

# Lil' Brown Radios Need Love Too!



*As found, in a Napa  
antique shop, 2017 "as is"*

*"Airline" was the brand of the  
Montgomery Ward stores*

The Airline 1939\* Midget  
A Radio with Unique Tuning...



A presentation by  
Bart Lee, K6VK for the  
California Historical  
Radio Society, © 2020

- \*related models sold
  - as late as 1949

# Cosmetic Restoration of the 1939 Airline AA4



Airline 04BR-420B{?}; RadioMuseum.org ID 47498 with Schematic.  
(But this is an All-American Four [!])

# Useful Compounds for Bakelite Restoration



Also, Brasso (but beware of abrasives in it), silver polishes, Simichrome polish and toothpaste.

# The Cabinet Polished



The bakelite is  
a burl pattern  
of **brown** and  
black swirls –  
Understated  
Elegance!

... with Lots of Elbow-grease and Q-tip Cleaning  
of Nooks and Crannies ...

But what's Inside?

# This Radio Worked!



No need to re-cap or diagnose 80 year old troubles -- that's impressive engineering!

# Where's the Variable Tuning Capacitor?



# A Variable Inductance Tunes:



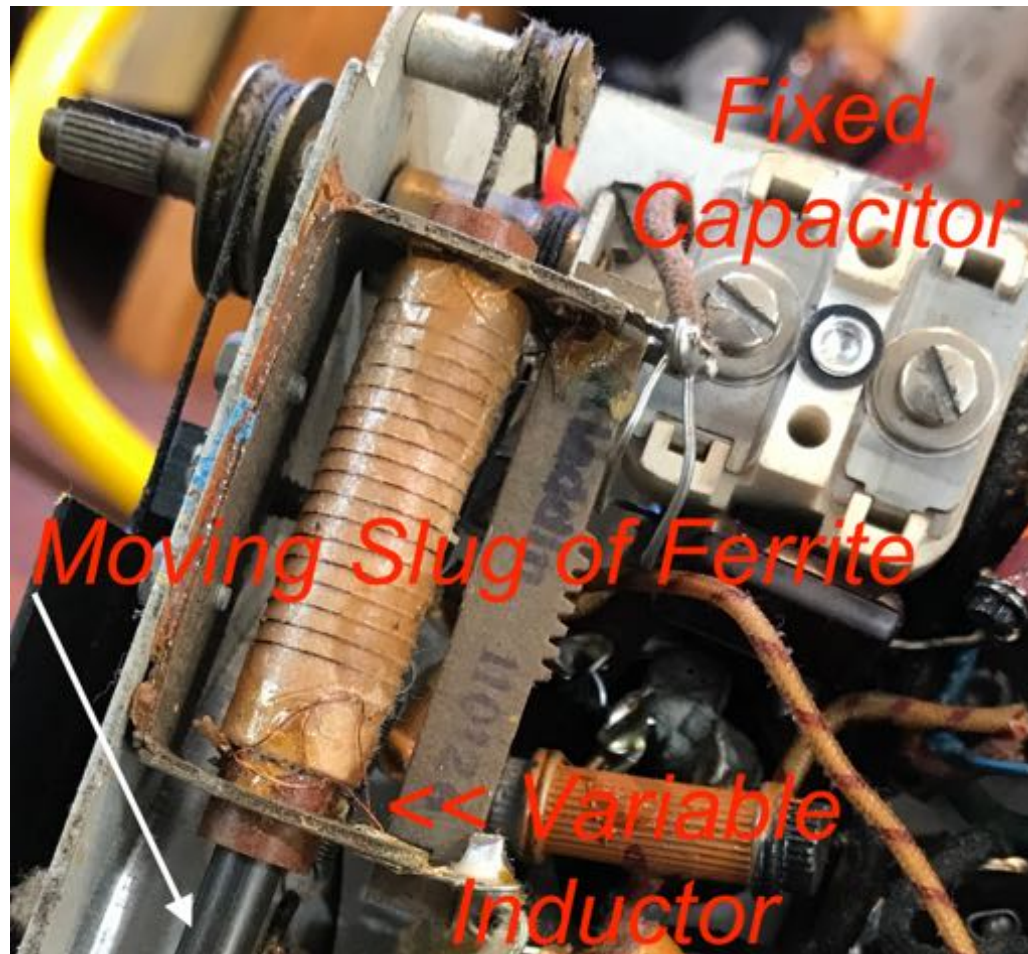
This is “permeability” tuning of the inductance with a ferrite core or slug.

# Since it's a Superhet, the Local Oscillator Needs Tuning Too



The Cord-Linked Variable Inductances Tune Together, at the IF Offset.

# Moving Ferrites Tune the Coil Against a Fixed Capacitor; Why?



# Midget Radios Must Save Space!

- A two-ganged tuning capacitor takes up a lot of room, but this is a very small radio.
- It also runs plenty hot, and heat can warp aluminum capacitor plates...
- And looking to WW II, Aluminum was better put to use to make aircraft ...
- But most likely, this radio had to be cute and small to sell to the lady of the house!

Seven Inches Wide by 5 Inches High  
by 4 Inches Deep (188x124x102 mm)



From the 1939-'40 Montgomery Ward catalog; courtesy RadioMuseum.org

# It Fits Everywhere

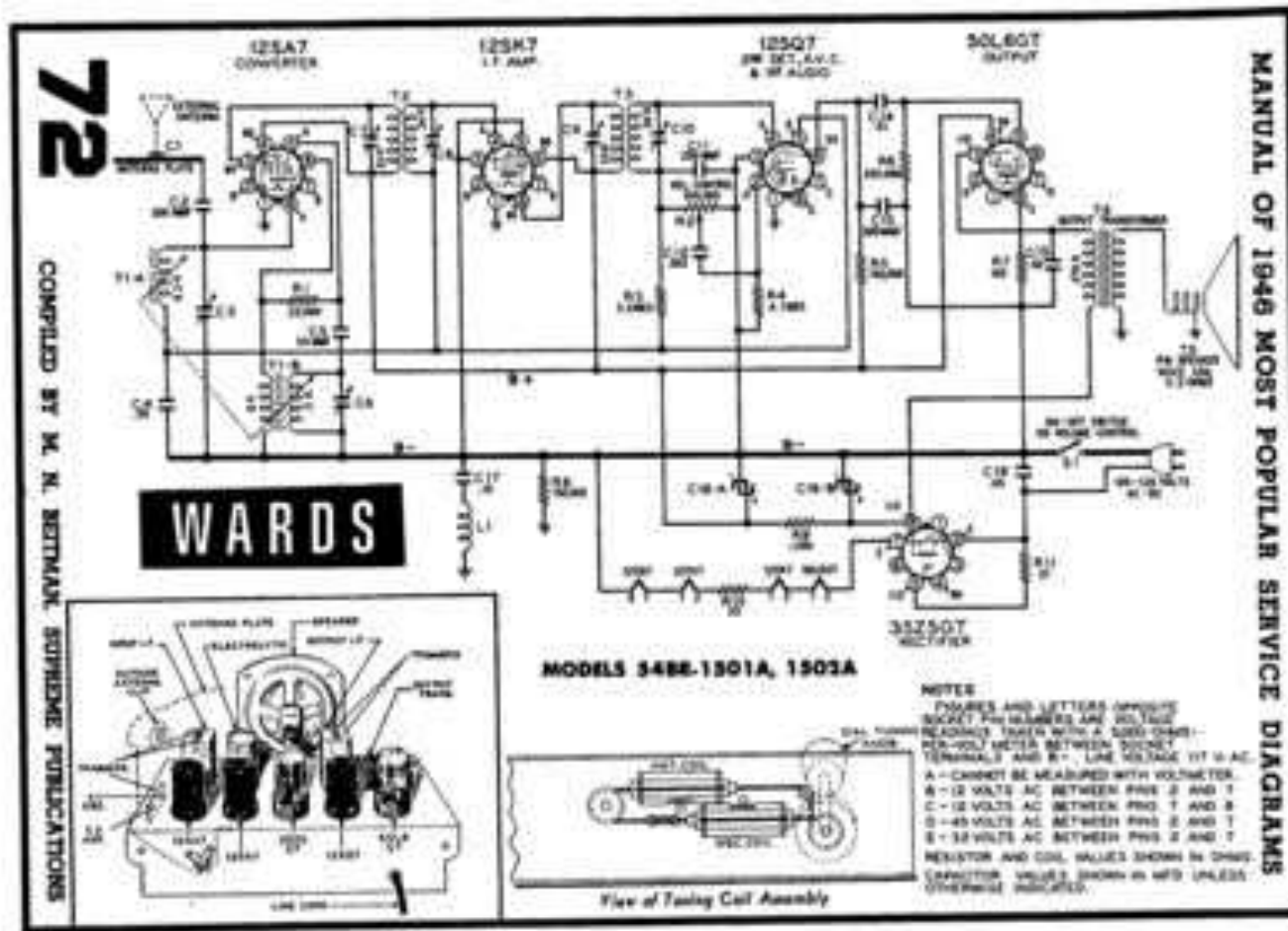
- This is a perfect little kitchen radio for listening to Arthur Godfrey in the morning (and soap-operas all day!).
- This is a perfect bedside radio for one last program in the evening: “Say goodnight, Gracie.”
- This is a perfect kid’s radio for listening to the Lone Ranger and even Jean Shepherd.
- You can’t go wrong for **\$5.75 [!!!]** the 1939 –’40 catalog price: **Buy three !!**

# And Maybe One For The Old Man Out In The Garage, Or Barn

- For some Wards' customers, these may have been first radios,
- For others supplemental radios.
- \$6 in 1939 is about \$100 today.
- The big console radio phonograph in the Wards catalog cost \$91.95, or about \$1,600.
- Remember, Radio in 1939 provided almost all home entertainment and news – a bargain!

# A Similar Post War Radio, AA5

Same First Three Tubes:



Note  
Ganged  
Inductors >>

About One  
Watt Audio  
Output.

# How Four Tubes?

- In the radio examined, the last audio tube is a 35L7, a pentode amplifier and a diode rectifier
- The three 12 volt tubes provide mixing and IF
- A dropping resistor takes the line voltage for the filaments down to about 70 volts:



# Radio Manufacturers' Association

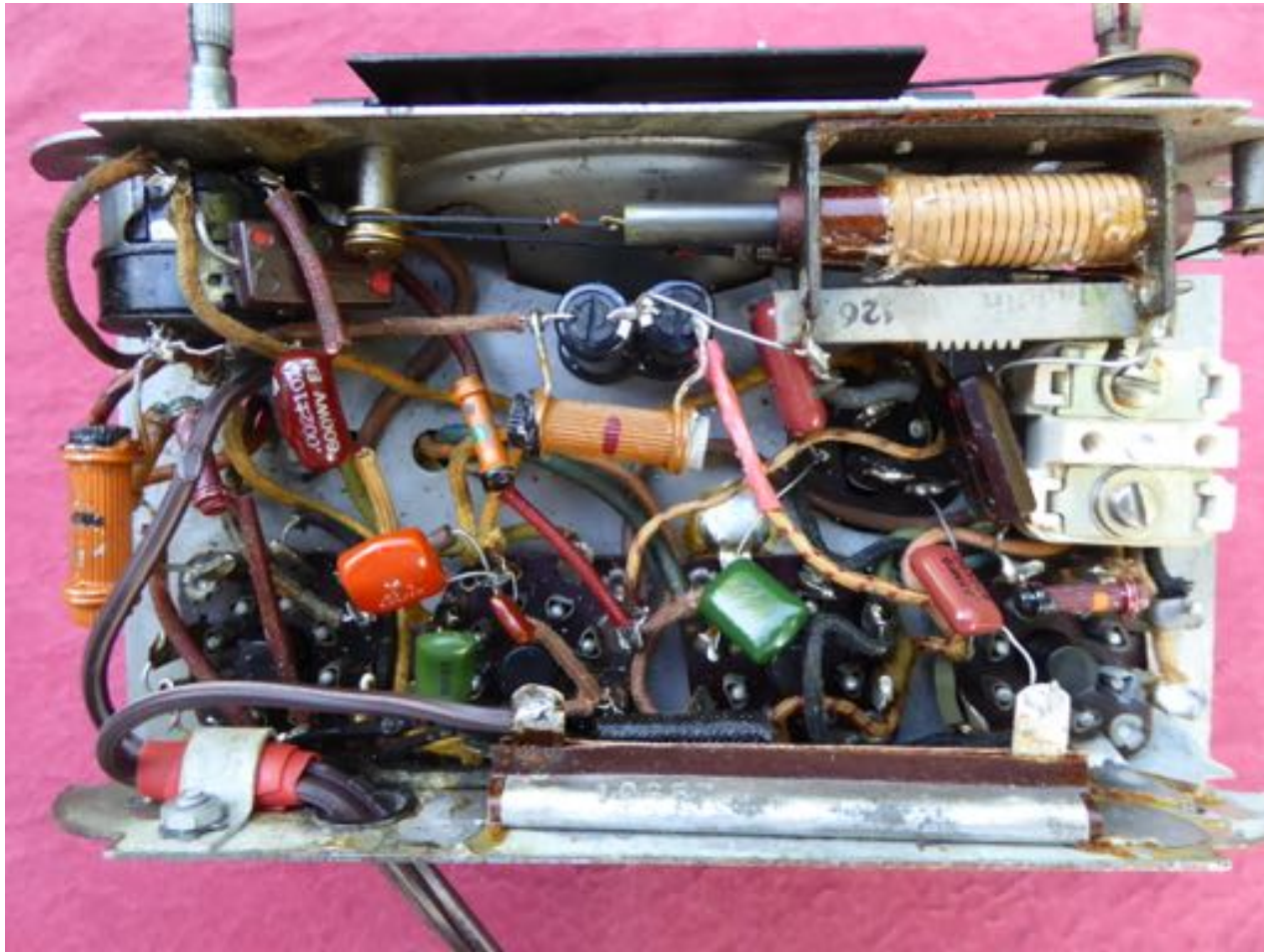


“Approved,” so I guess it’s OK – just don’t drop it in your bathtub!

Amnon Fisher's **PINK** one:



# Fully Restored (2020)



# Pink Airline Backstory...

- Master restorer Amnon Fisher has found and restored a PINK Airline AA4 (see pix). A while back I wrote about this funny little radio with only four tubes and no variable capacitor. (It is permeability tuned, both the main tuning and the local oscillator -- see Amnon's photo.)
- . Montgomery Ward sold this radio post WW II, circa 1946 -'49. (See article).
- . Maybe someday the pink sister will join her little brown brother at RadioCentral...

# Tune in to the history of old radio

## Montgomery Ward made many models

**Q** We have an old Airline brand table-top radio, 10 inches wide and 7 inches tall. Is it worth anything, or should we just send it to recycling?

**A** Your radio and its manufacturer have a fascinating history.

In 1872, Aaron Montgomery Ward, a former traveling salesman, came up with the idea of a mail-order dry goods business. This

predecessor of Amazon started with the premise of serving rural communities. Consumers could order items from a printed catalog; the products would be delivered for pickup at the nearest railroad station. As a retailer, the Montgomery Ward business expanded, building distribution centers across the country in major transportation hubs (including Oakland in the 1930s). Ward's had no real competition until 1896, when Richard Sears introduced similar catalog-based shopping.

As railroads spread, furnishing consumers with their needs became easier, more reliable and less expensive. By the end of World War I, customers began to order more and more luxury products, furniture and musical instruments by mail.

Meanwhile, wartime advances in technology led to development of the vacuum tube, allowing radios to



This Airline brand table-top radio, with a Bakelite case, was manufactured in the late 1940s.

transmit more than ship-to-shore and Morse code. General Electric marketed the first vacuum tubes in 1919. In 1920, Westinghouse received the first commercial radio license and was able to broadcast live the Harding-Cox presidential results.

By 1922, more than 600 radio stations broadcast to more than 12 million home radios. By the end of the decade, even during the onset of the Great Depression, the number of homes with radios more than doubled to 28 million, representing about 80 percent of households. Families joined together listening to music, comedy, news and variety shows. The radio became a sort of hearth for the home.

As the economy improved in the 1940s, radios continued to be hugely popular, but instead of large pieces of furniture central to the home, manufacturers were able to make compact radios. Many homes would

have more than one.

In 1935, the same year Pan Am began passenger service to Hawaii, retailer Montgomery Ward first issued the "Airline" home radio. The brand "Airline" became synonymous with Ward, and the retailer offered hundreds of models — from vacuum tube to transistor to television — well into the 1960s.

It looks as if your Airline radio retailed from 1946 to 1949. The sleek Bakelite case, the curved glass crystal and the torpedo-shaped tuning knobs would fit right into the décor of a modern, postwar home.

The monetary value of tube radios depends on several factors: Is the cabinet original and free from cracks or chips? Does it have its complete set of tubes and original parts? Is the grill cloth the right color and are the knobs the correct shape?

Your Bakelite radio case seems to be dusty but free

from dings; the crystal looks original, but the left-hand knob has been replaced with one with less character. If it's still in working order, your radio might sell in the \$25 to \$70 range.

To answer your question, don't send it to recycling yet! The California Historical Radio Society Museum, home of the Bay Area Radio Museum online collection and Bay Area Radio Hall of Fame, is hosting a Live Radio Day by the Bay on July 25 in Alameda. The event will feature a 19-piece "radio studio orchestra," a live radio play of "War of the Worlds," silent and live auction of antique radios, an electronics flea market, good food and beverages and lots of fun. You'll be certain to come across folks with a love of old radios, tube technology and old-time radio transmissions.

The California Historical Radio Society is a nonprofit that collects vintage radio and broadcasting equipment, audio recordings, documents and photographic images pertaining to the history and development of radio broadcasting in the Bay Area. The group is always looking for volunteers to help with research, engineering and general support. For information or membership, go to [www.californiahistoricalradio.com](http://www.californiahistoricalradio.com).

*Jane Alexiadis is a personal property appraiser. Send questions to [worth@janealexiadis.com](mailto:worth@janealexiadis.com).*

# Permeability Tuning from the 1930s

- A noted physicist worked out tuning by magnetic permeability in inductances in 1933: W. J. Polydoroff, “Ferro-Inductors and Permeability Tuning ” Proceedings of the Institute of Radio Engineers, Issue 5, May 1933; see also *Nature* 133, 956-956 (23 June 1934).
- Commercial adoption such as the Airline midget followed.
- Permeability tuning was especially useful in car radios that could then do without bulky tuning capacitors. This tuning persisted in vehicle radio until the coming of digital tuning.
- Some amateur gear used permeability tuning, *e.g.*, Ten-Tec transceivers such as the Corsair II.
- Collins radio pioneered permeability tuning in World War Two radios. The later R-390 is a classic instance.

# Permeability Tuning Goes to War



This midget tactical and covert short wave receiver dates from World War Two (1943); its Navy nomenclature was RBZ.

In this version covering 5 to 13 MHz, it is said to have been made available to anti-Nazi forces in Europe, especially for monitoring the BBC and secret messages.

Emerson manufactured it. See:

[www.cryptomuseum.com/spy/rbz/index.htm](http://www.cryptomuseum.com/spy/rbz/index.htm)



# Please Add More Information!

Corrections, suggestions and amplifications are welcome. Send to:  
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See [www.californiahistoricalradio.com](http://www.californiahistoricalradio.com)

73 de Bart, K6VK ##

