

KENWOOD

# 2014 Dayton Hamvention



**TS-500**

## **Kenwood Forum Committee**

**Mark Gilger – WB0IQK**

**Jan Servaites – N8CBX**

**Jeff Covelli – WA8SAJ**

**Dick Housden– W0NTA**

KENWOOD

- Agenda:

- Supporting user interests and needs for the Legacy Kenwood Equipment.
- History of the Legacy products TS-510 - TS-830's.
- SDR integration into the Legacy line.
- Rewinding TS-830s L41 coil.
- Tips & Hints.
- Resource help with Parts, Documentation.
- Questions and Answer session.
- Question the group on what they would like to see for 2015 discussion subjects.

- Drake Hybrid Legacy Radio Nets
  - Saturday, 7.235 mhz @ 3:30 pm Eastern
  - Sunday, 14.316 mhz @ 18:00 z
  - Yahoo Kenwood Group
- Yahoo Kenwood Group
  - [https://groups.yahoo.com/neo/groups/TS-520\\_820\\_530\\_830/info](https://groups.yahoo.com/neo/groups/TS-520_820_530_830/info)



# History of the Legacy Product

**Dayton 2014  
Kenwood Forum**

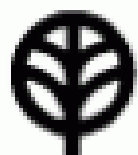
**Trio/Kenwood History**

**How The Company Started to  
Import Their  
H.F. Gear**

**By: Jeff Covelli / WA8SAJ**



**TRIO**



**KENWOOD**

**KENWOOD**



From 1960 into the 1970's

**TRIO**

produced many radios for

USA Companies

such as

Lafayette, Allied/Radio-Shack



# Lafayette Radios Manufactured by Trio in the 1960's





# Allied Radio Receivers Manufactured by Trio







**September 1970**

**Allied Radio Model A-2517**

**The First Trio H.F. Radio for the U.S.A.**

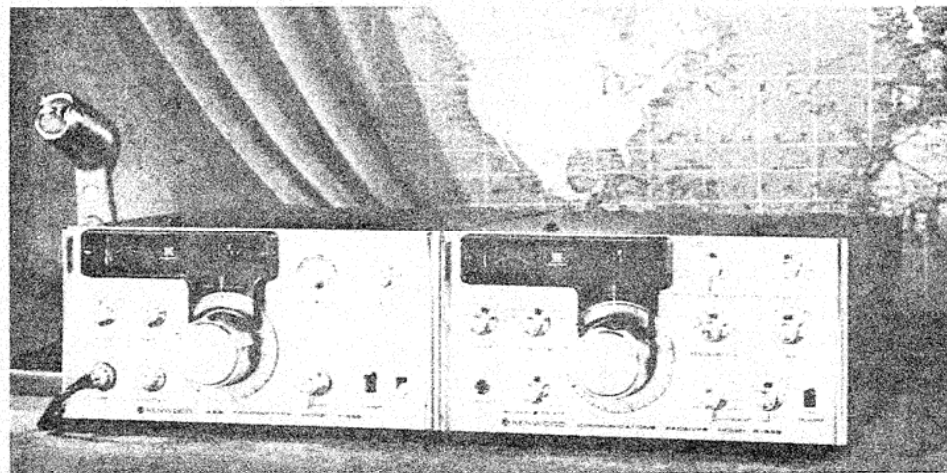


**KENWOOD**

**November 1970**

**1st  
U.S.A. Ad  
in  
Ham-Radio  
Magazine  
by  
Henry Radio**

**Once in a decade...  
a new equipment design  
to excite the amateur world**



**HENRY RADIO PROUDLY PRESENTS  
ITS KENWOOD SOLID STATE  
RECEIVER AND TRANSMITTER**

Never before has there been an amateur receiver and transmitter like the KENWOOD R-599 solid state receiver and T-599 hybrid transmitter. The wait is over — the promise of the transistor has been fulfilled. KENWOOD sets new standards of performance, reliability, flexibility, styling, and value.

**THE R-599 RECEIVER:** 1.8 to 29.7 MHz .5 microvolt sensitivity nominal • Dial readout to 1/2 kilocycle • Special detectors for SSB, AM, and FM • Transceive operation with T-599 • Built-in 100 kc and 25 kc crystal calibrator • Built-in 500 cycle CW filter • Provision for two meter and six meter coverage with optional accessory self-contained converters • Advanced "Space-Age" styling • Adjustable threshold squelch • The price . . . only \$298.00

**THE T-599 TRANSMITTER:** Clear, stable, selectable side-band, AM and CW • 4-way VFO Flexibility plus Receiver Incremental Tuning (RIT) when used with the R-599 • Amplified ALC • Built-in VOX • Full metering, including cathode current, plate voltage, ALC and relative Power Output • Built-in CW Sidetone monitor and semi-automatic break-in CW • Built-in power supply • Maximum TVI protection • Employs only 3 vacuum tubes • The price . . . only \$345.00

Deliveries start in November. Order yours today. Become the proud owner of the world's most technologically advanced amateur Receiver / Exciter combination.

S-599 Speaker . \$14.50 • CC-29 2 meter converter . \$29.50 • CC-69 6 meter converter . \$29.50

***Henry Radio***

*"World's Largest Distributor of Amateur Radio Equipment"*

11240 W. Olympic Blvd., Los Angeles, Calif. 90064 213/477-6701  
931 N. Euclid, Anaheim, Calif. 92801 714/772-9200  
Butler, Missouri 64730 816/679-3127



**KENWOOD**

**February 1971**

# Henry-Radio Promoting The Kenwood Brand



## COMPARE FEATURES...COMPARE PRICES...

In fact, we defy you to find a better value for your equipment dollar. The R-599, pictured above, boasts features, specifications and styling you won't find in any other receiver. So, whichever is more important — quality or price — the Kenwood R-599 wins hands down. Look at these features... they're standard! ① **MODE** — Permits reception of CW, LSB, USB, AM, AM with noise limiter, or FM. ② **FUNCTION** — Selects receiver position between: Standby, Monitor signal from T-599, Slow AGC, Fast AGC, 100 KHz or 25 KHz calibrator. ③ **DIAL** — 1/2 KHz readout, 25 KHz on subdial. ④ **PRESELECTOR** — Adjusts R-599 for maximum gain on desired receiving frequency by tuning for maximum s-meter reading. ⑤ **BAND** — 160, 80, 40, 20, 15, 10 meters (2 & 6 meters with accessory converters). ⑥ **RIT** — Allows off-set tun-

ing of receiver when Kenwood units are operated in transceive configuration. ⑥ **SQUELCH** — Allows squelch feature for receiver, turns RIT off by pulling knob out. ⑦ **VFO SELECT** — Chooses VFO of either unit in transceive operation or allows each VFO to operate independently. ⑦ **SELECTIVITY** — Automatically selects appropriate filter for selected mode or choose 2.5 KHz filter for LSB and USB, 500 Hz filter for CW, 5 KHz filter for AM (and AM with noise limiter), and 25 KHz filter for FM.

The S-599 speaker \$14.50 • CC-29 2 meter converter \$29.50 • CC-69 6 meter converter \$29.50.

The Kenwood T-599 hybrid transmitter, the perfect match, offers the same degree of perfection... SSB, AM and CW, all amateur bands 3.5 MHz to 29.7 MHz. Only \$345.00.

## ORDER YOURS TODAY...FROM ANY OF THESE FINE DEALERS:

HENRY RADIO • 11240 W. Olympic Blvd. • Los Angeles, Calif. 90064 • (213) 477-6701 □ Butler 1, Missouri 64730 • (816) 679-3127 □ 931 N. Euclid • Anaheim, Calif. 92801 • (714) 772-9200

AMATEUR ELECTRONIC SUPPLY • 4828 S. Fond du Lac Avenue • Milwaukee, Wisconsin 53216 • (414) 442-4200

AMATEUR RADIO CENTER • 2805 N. E. Second Avenue • Miami, Florida 33137 • (305) 374-4101

DOUGLAS ELECTRONICS • 1118 S. Staples • Corpus

Christi, Texas 78404 • (512) 883-5103

HERBERT W. GORDON COMPANY • Woodchuck Hill Road • Harvard, Massachusetts 01451 • (617) 456-3548

HARRISON • Rte. 110 at Smith • Farmingdale, N.Y.

11735 • (516) 293-7990 □ 8 Barclay St. • New York City • Barclay 7-7922 □ 139-20 Hillside • Jamaica, N.Y. • RE 9-4101

JOHN RICHARDT, W2WIY • Rte. 46 P.O. Box 154 • Great Meadows, N.J. 07838 • (201) 637-4107



**KENWOOD**

**“October 1971”**

**New!  
TS-511S**

**H.F.**

**Transceiver  
by Kenwood  
Henry-Radio Ad**

**brand  
new  
from  
Kenwood**



**Superb Kenwood quality, unsurpassed performance, value you'll find hard to believe, proven reliability of both vacuum tube and solid state technology**

*The Kenwood TS-511S is a five band SSB and CW transceiver packed with power and performance... offering features never before available in its price range. For example: built-in VOX, crystal calibrator, noise blanker, receiver incremental tuning, 1 kHz frequency read-out, 8 pole filter, stable FET VFO, dual conversion and accessory CW filter.*

**FREQUENCY RANGE:**

80 meter band 3.5 - 4.1 mHz  
40 meter band 7.0 - 7.6 mHz  
20 meter band 14.0 - 14.6 mHz  
15 meter band 21.0 - 21.6 mHz  
10 meter band 28.0 - 28.6 mHz  
28.5 - 29.1 mHz  
29.1 - 29.7 mHz

**MODES:** LSB, USB, CW

**INPUT POWER:**

500 watts PEP, 300 watts CW nominal.

**SENSITIVITY:**

3.5-21.6 mHz band; 0.5  $\mu$ v S/N 10 db  
28.0-29.7 mHz band; 1.5  $\mu$ v S/N 10 db  
and less than 100 cps frequency drift

per 30 minutes after warm-up

**SELECTIVITY:**

SSB more than 2.4 KC (at 6 db) with  
2 to 1 slope ratio  
CW more than 0.5 KC (at 6 db)

**AUDIO OUTPUT:** more than 1 watt  
(10% distortion)

**TUBE & SOLID STATE COMPONENTS:**

10 Tubes, 1 IC, 37 Transistors, 4 FET,  
52 Diodes

**PRICE:** \$398.00

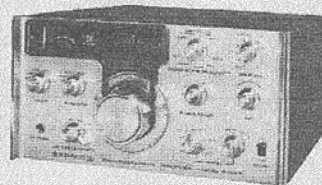
**ACCESSORIES:**

Power Supply with built-in speaker  
\$105.00

External VFO \$99.00

CW Filter \$35.00

**Kenwood's  
winning  
pair**



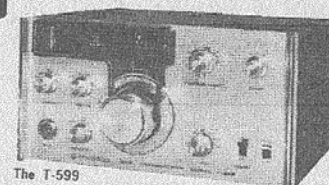
**THE R-599**

The R-599 Solid State Receiver: 1.8 to 29.7 mHz (amateur bands) • .5 microvolt sensitivity nominal • Dial readout to 1/2 kHz • Special detectors for SSB, AM, and FM • Transceive operation with T-599 • Built-in 100 kc and 25 kc crystal calibrator and 500 cycle CW filter • 2 and 6 meter coverage with optional accessory self-con-

tained converters • Adjustable threshold squelch. \$298.00 • S-599 speaker \$14.50 • CC-29 2 meter converter \$29.50 • CC-69 6 meter converter \$29.50

**THE T-599**

The T-599 Transmitter: Clear, stable, selectable sideband, AM and CW • 4-way



The T-599

VFO flexibility plus Receiver Incremental Tuning (RIT) when used with the R-599 • Amplified ALC • Built-in VOX • Full metering, including cathode current, plate voltage, ALC and relative Power Output • Built-in CW Sidetone monitor and semi-automatic break-in CW • Built-in power supply • Maximum TVI protection • Employs only 3 vacuum tubes • The price... \$345.00

All Kenwood prices are subject to an import surtax



KENWOOD

January 1972

599 Twins

&

TS-511S

Henry-Radio Ad



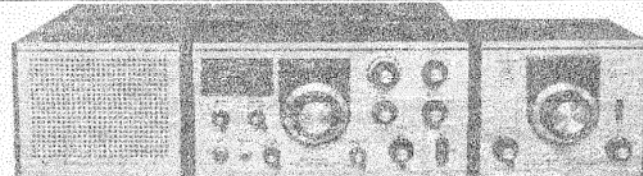
THE MOST EXCITING RECEIVER AND TRANSCIVER TO ENTER THE AMATEUR SCENE IN RECENT YEARS. THE KENWOOD R-599 SOLID STATE RECEIVER AND T-599 HYBRID TRANSMITTER HAVE ESTABLISHED NEW STANDARDS OF PERFORMANCE, RELIABILITY, FLEXIBILITY, STYLING AND VALUE.

**THE R-599 RECEIVER:** .5 microvolt sensitivity (amateur bands 1.8-21.0 MHz) • Dial readout to 1/2 kilocycle • Special detectors for SSB, AM, and FM • Transceive operation with T-599 • Built-in 100 kc and 25 kc crystal calibrator • Built-in 500 cycle CW filter • Provision for two meter and six meter coverage with optional accessory self-contained converters • Advanced "Space-Age" styling • Adjustable threshold squelch • The price ... only \$329.00\*

**THE T-599 TRANSMITTER:** Clear, stable, selectable side-band, AM and CW • 4-way VFO Flexibility plus Receiver Incremental Tuning (RIT) when used with the R-599 • Amplified ALC • Built-in VOX • Full metering, including cathode current, plate voltage, ALC and relative Power Output • Built-in CW Sidetone monitor and semi-automatic break-in CW • Built-in power supply • Maximum TVI protection • Employs only 3 vacuum tubes • The price ... only \$365.00\*

THE KENWOOD  
**TS-511S**  
TRANSCIVER

The Kenwood TS-511S is a five band SSB and CW transceiver packed with power and performance ... offering features never before available in its price range. For example: built-in VOX, crystal calibrator, noise blanker, receiver incremental tuning, 1 kHz frequency readout, 8 pole filter, stable FET VFO, dual conversion and accessory CW filter.



**FREQUENCY RANGE:** 10, 15, 20, 40 & 80 meters (Amateur Bands)  
☐ **MODES:** LSB, USB, CW  
☐ **INPUT POWER:** 500 watts PEP, 300 watts CW nominal.  
☐ **SENSITIVITY:** 3.5-21.6 mHz band; 0.3 uv S/N 10 db 28.0-29.7 mHz band; 1.5 uv S/N 10 db and less than 100 cps frequency drift per 30 minutes after warm-up  
☐ **SELECTIVITY:** SSB more than 2.4

KC (at 6 db) with 2 to 1 slope ratio  
CW more than 0.5 KC (at 6 db)  
☐ **A.F. OUTPUT:** more than 1 watt (10% distortion)  
☐ **TUBE & SOLID STATE COMPONENTS:** 10 Tubes, 1 IC, 37 Transistors, 4 FET, 52 Diodes  
☐ **PRICE:** \$398.00\*  
**ACCESSORIES:** Power Supply with built-in speaker \$105.00; External VFO \$99.00; CW Filter \$35.00\*

\*Prices subject to import surcharge.

11240 W. Olympic Blvd. Los Angeles, Calif. 90064 213/477-6701  
931 N. Euclid, Anaheim, Calif. 92801 714/772-9200  
Butler, Missouri 64730 816/679-3123

**Henry Radio**



KENWOOD

January 1973

New!

# TS-900 H.F. Transceiver

**ANNOUNCING...**  
**A SUPERB NEW**  
**SOLID-STATE SSB TRANSCEIVER**



**KENWOOD'S**  
**TS-900**

NOW THE PROMISE OF THE TRANSISTOR HAS BEEN FULFILLED.  
HERE IS THE TRANSCEIVER YOU WILL WANT TO OWN AND CAN AFFORD.  
FOR YEARS AMATEURS HAVE WAITED FOR THE NEW GENERATION  
GENERAL PURPOSE SSB TRANSCEIVER. NOW THE WAIT IS OVER.  
WHATEVER TRANSCEIVER YOU OWN GET READY TO TRADE.

**FEATURES:** Break-in CW with sidetone provided. ★ Built-in 100 kHz and 25 kHz crystal oscillator. ★ The receiver incremental tuning control can vary the receive frequency  $\pm 2$  kHz or more. ★ RTTY — Built-in frequency shift circuit for FSK operation. The frequency shift is factory set at 150 Hz. ★ Built-in noise blanker designed to reduce impulse type (lightning) noise. ★ Built-in VOX circuit with adjustable VOX gain and delay. ★ All major electronic circuits are built on modular (plug-in) circuit boards.

**SPECIFICATIONS:** Frequency range: 80 meter band — 3.5 to 4.0 MHz; 40 meter band — 7.0 to 7.6 MHz; 20 meter band — 14.0 to 14.8 MHz; 15 meter band — 21.0 to 21.5 MHz; 10 meter band — 28.0 to 29.5 MHz; 6 meter band — 28.0 to 29.5 MHz; 20.5 to 21.5 MHz; WWV — 15.3 MHz (receive only). ★ **MODE:** SSB, CW, or FSK. ★ **POWER OUTPUT:** 150 watts nominal into 50 ohms for SSB, 125 watts nominal into 50 ohms for CW, 50 watts nominal into 50 ohms for FSK. ★ **RF INPUT IMPEDANCE:** 50 ohms. ★ **FREQUENCY STABILITY:** Within 100 Hz during any 15 minute period after warming. ★ **CARRIER SUPPRESSION:** Carrier better than 45 db down from output signal. ★ **SIDEBAND SUPPRESSION:** Unwanted sideband better than 40 db down from output signal. ★ **HARMONIC RADIATION:** 0.8 microvolts for a 10 db signal. ★ **RECEIVER SENSITIVITY:** SSB and FSK — 0.5 kHz bandwidth (6 db down). 4.4 kHz bandwidth (60 db down). CW — 0.5 kHz bandwidth (6 db down). 1.5 kHz bandwidth (60 db down) (with optional CW filter installed). ★ **TUBE & SEMICONDUCTOR COMPLEMENT:** 3 tubes (6LQ6 x 2 and 6GK6), 2 IC's, 16 FET's, 57 transistors, 70 diodes. ★ **SIZE:** 12.6" W x 5.5" H x 12.8" D. The TS-900, unquestionably the best transceiver of its kind ever offered.

**PRICES:** TS-900, \$745.00. PS-900 (AC supply), \$110.00. TS-900/DC supply, \$130.00. VFO (External VFO), \$195.00.

Also, Kenwood's TS-511S five band SSB & CW transceiver... a superb value at \$415.00. If you want separate units, Kenwood's TS-599 solid state receiver at \$349.00 and the T-599 transmitter at \$395.00 are the best.

**Henry Radio**  
11345 W. Olympic Blvd., Los Angeles, Calif. 90064 213/477-6701  
831 N. Euclid, Anaheim, Calif. 92804 714/772-8200  
Butler, Missouri 64730 816/979-3127

**Late in 1973**

**The Start of the**

**C.B. Radio Boom!  
Very Large Growth  
in Ham-Radio Sales**

**This Helped Kenwood and Others  
Move Product**



KENWOOD

September 1973

Improved

599A's Series

# it wasn't easy...but Kenwood improved the R-599 & T-599

THOUSANDS HAVE PROVEN THEMSELVES THROUGH DAILY USE EVERYTHING THAT MADE THEM THE BEST REMAINS. BUT NOW KENWOOD DID THE IMPOSSIBLE BY MAKING THE "TWIN" EVEN BETTER. THE R-599A IS THE MOST COMPLETE RECEIVER EVER OFFERED. MANY FEATURES WHICH ARE "OPTIONAL" AT EXTRA COST IN OTHER RECEIVERS ARE STANDARD.

## the R-599A

Solid state... low power consumption, superbly reliable, small and lightweight. Full amateur band coverage... 10 through 160. CW, LSB, USB, AM, AM/N, FM reception. Selectable AGC... slow or fast. Built-in calibrator. Monitor T-599A frequency for calibrate transmitter. Squelch circuit. 1 KHz frequency readout. Smooth VFO action. Versatile cross channel operation with T-599A. Automatic or manual selectivity selection. Built-in SSB/S pole, CW/S pole and AM filters. RIT circuit with RIT tuning separate from RIT section. Five built-in fixed frequency channel positions. Provisions for installation of 2 and 5 meter converters. Stable, accurate VFO. Built-in power supply for 115/230 VAC operation or 12 VDC operation. Built-in WWV reception. Built-in S-meter. Excellent sensitivity—5 db. Easily adaptable to use with Kenwood TS-900. Modern, beautiful design.

### New Features:

New easy read dial, same 1 KHz readout... same smooth VFO action. Excellent built-in noise blaster. Improved 2 and 5 meter operation with optional accessory converters, easier installation. Continuous RF gain control replaces stepped attenuator. Built-in 11 meter coverage. AGC

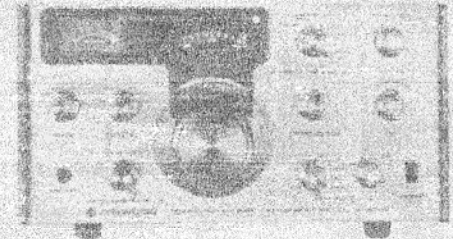


Photo 3881, Kenwood

turns off if desired. VFO indicator light for cross channel operation.

The R-599A... \$439.00. Converters... \$31.00.  
C-599 Speaker... \$18.00.

## the T-599A

Major solid state... only 5 tubes. Built-in power supply. Full metering: ALC, Ip, RF output, high voltage. CW, LSB, USB, AM operation. 1 KHz frequency readout, smooth easy VFO action. Built-in VOX, with delay, sensitivity and anti-VOX adjustments. Built-in semi-automatic CW with sidestone. Built-in calibrator function when used with the R-599A. Full amateur band coverage 10 through 80. Versatile cross channel operation with the R-599A. Stable, accurate VFO. Modern, beautiful design. ALC feedback. Maximum TVI protection. 200 watts PEP input nominal. Tube saving TUNE position. Built-in cooling fan. Selectable low or high microphone impedance.

### New Features:

Front panel ALC gain control. Front panel CAR, FVET control. Improved, easy read dial, same smooth VFO action. VFO indicator light for cross channel operation. New, high reliability final amplifier layout. Improved keying characteristics. New chain drive.

The T-599A... \$459.00.

Prices subject to change without notice.

### Why Buy from Henry Radio?

Over 30 years experience. No finance charges if paid within 90 days. Low interest contracts - 8 1/2% and on 1 1/2% annual rates - as long as 24 months. 10% down or trade-in down payments. Good used equipment. Most makes and models. Used equipment carries a 75 day trial, 90 day warranty and may be traded back within 90 days for full credit towards the purchase of NEW equipment. Write for booklet. Inquiries invited.

# Henry Radio

1700 N. Lincoln Ave., Dept. 100, Chicago, Ill. 60614  
1000 E. 17th St., Dept. 100, Cleveland, Ohio 44114  
1000 E. 17th St., Dept. 100, Cleveland, Ohio 44114  
1000 E. 17th St., Dept. 100, Cleveland, Ohio 44114

Available at Kenwood Dealers throughout the US

Sept 1973

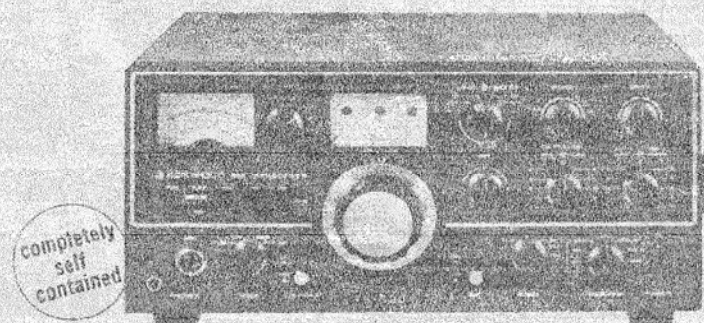


**KENWOOD**

**November 1973  
NEW!**

**TS-520  
Hybrid H.F.  
Transceiver  
Built-in  
AC & DC  
Supplies**

**NOW!!**  
*an exciting addition to the  
magnificent Kenwood line...*



**The New TS-520 Transceiver**

The new TS-520 is the transceiver you have wanted, but could not buy until now. A no-compromise, do everything, go everywhere 5 band transceiver for SSB or CW that performs equally well at home, in an automobile, airplane, boat or trailer. The top of the line TS-900 and the superb R-599A Receiver and T-599A Transmitter are already well known to all amateurs. Now the TS-520 fills out the line offering the famous Kenwood quality and reliability at a price most amateurs can afford.

★ Here are 30 special reasons you will want to own a TS-520. After you have operated one, you will doubtless give us 30 more why you're glad you own one. ★

- |   |                                       |                                      |
|---|---------------------------------------|--------------------------------------|
| 1. Built-in AC power supply             | reliable, with heater switch for      | 22. Full metering                    |
| 2. Built-in 12 volt DC power supply     | mobile receive-only operation.        | 23. Selectable SSB                   |
| 3. Built-in VOX with adjustable         | 13. Built-in cooling fan              | 24. Selectable AGC operation for     |
| gain, delay and anti VOX                | 14. Accessory external VFO &          | different modes                      |
| 4. 1 KHz dial readout                   | accessory external speaker            | 25. VFO indicator light              |
| 5. Ultra stable FET linear VFO          | 15. Built-in speaker                  | 26. Built-in selectable ALC action   |
| 6. Built-in noise blanker               | 16. Modern styling & functional       | for speech processing                |
| 7. Built-in RIT circuit and RIT         | design. Modular construction.         | 27. Carrying handle                  |
| indicator light                         | 17. Amplified ALC                     | 28. Rugged 6146 type final tubes     |
| 8. 8 pole crystal filter                | 18. TUNE position increases tube life | 29. Internal cross-channel operation |
| 9. Built-in 25 KHz crystal oscillator   | 19. Maximum TVI protection            | 30. Push button WWV reception        |
| 10. Provisions for optional CW filter   | 20. Built-in fixed channel operation  |                                      |
| 11. Break-in CW with sidetone           | (4 channels) with indicator light     |                                      |
| 12. Completely solid state except final | 21. Provisions for use with a VHF     |                                      |
| section. Compact, low current,          | transverter                           |                                      |

**Proven Kenwood quality  
and reliability**  
**The Price: \$599.00**  
subject to change without notice.

Accessories: External VFO - (VFO-520), External speaker - (SP-520), CW Filter - (CW-520)

Available from  
Kenwood dealers  
throughout the U.S.

**Henry Radio**



**KENWOOD**

**February 1974**

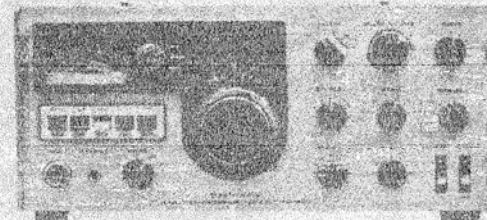
**TS-900  
&  
TS-520**

# WHEN YOU BUY KENWOOD ...YOU BUY PRIDE, PLEASURE & PERFORMANCE

Pride in knowing that you own today's ultimate in state-of-the-art technology... pleasure in operating a rig whose day in, day out performance will show you why the Kenwood name is world-famous for reliability and value.

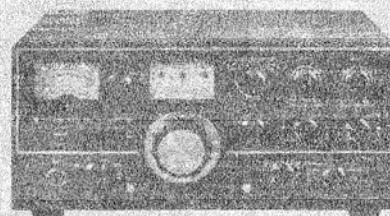
Kenwood's superb  
solid state SSB transceiver

**TS-900**



... the ultimate transceiver. The promise of the transistor has been fulfilled. Here is the transceiver you will want to own... whatever you have now, get ready to trade up. Its important features are far

too numerous to list. Its specifications are superb. The TS-900 is unquestionably the best transceiver of its kind ever offered. The price... \$795.00 TS-900 (AC Supply) \$120.00, the TS-900 \$140.00



**TS-520**

Kenwood's go every place... do everything transceiver

The new TS-520 is the transceiver you have wanted, but could not buy until now. It is a non-compromise, do everything, go everywhere 5 band transceiver for SSB or CW that performs equally well at home, in an automobile, airplane, boat or trailer. The TS-520 features built-in AC power supply, built-in 12 volt DC power supply, built-in VOX with adjustable gain delay and anti-VOX.

The price... \$599.00

**Kenwood's  
winning**

The R-599A is the most complete receiver ever offered. It is solid state, superbly reliable, small and lightweight, covers the full amateur band... 10 thru 160 meters, CW, LSB, USB, AM,

AM, N and FM.

The price... \$499.00

The T-599A is mostly solid state... only 3 tubes has built-in power supply, full metering (ALC, Ip, RF output and high voltage), CW-LSB-USB-AM operation.

The price... \$458.00

See the Kenwood line at the following dealers: CALIFORNIA: Communications Headquarters, San Diego • Gary Radio, Inc., San Diego • Ham Radio Outlet, Burlingame • Henry Radio, Anaheim • Henry Radio, Los Angeles • Sequoia Stereo, Arcata • Webster Radio, Fresno • FLORIDA: Amateur Electronic Supply, Orlando • Amateur Wholesale Electronics, Miami • IDAHO: United Electronics Wholesale, Twin Falls ILLINOIS: Erickson Communications, Chicago • Klaus Radio, Inc., Peoria • INDIANA: Graham Electronic Indianapolis • Hooper Electronics, Terre Haute • Radio Distributing Company, South Bend • IOWA: Hobb Industry, Council Bluffs • KANSAS: Associated Radio Communications, Overland Park • LOUISIANA: Tronics, Inc., New Orleans • MARYLAND: Electronic International Service Corp., Wheaton • Professional Electronics, Baltimore • MICHIGAN: Electronic Distributors, Muskegon • Radio Supply & Engineering Company, Detroit • MINNESOTA: Electronic Center, Minneapolis • MISSOURI: Ham Radio Center, St. Louis • Henry Radio, Butler • MONTANA: Conley Radio Supply, Billings • NEW JERSEY: Simon Side Band Company, Ca Ridge • NEW YORK: Adirondack Radio Supply, Inc., Amsterdam • Harrison Radio Corp., Farmingdale NORTH CAROLINA: Vickers Electronics, Durham • OHIO: Amateur Electronic Supply, Cleveland • Communications World, Cleveland • Queen City Electronics, Cincinnati • Spegco Electronics, Dayton • OKLAHOMA: Derrick Electronics, Broken Arrow • Radio, Inc., Tulsa • OREGON: Portland Radio Supply, Portland PENNSYLVANIA: JRS Distributors, York • Kass Electronics, Drexel Hill • SOUTH CAROLINA: Accutel Inc., Greenville • SOUTH DAKOTA: Burghardt Amateur Center, Watertown • TEXAS: Douglas Electronic Corpus Christi • Electronics Center, Inc., Dallas • Industrial Distributors, Dallas • Ed Juge Electronics, Inc Fort Worth • Madison Electronics, Houston • UTAH: Manwill Supply Company, Salt Lake City • WASHINGTON: Amateur Radio Supply Company, Seattle • WISCONSIN: Amateur Electronic Supply, Milwaukee



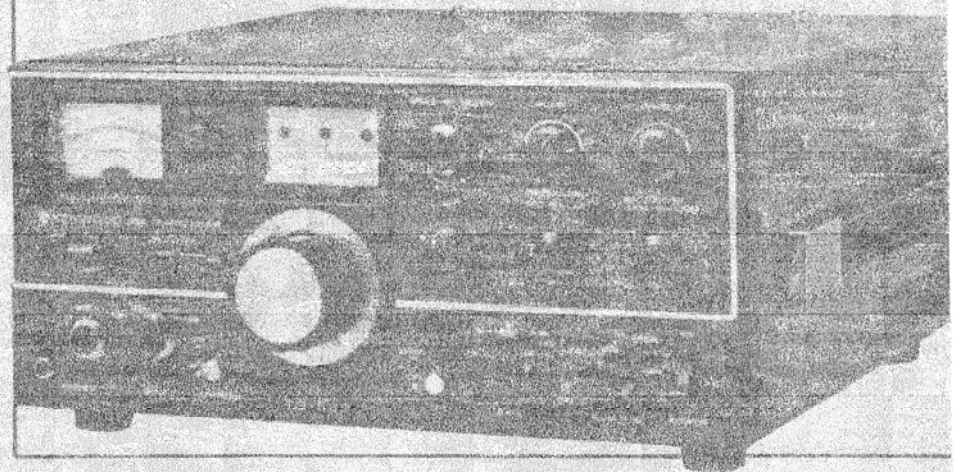
**KENWOOD**

**June 1974**

**TS-520**

**Doing Very Well!**

**We're  
overwhelmed!**  
...but not surprised by your acceptance of  
the new  
**TS-520**



**WE KNEW THIS NO-COMPROMISE, DO EVERYTHING, GO EVERYWHERE  
TRANSCIEVER WOULD BE POPULAR. NOW WE ARE DELIVERING THEM IN  
RECORD NUMBERS. PLEASE BE PATIENT...WE HAVE ONE FOR YOU.**

Here are 30 special reasons you will want to own a TS-520. After you have operated  
one, you will doubtless give us 30 more why you're glad you own one.

- |   |                                       |                                      |
|---|---------------------------------------|--------------------------------------|
| 1. Built-in AC power supply             | reliable with heater switch for       | 22. Full metering                    |
| 2. Built-in 12 volt DC power supply     | mobile receive-only operation         | 23. Selectable SSB                   |
| 3. Built-in VOX with adjustable         | 13. Built-in cooling fan              | 24. Selectable AGC operation for     |
| gain, delay and anti-VOX                | 14. Accessory external VFO &          | different modes                      |
| 4. 1 KHz dial readout                   | accessory external speaker            | 25. VFO indicator light              |
| 5. Ultra stable FET linear VFO          | 15. Built-in speaker                  | 26. Built-in selectable ATC action   |
| 6. Built-in noise blanker               | 16. Modern styling & functional       | for speech processing                |
| 7. Built-in RIT circuit and RIT         | design. Modular construction.         | 27. Carrying handle                  |
| indicator light                         | 17. Amplified ALC                     | 28. Rugged 6146 type final tubes     |
| 8. 8 pole crystal filter                | 18. TUNE position increases tube life | 29. Internal cross-channel operation |
| 9. Built-in 25 KHz crystal oscillator   | 19. Maximum TVI protection            | 30. Push button VHF reception        |
| 10. Provisions for optional CW filter   | 20. Built-in fixed channel operation  | <b>Proven Kenwood quality</b>        |
| 11. Break-in CW with sidetone           | (4 channels) with indicator light     | <b>and reliability</b>               |
| 12. Completely solid state except final | 21. Provisions for use with a VHF     | <b>The price...\$629.00</b>          |
| section. Compact, low current,          | transverter                           | subject to change without notice     |

Accessories: External VFO - (VFO-520), External speaker - (SP-520), CW Filter - (CW-520)

Available from  
Kenwood dealers  
throughout the U.S.

**Henry Radio**

1130 N. Lincoln Blvd., The Alhambra, Calif. 91804 (714) 777-5707  
251 N. Broad Avenue, San Jose, Calif. 95131 (415) 733-4200  
Biller, Mass. 01920 (617) 679-3122



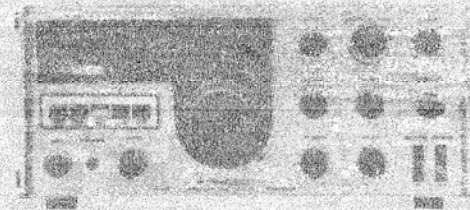
**KENWOOD**

**May 1975**

**599 Series  
TS-900  
TS-520  
on a  
BIG Roll**

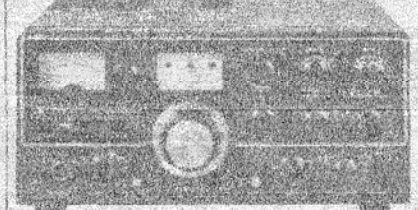
# Suddenly...the answer IS KENWOOD

Today when you ask "How can I modernize my SSB operation?" the answer certainly is KENWOOD. The deluxe TS-900 transceiver, the superb, go-anywhere TS-520 transceiver and the versatile R-599A receiver and T-599A transmitter offer today's amateur advanced design, reliable solid-state performance, contemporary styling... and the cost is modest. Now more than ever the answer is KENWOOD.



**TS-900** Kenwood's superb state-of-the-art SSB transceiver

... the ultimate transceiver. The promise of the transistor has been fulfilled. Here is the transceiver you will want to own... whatever you have now, get ready to trade up, its important features are far too numerous to list. Its specifications are superb. The TS-900 is unquestionably the best transceiver of its kind ever offered. The price... \$795.00  
PS-900 (AC Supply) \$120.00, the DS-900 \$140.00



**TS-520** Kenwood's go every place do everything transceiver

The new TS-520 is the transceiver you have wanted, but could not buy until now. It is a non-compromise, do everything, go everywhere 5 band transceiver for SSB or CW that performs equally well at home, in an automobile, airplane, boat or trailer. The TS-520 features built-in AC power supply, built-in 12 volt DC power supply, built-in VOX with adjustable gain delay and anti-VOX. The price... \$829.00

## Kenwood's winning package



R-599A Receiver

The R-599A is the most complete receiver ever offered. It is solid state, superbly reliable, small and lightweight, covers the full amateur band... 10 thru 160 meters, CW, LSB, USB, AM, AMN and FM.

The price... \$459.00

The T-599A is mostly solid state, only 3 tubes, has built-in power supply, full metering (ALC, Ip, RF output & high voltage), CW-LSB-USB-AM operation.

The price... \$479.00



T-599A Transmitter

Please call or write for complete specifications. Also available at Kenwood dealers throughout the U.S.

## Henry Radio

11240 W. Olympic Blvd., Los Angeles, Calif. 90064 213/477-8701  
931 N. Euclid, Anaheim, Calif. 92801 714/772-8200  
Butler, Missouri 64730 816/879-3127





August 1975

# TRIO/KENWOOD Announces Direct Sales

## No More Henry-Radio Distribution!

# KENWOOD

*Why settle  
for less!*

There are several good transceivers on the market today. But if you compare them carefully, study the specifications, note the important features, and finally talk to some Kenwood owners, you will have to come to the same conclusion that thousands of others have come to: you can't buy a better rig for the money than a Kenwood. Every unit is built with pride and designed to give top performance year after year. Join the switch to Kenwood.



The TS-520 shown with the VFO-520 and SP-520

The TS-520 is the final word in SSB transceivers... the "hottest little rig on the air." It is a compact, mostly solid state, all-in-one transceiver with built-in AC/DC power supply and speaker. It operates SSB and CW on 80 thru 10 meters. Features include 2-position ALC and double split frequency controlled operation.

Available at select Kenwood dealers throughout the U.S.  
Distributed by



**TRIO-KENWOOD  
COMMUNICATIONS INC.**

116 East Alondra / Gardena, California 90248

*AUG 19 75*



**KENWOOD**

**October 1975**

# Henry-Radio Has to Reduce Very Large Inventory

## Installs Digital Readout For TS-520's

### NEW--FROM HENRY RADIO

**NOW IT CAN BE  
DIGITAL...  
HENRY RADIO'S  
NEW  
CUSTOM TS-520**



Henry Radio now offers the Kenwood TS-520 with a built-in frequency display. This equipment is a standard, new TS-520 modified by Henry Radio to include a four digit frequency readout to 100 cycles. If you have never experienced the pleasure of a direct frequency readout, you have a big surprise coming.

As fast as you tune the transceiver, the TS-520 displays the actual transmit and receive frequencies. The LED readout is bright and easy to read. There is no chance of confusion, no chance of operating out of the band or on unauthorized frequencies. Your new digital system simply brings a new dimension of pleasure and accuracy to amateur radio.

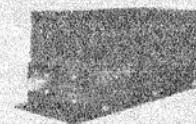
The TS-520 digital offers a four digit instantaneous display of both the transmitted and received frequencies to a resolution of 100 Hz for easy interpretation by the operator.

The operation of the display is interlocked into the standard controls of the transceiver; band switching, sideband switching, and RIT are all automatic. The digital circuits are incorporated directly inside the transceiver and do not affect the normal operating characteristics of the equipment.

Henry Radio will also install the digital modifications into any customer's transceiver if the equipment is returned prepaid to our Los Angeles address.

TS-520 Digital Transceiver \$729.00  
TS-520 Retrofit Modification \$129.00

**THE FIRST  
TRULY LINEAR  
SOLID STATE  
AMPLIFIER  
...TEMPO'S  
100AL10**



Enjoy distortion free SSB operation with the advantages of solid state circuitry. Operates in the VHF frequency range of 144-148 MHz with power output of 100W (nom.) with 10W (nom.) in. Guaranteed to effectively increase both the range and clarity of your communications under all operating conditions.

Modern solid state technology is used throughout, along with conservatively rated components to assure the highest possible reliability. Microstrip design on glass epoxy circuit boards give added resistance to damage from shock or prolonged vibration.

*The Tempo 100AL10 is available at Tempo dealers throughout the U.S. Specifications available upon request.*

*Also available in the fine Tempo line is the famous Tempo ONE, the Tempo 2000, 2002, 2006, 6N2, CL-146A, CL-220, DFD, ONE, DFD/K, FMH, RSF-1, TDC and a broad selection of RF amplifiers.*

## **Henry Radio**

11240 W. Olympic Blvd., Los Angeles, Calif. 90064 213/477-6701  
931 N. Euclid, Anaheim, Calif. 92801 714/772-9200  
Butler, Missouri 64730 816/679-3127





November 1975

TRIO/KENWOOD

NEW!  
599D's  
are a  
BIG HIT!

When Kenwood entered the amateur market, we did it with the finest technology and craftsmanship available. Thousands of discerning amateurs have selected Kenwood... after comparing specifications, features and prices... and finally, comparing its performance against all competition. The result has been Kenwood's phenomenal acceptance by the amateur world. And with this acceptance we pledge to constantly improve our products as technology advances and to bring forth new products that will meet tomorrow's needs. That is why we are the "pacesetter in amateur radio."

**KENWOOD**

*The "Twins" have  
a new look!*



The R-599D and the T-599D is the most versatile solid state receiver and transmitter combination on the ham bands. Thousands of "Twins" have proven themselves through daily use. Everything that made them the best remain... only their appearance has changed.

Available at select Kenwood dealers throughout the U.S.



*Kenwood... pacesetter in amateur radio*

*Distributed by*

**TRIO-KENWOOD  
COMMUNICATIONS INC.**

116 East Alondra / Gardena, California 90248

OV/DEC 1975

*NOV. 1975*





JANUARY 1976

# TRIO/KENWOOD Starting to do Aggressive Ad's

A black and white advertisement for Kenwood amateur radio equipment. At the top, the Kenwood logo (a stylized leaf) is followed by the word "KENWOOD" in large, bold, sans-serif letters. Below this, the phrase "pacesetter in amateur radio" is written in a script font. The advertisement features four main product sections, each with a photograph of the equipment and descriptive text. The products shown are the TS-520, TS-502, TS-700A, and QR-665. The text describes the features of each model, such as solid-state construction, frequency coverage, and power output. At the bottom right, the company name "TRIO-KENWOOD COMMUNICATIONS INC." is printed, along with the address "115 East Alondra, Gardena, California 90248". A handwritten note "JAN 1976 (2)" is visible at the bottom center of the page.

**KENWOOD**  
*pacesetter in amateur radio*

**The TS-520**  
The TS-520 with its companion VFO-520 and SP-520  
The TS-520 is the final word in SSB transceivers. The highest  
quality rig on the air. Built-in AC/DC power supply and microphone pre-amp.  
The TS-520 is loaded with Kenwood's finest

**The TS-502**  
20W transceiver. Built your  
TS-520 on the 2-meter band.  
Solid state 144 to 146 MHz  
SSB and CW. Priced right

**The TS-700A**  
2 meter transceiver. The  
best. Operates on  
SSB, CW, AM &  
lower. 6.7-40M  
and CW. Built  
in AC/DC supply.  
4 MHz  
band coverage  
44 channels  
with 1.1 crystals

**The QR-665**  
World's most  
compact. Best  
New 2-Meter  
communications  
transceiver.  
AM, SSB and  
CW. The last  
word in state  
of the art  
technology

**TRIO-KENWOOD COMMUNICATIONS INC.**  
115 East Alondra / Gardena, California 90248

JAN 1976 (2)



KENWOOD

July 1976

BIG DEAL!

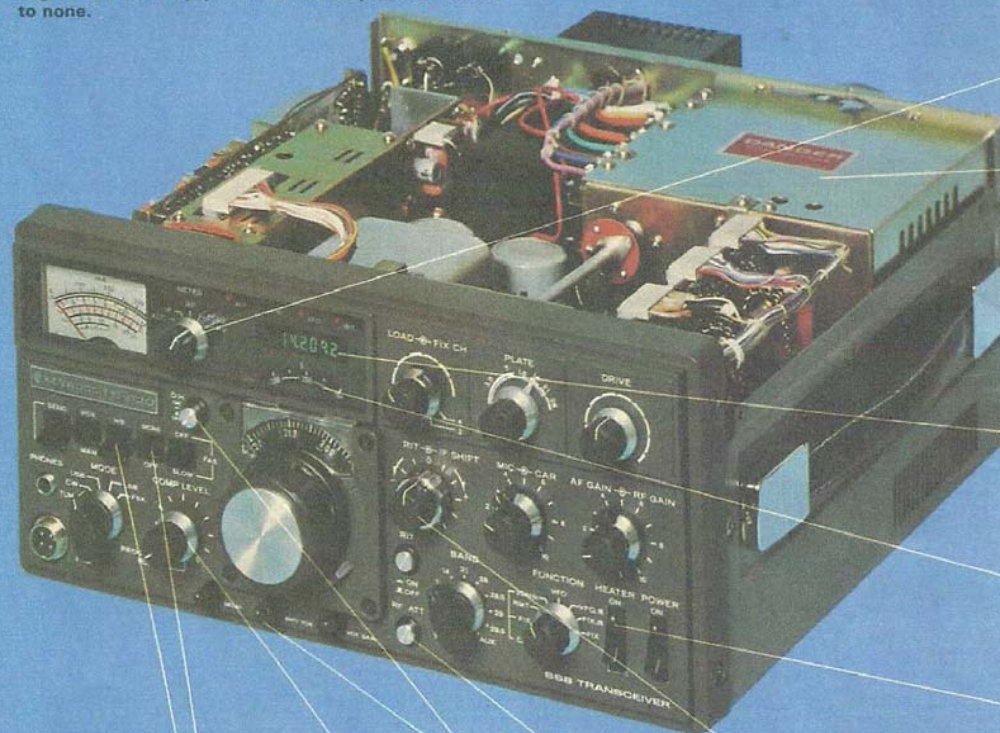
1st Ad After  
Dayton 1976

New TS-820  
Digital Readout  
Optional

## KENWOOD'S TS-820 *the Pacesetter*

Kenwood's well deserved reputation for fine craftsmanship and superb performance has never been more evident than in the TS-820. As a result of a host of innovative features being brought together, the 820 offers a degree of versatility, performance and pleasure second to none.

The Kenwood TS-820 is destined to be the world's new standard of excellence in amateur radio for years to come... a true "Pacesetter".



### VFO-820

The VFO-820 is a solid state remote VFO designed exclusively for use with the Kenwood TS-820 Pacesetter. The VFO-820 has its own RIT circuit and control switch. It is fully compatible with the optional digital display in the TS-820. The perfect extra to any Pacesetter station.

**RF MONITOR** - Built-in monitor circuit allows you to hear your own voice by sampling the RF signal. Especially useful for adjusting the RF Processor.

**NOISE BLANKER** - The TS-820 uses an efficient noise blanker circuit, another Kenwood exclusive. A special crystal filter assures unsurpassed efficiency in eliminating unwanted pulse noises.

**DIGITAL HOLD** - A single pushbutton switch offers the operator unprecedented versatility. The digital hold circuit will lock the counter and display at any frequency, but will allow the VFO to tune normally. Ever wanted to return to a certain spot on the band and forgotten the frequency? That won't happen again with the new digital hold feature on the Kenwood TS-820.

**SPEECH PROCESSOR** - An HF circuit provides quick time constant compression using a true RF compressor as opposed to an IF clipper. Amount of compression is adjustable to the desired level by a convenient front panel control.

**IF SHIFT** - The IF SHIFT control varies the IF passband without changing the receive frequency. This "IF shift" control is located on the front panel and provides excellent unwanted signal reject control or "pass band tuning." The 820 moves the signal across the IF pass band not the pass band across the signal.

**RF ATTENUATOR** - Easy, one touch activation of the attenuator supplies 20 dB of padding on receive.

**VOX** - A voice-activated microphone circuit is built into the TS-820 with VOX GAIN, ANTIVOX, and VOX DELAY controls placed on the front panel for convenient adjustment any time.



# KENWOOD

## July 1977 NEW! TS-520S with true Digital-Readout as an option with DG-5

### KENWOOD'S NEW TS-520S AND DG-5 DIGITAL FREQUENCY DISPLAY A NEW STANDARD IN ECONOMY TRANSCEIVERS

The NEW TS-520S combines all of the fine, field-proven characteristics of the original TS-520 together with many of the ideas, comments, and suggestions for improvement from amateurs worldwide. Kenwood's ultimate objectives... to make quality equipment available at reasonable prices.

#### FULL COVERAGE TRANSCEIVER

The new TS-520S provides full coverage on all amateur bands from 1.8 to 29.7 MHz. Kenwood gives you 160 meter capability, WWV on 15.000 MHz, and an auxiliary band position for maximum flexibility. And with the addition of the TV-502 and TV-506 transverters, your TS-520S can cover 160 meters to 2 meters on SSB and CW.

#### DIGITAL DISPLAY DG-5 (optional)

The new Kenwood DG-5 provides easy, accurate readout of your operating frequency while transmitting and receiving.

#### OUTSTANDING RECEIVER SENSITIVITY AND MINIMUM CROSS MODULATION

The new TS-520S incorporates a 3SK-35 dual gate MOSFET for outstanding cross modulation and spurious response characteristics. The 3SK35 has a low noise figure (3.5 dB typ.) and high gain (18 dB typ.) for excellent sensitivity.

#### NEW IMPROVED SPEECH PROCESSOR

A new audio compression amplifier gives you extra punch in the pile ups and when the going gets rough.

#### VERNIER TUNING FOR FINAL PLATE CONTROL

A new vernier tuning mechanism allows

easy and accurate adjustment of the plate control during tune-up.

#### FINAL AMPLIFIER

The new TS-520S is completely solid state except for the driver (12BY7A) and the final tubes. Rather than substitute TV sweep tubes as final amplifier tubes in a state of the art amateur transceiver, Kenwood has employed two husky 5-2001A (equivalent to 6146B) tubes. These rugged, time-proven tubes are known for their long life and superb linearity.

#### HIGHLY EFFECTIVE NOISE BLANKER

An effective noise blanking circuit developed by Kenwood that virtually eliminates ignition noise is built-in to the TS-520S.

#### RF ATTENUATOR

The new TS-520S has a built-in 20 dB attenuator that can be activated by a push button switch conveniently located on the front panel.

#### VFO-520 — NEW REMOTE VFO

The VFO-520 remote VFO has been designed to match the styling of the TS-520S and provide maximum operating flexibility on the band selected on your TS-520S.

#### AC POWER SUPPLY

The TS-520S is completely self-contained with a rugged AC power supply built-in. The addition of the DS-1A DC-DC converter (option) allows for mobile operation of the TS-520S.

#### EASY CONNECTION PHONE PATCH

The TS-520S has 2 convenient RCA phone jacks on the rear panel for PHONE PATCH IN and PHONE PATCH OUT.

#### CW-520 — CW FILTER (OPTION)

The CW-520 500 Hz filter can be easily installed and will provide improved operation on CW.

#### AMPLIFIED TYPE AGC CIRCUIT

The AGC circuit has 3 positions (OFF, FAST, SLOW) to enable the TS-520S to be operated in the optimum condition at all times whether operating CW or SSB.

The TS-520S retains all of the features of the original TS-520 that made it tops in its class: RIT control • 8-pole crystal filter • Built-in 25 KHz calibrator • Front panel carrier level control • Semi-break-in CW with sidetone • VOX/PTT/MOX • TUNE position for low power tune up • Built-in speaker • Built-in Cooling Fan • Provisions for 4 fixed frequency channels • Heater switch.



#### Specifications

Amateur Bands: 160 to 10 meters plus WWV (receive only)  
Modes: USB, LSB, CW  
Antenna Impedance: 50 Ohms  
Frequency Stability: Within  $\pm 1$  kHz during one hour after one minute of warm-up, and within 100 Hz during any 30 minute period thereafter

Tubes & Semiconductors:  
Tubes: 3 (5001A x 2, 12BY7A)  
Transistors: 52  
FETs: 19  
Diodes: 101

Power Requirements: 120/220 V AC, 50/60 Hz, 13.8 V DC (with optional DS-1A)

Power Consumption: Transmit: 280 Watts Receive: 26 Watts (with heater off)

Dimensions: 333(13 1/4) W x 153 (6 1/8) H x 359(13 3/16) D mm (inch)

Weight: 15.0 kg (33.0 lbs)

RF Input Power: SSB: 200 Watts PEP CW: 150 Watts DC

Carrier Suppression: Better than -40 dB

Sidband Suppression: Better than -50 dB

Spurious Radiation: Better than -40 dB

Microphone Impedance: 50K Ohms

AF Response: 400 to 2600 Hz

#### RECEIVER

Sensitivity: 0.25  $\mu$ V for 10 dB (S+N)/N

Selectivity: SSB: 2.4 kHz/-6 dB, 4.4 kHz/-60 dB

Selectivity: CW: 0.5 kHz/-4 dB, 1.5 kHz/-60 dB (with optional CW-520 filter)

Image Ratio: Better than 50 dB

IF Rejection: Better than 50 dB

AF Output Power: 1.0 Watt (8 Ohm load, with less than 30% distortion)

AF Output Impedance: 4 to 16 Ohms

#### DG-5

Measuring Range: 100 Hz to 40 MHz

Input Impedance: 5 k Ohms

Gate Time: 0.1 Sec

Input Sensitivity: 100 Hz to 40 MHz: 200 mV rms or over, 10 Hz to 10 MHz: 50 mV or over

Measuring Accuracy: Internal time base accuracy:  $\pm 0.1$  count

Time Base: 10 MHz

Operating Temperature:  $-10^{\circ}$  to  $50^{\circ}$  C/ $14^{\circ}$  to  $122^{\circ}$  F

Power Requirement: Supplied from TS-520S or 12 to 16 VDC (nominal 13.8 VDC)

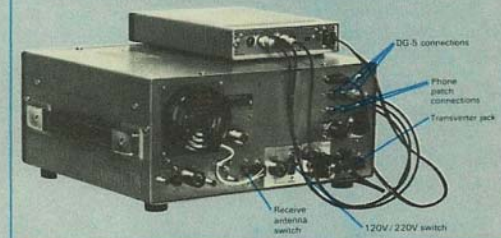
Dimensions: 167(6 9/16) W x 43(1 11/16) H x 208(8 9/16) D mm (inch)

Weight: 1.3 kg (2.9 lbs)



The luxury of digital readout is available on the TS-520S by connecting the new DG-5 readout (option). More than just the average readout circuit, this counter mixes the carrier, VFO, and heterodyne frequencies to give you your exact frequency. This handsomely-styled accessory can be set almost anywhere in your shack for easy to read operation... or set it on the dashboard during mobile operation for safety and convenience. Six bold digits display your operating frequency while you transmit and receive. Complete with DH (display hold) switch for frequency memory and 2 position intensity selector. The DG-5 can also be used as a normal frequency counter up to 40 MHz at the touch of a switch. (Input cable provided.)

NOTE TS-520 owners can use the DG-5 with a DK-520 adapter kit.



July 1977

TRIO-KENWOOD COMMUNICATIONS INC. 1111 WEST WALNUT/COMPTON, CA 90220

**KENWOOD**  
... pioneer in amateur radio



**KENWOOD**

**April 1979**

**Kenwood  
Announces**

**Their New  
TS-120S & TS-180S  
All Solid-State  
H.F. Transceivers**

**But Maintain  
Their  
Best Selling**

**Hybrid  
TS-520S and TS-820S  
H.F. Transceivers**

KENWOOD

# Hiroshi Miyazawa

## Director of Trio-Kenwood Corp.



JH1DRB



*Hiroshi Miyazawa*

DIRECTOR

**TRIO-KENWOOD CORPORATION**

13-13, 1 CHIDORI OHTA-KU, TOKYO, JAPAN TEL (REP.) 752-2171  
17-5, 2 SHIBUYA SHIBUYA-KU, TOKYO, JAPAN TEL (REP.) 477-5501



**TRIO**

JH1DRB

トリオ株式会社

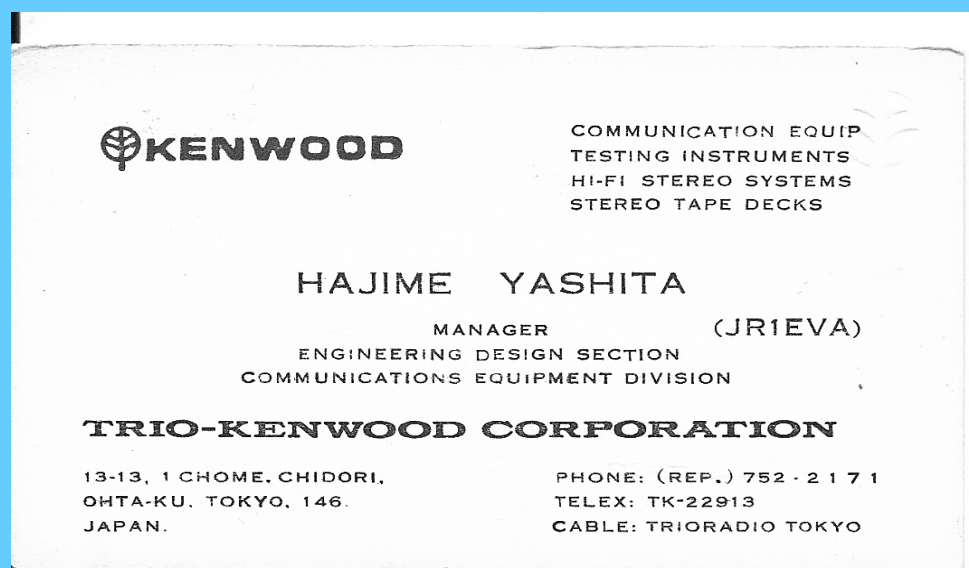
取締役 宮澤 寛

東京都大田区千鳥1丁目13番13号 電話 03 (752) 2 1 7 1 〒146  
本社 東京都渋谷区渋谷2丁目17番5号 電話 03 (477) 5 5 0 1 〒150  
シオノギ渋谷ビル

KENWOOD

# Hajime Yashita

## Manager of Engineering



**KENWOOD**

# Toshiyuki Tashiro

## R.F. Design Engineer



COMMUNICATIONS EQUIP.  
TESTING INSTRUMENTS  
HI-FI AUDIO PRODUCTS

**TOSHIYUKI TASHIRO**

ENGINEERING DESIGN SECTION  
COMMUNICATIONS EQUIPMENT DIVISION

**TRIO-KENWOOD CORPORATION**

13-13, 1-CHOME, CHIDORI,  
OHTA-KU, TOKYO, 146.  
JAPAN.

PHONE: (REP.) 752 - 2171  
TELEX: 2425214 TRICOM J  
CABLE: KENWOODCOM TOKYO



**TRIO**  
トリオ株式会社

通信機・測定器・音響機器

通信機事業部

設計グループ・機構設計セクション

JJ1ETT 田代敏行

東京都大田区千鳥1丁目13番13号 電話 03 (755) 4348(直) 〒146  
事業所 東京・八王子・駒ヶ根

**KENWOOD**

# **Mickey Hatori**

## **R.F. Engineer / Service**



(213) 639-9000

*9005*

**MASAKAZU "MICKEY" HATORI**  
**SERVICE MANAGER**

**TRIO-KENWOOD**  
**COMMUNICATIONS, INC.**

1111 WEST WALNUT STREET - COMPTON, CA. 90220  
MAILING: P.O. BOX 7065 - COMPTON, CA. 90224



**KENWOOD**

**Mickey: Age 34 R.F. Engineer  
for 13 years in 1980**

**All Hybrids & First Service Manager USA**

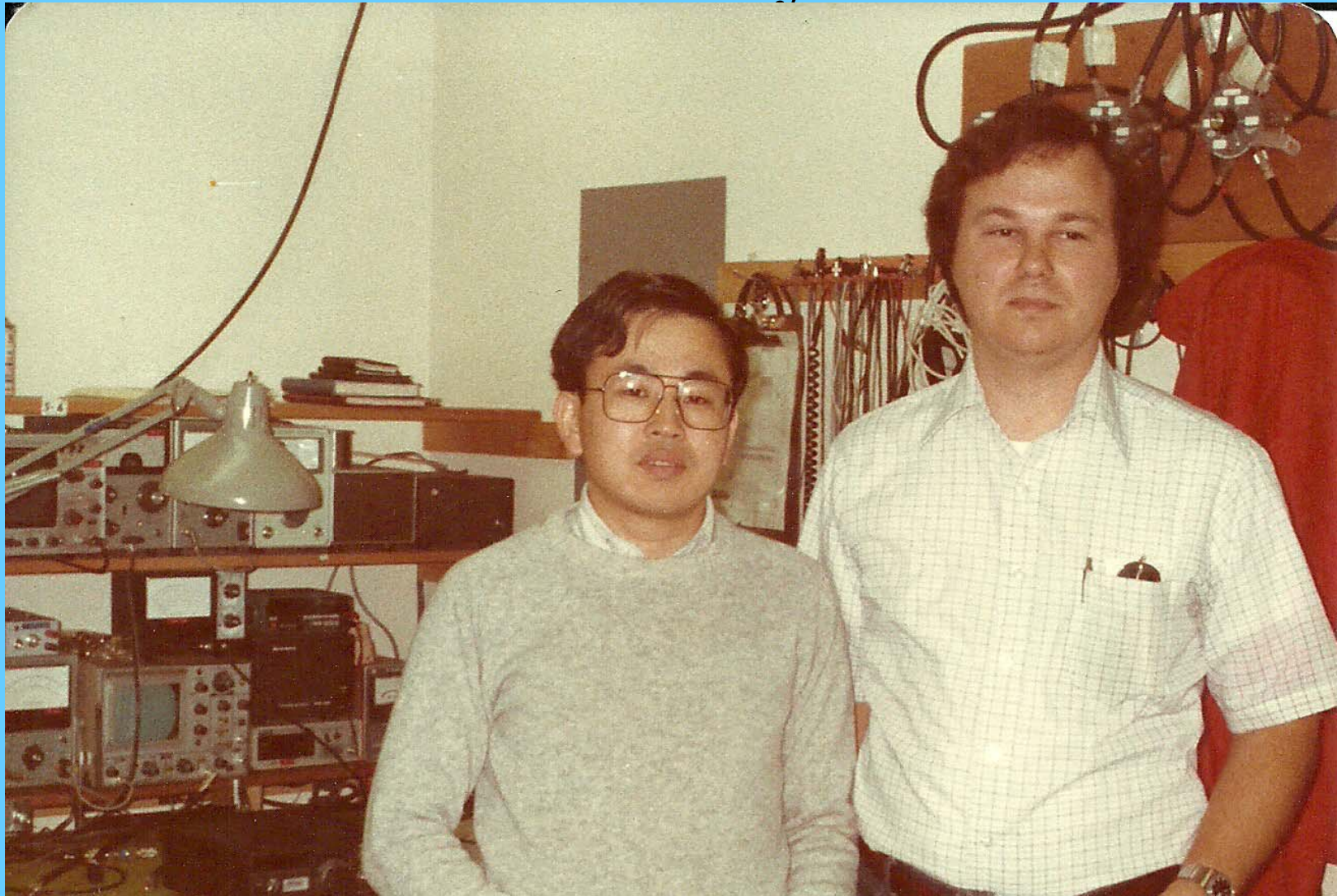




**KENWOOD**

# **Fuji: Age 34 R.F. Receiver Engineer**

**For all radios 13 years in 1980.**





**KENWOOD**

# **Kenwood's New Facility in 1980 at Compton, Calif.**



**KENWOOD**

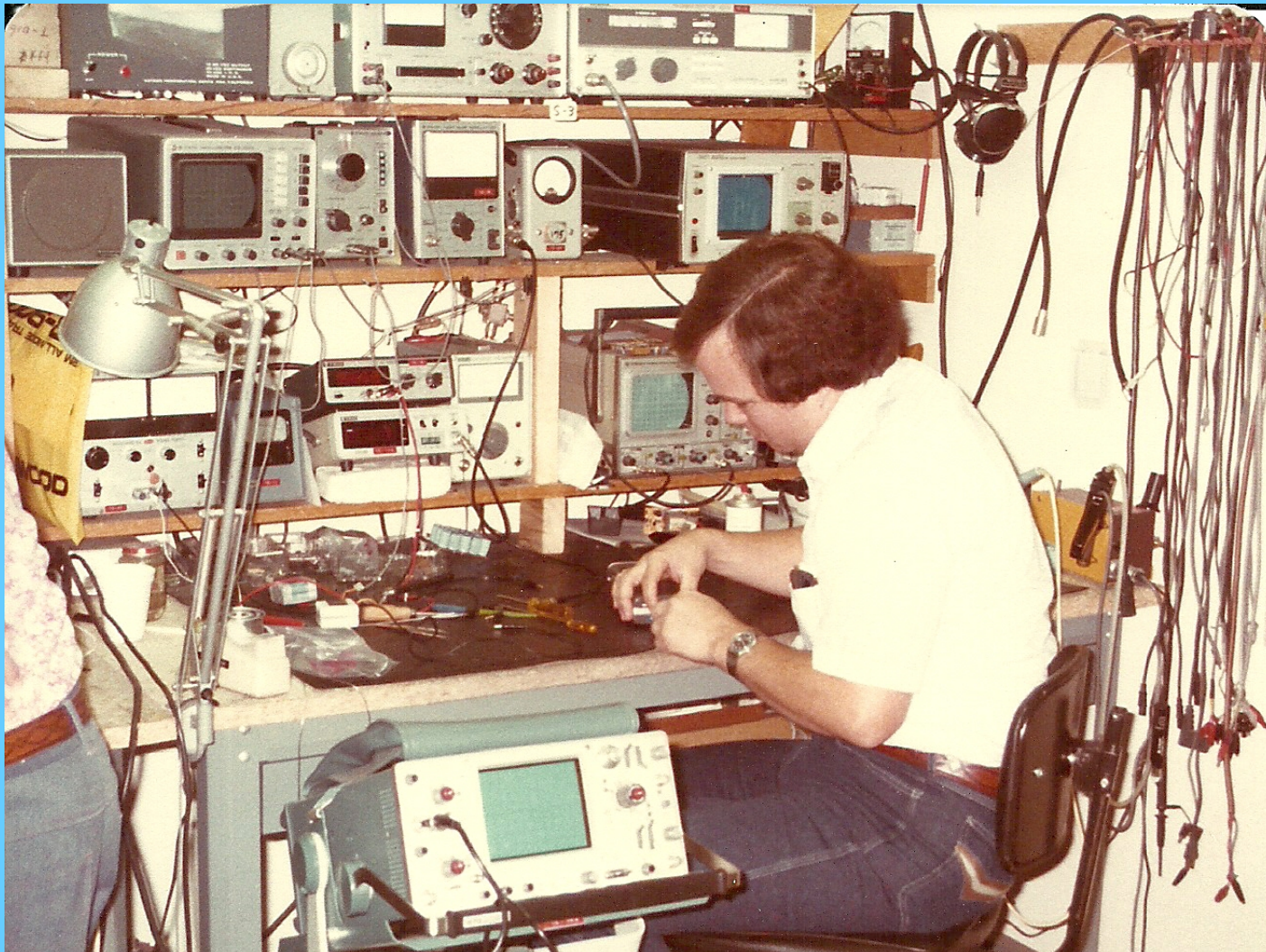
# **Shimizu: H.F. Lead Tech trying to figure out why the TS-180 Blew Up! !**





**KENWOOD**

# Jeff: Repairing a radio at Kenwood's Service Bench





**KENWOOD**

**September 1980**

**NEW!**

**TS830S**

**H.F.**

**Transceiver**

**KENWOOD**  
...pacesetter in amateur radio

**TRIO-KENWOOD COMMUNICATIONS INC.**  
1111 WEST WALNUT / COMPTON, CA 90220

**Top-Notch.**



**VBT, notch, IF shift, wide dynamic range**

## TS-830S

Now most Amateurs can afford a high-performance SSB/CW transceiver with every conceivable operating feature built in for 160 through 10 meters (including the three new bands). The TS-830S combines a high dynamic range with variable bandwidth tuning (VBT), IF shift, and an IF notch filter, as well as very sharp filters in the 455-kHz second IF. Its optional VFO-230 remote digital VFO provides five memories.

### TS-830S FEATURES:

- **160-10 meters, including three new bands**  
Covers all Amateur bands from 1.8 to 29.7 MHz (LSB, USB, and CW), including the new 10, 18, and 24-MHz bands. Receives WWV on 10 MHz.
- **Wide receiver dynamic range**  
Junction FETs (with optimum IMD characteristics and low noise figure) in the balanced mixer, a MOSFET RF amplifier operating at low level for improved dynamic range (high amplification level not needed because of low noise in mixer), dual resonator for each band, and advanced overall receiver design result in excellent dynamic range.

### • Variable bandwidth tuning (VBT)

Continuously varies the IF filter passband width to reduce interference. VBT and IF shift can be controlled independently for optimum interference rejection in any condition.

### • IF notch filter

Tunable high-Q active circuit in 455-kHz second IF, for sharp, deep notch characteristics.

### • IF shift

Shifts IF passband toward higher or lower frequencies (away from interfering signals) while tuned receiver frequency remains unchanged.

### • Various IF filter options

Either a 500-Hz (YK-88C) or 270-Hz (YK-88CN) CW filter may be installed in the 8.83-MHz first IF, and a very sharp 500-Hz (YG-455C) or 250-Hz (YG-455CN) CW filter is available for the 455-kHz second IF.

### • Built-in digital display

Six-digit large fluorescent tube display, backed up by an analog dial. Reads actual receive and transmit frequency on all modes and all bands. Display Hold (DH) switch.

### • Adjustable noise-blanker level

Built-in noise blanker eliminates pulse-type (such as ignition) noise. Front-panel threshold level control.

### • 6146B final with RF NFB

Two 6146B's in the final amplifier provide 220 PEP (SSB)/180 W DC (CW) input on all bands. Negative feedback provides optimum IMD characteristics for high-quality transmission.

### • More flexibility with optional digital VFO

VFO-230 operates in 20-Hz steps and includes five memories. Also allows split-frequency operation. Built-in digital display. Covers about 100 kHz above and below each 500-kHz band.

### • Built-in RF speech processor

For added audio punch and increased talk power DX pileups.

### • RIT/XIT

Receiver incremental tuning (RIT) shifts only the receiver frequency, to tune in stations slightly off frequency. Transmitter incremental tuning (XIT) shifts only the transmitter frequency.

### • SSB monitor circuit

Monitors IF stage while transmitting, to determine audio quality and effect of speech processor.

Ask your Authorized Kenwood Dealer about the many operating features offered by the TS-830S... at a very reasonable price!

**NOTE:** Price, specifications subject to change without notice and obligation.

### MATCHING ACCESSORIES FOR FIXED-STATION OPERATION:

- SP-230 external speaker with selectable audio filters
- VFO-230 external digital VFO with 20-Hz steps, five memories, digital display
- AT-230 antenna tuner/ SWR and power meter
- MC-50 desk microphone
- YG-455C (500-Hz) and YG-455CN (250-Hz) CW filters for 455-kHz IF
- YK-88C (600-Hz) and YK-88CN (270-Hz) CW filters for 8.83-MHz IF
- HC-10 digital world clock
- HS-5 and HS-4 headphones
- MC-30S and MC-35S noise-cancelling hand microphones
- TL-922A linear amplifier
- SM-220 Station Monitor
- PC-1 phone patch

### Other accessories not shown:





KENWOOD

May 1981

NEW!

TS-530S

H.F.

Transceiver

"Cents-ational."



IF shift, digital display, narrow-wide filter switch

## TS-530S

The TS-530S SSB/CW transceiver is designed with Kenwood's latest, most advanced circuit technology, providing wide dynamic range, high sensitivity, very sharp selectivity with selectable filters and IF shift, built-in digital display, speech processor, and other features for optimum, yet economical, operation on 160 through 10 meters.

### TS-530S FEATURES:

- **160-10 meter coverage, including three new bands**  
Transmits and receives (LSB, USB, and CW) on all Amateur frequencies between 1.8 and 29.7 MHz, including the new 10, 18, and 24 MHz bands. Receives WWV on 10 MHz.
- **Built-in digital display**  
Large, six-digit, fluorescent-tube display shows actual receive and transmit frequencies on all modes. Backed up by analog subdial.
- **IF shift**  
Moves IF passband around received signal and away from interfering signals and sideband splatter.

### Narrow/wide filter combinations

Any one or two of three optional filters ... YK-88SN (1.8 kHz) SSB, YK-88C (500 Hz) CW, YK-88CN (270 Hz) CW ... may be installed for selecting (with "N-W" switch) wide and narrow bandwidths on CW and/or SSB.

### Wide receiver dynamic range

Greater immunity to strong-signal overload, with MOSFET RF amplifier operating at low level for improved IMD characteristics, junction FETs in balanced mixer with low noise figure, and dual resonator for each band.

### Built-in speech processor

Combines an audio compression amplifier with change of ALC time constant for extra audio punch and increased average SSB output power, with suppressed sideband splatter.

### Two 6146B's in final

Runs 220 W PEP/180 W DC input on all bands.

### Advanced single-conversion PLL system

Improved overall stability and improved transmit and receive spurious characteristics.

### Adjustable noise-blanker level

Pulse-type (such as ignition) noise is eliminated by built-in noise blanker, with front-panel threshold level control.

### RF attenuator

The 20-dB RF attenuator may be switched in for rejecting IMD from extremely strong signals.

### Optional VFOs for flexibility

VFO-240 allows split-frequency operation and other applications. VFO-230 digital VFO operates in 20-Hz steps and includes five memories and a digital display.

### RIT/XIT

Front-panel RIT (receiver incremental tuning) shifts only the receiver frequency for tuning in stations slightly off frequency. XIT (transmitter incremental tuning) shifts only the transmitter frequency, for calling a DX station listening off frequency.

More information on the TS-530S is available from all authorized dealers of Trio-Kenwood Communications, Inc., 1111 West Walnut Street, Compton, California 90220.

### Matching accessories for fixed-station operation:

- SP-230 external speaker with selectable audio filters
- VFO-240 remote VFO
- AT-230 antenna tuner/ SWR and power meter
- MC-50 desk microphone

### Other accessories not shown:

- VFO-230 remote digital VFO with 20-Hz steps, five memories, digital display
- TL-922A linear amplifier
- SM-220 Station Monitor
- KB-1 deluxe VFO knob
- PC-1 phone patch
- HS-5 and HS-4 headphones
- HC-10 digital world clock
- YK-88C (500 Hz) and YK-88CN (270 Hz) CW filters and YK-88SN (1.8 kHz) SSB narrow filter
- MC-30S and MC-35S noise-canceling hand microphones



Specifications and prices are subject to change without notice or obligation.

**KENWOOD**

# Their Version of The Drake TR-7 General Coverage H.F. Transceiver, After 5 years of Drake's Great Run





*Thank You  
For Watching*

*The End*

KENWOOD



KENWOOD

History of the Legacy products:

# TS-500 & TS-511 TRIO

No QST Review

SSB, AM, CW, 17 tubes, 3 transistors, 15 diodes



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History of the Legacy products:

## TS-510 TRIO

No QST Review

SSB, CW, 14 tubes, 2 FET's, 13 transistors, 29 diodes





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History of the Legacy products:

TS-511s

No QST Review

SSB, AM, CW, 10 tubes, 1 IC, 4 FET's, 37 transistors, 57 diodes



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History of the Legacy products:

## TS-515s

No QST Review

SSB, CW, 10 tubes, 1 IC, 4 FET's, 37 transistors, 57 diodes





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History of the Legacy products:

## TS-520

QST Review Sept 1974

SSB, CW, 3 tubes, 17 FET's, 47 transistors, 84 diodes



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History of the Legacy products:

## TS-520s & TS-520se

QST Review May 1978

(S) = SSB, CW, 3 tubes, 19 FET's, 52 transistors, 100 diodes  
(SE) = SSB, CW, 3 tubes, 19 FET's, 49 transistors, 195 diodes + 1 IC





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History of the Legacy products:

## T599 & R599

No QST Review



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History of the Legacy products:

## TS-900

No QST Review

SSB, CW, FSK, 3 tubes, 3 IC's, 16 FET's, 57 transistors, 70 diodes





# TS-820 & TS-820S

QST Review September 1976

820 = SSB, CW, 3 tubes, 30 FET's, 5 IC's, 74 transistors, 167 diodes

820(S) = SSB, CW, 3 tubes, 31 FET's, 38 IC's 95 transistors, 195 diodes



UR

KENWOOD

History of the Legacy products:

## R-820

SSB, CW, RTTY, AM, IC's 40, 34 FET's, 89 transistors, 170 diodes



UR



KENWOOD

History of the Legacy products:

# TS-530s & TS-530se

QST Review March 1982



KENWOOD

History of the Legacy products:

## TS-830s

QST Review May 1981



M.V.G. May



Presenter: Mr Jan Servaites N8CBX

## Getting Started

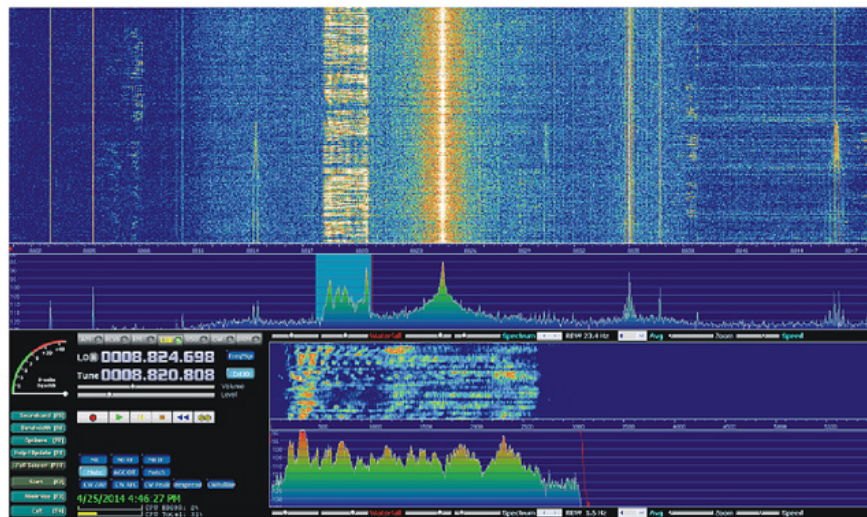
- Kenwood provides the 8.83mhz IF output on some models. The SM-220 owner's manual provides guidance in IF cable installations.
- Might need to attenuate IF signal (a step attenuator with 20db capability).
- An HF band SDR receiver (SoftRock kits from Tony Parks KB9YIG, [fivedash.com](http://fivedash.com)).
- PC computer's soundcard (typically 48khz, stereo line input).
- Running HDSDR.exe; Free download.

## Operating Hints & Tips

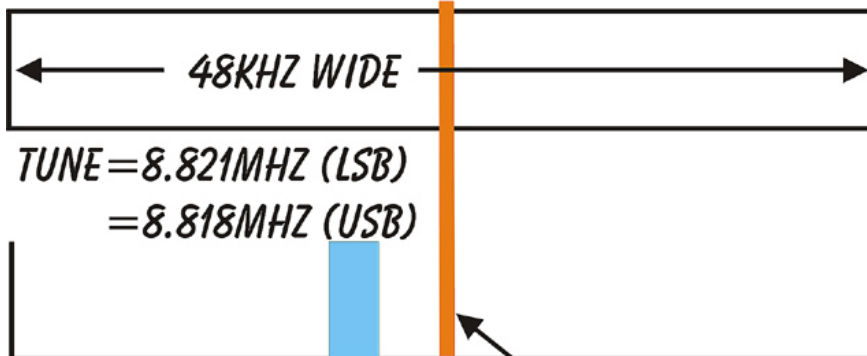
- "Softrock Ensemble-II Rx" has built in VFO. Frequency controlled by PC....(BEST!).
- "Softrock Lite" (\$25 kit w/8.812 xtal fixed LO frequency).
- 48khz s/c work great; 96khz & 192khz s/c available & expensive.
- Many nice features in HDSDR; All modes, recording, spectrum/waterfall, filter widths, noise blanker.
- Panadapter capability adds a new dimension to the older radios. Can revitalized a vintage radio to newer standards, and the hobby enjoyment!

## SDR PANADAPTER SYSTEM

### IF SPECTRUM

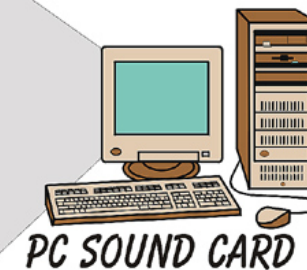


$LO = 8.825 \text{ MHz}$



DC RESPONSE  
IN SOUND CARD

RUNNING:  
HDSDR.EXE



USB &  
stereo cable



SOFTROCK SDR

RG-174

ATTENUATOR

8.83 MHz

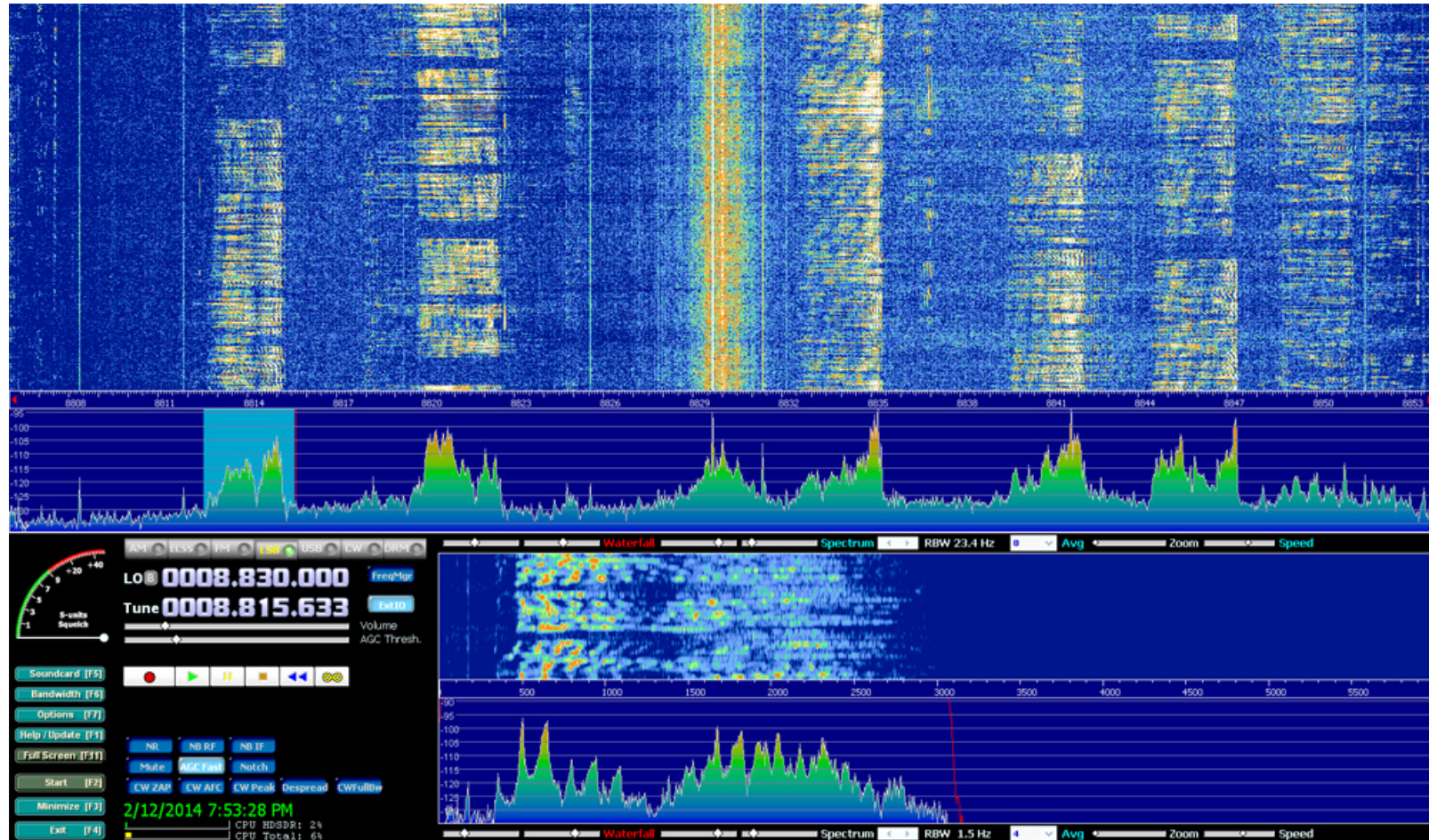
RG-174



TS-820

### Softrock Lite, w/8.812mhz xtal

Listening window is fixed





### Background on the L41

- First voltage step-up transformer in RX antenna circuit.
- Could be damaged by Electro-Static Discharge (ESD) or accidental transmit of RF.

### Troubleshooting low or no RX on RF board

- Inject 8.83 mhz test signal into RIF (RF board TP-2) – If good loud tone & s-meter, IF chain is good.
- Inject low-level RF signal at TP-1; If no response, try injecting at wafer switch S1-wiper #2; If good response, most likely L41 is bad (primary & secondary coils are likely shorted).

### Repair of L41

- No NOS L41s available, so it needs to be rewound.
- #41 magnet wire; 6T on primary, 26T on secondary.
- Need high magnification, a mandrel to hold the L41 bobbin, and a winding spindle. Cannot just scramble-winding it by hand; Make an even, multi-layer solenoid winding.

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Rewinding TS-830s L41 RF coil

B&L Microscope.

Fiber optical light  
source  
(cold light).

8mm Film editor  
winder & mandrel  
to support L41.

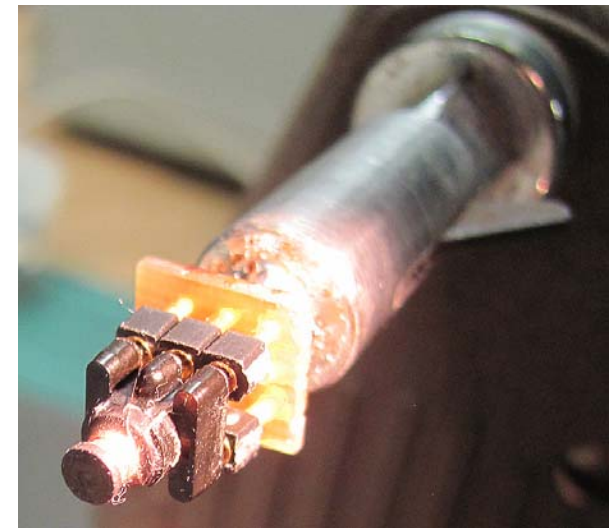
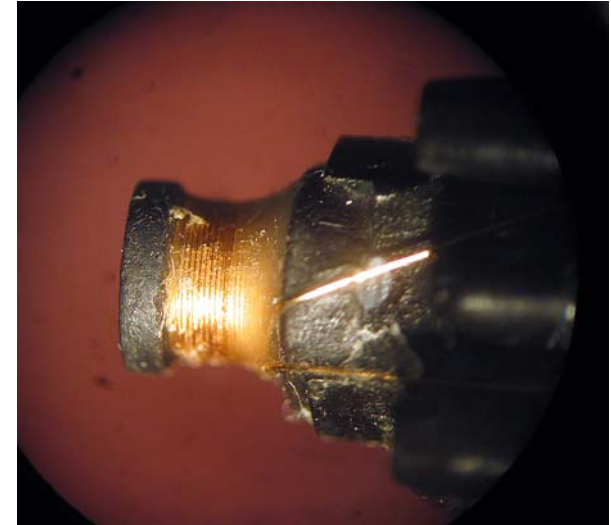
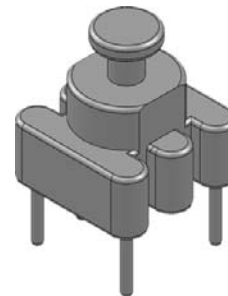
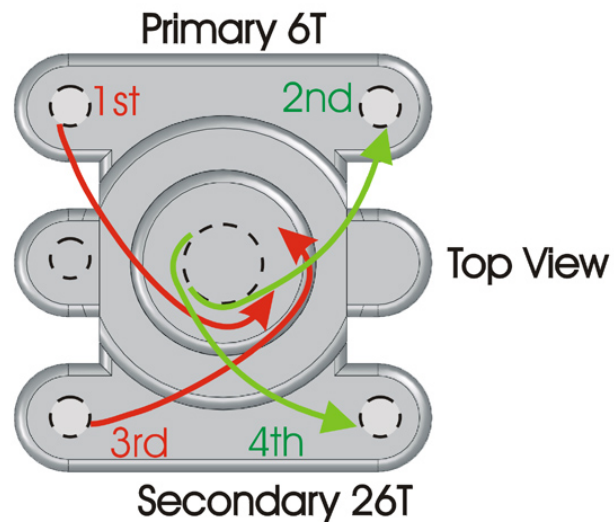
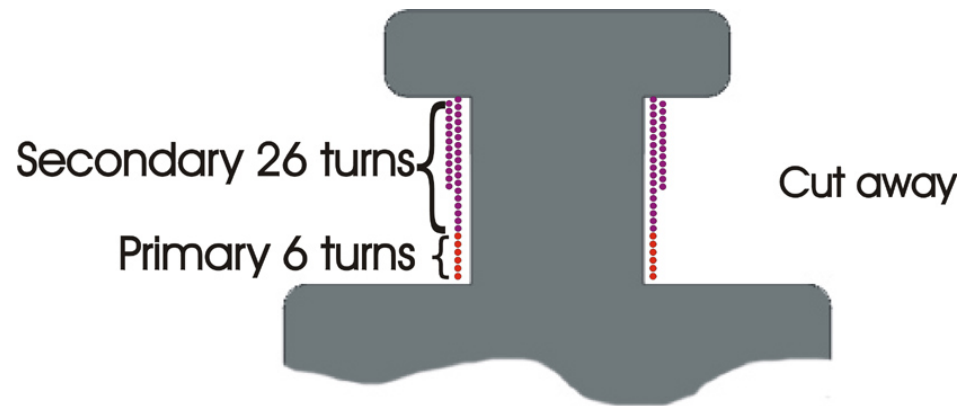
Wire tensioner.



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## Rewinding TS-830s L41 RF coil

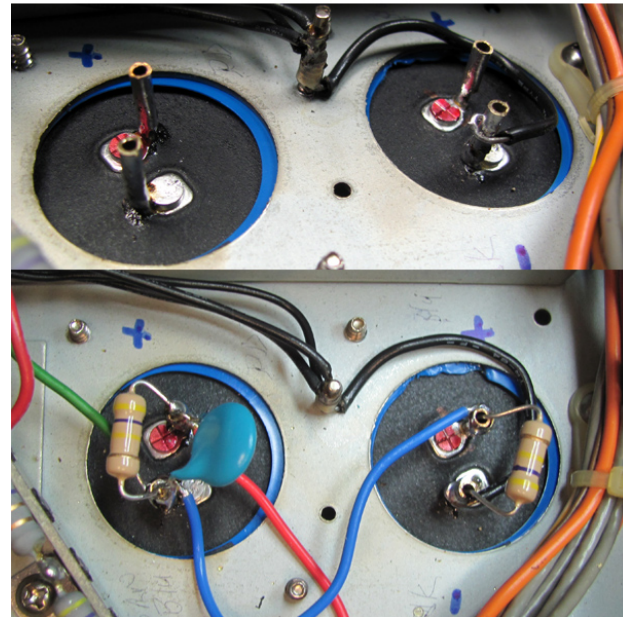
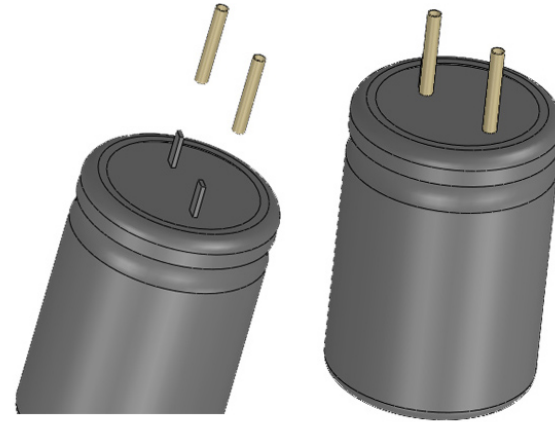
One can actually count the wind





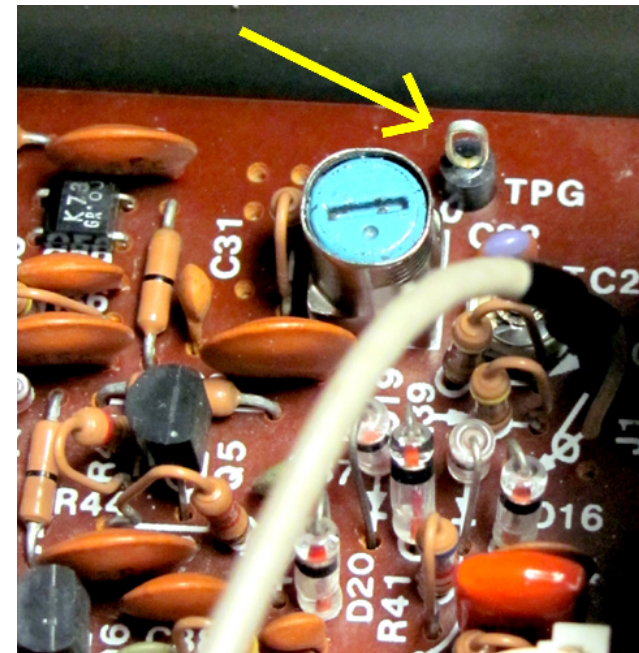
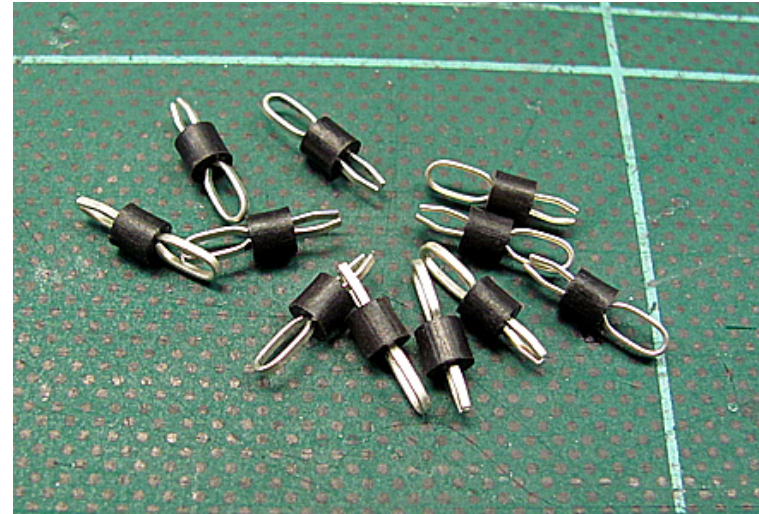
## Re-Capping with snap-lock terminals

- New HV filter caps have snap-locks; No good
- Use lengths of 3/32" brass tubing; Pre-tin and install.
- Bleed-down resistors & ceramic cap's leads are inserted into the tubing ends.....Easy to do now!



### PCB Test Point Terminal (TPT)

- No ground terminals on RF/IF/AF/PLL PCBs to connect probe ground wire !!!???
- TPG holes are on the PCBs, but no terminals in place.
- Use TPTs from Keystone Electronics ([keyelco.com](http://keyelco.com)), p/n = 5001.



### Replace VFO cable

- Replace annoying, dual-octal factory cable plug cable; Hard wire new cable into VFO, all new wire & flexible, nylon cable wrap.
- Eliminated one octal socket; Much better reliability & can't lose the cable now!
- Make it longer too, seems like it's always too short.








# Resource help for Parts, Service & Documentation

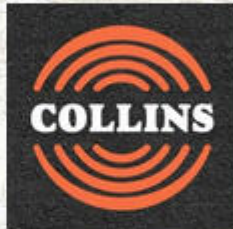
## Welcome to the WB4HFN Amateur Radio Website

---



[Drake  
Amateur  
Radio  
Equipment](#)

This section is dedicated to the vintage radio equipment from the R.L. Drake Company. Life before solid state devices, tubes were the hot ticket items. Featuring radio equipment from the 1960's and 70's era.



[Collins Amateur  
Radio  
Equipment](#)

This section is dedicated to the vintage radio equipment from the Collins Radio Company. Featuring the "S" Line radio equipment from the 1960's and 70's era.

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Kenwood  
Section

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**Kenwood Hybrid Radio Nets:**

Saturday - 7.235 MHz @ 3:30 EST

Sunday - 14.316 MHz @ 18:00 GMT



### Kenwood Related Website Links

K4EAA – KEN - EMAIL: [ken@k4eaa.com](mailto:ken@k4eaa.com) , Web: [www.k4eaa.com](http://www.k4eaa.com)

KE5FTF – Bob Mansker, Phone: (303)719-5433, Email: [KE5FTF@mail.com](mailto:KE5FTF@mail.com) Sells parts on eBay & QTH.COM

East Coast – Phone: (800)632-3323, Web: <http://www.kenwoodparts.com/parts/index.php>

Radio Boatanchor Parts: TEL: 207-942-5745 [xfrms@roadrunner.com](mailto:xfrms@roadrunner.com) <http://tubes.tubes.tubes.tripod.com/index.html>

Nationwide Radio & Eq. Sales LLC, Mark Olson, 1490 Norfield Rd, Suamico, WI. 54173, Email: [ke9pq@new.rr.com](mailto:ke9pq@new.rr.com)

Phone: (920) 434-8097 Web: <http://marketplaceadviser.channeladvisor.com/StoreFrontProfiles/default.aspx?sfid=86409>

WB4HFN.COM





## Resource help for Parts, Service & Documentation

### Kenwood service and technical support:

K4EAA – Ken, FL, – EMAIL: [ken@k4eaa.com](mailto:ken@k4eaa.com), Web: [www.k4eaa.com](http://www.k4eaa.com) (Temporarily Suspended Hybrid Repairs)  
K3TEN – Ken, NJ, Phone: (609)846-5190, Email: [k3ten@verizon.net](mailto:k3ten@verizon.net), Web: <http://www.k3ten.com/index.html>  
WA8SAJ – Jeff, OH - Phone: (440)951-6406, EMAIL: [wa8saj@ncweb.com](mailto:wa8saj@ncweb.com), Web: <http://wb4hfn.com/Services/WA8SAJ/SAJ-Repair.htm>  
N9HE – Steve, AZ, Email: [n9he@quarked.com](mailto:n9he@quarked.com)  
WB2KNR – Jim, NJ, Email: [jimlamanteer@yahoo.com](mailto:jimlamanteer@yahoo.com)  
AK4AA – David Lyndon, NC, Email: [ak4aa36@gmail.com](mailto:ak4aa36@gmail.com), Web: <http://oldhamdave.com/>  
W0NTA – Dick, CO, Phone: (970)356-2011 Email: [w0nta@arrl.net](mailto:w0nta@arrl.net), Web: <http://www.w0nta.com>  
K9TW – Terry, MI, Phone: (269)663-8943 Email: [wagstw46@aol.com](mailto:wagstw46@aol.com)  
W0NTA - Dick – Denver, CA Phone: 970-356-2011, Email: [housden@comcast.net](mailto:housden@comcast.net)  
HamRepair.com - Cal Fisher – TX, Phone: 214.476.5107, E-Mail: [info@HamRepair.com](mailto:info@HamRepair.com), Web: <http://hamrepair.com/>  
N0BXE, Affordable Radio Repair, Mike Alexander, Florence, CO, E-Mail: [mike@affordableradiorepair.com](mailto:mike@affordableradiorepair.com) Web: <http://www.affordableradiorepair.com/>  
KA5IPF, Clif Holland, Avvid, Mabank, TX 75147 Phone: 214-850-0973 Email: [clif@avvid.com](mailto:clif@avvid.com) Web: <http://www.avvid.com/> (Also TS-940)  
KE7OAY, Kenwood Restoration & Repair, Jim Showker, Eugene, Oregon, Email: [jim@hybridrestore.com](mailto:jim@hybridrestore.com) Web: <http://www.hybridrestore.com/>  
K6ARU, Turner Radio, Lancaster, Calif., 616-945-9097 Email: [k6aru@cwo.com](mailto:k6aru@cwo.com)

### Kenwood Parts:

K4EAA – KEN - EMAIL: [ken@k4eaa.com](mailto:ken@k4eaa.com), Web: [www.k4eaa.com](http://www.k4eaa.com)  
Kenwood Hybrid Restoration & Repair, KE7OAY, Jim Showker, Oregon Email: [jim@hybridrestore.com](mailto:jim@hybridrestore.com) Web: <http://www.hybridrestore.com/>  
KE5FTF – Bob Mansker, Littleton, CO, Phone: (303)719-5433, Email: [KE5FTF@mail.com](mailto:KE5FTF@mail.com) Sells parts on eBay & QTH.COM  
East Coast – Phone: (800)632-3323, Web: <http://www.kenwoodparts.com/parts/index.php>  
Radio Boatanchor Parts: TEL: 207-942-5745 [xfrmrs@roadrunner.com](mailto:xfrmrs@roadrunner.com) Web: [http://tubes\\_tubes\\_tubes.tripod.com/index.html](http://tubes_tubes_tubes.tripod.com/index.html)  
SilScorner - <http://silscorner.mybisi.com/>  
Radio Boatanchor Parts - [http://tubes\\_tubes\\_tubes.tripod.com/id183.html](http://tubes_tubes_tubes.tripod.com/id183.html)  
PacParts Inc., Phone: 800-421-5080, Web: <http://www.pacparts.com/>  
Nationwide Radio & Eq. Sales LLC, Mark Olson "President", 1490 Norfield Rd, Suamico, WI. 54173, Email: [ke9pq@new.rr.com](mailto:ke9pq@new.rr.com) Phone: (920) 434-8097  
Web: <http://marketplaceadvisor.channeladvisor.com/StoreFrontProfiles/default.aspx?sfid=86409>

wb4hfn.com

### Parts Description:

Band Switch Coupler:

1. P/N: D22-0409-05 - (L10) NYLON COUPLER R-5000 TS-830S TS-820S R-1000 [www.eastcoasttransistor.com](http://www.eastcoasttransistor.com)
2. K4EAA – KEN - EMAIL: [ken@k4eaa.com](mailto:ken@k4eaa.com) , Web: [www.k4eaa.com](http://www.k4eaa.com)
3. Kenwood Hybrid Restoration & Repair, Email: [jim@hybridrestore.com](mailto:jim@hybridrestore.com) Web: <http://www.hybridrestore.com/>



TS-520, TS-820, TS-530, TS-830 Flat Pack RL1:

1. K4EAA – KEN - EMAIL: [ken@k4eaa.com](mailto:ken@k4eaa.com) , Web: [www.k4eaa.com](http://www.k4eaa.com)
2. Online Components, Web: <http://www.onlinecomponents.com/keywordsearch.aspx?text=nf4eb-12v>
3. Mouser Electronics P/N 769-NF4EB-12V Web: [www.mouser.com](http://www.mouser.com)
4. Kenwood Hybrid Restoration & Repair, Email: [jim@hybridrestore.com](mailto:jim@hybridrestore.com) Web: <http://www.hybridrestore.com/>



TS-520, TS-820 Antenna Relay:

1. Kense Electronics, Web: <http://www.kenselectronics.com/> P/N: 401013-S term 12VDC *replace MH4P-12VDC in T599D, TS520S, TS820*
2. Kenwood Hybrid Restoration & Repair, Email: [jim@hybridrestore.com](mailto:jim@hybridrestore.com) Web: <http://www.hybridrestore.com/>



TS-530 & TS-830 Kenwood Hybrid Restoration & Repair, KE7OAY, Jim Showker, Oregon Email: [jim@hybridrestore.com](mailto:jim@hybridrestore.com) Web: <http://www.hybridrestore.com/>

TS-830 Rectifier board relay – Source unknown at this time...

TS-940 Relay Omron G6E134P-st-us-DC12, NAIS DS1E-m-12v, Digikey Panasonic part # 255-1473-ND



TS-520, 820, 530, 830 Drive Sprockets, Phone: [NR6C@roadrunner.com](mailto:NR6C@roadrunner.com) , Web: <http://nr6c.com/sprocket.htm>



# wb4hfn.com



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Resource help for Parts, Service & Documentation

W0NTA.COM

Amateur Radio Station W0NTA



These items are not for sale.

[Click Here for Manual Download Page](#)

### [My Participation in the FYBO QRP Contest 2006](#)

The FYBO (Freeze Your Buns Off) QRP contest is a fun event where you operate outdoors during a date in February when the temperatures are usually rather cold.

A multiplier is determined by the temperature - the lower the temperature, the higher the multiplier. I found that this page is still available on the net and decided to put a link here. We have since sold the place in the mountains. I miss it dearly as it was a great operating location and a relaxing venue.

[Rebuilding the bandswitch on a Kenwood Hybrid radio – TS-530S and TS-830S](#)

[Amateur Radio Items For Sale](#)



**KENWOOD**

Resource help for Parts, Service & Documentation

# Kenwood Hybrid Transceiver Sales, Restoration & Service

by **Ken K4EAA**

*Last Updated January 2013*

**Kenwood TS-520, TS-520D, TS-520S, TS-520SE, TS-520SP, TS-820, TS-820S, TS-530S, TS-830S, R-820**

Amateur Radio equipment Information & Service : Transceivers, Receivers, VFO's, Antenna Tuners, Speakers, Ham Projects, Technical Information, Schematics, Repair Procedures, Information about Vintage Kenwood Ham Radio equipment



**K4EAA.COM**



Resource help for Parts, Service & Documentation

## Kenwood Hybrid Restoration & Repair

Kenwood Models TS830S, TS530S, TS820, TS820S, TS520, TS520S, TS520D, TS520SE, TS520SP

[jim@hybridrestore.com](mailto:jim@hybridrestore.com)

Jim (KE7OAY)



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[hybridrestore.com/parts/](http://hybridrestore.com/parts/)

KENWOOD

Resource help for Parts, Service & Documentation

**Various operator and service manuals by manufactuer**

## ***KENWOOD HYBRID***

### ***DG-5***

1. DG5 Service Manual
2. DG-5 operators manual

**W5RKL.COM**

### ***TS-520***

1. TS-520 operators manual
2. TS-520 service manual

---

### ***TS-520S***

1. TS-520S Operators Manual
2. TS520S service manual

<http://w5rkl.com/kenwood-hybrid-operator-and-service-manuals/>





## Resource help for Parts, Service & Documentation



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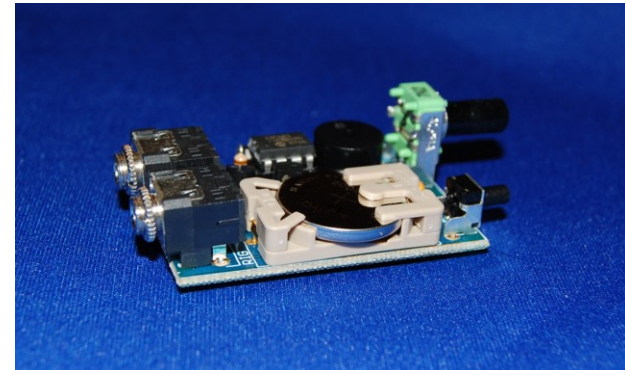


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**like to see going**  
**forward to 2015.**