 | 1.25 | A-2931 | A-2998 |
| 1G5-G | 9,000 | .550 | A-2932 | A-2998 | 12A7 | 13,500 | .550 | A-2934 | A-2900 | 47 | 7,000 | 2.7 | A-2931 | A-2903 |
| 1J5-G | 13,500 | .450 | A-2934 | A-2900 | 12AB5 | 6,000 | 3.3 | A-2931 | A-2903 | 48 | 1,500 | 2.5 | A-2928 | A-2902 |
| 1LA4 | 25,000 | .100 | A-2791 | A-2999 | 12AB5 | 5,000 | 4.5 | A-2930 | A-2902 | 49 | 11,000 | .170 | A-2932 | A-2998 |
| 1LB4 | 12,000 | .200 | A-2934 | A-2999 | 12AQ5 | 5,000 | 4.3 | A-2930 | A-2902 | 50 | 4,350 | 4.6 | A-2930 | A-2903 |
| 1N6-G | 25,000 | .100 | A-2791 | A-2999 | 12BF6 | 10,000 | .300 | A-2932 | A-2998 | 50A5 | 2,000 | 2.1 | A-2928 | A-2903 |
| 1Q5-GT | 8,000 | .330 | A-2927 | A-2900 | 12BK5 | 6,700 | 3.5 | A-2931 | A-2903 | 50B5 | 2,500 | 1.9 | A-3025 | A-2903 |
| 1S4 | 5,000 | .180 | A-3026 | A-2998 | 12C5 | 2,500 | 2.3 | A-3025 | A-2903 | 50C5 | 2,500 | 2.3 | A-3025 | A-2903 |
| 1S4 | 8,000 | .270 | A-2927 | A-2900 | 12CA5 | 4,500 | 1.5 | A-3026 | A-2998 | 50CA5 | 3,500 | 1.1 | A-4103 | A-2998 |
| 1T5-GT | 14,000 | .170 | A-2934 | A-2900 | 12CA5 | 3,500 | 1.1 | A-4103 | A-2998 | 50C6-G | 2,000 | 3.6 | A-2928 | A-2903 |
| 2A3 | 2,500 | 3.5 | A-3025 | A-2903 | 12CS5 | 2,000 | 2.1 | A-2928 | A-2903 | 50EH5 | 3,000 | 1.4 | A-3025 | A-2903 |
| 2A5 | 7,000 | 4.5 | A-2931 | A-2903 | 12CU5 | 2,500 | 2.3 | A-3025 | A-2903 | 50FE5 | 1,000 | 5.6 | A-4096 | A-2902 |
| 3LF4 | 8,000 | .400 | A-2927 | A-2900 | 12DB5 | 2,000 | 2.1 | A-2928 | A-2903 | 50FK5 | 3,000 | 1.2 | A-3025 | A-2903 |
| 3Q4 | 10,000 | .270 | A-2932 | A-2998 | 12DL8 | 800 | .040 | A-2763 | – | 50L6-GT | 2,000 | 2.1 | A-3025 | A-2903 |
| 3Q5-GT | 8,000 | .330 | A-2927 | A-2900 | 12DS7-A | 1,250 | .010 | A-2763 | – | 50L6-GT | 3,000 | 4.3 | A-4103 | A-2903 |
| 3S4 | 5,000 | .180 | A-3026 | A-2998 | 12DV8 | 1,250 | .005 | A-2763 | – | 50L6-GT | 4,000 | 3.8 | A-2930 | A-2903 |
| 3S4 | 8,000 | .270 | A-2927 | A-2900 | 12ED5 | 4,500 | 1.5 | A-3026 | A-2998 | 55 | 20,000 | .350 | A-4102 | A-2999 |
| 3V4 | 10,000 | .270 | A-2932 | A-2998 | 12EH5 | 3,000 | 1.4 | A-3025 | A-2903 | 59 | 6,000 | 3.0 | A-2931 | A-2998 |
| 5AQ5 | 5,000 | 4.3 | A-2930 | A-2902 | 12EM6 | 3,500 | .010 | A-2773 | A-2998 | 60FX5 | 3,000 | 1.3 | A-3025 | A-2903 |
| 5CZ5 | 5,000 | 5.4 | A-2930 | A-2902 | 12J8 | 2,700 | .020 | A-2767 | A-2903 | 70A7 | 2,500 | 1.5 | A-3025 | A-2903 |
| 5V6-GT | 5,000 | 4.5 | A-2930 | A-2902 | 12K5 | 800 | .040 | A-2763 | – | 70L7 | 2,000 | 1.8 | A-2928 | A-2903 |
| 6A3 | 2,500 | 3.5 | A-3025 | A-2903 | 12L6-GT | 2,000 | 2.1 | A-3025 | A-2903 | 71A | 4,800 | .790 | A-3026 | A-2998 |
| 6A4/LA | 8,000 | 1.4 | A-2927 | A-2900 | 12L6-GT | 3,000 | 4.3 | A-4103 | A-2903 | 85 | 20,000 | .350 | A-4102 | A-2999 |
| 6AC5-GT | 7,000 | 3.7 | A-2931 | A-2903 | 12L6-GT | 4,000 | 3.8 | A-2930 | A-2900 | 112A | 10,650 | .285 | A-2932 | A-2998 |
| 6AC6-GT | 3,500 | 3.6 | A-4103 | A-2998 | 12V6-GT | 5,500 | 2.0 | A-3026 | A-2998 | 117L7 | 4,000 | .850 | A-3026 | A-2998 |
| 6AD7-G | 7,000 | 3.2 | A-2931 | A-2903 | 12V6-GT | 5,000 | 4.5 | A-2930 | A-2902 | 117M7-GT | 4,000 | .850 | A-3026 | A-2998 |
| 6AG7 | 10,000 | 3.0 | A-2932 | A-2998 | 12V6-GT | 8,500 | 5.5 | A-2932 | A-2901 | 117N7-GT | 3,000 | 1.2 | A-3025 | A-2903 |
| 6AK7 | 2,500 | 6.5 | A-3127 | A-2902 | 12W6-GT | 2,000 | 3.3 | A-2928 | A-2903 | 117P7-GT | 4,000 | .850 | A-3026 | A-2998 |
| 6AL6 | 4,500 | 6.5 | A-3019 | A-2902 | 14A5 | 7,500 | 2.8 | A-2931 | A-2900 | 183 | 4,500 | 1.8 | A-3026 | A-2998 |
| 6AQ5-A | 5,000 | 4.3 | A-2930 | A-2902 | 14C5 | 5,000 | 4.5 | A-2930 | A-2902 | 257 | 6,000 | .800 | A-3026 | A-2998 |
| 6AR5 | 7,000 | 3.2 | A-2931 | A-2903 | 17CA5 | 3,500 | 1.1 | A-4103 | A-2998 | 483 | 4,500 | 1.8 | A-3026 | A-2998 |
| 6AS5 | 4,500 | 2.2 | A-3026 | A-2998 | 17CU5 | 2,500 | 2.3 | A-3025 | A-2903 | 950 | 13,500 | .450 | A-2934 | A-2999 |
| 6B4-G | 2,500 | 3.5 | A-3025 | A-2903 | 17L6-GT | 2,000 | 2.1 | A-3025 | A-2903 | 955 | 20,000 | .135 | A-4102 | A-2999 |
| 6B5 | 7,000 | 4.0 | A-2931 | A-2903 | 17L6-GT | 3,000 | 4.3 | A-4103 | A-2903 | 1222-A | 4,500 | 6.5 | A-3019 | A-2902 |
| 6BF5 | 2,500 | 1.9 | A-3025 | A-2903 | 17L6-GT | 4,000 | 3.8 | A-2930 | A-2900 | 1621 | 7,000 | 4.8 | A-2931 | A-2901 |
| 6BF6 | 10,000 | .300 | A-2932 | A-2998 | 19AQ5 | 5,000 | 4.3 | A-2930 | A-2902 | 1622 | 4,500 | 6.5 | A-3019 | A-2902 |
| 6BK5 | 6,700 | 3.5 | A-2931 | A-2903 | 20 | 6,500 | .110 | A-2931 | A-2998 | 1632 | 2,000 | 2.1 | A-2928 | A-2903 |
| 6BM8 | 3,900 | 1.05 | A-4103 | A-2903 | 25A6-GT | 5,000 | 2.2 | A-3026 | A-2998 | 5640 | 3,000 | 1.25 | A-3025 | A-2903 |
| 6BQ5 | 4,500 | 5.7 | A-3019 | A-2902 | 25A7-GT | 4,500 | .770 | A-3026 | A-2903 | 5672 | 20,000 | .065 | A-2796 | A-2999 |
| 6CA5 | 4,500 | 1.5 | A-3026 | A-2998 | 25AC5-GT | 2,000 | 2.0 | A-2928 | A-2903 | 5686 | 9,000 | 2.7 | A-2932 | A-2998 |
| 6CL6 | 7,500 | 2.8 | A-2927 | A-2900 | 25B5 | 2,000 | 2.0 | A-2928 | A-2903 | 5812 | 1,700 | 4.3 | A-2928 | A-2902 |
| 6CM6 | 5,000 | 4.5 | A-2930 | A-2902 | 25BK5 | 6,700 | 3.5 | A-2931 | A-2903 | 5824 | 5,000 | 4.3 | A-2930 | A-2902 |
| 6CU5 | 2,500 | 2.3 | A-3025 | A-2903 | 25B6 | 5,000 | 4.3 | A-2930 | A-2902 | 5871 | 8,500 | 5.5 | A-2932 | A-2901 |
| 6CZ5 | 5,000 | 5.4 | A-2930 | A-2902 | 25C5 | 2,500 | 2.3 | A-3025 | A-2903 | 5881 | 2,500 | 6.7 | A-3018 | A-2903 |
| 6DB5 | 2,000 | 2.1 | A-2928 | A-2903 | 25CA5 | 3,500 | 1.1 | A-4103 | A-2998 | 5881 | 4,000 | 1.8 | A-3026 | A-2998 |
| 6DG6-GT | 4,000 | 3.8 | A-3026 | A-2903 | 25CA5 | 4,500 | 1.5 | A-3026 | A-2998 | 5902 | 3,000 | 1.0 | A-3025 | A-2903 |
| 6DS5 | 8,000 | 3.6 | A-2927 | A-2900 | 25C6-G | 2,000 | 3.6 | A-2928 | A-2903 | 5930 | 2,500 | 3.5 | A-3025 | A-2903 |
| 6EH5 | 3,000 | 1.4 | A-3025 | A-2903 | 25EH5 | 3,000 | 1.4 | A-3025 | A-2903 | 5932 | 2,500 | 6.5 | A-3018 | A-2902 |
| 6F6-GT | 7,000 | 4.5 | A-2931 | A-2903 | 25L6-GT | 2,000 | 2.1 | A-3025 | A-2903 | 5992 | 5,000 | 4.5 | A-2930 | A-2902 |
| 6FE5 | 1,000 | 5.6 | A-4096 | A-2902 | 25L6-GT | 3,000 | 4.3 | A-4103 | A-2903 | 6005 | 5,000 | 4.5 | A-2930 | A-2902 |
| 6G6-G | 10,000 | 1.1 | A-2932 | A-2998 | 25L6-GT | 4,000 | 3.8 | A-2930 | A-2900 | 6005 | 10,000 | 10.0 | A-3022 | – |
| 6K6-GT | 7,600 | 3.4 | A-2927 | A-2900 | 25N6-G | 4,000 | 3.8 | A-2930 | A-2900 | 6046 | 2,000 | 2.1 | A-2928 | A-2903 |
| 6K6-GT | 9,000 | 4.5 | A-2932 | A-2901 | 25W6 | 2,000 | 2.1 | A-2928 | A-2903 | 6216 | 4,500 | 3.8 | A-2930 | A-2903 |
| 6L6-GC | 2,500 | 6.5 | A-3018 | A-2902 | 31 | 5,700 | .375 | A-3026 | A-2998 | 6287 | 6,000 | 4.5 | A-2931 | A-2903 |
| 6L6-GC | 4,200 | 10.8 | A-3019 | A-2902 | 32ET5 | 2,800 | 1.2 | A-3025 | A-2903 | 6516 | 16,000 | 1.4 | A-2934 | A-2999 |
| 6L6-GC | 5,000 | 1.4 | A-3026 | A-2998 | 32L7 | 2,600 | 1.0 | A-3025 | A-2903 | 6526 | 10,000 | .375 | A-2932 | A-2998 |
| 6N6-G | 7,000 | 6.5 | A-2931 | A-2901 | 33 | 6,000 | 1.4 | A-3026 | A-2998 | 6550 | 3,000 | 12.5 | – | A-2905 |
| 6V6-GT | 5,500 | 2.0 | A-3026 | A-2998 | 35A5 | 2,500 | 1.5 | A-3025 | A-2903 | 6669 | 5,000 | 4.5 | A-2930 | A-2902 |
| 6V6-GT | 5,000 | 4.5 | A-2930 | A-2902 | 35A5 | 4,500 | 3.3 | A-3026 | A-2903 | 7061 | 5,000 | 3.0 | A-3026 | A-2998 |
| 6V6-GT | 8,500 | 5.5 | A-2932 | A-2901 | 35B5 | 2,500 | 1.5 | A-3025 | A-2903 | 7868 | 3,000 | 11.0 | – | A-2902 |
| 6V7-G | 20,000 | .350 | A-4102 | A-2998 | 35C5 | 2,500 | 1.5 | A-3025 | A-2903 | EL34 | 2,000 | 11.0 | – | A-2902 |
| 6W6-GT | 2,000 | 2.1 | A-2928 | A-2903 | 35EH5 | 3,000 | 1.2 | A-3025 | A-2903 | ECL82 | 3,900 | 1.05 | A-3026 | A-2903 |
| 6W6-GT | 4,000 | 3.8 | A-2930 | A-2903 | 35L6-GT | 2,500 | 1.5 | A-3025 | A-2903 | EL84 | 5,000 | 5.3 | A-2930 | A-2902 |
| 6Y6-GA | 2,000 | 3.6 | A-2928 | A-2903 | 35L6-GT | 4,500 | 3.3 | A-3026 | A-2903 | EL84 | 10,000 | 15.0 | – | A-2904 |
| 6Y6-GA | 2,600 | 6.0 | A-3018 | A-2902 | 38 | 10,000 | 2.5 | A-2932 | A-2998 | KT66 | 2,200 | 7.25 | A-3127 | A-2902 |
| 7A5 | 2,500 | 1.5 | A-3025 | A-2903 | 41 | 7,600 | 3.4 | A-2927 | A-2900 | HL92 | 2,500 | 2.3 | A-3025 | A-2903 |

# Audio Output Transformers

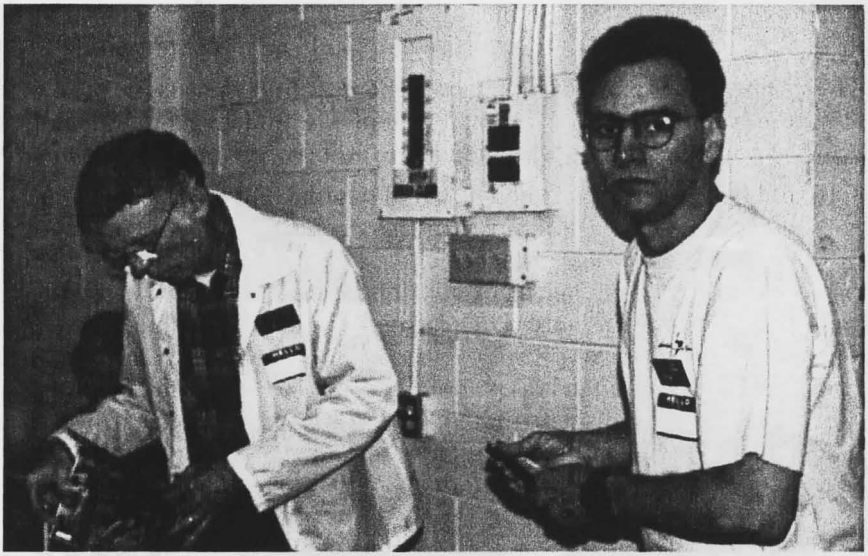
## Output Chart

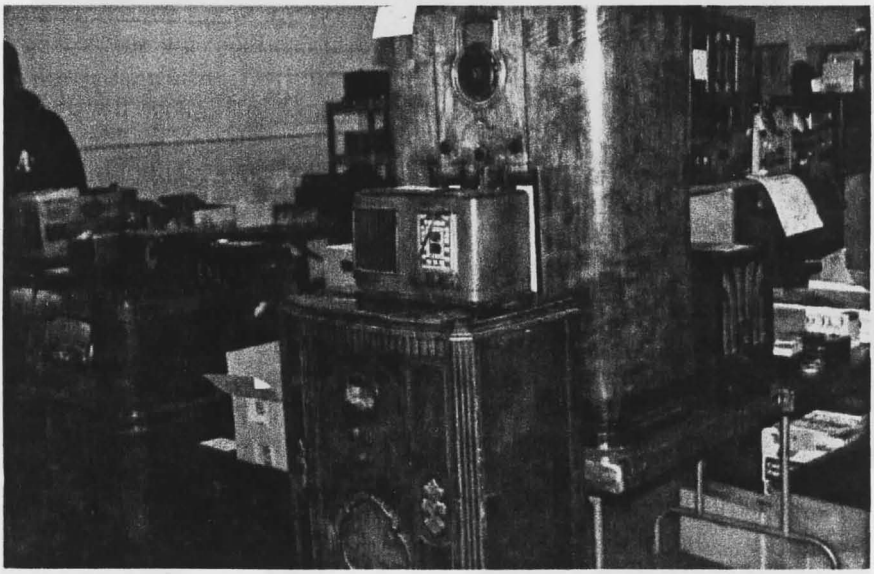
### TUBE LIST FOR PUSH-PULL APPLICATIONS

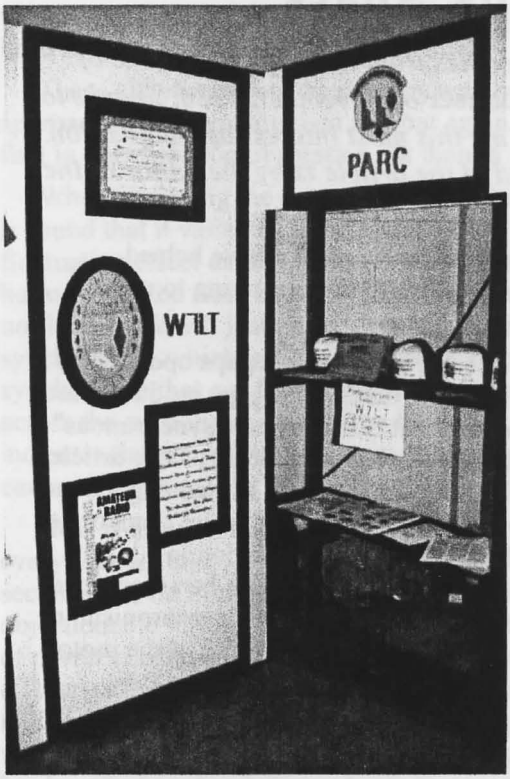
| Tube | Class | Plate Load | Watts | Merit No. Exact | Merit No. Universal | Tube | Class | Plate Load | Watts | Merit No. Exact | Merit No. Universal |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1A5-GT | A | 50,000 | .230 | A-3017 | – | 12AB5 | $AB_1$ | 10,000 | 10.0 | A-2936 | A-2904 |
| 1AC5 | A | 50,000 | .100 | A-3017 | – | 12AQ5 | $AB_1$ | 8,000 | 13.0 | A-4101 | A-2904 |
| 1E7-GT | A | 24,000 | .600 | A-2937 | – | 12CM6 | $AB_1$ | 10,000 | 10.0 | A-2936 | A-2904 |
| 1G6-GT | B | 12,000 | .670 | A-2938 | A-2900 | 12EH5 | $AB_1$ | 6,000 | 3.8 | A-4107 | A-2900 |
| 1H4-G | B | 10,000 | 2.1 | A-2938 | A-2900 | 12V6-GT | A | 8,000 | 14.0 | A-4101 | A-2904 |
| 1J6-GT | B | 10,000 | 2.1 | A-2938 | A-2900 | 12V6-GT | A | 10,000 | 10.0 | A-2936 | A-2904 |
| 1LA4 | A | 50,000 | .200 | A-3017 | – | 14C5 | $AB_1$ | 10,000 | 10.0 | A-2936 | A-2904 |
| 1N6-G | A | 50,000 | .200 | A-3017 | – | 19 | B | 10,000 | 2.1 | A-2938 | A-2900 |
| 2A3 | $AB_1$ | 3,000 | 15.0 | A-4100 | A-2905 | 19AQ5 | $AB_1$ | 8,000 | 13.0 | A-4101 | A-2904 |
| 2A5 | A | 10,000 | 10.5 | A-2936 | A-2904 | 25EH5 | $AB_1$ | 6,000 | 3.8 | A-4107 | A-2900 |
| 2A5 | $AB_2$ | 10,000 | 19.0 | A-3132 | A-2904 | 25F5 | $AB_1$ | 4,500 | 2.9 | – | A-2900 |
| 3B7 | $AB_2$ | 16,000 | 1.5 | – | A-2900 | 35EH5 | $AB_1$ | 6,000 | 3.8 | A-4107 | A-2900 |
| 4A6 | A | 8,000 | 1.0 | A-4101 | A-2900 | 35GL6 | $AB_1$ | 2,500 | 1.8 | A-4100 | – |
| 5AQ5 | $AB_1$ | 8,000 | 13.0 | A-4101 | A-2904 | 41 | A | 12,000 | 9.8 | A-3021 | A-2904 |
| 5V6-GT | $AB_1$ | 10,000 | 10.0 | A-3012 | A-2904 | 42 | A | 10,000 | 10.5 | A-2936 | A-2904 |
| 6A3 | $AB_1$ | 5,000 | 10.0 | A-2935 | A-2904 | 42 | $AB_2$ | 10,000 | 19.0 | A-3132 | A-2905 |
| 6A5 | A | 3,500 | 15.0 | A-4100 | A-2905 | 45 | $AB_2$ | 5,000 | 12.0 | A-2935 | A-2904 |
| 6A6 | B | 8,000 | 4.6 | A-4101 | A-2900 | 46 | B | 5,800 | 20.0 | A-2935 | A-2905 |
| 6AC5-GT | B | 10,000 | 9.5 | A-2936 | A-2904 | 47 | A | 14,000 | 6.0 | A-3021 | A-2901 |
| 6AD7-G | $AB_1$ | 14,000 | 6.0 | A-3021 | A-2901 | 50EH5 | $AB_1$ | 6,000 | 3.8 | A-4107 | A-2900 |
| 6AE7-GT | $AB_1$ | 10,000 | 9.5 | A-2936 | A-2904 | 50FE5 | A | 1,600 | 8.5 | A-4099 | – |
| 6AJ5 | $AB_1$ | 28,000 | 1.0 | A-2937 | – | 53 | B | 8,000 | 10.0 | A-4101 | A-2904 |
| 6AL6 | A | 5,000 | 18.0 | A-2935 | A-2904 | 59 | B | 6,000 | 20.0 | A-2935 | A-2905 |
| 6AL6 | $AB_1$ | 6,600 | 25.0 | A-3130 | A-2905 | 79 | B | 14,000 | 8.0 | A-3021 | A-2901 |
| 6AM5 | $AB_1$ | 20,000 | 4.8 | A-2937 | – | 89 | B | 9,400 | 3.5 | A-2938 | A-2900 |
| 6AQ5-A | $AB_1$ | 8,000 | 13.0 | A-4101 | A-2904 | 807/W | $AB_1$ | 3,300 | 55.0 | A-3133 | – |
| 6B4-G | $AB_1$ | 5,000 | 10.0 | A-2935 | A-2904 | 1291 | $AB_2$ | 16,000 | 1.5 | – | A-2900 |
| 6BQ5 | $AB_1$ | 8,000 | 11.0 | A-4101 | A-2904 | 1614 | $AB_1$ | 6,600 | 26.5 | A-3120 | A-2905 |
| 6CM6 | $AB_1$ | 10,000 | 10.0 | A-2936 | A-2904 | 1625 | $AB_1$ | 3,300 | 55.0 | A-3133 | – |
| 6DZ7 | $AB_1$ | 9,000 | 12 | A-3027 | A-2904 | 1631 | $AB_1$ | 6,600 | 26.5 | A-3130 | A-2905 |
| 6DZ7 | $AB_1$ | 9,000 | 18 | A-3132 | A-2904 | 1635 | B | 12,000 | 10.4 | A-3021 | A-2904 |
| 6E6 | A | 14,000 | 1.6 | A-3021 | A-2900 | 1644 | A | 10,000 | 1.0 | A-2938 | A-2900 |
| 6EH5 | $AB_1$ | 6,000 | 3.8 | A-4107 | A-2900 | 5670 | $AB_1$ | 27,000 | 1.0 | A-2937 | – |
| 6F6-GT | A | 10,000 | 11.0 | A-2936 | A-2904 | 5881 | A | 5,000 | 18.0 | A-2935 | A-2904 |
| 6F6-GT | $AB_2$ | 10,000 | 19.0 | A-3132 | A-2904 | 5930 | $AB_1$ | 5,000 | 10.0 | A-2935 | A-2904 |
| 6FE5 | A | 1,600 | 8.5 | A-4099 | – | 6095 | $AB_1$ | 10,000 | 10.0 | A-2936 | A-2904 |
| 6GK6 | $AB_1$ | 8,000 | 11.0 | A-4101 | A-2904 | 6146 | A | 10,000 | 18.0 | A-3132 | A-2904 |
| 6GK6 | B | 8,000 | 17.0 | A-4101 | A-2904 | 6360 | $AB_1$ | 8,000 | 9.3 | A-4101 | A-2904 |
| 6K6-GT | A | 12,000 | 9.8 | A-3021 | A-2904 | 6550 | $AB_1$ | 3,300 | 55.0 | A-3133 | – |
| 6L6-GC | A | 5,000 | 14.5 | A-2935 | A-2904 | 6973 | $AB_1$ | 6,000 | 17.0 | A-2935 | A-2904 |
| 6L6-GC | A | 5,000 | 17.5 | A-2935 | A-2904 | 6973 | $AB_1$ | 8,000 | 12.5 | A-4101 | A-2904 |
| 6L6-GC | $AB_1$ | 6,600 | 26.5 | A-3130 | A-2905 | 6973 | $AB_1$ | 13,000 | 15.0 | A-4106 | A-2904 |
| 6L6-GC | $AB_1$ | 3,800 | 18.0 | A-2935 | A-2905 | 7027A | $AB_1$ | 3,800 | 44.0 | A-3133 | – |
| 6L6-GC | $AB_2$ | 6,000 | 31.0 | A-3130 | – | 7027A | $AB_1$ | 6,600 | 32.0 | A-3130 | – |
| 6M5 | $AB_1$ | 7,000 | 9.4 | A-4101 | A-2904 | 7027A | $AB_1$ | 8,000 | 24.0 | – | A-2905 |
| 6N7-GT | B | 8,000 | 10.0 | A-4101 | A-2904 | 7189 | $AB_1$ | 11,000 | 16.5 | A-3132 | A-2904 |
| 6V5 | $AB_1$ | 10,000 | 10.0 | A-2936 | A-2904 | 7868 | $AB_1$ | 6,600 | 38.0 | A-3130 | – |
| 6V6-GT | A | 8,000 | 14.0 | A-4101 | A-2904 | 7868 | $AB_1$ | 10,000 | 28.0 | A-3132 | A-2905 |
| 6V6-GT | A | 10,000 | 10.0 | A-2936 | A-2904 | EL34 | A | 7,000 | 20.0 | A-3130 | A-2905 |
| 6Y7-G | B | 7,000 | 5.5 | A-4107 | A-2901 | EL34 | $AB_2$ | 3,300 | 50.0 | A-3133 | – |
| 6Y7-G | B | 14,000 | 8.0 | A-3021 | A-2901 | EL84 | $AB_1$ | 8,000 | 11.0 | A-4101 | A-2904 |
| 6Z7-G | B | 12,000 | 4.2 | A-2938 | A-2901 | EL84 | A | 10,000 | 15.0 | A-3027 | A-2904 |
| 7C5 | $AB_1$ | 10,000 | 10.0 | A-2936 | A-2904 | EL90 | $AB_1$ | 8,000 | 13.0 | A-4101 | A-2904 |
| 8BQ5 | $AB_1$ | 8,000 | 11.0 | A-4101 | A-2904 | KT66 | A | 10,000 | 10.0 | A-2936 | A-2904 |
| 8BQ5 | $AB_1$ | 8,000 | 17.0 | A-4101 | A-2904 | KT66 | $AB_1$ | 5,000 | 19.0 | A-2935 | A-2905 |

### HIGH FIDELITY APPLICATIONS

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5V6 | A | 10,000 | 12.0 | A-3101 | PENTODE CONNECTION | 6AL6 | A | 6,600 | 22.2 | A-3102 | WILLIAMSON SCREEN TAPPED CONNECTION |
| 6AL6 | A | 10,000 | 16.0 | A-3101 | | 6L6 | A | 6,600 | 22.3 | A-3102 | |
| 6AL6 | A | 5,000 | 18.0 | A-3100 | | 807 | A | 6,600 | 28.0 | A-3102 | |
| 6F6 | A | 10,000 | 14.5 | A-3101 | | 1614 | A | 6,600 | 28.3 | A-3102 | |
| 6L6 | A | 5,000 | 18.0 | A-3100 | | 5881 | A | 6,600 | 22.6 | A-3102 | |
| 6V6 | A | 10,000 | 12.0 | A-3101 | | 6550 | A | 6,600 | 31.7 | A-3102 | |
| 807 | A | 10,000 | 22.0 | A-3101 | | EL-34 | A | 6,600 | 36.7 | A-3102 | |
| 1614 | A | 10,000 | 19.0 | A-3101 | | EL-84 | A | 6,600 | 16.9 | A-3102 | |
| 5881 | A | 5,000 | 21.0 | A-3100 | | KT-66 | A | 6,600 | 30.4 | A-3102 | |
| 6146 | A | 10,000 | 18.0 | A-3101 | | | | | | | |
| 6550 | A | 5,000 | 22.0 | A-3100 | | | | | | | |
| EL-34 | A | 10,000 | 22.0 | A-3101 | | | | | | | |
| EL-84 | A | 10,000 | 15.0 | A-3101 | | | | | | | |
| KT-66 | A | 5,000 | 19.0 | A-3100 | | | | | | | |



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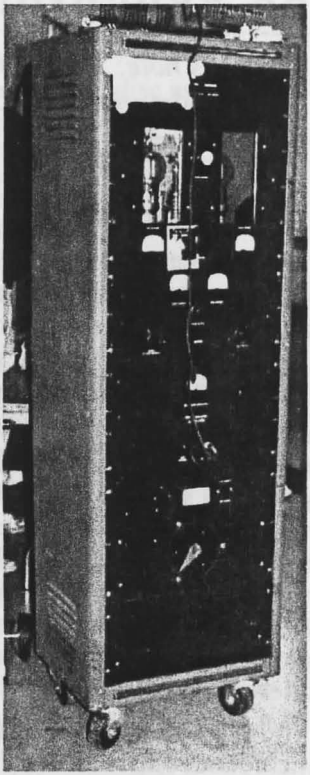
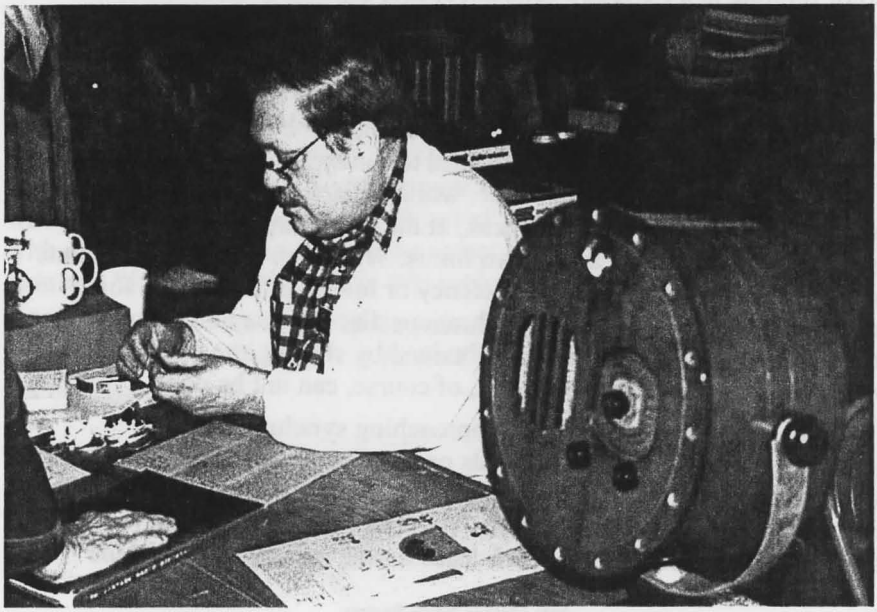
W7LT





# The Synchronous Spark

*Editor's note: This article comes from the inaugural issue of The Baltimore* **Radio Condenser** *of November, 1920. Thanks to Bob Campbell for sending me this most interesting publication. The Editor's note at the end of the article is by the editor of the* **Radio Condenser**.

Anyone who has been listening in recently cannot have helped noticing how many of the stations have been using or trying to use a synchronous tone.

Some of the out of town fellows have synchronous gaps operated by synchronous motors right off the 60 cycle line. These gaps produce a low pleasing tone, clear and easy to read. But it is the "almost synchronous" tone that is being used so much, that promoted the writing of this article. By "almost synchronous" we mean, the tone obtained by running a non-synchronous gap on the 60 cycle line supplying power to the transformer and adjusting the current fed to the motor until it is running in synchronism with the supply. This proper speed can only be ascertained by listening to the whining of the spark as it approaches synchronism, or sometimes if the motor bearings are loose, to the humming of the motor as it steps into phase.

It is an open question whether this synchronous tone from a non-synchronous gap is an advantage or not. It is almost impossible to keep a motor running at a perfectly constant speed, especially as there is generally a drop on the line when the key is pressed. The result is the whining tone so much heard around Baltimore.

The spark o a synchronous gap occurs at exactly the same point on the cycle for each discharge - generally at the peak for best results. Suppose, for example the motor has been adjusted to run absolutely synchronous on a non-synchronous gap. In this case, while a discharge may take place every cycle, it may occur at the peak, at the minimum or some intermediate point between the two limits. With such a synchronous tone we may be working at highest efficiency or lowest efficiency or some point between the two. With a synchronous disc mounted on the generator shaft this maximum point may be obtained by shifting the electrodes, but with a non-synchronous motor, this, of course, can not be done.

Let us suppose that the gap is approaching synchronism. The discharge across the electrodes leads on the approaching side of the wheel. As the disc comes into phase the discharge occurs exactly as the electrodes are opposite one another. Then, as the disc begins to revolve faster than synchronism, the spark leads on the retreating side of the

wheel. As synchronism is further destroyed this lead increases up to the limit of the condenser sparking potential.

These effects may be observed by watching any rotary disc as it slowly approaches into synchronism and out again. The spark seems to move first in one direction of rotation ant then in the opposite direction.

When observing the output into the antenna under theses conditions, it is found that it varies with the synchronism of the discharge. This fluctuating effect cannot be observed with a hot wire ammeter so well because it is too dead beat. By adjusting an anchor gap in the antenna lead until the spark will just jump when the gap is running slowly in and out of synchronism, which incidentally seems to be the nearest approach to synchronism that can be obtained, it will be found that a spark jumps across the anchor gap every time the motor passes into phase. This indicates that there is a maximum and minimum fluctuation of antenna current every time the point of synchronism is reached.

Now if this variation of synchronism is very slow, say about once every four seconds, we will be sending on maximum power for two seconds and on minimum power the next two. While this is not objectionable for local work, for long distance conditions where every bit of power is needed it will be seem that very objectionable receiving effects will occur. In making a letter one dot will be loud and the next will be fainter on a slightly lower pitch. The spark will whine or growl and it is very hard to receive any fast sending under these conditions. The writer has heard some synchronous tones that were slightly out of phase, where a sort of beat was produced of a very low frequency that made the signals very difficult to read.

On the other hand, when using a very low tone, the synchronous speed is the only method of preventing the spark from dragging out and straining the condenser. There is a field of experimentation to devise a simple means of keeping the spark synchronous and to determine exactly whether it is better to get distinctly out of phase and eliminate the swing with a non-synchronous spark. The writer would like to hear some opinions "for" and "against" on this subject of the non-synchronous tone.

Editor's note - the writer of this excellent paper (which was written expressly for this edition of the *Radio Condenser*) will be announced in the next issue.

# Swap Shop

*FOR SALE:* Thousands of tubes, hundreds of radio parts, panels, meters, surplus, etc. R5-D3 electronic surplus, Bob Lee, 6111 SE 82nd Ave., Portland, OR, (503) 774-6560.

*BUY, SELL, TRADE and RESTORE:* Contact me for quality restoration service on most pre-1960 electronics. I also buy and sell early radios, TV's, tubes, parts and related items. I'll buy one item or a whole collection.
VISIT MY WEB SITE: <http://www.radiolaguy.com> or e-mail: <sonny@radiolaguy.com>
Thanks, Sonny Clutter, phone (360) 834-5741

*WANTED:* The Crystal Radio Guy wants crystal sets and toy germanium diode radios. Buy outright, or trade for other radios. Galen (503) 231-9708.

*WANTED:* *Pre-WWII Zenith wooden or plastic knobs. Dick Dielschneider, 246-1062.

*WANTED:* **1**) PM Speaker for a Transoceanic 7G605 Bomber, and of course, the famous fromt lid. (Fat Chance!)
**2**) Electrodynamic speaker for a Philco 39-30. It is 6 inch round, and has a field coil resistance of 2750 ohms.
**3**) Audio Interstage Transformer for GE A-82 or A-87.
Call Myron White at (503) 629-5513.

*FOR SALE:* *Full set of Rider's manuals, Vol. 1-23. Best offer. Glen Bricker, (541) 942-3717.

*FOR SALE:* *1942 unusual Zenith 12H691 chairside radio-phono. Shutter dial. BC-SW-Old FM. Knobs OK. Mike Parker, (503) 235-7187, for details.

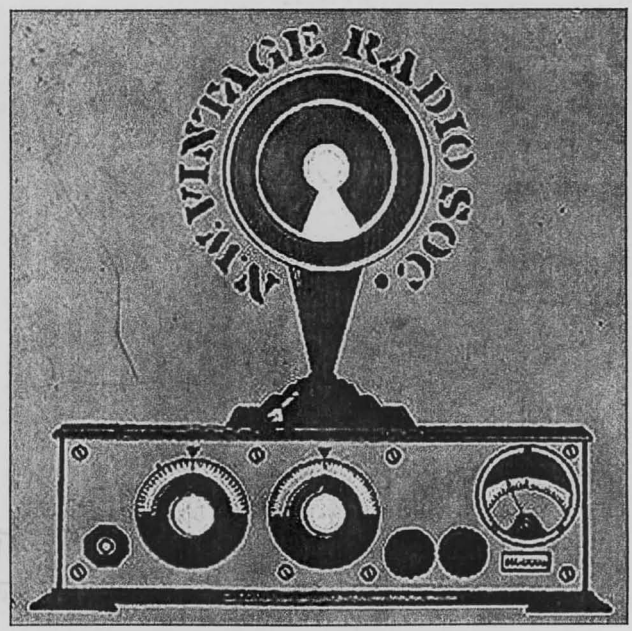
*FOR SALE:* *1924 Sonora Sonoradio crank phonograph with Ware 3-tube neutrodyne radio. Working condition. Has side-by-side Queen Anne floor cabinet. Call Mike Parker, (503) 235-7187, for details.

*FOR SALE:* 1926 Radiola 62, excellent condition except the stretcher base is gone. $150. Various telegraph keys - different kinds and prices. Call for details. 2 aircraft receivers. Call for details - price negotiable. Charlie Kent, (503) 281-9335.

*FOR SALE:* 1928 Zenith model 39A console. An ornate and rare five star radio. $600.00 or best offer. Contact: Gary at (360)573-8889

## Leads And Needs

Speed Feldschau *still* has a Scott 800B for sale, $200.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