

How To Locate Manuals and Documentation

"Excellent rig. Needs a little work." How many times have you passed up a good deal because you were certain you'd never find the service information? How often have you sent your rig to the factory for a bug that you could have fixed if you had the documentation? ARRL Laboratory Engineer Mike Gruber, WA1SVF, has searched high and low to find sources for service manuals and other useful information. In this month's column he gives you his results.—WB8IMY

Q: Why do I need documentation for my radio equipment?

A: Unless you're an electronics genius, proper documentation is often essential to the repair or restoration of any radio equipment. Even a simple schematic can save hours of time that would be wasted otherwise.

Q: Okay, but is documentation readily available—even for my antique receiver?

A: Believe it or not, there is a good chance that documentation still exists for almost any radio you're likely to encounter. Your success in finding it, however, depends on knowing what *type* of documentation might be available for your particular piece of equipment.

Q: What types of documentation should I be looking for? Where can I find them?

A: Let's save the names and addresses for later and begin by taking a look at the different types of equipment documentation available. There are several:

Owner's Manuals: An owner's manual is supplied with the unit at the time of purchase. It's intended primarily as an instruction manual for the owner. It may not contain a schematic and service data is usually minimal. Although it's better than nothing, an owner's manual leaves quite a bit to be desired should repair or alignment be required.

Manufacturer's Service Manuals: Service manuals are usually sold by the manufacturer. They contain vital repair, service and alignment data. Most manufacturers supply service manuals for their products, although some may not provide manuals for obsolete equipment. If you're working with old equipment, it's possible that the manufacturer may have gone out of business. Keep this in mind the next time you purchase a new rig. Obtaining a service manual will take a little extra effort, but you'll be making a worthwhile investment in the future of your equipment.

Third-Party Service Documentation: This type of documentation is published by companies other than the manufacturer. It's available in several varieties from basic schematics to complete service manuals. Third-party documentation offers a wealth of information on antique receivers and modern consumer electronics, though it is seldom available for modern amateur gear.

Q: Wait a minute. You mean that there are companies that publish and sell service data for another company's products?

A: Certainly! Some of the most noteworthy publishers—past and present—include:

Howard W. Sams & Company *Photofacts*: Sams started publishing *Photofacts* in 1946 with only 12 employees. Today *Photofacts* are accepted as the standard for accuracy. Complete chassis photographs are included and each component is clearly labeled. Alignment procedures and normal voltage readings are always provided. The extensive *Photofacts* library does not include modern amateur equipment, but you'll find service data for some of the classic short-wave receivers made by companies such as Hammarlund and Hallicrafters.

Photofacts are sold in numbered folders and volumes. To obtain the correct *Photofact*, you must find the reference number for your particular piece of equipment in the *Photofact Index*.

There is an interesting sidenote to the *Photofacts* story. Sams creates *Photofacts* from actual product samples. Instead of using the manufacturer's schematics, the circuits are analyzed and traced by Sams technicians!

John F. Rider Perpetual Troubleshooters Manuals: "*Rider's*," as this series is commonly known, was first published in 1930 and covered radios back to 1926. The first numbered volume, however, appeared in 1933. New volumes were published at a rate of about one per year until the last one, Volume 23, appeared in 1953. (*Rider's* for TVs, however, went from 1948 to 1957, Volumes 1 through 18.)

Rider's is indexed by a system that is very similar to the *Photofacts*. Several index volumes were published, such as Volumes 1 to 7, 1 to 10, 1 to 15, 16 to 22 and 23 only. Unlike *Photofacts*, however, Rider used service data provided by the manufacturers.

RCA Victor Service Data Books, commonly called "*Redbooks*." These cover RCA receivers manufactured from 1923 to 1950. The first volume covered receivers from

1923 to 1928. A new volume was published each year until 1950.

Supreme Manuals: Compiled by M. N. Beitman, these first appeared about 1930 and covered radios made as early as 1926. One volume per year was published until the company went out of business in the 1950s. These generally contain only schematics; *Riders* and *Photofacts* are far more complete.

Hugo Gernsback's *Official Radio Service Manuals*: Six volumes were published from 1929 to 1936.

Mallory Radio Service Encyclopedia: First published in the early '30s, the Mallory Encyclopedias contained a very complete listing of radios by manufacturer and model number. In addition, an exact tube complement was given for each product. This information can be very useful if you are seeking service data for an old radio with an unknown model number.

Q: Speaking of tubes, what about vacuum tube data? Is that kind of information still available?

A: It sure is! Data for Eimac tubes, frequently found in amateur amplifiers and other high-power RF applications, is currently available from the manufacturer. Transmitting tube data can also be found in the *ARRL Handbook*; look for it in Chapter 35 if you have a recent edition. Data books for other tube types, such as receiving tubes, have been published by several companies. Most of these data books are no longer in print. Copies, reprints and even old originals can still be obtained if you know where to look. Two of the most popular data books for tubes are:

RCA Tube Manuals: These are probably the most common tube manuals—especially for receiving tubes. Separate manuals were also published for transmitting, special purpose and industrial tubes. These manuals first appeared in the 1930s and were frequently updated.

General Electric *Essential Characteristics Tube Data Books*: These are similar to the RCA Manuals.

Tube substitution guides have also been published by Sams and John F. Rider.

Q: Now that I know what I'm looking for, where can I find the documentation?

A: If you prefer the manufacturer's service manual, start by contacting the manufac-

turer directly. If the manufacturer is out of business, or no longer supplies the manual you need, you have other options. For example, try obtaining a copy from a manual-supply company.

If you're working with military gear, manual-supply companies are also good sources. And, some military equipment manuals can still be obtained from the government. (More about that later.)

If you think a *Photofact* or *Rider* might be available based on the age and type of equipment involved, check with your local library. Many city and university libraries have them and will let you make photocopies provided that no copyright laws are violated.

If your local library can't help you, try one of the "schematic services" that cater to antique radio buffs. Their prices are generally quite reasonable. Don't forget to check the hamfest flea markets and yard sales. Service information can turn up in the most unusual places!

For a difficult case, you might try a classified ad in *QST*. A classified ad in a publication that specializes in the type of equipment involved (such as *Electric Radio Magazine*¹ or *Antique Radio Classified*² for surplus or antique rigs) may be very effective.

Q: Come to think of it, I have several radios that could be put to good use—if they were working! How about those addresses you promised?

A: Here they are. Good luck with your projects!

Alinco Electronics, Inc
438 Amapola Ave
Suite 130
Torrance, CA 90501
tel 310-618-8616

Supplies Alinco manuals only.

Amateur Wholesale Electronics
PO Box 224
1040 Industrial Dr
Watkinsville, GA 30677
tel 404-769-8706 (technical service and orders)
Manuals and replacement parts for Azden Radios.

Antique Audio
41560 Schoolcraft
Plymouth, MI 48170

Older factory manuals for RCA, Zenith (including Transoceanics) and several others. *Riders* Volumes 1 through 22, Sams *Photofacts*¹ through 600, Beitman's Volumes 1 through 10 and Sams *Transistor Service Manuals* Volumes 1 through 90. The price is \$5 per schematic up to 8 pages. Fifty cents for each additional page. Written inquiries for schematics preferred.

Antique Electronic Supply
6221 South Maple Ave
Tempe, AZ 85283
tel 602-820-5411

Antique Electronic Supply supplies pre-1960 service manuals for many electronic products,

¹Notes appear on page 69.

including communications receivers. The cost is \$4.50 each. A catalog of antique radio parts and books is also available. They offer reprints of some older service manuals, tube manuals, a tube substitution guidebook and even a ballast tube manual.

Ardco Electronics
PO Box 95
Berwyn, IL 60402

Manuals for 95% of the Hallicrafters product line. The company was founded by Anthony Dambrauskas, the Hallicrafters service manager, when Hallicrafters went out of business in 1978. Today, the business is being carried on by his son Robert. Manuals range in price from \$7 to \$20.

Brock Publications
PO Box 5004
Oceanside, CA 92052

Manuals for all amateur equipment sold by Swan Electronics. Also stocks manuals for Cubic Communications, Astro and Silttronix products. Brock Publications is a home business owned by Grace Brock who retired from Swan Electronics/Cubic Communications in 1990.

Center For Legislative Archives
National Archives
Washington, DC 20408
tel 202-501-5350

(Record Group 287) US Army Technical Manuals for radio equipment manufactured from 1940 to 1979. Photocopies can be obtained at a cost of 25 cents per page and a \$6 minimum order. A "Reproduction Service Order" must first be completed by the National Archives to determine the cost of the specific manual you desire. The manual on this form must be identified by its proper Army Technical Manual number. If this number is not known, contact your nearest US Government Depository Library for assistance. (These are usually the main public libraries in large and medium-sized cities.) A booklet entitled *Indexes and Lists to Army Technical and Administrative Publications 1940-1979; The National Archives Microfilm Publications Pamphlet Describing M1641*, also available from the Archives, describes this procedure.

Eico Electronics Instrument Co, Inc
363 Merrick Rd
Lynbrook, NY 11563
tel 516-599-5744

Eico manuals for the last 25 years. Calls are accepted on Monday, Wednesday and Thursday from 8:30 AM to 2:30 PM Eastern time.

Fair Radio Sales Co, Inc
1016 East Eureka
PO Box 1105
Lima, OH 45802
tel 419-223-2196

Manuals for surplus equipment. Also some Tektronix manuals and vacuum tube data. Catalog available.

Hi-Manuals
PO Box 802
Council Bluffs, IA 51502

Extensive collection of manuals from the mid-30s to the 70s. Amateur Radio equipment is included. You must order from a current catalog and "dropped list." The cost is \$3 for both. Many Heathkit manuals in stock. They also supply vacuum tube data from the RCA

Receiving and Air Cooled Transmitting Tube manuals and the *Rider #35 Tube Substitution Guide*. The cost is \$5 per tube plus a business-size SASE. Your check will be returned if the tube data is not available. Hi-Manuals cannot accommodate technical correspondence, quote requests or telephone calls.

Howard W. Sams & Co
2647 Waterfront Parkway East Dr
Indianapolis, IN 46214-2041
tel 800-428-7267

You can order Sams *Photofacts* through your local distributor (saves postage and handling costs), by mail or by phone. Sams covers most consumer electronic items manufactured since 1945. A photocopy service for manufacturer's manuals and Rider's data is also available.

ICOM America, Inc
2380 116th Ave NE
PO Box C-90029
Bellevue, WA 98009-9029
tel 206-454-7619

Manuals and parts for ICOM products. Call for prices. Most service manuals cost around \$25 for base and mobile units; \$20 for handheld units.

Kenwood (East Coast)
East Coast Transistor Parts, Inc
2 Marlborough Rd
W Hempstead, NY 11552
tel 800-637-0388 (orders only)

Kenwood (West Coast)
Pacific Coast Parts Distributors, Inc
15024 Staff Ct
Gardena, CA 90248
tel 800-421-5080 (Outside CA)
800-262-1312 (CA only)

Kenwood product manuals only.

Japan Radio Company
Service manuals are available from JRC dealers. The three companies likely to have JRC manuals in stock are:

Electronic Equipment Bank
323 Mill Street NE
Vienna, VA 22180
tel 800-368-3270

Gilfer Shortwave
52 Park Ave
Park Ridge, NJ 07656
tel 800-445-3371

Universal Shortwave
6830 Americana Parkway
Reynoldsburg, OH 43068
tel 800-431-3939

Jim Farago
4017 42 Ave South
Minneapolis, MN 55406-3528

A complete set of *Riders*, Volumes 1 through 23, covering radios from 1924 to 1954. The cost is \$3 per copy plus SASE. The customer must provide the unit name, brand name and model number.

Land Air Communications
95-15 108th Street
Richmond Hill, NY 11419
tel 718-847-3090

Authorized dealer for Kenwood, ICOM and Yaesu manuals. Also carries Collins, Johnson, Hallicrafters, National and other manuals. Can provide schematics on most equipment dating back to 1945.

Musty Manuals
HamHeaven Communication Corp
645 Wheeling Rd
Wheeling, IL 60090
tel 708-634-6467

An extensive collection of owners manuals, service and maintenance manuals, catalogs, magazines and other technical facts on all types of early and late model radio equipment—including ham gear. Manuals come with updates or articles, product reviews and other tidbits of information. Catalog available.

MECCA
1132 Conway Dr
Newark, OH 43055
tel 614-522-4944

Used manuals for test equipment, amateur equipment and early receivers. Prices range from \$5 to \$35. Send an SASE with your request for price and availability.

Olde Tyme Radio Company
Suite 317
2445 Lyttonsville Road
Silver Spring, MD 20910
tel 301-585-8776

Some RCA *Tube Manuals* and *Riders* for sale. Catalog available.

Puett Electronics
PO Box 28572
Dallas, TX 75228
tel 214-321-0927 or 214-327-8721

Schematic diagrams "for nearly any radio receiver." Cost is \$5 with manufacturer and model number; \$15 plus drawing and description if the manufacturer or model number is unknown. Reproduction manuals, *Rider's* indexes, RCA *Vacuum Tube Manuals*, and many other service/instruction manuals for classic radios and related equipment are available. Some amateur equipment manuals including Collins. Test equipment manuals include Hewlett Packard, Tektronix, Hickock and others. Also supplies recordings of old radio shows as well as tubes and other antique radio components. Catalog available.

Radio/TV/Ham Schematics
Alton H. Bowman
4172 East Ave, RD 2
Canandaigua, NY 14424

A large collection of manuals and schematics for Amateur Radio equipment and other electronic products from 1920 to 1970—many unusual. Welcomes requests for odd-ball material with and without model numbers or labels. Prices are \$5 for schematics and \$7.50 to \$10 for manuals. An SASE is appreciated. Alton emphasizes that this service is his *hobby* and not a business.

R. L. Drake Company
230 Industrial Drive
Franklin, OH 45005
tel 513-746-6990
Drake product manuals only.

Robot Research Inc
5636 Ruffin Rd
San Diego, CA 92123
tel 619-279-9430
Robot manuals only.

Slep Electronics Co
PO Box 100
Otto, NC 28763-0100
tel 704-524-7519

Operation and service manuals; schematic service for old and new amateur radios, commercial and military surplus test equipment, commercial and surplus military radios, antique radios and equipment manuals. Catalog not available due to large stock. Send an SASE for price and availability. Include make and model of each unit.

Sony Publications
PO Box 20407
Kansas City, MO 64195
tel 816-891-7550, extension 33
(Customer Service)
Manuals for Sony shortwave receivers and other products.

Steinmetz Electronics
7519 Maplewood Ave
Hammond, IN 46324
tel 219-931-9316

Schematic copies from a complete set of *Rider's* and *Beitman* books, some older manufacturer's manuals (consumer radios only) and Sams *Photofacts*. The cost is \$3 for the first schematic copy, \$2.50 for the second and \$1.50 for each additional copy. Include an extra dollar for research if the model number is unknown (SASE preferred). Also carries vacuum tubes and other parts. Catalog available.

Surplus Sales of Nebraska
1502 Jones St
Omaha, NE 68102
tel 402-346-4750

Stocks a complete line of manuals for Collins amateur equipment and partial collection of commercial equipment. Call or send an SASE for price and availability. Collins parts are also available.

Ten-Tec, Inc
PO Box 8010
Sevierville, TN 37864
tel 800-833-7373

Manuals for Ten-Tec products only. Most older manuals are available and they will make photocopies. Call or write for specifics.

US Army Military History Institute
Carlisle Barracks, PA 17013-5008
tel 717-245-3611

Technical manuals for military radio equipment. If possible, include the manual number with your request. If this is unknown, include a complete description of the equipment including the model name, model numbers and the time period in which the equipment was in use, if known.

Once a specific manual is identified, it may be obtained in one of two ways. If the Institute possesses three or more copies, one may be borrowed through interlibrary loan procedures. This process must be initiated at your local library. Alternatively, photocopies can be purchased. The minimum cost is \$6 for up to ten pages. Each additional page is 25 cents. Each patron is allowed up to 300 pages per calendar year. Selected bibliographies of Institute holdings are available through interlibrary loan.

Varian Associates, Inc
301 Industrial Way
San Carlos, CA 94070-2682
tel 800-432-4422

EIMAC tube data for tubes from 1-kW to 1.5-kW plate dissipation including all glass-envelope tubes. 200-watt, 800-watt and larger tubes are manufactured in Salt Lake City,

Utah. You can use the telephone number shown above to access either plant for data on any EIMAC tube.

VISTA Technology Inc
3041 Rising Springs Ct
Bellbrook, OH 45305
tel 513-426-6700

Newly published manuals for selected models of Rockwell/Collins Amateur Radio equipment. Authorized by Rockwell International.

Western Nebraska Electronics
HC-84, Box 1
Potter, NE 69156
tel 308-879-4552

A complete collection of Collins manuals. The cost is \$12.50 for a reprint copy, or \$35 for a printed copy. Also carries a large supply of Collins parts.

Yaesu USA
17210 Edwards Rd
Cerritos, CA 90701
tel 310-404-2700

Owners and service manuals for Yaesu products. Also sells components.

Notes

¹Published monthly by Barry Wiseman, N6CSW, Box 57, Hesperus, CO 81326.

²Published monthly by John Terrey, 498 Cross St, PO Box 2, Carlisle, MA 01741, tel 508-371-0512.

We welcome your suggestions for topics to be discussed in *Lab Notes*, but we are unable to answer individual questions. Please send your comments or suggestions to: *Lab Notes*, ARRL, 225 Main St, Newington, CT 06111.

OST

Strays



QSO IN PROPORTION TO FREQUENCY

□ The 12-Volt Telegraph Network offers the One Meter per Hertz Club certificate to radio operators who make appropriate two-way contacts on any authorized frequency. For example, a qualifying QSO on 160 meters would have to span about 1850 km. For details, send an SASE to Fred Beihold, NK1L, 79 Hancock St, Lexington, MA 02173.

FINNISH STATIONS USE OG PREFIX

□ To celebrate the 75th anniversary of Finnish independence, the Telecommunication Administration Center of Finland has given all Finnish Amateur Radio operators the right to use the OG prefix instead of the usual OH prefix, from January 1, 1992, to December 31, 1992.

The Finnish Amateur Radio League, SRAL, has issued an award for the 75th anniversary. To obtain the Suomi 75 Vuotta award, you have to contact 75 Finnish Amateur Radio stations. For details on this and other awards, contact Awards Manager Jukka Kovanen, Varuskunta Rak 47 as 11, SF-11310 Riihimäki, Suomi-Finland.

Frequencies for the Finnish county award are 3515, 3525, 7025, 14045, 21045 and 28045 kHz on CW and 3675, 7060, 14273, 21273 and 28573 kHz on SSB.—*Norbert Kelzenberg, OH2AUM, Helsinki, Finland*