CB BUYERS GUIDE

02226

1977 EDITION $1.50

EXCLUSIVE

Unbiased Lab Reports covering more than

45

40-channel CB Transceivers --Mobile & Base, AM & SSB

By the Editors of ELEMENTARY ELECTRONICS

LET THE CB PROS HELP YOU

- Pick a Hot Mobile Rig
- Put Punch in Your Base Station
- Get Up the Right Antenna
- Add Accessories That Count
- Talk Like a Trucker

All You Can Handle CB MICROPHONE--

Editors' Futuristic Design May Be In the Cards Tommorrow!

PLUS

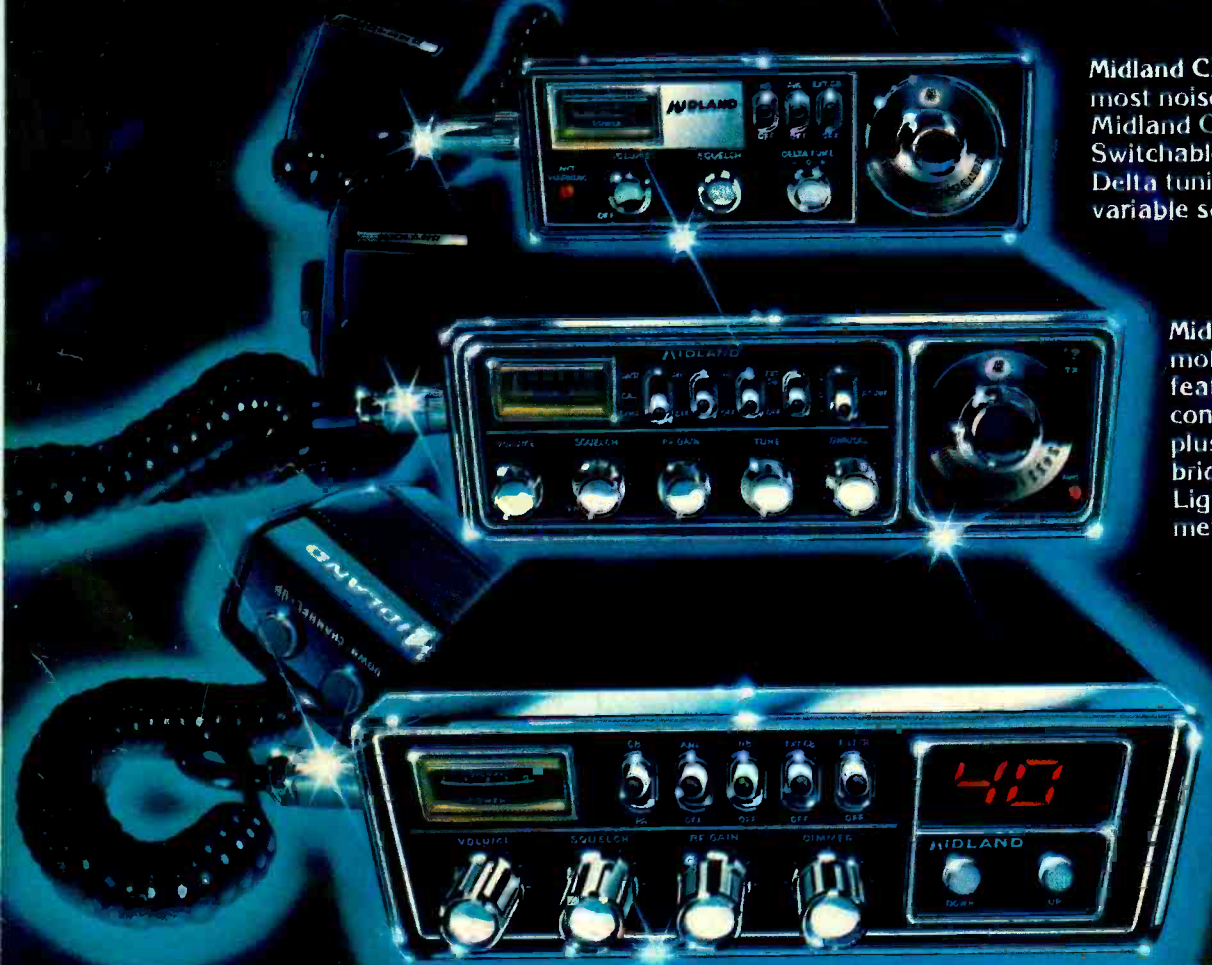
CB Directory of 40-Channel Rigs

Latest FCC Rules And Regs Made Clear

40-Channel CB Rigs Are Better than the 23's

MIDLAND POWER

IT'S WHAT YOU GET WHEN YOU RUN WITH NUMBER 1. MIDLAND CB.



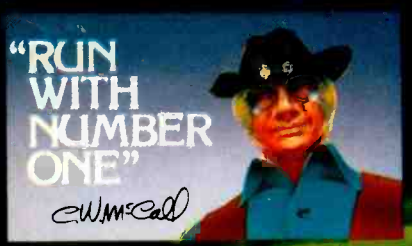
Midland CB 77-882. One of the most noise- and distortion-free Midland CB's ever built. Switchable ANL and noise blanker. Delta tuning and full-range variable squelch control.

Midland CB 77-888. The mobile with base-station features. On-mike volume control. Switchable ANL plus noise blanker. SWR bridge and calibrator. Lighted signal/power/VSWR meter and RF gain control.

Midland CB 77-838. Look at that big, bright L.E.D. digital channel indicator. Plus on-mike channel-changer and volume control to put a world of Midland Power in your fist.

WE PUT OUR MONEY WHERE YOUR MOUTH IS.

We've put the power of our 15 years of CB experience behind



the biggest product advancement drive in Midland history.

And created a full line of the most sophisticated 40-channel models in the business, with all the sending and receiving power you'll ever need.

All backed by Midland's warranty and convenient, authorized service centers, coast to coast. Exactly what you expect from the world's Number 1 selling CB.

Midland Power. It's what you want in a 40-channel CB. It's what you get when you run with Number 1.

For your free, full-color, 24-page 1977 Midland CB brochure, write: Midland International, P.O. Box 12737, North Kansas City, Mo. 64116.

R.M. Rosa

MIDLAND® CB

A member of the Beneficial Corporation Family.

Shop for these active living products from Midland International: Benchmark Tools • Goodwin Sporting Goods • Medallion Car-Sound Products • Midland Television • Young World Toys.

CIRCLE 30 ON READER SERVICE COUPON

Now you can buy Europe's No.1 CB in the U.S.A.

The country that created superior steel, jet fighters, automobiles and cameras has also created the world's finest CB equipment.

handic, from Sweden, is the best selling, most popular CB in all Europe.

It is a true system. Base stations, mobiles, hand-helds and accessories interface with one another as a system should.

handic CBs have not only met but exceeded all FCC specifications at their time of introduction. Including the extraordinarily handsome new 40 channel line.

Ruggedly made for tough Swedish geography and extreme weather conditions, yet stunningly designed, handic has drawn rave reviews from CB publications in the U.S.

Designed in Sweden

A. handic 240 – in-dash 40 ch/5w Mobile CB/AM/FM Radio MPX (LED) – $259.95
B. handic 230 – under-dash 40 ch/5w Mobile CB (LED) – $199.95
C. handic 21 – 2 ch/1w Hand-held CB – $59.95
D. handic 32 – 3 ch/2w Hand-held CB – $69.95
E. handic 43C – 4 ch/3w Hand-held CB – $89.95
F. handic 65C – 6 ch/5w Hand-held CB – $109.95
G. UCB – Universal Cassette, Recharge/Power Holder for Hand-helds – $19.95
H. handic S-12 – Selective Call for Base & Mobile – $79.95
I. handic 305 – 3 ch/5w Mobile CB – $79.95
J. handic 4005 – 40 ch/5w Base CB w/Sub-receive (LED) – $279.95
K. handic 3605 – 40 ch/5w Base (LED) – $249.95
L. handic 007 – 8ch/hi-lo band Scanner w/FM Radio – $239.95
M. handic 006-H/L – 8ch/hi-lo band or UHF Scanner – $149.95
N. handic 004-U – 4ch/hi-lo band or UHF Pocket Scanner – $139.95
O. BK-305 – Power-pak for handic 305, 605, 006 – $34.95
P. handic 80 – Base Power Mike – $49.95

Please send the free handic color catalog and name of my nearest dealer.

Name _____

Address _____

City _____

State _____

Zip _____

CBBG 5/77-L-C

handic USA Inc.

Telephone: (305) 558-1522 Telex: 519139
Kennedy Building, 14560 N.W. 60th Ave.
Miami Lakes Florida 33014 USA

handic USA, Inc., 14560 N.W. 60th Ave., Miami Lakes, FL 33014

CIRCLE 26 ON READER SERVICE COUPON

CB BUYERS GUIDE

1977 EDITION

The 40-channel Cobra 29XLR. From the sleek brushed chrome face to the matte black housing, it's a beauty. But its beauty is more than skin deep. Because inside, this CB has the guts to pack a powerful punch.

The illuminated 3-in-1 meter tells you exactly how much power you're pushing out. And pulling in. It also measures the system's efficiency with an SWR check. In short, this Cobra's meter lets you keep an eye on your ears.

The Digital Channel Selector shows you the channel you're on in large LED numerals that can be read clearly in any light. There's also switchable noise blanking to reject short-pulse noise other systems can't block. The built-in power of DynaMike Plus. Automatic noise limiting and Delta Tuning for clearer reception.

And the added protection of Cobra's nationwide network of Authorized Service Centers with factory-trained technicians to help you with installation, service and advice.

The Cobra 29XLR. It has 40 channels. And it has what it takes to improve communications by punching through loud and clear on every one of them. That's the beauty of it.

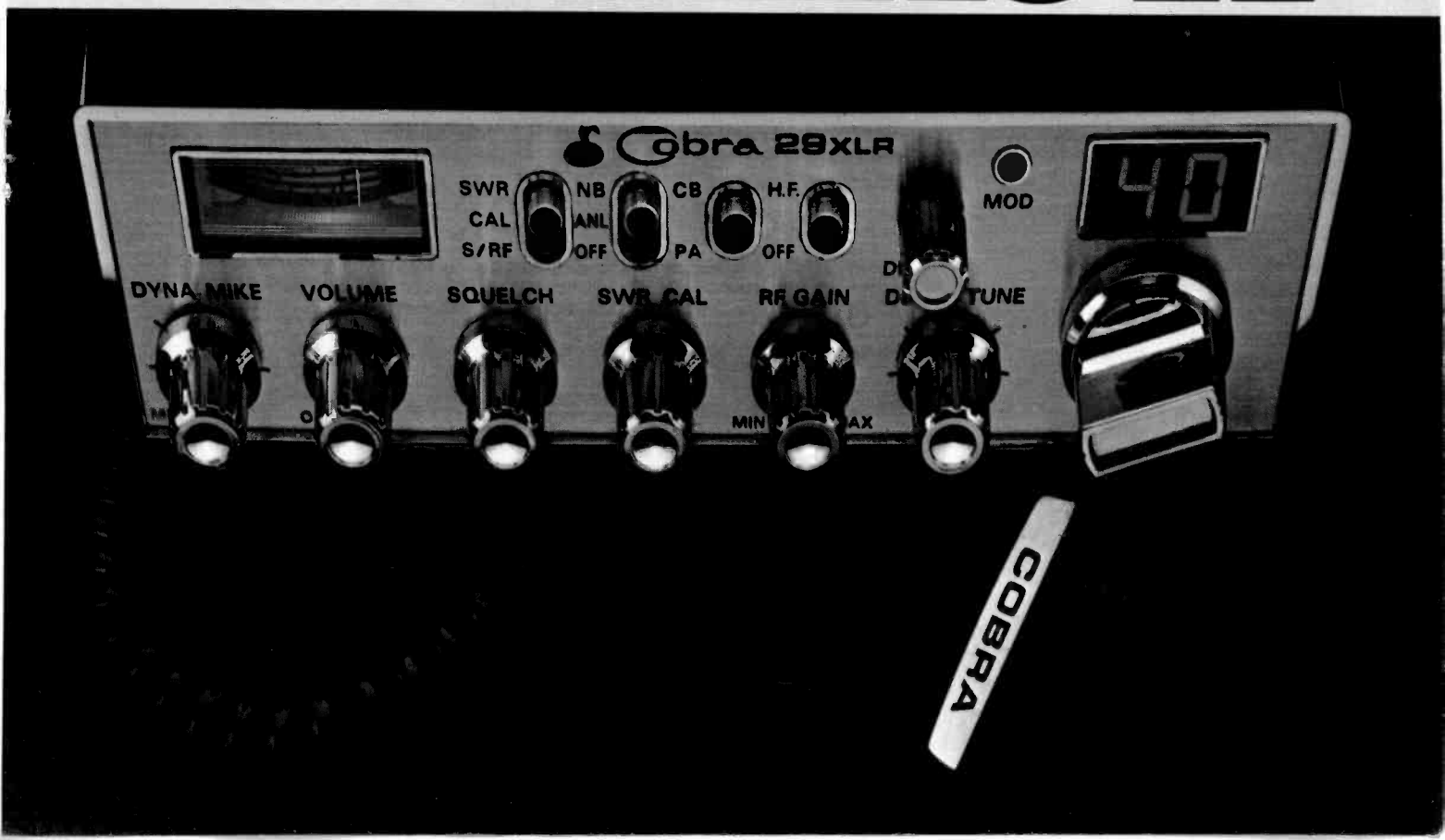
Cobra

Punches through loud and clear.

Cobra Communications Products
DYNASCAN CORPORATION
6460 W. Cortland St., Chicago, Illinois 60635
Write for color brochure
EXPORTERS: Empire • Plainview, N.Y. • CANADA: Atlas Electronics • Toronto

CIRCLE 29 ON READER SERVICE COUPON

PUNCH AND BEAUTY



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PRESIDENT CB
The second generation radios

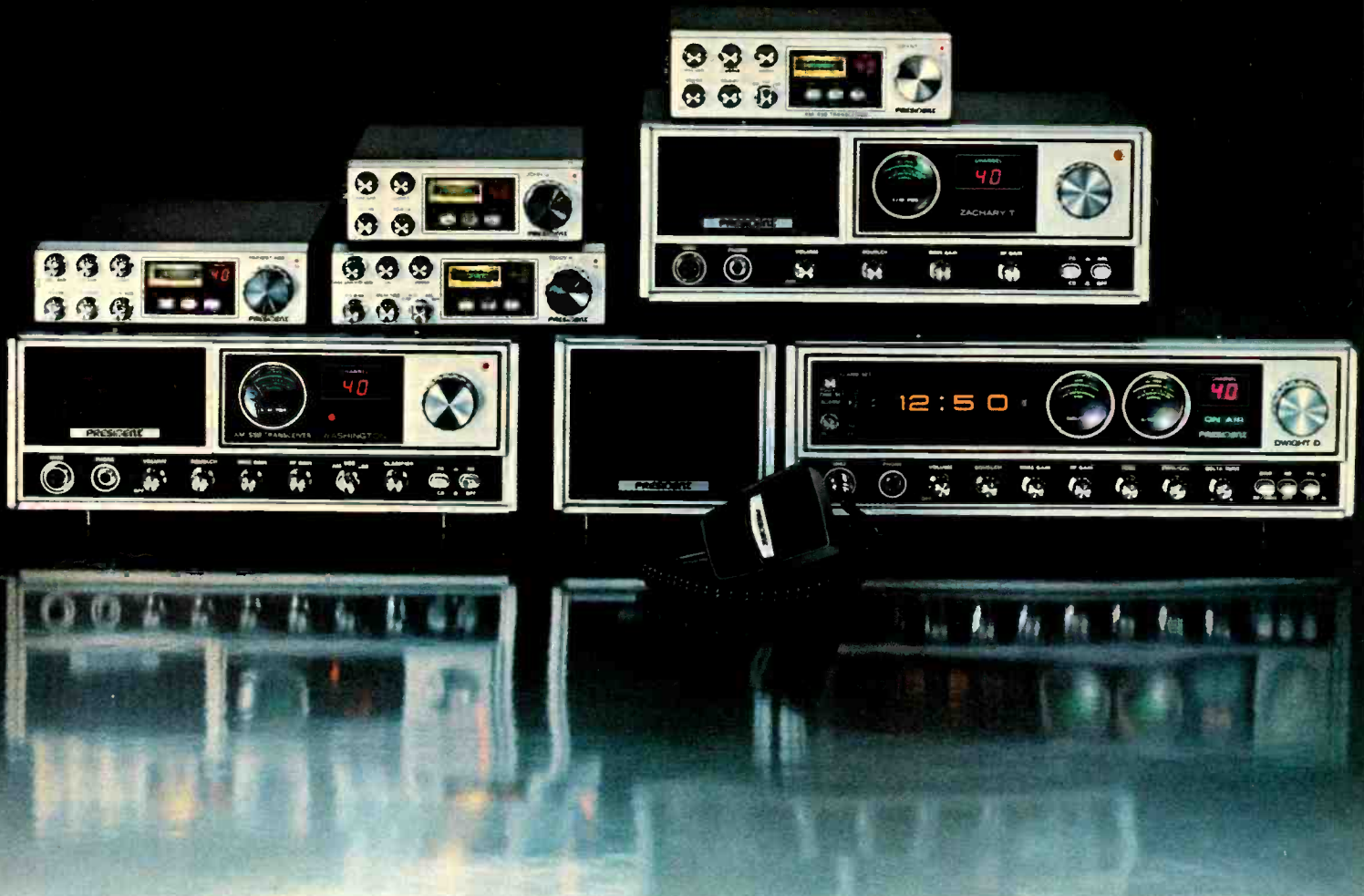
Every one with 40-channels.

Every one with a little something extra...like LED digital channel readout and Automatic Noise Limiter with manual override on even the least expensive model.

Every one sets a new standard of talk power. With President's new high level compression circuit and variable mike gain on every model, the modulation is fantastic.

Every one with quality control second-to-none because every single radio is checked thoroughly for peak performance before it leaves the factory.

President may be a new CB company but the people who founded President aren't new to CB. They're industry leaders who were there in the beginning and want to offer the American people CB's with a little bit extra.



President Radios

John Q—40-channel AM mobile. Mid-priced mobile with base station features. Volume, squelch, variable mike gain, ANL, receiver sensitivity switch, digital channel indicator with dimmer control, S/RF meter, PA.

Honest Abe—40-channel AM mobile. Designed and priced to become a best seller. Digital channel indicator with dimmer control, RF gain, delta tune, variable mike gain, S/RF/modulation meter, ANL, PA.

Teddy R—40-channel AM mobile. Top-of-the-line mobile. Volume, squelch, mike gain, RF gain, delta tune, true RF noise blanker, tone control, PA switch, S/RF modulation/SWR meter, digital channel display with variable dimmer control.

Zachary T—40-channel AM base station. A short step down from the top-of-the-line. Volume, squelch, variable mike gain, RF gain, S/RF meter, digital channel display, PA, ANL, AC/DC.

Dwight D—40-channel AM base station. Top-of-the-line base. Digital clock with built-in alarm, two meters reading signal strength, relative RF power output, modulation, SWR reflected and forward. Also, digital channel display, volume, squelch, mike gain, RF gain, tone, delta tune, true RF noise blanker, PA, AC/DC.

Grant—40-channel AM/SSB mobile. Variable brilliance channel indicator. Variable mike gain, local/distant switch, RF noise blanker, clarifier, large AM, upper and lower sideband control, LED transmit light, PA, volume, squelch.

Washington—40-channel AM/SSB base station. A quality price leader. LED transmit indicator. Volume, squelch, mike gain, RF gain, clarifier, PA, RF noise blanker, large S/RF meter, AC/DC, digital channel indicator.

PRESIDENT

Engineered to be the very best.

President Electronics, Inc. • 16691 Hale Avenue, Irvine, California 92714 • (714) 556-7355

CIRCLE 19 ON READER SERVICE COUPON

New Products

300-Ohm CB Filter

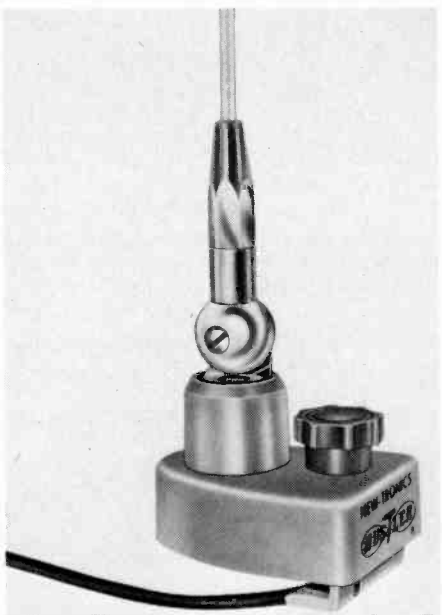
A 300-ohm Citizens Band interference filter made by RMS Electronics knocks out CB and amateur radio interference on television sets. The filter connects directly to the VHF antenna terminals on the rear of the TV set. Outstanding features are miniaturized circuitry, totally shielded network and housing, and heavy duty twisted and tinned twinlead that is

CIRCLE 79 ON READER SERVICE COUPON

oval cut for additional strength at the connection point. Penetrating washer terminals provide simple connection of the antenna lead-in wire to the unit, and eliminates the need to strip and bare the ends of the lead-in wire. The RMS CB interference filter, model CB-300F has a list price of $7.75. For more information, write to RMS Electronics, Inc., 50 Antin Place, Bronx, NY 10462.

Rapid Hide-Away Antenna

The Hustler "Hustloff" instant removal, store-in-the-trunk, instant remount antenna has performance equal to most permanently mounted mobile installations! The special design trunk lip mount firmly clamps to any trunk lid with the twist of a knob. Operation is instant and easy. Positive grounding is assured with the heavy duty, case-hardened clamp assembly. Mounted antenna cannot be removed when trunk is closed. Deluxe features include a 180 degree swivel for positioning antenna to optimum vertical location, 17-ft. coax with all connectors factory attached. The Hustloff antenna is available with 48-in. standard and 55-in. heavy duty stainless steel antennas. Price is $28.95 for the HT-27 and $31.25 for the HHt-27. Additional information may be obtained from New-Tronics Corporation, 15800 Commerce Park Drive, Brookpark, OH.



CIRCLE 73 ON READER SERVICE COUPON

MikeMate

Mura has announced the introduction of its MikeMate microphone adapter system. It's always been difficult for CB users to buy accessory and power microphones because they come without connectors. The CBer had to buy the connector and solder it on himself. Because of the very fine wires used in CB cables and because of the very small size of CB mike connectors, even skilled CB hobbyists have trouble properly assembling these connectors. The MikeMate, featured on all Mura microphones, uses a simple adapter and master connector on each microphone to solve this problem. Each dealer will have a cross reference guide to show the customer which adapter fits his transceiver. All he need do is select the Mura microphone of his choice, purchase

CIRCLE 76 ON READER SERVICE COUPON

the appropriate adapter, and plug it right into his transceiver for immediate operation! Although there are many dozens of different connectors on CB transceivers, dealers will stock the most popular adapters which will connect to about 85 percent of all CB transceivers, 23 channel and 40 channel. The remaining special adapters can be ordered by dealers so that a customer can fit any Mura CB microphone to every CB transceiver without difficulty. The adapters are priced at $5.95. For further information, write to Mura Corporation, Westbury, NY 11590.

(Continued on page 10)

Chances are, the name on his radio will be Motorola.®

The same Motorola that now makes a CB radio for your car.

Like our professional radios, a Motorola CB is exceptionally simple to operate.

It has features like gain control, audio compression, and noise limiting built in, fully automatic.

The result is truly outstanding talk/listen performance. Because the radio is in control. Rather than you.

A digital phase lock loop synthesizer makes tuning precise. Again, automatically.

A professional-quality 3½-inch top-fire speaker produces an audio fidelity that must be heard to be fully appreciated.

A Motorola CB is completely solid state and standardly equipped with a power mic that doesn't have batteries that can fail. That doesn't cost extra.

Of course, there's one feature a Motorola CB offers that's not in the specs. And that's reliability.

Police get it with the name Motorola.

So can you.

Motorola CB

From the voice of experience in 2-way radio.

To find the dealer nearest you, write: Customer Relations Manager, Motorola Inc., Automotive Products Division, 1299 East Algonquin Rd., Schaumburg, Illinois 60196. Motorola is a registered trademark of Motorola Inc.

CIRCLE 17 ON READER SERVICE COUPON

HUSTLER

"Hustloff"

STOP RIP-OFF
—three models—

Instant mount or dismount—store out of sight in trunk

Instant mount or dismount—store out of sight in car

New Hustle-away CB antenna eliminates faulty grounds-erratic SWR of magnetics and hinged flip-outs!

Outsmart the rip-off, quick and easy! Turn the knob and store your antenna out of sight. To remount, slip the antenna back in place and spin the knob. It's that quick, that easy! And most important, you get complete freedom from erratic grounding, questionable SWR that can cause CB radio failure. The Hustler design is positive, definite and equal in electrical and mechanical performance to the best permanently mounted mobile antennas.

TRUNK LIP MOUNT "HUSTLOFF"
Stainless steel 48" antenna and mount—Model HT-27.
Heavy duty 55" antenna and mount—Model HHT-27.

RAIN GUTTER MOUNT "HUSTLOFF"
Fiberglass 42" antenna and mount—Model RFG
All versions include cable, connectors attached, ready to operate.

THIS HUSTLER COVERS 40+ CHANNELS

"the home of originals"

HUSTLER

Available from all distributors who recognize the best!

new·tronics corporation
15800 Commerce Park Drive
Brookpark, Ohio 44142

AVAILABLE IN CANADA FROM
superior
SUPERIOR ELECTRONICS INC.

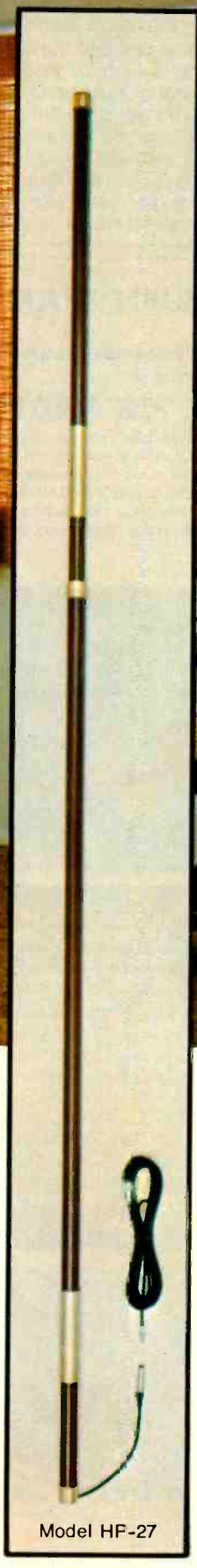
CIRCLE 41 ON READER SERVICE COUPON

THE GREAT UPRISING!

HUSTLER®

"HOMING PIGEON"™

the first all-indoor CB base antenna with all-out performance.



Model HP-27

THIS HUSTLER COVERS 40+ CHANNELS

The "Homing Pigeon" is your antenna answer to operating CB from any location, condominium, office, home, apartment, motel etc. No installation required; antenna is supported between floor and ceiling like a pole lamp. Communications range is equal or superior to better mobile installations. The "Homing Pigeon" incorporates a unique method of easily and quickly adjusting SWR. One setting covers all channels for outstanding performance with any 23 or 40 channel CB radio, AM or SSB. Antenna is supplied complete with 17' coax, connectors attached, ready to use. Model HP-27.

"the home of originals"

HUSTLER®

AVAILABLE FROM ALL DISTRIBUTORS WHO RECOGNIZE THE BEST!

Patent for "Homing Pigeon" applied for by New-Tronics. Other Hustler antennas are protected by one or more New-Tronics patents: 3287732, 3513472, 3327311, 3419869, 3599214, 3873985, 3582951.

new-tronics corporation

15800 commerce park drive
brook park, ohio 44142
(216) 267-3150

AVAILABLE IN CANADA FROM
superior
SUPERIOR ELECTRONICS INC.

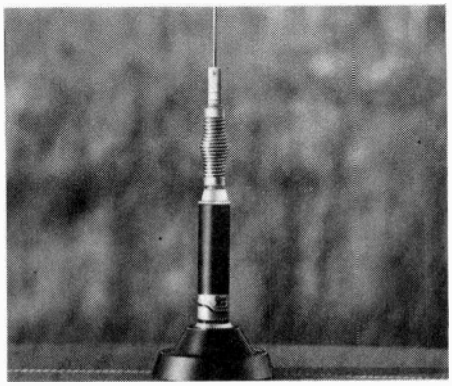
CIRCLE 44 ON READER SERVICE COUPON

New Products

(Continued from page 6)

Magnetic Mount for 140 MPH

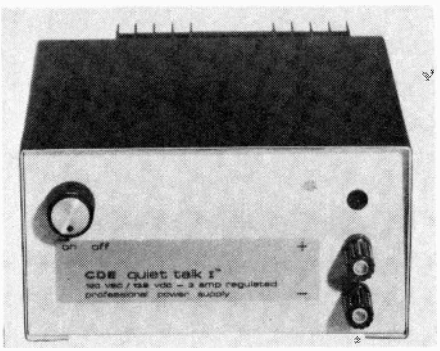
The Channel Master Mag-Ne-Tenna is a full-size, base loaded mobile antenna, providing high performance with 23 and 40 channel sets, AM and single sideband. The antenna has a 6-pole; 8-ounce magnet, and was successfully tested on the surface of an airplane flying at 140 miles per hour. Its exceptional holding power means it is particularly effective on vinyl surfaces—even padded vinyl surfaces. Electrically, the Channel Master Mag-Ne-Tenna is a superb performer because it features an in-line, ferrite bead RF choke, a must for vinyl top cars. The choke maintains stable SWR, aids in tuning, eliminates background noise, and generally enhances performance. Drift and RF interference are eliminated. The antenna is fully-weather-protected; A 24 foot length of coaxial cable is furnished for simplified installation. When not in use, the Mag-Ne-Tenna is easily removed from the surface of the vehicle, leaving no tell-tale signs for CB thieves. Model 5029; list price, $34.95. For further information, contact Channel Master, Ellenville, NY 12428.



CIRCLE 87 ON READER SERVICE COUPON

DC Power Supply

Cornell-Dubilier Electric has a power supply specifically designed for communications equipment such as CB radios. The unit, Quiet Talk 1, supplies DC power with very low hum (ripple). The unit is protected against short circuits. The Quiet Talk 1 requires an input of 120 VAC and .6 amp and has an output of



CIRCLE 89 ON READER SERVICE COUPON

13.8 VDC and 3.0 amps. Whether used for high output SSB transceivers or low drain accessory items, the unit offers a regulation of ± .3 percent from no load to full load and a ripple less than .003 volts. Priced at $62.50. For further information, write to Cornell-Dubilier Electric Corporation, 150 Avenue L, Newark, NJ 07101.

Shakespeare's Evader™ Antenna. The AM-FM-CB disguise antenna that lets you be heard. And not seen.

It's the CB disguise you'd never recognize. It's evasive. It's Shakespeare's new Evader antenna. The solid grey fiberglass whip that brings you superior AM-FM-CB performance under the guise of an ordinary automobile antenna. Providing your valuable CB equipment with the perfect cover. It looks like a million others. And that's where the comparison ends.

Shakespeare's exclusive fiberglass engineering process, coupled with the high quality electronic components, makes the Evader antenna truly unique. Reducing mobile FM flutter. And assuring superb CB performance. Performance that's been pre-tested and pre-tuned by the factory.

Totally disguise your CB operation without covering up performance. Shakespeare's Evader antenna. Outstanding performance that won't stand out in the crowd.

Shakespeare

The best antenna going. And coming.

Style 4135 G

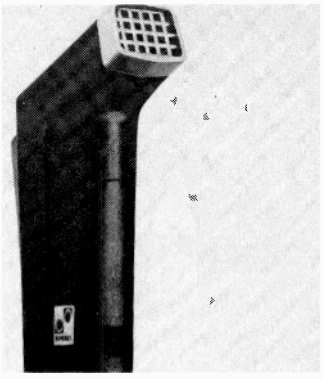
By nature, an antenna designed to function on 3 radio frequencies will not be as effective as an antenna tuned exclusively for CB.
Shakespeare Company, Antenna Group, P.O. Box 246, Columbia, S.C. 29202. In Canada: Len Finkler, Ltd. Ontario.

CIRCLE 21 ON READER SERVICE COUPON

New Products

CB Power Mike

The Superex PV-1 is a new concept in CB power microphone design, which replaces most dynamic and many ceramic microphones. The PV-1 is a unique hand hugging electret/condenser power microphone incorporating a self contained FET pre-amplifier and power amplifier. The single penlight cell that operates the amplifiers is included. For quick and easy



CIRCLE 74 ON READER SERVICE COUPON

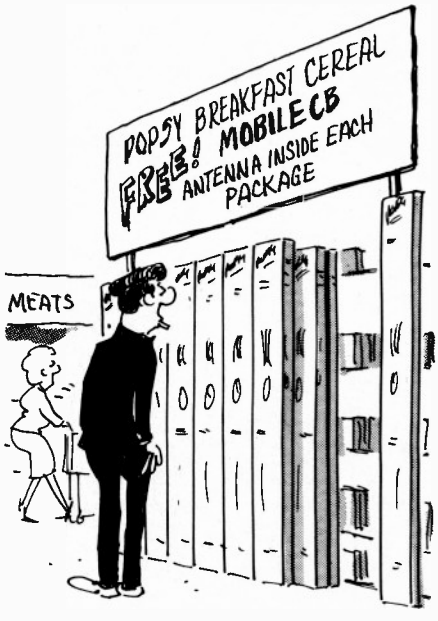
attachment to the CB, Superex has designed a special non-solder connection. The PV-1 comes complete with 6-ft. coiled cord and is suggested for retail at $34.95. For further information on the PV-1 and other Superex products, contact Superex Electronics Corp., 151 Ludlow Street, Yonkers, NY 10705.

Marine CB and VHF Antennas

The new Power Pair—Marine CB and VHF Antennas by Anixter-Mark is a pair of marine 8-foot twin antennas designed to compliment any craft—from the nautical blue cap on top, down the sleek marine white covering, to the quadruple chrome-plated ferrule at the base. The

CIRCLE 78 ON READER SERVICE COUPON

CB antenna uses the patented, high efficiency "Heliwhip" design. That means



40 channels ...and more

Browning is proud to be among the first to bring you 40-channel mobiles and base stations. Beyond their 40-channel capability, these new radios embody electronic innovations specifically designed to make your CB hours more pleasurable and rewarding. In the new Sabre, you'll find phase-lock loop circuitry (PLL) and LED digital readout — in the new Golden Eagle Mark IV are Browning engineering advances such as a revolutionary "Transcan System" which **lets you turn a knob and electronically sweep all transmit frequencies!**

If you're serious about CB, discover what Browning performance and quality are all about — you'll soon understand why CBers have relied upon the name Browning since Citizens Band began almost two decades ago.

Write for illustrated literature and specifications or see Browning's entire line of products at your nearby CB specialty store.

browning®
bringing people together

browning laboratories, incorporated, laconia, new hampshire 03246

CIRCLE 3 ON READER SERVICE COUPON

New Products

top loaded and low-loss for high performance and output efficiency. There's no ground plane required, and the antenna may be mounted on fiberglass, wood or mast with standard universal marine thread mount. The matching VHF/FM antenna is designed as the perfect compliment to the CB unit. Mounted port and starboard, the Anixter-Mark marine twin antennas are powerful, professional and a handsome addition to any boat and can be purchased separately or in pairs. Priced at $79.95 for one and $159.90 for pair. For further information write to Anixter-Mark, 5439 West Fargo, Skokie, IL 60076.

CB Base Supply

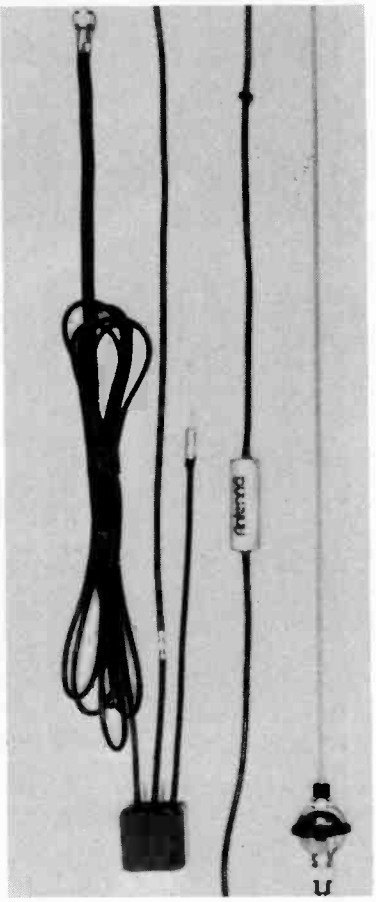
Pearce-Simpson's K-5229 Base Supply Unit provides operation of direct current (DC) mobile CB transceivers on house current (AC). All it takes is simple connection to the CB radio, a base station antenna, and plugging the K-5229 into an ordinary AC wall outlet. The entire process takes only minutes. The K-5229's five-way output terminals allow connection of a CB radio by stripped wire, spade lug, alligator clip, wrap-around wire, or banana plug methods. Then connect the transceiver to the base station antenna and you're on the air. To go mobile again, just disconnect the base supply and antenna and reinstall the radio in your vehicle. To protect your radio, integrated circuits limit voltage and provide automatic shutdown if temperatures exceed a prescribed limit. And there's an indicator light to tell when sufficient power is available to operate the unit. For convenience, the on/off switch is mounted on the front. And a 6½-ft. AC power cord is included. Suggested retail: $39.95. For more information on this and other products, write to Pearce-Simpson, Division of Gladding Corporation, 179 River St., Oneonta, NY 13820.

CIRCLE 104 ON READER SERVICE COUPON

CB-AM-FM Disguise Antenna

Here is a CB-AM-FM disguise antenna that really works well on all 40 chan-

(Continued on page 20)



CIRCLE 77 ON READER SERVICE COUPON

When you've got a Pace CB radio,

you've got the world by the ears.

There are millions out there with their ears on waiting to talk to you Pace to Pace.

And with a Pace CB two-way radio you've got every bit of power the law allows. And features to cut through interference and "bleeders" from other channels.

What's more, it's assembled with computerized circuitry and it's 100% solid state, so it's as trouble-free as a CB can be.

It all adds up to your voice getting out there clearer and with less distortion, and the other guy's voice coming back just as clear.

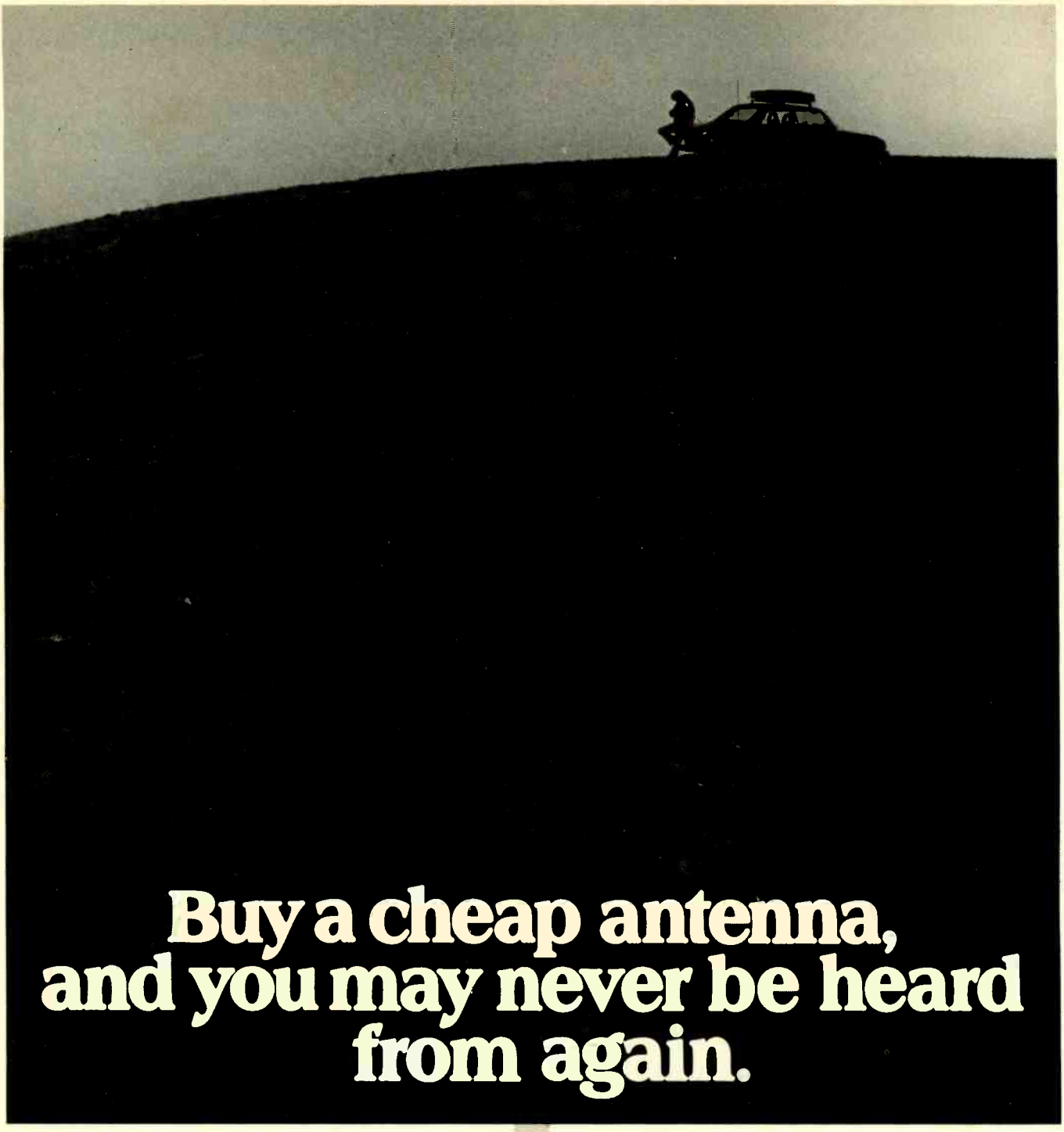
To learn more, drop into a Pace place near you. The dealer will tell you just how economical and easy-to-install a Pace is. He'll help you choose the one that's just right for you, too.

Ask him for the world by the ears. He'll know which CB you're talking about.

pace

PACE CB/PACE TWO-WAY RADIO PRODUCTS
BY PATHCOM INC., HARBOR CITY, CA 90710

CIRCLE 39 ON READER SERVICE COUPON



Buy a cheap antenna, and you may never be heard from again.

When you're miles from help, you need a CB antenna that reaches for miles and miles. It could be your only link to safety. So saving a couple of dollars on a cut-rate brand could cost you.

But the price of an A/S antenna is worth the extra you might pay — just for the peace of mind. Every single A/S antenna is hand-tuned and tested for 23- and 40-channels. That's the kind of care and quality control that makes A/S the choice of police departments, truckers and safety people everywhere. And that's why A/S has been the leader in antennas for 24 years.

So look for the red and black A/S stripes. You'll be heard when you have to be heard. We'll bet our A/S on it.

M-510 "Big Momma" Heavy Duty Antenna

the antenna specialists co. 12435 Euclid Avenue, Cleveland, Ohio 44106 • a member of The Allen Group, Inc.

® "Stripes of Quality"

CIRCLE 8 ON READER SERVICE COUPON

NRI CAN TURN YOUR CB INTEREST INTO PART-TIME INCOME OR A CAREER

Career opportunities are opening up fast for the man trained in communications.

The field of communications is bursting out all over. In Citizens Band alone, class "D" licenses grew from 1 to over 2.6 million in 1975, and the FCC projects about 15 million U.S. CB'ers by 1979. That means a lot of service and maintenance jobs . . . and NRI can train you at home to fill one of the countless career jobs available in design, installation and maintenance of communications equipment. Start training now, the NRI way, to get your all important FCC Radiotelephone License and qualify for one of these openings.

Learn on your own 400-channel, digitally-synthesized VHF transceiver

The NRI Complete Communications Course teaches you at home to service and adjust all types of two-way radio equipment (including CB), using the one unit that is best equipped to train you for CB, Commercial and Amateur communications: a digitally-synthesized 400-channel VHF transceiver and AC power supply. This 2-meter transceiver gives you "Power-On" training. Then we help you get your FCC Amateur License with special instructions so that you can go on the air.

More know-how for your dollar

The complete program includes 48 lessons, 9 special reference texts, and 10 training kits. Included are: your own electronics Discovery Lab, a new Antenna Applications Lab, an Optical Transmission System, CMOS Digital Frequency Counter, and TVOM. The course covers AM and FM Transmission Systems; Radar Principles; Marine, Aircraft, and Digital Electronics; and Mobile Communications. You must earn your first class radio-telephone FCC license or you get your money back.

CB Specialist Course also available

NRI offers a specialized course in CB Servicing. You get 37 lessons, 8 reference texts, your own CB transceiver, AC power supply and multimeter . . . for hands-on training. Also included are 14 coaching units to make it easy to get your commercial radiotelephone FCC license, enabling you to test, install and service communications equipment.

Widest choice of courses with Quadraphonic Audio and Color TV Servicing

NRI offers five TV-Audio servicing courses as well as career courses in Digital Computer Electronics; Marine and Aircraft Electronics; Mobile Communications, and more.

Over a Million have enrolled with NRI

Send for the free NRI catalog and discover why more than a million people like yourself have chosen the NRI way as the right way to get ahead. Read how you learn at home from bite-size lessons, progressing at your own speed to your FCC license and then into the communications field of your choice. There's no obligation, and no salesman will call.

If card is missing, write to:

NRI SCHOOLS
McGraw-Hill Continuing Education Center
3939 Wisconsin Avenue
Washington, D.C. 20016

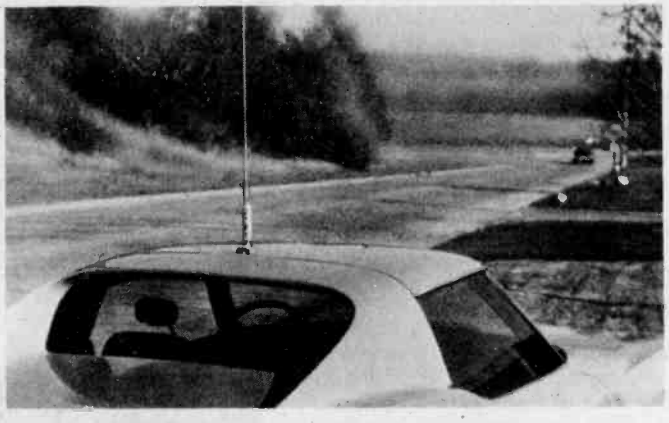
New Products

(Continued from page 14)

nels, ending the trade-off between theft protection and good antenna performance. The model 11004 is a cowl mount CB disguise antenna identical in appearance to most standard replacement AM-FM receiving antennas, and is pretuned at the factory for a standing wave ratio (SWR) of 1.5:1 or less across all 40 channels. The model 11004 includes Antenna Incorporated's in-line coaxial cable connector for simplified installation and 18 feet of low loss RG-58/U coaxial cable. It sells for $34.95. For further information on the model 11004 CB-AM-FM disguise antenna and the complete line of Antenna Incorporated products, write to Antenna Incorporated, 23850 Commerce Park Road, Cleveland, OH 44122.

Corvette T-Top CB Mount

Now, owners of Corvette autos with the distinctive "T-Top" can easily mount CB antennas on their cars, thanks to Antenna Incorporated's new Model 18312 mounting bracket. Mounting CB antennas on Corvettes poses two problems. First, because the Corvette's body is made of fiberglass, it is difficult to form a good ground plane for a CB antenna. Second, most Corvette owners do not want to install anything on the car which might damage the body or its finish. Antenna Incorporated discovered that the Corvette's integral roll bar and



the metal in the windshield frame provide enough metal for an adequate ground plane. The company then developed a bracket which would mount without disturbing the T-Top, and the result was the Model 18312. The polished stainless steel mount will not rust, and will not detract from the aesthetics of the automobile. It can be used with any base or center loaded CB antenna. Suggested selling price is $5.95. For further information on the Model 18312 Corvette T-Top mount and the complete line of Antenna Incorporated antennas and accessories, write to Antenna Incorporated, 23850 Commerce Park Road, Cleveland, OH 44122.

New from Pacer. The CB AntennaMent

A new portable powerful, compact, 4dB gain omni-directional CB base station antenna especially designed for the apartment or condominium CB'er.

Here's a new kind of antenna that not only gives your customers vertical and horizontal polarization but introduces a whole new concept of freedom and mobility.

A marketing first. The New Pacer AntennaMent is another product of Pacer engineering: top-quality performance, transmitting and receiving power. See your Pacer distributor right away And take advantage of this and other Pacer profit opportunities.

1 Top Coil Loaded
For greater transmitting power.

2 Fiberglass Pole
Offers good looks, long life, flexibility and protection from corrosion and weathering.

3 Fingertip Tuning
With special tuning stud for maximum flexibility and portability.

4 4dB Gain
Offers greater transmitting distance with the first indoor gain antenna ever offered.

Use AntennaMent indoors.
Only 64" high. Stand it on a desk, dresser, table-top or floor. Only completely indoor, truly "out-of-sight" base station on the market today.

Use AntennaMent outdoors.
Take it with you intact. Takes apart in seconds. Performs anywhere: car, truck, boat, RV, picnic table...even on your birdbath.

Handsome, lightweight, completely portable.
"Military-Grade" white fiberglass and all Pacer quality materials.

Fingertip Tuning.
Makes the AntennaMent truly portable, tune and re-tune to a minimum SWR everytime, everywhere.

CIRCLE 28 ON READER SERVICE COUPON

Pacer

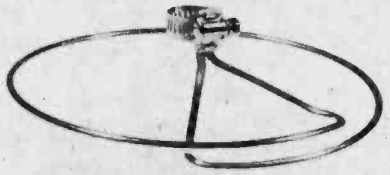
...sets the pace in big talk power.

Manufactured in the USA.
Progress, Inc.
3321 N.W. 79th Avenue
Miami, Fla. 33122

New Products

Getting All Around

The Zing Ring by Gold Line can improve a CB antenna's performance by providing a 360 degree launching pad for the signal. In order to launch a signal properly, a mobile antenna should be mounted over the metal surface of the vehicle such as with the centered roof mount or a centered trunk lid mount. The metal of the vehicle acts as the



CIRCLE 75 ON READER SERVICE COUPON

primary ground plane, establishing the radiation strength and pattern. A gutter, mirror or bumper mounted antenna is not centered and does not offer these necessary performance features. Without a 360 degree primary ground plane, the signal has a lopsided and weak radiation pattern in certain directions. The Zing Ring not only zips up the signal but, it also reduces antenna vibration and whiplashing caused by vehicle motion or wind. Priced at $3.95. For further details, write to Gold Line Connector, Inc., P.O. Box 893, East Norwalk, CT 06855.

Walkie-Talkie With Remote Mike

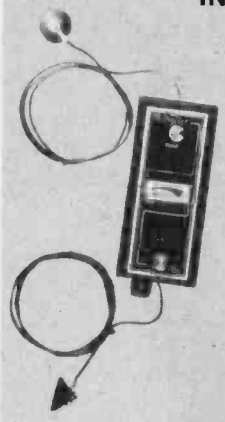
Radio Shack has introduced a new Citizens Band walkie-talkie with a jack for use with push-to-talk microphone. The Realistic TRC-200 includes a built-in speaker and separate electret condenser mike for conventional hand-held operation. The remote mike feature makes its possible to set the unit down or fasten it to a vehicle, backpack, or elsewhere, out of the way, and still operate without having to reach the unit itself or use the built-in transmit button on the walkie-talkie case. A Hi/Lo power

CIRCLE 107 ON READER SERVICE COUPON

GOLD LINE CB ACCESSORIES

INTENNA INDOOR CB ANTENNA

1107 $29.95



- Portable indoor base station antenna
- Use in apartments, campers mobile homes
- Good for 40 channels
- Mounts on window or wall

Ideal for use where an outdoor antenna is difficult to install. Tuning controls and meter allow for easy, accurate tuning for maximum power out on all 40 CB channels

ANTENNA MATCHER

1046 $8.99

250 Watts 13-78 MHz

Gives a perfect VSWR match for full power every time. Stops power loss, quick and easy to install.

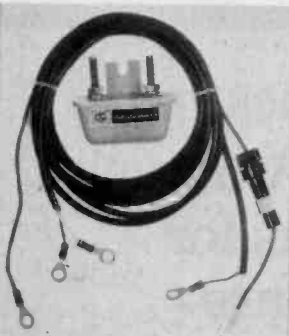
BIG 40 TWO-STAGE MATCHER

1113 $19.95

- An Antenna Matcher designed especially for 40 channel rigs
- 13-78 MHz — 200 Watts

ALTERNATOR & GENERATOR FILTERS

FEED-THRU NOISE SUPPRESSOR FILTERS



NOISE FILTERING HOOKUP HARNESS

1106 $12.95

For an easy trouble free installation

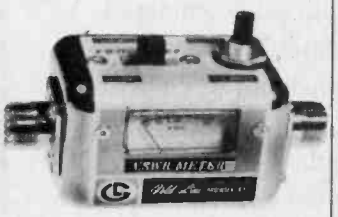
Noise which affects CB sets is generated from various sources in your automobile and is picked up by either the antenna or the wiring that supplies power to the set.
The primary function of the unique 1106 Noise Filtering Hookup Harness is to reduce the noise picked up by the wiring.

ZING RING

1114 $4.25

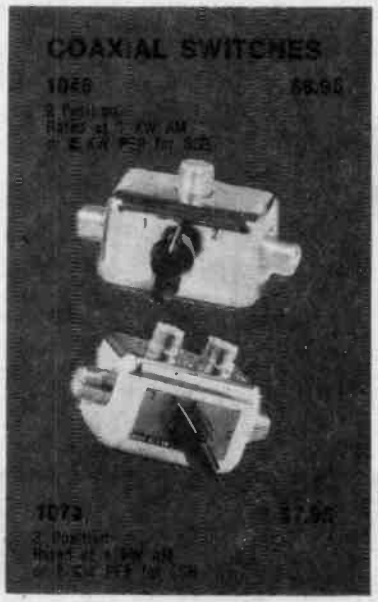
- Provides a 360° primary ground plane and centering effect to improve your signal in all directions
- Zips up your signal and reduces antenna vibration and whiplashing caused by vehicle motion or wind

SWR MINI-BRIDGE



1049A $16.95

- Perfect for inline mobile applications
- Very stable meter readings
- Negligible insertion loss



Dealers and Distributors - Write for details.

GOLD LINE

25 Van Zant St., E. Norwalk, Conn. 06855 203-853-1211

INTERNATIONAL DIVISION, 2200 SHAMES DRIVE, WESTBURY, N.Y. 11590
CABLE—CHURCHIN WESTBURY, N.Y. TELEX—0961474

New Products

switch selects the full five-watt input power or three watts for shorter range communications and longer battery life. Features include top-mounted volume, squelch and channel selector controls, battery/RF power meter, center-loaded telescoping antenna and jacks for an external speaker, 12 VDC power source, antenna and battery charger. The TRC-200 is supplied with channel 14 crystals and has provisions for five more channels. Priced at $99.95, complete with carry case and eight "A" cells. Optional push-to-talk mike, $11.95. Available from Radio Shack stores and dealers, nationwide.

Base Station Antenna Mounting Kit

Antenna Specialists announces their new M-481 base station antenna mounting kit. Each kit contains everything needed to side mount an A/S antenna on a house. Included are: a 10 ft. galvanized steel mast (two pieces), 50 ft. of Type 8/U coaxial cable, two PL-259 connectors (one attached to each end of the cable), two house side mounts and three cable standoffs. And all this at the price of $39.95. For more information on this mounting kit and A/S base station antennas, write to The Antenna Specialists Co., 12435 Euclid Avenue, Cleveland, OH 44106.

CIRCLE 72 ON READER SERVICE COUPON

Low Pass TVI Interference Filter

The proliferation of CB transceivers in use has caused a growing number of complaints of interference with television reception. One possible cause is the CB radio radiating harmonics of the same frequency assigned to one or more of the local TV channels. To overcome the problem, the

CIRCLE 70 ON READER SERVICE COUPON

Avanti AV-800 Low Pass Filter is especially useful on channels 2 and 5. Installed in the coaxial line from the CB transceiver, it has an impedance of 50 ohms, VSWR of 1.1:1, negligible line loss, and 3dB cutoff frequency of 43 MHz. Attenuation on channel 2 (54 MHz) is 80 decibels. The unit has a capacity of 1000 watts. Sells for $24.95. Avanti Research & Development, Inc., 340 Stewart Avenue, Addison, IL 60101.

Wattmeter For Amateur and CB Radio

A new wattmeter for amateur and CB radio operators, known as the Mark II wattmeter, is designed for use with 50 ohm, coaxial radio frequency systems, and features all three power ranges (20, 200 and 2000) on a single meter scale. Frequency range is 3.5

Go with Realistic® no matter how you go!

Realistic CB is for people on the move. Whether you're driving an unfamiliar road, hiking away from camp, or working in the field, reliability is a prime concern with your walkie-talkie or mobile set. So come to Radio Shack — leading the way in quality CB since 1959.

walkin' and talkin'

Realistic's TRC-190 has exclusive range-boost: Grip the side-panels and your body adds extra signal power to the antenna system. Three watts input, with a high-low power switch to save on batteries during short-range use. Built-in automatic noise limiter, ceramic IF filter, IC audio circuitry — all for clean, low-interference sound. Adjustable squelch. Battery/RF meter. Built-in mike, speaker, plus a jack for optional push-to-talk mike. Power and antenna jacks so you can use the TRC-190 as a base or mobile station. With batteries, crystals for Channel 14 — add up to 5 more channels. Just 84.50*.

ridin' and talkin'

The TRC-424 is our finest 40-channel set, and the built-in quality is obvious. Phase-locked loop circuitry for ultra-precise frequency control. Switchable noise blanker — the best way to cut pulse interference. Delta-tuning pulls in off-channel signals. Adjustable RF gain and squelch. Channel selection is easier than ever with the large LED digital readout — one glance is all it takes. Add an external speaker and you've got a mobile public address system, too. With S/RF meter, dynamic plug-in mike, mounting bracket and power cables. First-class CB is even better when you can afford it! Get the Realistic TRC-424. Just 169.95*.

BANKAMERICARD master charge

These two credit cards honored at most Radio Shacks.

*Prices may vary at individual stores and dealers.

SOLD ONLY WHERE YOU SEE THIS SIGN:

Radio Shack®

A TANDY COMPANY • FORT WORTH, TEXAS 76107
OVER 5000 LOCATIONS IN NINE COUNTRIES

New Products

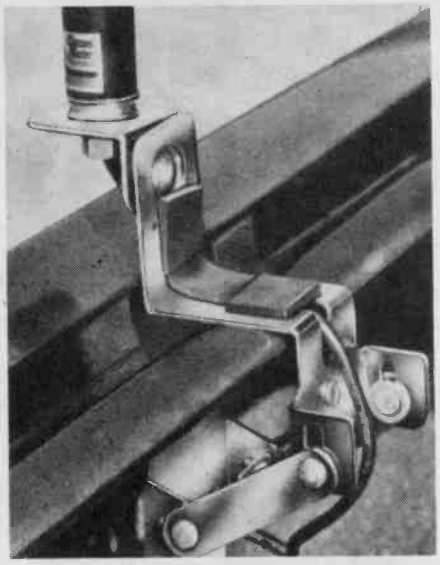
to 30 MHz, and accuracy ±5% of full scale. Along with the direct reading SWR scale in red, there is a complementing percentage of reflected power scale. The SWR function can be used as an aid in the adjustment of carrier suppression for SSB operation. A peak-average switch allows measurement of either positive peak power

CIRCLE 68 ON READER SERVICE COUPON

or average power. Sold through electronic distributors, Mark II has a suggested retail price of $79.95. Get all the facts by writing to Transel Corporation, 2898 N. Catherwood, Indianapolis, IN 46219.

"Under Cover" CB Antennas

Channel Master's 40 channel coil-loaded whip antennas can be conveniently flipped down and hidden in the automobile trunk when not in use. By not signaling the presence of CB equipment, the new Under Cover



CIRCLE 87 ON READER SERVICE COUPON

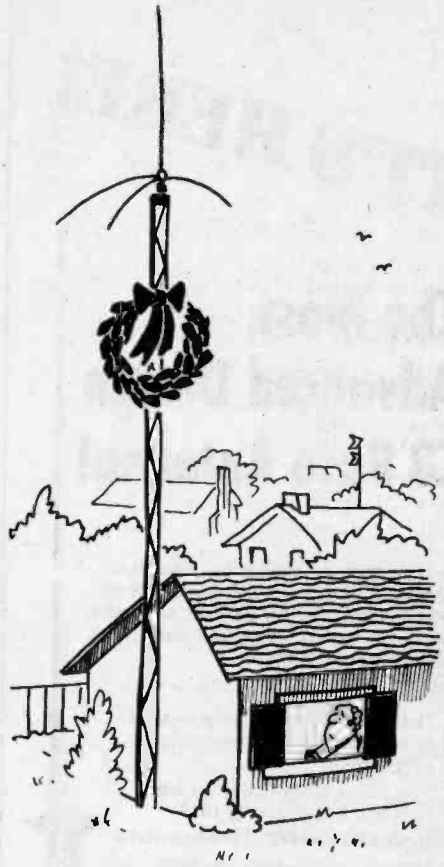
antennas sharply reduce the danger of theft, without sacrificing performance. Base-loaded and center-loaded models are available, mounted on a specially designed, heavy gauge Under Cover bracket that is fastened to the lip of the trunk. The two-way bracket enables the CBer to mount the antenna in a perfectly vertical position, regardless of the slope of the car's rear deck, and also allows the antenna to be folded down into the trunk, completely out of sight. No tell-tale sign is visible, not even a trace of hardware. Channel Master Div. of Avnet, Inc., Ellenville, NY 12428. ■

WHEN THE CB IS OUT FOR REPAIRS

By Jack Schmidt

"Well, well, well—we've been waiting for you for two years!"

"If it's that bad, go back and ask him for a loaner!"



....You never heard it so good!!!

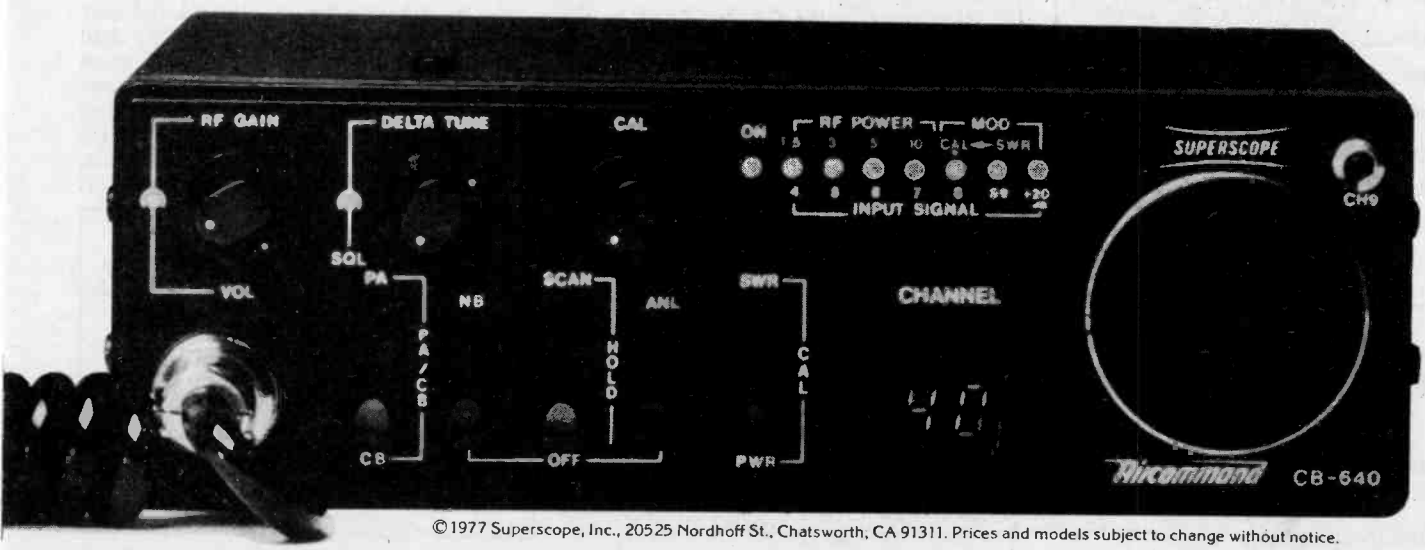
CB-640 rear panel, and boom your tape out through the same external speaker. (3.) Mix your voice from the CB microphone with the program material on the tape recorder. Both voice and tape sound at the same time through the external speaker. (4.) Beam your **received signal** through the external speaker.

Built-in standing wave ratio circuitry. Measures the efficiency of the antenna system for optimum performance.

Other outstanding features include: Delta fine tuning control, digital synthesizer with phase-locked loop, automatic noise limiting switch, noise blanking switch, squelch control, RF gain control.

Also available: Aircommand CB-140; Aircommand CB-340. All 3 units bring you state-of-art design, flawless craftsmanship and day-in, day-out reliability. Try them out now at your Superscope Aircommand dealer.

TM Aircommand by SUPERSCOPE.



ASK HANK, HE KNOWS!

Got a question or a problem with a project—ask Hank! Please remember that Hank's column is limited to answering specific electronic project questions that you send to him. Personal replies cannot be made. Sorry, he isn't offering a circuit design service. Write to:

Hank Scott, Workshop Editor
CB BUYERS GUIDE 1977
229 Park Avenue South
New York, NY 10003

Follow Instructions

The co-phasing harness I bought is too long. The instructions say I can't cut them shorter. Why not?

—F. O., Moses Lake, WA

Co-phasing is another word for timing two or more waves. The cable lengths are important to assure exact delay times in the cables for efficient phasing of the antennas. If you have too much cable, hide the excess under the car's or truck's interior panels. Never, never shorten the cables of a co-phasing harness.

Good Idea!

Here's an idea that occurred to me recently. I think CBers should give it a try. The plan is very simple: Allocate four channels, say: 19, 20, 21, 22 to highway mobile assistance, on Interstate highways (primarily). One channel to be used for each major direction: i.e. North, East, South and West to be used by units traveling in each respective direction. Alternatively, since many units make the request: "How do things look over your shoulder, good buddy?," perhaps only two channels will be needed. I have been in amateur radio for 25 years (W5TVW) and hold an Extra Class license, and also hold 2nd Class Radiotelephone and Radiotelegraph licenses. My first CB license was Class B, 465 MHz. (8A0239) and I have been sporadically in and out of CB for the past 22 or so years. (I used to use 11 meters as an amateur!) One thing for sure, I think CB is invaluable to the motorist!!

—E. B., Metairie, LA

Good to hear from you, OM. Yes, your idea is a good one and should be considered. Now, who will make the truckers listen?

Bandwidth

How wide is the Citizens Band on 27 MHz?

—C. R., Little America, WY

The top and bottom frequencies of the band are 27.305 MHz and 26.965 MHz. That's a bandwidth of 340 kHz or 0.340 MHz. The FCC specifies the maximum audio frequency to be 3000 Hz, so considering AM emissions, 6000 Hz has to be added to the bandwidth. Thus, the bandwidth with room for modulation is 346 kHz or 0.346 MHz.

Hank Scott's the Handle

My friend uses my exclusive handle and fools people into thinking it is me. Is he allowed to do this?

—A. S., Unadilla, GA

If you use your call sign at the beginning and end of each transmission sequence, your friend cannot fool anyone without breaking the law. You see, he cannot use your call. And while we are at it, what's so exclusive about your handle. Anyone can use any handle. I find it easier to use my name.

On the Move

Hank, I moved, and I know that someone at the FCC should be informed. What should I do? Please hurry, my friend said I can't use my CB until I do so.

—R. R., Alliance, NE

Prompt written notice must be furnished to the FCC as soon as possible after the move has been made. A short letter should contain the name and address of the licensee as they appear in the FCC's records, the new name (for those who experience a name change) and/or new address, the call signs and classes of all radio stations for which you hold licenses. Send the letter to FCC, Gettysburg, PA 17325, and keep a copy of the letter as part of your station records.

He is Beeping!

A friend of mine is running a paging service with his CB. Is this legal?

—B. R., Oxnard, CA

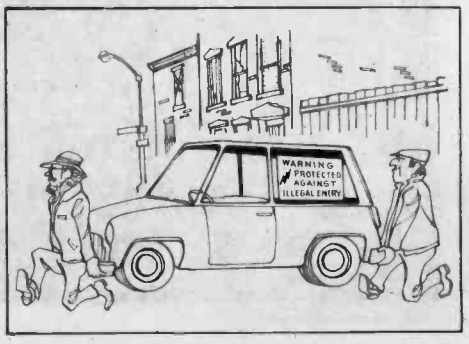
If he is just broadcasting information, I believe he is in for trouble. However, if he makes contact with the station and gives information, it looks like a good business. I hope he is located on top of a hill.

Lost Green Stamps

I received a ticket for transmitting on my CB while my car was in motion. I'll fight it to the Supreme Court if you tell me I'm right, Hank.

—A. F., Driggs, Idaho

Listen to me and you'll see the inside of a jail. Your best bet is to talk to a lawyer—he knows best! But, from where I sit, you don't have a leg to stand on. If I may quote the rules, "95.501. A station shall not be used: (1) for any purpose, or in connection with an activity, which is contrary to Federal, State, or local law." And if your State or local law says no talking into a microphone while auto is in motion, you don't do it. Make peace with Smokey!



SIX 1978 FORD THUNDERBIRDS WILL BE GIVEN AWAY!
2% BONUS DISCOUNTS!

BODACIOUS

What Else Can You Call Americas Largest Dealer Participation Contest? From July To December We Are Giving Away A New 1978 Ford Thunderbird To A Lucky Dealer Each Month, And That Dealer Could Be You! There's No Trick To Winning! For Every Thousand Dollar Order Of Available Merchandise You Place, We Will Send A "BENNIES BIG BUCK" Coupon. A Copy Of Your Coupon Is Placed In Our Giant Give-A-Way Barrel For The Drawing Of A New 1978 Ford Thunderbird! Plus You Receive A 2% Bonus Discount On Your Order! Starting In July We Will Pick One Dealer Each Month By Random Drawing Till December As The Winner Of That Months Thunderbird! It's As Easy As That! And Even If You Aren't Picked, Your "BIG BUCK" Is Still Eligible For The Next Months Drawing! And As You Continue To Order, You Continue To Build Up Your "BENNIES BIG BUCKS" (And Chances To Win) In The Barrel! Didn't We Tell You "BODACIOUS" Is The Only Word That Describes Our Giant Thunderbird Give-A-Way Contest? Bennies Also Offers The Worlds Largest Catalog Of Citizens Band Radios And Accessories. At 680 Pages, It's The Answer To Every Thing You'll Ever Need In CB From "A To Z". For Your Copy Send $10.00 (Deductible From Your First Order If Made Within 90 Days) And Your Tax Number. Sorry, Catalog Offer Available To Dealers Only.

BENNIES

WAREHOUSE DISTRIBUTION CENTER

R.D.1 BERWICK,PA.18603 717-759-2201

CIRCLE 35 ON READER SERVICE COUPON

ASK HANK, HE KNOWS!

Ham and Chatter

How do hams and CBers differ?
—D. M., Elephant Butte, NM

CB is a radio service designed to provide private shortrange radio-communication service for the business and personal activities of the licensees. Amateur radio offers two-way communication of short, medium and long distances and is designed to encourage the operator or operator-to-be to self-educate himself on radio theory, develop communications techniques, and improve the state of the art. If you are interested in two-way communications, get a CB license at once. Also, investigate amateur radio and commit yourself to a self-taught training program. The American Radio Relay League (ARRL) would like to offer assistance to would-be hams. Write to them at: 225 Main Street, Newington, CT 06111.

Class D Dead?

My "good" buddies tell me Class D CB is dead. Say it isn't so, Hank!
—J. S., Bronx, NY

It is and it ain't! The old Class D Citizens Band Service went through a name change. Now, the FCC calls it the Citizens Band (CB) Radio Service. Ho hum, another earth shattering advance by the FCC.

Keep on Talking

Hank, with all these new equipment regulations taking effect, is my old 23-channel CB set now illegal to operate?
—D. L., Cambridge, MA

Push to talk all you want, good buddy! The rules affect only the new gear being manufactured, and sold. Once it is in the CBer's hands, the rig is legit as long as the operator has a license. To date, no Citizens Band radio is obsolete.

Receiver Feature

What is an RF gain control on a CB transceiver? Is it a real advantage?
S.N., Wrightwood, CA

You can put an RF gain control to good use in CB operation. Most sets don't have them. They operate as if the missing control was set to maximum RF gain. That's good when the band is not crowded and all signals are weak. However, if you are working a local with plenty of signal, turn down the RF gain control (if your set has one) and it will reduce the background noise and weak signals. I know of two remote chain stores that stay in touch with beam antennas and reduced gain. Only their signals get through except for the moments when some mobile rides between the antennas. This is rare and the store's communications are as reliable as the telephone.

FM vs AM on Two-Way

Hank, what is the advantage of FM 2-way communications over AM, like what we have on CB?
—J.W., Scottsdale, AZ

FM has a superior signal-to-noise ratio and a lower usable signal level. The received signal does not gradually deteriorate with the distance between receiver and transmitter. The carrier power does not depend on the audio power, and interference with a weaker signal on the same frequency does not exist. FM is the way to go if you need 100% reliability without interference.

Forget It and Enjoy It

What happens if my 23-channel rig does not pass the new FCC minimum radiation requirements? *—B. E., Walden, NY*

It probably can't, and it makes no difference. Your set was acceptable under the standards in existence prior to January 1, 1977 and therefore can be used after that date. All sets manufactured on or after January 1, 1977 must pass the new standards.

From Tavarish

Do I have to be a citizen to get a CB license?
—F. S., Los Angeles, CA

Heck, no! There is a requirement that you are not an agent for a foreign government—and that goes for citizens and aliens alike. Should you be barred from getting a license for this reason, the FCC may waver this rule should you state that your station would be used for personal reasons and not for business. Write and ask the FCC today.

Well I'll Be . . . . . .

When I read the letter "I'll Squeal!" in ELEMENTARY ELECTRONICS *(Jan/Feb 1976), I tried it out on my 100-in-1 electronic kit. I found that it wasn't the transformer, but the capacitors that made the noise. Is anything wrong with my kit?*
—R. W., Celina, OH

Well, I'll be! There's nothing wrong at all as long as people like you stay inquisitive and continue to experiment. Thank you for being a reader of ELEMENTARY ELECTRONICS.

"You don't mean it, Al, your brand new walkie-talkie!"

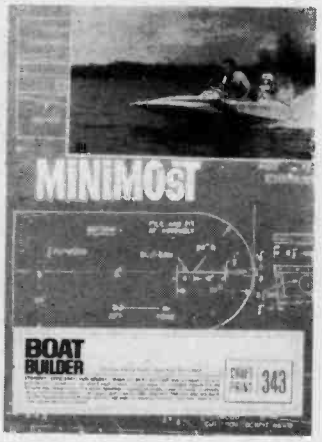
Build the REAL THING—Yourself!

Get top mileage from your own craft skills

367. ROBIN is a versatile skiff that can be used for hunting or fishing, as a yacht club tender, or a work boat. It is rugged, yet its plywood construction makes it easy to build; no special jig or tools are needed. It can take a motor of 7-10 hp. L.O.A., 12′; beam, 5′1″. $5.00

75. KINGFISHER is a modern version of the Scandinavian pram developed hundreds of years ago. It rows easily, sails well, and propels nicely with a small outboard motor. Its 90 lb. weight and small size make it ideal to car-top; construction is plywood. L.O.A., 9′; beam, 4′. $5.00

245. CAT'S PAW catamaran provides a stable base for a lot of sail area to make for fast sailing. And she's easy to build because of her straight-sided hulls, flat sheer, and straight bow and stern. It's an ideal boat in which to learn sailing. L.O.A., 12′, beam, 6′2″; sail area, 85 sq. ft. $6.00



343. MINIMOST is an 8′ outboard sports hydro you can build in just 15 hours, and at a cost of less than $25 for materials. Its advanced underhull design makes speeds in the 30 mph range possible with a 10 hp motor. L.O.A., 8′. $5.00
Full-size pattern set 344 $15.00

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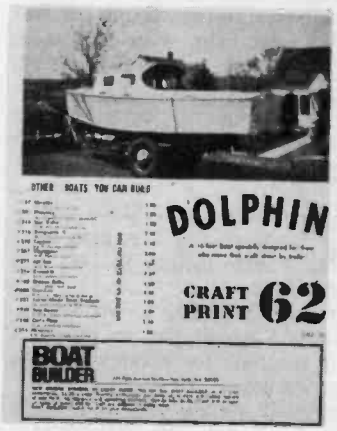

62. DOLPHIN is small and light enough to be transported anywhere by trailer, yet it will accommodate two persons for extended cruising or a party of four on day trips. Plywood is used throughout, and the hull is designed to get the most from modest power. L.O.A., 16′; beam, 5′9″. $5.00

356. TABU gets up on plane, just like an outboard, to provide speeds up to four times higher than those possible with a conventional hull of the same size. Hull is of plywood, covered with resin and Dynel cloth. L.O.A., 16′; beam, 4′8″; draft, centerboard down, 2′6″; sail area, 165 sq. ft. $5.00

371. JAMAICAN is a sailing surfboard of unique construction. Fiberglass and Dynel cloth are stretched and stapled in place over a wooden framework, then resin is applied. No special building jigs or forms are needed. Foamed-in-place polyurethane adds stiffness. L.O.A., 12′; beam, 3′. $5.00

36. CHUM is a speedy little runabout that can be built as a single cockpit or double cockpit model. Use a lightweight engine of no more than 100 hp for top performance. Construction is of marine plywood over hardwood frames. Decks are of mahogany-faced plywood. L.O.A., 15′6″ $5.00

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Enclosed is _____. Please add 50¢ for postage and handling. Send me the Craft Print(s) I have checked below:

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☐ #356 $5.00 Add 50¢
☐ #36 $5.00 Add 50¢
☐ #343 $5.00 Add 50¢
☐ #344 $15 full-size pattern set. Add 50¢

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City _____ State _____ Zip _____

ASK HANK, HE KNOWS!

Only Inches Allowed

If the antenna is too long or too short, will it burn out the CB transmitter section?

S. G., Denver, CO

If you are talking about an antenna with a 2 or 3-in. tuning tip, the answer is no! However, home brew antennas that cause a very high SWR may pop the transceiver's final stage.

Make It 2-to-1

Could you send me some information on repairing transistor radios. I am in the seventh grade.

–J. S., Springfield, IL

Look at our Bookmark column for the book that'll help you. If you cannot find what you like, write to the publishers and ask for their book catalog. A word of advice. At your age you should spend at least two hours of reading for each hour of practical service work. Theory is very important!

What Way to Go?

I purchased an issue of COMMUNICATIONS WORLD, *and got interested in SWL. I would like to buy a good used shortwave receiver, but I don't know where to look. Could you please advise me if there are any firms that sell used SW receivers.*

–W.R., Baraga, MI

Check your local classified ads, flea markets and auctions. Buy a working unit unless you are qualified to service it. Remember, you can get started in shortwave listening on an inexpensive multi-band transistor portable. After a few months, you may want to go for a better unit. But first, get started!

Regulator for Car Radio Power

Hank, I started to build a power supply for an old car radio like you told me on page 71 of your November/December 1976 issue of ELEMENTARY ELECTRONICS, *but Radio Shack says the voltage regulator chip your author used is no longer in stock. What part can I use in my project?*

–M. G., Rowayton, CT

Oooops! They changed parts on us, pal. Your local Radio Shack has a regulator chip, catalog number 276-1771, now which accepts up to 35 volts DC in, delivers 12 volts DC out. It's just what you need to rehabilitate your old car radio. Remember, never quit if the part is not available. Look for an equal or better substitute.

Can You Help Out?

Δ David Lupo #129-40-5389, Comm Station, Spain, Box 1105, FPO, New York, NY 09539 (now that's an address) needs the schematic diagram and/or service diagrams for the Panasonic AM/FM radio, Model RF-680D.

Δ Jim Blankenship is in need of an oscillator coil replacement for an old Transoceanic receiver, Model G500, chassis 5G-40. If you can help, write to Jim at 2506 Andrews Ave., Melbourne, FL 32935.

Δ Wanted–service manual for a Dumont Oscilloscope, Model 327 (Serial #2X03) by Ralph G. Maddox, Purgitsville, WV 26852.

Δ Can anyone help Leon Stone get a capacitor for his Strobonar 61A flash gun? Write to 24575 San Jacinto St. 48, San Jacinto, CA 92383.

Δ R. J. Silver of 45 Kesling Drive, Springboro, OH 45066 would like to obtain a coil winding machine for making air-core audio-frequency coils.

Δ Have anything on the BC-348-0 radio receiver? Send it to Bob Wydock, 30 Mitchell Dr., Toms River, NJ 08753.

Δ Richard Schant of 1218 Marshall Ave., Green Bay, WI 54303 needs a schematic diagram of the Knight T-60 transmitter. He could use the operators manual, also.

Call For Help

Hank, can you tell me if it's natural for a transmitter within 1000 ft. of my base to splatter 2 to 3 channels each side of his transmit frequency on AM, and wipe out my incoming signals on all AM channels when he's on SSB, lower side of 16, with a loud hiss? This is my first radio experience, and I have a tendency to feel I have done something wrong.

–J. T., Michigan City, IN

Can't see how it can be your fault unless you damaged your rig somehow. I suggest you call a few good buddies to monitor the station in question and see what they report. If they agree with your reception report, approach the station involved and offer *friendly* advice.

(Continued on page 103)

You get a better "break" with Gemtronics 40-Channel CB!

Our new line of 40-Channel Citizens Band Radios gives you a better break on quality and value. Each features Phase Locked Loop (PLL) frequency control, a one year guarantee on parts and labor . . . plus famous Marine Quality — designed and engineered to the same specifications as our famous ship-to-shore communications systems. See the complete line of Gemtronics CB's at your Gemtronics dealer soon!

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- Digital Channel Readout
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- Distant-Local Service
- Delta Tune

GTX-77
- Tone Control
- SSB/AM
- Noise Blanker
- Clarifier
- Illuminated S/RF Meter

GTX-4040
- RF Gain Control
- Automatic Noise Limiter
- PA Capability

GTX-5000
- Tube Type Base
- Digital Channel Readout
- Fine Tune Control
- TX/RX Indicators
- Illuminated S/RF Meter

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Dealer Inquiries Welcome

CIRCLE 24 ON READER SERVICE COUPON

The high performance CB-AM-FM antenna that disguises so well, only our competitors will try to rip it off.

You know the problems with CB disguise antennas. The "disguise" isn't complete, and the professional CB thief can spot an incomplete disguise a block away. Or the disguise works, but the antenna doesn't. It keeps the thief from wanting to get into your car, but the antenna design keeps your signal from getting out like it should.

These problems are over.

From its black insulator to the top of its stainless steel whip, our Model 11004 CB disguise antenna is identical to most standard replacement AM-FM receiving antennas. More important, it's pre-tuned at our factory for an SWR of 1.5:1 or less *across all 40 channels.* That means you get out with the strongest possible signal, without advertising the fact your car is CB equipped. And it's why we call the Model 11004 **"One-(Big)-Ten-Four."**

Like all our antennas, it's handcrafted using only the highest quality materials for years of dependable service. And the Model 11004 includes our exclusive in-line connector for simplified installation and 18 feet of low-loss RG-58/U coaxial cable.

For protection from CB rip-offs and a great output signal, you can't do better. Just ask for Antenna Incorporated's "One-(Big)-Ten-Four." At $34.95*, it's a steal.

You deserve the best. You get it from the Antenna pros.

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*suggested resale price

CIRCLE 7 ON READER SERVICE COUPON

CB BUYERS GUIDE

1977 EDITION

40-Channel CBs...
How Good are They?
Buying a Transceiver.
Mobile and Base Station Antennas.
Accessories Improve Performance.
CB Test Reports and Directory.
FCC Rules and Regs for CBers.
....And more!

ONCE AGAIN American technology has been underestimated. Not only technology, the business community itself was underestimated. When 40-channel CB was first announced by the FCC the voices of doom and gloom were quick to fill the airwaves, as well as much magazine and newspaper space: "40-channel transceivers won't be as good as the 23s! They won't put out as much power! The modulation will be down in the mud! There won't be anyone to work on the new channels because it will take months before any 40-channel models make it to the dealer's shelves!"

Would you believe that even the trade magazines which are supposed to be privy to the real *inside poop* were spreading the nonsense that (a) It would be a long time before dealers had any 40-channel rigs to sell; (b) There would be a shortage of 23s by Christmas 1976. How anyone will ever believe the trade press again when it comes to CB is beyond us, so let's see what really happened and how it directly benefits *you,* the CBer.

When the FCC announced 40-channel CB for January 1, 1977 all 23-channel transceivers immediately became obsolete in terms of all-channel coverage. They were perfectly good transceivers, electrically, and still are, but there was no logical reason why anyone should spend full list price for a 23-channel model when the same money or a few dollars more would get all 40-channels in just a few months. The trade press pushed the idea there would be a shortage of 23s for Christmas, and prices would hold. The CBer, however, was a lot smarter than most of the press and he or she demanded a discount. Most manufacturers saw the handwriting was on the wall, not in the trade press, and it took less than a month before there was sharp discounting of 23-channel sets. By Christmas it was possible to buy a full-23 model for as low as $39.95, and there were rumors that some stores were even unloading full-23s for less than $30.

Many a CBer who had no need for the additional channels or was willing to compromise full-40 coverage with price got an outstanding value; the type of buy you get once in a lifetime.

In fact, by Christmas there was no shortage of 23s, there was actually a glut because the American businessman had been underestimated. Here in the U.S. there are few government sponsored monopolies to stick it to the consumer. If 40-channel sets could be sold by January 1, 1977 you could bet your life—and give odds, yet—there would be 40-channel models for sale right after New Year's Day. By Christmas everyone knew just what 40-channel models would be for sale in a week or two and the bottom fell out of the 23s; in some instances discounts were greater than 50 percent of the original selling price, and when the CB dealers opened their doors for sale on January 2 or 3 they had at least an AM and SSB 40-channel transceiver on the shelves. Within the next few weeks CB dealers had several 40-channel models to sell because the American businessman does not sit around waiting for someone else to tell him when to sell. The CB trade press could talk all they wanted about the future shortage of 40-channel transceivers, the truth of the matter was every manufacturer and distributor was going all out to have a 40-channel transceiver ready for sale by January 1, and typical of the U.S. businessman, many succeeded. On January 1, 1977, 40-channel was here to stay, and it was here with even better performance and value for the price.

But before we tell you why 40 channels are better in terms of *communications effectiveness* we should clear up one of the misconceptions caused by the effort to sell 23-channel transceivers at full list price. When the FCC first announced 40-channel CB the common theme of most articles was they would cost substantially more than equivalent 23-channel models. To anyone with an ounce of intelligence it was obvious the extra channel coverage and TVI filtering using new technologies would cost less, the same, or *slightly more* than 23-channels using crystal synthesizers. Allowing for some manufacturing problems and the normal inflation factor, a 40-channel transceiver should cost the same or just a few dollars more than a 23 of equivalent performance and overall quality; there was no reason for a large price increase. Well, common sense prevails: a 40-channel transceiver costs just about the same as its 23-channel equal. The 40-channel models which are priced substantially higher than 23-channel models generally feature a lot more in the way of performance; performance that often wasn't available at consumer prices when 23s were still being built.

Better Than Ever. Contrary to what you hear on the band, or what some dealer tells you when he's trying to talk you into buying an old 23-channel

transceiver he's found in the stockroom, 40-channel transceivers are better than their 23-channel counterparts of similar price and quality. The reason they are better is simply because the FCC must now approve every model offered for sale, and a manufacturer cannot change the design or adjustment without getting approval for the changes. Though many of the FCC requirements for new 40-channel models are aimed at reducing *the possibility*—not actuality—of CB transceivers causing radio interference (RFI) to other devices in other services, a few requirements for type acceptance directly affect the effectiveness of the CB signal. For example, the FCC not only insists on 100 percent modulation limiting, it limits the maximum bandwidth to 4000 Hz per sideband (8000 Hz total bandwidth for AM). Just these two requirements can result in a sharp improvement in the *talk power* of budget and moderate priced transceivers.

100 Percent Modulation Limiting. Back in the days of 23 channels some manufacturers actually provided 100 percent modulation limiting as they were required to do by the FCC, others did not, allowing their production models to overmodulate so the resultant distorted signal would *appear* to have more talk power. With an overmodulated signal coming in at 50 dB over S9 it could appear there was more talk power, but the sideband splatter caused by overmodulation was interfering with signals on adjacent channels. Some transceivers attained 100 percent modulation by the simple expedient of clipping the modulation peaks, but this produces harmonics of the modulating signal that also appear as splatter on adjacent channels if not properly filtered.

In the 40-channel models 100 percent modulation is a whole new ball game. It is absolutely required, and the latest requirement of the FCC reached in agreement with the Japanese Ministry of International Trade and Industry (MITI) requires periodic factory inspections to insure that what comes off the assembly line really conforms to the model accepted by the FCC. This means that what you get is what the manufacturer promised the FCC you would get.

Now when you have 100 percent modulation limiting you automatically get built-in compression, or *talk power boosting*. Here's how it comes about. The modulation is set to limit on an "average" voice level. If you raise your voice the limiter squashes the peak signals down to 100 percent modulation while the lower voice level and sounds are amplified. The overall effect is exactly that of a compressor: the average voice power is increased and the lower sounds are automatically amplified towards 100 percent modulation.

In the event the 100 percent modulation limiting causes clipping, harmonics are attenuated because all modulation frequencies above 4000 Hz must be attenuated. This reduces the clipping distortion to the main signal and essentially eliminates sideband splatter on adjacent channels. Not only does the typical 40-channel transceiver deliver *cleaner* modulation, it reduces the possibility of adjacent channel interference caused by splatter. In short, a budget priced 40-channel transceiver will usually deliver the wall-to-wall modulation previously found on the better, more

accessories

Leader Instruments Corporation's LPM-885 SWR/Power meter is an in-line device that measures SWR and transmitter power output from 1.8 to 54 MHz. $99.95.

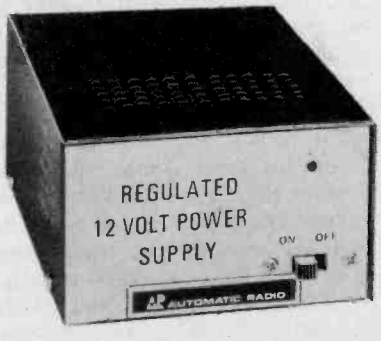
CIRCLE 71 ON READER SERVICE COUPON

Channelmaster has two filters to end CB-caused TV interference; the Trapper 45 for average situations ($9.95), for severe problems, the Trapper 100 ($14.95).

CIRCLE 87 ON READER SERVICE COUPON

Sparkomatic's NFS-1000 CB noise filter system is a unique combination of filters designed to eliminate interfering noises from all vehicular sources including ignition spark, alternator/generator, and metal to metal contact. $16.99.

CIRCLE 116 ON READER SERVICE COUPON



The HPS-2000 CB home power supply allows any CB mobile unit to be used as a home base station. Made by Automatic Radio, the HPS-2000 features "quick connect" terminals for easy hook up to your CB set. Selling price $27.50.

CIRCLE 83 ON READER SERVICE COUPON

expensive 23-channel models.

Secondly, because the FCC now actually checks for 4 watts maximum power output and does not let the manufacturer increase the power input so there will be more than 4 watts output, you are generally guaranteed that your signal will be fully modulated. On all the new 40-channel rigs you get full modulation of the transmitter; and a fully modulated 4-watt RF signal gets out further and is more readable than any unmodulated signal up to 8 watts. Fact is, even if you could legally run an 8 watt signal, if the percent of modulation was 50 percent it would sound "weaker" and be less readable in noise than a 100 percent modulated 4 watt signal. (In electronics nothing is free. It's like a see-saw: if you increase one side without the other the signal gets unbalanced and is usually worse.)

Moving along. The FCC now requires all new 40-channel transceivers to have at least 60 dB harmonic attenuation. This means much less chance you'll cause television interference (TVI) with a 40-channel rig. Back in the "old days" of '76 some rigs had TVI filters while others did not. Some were simple second harmonic traps, other were tuneable traps the user adjusted for minimum TVI. Now *all* transmitters must provide a rather high degree of harmonic radiation attenuation and your chances of causing "herringbone" TV inteference to channels 2 and 5 on your neighbor's TV set is sharply reduced. Even if your antennas are so close your rig does cause interference it will usually be so slight an inexpensive TVI filter in series with the transmission line will give just enough extra harmonic suppression to squash the interference.

If just the improvements in modulation and TVI supression were the only things offered by the 40-channel transceivers it would be worth considering upgrading right now. But the FCC's type-acceptance requirement results in another big plus. As part of type-acceptance the 40-channel transceivers must meet Part 15 spurious signal radiation standards. Without getting technical, a CB transceiver cannot radiate more than a flea's whisper of energy *from the receiver section.* A receiver must now be built with more care and attention in the area of shielding, spurious signal(s) reduction and/or elimination, and in general better overall quality which is evident from the test reports. Those of you familiar with several budget and moderate priced transceiver lines will note from the reports that 40-channel models from these lines appear to have greater sensitivity and adjacent channel rejection; since the basic circuits are similar to what was used for 23-channel models we can only assume the improved performance is at the very least partially caused by the FCC's certification and type-acceptance requirements for the new 40-channel transceivers.

Summing Up. Because all new 40-channel CB transceivers must meet FCC certification and type-approval standards the possibility of being stuck with a "lemon"—a transceiver with overall poor performance—is sharply reduced, if not entirely eliminated. Naturally, we don't intend to imply that a 40-channel transceiver in the $100 range has the same performance or even the same grade of components or care of construction as a $200, or $300 transceiver. Rather, the FCC has essentially established a "floor" on CB performance so no one gets stuck with a literal *communications disaster* in a chrome plated cabinet.

Using CB. Other than a restriction against working stations located further than 150 miles from your location there are essentially no prohibitions on CB

accessories

CIRCLE 69 ON READER SERVICE COUPON

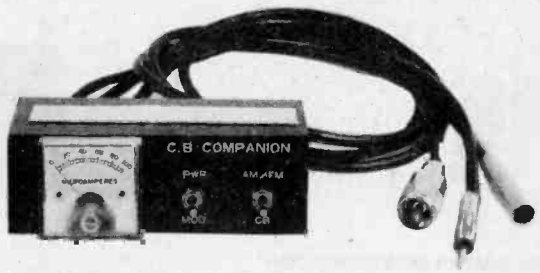
The CB Xtender by Chemtronics is a preamplifier with more than 20 dB gain on all 40 channels, making incoming CB signals up to 10 times stronger. Priced at $39.95.

Solitron's Z Mate converts any car radio antenna for use as a CB antenna. A built-in SWR meter makes tuning easy. $26.95.

CIRCLE 67 ON READER SERVICE COUPON

CIRCLE 66 ON READER SERVICE COUPON

Universal Technology's CB Beam is a 3-channel, 2-watt CB transceiver and a powerful steady or flashing light. The CB Beam sells for $89.95.



CIRCLE 66 ON READER SERVICE COUPON

Universal Technology's CB Companion works with any AM or FM car radio antenna to provide normal broadcast reception plus CB transmission and reception. The unit sells for $24.95.

contacts as long as the purpose is legal, and not for the sale of equipment or accessories. For example, you cannot use CB in the commission of any crime, nor can you get on the air and offer equipment for sale or offer services such as the repair or adjustment of CB equipment for a monetary or other consideration. Except for these few sensible restrictions almost anything goes. If you're running a small business and need a two-way radio hook-up to talk with the driver of your delivery van you can use CB. If you just want to talk to the folks at home from your car while shopping, or on the road home from work, that's okay too.

If you want a back up radio system for your local rescue or disaster team you can use CB—though VHF radio will insure less chance of interference to the primary communications.

If you would like to just chit-chat with CB neighbors, why that's okay too; just as long as you don't do it on channel 9 which is reserved for emergency calls. (In many areas groups of CBers generally affiliated with *REACT* monitor channel 9 for emergency calls.)

As a general rule, CB can be used when it's impossible or inconvenient to use the telephone. It's also often a lot cheaper to use CB rather than the phone; for example, a call from your boat to vacation cottage via the marine operator is relatively expensive, it's not like slipping a dime or three nickels into a pay phone. Do it by CB and it doesn't cost you a cent—assuming you already own your own CB gear.

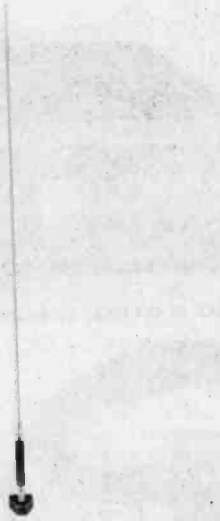
What To Look For In Transceivers. All of the new transceivers we've seen so far have been full 40-channel coverage. The exceptions are models with six or less channel capability still available from before the introduction of the 40-channel models. As a general rule these limited channel coverage transceivers are supplied with crystals for one channel, and the user purchases crystals for those channels he might need. For example, someone who will use CB only when on the road might be perfectly happy with channels 19 and 10, while a boater might prefer the "unofficial marine" channel 13. A local delivery or taxi service might also have need for coverage of just one or two channels, and considerable expense can be saved by not purchasing a full-40 model.

In all truth, however, full-40 coverage is what most CBers want and the limited channel coverage transceiver is fast becoming extinct, or at best rather difficult to find.

Beyond the small demand for less than full-40 coverage, 40-channel transceivers are the general rule and the most desired models; to get maximum communications effectiveness you must search out those 40-channel models that have the specific operating features suiting your individual requirements, and if you don't have unlimited funds be prepared to trade off a little in the way of performance to get your most wanted features.

Double Conversion. Double conversion is a system of receiver *intermediate frequency* (termed IF) amplification that sharply reduces the possibility of interference from signals broadcast on certain frequencies related to the receiv-

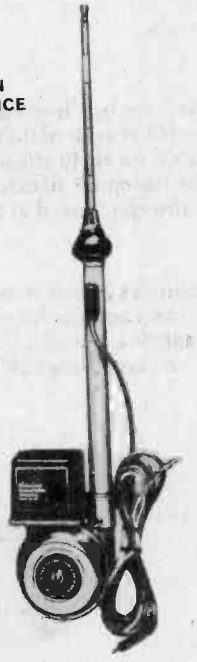
antennas



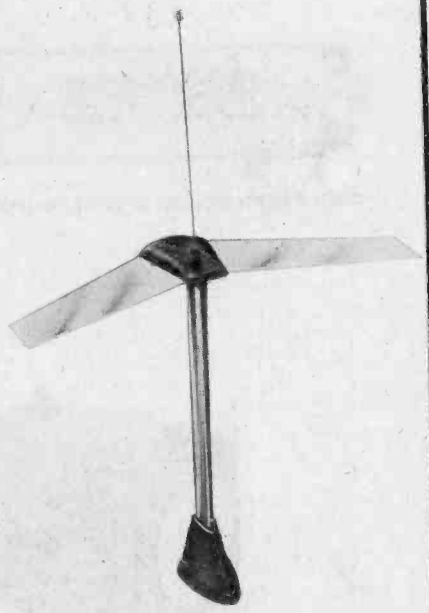
CIRCLE 78 ON READER SERVICE COUPON

Anixter-Mark's The Long Gainer is a tunable base loaded stainless steel antenna that can be easily adjusted to cover all channels with just a simple turn of the frequency adjustment screw. $31.75.

CIRCLE 116 ON READER SERVICE COUPON



The SA-301 motorized retractable antenna by Sparkomatic deters theft and vandalism. With its frequency dividing coupler, the SA-301 provides optimum AM/FM/FM Multiplex and CB operation. Sells for $59.95.



CIRCLE 87 ON READER SERVICE COUPON

Channelmaster's Power Wing antenna features capactive top-loading and a unique, grooved-core coil in the weatherproof Kralastic base. $29.95.

er's IF frequency(s). Signals received on these IF related frequencies are called "image interference." In the early days of radio double conversion was very important in general purpose communciations receivers that covered broad tuning ranges, such as 1.5 to 30 MHz. It is not important in CB because there is virtually no use of the image related frequencies that would cause image interference.

Though it is true that some IF systems used in early model CB transceivers could be sensitive to image interference if the receiver covered all 40 channels, advances in IF filter cricuits allow both single and double conversion receivers to be free of image signal interference.

Essentially, double conversion came to CB as a sales feature: if single conversion was good, double conversion must be better. One manufacturer even went to triple conversion. Double conversion was generally used in the higher priced models to convey the *idea* of *high performance*. The plain truth is single and double conversion does not necessarily guarantee a lower or higher level of performance. Either can deliver the best performance level required for today's jammed channels, and either can be a total washout in terms of overall performance. Final performance depends on the total design, alignment and assembly.

Double conversion became almost a necessity when crystal synthesizers came into use: when 12 to 14 crystals could be made to do the work of 46 individual receive and transmit crystals.

But today we can synthesize with a single conversion receiver while still retaining high performance. Double conversion is generally used, however, because it makes design somewhat easier for the phase-locked loop (PLL) digital frequency synthesizer used in the late 23- and new 40-channel transceivers.

Selectivity. Often termed "adjacent channel rejection," selectivity is probably the most important receiver parameter because it determines how free your reception will be from signals on channels adjacent to the one you are monitoring. As a general rule a transceiver's overall performance, and to some extent the final selling price, is determined by the selectivity—it costs money to build in more and more adjacent channel rejection. If you don't need super selectivity considerable savings can be made by purchasing a transceiver with a moderate degree of selectivity, and the savings can often pay for the rest of your CB equipment needs.

Sensitivity. The ability of the receiver section to pull in weak stations is a measure of its sensitivity. In all honesty, because of interfering signals and man-made and atmospheric noises there is little *practical difference* between a transceiver having a receiver sensitivity of, say, 0.5 uV and 1.0 uV. In the laboratory there is a difference. Out on the highway there is essentially none. If the transceiver has other features that interest you don't let sensitivity carry too much weight in your final decision.

Noise quieting. All CB transceivers have some form of noise limiter. Some also have a *noise blanker* that is a more effective noise limiter for impulse noise. Noise blankers are usually combined with standard noise limiters; it is rare for a transceiver to have just a noise blanker because it is not all that effective against continuous noise. Quite often, a manufacturer will claim his rig has a noise blanker and no noise limiter is specified. But rest assured if the rig wasn't made by a fly-by-night operator

cb transceivers

CIRCLE 88 ON READER SERVICE COUPON

The Cobra 32XLR mobile transceiver front panel includes a channel 9 indicator light, which automatically warns when an emergency transmission is being made. Scan Alert simultaneously monitors channel 9 as well as receiving other channels. $279.95.

CIRCLE 105 ON READER SERVICE COUPON

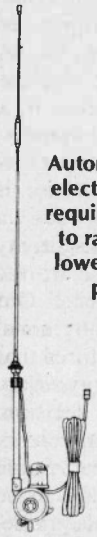
The Grant, manufactured by President, transmits and receives in SSB (single sideband) as well as AM. The front panel controls include adjustments for microphone gain and clarifier. $339.95.

CIRCLE 102 ON READER SERVICE COUPON

Motorola's model 4020 has a top fire speaker, an Extender noise blanker, and LED digital channel readout with dimmer control. $259.95.

CIRCLE 86 ON READER SERVICE COUPON

Baron by Browning is a 40 channel mobile transceiver with phase-lock loop circuitry, and SSB (single sideband) transmit/receive mode as well as AM. It includes an RF gain control on the front panel, which is set at a functional slope. $429.95.

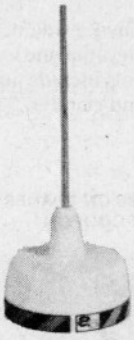


Automatic Radio's ACE-2214 is an electrically operated CB antenna, requiring only a flick of the switch to raise it to operating height or lower it to the hideaway, secured position. Sells for $49.95.

CIRCLE 83 ON READER SERVICE COUPON

Anixter-Mark's "The Little Fooler" is a disguise CB antenna that also gives top performance on AM and FM and comes complete with universal mounting coupler and coaxial cable. $34.95.

CIRCLE 78 ON READER SERVICE COUPON



CIRCLE 72 ON READER SERVICE COUPON

The Antenna Specialists M-440 mounts instantly on flat metal surfaces and holds tightly even at highway speeds because of its powerful ceramic magnets. $15.95.

the noise limiter is there. The trick you can't find out about is the manufacturer who puts a switch on the front panel labeled "noise blanker" when only a noise limiter is provided. (Reputable manufacturers do not try to deceive you with this trick.) Many rigs have a noise limiter or noise blanker on-off switch, which really does nothing but show how the noise is being crushed by the limiter or blanker. You generally leave the switch set permanently to *on* if you don't want your ears constantly assaulted by noise, so a noise limiter switch shouldn't be given an ounce of consideration when selecting a transceiver.

Fine Tuning. Delta tuning, fine tuning, bandspread, or clarifier is a device used to slightly modify the receiver's tuning (up to 1.5 kHz) on either side of the crystal-controlled receive frequency. This electronic fine tuning is needed when the received signal is slightly off the precise channel frequency—remember, up to 0.005 percent deviation is allowed. When a signal is received through a highly selective IF amplifier severe distortion is generated if the received signal does not pass through the "electrical center" of the bandpass response; the fine tuning device electrically changes the tuning of the received signal just enough to center the signal through the IF amplifiers. If a receiver has standard selectivity the bandpass is normally sufficiently broad to accommodate all received signals within the FCC's frequency tolerance.

Talk Power. *Talk power boosters* are electronic devices that limit the peaks of the modulation or compress the dynamic range by amplifying the lower volume levels. Both systems result in an increase in average modulation level at the receiving station without exceeding the FCC's specified limit of 100 percent modulation. As a general rule, any transceiver having modulation limited to 100 percent has some form of talk power booster as modulation limiting and 100 percent modulation limiting are twins—you can't have one without the other. Special talk power boosters, however, such as those known as *Dynarange* or *range boost,* are compressors and are usually more effective at increasing talk power than limiters because compressors automatically increase the modulation level of the weaker voice sounds. Most compressor devices also incorporate some form of peak modulation limiting.

Should you wish to use your rig as a public address amplifier, or if you want to use an external speaker, you'll need a transceiver with external and/or PA speaker jacks. Most rigs are available with these connections.

Meters. If a CB transceiver has any meter at all it probably has something called an "S-meter" that indicates the relative strength of received signals. Frequently, the S-meter also functions as a relative RF output meter when transmitting. In most transceivers the meter automatically switches from the "S" to RF-output mode when you press the microphone's push-to-talk (PTT) switch. In some transceivers you must operate a panel switch to set the meter to the desired mode. A few deluxe transceivers also provide SWR (standing wave ratio) metering. This can be done with separate meters, or everything can be combined into one S/RF/SWR meter with the precise function determined by a panel-mounted switch. As a general rule the meter always returns to an S-meter when receiving.

At one time almost all transceivers had the microphone "hard wired" to the transceiver. Today, most transceivers have plug-in mikes. It really makes no difference in routine CB operations whether the mike does or does not plug in, but if you plan on experimenting with different microphones, including amplified or compressor types, it's a lot easier if you have a microphone jack on the transceiver.

Base Stations. Any CB station located at a permanent or temporary fixed location is known as a "base station." The purpose of a base station is to communicate with other base stations and mobile units. How well you accomplish this will depend upon your installation.

The installation consists of the location of the equipment in your shack (all radio rooms are known as "shacks" in CB), the manner in which the equipment is hooked up, and the way it is serviced and maintained.

The equipment you will want to select for your base station will have a 110 volt AC power supply (some transceivers designated primarily for mobile use operate on 12 volts only, and must have an extra power supply in order to operate on house current). You will also find that a desk-type microphone with a push-bar (as opposed to a handheld pushbutton mike) will make for ease of operation; however, desk mikes aren't normally sold with a CB transceiver.

Do-It-Yourself. Customized installations are also nice for someone who is handy with tools and wood. Some beautiful work has been done by CBers along these lines.

Locate the installation where you will be able to run the antenna cable out of the window conveniently and without making a ridge down the center of your

carpet. Just as the heat from the stove won't help the situation, radiators will also not aid in extending the life of a transceiver.

You will probably find it handy to have a telephone on your desk. Keep the telephone numbers of police, fire, and other emergency services posted nea the telephone.

Safety precautions should always be observed. Bond all metal cabinets together by hooking them to a cold-water pipe ground with heavy #12 copper wire. You may find that it is best to run a single, well-insulated, heavy-duty cord from the outlet to a multiple outlet tap attached to the side or back of the operating table rather than running long wires from the outlet to everything on the table.

The Hook-Up. While the location of the antenna on your roof will be a matter of your own personal tastes and will be limited in height by FCC regulations, getting the signal between the CB rig and the antenna means the use of lead-in wire. In CB this means coaxial cable having an impedance of 50 ohms. Because coaxial cable creates losses in signal strength (both incoming and outgoing), your best bet is to select only the highest quality cable and use the shortest length possible.

The CB Mobile Station. If it's a CB rig with wheels under it, it's a mobile station—and it's a mobile station if it flies, sails or pedals. While it may at first seem a simple matter to throw a CB rig into your car and go mobile, there are a number of fine points to the situation which should be considered.

Mobile CBing consists of the following problems: picking the proper rig, locating and installing it, locating the antenna, and eliminating electrical noise from the car.

Choosing the Rig. Flashy chrome, meters, and lights may make for great base stations, and possibly also dandy mobile rigs. The problem is that when you select a rig for mobile use, you must be a little more selective than when you are setting up a base station.

For instance, the rig must be able to fit in your car. Many of the larger rigs just can't be squeezed into Volkswagens, Fiats, Pintos, and other small cars.

Assuming you have one of Detroit's recent products, you will be able to accommodate any 12-volt transistor rig. The only limiting factors will be size and price. If you have a foreign "bucket of bolts" a check of the electrical system is in order before you plunk down your cash for a mobile rig. Some transistor rigs will work on either polarity—positive or negative ground. If your car has a *positive* battery ground be absolutely certain the CB rig can operate with a positive ground. Many CB rigs will work only with a *negative* battery ground, so double-check carefully if your car was made on the other side of either "big pond."

The Right Place. Next, check the car for possible mounting locations for the transceiver. The usual mounting location is under the dash close to the driver, but not so close as to get in the way of the right foot. The driver should be able to reach the transceiver's microphone and controls without having to lean across the seat. If you intend to conceal the rig in the glove compartment take notice that it is impossible for the driver to operate safely while driving. Glove compartment installations are suggested only when the rig is operated with the car stopped and parked, or when the passenger will do the talking.

Consider the features required for mobile communications. Will you operate mobile in an area of high CB activity, requiring sharp selectivity, or can you get by with a rig having relatively broad (and low cost) selectivity? Will communications be over long distances where you'll need every bit of extra talk power, requiring the rig to have some form of "talk power booster"?

When you've decided which rig has the features you need, make certain it will fit the chosen mounting location in your car. Most CB rigs today come equipped with a mobile mounting braket, together with all necessary hardware and complete mounting instructions.

Your next step is to get power to the CB rig. Regardless of what you might have heard about wiring the power cable for the CB rig across the vehicle's ignition switch the best place to obtain power is directly from the battery as direct wiring eliminates a heck of a lot of impulse noise. But getting wires through the firewall can be a problem for some, so the next best place is the accessory equipment terminal, or "battery" terminal, of the fuse block mounted inside the vehicle.

One you have power to the transceiver all you need to get on the air is to install and connect the antenna. This is a story in itself and you'll find a special antenna article in this issue of the CB Buyers Guide to assist you in the proper selection and installation of antenna equipment. ■

New-Tronics new instant indoor base station antenna, the Hustler HP-27 "Homing Pigeon," installs in minutes, providing a communications range equal or superior to better mobile installations. Priced at $42.95.

Choosing the Best Antenna for You!

THE FULL LEGAL 4-watt output, the most solid *talk power*, and any high performance features and/or performance you can build into a CB transceiver are worthless if you can't get the signal out past the backyard fence, or past the front bumper if you're working mobile.

And the thing that broadcasts your signal to the waiting world, the item that decides exactly how far your signal gets out, is the antenna system, or more specifically, the antenna. Select the right antenna for your particular needs and use, and you can raise a contact on every shout. But choose the wrong antenna equipment, or use the right antenna in the wrong place, and you'll be spending more time shouting *break, break* than working a contact. Remember, if they can't hear you they can't work you.

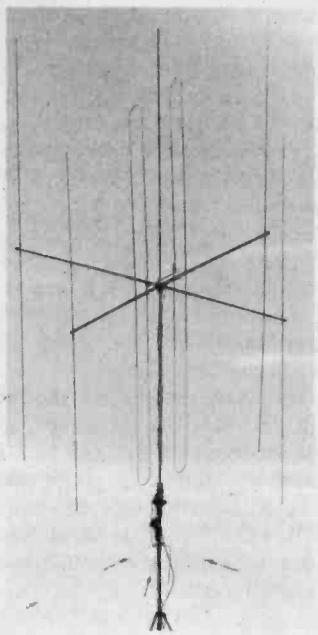
Selecting the right antenna is more than just walking into your local CB salesroom and asking for "the best there is." If there was such a thing as "the best antenna" each CB distributor would stock only two antennas: the best base antenna and the best mobile antenna. But no dealer stocks just two antennas.

In fact, there are probably more different types of antennas in stock at your local CB dealer than there are transceivers. Most likely you'll find just the different mobile models from two or three manufacturers take up a good part of a display wall, while base antennas come in every style, shape and price.

But though there are many different model antennas to choose from, there are actually only a few different antenna models or styles when we talk in terms of *electrical performance*, the way the antenna radiates the RF energy from your transceiver (and the way it receives signals). The reason so many sizes and shapes are needed for a few basic electrical variations is because there are many limitations on the way an antenna can be installed. Some cars, for example, require a trunk lip antenna mount, others can take a bumper mount. Trucks might require a West Coast Mirror clamp, or a Vise-Grip antenna mount. Or perhaps your base hasn't got much clearance because of several large trees, and you need an antenna that can snake its way through a narrow space between the trees and building.

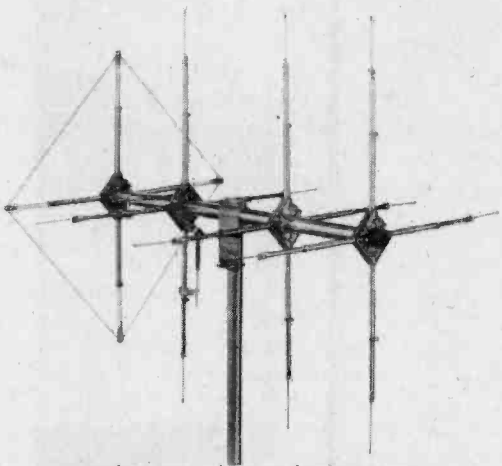
To accommodate all possible antenna installation needs just about every manufacturer offers a broad range of mounting devices for a few basic antennas; the same antenna—say a mobile

base station antennas



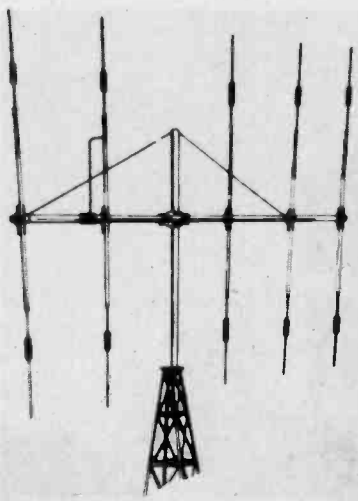
Ultra-Kicker by Turner uses remote electronic switching to allow monitoring in the omni mode, and instantaneous directional control to any of eight primary compass points. Needing no rotator, it sells for $239.95.

CIRCLE 65 ON READER SERVICE COUPON



Avanti's Moonraker is a four element in-line design with crossed dipoles. It uses Gamma matches and multiplies signal strength 28 times. $157.95.

CIRCLE 70 ON READER SERVICE COUPON



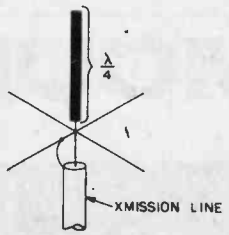
Mosley Mini-Beam GA-5D gets compact size through hermetically sealed high "Q" coils on each element. It exposes less area to wind so lighter towers and rotators can be used. $71.70.

CIRCLE 64 ON READER SERVICE COUPON

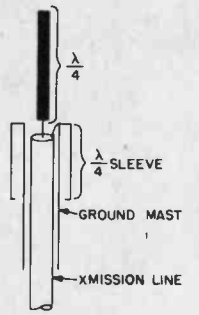
whip—can be available in five, six, or eight models; the only real difference being the mount to which the antenna is attached.

When you come right down to basics, forgetting the mounting methods, you should select the antenna type that has the most desired electrical characteristics for your particular CB operation. You can find some antenna that has the needed mounting system to go along with the necessary electrical performance. After all, the most important thing is not how the antenna system looks, but how it performs.

Base Stations. The basic, or *reference,* base station antenna—the one to which all others are compared—is the "omnidirectional" *ground plane.* The most common form of ground plane antenna has a ¼-wavelength vertical radiator element and three or four horizontal (or semi-horizontal) ground radials at the base of the vertical element. This type of antenna radiates and receives signals with more or less equal intensity in all directions. But all energy is not radiated out to the sides; a good part of the energy is radiated skyward and the only time it can do any good is if you should work a CB flying over your base. The advantages of the ground plane are price—it is often the lowest cost base antenna, and its *omni* pattern that permits you to work stations at any compass heading.



BASIC GROUNDPLANE



COAXIAL ANTENNA

Two types of antennas used by CBers are the vertical groundplane (above), which is the most widely used, and the coaxial antenna (below) which will become more popular, particularly with business users, now that earlier limitations on size and height have been dropped.

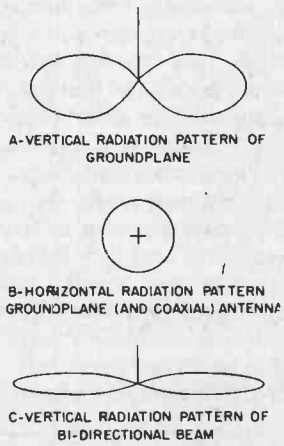
To get more signal out where it can do some good, rather than squirt a good part of it straight up in the air, many manufacturers developed the ⅝-wavelength and ½-wavelength antennas (the vertical radiator element is greater than ¼-wavelength.) This antenna puts a signal *on the ground* up to 3 dB greater than that of an ordinary groundplane, and 3 dB is the equivalent of doubling your transmitter's power output. Where does the extra energy come from? From the sky! Just as with everything in life, you cannot get something from nothing. The omnidirectional "gain" antennas do not create RF energy. What they do is to take a good part of the energy the ¼-wavelength ground plane squirts at the clouds and concentrates it down towards the ground where it can do some good. And since an antenna does for receiving what it does for transmitting, it increases the overall receiving sensitivity of your CB installation by an amount equal to the transmitting gain.

Now if you need to broadcast your signal in every possible direction; or have need to receive signals from all directions, omnidirectional *gain* antenna is a good choice; but if you need to concentrate your transmitter's power in a *specific* direction—for the maximum possible range—the omni is not the best choice. For example, assume you want to work a station due west of your base. The omni antenna is squirting its signal in a full circle; any part of the energy not going out due west isn't doing you any good. What's needed is an antenna that concentrates as much energy as possible in one direction (forward).

An antenna that can concentrate the transmitter's RF energy in one direction —even if only a small amount of RF is so concentrated—is called a *directional beam,* or *beam* for short. The drawings here show how the RF energy can be concentrated; ranging from a broad forward pattern to a narrow pinpoint of concentrated energy. The important thing to keep in mind is that the *outline* of the radiation pattern represents *equal* signal strength. Note that as the energy is beamed into a narrow forward angle the forward signal pushes out. It is possible to so highly concentrate the radiated energy that if the beam antenna is rotated just a few degrees to the side the signal at the receiving station will fade down into the noise level.

There are many different types of beam antennas, ranging from the Yagi design and the Cubical Quad, to the phased arrays. Usually, the manufacturer selects a model designation that implies powerhouse energy, such as *Moonraker, Big Gun,* or *Ultra-Kicker* Whatever it's called, the antenna is a *directional beam.*

Depending on the overall design, including number of elements and spacing, the forward gain compared to a groundplane antenna can range from 3 to 12 dB. Let's assume you have a transmitter with a 4-watt RF output. If your beam antenna has a gain of 3 dB the effect at the receiving station is as if you are still using a groundplane but have doubled the transmitter's output to 8 watts. If you use an antenna with a gain of 6 dB the effect at the receiving station is as if your transmitter's power output were boosted to 16 watts. If the antenna has 10 dB gain you have the equal of a 40 watt transmitter, and if your antenna has a 12 dB forward gain your signal has the punch of 63.4 watts RF output.



Comparison of the radiation (signal) patterns of omni-directional groundplane (and coaxial) and bi-directional beam antennas shown how greater range is possible with the beam since it concentrates more of the signal at a lower angle (closer to the ground).

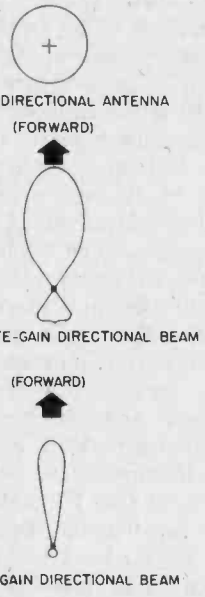
Terrific? Yup. But the advantages of a directional beam don't stop at your transmitter. You also get two important receiving benefits. First, you get exactly the same amount of increase in receiving sensitivity as you do for transmitting. If your beam has 8 dB forward gain for transmitting, you get 8 dB extra forward sensitivity for receiving. Even more important, received signals from the rear and sides are attenuated because the antenna is primarily sensitive to signals arriving from the forward direction—into the front of the antenna. It is not uncommon for receive front-to-back ratios to approach or equal 25 dB. This means that signals arriving into the rear of the antenna are actually attenuated 25 dB in comparison to the same signal received into the front of the antenna. As you can surmise, re-

jection of rear and side signals sharply reduces the amount of interference from signals on the same channel. As long as the physical location of the interfering stations are to the rear and sides of your antenna their signals will be well below what they would be if you were using an omnidirectional antenna.

Pinpointing the signal. If all you're interested in is getting your signal to one specific location you need only erect a mast, aim your beam at the desired receiving location, and tighten the mounting clamps. In fact, you will often see precisely this type of antenna installation on a factory building where CB is being used to communicate between plants spaced well beyond "normal" CB communications range.

But fixed beams aren't the general rule. Most beams are used to work any compass heading, and that means some method must be used to swing the beam through 360 degrees. Most beam designs require an antenna rotator motor of some type. For those who can't afford, or don't want the bother of installing a rotator system, there's the *electrically rotated* beam antenna.

Electrical rotation is accomplished through an antenna with four or more radiating elements. By feeding the elements "out of phase" through different length transmission lines, delay lines, or phasing networks, it is possible to create a "beamed" signal that can be rotated by changing the phasing to the elements. Though early electically rotated, or *phased arrays*, provided maximum forward gain in only four specific directions 90 degrees apart, the modern phase array provides a substantially uniform forward gain through 360 degrees.

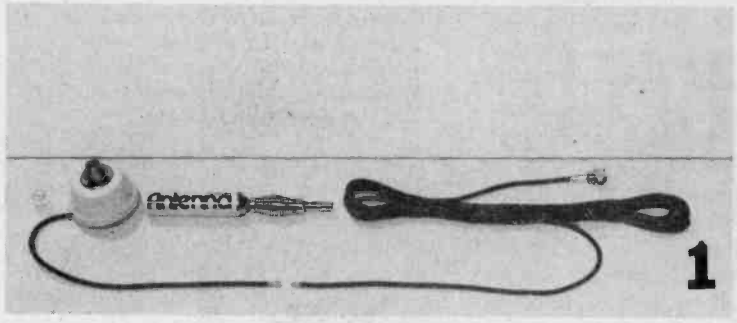


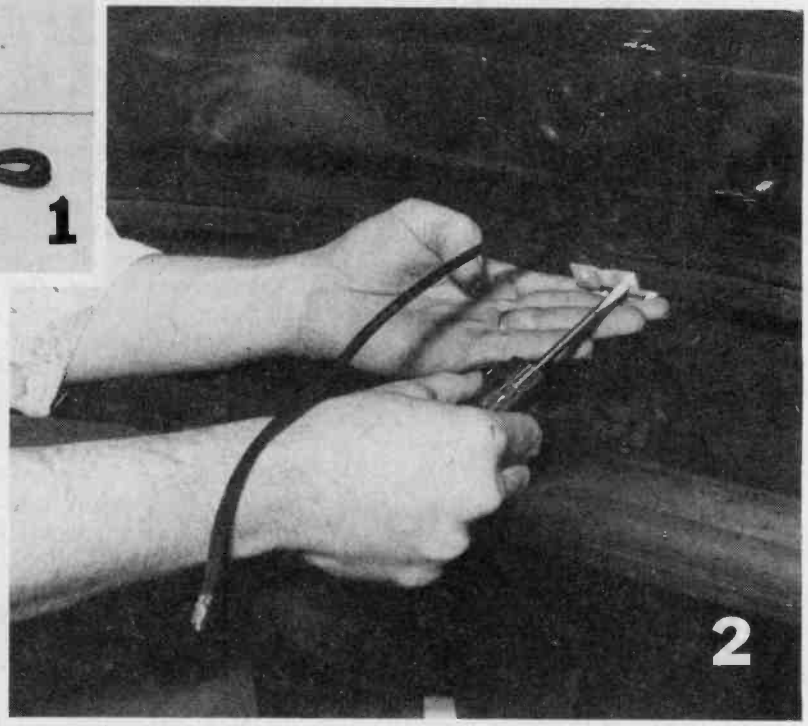
Example of how RF energy is concentrated in the direction (forward) the antenna is pointed, with reduced radiation (signal) to sides and rear, by use of directional beam antennas. The same effect applies on Receive, increasing the strength of signals from the front while reducing the level of those coming from other directions by as much as 25 dB, depending upon the particular antenna in use.

Mobile Antennas. For many years the accepted rule for mobile antennas was: "The longer the better." Generally, a ¼-wavelength whip was the standard of reference for mobiles, and for CB this works out to 108-inches. Theoretically, a ¼-wavelength whip has an impedance of 50 ohms, a value matched by CB tansceivers and mobile transmitters for other services. Problem is, it is almost impossible to get a "solid" groundplane under the whip so funny things start to happen with radiation resistance and radiation patterns. If the 108-inch whip was mounted in the center of the car roof there would be enough of a groundplane under the whip to provide a nominal 50-ohm impedance and an essentially omnidirectional radiation pattern.

But can you imagine 108-inches on top of a car?; it would spear toll booth lights, low lamps, trees, garage doors,

TRUNK LIP MOUNT





CIRCLE 77 ON READER SERVICE COUPON

Recent developments in mobile antenna design make fast, trouble-free installations easier than ever. Antenna Incorporated's model 17610 trunk lip mount antenna with in-line connector (1) can be installed on your car's rear deck with just a screwdriver to secure the clamp (2) that holds the mount in place and protects the coaxial cable from being pinched or broken when opening and closing the trunk lid. The short piece of cable from the antenna is attached to the main length through the in-line connector (3) and the cable is then pushed through to the front of the car (4). The cable is then connected to the CB transceiver via an in-line SWR/wattmeter (5) and the entire system transceiver, coaxial transmission line, and antenna (6) is tuned for minimum SWR and maximum power.

ceilings—in short, a first class pain. So the usual spot for the full length whip became the rear fender or bumper; but this move creates more problems than it solves. First off, the radiation resistance drops to 15 to 35 ohms, the exact value depending on many things such as the precise mounting location, car structure and length of the car. Then you'll find that a rear mounted whip tends to beam its signal over the opposite diagonal fender; for example, if the antenna is mounted on the left rear the signal has a slight beam over the right front fender.

But don't get us wrong, the full-length ¼-wave whip does a fine job considering it's relatively low in cost and somewhat easy to mount (on a bumper). In the early days of CB when 108-inches of steel was the only CB antenna many experimenters improved its performance by physically lengthening the whip about 10 percent and then shortening it *electrically* back to ¼-wavelength with an adjustable (variable) capacitor between the bottom end of the antenna and the transmission line. The physical lengthening resulted in an impedance of almost 50 ohms, a perfect match for the transmitter. With some careful adjustment of the capacitor while observing an SWR meter the antenna could be *tweaked* to appear as an electrical ¼-wavelength.

Problem was, there was now even more steel whipping over the car into lights, doors, trees, and other low-hanging devices.

So we started to see the beginning of the "loaded" antenna. Just as we can electrically tune an oversize element to an electrical ¼-wavelength, so too can we use a loading coil to make a physically short antenna appear as an electrical ¼-wavelength. The difference being, however, that a shortened antenna is not as efficient a radiator as a full-length, or oversize, antenna. But as we'll show, the better mounting location possible with a short antenna compensates for radiation energy loss.

A loading coil can be applied anywhere on the antenna. If located towards the top of the element we say the antenna is "top loaded." If the loading coil is in the center the antenna is "center loaded," and if the loading coil is near the bottom, or base, we say the antenna is "base loaded."

In both the full-length and shortened ¼-wavelength antennas maximum current occurs at the base of the antenna, *and radiation is from the high current area.* If you look at the illustrations you'll see that as the loading coil is moved towards the base the high current area is reduced, and you can logically say the top loaded antenna radiates more energy than a base loaded antenna of equal physical length.

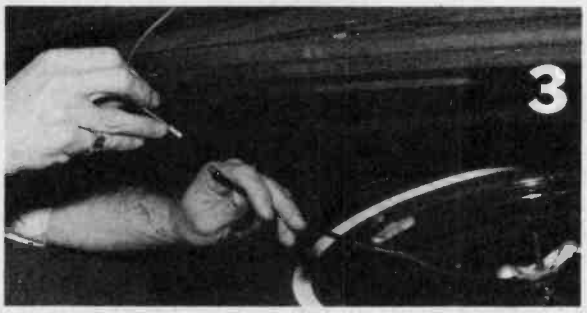
But, and it is a big *but,* this does not mean the top-loaded antenna is more efficient than a base-loaded model. Again, we run into compromises. The top-loaded antenna is an electrical ¼-wavelength but the transmitter sees a low radiation resistance so it cannot transfer maximum energy to the antenna system without a matching device (and matching devices are fairly recent in CB). Nor can the top-loaded antenna be user tuned to compensate for loading variations caused by nearby metal and groundplane configuration.

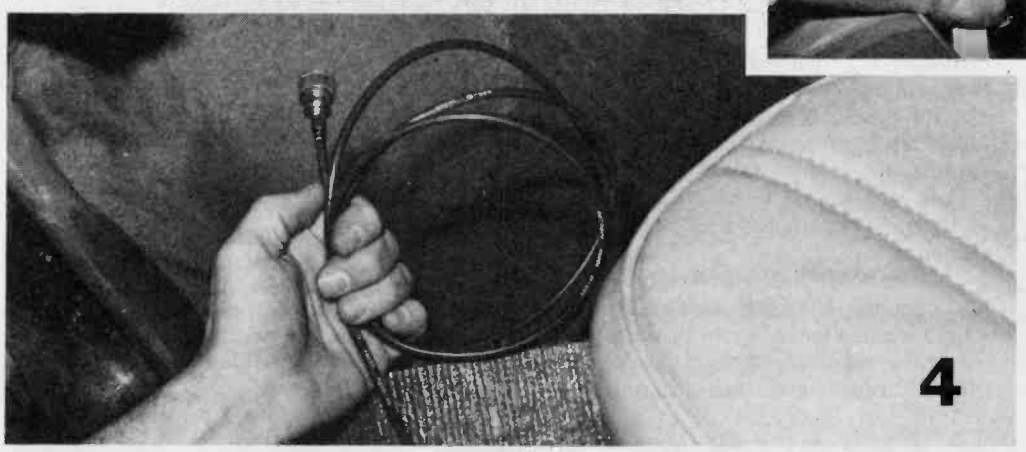
The center-loaded antenna has the advantage of a small, compact loading coil, with (usually) easy tuning for optimum SWR by adjusting the length of the antenna section above the loading coil. But again, the antenna impedance is usually less than 50 ohms.

Base-loaded antennas generally incorporate a matching transformer with the loading coil so the transmitter "sees" a 50 ohm match, and can therefore deliver its maximum power output to the antenna system. The base loaded antenna can be "tuned" for lowest SWR by (generally) adjusting the length of the whip above the loading coil. Though base loaded antennas have narrow bandwidth, it's adequate for CB so the most trouble you'll have is an extra minute or so needed for a precision tuning adjustment—using an SWR meter.

So you see, even though each type of loading has an advantage over the other

ANTENNA INSTALLATION

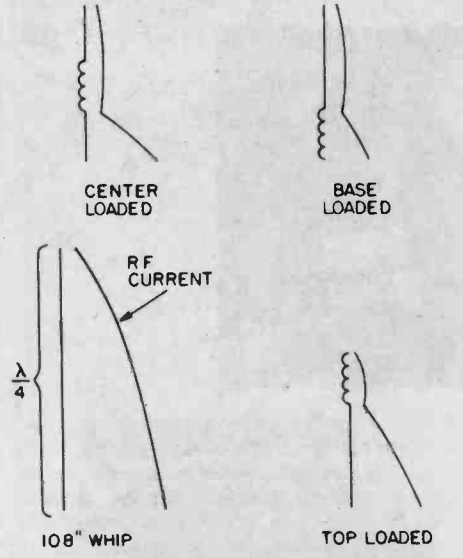




PHOTOS COURTESY ANTENNA INCORPORATED

two, there is a compensating disadvantage, and in the end one antenna works more or less as well as the others. None are basically as good as the full length whip in the center of the car roof, but the full length whip usually isn't mounted on the roof. Loaded antennas, however, are mounted on the roof, or on the trunk lid; in both instances a good ground plane is provided by the vehicle. The good groundplane in combination with the better match provided to the transmitter usually results in the short, loaded antenna working out at least as well as the bumper or fender mounted full length whip. Quite often, the loaded antenna will outperform the whip.

Mobile Specials. Earlier in this article we covered *electrically rotated* beam antennas for base installations. Well, the same idea on a smaller scale is available for mobiles. Known as a *co-phaser,* or some similar term, the electrical mobile beam consists of two whip antennas and a pre-tuned coaxial cable harness. When the antennas are installed on opposite sides of the car and connected with the supplied transmission line (harness), the signal gets beamed in parallel with the car (or truck, as several truck systems for mounting on West Coast mirrors are available). Since the signal is beamed parallel with the vehicle there's a stronger signal directly in front of and behind the car or truck—right down the highway.



Maximum radiation of RF energy is from area of highest current. Thus, as shown here, the 108-inch whip and the top-loaded whip are the most efficient radiators. However, mounting location and other factors tend to equalize the performance of the various antennas.

40-Channel Antennas. Contrary to what you have read in many magazines or heard on the air most "standard" mobile antennas cover all 40-channels. A very few designs, generally the ultra-short compact models, cannot stretch their coverage for efficient radiation on 40 channels; but then again, they weren't all that good on 23 channels.

To understand 40-channel coverage you must accept the fact that an SWR of up to 2:1 simply does not make any difference *in a mobile installation.* A base installation where long cable runs are involved is something else, but for mobile anything up to 2:1 is considered *good.* In fact, most modern transceivers work perfectly well into SWR ratios as high as 3:1, but it can get "hairy," so let's stick to an SWR of 2:1 as the acceptable limit.

Firstly, all full length 108" whips (include the spring in the measurement) cover all 40-channels. A broad-band SWR of less than 1.5:1 across all 40-channels is possible with the newer type of full-length whip that has a small adjustable tip.

Moving on, tests by ELEMENTARY ELECTRONICS magazine show that any loaded antenna 48-inches or longer with a tuning adjustment can be pulled into 40-channel coverage with an SWR no worse than 2:1 on any channel on a mid to large car; 2.5:1 on compacts and sub-compacts.

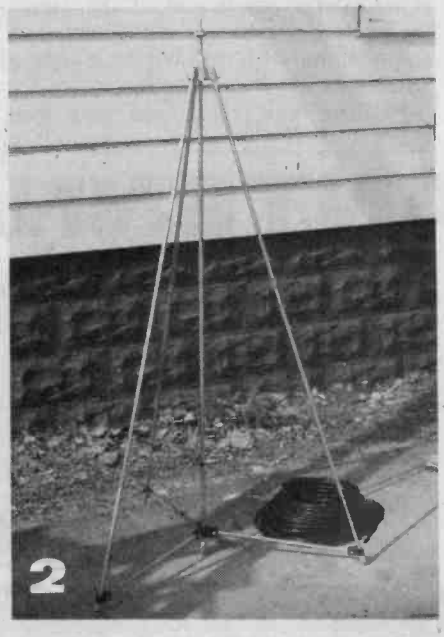
42-inch loaded antennas will generally have an SWR below 3:1 across all 40 channels, but since a SWR value of 3:1 can cause loading problems with some transmitters we therefore limit our 40-channel coverage recommendation to antennas 48-inches or longer.

Keep in mind, however, that on certain vehicles—depending upon their size, shape and where the antenna is located—an antenna between 42 and 48 inches might cover all 40 channels with an SWR of 2:1 or lower. So if you already own an antenna less than 48 inches in length give it a try with your new 40-channel transceiver; measure the SWR across the entire band. If the SWR seems reasonable to you there's probably no reason to purchase a new antenna.

If the "old" antenna won't cover all 40 channels efficiently don't forget that any tuneable antenna can be adjusted to cover a relatively smaller segment of the Citizens Band. For example, one of those short 21-inch rain-gutter sky hooks won't cover a full 40, but it can be tuned to handle, say, channels 15 through 30 with low SWR. If your communications typically run from "trucker 19" to channel 30 you'll get by with the old rain gutter antenna.

The longer the antenna the greater the coverage even if it can't make the full 40. For example, a 42 incher can usually be tuned for efficient performance from channels 9 through 40; and that covers all the important frequencies from national emergency channel 9, through the marine and regional

BASE



CIRCLE 87 ON READER SERVICE COUPON

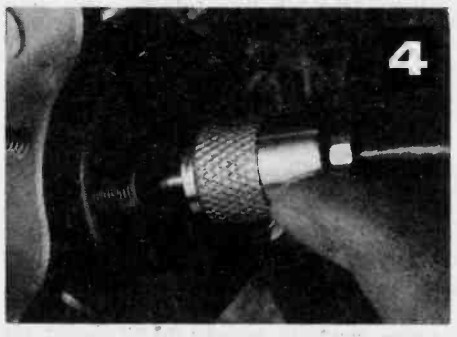
With their Golden Hawk omni-directional half-wave dipole, Channel Master has taken the frustration out of base station antenna installation. Once out of the carton (1), the antenna opens like an umbrella (2), the top and side radials are pulled out and secured in place by knurled collar couplers, the static wires are attached, and the antenna is ready for mounting on the mast. Before putting the antenna on the mast the coaxial cable

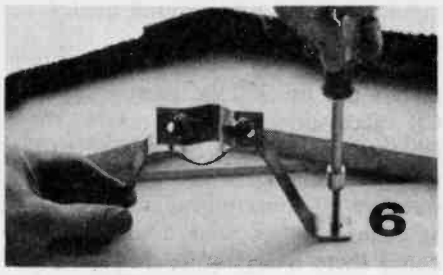
trucker channels, up to the very top of the dial at channel 40. If you don't need or use the bottom eight channels you will probably get by with your present antenna, though the CB BUYERS GUIDE always recommends full-40 coverage—you never know what emergency will turn up—and we suggest you eventually update the antenna system with a 40-channel antenna to compliment your 40-channel transceiver.

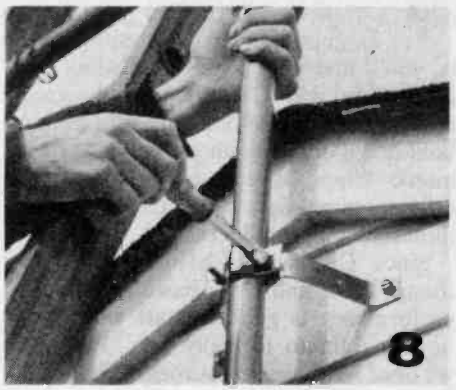
Once you've made up your mind what type of antenna system you'd like to have on the car, RV, or truck, stick to your decision. Don't be talked out of what you want on the grounds that "it can't be mounted on your car," or "we don't recommend that antenna for a truck because it will fall off." When it comes to antennas many CB dealers stock only models they can "turnover" quickly; they don't want to stock some oddball mount that will lie on the shelf gathering dust. But never forget that CB is big enough to handle any unusual mounting situation. Regardless of how oddball or peculiar your antenna mounting situation might appear, someone out there makes, and someone else stocks, exactly the mounting needed for your individual car, truck or what-have-you. Just to show you what's available, in a CB specialty shop near the CB BUYERS GUIDE office we found four different types of bumper mounts, three different types of Hollywood mirror mounts, a clamp mount for securing a whip to the luggage rack of a station wagon, and even a mount welded to *vise-grip* pliers; all this in addition to a seemingless endless assortment of trunk-lip and cowl mounting antennas.

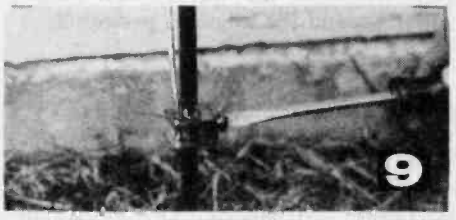
So never give up. There's an antenna system virtually custom made for your vehicle. ■

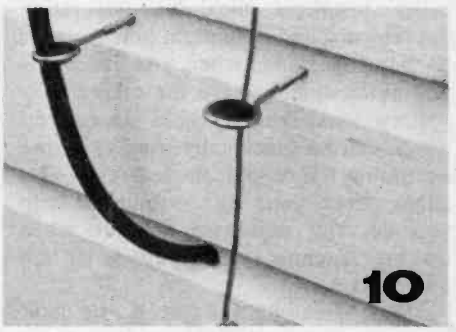
ANTENNA INSTALLATION











PHOTOS COURTESY CHANNEL MASTER

is threaded through the mast section (3) and attached to the antenna with a PL-259 (4). Next the antenna is mounted, sliding the center insulator over the mast and securing it in place (5). Although other types may be used, a popular and easy to install wall mount is shown here. The installer mounts the top and bottom brackets firmly in place against the side of the house (6). Brackets must be flush against the building for maximum support. In the installation shown guying is unnecessary. Making absolutely sure that everything will be well clear of all obstacles—especially overhead high-voltage power lines—the antenna and masting, with cable attached, are put in place (7). The bracket bolts are tightened with a hexagonal-head nut driver (8). The next step is to ground the installation using an in-line lightning arrestor placed at the transceiver end of the system. Then ground line is run from the arrestor to a good earth ground such as a cold water pipe or ground rod (9). After the ground wire has been run, a hole is drilled in the side of the house so the coaxial cable can be brought into the transceiver (10). Entrance may also be made through a window or window frame if preferred. Note that both cable and ground line are supported by standoffs, preventing them from moving about in wind.

ACCESSORIES MAKE CB GO

CITIZENS BAND EQUIPMENT is so well integrated as far as the main components are concerned that you can connect virtually any antenna to any transceiver and be on-the-air with a darn good signal even if you never lay another finger on the equipment other than to press the microphone's push-to-talk (PTT) switch.

Yet as good as the basic equipment is, you'll find your local CB dealers are jam-packed with CB accessories ranging from simple mobile antenna rain gutter hold-down clips, to phone patches, harmonic filters, speech compressors, receive preamplifiers . . . and almost a thousand other gadgets.

Since CB gear is basically so well thought out, and since basic equipment performance is good to start with, you have a right to logically ask "Why do we need all these accessories? What useful purpose do they serve?" CB accessories expand the inherent performance of CB equipment.

In fact, CB accessories are two-edge swords. One edge insures your transceiver and its antenna system will deliver all the inherent performance; the second edge provides the maximum operating convenience. Of course, in many instances maximum operating convenience and maximum performance go hand in hand, when you have one you automatically have the other.

Let's look first at those accessories which can be specifically used to insure maximum RF output; those devices that either check your rig's output, or help you get the maximum output when making antenna system repairs or adjustments.

FSMs. Heading the list is the *field strength meter*, or FSM as it is more commonly called. An FSM acts as a miniature receiver that picks up your transmitter's signal and indicates its *relative* signal strength, much in the same manner as a receiver's S-meter. Since the FSM picks up the signal after it leaves the antenna its reading takes into account every link in the chain from the antenna through the transmission line and finally the antenna, including any meters and/or matching devices you might have in the transmission line.

FSMs come in all sizes and shapes, from a teeny model with a mini-meter and magnetic base you can "clip" to the dash to keep track of your mobile station's output, to large-meter models with an audio jack to which you can plug in a set of headphones so you can monitor or check the sound quality of an AM transceiver.

SWR. Standing Wave Ratio (SWR) meters are one of the most important CB accessories. SWR meters show whether the antenna is matched to the transmission line, which for CB has a standard 50-ohms impedance. When the antenna is other than 50-ohms impedance there is a "mismatch," the exact value measurable with an SWR meter. The SWR meter, which is installed between the transmitter and the transmission line, shows when a mismatch exits between antenna and transmission line. Normally, most CB antennas can be "tuned" (adjusted) for minimum SWR so the transmitter can deliver its maximum power output. You cannot tune the antenna without the SWR meter. Extremely skilled technicians can get a *modertaely good* match by using an FSM, but a higher reading on an FSM does not necessarily mean the antenna is tuned. That's why we say antenna tune-ups with an FSM requires extreme skill—and even then it's not too accurate. So stick with an SWR meter.

SWR meters come in all sizes, shapes and styles. There are inexpensive models no larger than two thumbs side by side that simply indicate SWR. There are larger models that also show the amount of *forward power* (power output from the transmitter) and *reflected power* (power returned by the antenna because of a high SWR and not radiated).

Antenna Matcher. There are even SWR meters incorporated in *antenna matchers*. Often, particularly with some mobile or portable antennas, it is impossible to get a low SWR and the transmitter "sees" an impedance value into which it can deliver substantially less than its potential power output. A matcher is a device that makes the antenna system *appear electrically* as a 50-ohm load to the transmitter. The transmitter gets fooled into seeing 50 ohms so it delivers its maximum power output into the matcher. The matcher in turn pushes the RF out into the antenna system. In effect, the matcher acts as an *RF impedance matching transformer*. But remember, you must use an SWR meter between the transceiver and the matcher, adjusting the matcher's controls for minimum SWR.

Microphones. There are many different types of accessory microphones. Some are "barefoot," meaning a straight, ordinary microphone. Others have built-in preamplifiers, while still others have built-in compressors. Since all modern CB transceivers come with a microphone that will provide at least 85 percent (effectively 100 percent) modulation there is no logical reason why the microphone supplied with the transceiver should be changed. In fact, an amplified accessory microphone will often cause severe modulation distortion unless the volume is turned down to the point where no gain is provided. But if you feel you can add talk power by changing to an accessory microphone it never hurts to try; it might work out best *for you.*

Lightning and Switching. For your own protection and that of your home all base stations should be equipped with a *lightning arrester*, a device that connects btween the end of the transmission line and the transceiver. A wire connected from the arrestor to ground (cold water pipe or outside ground rod) helps bleed off static electric charges that might accumulate on the antenna system. It can't provide complete protection against a direct lightning hit, but it does (so it is claimed by experts) reduce the possibility of a direct hit.

When you must connect one transceiver to two or more antennas, or one antenna to two or more transceivers or radio sets, you could go through the hassle of disconnecting and reconnecting a *rat's nest* of wires. An easier way to do it is with a *coaxial switch*, a special type of switchbox that accepts standard coaxial type connectors. Coaxial switches are commonly available that will enable you to switch up to

half a dozen antennas to one transceiver or two or more transceivers to a single antenna.

Noise Killers. The noises generated by a car's primary and ignition (secondary) systems can often make a weak to moderate strength received CB signal unintelligible. Several types of mobile noise-killer devices can be found in just about every CB salesroom. These devices squash the noise by either bypassing it to ground or actually preventing the noise from moving from the noise producing component to the wiring, where it gets radiated as if the wire was an antenna.

Standard CB mobile noise-killers are intended for specific pieces of equipment, such as a generator and/or alternator noise filter or regulator bypass. If your car is not already equipped with resistor spark plugs or resistor wiring, and the service manual for the vehicle does not specifically recommend against substituting for the original equipment components, you can add "suppressor" wiring and plugs—though you might have to have the engine timing adjusted to compensate for the resistor components.

When your noise problem is so bad none of the low-cost standard noise-killer devices give you much relief, then you must look into the completely shielded ignition wiring kits also available from many CB equipment dealers. These kits are moderately expensive and take some time to install, but they are the only solution when nothing else works.

The Killer. One of the most useful accessories for the mobile CBer is a device known by the name given to the first model made available to the ordinary consumer. It's known as *The Killer*. *The Killer* is a device that connects to your vehicle's AM or AM/FM radio and CB rig. It allows you to monitor the broadcast radio (AM or FM) and still be on standby with your CB transceiver. When a call is received on the CB rig *The Killer* automatically kills the sound from the radio so you can hear the CB call. Similarly, when you transmit the radio is again muted so you don't broadcast the Top Twenty with your CB message.

Hands-Free. An accessory coming into greater popularity among CBers is the boom microphone/headset, the same type of equipment worn by airplane pilots and flight center communicators. This device consists of a single headphone with an attached microphone on the end of an adjustable boom. The PTT switch is generally a combination momentary-contact/push-on, push-off switch attached to the connecting cord with a clip that permits it to be secured to your shirt or jacket. The headphone brings the received signal right up to your ear over the road noise, while the boom keeps the microphone at optimum distance from your mouth, and it follows you as you turn your head while observing traffic. Most important, the locking-PTT-switch models permit you to keep both hands on the wheel when transmitting. If you can't locate a boom headset with a locking PTT look for another accessory known as a "VOX."

VOX. VOX means "voice operated transmit." It is an electronic "black box" that connects between the microphone and the transmitter. When the VOX senses a signal from the microphone it automatically switches the transceiver to transmit. A built in time delay (usually adjustable) holds the transmit mode between normal word spacing. When you stop speaking the VOX releases and resets the transceiver to receive. A VOX feature known as "anti-trip" prevents the transceiver's speaker output that is picked up by the microphone from tripping the transmitter.

Receive Preamplifier. Another accessory that can make a big improvement in CB operation is the receive preamplifier. This device connects between the antenna's transmission line and the receiver or transceiver and provides approximately 20 to 25 dB of gain when receiving; it can dig signals out of the noise you didn't even know were there. If you simply connected an ordinary preamplifier into the antenna system it would block any RF output from your transceiver. The special CB receive preamplifier models sense the RF from your rig and switch the preamplifier out of the circuit, restoring the direct connection between the transceiver and the antenna. The CB preamps are also made to be "fail safe." If they break down the connection between transceiver and antenna is automatically restored—you don't get stuck with a

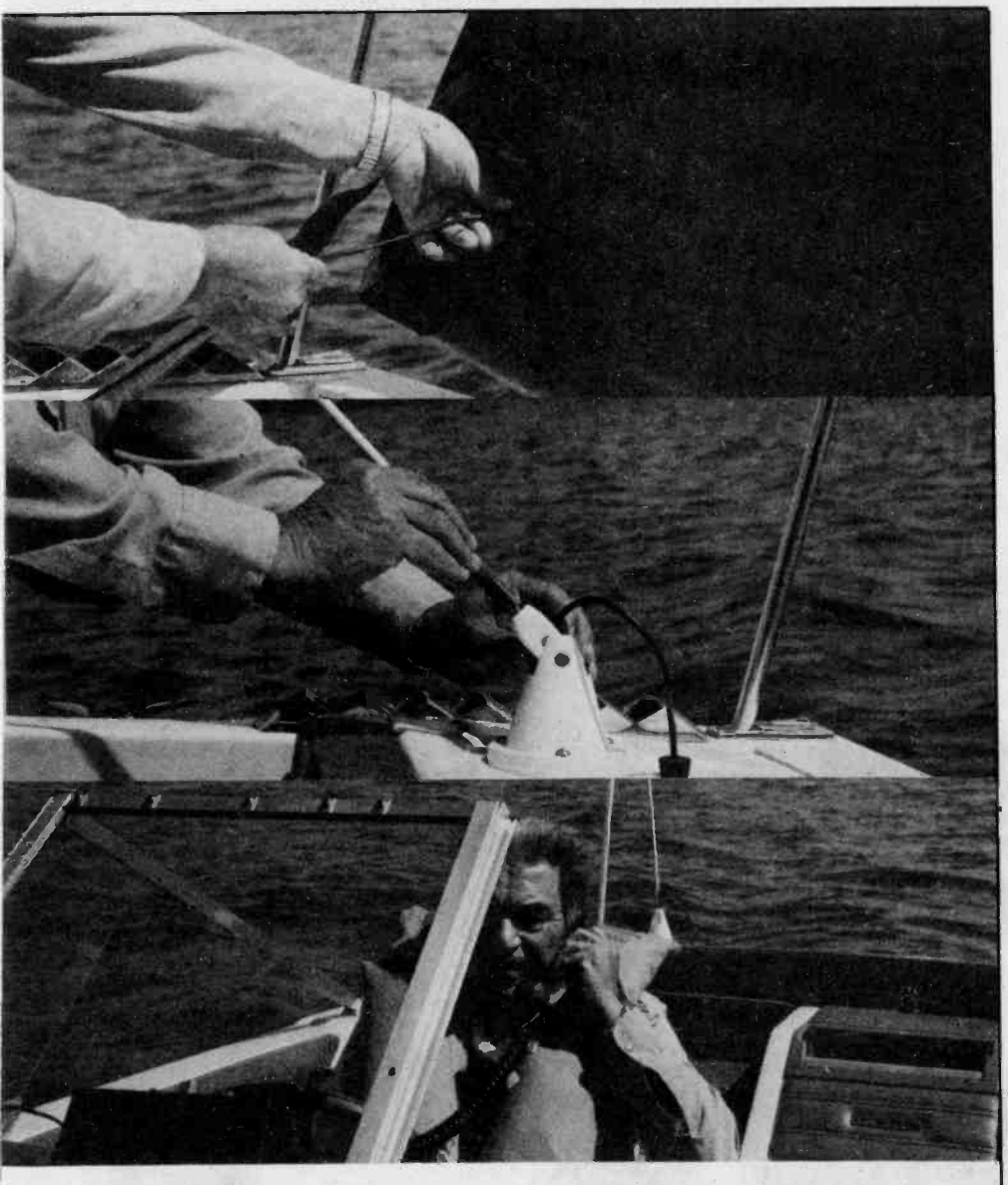
It's hard to believe this photo is of a trucker at the wheel of an eighteen wheeler on the way to OK town on I-40. Looks like the control position of a space shuttle. CB is given prime position where coffee cup would have been five years ago. Accessory speaker is mounted on cab's roof and offers improved sound quality in noisey cab.

The latest trend in CB is the carrying bag for toting your CB rig about when you leave the car. Too many parking lot thefts are made because the thief has watched you put your valuable gear in the trunk. He knows where it is, and needs less than one minute to break in and take off. Help starve a thief into doing work by toting your rig under your arm.

defective preamp that keeps you from using the rest of your equipment.

Phone Patch. The phone patch is one of the most important accessories for base stations that are part of REACT or other rescue operations. The phone patch allows the transceiver to be modulated directly by signals from the telephone line, and it also feeds the received signal directly into the telephone system. In this way a mobile CBer can talk directly to the police and/or emergency service (and vice versa) through a cooperating base station.

Television Interference Filters. If your CB rig is close enough to a neighbor's TV set (like on the other side of a wall), or if your CB antenna is close to the neighbor's TV antenna, there's a good possibility he's getting interference from your CB station. If his TVI (television interference) is caused by overload from your transmitter, as evidenced by a reversed or "negative" picture, or "tearing," he needs a high pass TVI filter at the TV set's antenna input terminals. If the interference is caused by transmitter hamonics—usually seen as "herringbone' lines in the TV picture —the trouble is at your transmitter and can generally be eliminated or reduced with a low pass TVI filter connected directly at your transceiver's output. Sometimes it takes both a low pass filter on your rig and a high pass filter on the TV to get rid of a bad case of TVI.



Adding CB to your boating pleasure and safety is as easy as falling off deck. You must keep in mind that drilling holes in boats can be costly. Also, whether you are on salt water or not, the corrosive effect of the high humidity around boats requires special antennas, products and procedures. First off, select a marine antenna that can do the job and survive the environment. Antenna used in photos is the Radio Shack 102-inch fiberglass marine antenna that requires no ground plane. Holes are drilled in a rear deck panel, and the antenna base and cable are secured (top photo). Lay down feature (middle photo) is important when passing under low bridges. Note black stopper cable passes through. The skipper is one happy man (bottom photo) knowing he can call for help when he needs it.

Better Sound. A few years ago only one manufacturer made available an external mobile speaker; a relatively large (about 3- to 5-inches), efficient speaker mounted in a compact cabinet with a gimbal bracket. Today, you can barely count the number of CB remote or external speakers on the fingers of both hands.

The reason for the sudden popularity of the external speaker is the miniaturization of mobile rigs. As transceivers became smaller the speakers also became smaller, and as speaker size decreases, the low frequency efficiency is sharply reduced. Also, with most mobile transceivers having the speaker on the bottom the received sound is directed at the floor rather than at the operator. If you add reduced low frequency response to sound beamed at the floor of the car it adds up to reduced intelligibility at the operator's position—which is generally behind the wheel. Now if you mount a remote or external speaker on or under the dash, it can be beamed directly at the operator, providing clearer, cleaner sound quality. The improvement in received signal intelligence is often startling. In fact, many times the difference between a budget and high priced transceiver is a larger cabinet and large forward-facing loudspeaker. Add your own remote/external speaker, which simply plugs into the external speaker jack on the back of your transceiver, and you get *big-rig* sound from a compact.

Customizer Components. Elsewhere in this issue of the CB BUYERS GUIDE we tell you how to customize your mobile antenna. Virtually every part of a mobile antenna system is available as a separate accessory, including a pre-cut length of coaxial cable complete with coax plug and terminals. You can fabricate just about any type of mobile antenna from these accessory components.

Connectors Galore. While there is a certain amount of stardardization as to the types of jacks, plugs, and other

connectors used—the SO-239 is finally becoming the universal antenna input connector—you will run across uncommon jacks and plugs on some transceivers. Virtually every type of plug, jack, fuseholder and power cord used on a CB transceiver is available as an accessory from the larger mail order and local CB equipment dealers. So don't be afraid to customize your CB installation simply because you might need what appears to be an oddball connector. It's an odds-on bet it's available from a CB shop.

BC to CB. There might be some particular reason you need to monitor CB but have no use for transmitting. If this is your bag you can do the job for a lot less than the cost of a transceiver by using an accessory device usually called a "Citizens Band Converter" that permits you to hear CB frequencies on your car radio. And with a flip of the switch you restore normal AM broadcast reception.

Stop Thief! Your CB mobile rig can be stolen even if its welded to the dash, for there is a firm rule that no security system—whether for car, home, or office—is totally secure against the skilled professional thief. But there's no reason to make things easy for him. Any hood looking into your car who sees a mobile rig held in place with a couple of screws can figure he needs only a couple of free moments to remove your pride and joy. In fact, another rule states that if you can make theft difficult the thief will look for easier pickings, for he usually won't spend hours for the same score he can make in minutes. So make things as difficult as possible, use an accessory mobile locking bracket for your transceiver. These locking brackets require a key to release the mobile rig, and while it won't stop the hood determined to get your particular rig (assuming he's got the time to hacksaw his way through your locking bracket without being seen), it will stop the kid who tries to make a fast grab-and run.

Special Mounts. While we're on the subject of mobile rigs let's face the fact that some foreign cars and some new American sub-compacts leave no room for a typical under-dash mobile installation. If you can't get the rig under the dash look a little lower for there are several accessory floor mounts available that accommodate everything from a flat floor to an oversize transmission-tunnel hump. And don't overlook the quick-release under-dash mount that carries the power supply and/or external speaker connection. You can just slip the rig into the mount and the power and external speaker connections (if you use an external speaker) are made; all you need do is attach the antenna connector. And often, with a little ingenuity you can even make the antenna connection automatic.

Is It Working? We have saved for last what we consider one of the most important CB accessories for base or mobile installations: the *inline wattmeter.* The inline wattmeter is just what it says it is, a wattmeter permanently connected into the transmission line. If the reading suddenly decreases, or increases above normal (which is really a "false" power reading), you know for certain you've got troubles, and you know the reason your signal isn't getting out. Inline wattmeters are really specially calibrated circuits equivalent to the *forward power* circuits in SWR meters, and many times you'll find an SWR meter also does double-duty as an inline wattmeter.

Okay, So Now You Know. Somewhere, someplace is a CB accessory to make your CB operations—no matter how good—even better. There is no valid excuse for not realizing the full potential of Citizens Band radio. If you can think of something that would make a useful accessory, chances are someone has already though of it, and there's probably at least one CB dealer in your area who has just the CB accessory you're looking for. ■

CB LANGUAGE

Mercy sakes alive, Good Buddys, let the hammer up on those doggone Papermates. Polish Ham ten-fours your bodacious requests. Here's a bundle of CB lingo you've been picking up on your ears like bugs on a bumper for sure. Brain bank 'em and you'll turn into a regular CB ratchet jaws. Four? Now, Good Buddys, keep the greasy side down and the shiny side up. Stack them eights. We gone.

—Polish Ham, KGK 3915

Advertising—A marked police car that has its lights turned on.

Back door—Last vehicle (truck) in a string of three or more—all in contact with each other.

Bear—Policeman.

Bear Cave—Police station or post on highway.

Beat the Bushes—"Front door" (lead vehicle) looks for Smokey by going fast enough to draw him out of hiding. See also "Shake the leaves."

Bodacious—Good signal; clear transmission.

Break One-Oh—Also "Break 10"—I want to talk (on Channel 10).

Bushels—One-half-ton; a 20-ton load would be 40 bushels.

Camera—Police radar unit.

Catch You on the Old Flip/Flop—Catch you on the radio on a return trip.

Check the Seatcovers—Watch for a female driver with her skirt pulled up.

Chicken Coop—Highway truck weigh station.

Clean—No Smokies around.

Comic Books—Truckdrivers' log sheets or log books.

Cotton Picker—Cotton picker (instead of four-letter words on the air).

County Mounty—County sheriff or highway patrol.

Ears—Antennas or radios. (See also "Smokey with Ears.")

Eatum-Up—Roadside restaurant.

Eighteen Wheeler—Any semi-tractor truck with any number of wheels.

Fat Load—Overload, more weight than local state law allows.

Feed the Bears—Collect a ticket from Smokey.

Five-Five—55, the legal limit in most places.

Four—Abbreviation of "10-4," meaning "OK."

Four Ten—10-4, emphatically.

Four Wheeler—Passenger car.

Front Door—First vehicle (truck) in string of three or more trucks in radio contact.

Grass—Side of the road or median strip.

Green Stamps—Dollars.

Green Stamp Road—Tollway.

Hammer—Accelerator.
Hammer Down—Highballing; driving fast.
Handle—Slang names used by CBers.
In the Grass—Parked or pulled over on the median strip.
Keep Your Nose Between the Ditches and Smokey Out of Your Britches—Drive safely and look out for speed traps and speeding fines.
Keep the Greasy Side Down and the Shiny Side Up—Drive safely.
Kenosha Cadillac—Any car made by AMC.
Let the Channel Roll—Let others break in and use the channel.
Mercy—Oh, wow! (Yes, truckdrivers really do say this.)
Negatory—No. Negative reply.
On the Move—Driving, moving.
On the Side—Parked or pulled over on the shoulder.
Other Half—Wife (usually) or husband.
Plain Wrapper—Police car with no markings; unmarked car.
Picture Taker—Same as "Camera"—a police radar unit.
Pickum-Up—Light truck; pickup truck.
Polish Ham—Your Editor, Julian Martin.
Pounds—Number on S-meter (S-3 is three pounds, etc.).
Pregnant Roller Skate—Volkeswagen.
Put the Good Numbers on You—Threes and eights—best regards, etc.
Rake the Leaves—Back door or last vehicle in string, bringing up the rear.
Ratchet Jaw—Nonstop talker.
Rest-Um Up—Roadside rest area.
Rig—CB radio; tractor (double meaning).
Rocking Chair—Vehicle that's between the front door and back door in a string of vehicles.
Roger Rollerskate—Passenger car going more than 20 mph over the limit.
Roller Skate—Small car.
Seatcovers—Occupants of passenger car, usually attractive females.
Shake the Leaves—Act as lead vehicle to decoy any Smokies out of hiding. See also "Beat the Bushes."
Six Wheeler—Passenger car pulling a trailer.
Smokey—The police.
Smokey on Four Legs—Mounted police (used in New York City and Chicago only).
Smokey the Bear—State Police Patrol (with or without a Smokey the Bear hat).
Smokey with Ears—Police listening on CB.
Stack them Eights—Best regards.
Sweeping Leaves—Bringing up the rear. See also "Back Door," and "Raking the Leaves."
Thirty Three—10-33, This is an emergency.
Threes on You—Best regards.
Threes and Eights—Lots of best regards.
Tijuana Taxi—Well marked police car.
Train Station—Traffic court that fines everybody.
Two Wheeler—Motorbike, motorcycle.
Two Way Radar—Radar used from moving police car.
Wall to Wall—Peg full-scale on S-meter.
Wall to Wall Bears—High concentration of police with strict enforcement, traps, etc.
We Gone—Stopping our sending, will listen.
Wrapper—Color; "Blue wrapper" is a blue car, usually an unmarked police car.
XYL—Wife.

CODES OFTEN USED BY LAW ENFORCEMENT AGENCIES OFFICIAL 10-CODE SIGNALS

The official Associated Public Safety Communications Officers, Inc. (APCO) Ten Signals have been revised and now consist of only 34 signals.

10-1—Signal weak
10-2—Signal good
10-3—Stop transmitting
10-4—Affirmative (OK)
10-5—Relay (to)
10-6—Busy
10-7—Out of service
10-8—In service
10-9—Say again
10-10—Negative
10-11—_____On duty
10-12—Stand by (Stop)
10-13—Existing conditions
10-14—Message/information
10-15—Message delivered
10-16—Reply to message
10-17—Enroute
10-18—Urgent
10-19—(In) Contact
10-20—Location
10-21—Call (_____) by phone
10-22—Disregard
10-23—Arrive at scene
10-24—Assignment completed
10-25—Report to (Meet)
10-26—Estimated arrival time
10-27—License/permit info
10-28—Ownership information
10-29—Records check
10-30—Danger/caution
10-31—Pick up
10-32—_____Units needed Specify/number/type
10-33—Help me quick
10-34—Time

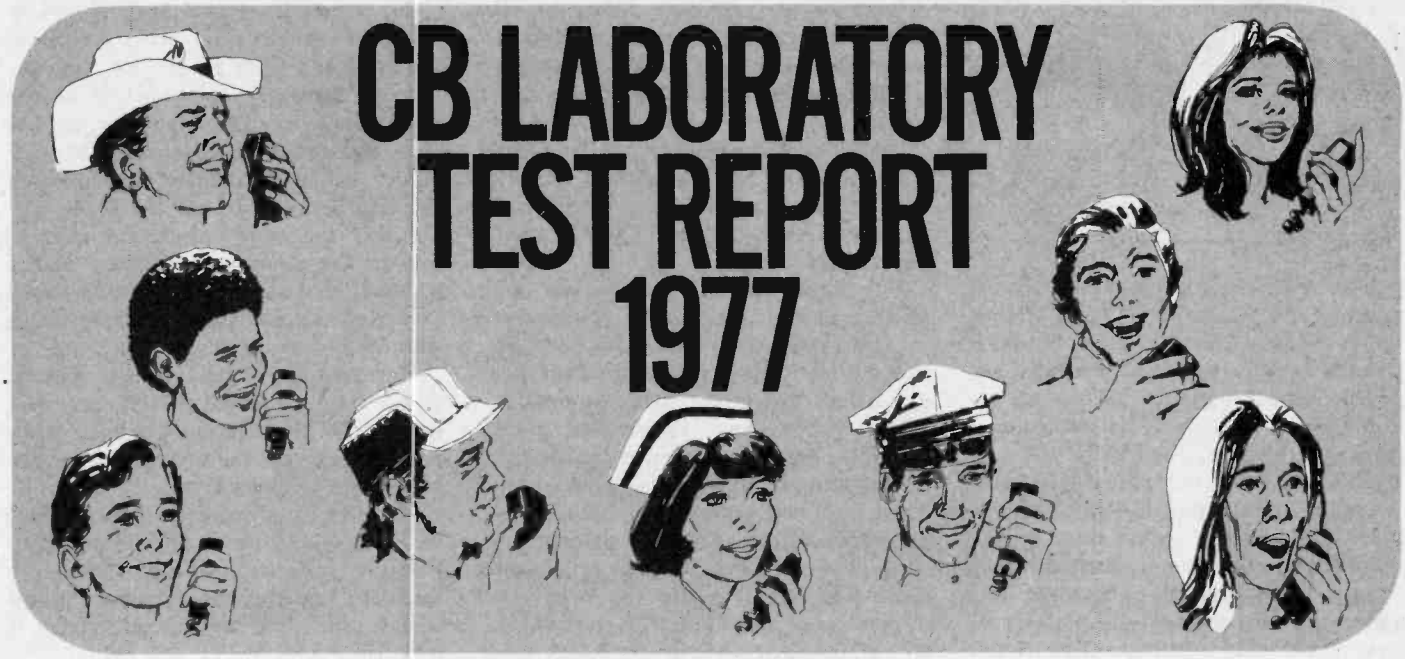
ADDITIONAL CODES

11-7—Prowler
11-6—Shooting
11-8—Person down
11-10—Take a report
11-11—Investigate
11-13—Injured
11-14—Dog bite
11-30—Incomplete phone call
11-31—Calling for help
11-40—Notify if ambulance needed
11-41—Ambulance needed
11-42—Ambulance not needed
11-44—Coroner's case
11-45—Attempted suicide
11-46—Report of death
11-47—Injured person
11-48—Furnish transportation
11-50—Shakedown vehicle
11-51—Shakedown pedestrian
11-52—Are you O.K.? (If response is other than "Affirmative," cover will be sent.)
11-71—Fire
11-80—Serious injury accident
11-81—Minor injury accident
11-82—No injury accident
11-83—No detail accident
11-84—Traffic control
11-85—Tow car wanted
11-88—Citizen assist
11-99—Officer needs help.

CODE TWO—Urgent (observe traffic laws)
CODE THREE—Emergency (red light & siren)
CODE FOUR—No further cover required
CODE FIVE—Stake out
CODE SIX—Stay out of area
CODE SEVEN—Eating
CODE NINE—Remove ties
CODE TEN—In service via walkie talkie
CODE THIRTY-SEVEN—Subject wanted (misdemeanor or felony)

PHONETIC ALPHABET

A—Adam	**J**—John	**S**—Sam
B—Boy	**K**—King	**T**—Tom
C—Charles	**L**—Lincoln	**U**—Union
D—David	**M**—Mary	**V**—Victor
E—Edward	**N**—Nora	**W**—William
F—Frank	**O**—Ocean	**X**—X-ray
G—George	**P**—Paul	**Y**—Young
H—Henry	**Q**—Queen	**Z**—Zebra
I—Ida	**R**—Robert	



CB LABORATORY TEST REPORT 1977

TESTING 1, 2, 3. . . . transceivers tested for the 1977 CB BUYERS GUIDE are only those models currently available on dealer's shelves. We do not test prototypes or *one-of-a-kinds* because the performance of the final production model or the specific model you purchase might well be different from that of the test unit. Those CB transceivers which are "standard stock" have been thoroughly tested and checked, and you can depend on our test results and reports before you put your money on the counter.

Because of the unavailability of many 40-channel transceivers in time for testing and inclusion in this edition of the CB BUYERS GUIDE we are for the first time listing a number of untested units. The information given here is exactly the same for both tested and untested equipment with the exception of the test results for those transceivers actually tested in our laboratory.

As usual, our tests are geared to actual operating conditions rather than laboratory (artificial) standards, so you can judge for yourself exactly which models meet your particular communications requirements.

By active involvement in CB communications for many years, and by specific monitoring of CB communications from the viewpoint of most effective performance, we determined the typical range of signals encountered in day-to-day use, and the typical operation of both business and personal stations. Our test procedures for the transceivers were then specifically adapted to the typical operating practices and signals.

For example, it appears CBers use the squelch control to mute the background (no signal) noise level, not to mute specific signal levels. Therefore, though many manufacturers specify a squelch release at so many microvolts above a specified signal level, this value is useless, as most CBers, quite rightly, use the *minimum* degree of squelch needed to mute the background noise which can vary from almost zero to almost S9, depending on the user's location. Since all transceivers we tested release the squelch within, at worst, 1 μV of the measured input sensitivity, it was not considered necessary to include the "squelch release" specification.

More Sock! Audio limiting, talk power boost, etc., are other examples of our user-oriented testing program. Any transceiver which has built-in 100 percent modulation limiting has a built-in talk power booster, for if the user raises his or her voice the loud volume peaks will be clipped, or level-limited, and this is how a talk power booster is supposed to work. Some transceivers have built-in compressors which increase the average modulation level in much the same manner and degree as the clippers and limiters. All those which claimed compression did provide some degree of compression. Since all compressors and limiters worked, there was no need to say so in our test reports.

Note that limiting and/or compression per se do not necessarily guarantee effective talk power. The transmit sound quality among transceiver models varied from bassy to high pitched, and for this reason a station's effective talk power would primarily depend on the user's voice quality rather than on limiting or compression.

AGC (automatic gain control) is supposed to equalize extreme variations in input signal level to reduce the possibility of the speaker blasting the eardrums. From our experience, the typical input signal range is 2 to 10,000 μV; hence, our AGC test is limited to this range of received signal strength.

Similarly, all CB transmitters are designed to work into matching antenna systems of nominally 50 ohms impedance. There is, therefore, no need to test or measure performance with the transmitter working into a load of other than 50 ohms.

Useful Info Only. The performance specifications given for each model are those obtained from test signals intended to synthesize the typical useful range of required performance. No attempt was made to secure test results for performance which was not typical of required usage, nor was any attempt made to realign or readjust a transceiver to secure optimum performance. All measurements were made with the transceiver exactly as supplied. Regardless of the manufacturer's stated test procedures (if such were stated in the service manual), all transceivers were tested in exactly the same manner.

Because many solid-state models have almost 100 percent effective AGC systems, and because many transceivers deliberately desensitize the front end on strong signals (to prevent severe overload), we rate selectivity in terms of *effective* adjacent channel rejection.

By way of explanation, overall receiver selectivity tests are usually made by applying an on-channel modulated test signal at rated sensitivity, then measur-

(Continued on following page)

ing the increase in input signal needed to cause the same audio output from a signal on an adjacent channel. The difference between the on-channel and adjacent-channel signal is the overall selectivity and is termed adjacent channel rejection.

Depending on the particular transceiver, adjacent channel rejection was rated one of three ways: first, by the usual technique; second, where a strong signal desensitized the receiver, by measuring the adjacent-channel signal input which reduced the on-channel signal's audio output to that of the adjacent channel (two signal generators mixed into the antenna input); and third, when a receiver would desensitize only on the high or low side of the desired channel, by showing the worst case.

Receiver Sensitivity. We use the standard test procedure for receiver sensitivity: Sensitivity in microvolts for a 10 dB signal plus noise to noise ratio, expressed as "μV for 10 dB S+N/N." (A few manufacturers still use test procedures which produce astronomically high sensitivity values; hence, their claimed sensitivity values will appear reduced compared to our reports.)

In the sensitivity test, a signal is applied to the receiver with 30 percent modulation at 1000 Hz, and the output level is measured. Then the modulation is turned off and the output level is again measured. The signal input level to the receiver is progressively reduced until a point is reached where there is a 10 dB difference in output level between the modulated signal and the signal without modulation (noise). The input level to the receiver which produces this 10 dB difference is the receiver sensitivity in microvolts (μV).

In most instances our sensitivity rating appears considerably lower than that claimed by the manufacturer. This is generally due to variations between the manufacturer's "peak-aligned" models used for the advertising tests, and the normal production-line alignment. Also, solid-state gear has very wide transistor characteristics—the gain of individual transistors can vary by a factor of 2X and 3X.

It is quite possible that two identical transceivers made from the same group of components will have different performance characteristics. Therefore, it would not be wrong to state that the transceiver you purchase will give better or poorer performance than the results shown in the test reports. And this difference rule can be applied to any aspect of the transceiver's performance, from receiver sensitivity to 100 percent modulation limiting.

For those who might question our reliance on the 10 dB S+N/N sensitivity test rather than the 6 dB S+N/N test, we offer this explanation: Previous and extensive tests by many communications groups have shown that more than 80 percent intelligence can be extracted from a radio-phone signal whose input level will produce a minimum 10 dB S+N/N ratio. (And 80 percent intelligence extraction is the minimum acceptable figure before the receiving station loses continuity of meaning.) An input signal which produces less than the 10 dB ratio, e.g. 6 dB S+N/N, will generally deliver less than 80 percent intelligence extraction, while a signal level producing more than a 10 dB ratio, say, 15 dB S+N/N, will approach 100 percent intelligence extraction.

Receiver Selectivity. . . . is the ability of the receiver section to reject interference from CB stations on channels adjacent to the one you are monitoring. For example, if channel 9 is the monitored channel, signals on channels 8 and 10 are adjacent channel signals, and are the ones which the receiver must attenuate in order to receive the channel 9 signal cleanly without excessive interference.

Selectivity is often expressed in terms of "dB down," or "–dB," or "dB adjacent channel rejection." Consequently, a receiver showing 45 dB adjacent channel rejection is more selective (and less likely to suffer adjacent channel interference) than a receiver rated for 35 dB adjacent channel rejection.

As with the sensitivity tests, our tests often indicate less selectivity than specified by the manufacturer. Again, this is partly due to the measurement techniques. Some manufacturers use an unmodulated carrier test. This always produces relatively high ratings not truly indicative of actual operating experience (where modulated signals are the rule).

Another technique involves measurement through only the IF amplifiers, excluding the front end. Though this is an honest test procedure it does not allow for the front end favoring reception towards one side of the desired channel (because of crystal tolerances).

Our selectivity tests were done in such a manner as to closely simulate typical operating conditions. First, the audio output level was measured when a signal exactly on center channel (channel 11) with 30 percent modulation at 1000 Hz was applied at the rated sensitivity. The applied signal was then adjusted ±10 kHz (one channel either side of the center channel) and the level increased until the audio output was the equal of the on-channel signal. The amount of increase of the adjacent channel's signal is equal to the "inverted" selectivity and is expressed in dB adjacent channel rejection.

For example, if the adjacent channel signal were increased 50 dB, it would mean "50 dB adjacent channel rejection." The larger the number, the greater the receiver selectivity.

Because some receivers "desensitize" well below the input levels needed to measure selectivity, these models are tested by applying the adjacent channel signal until the on-channel signal is desensitized.

Using input signal through the antenna input generally resulted in selectivity ratings inconsistent with the manufacturer's claims. In most instances this is because of production-line alignment variations. If the receiver alignment is not exact (or if crystal tolerance is at the extreme of the tolerance limit), the overall receiver sensitivity will be greater off the center channel, and this will producer sharply reduced selectivity measurements. However, since tolerance is allowed (even in the transmitter it's 0.005 percent), the manufacturer should not be penalized.

Image Rejection Measurements. A superheterodyne receiver is primarily sensitive to two frequencies—the desired one and the so-called image. The image signal is removed from the desired signal by twice the IF frequency. For example, assuming a transceiver with a 1-MHz IF amplifier is tuned to 27.065 MHz, the local oscillator could be 1 MHz *below* the desired signal at 26.065 MHz. (The 26.065-MHz local oscillator, beating against the 27.065-MHz signal, produces the IF frequency of 1 MHz, which is the difference between the two signals.) However, should a signal of 25.065 MHz leak through the input, it will also be converted to 1 MHz and appear as interference.

Double-conversion circuits are used primarily to reduce interference by producing a first IF frequency so far removed from the desired CB frequency that normal circuit rejection results in a low image sensitivity. Single-conversion receivers are far more prone to image interference, but luckily it works out that the image frequencies are used very little if at all.

Unlike previous years in which image

interference rejection ranged from very good to very poor, almost all the modern transceivers tested for this issue met the minimum image rejection suitable for today's crowded Citizens Band. Since there is essentially no effective difference to the CBer between say, 50 dB and 80 dB image rejection, to avoid getting caught up in a meaningless numbers game we are not providing image rejection measurements. All transceivers in our test reports have a minimum image rejection suitable for CB. Any transceiver that could not meet the minimum image rejection standard was rejected and is not listed.

AGC Action. Every receiver has AGC (automatic gain control) to prevent overload by excessively strong signals and to reduce speaker blasting by strong signals. If a receiver's volume control was turned all the way up to monitor a very weak station, without AGC the CBer would be literally blasted out of his seat when a strong signal came on the channel.

A receiver's AGC action was tested between the extremes of a very weak signal (2*u*V) and a moderately strong signal (10,000 *u*V), the difference in level between the two signals being 62 dB.

The better the receiver's AGC system the smaller will be the ratio between the two signals' audio output (from the speaker). A very good AGC system would reduce the 62 dB spread to a more ear-pleasing 2 to 7 dB. The smaller the AGC specification, the better the AGC action (4 dB is better than 9 dB).

SSB Opposite Sideband Rejection. With the ever increasing popularity of SSB it's become vitally important that SSB transceivers have sufficient *opposite sideband rejection* to prevent interference from SSB stations using the opposite sideband of the same channel. For example, if you were working on the lower sideband of channel 16 you should experience no, or almost no interference from stations using the upper sideband. (Yes, with good sideband equipment it is actually possible for two separate SSB contacts to be held on the same channel without creating interference to the other.) Approximately 40 dB (or more) opposite sideband rejection is all that's needed to insure freedom from opposite sideband interference. A higher value, say 55 dB, does not necessarily mean better reception because once the reception is free of interference it's as good as it will be. So there's no need to look any further than the "magic" fugure of 40 dB opposite sideband rejection.

RF Output Power. RF power output is the transceiver's output power in watts when loaded by a 50-ohm dummy load. FCC requirements limit the output power to 4 watts. In a few of the test reports in this issue the RF power output was found to be in excess of 4 watts. The small fractional wattage causing the excess in legal RF output may be peculiar to only the set tested and not the entire product run coming off the assembly line. It is the responsibility of the user to make certain his equipment conforms to regulations.

Modulation to 85 Percent. There is no effective difference, as far as reception is concerned, between 85 percent and 100 percent modulation. Good engineering practice only requires that transmitters be modulated to 85 percent on average peaks. The difference between 85 percent and 100 percent represents meter inaccuracies and protection against sudden modulation peaks.

Under difficult conditions, such as ignition noise, the intelligence extracted from a signal depends almost entirely on the modulation characteristics and the percent modulation.

Our test results only indicate whether the transceiver is capable of being modulated *through the microphone* to at least 85 percent.

Percent modulation was tested by feeding a 1000-Hz signal into the microphone. A 1000-Hz signal was chosen because it is the center of the speech frequencies.

Relative Sensitivity For 85 Percent Modulation. In this test a 1000-Hz signal was fed into the microphone. The test signal level was adjusted until the oscilloscope indicated 85 percent modulation, or the maximum obtainable modulation with low distortion.

The figures given are the direct instrument readings and have no reference value. We determined by experimentation that −15 dB is approximately equivalent to an average loud voice.

The lower the reading, the more sensitive the microphone, i.e., −20 dB is more sensitive than −30 dB. Actually, it is not a case of microphone sensitivity (do not consider changing microphones), but the overall amplification from the microphone to the modulator.

High sensitivity is not necessarily good. Under high noise conditions you might prefer low sensitivity so the microphone would not pick up ambient noise (such as in a moving vehicle). To ensure low noise interference, a noise-cancelling microphone—which reduces background noise from the rear of the microphone—would logically be combined with low mike sensitivity.

In a quiet office, where you would not think of raising your voice, a highly sensitive modulator and microphone would be preferred.

Modulation Limited to 100 Percent. FCC regulations specifically prohibit modulation of either the positive or negative peak in excess of 100 percent. Negative modulation in excess of 100 percent produces carrier interruption with resultant interference (splatter) on adjacent channels (possibly several adjacent channels). There is no real, logical reason why the positive peak should have also been limited to 100 percent. Our tests indicate over-modulation if the negative peak can exceed 100 percent modulation.

DB Per S-Unit. It is commonly accepted that an S-unit is equal to a change in received signal strength of (nominally) 6 dB (double or half the reference signal voltage at the antenna terminals). This calibration was shown not to be the general rule among CB transceivers. In nearly all instances, the S-meter was nothing more than a *relative* signal strength meter.

Using the Test Info. The test results are intended to assist you in selecting a particular transceiver meeting most, or almost all, of your needs. There are several aspects of transceiver selection, however, which must be considered in addition to the hard measurement specifications. To start with, comparison of test specifications between different models is valid only if *our* test results are compared against each other. There is no lavue in comparing our results against a manufacturer's claims, or aaginst test results in any other publication. The normal instrument tolerances between our test equipment and any other test equipment is unknown, hence, our interpretation of performance is valid only for our tests which are all made with the same set of test equipment. For example, at the low signal levels involved in receiver testing it is not unusual for two signal generators of the same make and production run to have a total combined tolerance of 20 percent—this is one major difference. Then, if there is a periodic variation in the meter readings it would not be unlikely that a manufacturer would choose the reading that reflects superior performance. ■

Turn to next page for CB Transceiver Test Reports

• AIRCOMMAND CB-140
$139.95 (Superscope, Inc.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Front panel switches, jack and controls include Volume/Off, Channel Selector, Squelch, PA/CB, LED

CIRCLE 81 ON READER SERVICE COUPON

Digital Channel Readout, LED Meter Display of unique design that monitors RF Power, Modulation and Input Signal.
Editorial Remarks: The CB-140 features "advanced" mike and preamp design to provide 100 percent modulation. ■

• AIRCOMMAND CB-340
$179.95 (Superscope, Inc.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Front panel switches, jack and controls include PA/CB, RF Gain/Off/Volume, Delta Tune/Squelch, Noise Blanker, Automatic Noise

CIRCLE 81 ON READER SERVICE COUPON

Limiter, Channel Selector, LED Digital Channel Readout, Microphone Jack, LED Meter Display of unique design that monitors RF Power, Modulation and Input Signal.
Editorial Remarks: The CB-340 features "advanced" mike and preamp design to provide 100 percent modulation. ■

• AIRCOMMAND CB-640
$229.95 (Superscope, Inc.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Front panel switches, jack and controls include PA/CB, RF Gain/Volume, Delta Tune/Squelch, CAL, Noise Blanker, Scan, SWR/CAL/PWR, Microphone Jack, Channel Selector, LED Digital Channel Readout, LED Meter Display of unique design that monitors RF Power, Modulation, and Input Signal.

CIRCLE 81 ON READER SERVICE COUPON

Editorial Remarks: The top-of-the-line CB-640 offers an emergency channel 9 scanner which constantly monitors channel 9 and beeps audibly when a transmission takes place. ■

• ALARON B-4075
$99.95 (B&B Import-Export Inc.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Power supply 12 VDC with positive or negative ground. Front

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panel switches, controls and jacks include illuminated Channel Selector, PA/CB, Delta Tune, Volume, transmit and receive indicator lights, Mike Jack, Squelch, illuminated S/RF Meter. Dimensions: 8½-in. x 6-in. x 2-in.
Editorial Remarks: The B-4075 has a built-in automatic noise limiter, jacks for PA and extension speakers, dynamic microphone with coiled cable, mounting bracket, microphone bracket, power cable with fuse holder and fuse. ■

• ALARON B-4900
$119.95 (B&B Import-Export Inc.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 12 VDC with positive or negative ground. Front panel switches and controls include Volume, Squelch, RF Gain, Delta

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Tune, Noise-Blanker/ANL, PA/CB, Channel Selector with LED digital readout, S/RF Meter. Dimensions: 8½-in. x 7-in. x 2¼-in.
Editorial Remarks: The B-4900 has a dynamic microphone with coiled cable and fastener ring on plug fits jack on left side of chassis. Other features: jacks for PA and extension speakers, transmit and receive indicator lights, mounting bracket and microphone hanger. ■

• ALARON B-5050
$124.95 (B&B Import-Export Inc.)
General Description: A 40-channel AM tansceiver for base, PA operation. Power source 105-120 VAC. Front panel switches, controls and jacks include Volume, Squelch, PA/CB, Channel Selector, S/RF Meter. Dimensions: 11¾-in. x 9½-in. x 4-in.

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Editorial Remarks: The B-5050 PA/CB Function Switch includes a Local-Distant RF Gain capability. Other features: built-in automatic noise limiter, transmit and receive indica-

tor lights, phase lock loop synthesizer system, jacks for PA and extension speakers and for headphones. Accessories included: dynamic microphone, AC cord, DC power cord with fuse holder and fuse, mounting hardware. ■

• ALARON B-5200
$199.95 (B&B Import-Export Inc.)
General Description: A 40-channel in-dash AM transceiver with AM/FM-Multiplex radio for mobile operation. Power source 11-15 VDC with positive or negative ground. Front panel switches and controls include pushbuttons for Standby, Radio/CB, ANL, DX-LO. Also Slide

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Lever Delta Tune and Squelch, Illuminated S/RF Meter, CB transmit/receive lights, slide rule radio dial. Dimensions: 7-in. x 5⅞-in. x 2⅛-in.
Editorial Remarks: The B-5200 has a channel selector and LED digital readout built into the microphone. Other features: phase lock loop synthesizer system, adjustable radio control shafts, power cable with fuse holder and fuse, mounting system. ■

• ALARON B-5750
$249.95 (B&B Import-Export Inc.)
General Description: A 40-channel in-dash AM transceiver with AM/FM-Multiplex radio and cassette stereo player for mobile operation. Power supply 11-15 VDC with positive or negative ground. Front panel

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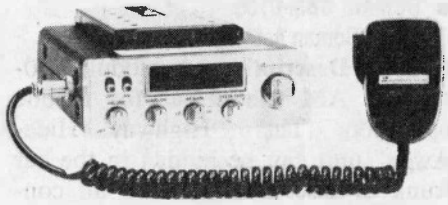
switches and controls include AM/FM Mono/FM Stereo, Volume, Squelch, Tone, Tape Controls. Dimensions: 7¼-in. x 6½-in. x 2⅛-in.
Editorial Remarks: The B-5750 has a CB channel selector and LED digital readout on the microphone. Other features: phase lock loop synthesizer system, mounting hardware. ■

• AUTOMATIC RADIO CBH-2265
$202.50 (Automatic Radio)
General Description: An under-dash 40-channel AM transceiver for mobile, PA operation. Front panel switches and controls include Volume/Off, Squelch, RF Gain, Delta



CIRCLE 83 ON READER SERVICE COUPON

Tune, Automatic Noise Limiter, PA/CB, Channel Selector, S/RF Meter, Transmitting and Receiving Lights, Digital Readout.
Editorial Remarks: The CBH-2265 comes with a slip-out mounting bracket that permits quick and easy removal of the unit for safe keeping. ■

• AUTOMATIC RADIO CBL-2270
$181.95 (Automatic Radio)
General Description: An under-dash 40-channel AM transceiver for mobile, PA operation. Front panel switches, jack and controls include Volume, Squelch, RF Gain, Auto-

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matic Noise Limiter, Delta Tune, PA/CB, TX and RX Indicator Lights, Microphone Jack, Channel Selector, S/RF Meter.
Editorial Remarks: The CBL-2270 comes with a slip-out mounting bracket that permits quick and easy removal of the unit for safe keeping. ■

• BOMAN CB-910
$149.95 (Boman Astrosonix)
General Description: A 40-channel AM transceiver for mobile, PA oper-

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ation. Positive or negative ground operation. Front panel switches, jacks and controls include S/RF Meter, Volume/Off, Squelch/PA, Channel Selector, Microphone Jack.
Editorial Remarks: The compact CB-910 does not feature LED digital channel readout as do other Boman models. However, it does offer phase lock loop circuitry, automatic modulation limiting, and automatic noise limiting. ■

• BOMAN CB-920
$169.95 (Boman Astrosonix)
General Description: A 40-channel AM transceiver for mobile, PA operation. For positive or negative ground operation. Front panel switches, jacks and controls include LED Digital

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Channel Readout (with LED dimmer), S/RF Meter, Noise Blanker, Automatic Noise Limiter, Transmit Mode Indicator Light, PA.
Editorial Remarks: The CB-920 features automatic modulation limiting, local/distant control, external speaker jack. ■

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• BOMAN CB-930
$199.95 (Boman Astrosonix)
General Description: A 40-channel AM transceiver for mobile, PA oper-

ation. For positive or negative ground operation. Front panel switches and controls include LED Digital Channel Readout (with LED dimmer), Automatic Noise Limiting, Noise Blanker, Delta Tune, RF Gain, S/RF/SWR Meter with SWR Calibrator, CB Monitor, Tone, Modulation Light.

Editorial Remarks: The CB-930 offers built-in automatic modulation control as part of the phase lock loop circuit, PA capability, external speaker jack. ■

• BOMAN CB-950

$389.95 (Boman Astrosonix)

General Description: A 40-channel AM/SSB transceiver for mobile, PA operation. For positive or negative ground operation. Front panel switches and controls include LED Digital Channel Readout (with LED trim-

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mer), S/RF/SWR Meter, SWR Calibrator, AM/LSB/USB Mode, RF Gain, Clarifier, Noise Blanking, Modulation Indicator.

Editorial Remarks: Other features of the CB-950 include an external speaker jack, phase lock loop circuitry, PA capability. This model is Boman's best under-dash CB transceiver. ■

• BOMAN CBH-990

$269.95 (Boman Astrosonix)

General Description: A 40-channel AM transceiver for base station, PA or mobile operation. Operates on either 115 VAC or 12 VDC. Front panel switches, jacks and controls include S/RF Meter, LED Digital Channel Readout, RF Gain, Delta Tune, Automatic Noise Limiter,

CIRCLE 84 ON READER SERVICE COUPON

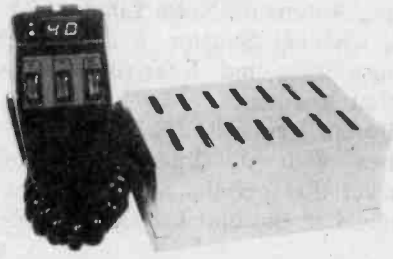
Noise Blanking, Tone, PA, Jack for Earphones.

Editorial Remarks: The CBH-990 incorporates digital synthesis and phase lock loop circuitry. ■

• BOMAN CBM-6100

$299.95 (Boman Astrosonix)

General Description: A modular 40-channel AM transceiver for mobile operation. This "Highway Hide-Away" unit can be hidden in the car trunk or elsewhere because all controls are built into the microphone.



CIRCLE 84 ON READER SERVICE COUPON

The microphone switches and controls include an Up/Down Two Speed Channel Selector, Microphone Gain, Squelch, Volume, LED Digital Channel Readout.

Editorial Remarks: The CBM-6100 features phase lock loop circuitry and an instantly detachable microphone. ■

• BOMAN CBR-9600

$249.97 (Boman Astrosonix)

General Description: An in-dash 40-channel AM/FM-MPX Radio/Transceiver. Front panel switches and controls include, Tone, Balance, DX Pushbutton, Stereo Indicator, S/RF

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Meter, Automatic Noise Limiter, Standby, LED Digital Channel Readout, Transmit Mode Indicator Light. For positive or negative ground operation.

Editorial Remarks: The CBR-9600 incorporates digital synthesis and phase lock loop circuitry. ■

• BOMAN CBR-9700

$329.95 (Boman Astrosonix)

General Description: An in-dash 40-channel AM/FM-MPX Radio/Transceiver. Front panel switches and controls include Continuous Tone and Volume, Stereo Indicator, Standby

CIRCLE 84 ON READER SERVICE COUPON

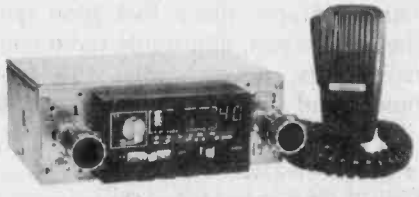
CB Monitor, LED Digital Channel Readout, Delta Tune. For positive or negative ground operation.

Editorial Remarks: The CBR-9700 incorporates phase lock loop circuitry and built-in noise limiting. ■

• BOMAN CBR-9940

$359.95 (Boman Astrosonix)

General Description: An in-dash 40-channel AM/FM-MPX Pushbutton Radio / Transceiver. Front panel switches and controls include FM Stereo Indicator, Continuous Tone



CIRCLE 84 ON READER SERVICE COUPON

and Volume, Front Antenna Trimmer, Standby Monitor, LED Digital Channel Readout, S/RF Meter, Delta Tune. For positive or negative ground operation.

Editorial Remarks: The CBR-9940 features phase lock loop circuitry and built-in automatic noise limiting. ■

• BOMAN CBR-9950

$389.95 (Boman Astrosonix)

General Description: An in-dash 40-channel AM/FM-MPX Pushbutton Radio / Transceiver. Front panel switches and controls include a Balance for Left and Right Speakers, Tone, FM Local/Distant Selector,

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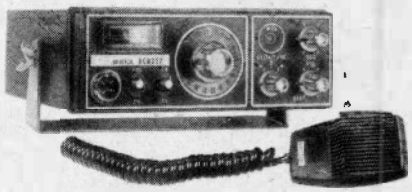
FM Stereo Indicator, Antenna Trimmer, LED Digital Channel Readout, Transmit and Receive Mode Indicator Lights, CB Stand-by, S/RF Meter, Automatic Noise Limiter. For positive or negative ground operation.
Editorial Remarks: The CBR-9950 features a four-way fader control for maximum utilization of a 4-way speaker system, quick-set pushbuttons for favorite AM and FM stations, phase lock loop circuitry. ■

• BRISTOL MODEL BCB-227
$199.00 (Bristol Electronics, Inc.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Front panel switches, jack and controls include Volume/Off, Delta



CIRCLE 85 ON READER SERVICE COUPON

Tune, Squelch, Modulation Indicator, Automatic Noise Limiter, PA/CB, Microphone Jack, Channel Selector, S/RF Meter.
Editorial Remarks: The BCB-227 utilizes phase lock loop frequency synthesizing circuitry. ■

• BROWNING BARON
$429.95 (Browning Laboratories)
General Description: A 40-channel SSB/AM transceiver for mobile, PA operation. Power source 11.6 to 16 VDC, with 12 VDC nominal, positive or negative ground. Front panel switches and controls include Volume/RF/Off, RF PWR/SWR/Clarifier, Off/Automatic Noise Limiter/

CIRCLE 86 ON READER SERVICE COUPON

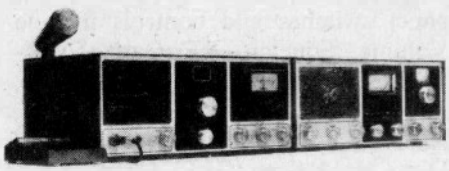
Squelch, AM/LSB/USB, Off/Noise Blanker, SWR/CAL, PA/CB, DIM/BRIT, Meter, Channel Selector, LED Digital Channel Readout.
Editorial Remarks: Baron accessories include chrome mounting bracket, microphone with coil cord, tamper-proof bolts with custom wrench, spare fuses. ■

• BROWNING BROWNIE
$159.95 (Browning Laboratories)
General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 12.4 to 15.2 VDC, 13.8 VDC nominal, with positive or negative ground. Front panel

CIRCLE 86 ON READER SERVICE COUPON

switches, jacks and controls include Volume / Off, Squelch, Automatic Noise Limiter, PA/CB, Channel Selector, Microphone Jack.
Editorial Remarks: Brownie accessories include a chrome mounting bracket, microphone with coil cord, tamper-proof bolts with custom wrench, spare fuses. ■

• BROWNING GOLDEN EAGLE MARK IV
$895.00 (Browning Laboratories)
General Description: A 40-channel SSB/AM transceiver for base station operation. Power source 117 VAC. Front panel switches and controls on the receiver unit include Volume/Off/On, Tone, RF Gain/AGC/On, AM / LSB / USB, CB / HF / XTL, Squelch/Automatic Noise Limiter, Bandspread, Varactor Fine Tune with 300 degree rotation, Meter. Front



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panel switches, jacks and controls on the transmitter unit include Test/Reset/LED, Spot, Microphone Jack, Scan Rate, AM/LSB/USB, SWR Cal, Meter/FWD/REF, Meter, LED Digital Channel Readout.
Editorial Remarks: The two-unit Golden Eagle includes a "Transcan System" which lets you turn a knob and electronically sweep all transmit frequencies. Standard equipment includes a Browning Model 776 high-output, high-impedance dynamic microphone; the Astatic GD-104 microphone is an extra-cost option. ■

• BROWNING SABRE
$239.95 (Browning Laboratories)
General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 11.5 to 16 VDC, 12 VDC nominal, with positive or negative ground. Front panel switches and controls include Volume/Tone/Off, RF/SWR/Delta Tune, Automatic Noise Limiter/Off, Squelch,

CIRCLE 86 ON READER SERVICE COUPON

Noise Blanker/Off, SWR/CAL, PA/CB, Dim/Brit, Meter, Channel Selector, LED Digital Channel Readout, On-Air Indicator.
Editorial Remarks: Sabre accessories include a chrome mounting bracket, microphone with coil cord, tamper-proof bolts with custom wrench, spare fuses. ■

• BROWNING SST
$199.95 (Browning Laboratories)
General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 11.5 to 16 VDC, 12 VDC nominal, with positive or negative ground. Front panel switches and controls include Volume/Off,

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Delta Tune, Squelch, Noise Blanker/Off, PA/CB, On-Air Indicator, Meter, Channel Selector.
Editorial Remarks: The SST features phase lock loop circuitry and comes with such accessories as chrome mounting bracket, microphone with coil cord, tamper-proof bolts with custom wrench, spare fuses. ■

• CHANNEL MASTER SUPER PHASE 40
$159.95 (Channel Master)
General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 13.8 VDC with positive or negative ground. Front panel switches, controls and jacks include Volume, Squelch, RF Gain, PA/CB, Noise-Blanker/Automatic

CIRCLE 87 ON READER SERVICE COUPON

Noise Limiter, Delta Tune, Channel Selector with LED digital indicator, illuminated S/RF Meter, Mike Jack. Size: 2½-in. h x 8½-in. d x 6¾-in. w.
Editorial Remarks: The Super Phase 40 features a phase lock loop circuit, ceramic filter, self-contained 3-in. speaker, and jacks for antenna, PA speaker and remote speaker. ■

• COBRA 21XLR
$179.95 (Dynascan Corp.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 13.8 VDC with positive or negative ground. Front panel switches, controls and jacks include Volume, Squelch, Dynamike Gain, Automatic Noise Limiter, PA/

CIRCLE 88 ON READER SERVICE COUPON

CB, Channel Selector Dimmer, Channel Selector, LED Digital Readout, Mike Jack, RF/Signal Strength Meter.
Editorial Remarks: The 21XLR provides PA capability, and a digital channel readout with a continuous dimmer. ■

• COBRA 29XLR
$229.95 (Dynascan Corp.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 13.8 VDC with positive or negative ground. Front panel switches and controls include Volume, Squelch, Dynamike Gain, SWR-CAL, RF Gain, Delta Tune, SWR/CAL/S-RF, LED Dimmer, PA/CB, Hash Filter, Noise-Blanker/Automatic Noise Limiter, Modulation Light, Channel Selector, LED Digital

CIRCLE 88 ON READER SERVICE COUPON

Readout, SWR/RF/Signal Strength Meter. The Mike Jack is on the left side of the chasis.
Editorial Remarks: The 29XLR features modulation and transmit lights, extension speaker capability, Dynamike gain control, and a dual-conversion type receiver. ■

• COBRA 32XLR
$279. 95 (Dynascan Corp.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 13.8 VDC with positive or negative ground. Front panel switches and controls include Volume, Squelch, RF Gain, SWR-CAL, Dynamike Gain, Delta Tune, percent Mod/RF, SWR/CAL/OFF, NB-ANL/ANL/OFF, PA/CB, Brite/Dim, Hold/Scan/OFF, Channel Selector, LED digital Readout, Meter, Transmit Indicator. The Mike Jack is on the left side of the chassis.
Editorial Remarks: The 32XLR features Scan Alert which monitors emergency channel 9 during normal use of other channels. The meter is a multi-purpose RF/Signal Strength/

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Modulation/SWR instrument. Other features include external speaker jack, PA capability. ■

• COBRA 77X
$149.95 (Dynascan Corp.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 13.8 VDC with positive or negative ground. Front panel switches, controls and jacks include Volume, Squelch, Dynamike

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Gain, PA/CB, Automatic Noise Limiter, Channel Selector, RF/Signal Strength Meter, Mike Jack.
Editorial Remarks: The 77X is a compact, basic mobile unit without frills, but with such conveniences as PA capability and switchable noise limiting. ■

• COBRA 86XLR
$199.95 (Dynascan Corp.)
General Description: A 40-channel AM transceiver for base station, mobile and PA operation. Power source 120 VAC, or 13.8 VDC with positive or negative ground. Front panel

CIRCLE 88 ON READER SERVICE COUPON

switches, controls and jack include Volume, Dynamike Gain, Squelch, Delta Tune, Automatic Noise Limit-

er, Channel Selector, RF Output/ Signal Strength Meter, Mike Jack.
Editorial Remarks: The 86XLR features plug-in dynamic microphone, detachable power cords. ■

• COBRA 89XLR
$289.95 (Dynascan Corp.)
General Description: A 40-channel AM transceiver for base station, mobile, PA operation. Power source 120 VAC, or 13.8 VDC with positive or negative ground. Front panel switches, controls and jack include

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Volume, Squelch, Dynamike Gain, RF Gain, SWR-CAL, Delta Tune, Tone, Automatic Noise Limiter, PA/ CB, SWR / SWR-CAL / RF-MOD, Channel Selector, LED Digital Readout, S/RF PWR Meter, SWR/MOD Meter, Mike Jack.
Editorial Remarks: The 89XLR base station features an angled control panel, two meters, AC/DC power capability. ■

• COBRA 132XLR
$399.95 (Dynascan Corp.)
General Description: A 40-channel AM/SSB transceiver for mobile, PA operation. Power source 13.8 VDC with positive or negative ground. Front panel switches and controls include Volume, Squelch, RF Gain, SWR-CAL, Dynamike Gain, "Voice Lock" (Delta Tune), percent Mod/RF,

CIRCLE 88 ON READER SERVICE

SWR/CAL/OFF, Brite/Dim, Noise-Blanker/Automatic Noise Limiter/ Off, PA/CB, AM/USB/LSB, Channel Selector, LED Digital Readout, Meter. The Mike Jack is on the left side of the chassis.
Editorial Remarks: The 132XLR utilizes a multi-purpose meter (RF/ Signal Strength/Modulation/SWR). Other features include a microphone gain control, transmit light, mode indicator. ■

• COBRA 135XLR
$519.95 (Dynascan Corp.)
General Description: A 40-channel AM/SSB transceiver for base station, mobile, PA operation. Power source 120 VAC, or 13.8 VDC with positive or negative ground. Front panel switches, controls and jack include Power On/Off, Auto On/Off, PA/ CB, SWR-CAL/Measurement, Noise-Blanking/Automatic Noise Limiter, SWR-CAL, Squelch, RF Gain, Volume, "Voice Lock" (Delta Tune), Mode (AM/USB/LSB), Dynamike Gain, Mike Jack, Modulation Light,

CIRCLE 88 ON READER SERVICE COUPON

Transmit Indicator, Channel Selector, LED Digital Readout.
Editorial Remarks: The 135XLR features a digital clock, multi-purpose meter (SWR / RF Output / Signal Strength), and an angled control deck. ■

• COBRA 138XLR
$349.95 (Dynascan Corp.)
General Description: A 40-channel AM/SSB transceiver for mobile, PA operation. Power source 13.8 VDC with positive or negative ground. Front panel switches and controls include Volume, Squelch, Dynamike Gain, RF Gain, AM/USB/LSB,

CIRCLE 88 ON READER SERVICE COUPON

"Voice Lock" (Delta Tune), Noise-Blanker/Automatic Noise Limiter/ Off, PA/CB, Tone Control, LED Dimmer, Transmit Light, Channel Selector, LED Digital Readout.
Editorial Remarks: The 138XLR has jacks for external speaker and PA, RF/Signal Strength Meter. ■

• COBRA 139XLR
$449.95 (Dynascan Corp.)
General Description: A 40-channel AM/SSB transceiver for base station, mobile, PA operation. Power source 120 VAC, or 13.8 VDC with positive or negative ground. Front panel switches, controls and jack include Volume, Squelch, Dynamike Gain, RF Gain, SWR-CAL, "Voice Lock"

CIRCLE 88 ON READER SERVICE COUPON

(Delta Tune), Mode (AM/USB/ LSB), Noise - Blanker / Automatic Noise Limiter/ANL/Off, PA/CB, SWR/SWR-CAL/RF-MOD, Channel Selector, LED Digital Readout, Mike Jack.
Editorial Remarks: The 139XLR base station features an angled control deck and two meters—an S/RF Power meter and an SWR/Mod meter. ■

• CORNELL-DUBILIER MARK 12
$149.95 (Cornell-Dubilier Electric)
General Description: A 40-channel AM transceiver for mobile operation. Front panel switches, jack and controls include Volume, Squelch, TX Indicator Light, S/RF Meter, Channel Selector, LED Digital Channel

CIRCLE 89 ON READER SERVICE COUPON

Readout.

Editorial Remarks: The Mark 12 is very compact, measuring only 7-in. w x 2.4-in. h x 7.7-in. d. It features a dual conversion receiver, ceramic IF filter and an automatic modulation control. ■

• CORNELL-DUBILIER MARK 16

$229.95 (Cornell-Dubilier Electric)

General Description: A 40-channel AM transceiver for mobile, PA operation. Front panel switches, jack and controls include Volume/RF, SWR/Squelch, Delta Tune, PA/CB, Noise Blanker, SWR/CAL, Microphone Jack, S/RF/SWR Meter, Channel Selector, LED Digital Channel Readout.

Editorial Remarks: The Mark 16 also features transmit and receive indicator lamps, ceramic IF Filter, protected RF output and regulated power supply. ■

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• CORNELL-DUBILIER MARK 26

$374.95 (Cornell-Dubilier Electric)

General Description: A 40-channel AM/SSB transceiver for mobile, PA operation. Front panel switches and controls include Volume/RF, SWR/Squelch, AM/LSB/USB, Clarifier, PA/CB, Noise Blanker, SWR/CAL, S/RF/SWR Meter, Channel Selector, LED Digital Channel Readout.

Editorial Remarks: The Mark 26 also features transmit and receive indicator lamps, ceramic IF filter, protected RF output and a regulated power supply. ■

• COURIER BLAZER 40D

$149.95 (Fanon/Courier Corp.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 2⅜-in. h x 5⅞-in. w x 8½-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, RF Gain, PA/CB, ANL. Standard accessories are microphone, mobile mount, DC power cable.

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Receiver Section Test:

Input Sensitivity	0.28 μV
Adjacent Channel Rejection	57 dB
AGC Action	10 dB
Input Level for S9	26 μV

Transmitter Section Test:

AM RF Output	4.0 watts
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—32 dB
Modulation Limited to 100%	no

Editorial Remarks: The Courier Blazer 40D has an S-meter that reads 5 dB per S-meter, double conversion receiver, external and PA speaker jacks, LED digital channel indicator, and S/RF output meter. ■

• COURIER CARAVELLE 40D

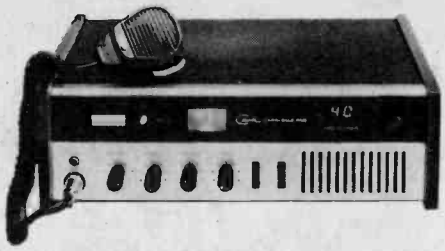
$239.95 (Fanon/Courier Corp.)

General Description: A 40-channel AM transceiver for mobile, PA, fixed operation. Power supply 12 to 13.8 VDC with negative or positive ground and 120 VAC. Overall dimensions are 5⅜-in. h x 15-3/16-in. w x 10¼-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, RF Gain, Tone, PA/CB, Tone. Standard accessories are microphone and AC power cable.

Receiver Section Test:

Input Sensitivity	0.3 μV
Adjacent Channel Rejection	65 dB
AGC Action	5.5 dB
Input Level for S9	40 μV

Transmitter Section Test:



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AM RF Output	3.9 watts
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—27 dB
Modulation Limited to 100%	yes

Editorial Remarks: The Courier Caravelle 40D has a relative reading S-meter, double conversion receiver, PA speaker and headphone jacks, LED digital channel indicator, and S/RF output meter. ■

• COURIER CENTURION PLL 40

$569.95 (Fanon/Courier Corp.)

General Description: A 40-channel AM/SSB transceiver for mobile, PA, fixed operation. Fine tuning ±1.5 kHz provided. Power supply 12 to 13.8 VDC with positive or negative ground and 120 VAC. Features digital clock.

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Overall dimensions are 7-in. h x 15-9/16-in. w x 12¼-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, Clarifier, RF Gain, SWR Meter Calibrate, Power, AM/LSB/USB, PA/CB, Noise Blanker, SWR Meter Calibrate. Standard accessories are microphone, DC power cable, AC power cable.

Receiver Section Test:

Input Sensitivity	0.5 μV
Adjacent Channel Rejection	59 dB
AGC Action	5 dB
SSB Opposite Sideband Rejection	60 dB
Input Level for S9	110 μV

Transmitter Section Test:

AM RF Output	3.7 watts
SSB RF Output	15 watts PEP
Modulation to 85%	yes

Relative Sensitivity for
85% Modulation .....—31 dB
Modulation Limited to 100% .....yes

Editorial Remarks: The Courier Centurion PLL 40 has a relative reading S-meter, double conversion receiver, external and PA speaker jacks, front panel headphone jack, SWR meter, and S/RF output meter. The digital clock can turn receiver on at preset time. ■

• COURIER CLASSIC PLL 40

$239.95 (Fanon/Courier Corp.)

General Description: A 40-channel AM transceiver for mobile, PA, fixed operation. Delta tuning ±1.2 kHz provided. Power supply 12 to 13.8 VDC with negative or positive ground and 120 VAC. Overall dimensions are 2⅝-in. h. x 7½-in. w x 9½-in. d. Front panel controls and switches for Channel Selector, Volume,

CIRCLE 90 ON READER SERVICE COUPON

Squelch, Power, DX/Local Sensitivity, Delta Tune, ANL. Standard accessories are microphone, mobile mount, DC power cable, AC power cable.

Receiver Section Test:
Input Sensitivity .....0.4 μV
Adjacent Channel Rejection .....63 dB
AGC Action .....8 dB
Input Level for S9 .....28 μV

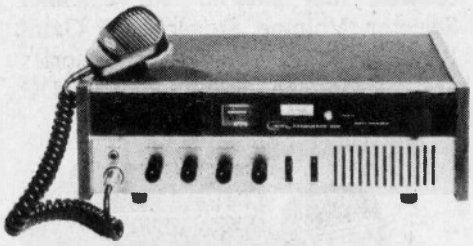
Transmitter Section Test:
AM RF Output .....3.9 watts
Modulation to 85% .....yes
Relative Sensitivity for
85% Modulation .....—30 dB
Modulation Limited to 100% .....no

Editorial Remarks: The Courier Classic PLL 40 has an S-meter that reads 3 dB per S-unit, double conversion receiver, external and PA speaker jacks, and S/RF output meter. ■

• COURIER CONQUEROR 40D

$269.95 (Fanon/Courier Corp.)

General Description: A 40-channel AM transceiver for mobile, PA, fixed operation. Power supply 12 to 13.8 VDC with positive or negative ground and 120 VAC. Features digital clock (AC operation only). Overall dimensions are 5⅜-in. h x 15-3/16-in. w x 10¼-in. d. Front panel controls



CIRCLE 90 ON READER SERVICE COUPON

and switches for Channel Selector, Volume, Squelch, RF Gain, Tone, Clock Set, Clock/Power Function, PA/CB, ANL. Standard accessories are microphone and AC power cable.

Receiver Section Test:
Input Sensitivity .....0.3 μV
Adjacent Channel Rejection .....61 dB
AGC Action .....6 dB
Input Level for S9 .....40 dB

Transmitter Section Test:
AM RF Output .....4.0 watts
Modulation to 85% .....yes
Relative Sensitivity for
85% Modulation .....—27 dB
Modulation Limited to 100% .....yes

Editorial Remarks: The Courier Conqueror 40D has a relative reading S-meter, double conversion receiver, PA speaker and headphone jacks, LED digital channel indicator, and S/RF output meter. Clock can automatically turn receiver on at preset time. ■

• COURIER GLADIATOR PLL 40

$429.95 (Fannon/Courier Corp.)

General Description: A 40-channel AM/SSB transceiver for mobile, PA operation. Fine tuning ±1.0 kHz provided. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 3-in. h x 10-

CIRCLE 90 ON READER SERVICE COUPON

9/16-in. w x 12⅜-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, Calrifier, RF Gain, SWR Meter Calibrate, AM/LSB/USB, Power, Noise Blanker, PA/CB, S/RF/SWR Meter Mode. Standard accessories are microphone, mobile mount, DC power cable.

Receiver Section Test:
Input Sensitivity .....3.5 μV
Adjacent Channel Rejection .....59 dB
AGC Action .....4 dB
Input Level for S9 .....600 μV

Transmitter Section Test:
AM RF Output .....4.0 watts
Modulation to 85% .....yes
Relative Sensitivity for
85% Modulation .....—22 dB
Modulation Limited to 100% .....no

Editorial Remarks: The Courier Gladiator PLL 40 has a relative reading S-meter, double conversion receiver, external and PA speaker jacks, and S/RF output meter. ■

• COURIER NIGHTRIDER 40DR

$239.95 (Fanon/Courier Corp.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 2-1/16-in. h x 6-in. w x 10-in. d. Front panel controls and switches for Channel Selec-

CIRCLE 90 ON READER SERVICE COUPON

tor, Volume, Squelch, RF Gain, PA/CB, Tone, ANL/Blanker. Standard accessories are microphone, mobile mount, DC power cable.

Receiver Section Test:
Input Sensitivity .....3.8 μV
Adjacent Channel Rejection .....67 dB
AGC Action .....4 dB
Input Level for S9 .....38 μV

Transmitter Section Test:
AM RF Output .....3.8 watts
Modulation to 85% .....yes
Relative Sensitivity for
85% Modulation .....—20 dB
Modulation Limited to 100% .....yes

Editorial Remarks: The Courier

Nightrider 40DR has an S-meter that reads 5 dB per S-unit, double conversion receiver, external and PA speaker jacks, and S/RF output meter. Channel selector switch and LED digital channel indicator are built into microphone. ■

• COURIER RANGLER 40D

$199.95 (Fanon/Courier Corp.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power supply 12 to 13.8 VDC with positive or negative ground. Overall dimensions are 2⅛-in. h x 6-in. w x 10¼-in. d. Front panel controls and switches for Channel

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Selector, Volume, Squelch, RF Gain, PA/CB, Noise Blanker, Tone (high cut). Standard accessories are microphone, mobile mount, DC power cable.

Receiver Section Test:

Input Sensitivity	0.35 μV
Adjacent Channel Rejection	70 dB
AGC Action	7 dB
Input Level for S9	75 μV

Transmitter Section Test:

AM RF Output	3.7 watts
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—32 dB
Modulation Limited to 100%	yes

Editorial Remarks: The Courier Rangler 40D has a relative reading S-meter, double conversion receiver, external and PA speaker jacks, LED digital channel indicator, and S/RF output meter. ■

• COURIER RENEGADE 40

$129.95 (Fanon/Courier Corp.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 2⅜-in. h x 5⅞-in. w x 8½-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, RF Gain, PA/CB, ANL. Standard accessories are microphone, mobile mount, DC power cable.

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Receiver Section Test:

Input Sensitivity	0.28 μV
Adjacent Channel Rejection	55 dB
AGC Action	7 dB
Input Level for S9	38 μV

Transmitter Section Test:

AM RF Output	3.8 watts
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—32 dB
Modulation Limited to 100%	no

Editorial Remarks: The Courier Renegade 40 has an S-meter that reads 5 dB per S-unit, double conversion receiver, external and PA speaker jacks, and S/RF output meter. ■

• COURIER SPARTAN PLL 40

$349.95 (Fanon/Courier Corp.)

General Description: A 40-channel AM/SSB transceiver for mobile, PA operation. Fine tuning ±1.4 kHz provided. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 2⅜-in. h x 7½-in. w x 10½-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, Clarifier, PA/CB, Noise Blanker, Local/Distance Sensitivity. Standard accessories are microphone, mobile mount, DC power cable.

Receiver Section Test:

Input Sensitivity	0.6 μV
Adjacent Channel Rejection	67 dB
AGC Action	12 dB
SSB Opposite Sideband Rejection	45 dB
Input Level for S9	300 μV

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Transmitter Section Test:

AM RF Output	3.8 watts
SSB RF Output	15 watts PEP
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—31 dB
Modulation Limited to 100%	yes

Editorial Remarks: The Courier Spartan PLL 40 has a relative reading S-meter, double conversion receiver, external and PA speaker jacks, and S/RF output meter. ■

• CRAIG MODEL L101

$199.95 (Craig Corp.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Front panel switches, jack and controls include Volume/Off, Microphone Jack, Squelch/Dim, PA/CB, Meter, Channel Selector, Standard equipment includes a "total-slideout" mounting bracket that automatically

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connects and disconnects antenna, power, external speaker and PA speaker cables.

Editorial Remarks: Other features of the L101 include an aircraft type channel number readout that is visible even in bright sunlight, pulsating modulator ring to monitor transmission, and built-in voice compression circuitry. ■

• CRAIG MODEL L131

$429.95 (Craig Corp.)

General Description: A 40-channel AM/SSB transceiver for mobile, PA operation. Power source 13.8 VDC with positive or negative ground. Front panel switches and controls include Volume/Off, Squelch, Clarifier, CB/DIM/PA, Noise Blanker/Automatic Noise Limiter/Off, LSB/AM/USB, S-RF/CAL/SWR, Calibrate/Local/Distance, Channel Selector, Meter, Bright Channel Readout.

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Editorial Remarks: Model L131 features a slideout bracket for instant connect/disconnect of all cables; voice compression; pulsating modulation ring on the channel selector to indicate when transmissions are in progress. ■

• CRAIG MODEL L231

$599.95 (Craig Corp.)

General Description: A 40-channel AM/SSB transceiver for base station, mobile and PA operation. Power source 120VAC (clock and CB) or 13.8 VDC (CB only). Front panel switches, jacks and controls include Volume, Squelch, RF Gain, Headphone and Microphone Jacks, Antenna, Noise Blanker / Automatic Noise Limiter/Off, Meter Test, Calibrate, Mode, Clarifier, Clock, LSB, USB, AM, PA, Channel Selector, LED Digital Channel Readout.

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Editorial Remarks: Model L231 features a digital clock with turn-on and alarm provisions; dual antenna input; voice compression; pulsating modulation ring that functions as a transmission monitor. ■

• CRAIG MODEL L600

$299.95 (Craig Corp.)

General Description: An in-dash 40-channel AM transceiver plus AM/FM radio. Front panel switches and controls include PA, Radio/CB, FM/AM, Stereo/Mono, Local/Distance, Volume, Tone, Balance, Squelch, Channel Selector, "Aircraft Type" Digital Channel Readout. A second set of channel selector controls is built into the microphone.

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Editorial Remarks: The Model L600 channel display is bright enough to be read in bright sunlight, but is dimmed automatically for safety when car dash lights are turned on. There's also a special connector bracket for microphone concealment. ■

• EBC RT-40

$249.00 (Emergency Beacon Corp.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Fine tuning +3.6 and −1.1 kHz is provided. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 2⅝-in. h x 7-13/16-in. w x 10½-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, Power, PA/CB, and Noise Blanker. Standard accessories are microphone, mobile mount, DC power cable.

Receiver Section Test:

Input Sensitivity	0.5 μV
Adjacent Channel Rejection	50 dB
AGC Action	5 dB

Transmitter Section Test:

RF Output	4.0 watts
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	−31 dB
Modulation Limited to 100%	yes

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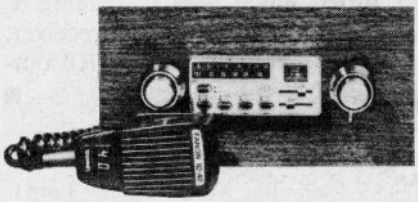
Editorial Remarks: The EBC RT-40 has a double conversion receiver, external and PA speaker jacks. The S/RF output device is an 8-step LED indicator. Maximum S-indication equals 10 μV. ■

• FANON ID-40

$249.95 (Fanon Div., Fanon/Courier Corp.)

General Description: A 40-channel AM transceiver plus AM/FM/MPX radio for in-dash mounting. Front panel controls and switches include RF Gain, S/RF Meter, Automatic Noise Limiter, Local/Distance Switch to bring in weak signals. The CB Transmit Light Digital Channel Indicator and Rotary Channel Selector are in the detachable microphone.



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Editorial Remarks: The Fanon ID-40 has a CB Override Channel 9 Priority Switch which operates in both AM and FM modes, and there are fully adjustable shafts and face plates for universal installation in practically any American or foreign-made vehicle. ■

• FANON FANFARE 100F1

$109.95 (Fanon/Courier Corp.)

General Description: A 40-channel AM transceiver for mobile operation. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 2-3/16-in. h x 5⅞-in. w x 9½-in. d. Front panel controls for Channel Selector, Volume, Squelch. Standard accessories are microphone, mobile mount, DC power cable.

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Receiver Section Test:

Input Sensitivity	0.5 μV
Adjacent Channel Rejection	56 dB
AGC Action	8 dB
Input Level for S9	68 μV

Transmitter Section Test:

AM RF Output	4.0 watts
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—20 dB
Modulation Limited to 100%	no

Editorial Remarks: The Fanon Fanfare 100F1 has a relative reading S-meter, double conversion receiver, external speaker jack, and S/RF output meter. ■

• FANON FANFARE 125F

$119.95 (Fanon Div., Fanon/Courier Corp.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power supply has positive or negative ground. Front panel controls and switches include a Channel

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Selector, PA/CB, Volume, Squelch, and a large illuminated S/RF Meter. **Editorial Remarks:** The Fanfare 125F features phase lock loop circuitry, and a detachable 4-pin, plug-ing, screw-on microphone. Housed in a cabinet with wood-grain look panel and brushed chrome face plate. ■

• FANON FANFARE 182F

$129.95 (Fanon/Courier Corp.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 2⅜-in. h x 5-5/16-in. w x 8½-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, RF Gain, ANL, PA/CB. Standard accessories are microphone, mobile mount, DC power cable.

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Receiver Section Test:

Input Sensitivity	0.25 μV
Adjacent Channel Rejection	58 dB
AGC Action	9 dB
Input Level for S9	28 μV

Transmitter Section Test:

AM RF Output	3.9 watts
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—32 dB
Modulation Limited to 100%	yes

Editorial Remarks: The Fanon Fanfare 182F has a relative reading S-meter, double conversion receiver, external and PA speaker jacks, and S/RF output meter. ■

• FANON FANFARE 184DF

$149.95 (Fanon/Courier Corp.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 2⅜-in. h. x 5-15/16-in. w x 8½-in. d. Front panel controls and switches for Channel Selection, Volume, Squelch, RF Gain, ANL, PA/CB, High/Dim LED Selector. Standard accessories include microphone, mobile mount, DC power cable.

Receiver Section Test:

Input Sensitivity	0.25 μV
Adjacent Channel Rejection	45 dB
AGC Action	10 dB
Input Level for S9	25 μV

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Transmitter Section Test:

AM RF Output	3.8 watts
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—32 dB
Modulation Limited to 100%	yes

Editorial Remarks: The Fanon Fanfare 184DF has a relative reading S-meter, double conversion receiver, external and PA speaker jacks, LED digital channel indicator, and S/RF output meter. ■

• FANON FANFARE 185DF

$199.95 (Fanon/Courier Corp.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 1⅞-in. h x 5⅞-in. w x 9-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, Noise Blanker, PA/CB, Tone (high cut), Local/Distance Sensitivity. Standard accessories are microphone, mobile mount, DC power cable.

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Receiver Section Test:

Input Sensitivity	0.4 μV
Adjacent Channel Rejection	66 dB
AGC Action	10 dB
Input Level for S9	150 μV

Transmitter Section Test:

AM RF Output	3.9 watts
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—24 dB
Modulation Limited to 100%	yes

Editorial Remarks: The Fanon Fanfare 185DF has an S-meter that reads 5 dB per S-unit, double conversion receiver, external and PA speaker jacks, LED digital channel indicator, and S/RF output meter. ■

• FANON FANFARE 190DF

$239.95 (Fanon Div., Fanon/Courier Corp.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Front panel switches and controls include Volume, Squelch, PA/CB, Tone, RF Gain, extra-large S/RF Meter, Automatic Noise Limiter and Noise Blanker. A Rotary Channel Selector Dial and a LED Digital Channel Display are both built into

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the microphone.

Editorial Remarks: The Fanfare 190DF features a new "wireless" modular design, phase lock loop circuitry, heavy duty chassis with woodgrain look panel and brushed chrome face plate. ■

• FANON FANFARE 350F

$349.95 (Fanon/Courier Corp.)

General Description: A 40-channel AM/SSB transceiver for mobile, PA operation. Fine tuning ±1.2 kHz provided. Power supply 12 to 13.8 VDC with negative or positive ground.

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Overall dimensions are 2⅜-in. h x 7½-in. w x 10½-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, Clarifier (fine tuning), PA/CB, AM/LSB/USB, Noise Blanker, Local/Distance Sensitivity. Standard accessories are microphone, mobile mount, DC power cable.

Receiver Section Test:

Input Sensitivity	0.4 μV
Adjacent Channel Rejection	67 dB
AGC Action	12 dB
SSB Opposite Sideband Rejection	50+ dB
Input Level for S9	10,000 μV

Transmitter Section Test:

AM RF Output	3.8 watts
SSB RF Output	12 watts PEP
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—24 dB
Modulation Limited to 100%	yes

Editorial Remarks: The Fanon Fanfare 350F has a relative reading S-meter, double conversion receiver, external and PA speaker jacks, and S/RF output meter. ■

• FANON FANFARE 880DF

$239.95 (Fanon Div., Fanon/Courier Corp.)

General Description: A 40-channel AM transceiver for base, PA operation. Front panel switches, controls and jacks include Volume, PA/CB,

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Squelch, Tone, Automatic Noise Limiter, RF Gain, Phone Jack, Mike Jack, Illuminated S/RF Meter, LED Digital Channel Number Display.

Editorial Remarks: The Fanfare 880DF has a built-in AC/DC Power Supply, On-the-Air Indicator, and phase lock loop circuitry. ■

• FIELDMASTER MICRO MINI-40

$149.95 (Fieldmaster Radio Corp.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 13.8 VDC (15 V Max.) with positive or negative ground. Front panel switches and controls include Volume/Off, Channel Selector, Squelch, PA/CB, LED Digital Channel Readout.

Editorial Remarks: The Micro Mini-40 features a double superheterodyne

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circuit, a momentary overmodulation suppression circuit, and phase lock loop circuitry. ■

• GENERAL ELECTRIC MODEL 3-5801

$134.95 (General Electric)

General Description: A 40-channel AM transceiver for mobile operation. Power source 13.8 VDC. Front panel switches and controls include Vol-

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ume, Squelch, Automatic Noise Limiter, S/RF Meter, Transmit Modulation Light, Channel Selector.

Editorial Remarks: Model 3-5801 features a quick-release mounting system, jack for external speaker, internal burn-out circuit protection (component failure protection for up to 5 minutes). ■

• GENERAL ELECTRIC 3-5811

$149.95 (General Electric)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power Supply 12 VDC with negative and positive ground. Overall dimensions 2¼-in. h x 6½-in. w x 8-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, PA/CB/CBPA, and

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ANL. Standard accessories are microphone, all crystals or PLL, mobile mount, DC power cable.

Receiver Section Test:

Input Sensitivity	0.5 μV
Adjacent Channel Rejection	64 dB
AGC Action	7 dB
Input Level for S9	44 μV

Transmitter Section Test:

RF Output	3.7 watts
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—32 dB
Modulation Limited to 100%	yes

Editorial Remarks: The General Electric 3-5811 has a relative reading S-meter, double conversion receiver, external and PA speaker jacks, and an S/RF output meter. Reproduces CB through PA speaker via CBPA position of PA/CB/CBPA switch. ■

• GENERAL ELECTRIC MODEL 3-5812

$174.95 (General Electric)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 13.8 VDC. Front panel switches and controls include Volume, Squelch, Noise Blanker, Automatic Noise Limiter, PA/CB Delta Tune, Channel Selector, S/RF Meter, Transmit Modulation Light, Antenna Warning Indicator. The Mike Jack is on the left side of the chassis.

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Editorial Remarks: The 3-5812 features a warning light that glows when the antenna system needs adjustment, and there is internal burn-out protection. Other items: quick-release mounting system, jacks for external and PA speakers, coding for rapid identification of emergency channel 9. ■

• GENERAL ELECTRIC MODEL 3-5819

$219.95 (General Electric)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 13.8 VDC. Front panel switches and controls include Volume, Squelch, RF Gain, SWR-CAL, Delta Tune, Tone, Noise-Blanker/Automatic Noise Limiter, PA/CB, Meter Switch (SWR/CAL/Rx-Tx), Channel Selector with LED

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digital readout, Mike Jack, 3-way lighted meter, Transmit Light, Antenna Warning Indicator Light.

Editorial Remarks: The 3-5819 3-way lighted meter (SWR/S/RF) shows relative receive and transmit signal strength, and can also check SWR for maximum antenna efficiency. Has internal burn-out protection that protects components for five minutes of transmission with shorted, open or loose antenna connection. ■

• GENERAL ELECTRIC MODEL 3-5821

$239.95 (General Electric)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 13.8 VDC. Front panel switches and controls include Volume, Tone, Squelch, RF Gain, Priority, Noise Blanker/Automatic Noise Limiter, PA/CB, S/RF Meter, Modulation Indicator Light, Channel Selector, LED Digital Channel Readout.

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Editorial Remarks: Model 3-5821 features a Priority Channel Light which indicates when receiving on a priority channel; also a Priority Channel Audio Signal consisting of an audible scanning pulse to indicate when the unit is in priority mode. ■

• GENERAL ELECTRIC MODEL 3-5825

$329.95 (General Electric)

General Description: A 40-channel AM/SSB transceiver for mobile, PA operation. Power source 13.8 VDC. Front panel switches and controls include Volume, Squelch, RF Gain, Clarifier, AM / LSB / USB, Noise Blanker/Automatic Noise Limiter, Tone, PA/CB, TX Indicator Light, S/RF Meter, Channel Selector, LED Digital Channel Display.

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Editorial Remarks: Model 3-5825 features a screw-on type microphone, quick-release mounting system, antenna failure indicator. ■

• GENERAL ELECTRIC MODEL 3-5871

$249.95 (General Electric)

General Description: A 40-channel AM transceiver for mobile, PA, fixed operation. Delta tuning ± 1.5 kHz provided. Power supply 12 to 13.8 VDC with negative or positive ground and 120 VAC. Overall dimensions are 4-in. h x 11-7/16-in. w x 9-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, RF Gain, Tone, Delta Tune, CB/PA, ANL. Standard accessories are microphone, mobile bracket, DC power cable, AC power cable.

Receiver Section Test:

Input Sensitivity	0.4 μV
Adjacent Channel Rejection	66 dB
AGC Action	9 dB
Input Level for S9	76 μV

Transmitter Section Test:

AM RF Output	3.7 watts
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—31 dB

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Modulation Limited to 100% ....yes
Editorial Remarks: The General Electric 3-5871 has a relative reading S-meter, double conversion receiver, external and PA speaker jacks, LED digital channel indicator, and S/RF output meter. ■

• HY-GAIN I
$129.95 (Hy-Gain Electronics Corp.)
General Description: A 40-channel AM transceiver for mobile operation. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 2¼-in. h x 6⅜-in. w x 8⅞-in. d. Front panel controls for Channel Selector, Volume, Squelch. Standard accessories are microphone, mobile mount, DC power cable.
Receiver Section Test:

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Input Sensitivity	0.3 μV
Adjacent Channel Rejection	58 dB
AGC Action	12 dB
Input Level for S9	70 μV

Transmitter Section Test:

RF Output	4.2 watts
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—18 dB
Modulation Limited to 100%	yes

Editorial Remarks: The Hy-Gain I has a relative reading S-meter, double conversion receiver, jacks for external and remote (telephone handset) speakers, and S/RF output meter. ■

• HY-GAIN II
$179.95 (Hy-Gain Electronics Corp.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 2¼-in. h x 6⅜-in. w x 8⅞-in. d. Front panel controls and switch for Channel Selector, Volume, Squelch/PA, RF Gain, and ANL. Standard accessories are microphone, mobile mount, DC power cable.
Receiver Section Test:

Input Sensitivity	0.3 μV
Adjacent Channel Rejection	59 dB
AGC Action	11 dB
Input Level for S9	90 μV

Transmitter Section Test:

RF Output	4.3 watts
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—33 dB
Modulation Limited to 100%	no

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Editorial Remarks: The Hy-Gain II has a relative reading S-meter, double conversion receiver, external and PA speaker jacks, and S/RF output meter. ■

• HY-GAIN III (MODEL 2703)
$249.95 (Hy-Gain Electronics Corp.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 11.5 to 14.5 VDC with positive or negative ground. Front panel switches, jacks and controls include Volume/RF Gain/Off, Squelch/Cal, CB/Cal/SWR/PA, Automatic Noise Limiter/

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Noise Blanker, S/RF/SWR Meter, Microphone Jack, Channel Selector, LED Digital Channel Readout.
Editorial Remarks: Model 2703 features phase lock loop circuitry, automatic modulation control, built-in microphone preamplifier. The unit adjusts automatically for positive or negative grounding. ■

• HY-GAIN V (MODEL 2705)
$369.95 (Hy-Gain Electronics Corp.)
General Description: A 40-channel AM/SSB transceiver for mobile, PA operation. Power source 11.5 to 14.5 VDC with automatically-adjusting positive or negative ground. Front panel switches and controls include Volume / On / Off, Squelch, AM /

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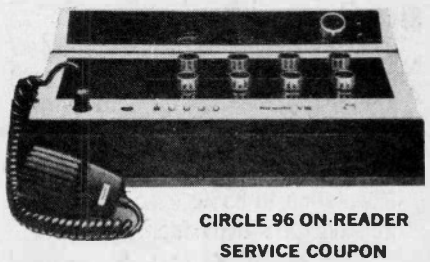
USB/LSB, Noise Blanker, CB/PA, Clarifier, RF Gain, S/RF Meter, Channel Selector, LED Digital Channel Readout.
Editorial Remarks: Model 2705 features automatic modulation control, built-in IC microphone preamplifier with AGC, and an external speaker jack. ■

• HY-GAIN VIII (MODEL 3108)
$499.95 (Hy-Gain Electronics Corp.)
General Description: A 40-channel AM transceiver for base station, mobile and PA operation. Power source 120 VAC or 13.8 VDC. Top panel switches, jacks and controls include Power, Squelch, Volume, Fine Tune, Function, SWR/Cal, Tone, RF Gain, Microphone Jack, Noise Blanker, Au-



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tomatic Noise Limiter, CB/PA, Modulation Calibrate, SWR Calibrate, RF/SWR Meter, TX/RX Indicators, S/Modulation Meter, Digital Clock, Channel Selector, LED Digital Channel Readout.
Editorial Remarks: Model 3108 features a face plate that blacks out to conceal signal/modulation and SWR/RF meters, receive and transmit LED indicators, and the digital readouts for time and channel when not op-

erative. Other features include jacks for optional telephone handset and speakers. ■

• HY-GAIN 9
$239.95 (Hy-Gain Electronics Corp.)
General Description: A 40-channel AM transceiver for mobile operation. Power supply 12 VDC to 13.8 VDC with negative or positive ground. Features separate microphone/control and separate remote mounting transceiver. Microphone has controls for Channel Selection, Volume, Squelch, and Push-to-Talk. Standard accessories are microphone, mounting bracket, DC power cable.

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Receiver Section Test:

Input Sensitivity	0.4 μV
Adjacent Channel Rejection	61 dB
AGC Action	9 dB

Transmitter Section Test:

RF Output	4.0 watts
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—28 dB
Modulation Limited to 100%	no

Editorial Remarks: The Hy-Gain 9 has a double conversion receiver, jacks for external speakers. The channel selector switch steps up or down to desired channel which is indicated by LED display on microphone. ■

• HY-GAIN 2680a
$129.95 (Hy-Gain Electronics Corp.)
General Description: A 40-channel AM transceiver for mobile operation.

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Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 2¼-in. h x 6⅜-in. w x 8⅞-in. d. Front panel controls for Channel Selector, Volume, Squelch. Standard accessories are microphone, mobile mount, DC power cable.

Receiver Section Test:

Input Sensitivity	0.5 μV
Adjacent Channel Rejection	57 dB
AGC Action	9 dB

Transmitter Section Test:

RF Output	4.1 watts
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—12 dB
Modulation Limited to 100%	no

Editorial Remarks: The Hy-Gain 2680a has a double conversion receiver and jacks for external and remote (telephone handset) speakers. ■

• RAY JEFFERSON CB-702
$289.95 (Ray Jefferson)
General Description: A 40-channel AM transceiver for base, marine VHF/FM operation. Front panel switches, controls and jacks include Volume, Squelch, RF Gain, CB/VHF Weather, S/RF Meter, 2-posi-

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tion VHF, Phone Jack, Mike Jack, Channel Selector with illuminated Digital Readout, Tone. Size: 9-in. w x 4-in. h x 9-in. d.
Editorial Remarks: Includes a front panel speaker, jack for external speaker, plug-in PTT microphone. Model TW205B Table Microphone available for $29.95. ■

• RAY JEFFERSON CB-712 SATURN
$249.95 (Ray Jefferson)
General Description: A 40-channel AM transceiver for marine, mobile, VHF/FM weather-receive operation. Power supply 12 VDC. Front panel switches, controls and jacks include

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Volume, Squelch, RF Gain, CB/WX (weather), 2-position VHF, S/RF Meter, Channel Selector with Digital Readout. Size: 7½-in. w x 3-in. h x 9-in. d.
Editorial Remarks: The CB-712 Saturn has two weather-receive (WX1 and WX2) channels, all-aluminum case, panel speaker, built-in jack for external speaker. Comes with PTT microphone, gimbal mounting bracket, microphone hangers. ■

• RAY JEFFERSON CB-740
$149.95 (Ray Jefferson)
General Description: A 40-channel AM transceiver for mobile, PA operation. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 2¼-in. h x 6¼-in. w x 8⅝-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, and PA/CB. Standard accessories are microphone, mobile mount, DC power cable.

Receiver Section Test:

Input Sensitivity	0.3 μV
Adjacent Channel Rejection	63 dB
AGC Action	5 dB

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Input Level for S9 .....150 μV

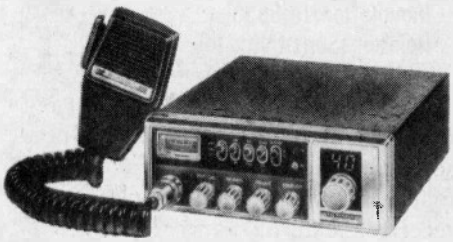
RF Output .....3.9 watts
Modulation to 85% .....yes
Relative Sensitivity for
85% Modulation .....—31 dB
Modulation Limited to 100% .....yes

Editorial Remarks: The Ray Jefferson CB-740 has an S-meter that reads 6-10 dB per S-unit, double conversion receiver, external and PA speaker jacks, and S/RF output meter. ■

• RAY JEFFERSON CB-845

$199.95 (Ray Jefferson)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power supply 12 VDC with positive or negative ground. Front panel switches, controls and jacks include Volume, Squelch, RF Gain, SWR-Calibration, Tone, Delta Tune,



CIRCLE 97 ON READER SERVICE COUPON

PA/CB, SWR/CAL/RF, S/RF Meter, Channel Selector with Digital Readout, Mike Jack, Automatic Noise Limiter/Noise Blanker. Size: 7-in. w x 2½-in. h x 8½-in. d.

Editorial Remarks: The CB-845 comes with a keyed power cord with in-line fuse, PTT microphone, gimbal mounting bracket and microphone hanger. ■

• RAY JEFFERSON CB-7120

$299.95 (Ray Jefferson)

General Description: A 40-channel Single Sideband/AM transceiver for mobile, PA operation. Power supply 12 VDC with positive or negative ground. Front panel switches, controls and jacks include Volume, Squelch, Clarifier, PA/CB, AM, USB, LSB,

CIRCLE 97 ON READER SERVICE COUPON

Channel Selector, S/RF Meter, Mike Jack. Size: 8-in. w x 2½-in. h x 9-in. d.

Editorial Remarks: Transmit indicator glows red when transmitting. Comes with keyed power cord with in-line fuse, PTT micorphone, gimbal mounting bracket, microphone hanger. ■

• J.I.L. MODEL 615-CB

$369.95 (J.I.L. Corp. of America)

General Description: A 40-channel AM transceiver with AM/FM/MPX radio plus a stereo cassette tape player. For mobile, in-dash operation. CB controls on the front panel include Squelch, CB/Radio-Tape Mode, Receive and Transmit Indicator Lights, Standby (monitors CB while radio or tape player is in use). The cassette section controls include Fast Forward/Eject, Tape Play Indicator Light. The AM/FM/MPX section includes AM/FM Selector, Mono/

CIRCLE 98 ON READER SERVICE COUPON

Stereo Switch, MPX Indicator Light, Antenna Trimmer.

Editorial Remarks: The 615-CB has a cassette loading port just above the radio dial. The microphone controls are: push-to-talk, RF Gain, LED Digital Channel Readout. ■

• J.I.L. 860CB

$359.95 (J.I.L. Corp. of America)

General Description: An in-dash AM/FM stereo radio/8-track player and 40-channel CB transceiver for mobile operation. Power supply 12 to 13.8 VDC with negative or positive ground. Supplied with universal in-dash mounting hardware. Front panel controls and switches for Volume, Squelch, Tone, Balance, Radio Tuning, AM/FM, Local/Distance Sensitivity, CB/Radio, CB Override of radio On-Off. CB Channel Selector is built into microphone. Standard ac-

CIRCLE 98 ON READER SERVICE COUPON

cessories are microphone, all panel hardware and trim plate.

Receiver Section Test:
Input Sensitivity .....0.7 μV
Adjacent Channel Rejection .....60 dB
AGC Action .....11 dB

Transmitter Section Test:
AM RF Output .....3.8 watts
Modulation to 85% .....yes
Relative Sensitivity for 85%
Modulation .....—30 dB
Modulation Limited to 100% .....yes

Editorial Remarks: The J.I.L. 860CB has a double conversion receiver, speakers, and an LED channel indicator built into the microphone. ■

• E. F. JOHNSON MESSENGER 4120

$99.95 (E. F. Johnson Co.)

General Description: A 40-channel AM transceiver for mobile operation. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 2-in. h x 6-3/16-in. w x 9⅜-in. d. Front panel controls for Channel Selector, Volume, Squelch. Standard accessories are microphone, mobile mount, DC power cable.

CIRCLE 99 ON READER SERVICE COUPON

Receiver Section Test:
Input Sensitivity .....0.35 μV
Adjacent Channel Rejection .....52 dB
AGC Action .....13 dB

Transmitter Section Test:
AM RF Output .....3.6 watts
Modulation to 85% .....yes
Relative Sensitivity for
85% Modulation .....—21 dB
Modulation Limited to 100% .....yes

Editorial Remarks: The E. F. Johnson Messenger 4120 has a double conversion receiver, external speaker jack, and LED digital channel indicator. ■

• E. F. JOHNSON MESSENGER 4140
$149.95 (E. F. Johnson Co.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 2-in. h x 6-3/16-in. w x 9⅜-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch/Channel Indicator Dimmer, ANL, PA/CB. Standard accessories are microphone, mobile mount, DC power cable.

CIRCLE 99 ON READER SERVICE COUPON

Receiver Section Test:
Input Sensitivity ..... 0.35 μV
Adjacent Channel Rejection ..... 40 dB
AGC Action ..... 12 dB
Input Level for S9 ..... 10 μV
Transmitter Section Test:
AM RF Output ..... 3.6 watts
Modulation to 85% ..... yes
Relative Sensitivity for 85% Modulation ..... —20 dB
Modulation Limited to 100% ..... yes
Editorial Remarks: The E. F. Johnson Messenger 4140 has a relative reading S-meter, double conversion receiver, external and PA speaker jacks, LED digital channel indicator, and S/RF output meter.

• E. F. JOHNSON MESSENGER 4145
$149.95 (E. F. Johnson Co.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 12 VDC with positive or negative ground. Front panel switches and controls include Volume/Off, Squelch/Dim, PA/CB, Automatic Noise Limiter/Off, Chan-

CIRCLE 99 ON READER SERVICE COUPON

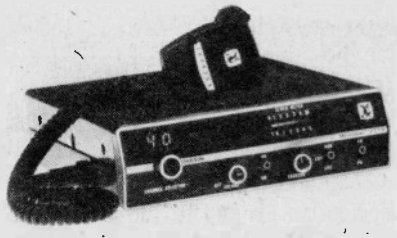
nel Selector with LED digital readout, S/RF Meter which is an exclusive and unique LED bar-graph meter easily read from any viewing angle. The microphone is connected to the left side of the chassis.
Editorial Remarks: Notable features of the Messenger 4145 include PA capability, speaker jack, phase lock loop circuitry, electronic speech compression, and the unorthodox S/RF meter. ■

• E. F. JOHNSON MESSENGER 4170
$199.95 (E. F. Johnson Co.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 12 VDC with positive or negative ground. Front panel switches and controls include Volume/Off, Squelch, Noise Blanker, PA/CB, Range Control (Local/Extended/Normal), Channel Selector with LED digital display, S/RF

CIRCLE 99 ON READER SERVICE COUPON

Meter (vane type). The microphone is attached to the left side of the chasis. ■

• E. F. JOHNSON MESSENGER 4175
$199.95 (E. F. Johnson Co.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 2¼-in. h x 8-



CIRCLE 99 ON READER SERVICE COUPON

in. w x 9⅜-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, Noise Blanker, PA/CB, Local/Normal/Extended Sensitivity. Standard accessories are microphone, mobile mount, DC power cable.
Receiver Section Test:
Input Sensitivity ..... 0.4 μV
Adjacent Channel Rejection ..... 48 dB
AGC Action ..... 6 dB
Input Level for S9 ..... 40 dB
Transmitter Section Test:
AM RF Output ..... 3.8 watts
Modulation to 85% ..... yes
Relative Sensitivity for 85% Modulation ..... —28 dB
Modulation Limited to 100% ..... yes
Editorial Remarks: The E. F. Johnson Messenger 4175 has a relative reading S-meter, double conversion receiver, external and PA speaker jacks, LED digital channel indicator, and S/RF output meter using six LED segments. ■

• E. F. JOHNSON MESSENGER 4230
$199.95 (E. F. Johnson Co.)
General Description: A 40-channel AM transceiver for mobile, PA, fixed operation. Power supply 12 to 13.8 VDC with negative or positive ground and 120 VAC. Overall dimensions are 4-9/16-in. h x 11-in. w x 11½-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, ANL, PA/CB, Local/Normal/Extended Sensitivity. Standard accessories are microphone, DC power cable, AC power cable.
Receiver Section Test:
Input Sensitivity ..... 0.4 μV
Adjacent Channel Rejection ..... 65 dB
AGC Action ..... 12 dB
Input Level for S9 ..... 50 μV
Transmitter Section Test:
AM RF Output ..... 3.4 watts
Modulation to 85% ..... yes
Relative Sensitivity for 85% Modulation ..... —20 dB
Modulation Limited to 100% ..... yes
Editorial Remarks: The E. F. John-

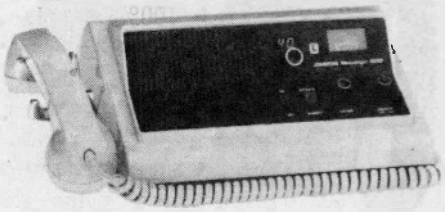
CIRCLE 99 ON READER SERVICE COUPON

son Messenger 4230 has a relative reading S-meter, double conversion receiver, external and PA speaker jacks, LED digital channel indicator, and S/RF output meter using six LED segments. ■

• E. F. JOHNSON MESSENGER 4250

$259.95 (E. F. Johnson Co.)

General Description: A 40-channel AM transceive for base station, PA operation. Power source 117 VAC. Top panel switches and controls include Volume, PA/Off, Speaker/Handset, Squelch/Dim, Meter, LED Digital Channel Readout.



CIRCLE 99 ON READER SERVICE COUPON

Editorial Remarks: The Messenger 4250 provides normal speaker listening or private handset monitoring and transmission. Circuitry includes phase lock loop and a built-in TANL (Tapered Automatic Noise Limiter) which automatically and continuously adjusts itself to incoming signal conditions. ■

• E. F. JOHNSON VIKING 4740

$359.95 (E. F. Johnson Co.)

General Description: A 40-channel AM/SSB transceiver for mobile, PA operation. Fine tuning ±1.5 kHz provided. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 2⅜-in. h x 7¾-in. w x 10½-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, Fine Tuning, RF Gain, AM/LSB/USB Mode, CB/PA, Noise Blanker. Standard accessories are microphone, mobile mount, DC power cable.

Receiver Section Test:

Input Sensitivity	0.45 μV
Adjacent Channel Rejection	60 dB
AGC Action	9 dB
SSB Opposite Sideband Rejection	60+ dB
Input Level for S9	100 μV

CIRCLE 99 ON READER SERVICE COUPON

Transmitter Section Test:

AM RF Output	3.6 watts
SSB RF Output	16 watts PEP
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—27 dB
Modulation Limited to 100%	yes

Editorial Remarks: The E. F. Johnson Viking 4740 has a relative reading S-meter, double conversion receiver, external and PA speaker jacks, LED digital channel display dimmer switch built into squelch control, and S/RF output meter. ■

• KRIS XL-40

$179.95 (Kris, Inc.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 2.3-in. h x 6.5-in. w. x 8.4-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, ANL, PA/CB, Internal/External Speaker Selector (feeds CB through PA speaker). Standard accessories are microphone, mobile mount, DC power cable.

CIRCLE 100 ON READER SERVICE COUPON

Receiver Section Test:

Input Sensitivity	3.5 μV
Adjacent Channel Rejection	51 dB
AGC Action	3.5 dB
Input Level for S9	15 μV

Transmitter Section Test:

RF Output	3.7 watts
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—20 dB
Modulation Limited to 100%	yes

Editorial Remarks: The Kris XL-40 has an S-meter that reads 5 dB per S-unit, double conversion receiver, external and PA speaker jacks, S/RF output meter, and jack for external S-meter. ■

• KRIS XL-45

$199.95 (Kris, Inc.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Front panel switches, jacks and controls include Volume, Noise (ANL-ANL/NB), RF Gain/Squelch, Microphone Gain, Int/Ext (speaker switch), Norm/Talk-Back, CB/PA,

CIRCLE 100 ON READER SERVICE COUPON

Microphone Jack, S/RF Meter, Transmit Indicator Light, Channel Selector, LED Digital Channel Readout.

Editorial Remarks: The XL-45 features a "Talk-Back" intercom facility, phase lock loop circuitry, external speaker jack, and an S-meter jack for adding a larger, optional Kris S-meter. ■

• KRIS XL-50

$259.95 (Kris, Inc.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Delta tuning ±1.5 kHz provided. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 3-in. h x 8.9-in. w x 9.5-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, RF Gain, Tone, Delta Tune, Meter Lamp Dimmer, Noise Blanker, CB/PA, Intercom

CIRCLE 100 ON READER SERVICE COUPON

Function, Internal/External Speaker (feeds CB through PA speaker), LED Dimmer. Standard accessories are microphone, mobile mount, DC power cable.

Receiver Section Test:

Input Sensitivity	0.3 μV
Adjacent Channel Rejection	55 dB
AGC Action	2 dB
Input Level for S9	20 μV

Transmitter Section Test:

RF Output	3.7 watts
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—28 dB
Modulation Limited to 100%	yes

Editorial Remarks: The Kris XL-50 has an S-meter that reads 3 dB per S-unit, double conversion receiver, external and PA speaker jacks, LED digital channel indicator, S-meter, RF output meter, modulation meter, and jack for external S-meter. ■

• MIDLAND 76-858

$231.95 (Midland International Corp.)

General Description: A 40-channel AM transceiver for base station, mobile and PA operation. Power source 115 VAC or 12 VDC with positive or negative ground. Front panel switches, jack and controls include Power, Volume, Squelch/PA, Hi Filter, Ext CB, Transmit Indicator, Microphone Jack, Channel Selector, Signal/Power (S/RF) Meter.

Editorial Remarks: The 76-858 has a Hi-filter switch to limit high frequency distortion, phase lock loop tuning, external CB switch to direct CB reception to an optional public address speaker. ■

CIRCLE 101 ON READER SERVICE COUPON

• MIDLAND 77-825

$174.95 (Midland International Corp.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Front panel switches and controls include Volume/Off, Squelch, PA/EXT CB/Off, TX Indicator Light, Signal/Power Meter, Channel Selector, LED Digital Channel Readout.

CIRCLE 101 ON READER SERVICE COUPON

Editorial Remarks: The Model 77-825 is especially compact to fit small cars. It features an automatic noise limiter, dual conversion superheterodyne receiver with tuned RF stage and automatic gain control. ■

• MIDLAND 77-830

$149.95 (Midland International Corp.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 12 VDC with positive or negative ground. Front panel switches, jack and controls include Channel Selector, Squelch/PA, Volume/Off/Off, Microphone Jack.

Editorial Remarks: The 77-830 has an S/RF Meter, Channel Indicator, and TX Light built into the top front edge of the unit for easier viewing from the driver's seat. ■

CIRCLE 101 ON READER SERVICE COUPON

• MIDLAND 77-838

$253.95 (Midland International Corp.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 12 VDC with positive or negative ground. Front panel switches and controls include Volume/Off, Squelch, RF Gain, Dimmer, PA/CB, Automatic Noise Limiter/Off, Noise Blanker/Off, Ext. CB/Off, Filter/Off, LED Digital Channel Readout.

CIRCLE 101 ON READER SERVICE COUPON

Editorial Remarks: Instead of the usual dial-type channel selector, the 77-838 has a 2-button (Up and Down) 2-speed pushbutton channel changer on the front panel and also on the microphone. The microphone also provides an additional volume control. ■

• MIDLAND 77-857

$169.95 (Midland International Corp.)

General Description: A 40-channel AM transceiver for mobile operation. Power source 12 VDC with positive or negative ground. Front panel switches, controls and jacks include Volume, Squelch, Delta Tune, Automatic Noise Limiter, External CB, Channel Selector, S/RF Meter, Mike Jack.

Editorial Remarks: The 77-857 has an external CB switch for monitoring CB calls through an optional PA speaker. Other features include auto-

CIRCLE 101 ON READER SERVICE COUPON

matic gain control and a phase lock synthesizer. ■

• MIDLAND 77-861

$207.95 (Midland International Corp.)

General Description: A 40-channel AM transceiver for mobile and portable operation. Power source can be standard AA cells or rechargeable NiCad cells, or the unit can be converted for operation on any 12-volt auto power system. Front panel switches and controls include Vol-

CIRCLE 101 ON READER SERVICE COUPON

ume, Squelch, Hi/Low, Channel Selector, Check Lite, Meter.

Editorial Remarks: The 77-861 has a carrying case for the battery pack which includes a charger jack, padded shoulder strap and belt loop. Up to 4 watts output on vehicle power and 3.1 or 1.5 watts on portable power depending on use of battery-saver feature. ■

• MIDLAND 77-882

$199.95 (Midland Communications Co.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Delta tune ±1.2 kHz provided. Power supply 12 to 13.8 VDC with positive or negative ground. Overall dimensions are 2¼-in. h x 6⅜-in. w x 7⅞-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch/PA, Noise Blanker, ANL, External CB (CB signal to PA speaker). Standard accessories are microphone, mobile mount, DC power cable.

Receiver Section Test:

Relative Sensitivity for 85%	
Input Sensitivity	0.6 μV
Adjacent Channel Rejection	62 dB
AGC Action	9 dB
Input Level for S9	70 μV

CIRCLE 101 ON READER SERVICE COUPON

Transmitter Section Test:

AM RF Output	3.9 watts
Modulation to 85%	yes
Modulation	—36 dB
Modulation Limited to 100%	yes

Editorial Remarks: The Midland 77-882 has a relative reading S-meter, double conversion receiver, external and PA speaker jacks, and S/RF output meter. ■

• MIDLAND 77-883

$229.95 (Midland International Corp.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 12 VDC with positive or negative ground. Front panel switches and controls include Volume/Off, Squelch, SWR/CAL, Tone, Delta Tune, SWR/CAL/S-RF, PA/Ext PA/Off, Automatic Noise Limiter, Noise Blanking, TX and antenna warning indicator lights, Meter, Channel Selector.

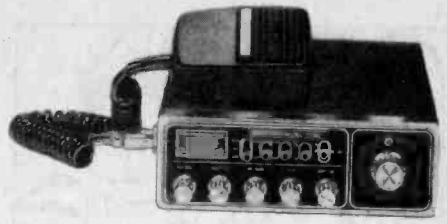
CIRCLE 101 ON READER SERVICE COUPON

Editorial Remarks: The 77-883 can be used as a public address amplifier with an optional 8 or 16-ohm speaker. ■

• MIDLAND 77-888

$244.95 (Midland International Corp.)

General Description: A 40-channel AM transceiver for mobile, PA oper-



CIRCLE 101 ON READER SERVICE COUPON

ation. Power source 12 VDC with positive or negative ground. Front panel switches and controls include Volume, Squelch, RF Gain, Tone, SWR/CAL, Automatic Noise Limiter, Noise Blanker, External CB, Delta Tune, Channel Selector. The Mike Jack is on the left side.

Editorial Remarks: A built-in SWR bridge and calibrator operate with the 3-function S/RF/SWR Meter for matching the antenna to the unit. An antenna warning indicator lights in case of mismatch or failure. The microphone also has a volume control. ■

• MIDLAND 77-899

$359.95 (Midland International Corp.)

General Description: A 40-channel in-dash AM transceiver plus AM/FM/MPX radio. Front panel switches and controls include LED Digital Channel Readout, pushbutton channel selector, Tune/Fader, Tone Balance/SW Vol. The microphone has

CIRCLE 101 ON READER SERVICE COUPON

pushbutton channel selectors plus volume and squelch controls.

Editorial Remarks: The 77-899 has a standby switch that permits receiving and transmitting of CB messages while listening to an AM or FM radio broadcast. The CB power module can be mounted on the car firewall or be installed in the trunk. ■

• MIDLAND 77-955

$274.95 (Midland International Corp.)

General Description: A 40-channel

AM transceiver for mobile, PA operation. Power source 12 VDC with positive or negative ground; includes 20-foot aircraft-quality connector cable. Front panel switches and controls include Power, PA/CB/Ext CB, TX Indicator Light, Channel Selector, Signal/Power Meter.

CIRCLE 101 ON READER SERVICE COUPON

Editorial Remarks: The 77-955 features a uniquely compact control head that is small enough to fit into a car glove compartment. The main CB "black box" installs on the firewall, under a seat, or in the car trunk. The microphone houses volume and squelch controls. ■

• MIDLAND 79-892

$339.95 (Midland International Corp.)

General Description: A 40-channel AM/SSB transceiver for mobile, PA operation. Tilted front panel switches and controls include Volume/PA, RF Gain, Squelch, LSB/USB/AM, HI/Tone/LO, Noise Blanker, PA/CB, S/RF Meter, Channel Selector.

CIRCLE 101 ON READER SERVICE COUPON

Editorial Remarks: The 79-892 has a single sideband clarifier control on the microphone for fine tuning. ■

• MIDLAND 79-893

$369.95 (Midland International Corp.)

General Description: A 40-channel AM/SSB transceiver for mobile, PA operation. Power source 12 VDC with positive or negative ground. Front panel switches and controls include Volume/Squelch/Off, Microphone Gain, RF Gain, AM/USB/LSB, Clarifier, Hi/Tone/Lo, Noise Blanker, PA/CB, Channel Selector, S/RF Meter.

CIRCLE 101 ON READER SERVICE COUPON

Editorial Remarks: The 79-893 features a microphone gain control to adjust audio input, dual detectors for AM and SSB, phase lock loop circuitry. ■

• MOTOROLA 4000 (MOCAT 40)

$149.95 (Motorola, Inc).

General Description: A 40-channel AM transceiver for mobile, PA operation. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 2½-in. h x 7¼-in. w x 9½-in. d. Front panel controls and switch for Channel Selector, Volume, Squelch, PA/CB. Standard accessories are microphone, mobile mount, DC power cable.

CIRCLE 102 ON READER SERVICE COUPON

Receiver Section Test:

Input Sensitivity	0.35 μV
Adjacent Channel Rejection	50 dB
AGC Action	4 dB
Input Level for S9	6,000 μV

Transmitter Section Test:

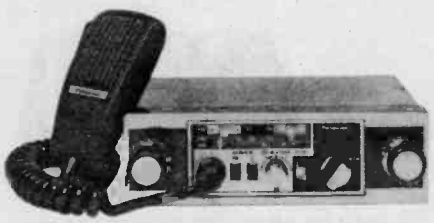
RF Output	3.5 watts
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—20 dB
Modulation Limited to 100%	no

Editorial Remarks: The Motorola 4000 has a relative reading S-meter, double conversion receiver, external and PA speaker jacks, and S/RF meter. Internal speaker mounted on top facing driver. ■

• PANASONIC CR-B4700

$249.95 (Panasonic)

General Description: An in-dash 40-channel AM transceiver with AM/FM stereo radio for mobile operation. Front panel switches, controls and jacks include Volume, Squelch, Delta Tune, Standby Monitor, AM/FM Slide Bar Switch, Stereo Indicator Light, Manual Radio Tuning, Mike Jack.



CIRCLE 103 ON READER SERVICE COUPON

Editorial Remarks: The CR-B4700 has a standby monitor that permits receiving CB calls when listening to standard AM/FM stereo broadcasts. Other features: phase locked loop system, illuminated digital channel selector, installation kit with adjustable shafts. ■

• PANASONIC RJ-3050

$129.95 (Panasonic)

General Description: A 40-channel AM transceiver for mobile operation. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 2⅜-in. h x 6¾-in. w x 10-in. d. Front panel controls for Channel Selector, Volume, Squelch. Standard accessories are microphone, mobile mount, DC power cable.

Receiver Section Test:

Input Sensitivity	3.0 μV
Adjacent Channel Rejection	67 dB
AGC Action	9 dB
Input Level for S9	30 μV

CIRCLE 103 ON READER SERVICE COUPON

Transmitter Section Test:

AM RF Output	3.4 watts
Modulation to 85%	no
Relative Sensitivity for 85% Modulation	—29 dB
Modulation Limited to 100%	yes

Editorial Remarks: The Panasonic RJ-3050 has a relative reading S-meter, double conversion receiver, external speaker jack, LED digital channel indicator, and S/RF output meter. ■

• PANASONIC RJ-3150

$159.95 (Panasonic)

General Description: A 40-channel AM transceiver for mobile, PA operation. Delta tuning ±1.5 kHz provided. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 2¼-in. h x 6⅝-in. w x 10⅛-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, Delta Tune, ANL. Standard accessories are microphone, slide-in mobile mount, and DC power cable.

CIRCLE 103 ON READER SERVICE COUPON

Receiver Section Test:

Input Sensitivity	0.3 μV
Adjacent Channel Rejection	68 dB
AGC Action	11 dB
Input Level for S9	50 μV

Transmitter Section Test:

RF Output	3.4 watts
Modulation to 85%	no
Relative Sensitivity for 85% Modulation	—26 dB
Modulation Limited to 100%	yes

Editorial Remarks: The Panasonic RJ-3150 has a relative reading S-meter, double conversion receiver, external and PA speaker jacks, LED digital channel indicator, and S/RF output meter. ■

• PANASONIC RJ-3250

$199.95 (Panasonic)

General Description: A 40-channel AM transceiver for mobile, PA operation. Delta tuning ±1 kHz provided. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 2-7/16-in. h x 7⅝-in. w x 11-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, Noise Blanker, Delta Tune, RF Attenuation (receiver). Standard accessories are microphone, auto-connect slide-in mobile mount, DC power cable.

CIRCLE 103 ON READER SERVICE COUPON

Receiver Section Test:

Input Sensitivity	3.5 μV
Adjacent Channel Rejection	66 dB
AGC Action	4 dB
Input Level for S9	80 μV

Transmitter Section Test:

RF Output	3.8 watts
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—30 dB
Modulation Limited to 100%	yes

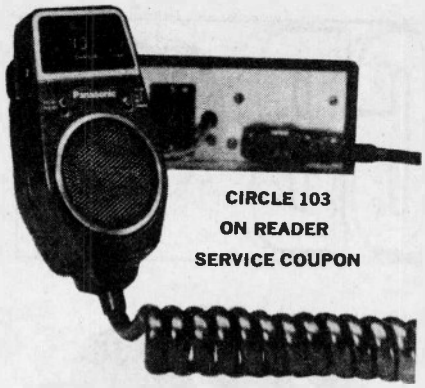
Editorial Remarks: The Panasonic RJ-3250 has a relative reading S-meter, double conversion receiver, external and PA speaker jacks, push-button selection of channel 9, LED digital channel indicator, VU/Modulation meter, S/RF output meter. Supplied with slide-in mount with automatic connections for power, antenna and speakers. ■

• PANASONIC RJ-3450

$229.95 (Panasonic)

General Description: A 40-channel AM transceiver having all controls built into the microphone, plus a Scanner System which monitors the entire 40-channel bandwidth to seek out open channels. Switches and controls on the microphone include a LED digital channel display, "on-the-air" LED transmission indicator, Squelch, Noise-Blanker/ANL, "push-to-talk" Mike Toggle.

Editorial Remarks: The RJ-3450 has



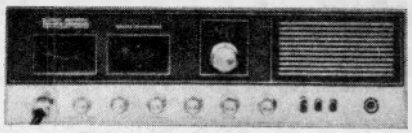
CIRCLE 103 ON READER SERVICE COUPON

a 5-foot connector cable to permit hiding the transceiver permanently under a car seat, or an optional 9-foot extension cable can move it into the car trunk. The microphone, with all controls, is quickly disconnected from a connector on the car dash. The auto-manual built-in Scanner System can be set to either vacant or busy to automatically locate an open channel. ■

• PEARCE-SIMPSON SUPER BENGAL 40

$429.95 (Pearce-Simpson, Inc.)

General Description: A 40-channel AM/SSB transceiver for base, mobile and PA operation. Power source 115 VAC or 12 VDC. Front panel switches, jacks and controls include Tone, RF Gain, Squelch, Volume, AM / USB / LSB, PA / CB, Noise Blanker, dual S/RF Modulation Meters, Receiv-O-Slide (off-frequency control), Phone and Microphone Jacks, Channel Selector, LED Digital Channel Readout.



CIRCLE 104 ON READER SERVICE COUPON

Editorial Remarks: The Super Bengal features the Pearce-Simpson "Hetrolock" frequency synthesizing circuitry. ■

• PEARCE-SIMPSON BOBCAT 40

$179.95 (Pearce-Simpson, Inc.)

General Description: A 40-channel AM transceiver for mobile, PA opertion. Power source 12 VDC. Switches and controls include S/RF Meter, Receiv-O-Slide (off-frequency control), Automatic Noise Limiter, CB/PA.

CIRCLE 104 ON READER SERVICE COUPON

Editorial Remarks. The Bobcat is ready for 40-channel operation, all crystals included. ■

• PEARCE-SIMPSON JAGUAR 40

$339.95 (Pearce-Simpson, Inc.)

General Description: A 40-channel AM transceiver for base station, mobile and PA operation. Front panel switches, jacks and controls include Power On/Off, RF Gain, Tone, Receiv-O-Slide (off-frequency control), Function Lights, PA/CB, Noise Blanker, Phones and Microphone

CIRCLE 104 ON READER SERVICE COUPON

Jacks, S/RF/SWR Meter, LED Digital Clock, Channel Selector, LED Digital Channel Readout. Power source 115 VAC or 12 VDC.

Editorial Remarks: The Jaguar features the Pearce-Simpson "Hetrolock" frequency synthesizing circuitry. ■

• PEARCE-SIMPSON LEOPARD 8

$299.95 (Pearce-Simpson, Inc.)

General Description: An in-dash AM/FM stereo radio and 40-channel transceiver combination. Delta tuning ±1.2 kHz provided. Power supply 12 to 13.8 VDC with negative ground. Overall dimensions are 2-1/16-in. h x 7⅛-in. w x 5⅛-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, Delta Tune, Radio Tuning, Tone, Stereo Balance, CB On-Off, CB Monitor From Left Speaker With Radio On Right Speaker, AM/FM radio, Local/Distance Sensitivity. Standard accessories are microphone, universal mounting hardware, bezel, stereo speaker cables, DC power cable.

Receiver Section Test:

Input Sensitivity	4.5 μV
Adjacent Channel Rejection	53 dB
AGC Action	8 dB
Input Level for S9	Red/Green Scale

Transmitter Section Test:

CIRCLE 104 ON READER SERVICE COUPON

AM RF Output	3.6 watts
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—31 dB
Modulation Limited to 100%	yes

Editorial Remarks: The Pearce-Simpson Leopard 8 has a double conversion receiver, outputs for left and right speakers, separate antenna connectors for AM/FM and CB, LED digital channel indicator, and S/RF output meter calibrated in red/green for S and RF. ■

• PEARCE-SIMPSON LION 40

$249.95 (Pearce-Simpson, Inc.)

General Description: A 40-channel AM transceiver for mobile, PA, base operation. Delta tuning ± 1.5 kHz is provided. Power supply 12 VDC to 13.8 VDC with negative or positive ground. Overall dimensions are 2½-in. h x 7⅛-in. w x 9½-in. d. Front

CIRCLE 104 ON READER SERVICE COUPON

panel controls and switches for Channel Selector, Volume, Squelch, RF Gain, Tone, SWR Calibrate, S/RF/SWR Meter, ANL, Noise Blanker, PA/CB, CB thru PA Speaker, and Delta Tune. Standard accessories are microphone, mobile mount, DC power cable.

Receiver Section Test:

Input Sensitivity	0.6 μV
Adjacent Channel Rejection	62 dB
AGC Action	9 dB
Input Level for S9	300 μV

Transmitter Section Test:

RF Output	3.7 watts
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—32 dB
Modulation Limited to 100%	yes

Editorial Remarks: The Pearce-Simpson Lion 40 has a relative reading S-meter, double conversion receiver, external and PA speaker jacks, and S/RF output meter. ■

• PEARCE-SIMPSON SUPER PANTHER SSB 40

$369.95 (Pearce-Simpson, Inc.)

General Description: A 40-channel AM/SSB transceiver for mobile, PA operation. Power source 12 VDC. Front panel switches and controls include Volume/Off, Squelch, Clarifier, LSB / USB / AM, PA / CB, Noise

CIRCLE 104 ON READER SERVICE COUPON

Blanker, DX/Local, Dimmer, S/RF Meter, Channel Selector, LED Digital Channel Readout.

Editorial Remarks: The Super Panther SSB features the Pearce-Simpson "Hetrolock" frequency synthesizing circuitry. ■

• PEARCE-SIMPSON TIGER 40
$229.95 (Pearce-Simpson, Inc.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Delta tuning ± 1.0 kHz is provided. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 2¼-in. h x 7-in. w x 9⅛-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, Tone, RF Gain, Noise Blanker, ANL, CB/PA, and Delta Tune. Standard accessories

CIRCLE 104 ON READER SERVICE COUPON

are microphone, mobile mount, DC power cable.

Receiver Section Test:

Input Sensitivity	0.6 μV
Adjacent Channel Rejection	64 dB
AGC Action	8 dB
Input Level for S9	90 μV

Transmitter Section Test:

RF Output	3.7 watts
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—32 dB
Modulation Limited to 100%	yes

Editorial Remarks: The Pearce-Simpson Tiger 40 has a relative reading S-meter, double conversion receiver, external and PA speaker jacks, and S/RF output meter. ■

• PEARCE-SIMPSON SUPER TIGER 40
$239.95 (Pearce-Simpson)
General Description: A 40-channel AM transceiver for mobile, PA operation. Front panel switches, controls and jacks include Volume, Squelch, RF Gain, Tone, SWR-Cal, "Receiv-O-Slide" (Delta Tune), RF/Mod/SWR, Noise Blanker, PA/CB, Channel Selector with LED digital indicator, S/RF Meter, Mike Jack.

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Editorial Remarks: The Super Tiger 40 features Pearce-Simpson's exclusive "HetroLock" frequency synthesizing system which utilizes only three crystals. There's also a high-Q ceramic filter for adjacent channel rejection, noise-cancelling dynamic mike, PA capability. ■

• PRESIDENT DWIGHT D.
$329.95 (President Electronics, Inc.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Delta tuning ±1.0 kHz provided. Power supply 12 to 13.8 VDC with negative or positive ground and 120 VAC. Features built-in digital clock. Overall dimensions are 4¾-in. h x 15-in. w x 11½-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, Microphone Gain, RF Gain, Delta Tune, Tone, SWR Calibrate, SWR/Modulation Meter Mode, PA/CB, Noise Blanker. Standard accessories are microphone, mobile mounting bracket, DC power cable, AC power cable.

CIRCLE 105 ON READER SERVICE COUPON

Receiver Section Test:

Input Sensitivity	3.5 μV
Adjacent Channel Rejection	59 dB
AGC Action	7 dB
Input Level for S9	70 μV

Transmitter Section Test:

RF Output	4.2 watts
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—28 dB
Modulation Limited to 100%	yes

Editorial Remarks: The President Dwight D. has a relative reading S-meter, double conversion receiver, external and PA speaker jacks, speaker that plugs into external speaker jack, front panel headphone jack, LED digital channel indicator, SWR/Modulation meter, and S/RF output meter. Digital clock can turn on receiver at preset time. ■

• PRESIDENT GRANT
$339.95 (President Electronics, Inc.)
General Description: A 40-channel AM/SSB transceiver for mobile, PA operation. Fine tuning ±1.25 kHz provided. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 2⅜-in. h x 7⅞-in. w x 10½-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, Clarifier, Microphone Gain, Panel Light Dimmer, AM/LSB/USB, PA/CB, Noise Blanker, Local/Distance Sensitivity. Standard accessories are microphone, mobile mount, DC power cable.

CIRCLE 105 ON READER SERVICE COUPON

Receiver Section Test:

Input Sensitivity	0.4 μV
Adjacent Channel Rejection	60 dB
AGC Action	7 dB
SSB Opposite Sideband Rejection	60+ dB
Input Level for S9	100 μV

Transmitter Section Test:

RF Output	3.6 watts AM, 12 watts PEP SSB
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—20 to —40 dB
Modulation Limited to 100%	yes

Editorial Remarks: The President Grant has a relative reading S-meter, double conversion receiver, external and PA speaker jacks, LED digital channel indicator, and S/RF output meter. ■

• PRESIDENT HONEST ABE
$199.95 (President Electronics, Inc.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Delta tuning ±1.2 kHz provided. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 2¾-in. h x 7-5/16-in. w x 9⅝-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, Microphone Gain, RF Gain, Delta Tune, Panel Light Dimmer, PA/CB, ANL, Modulation/S-RF Meter Mode. Standard

CIRCLE 105 ON READER SERVICE COUPON

accessories are microphone, mobile mount, DC power cable.

Receiver Section Test:

Input Sensitivity	0.4 μV
Adjacent Channel Rejection	62 dB
AGC Action	7 dB
Input Level for S9	100 μV

Transmitter Section Test:

RF Output	3.8 watts
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—35 dB max.
Modulation Limited to 100%	yes

Editorial Remarks: The President Honest Abe has an S-meter that reads 5 dB per S-unit, double conversion receiver, external and PA speaker jacks, LED digital channel indicator, and S/RF meter. ■

• PRESIDENT JOHN Q.

$169.95 (President Electronics, Inc.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 2⅛-in. h x 6¼-in. w x 9⅜-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, Microphone Gain, Panel Light Dimmer, PA/CB, ANL, Local/Distance Sensitivity. Standard accessories are microphone, mobile mount, DC power cable.

Receiver Section Test:

Input Sensitivity	0.4 μV
Adjacent Channel Rejection	51 dB
AGC Action	11 dB
Input Level for S9	40 μV

ransmitter Section Test:

RF Output	3.8 watts
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—35 dB
Modulation Limited to 100%	yes

CIRCLE 105 ON READER SERVICE COUPON

Editorial Remarks: The President John Q. has a relative reading S-meter, double conversion receiver, external and PA speaker jacks, LED digital channel indicator, and S/RF output meter. ■

• PRESIDENT TEDDY R.

$229.95 (President Electronics, Inc.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Delta tuning ±1.5 kHz provided. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 2¾-in. h x 7-5/16-in. w x 9⅝-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, Delta Tune, RF Gain, Microphone Gain, Panel Light Dimmer, SWR Calibrate, PA/CB, Noise Blanker, Tone (high cut), Meter Function. Standard accessories are microphone, mobile mount, DC power cable.

Receiver Section Test:

CIRCLE 105 ON READER SERVICE COUPON

Input Sensitivity	0.4 μV
Adjacent Channel Rejection	61 dB
AGC Action	8 dB
Input Level for S9	200 μV

Transmitter Section Test:

RF Output	3.7 watts
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—32 dB
Modulation Limited to 100%	yes

Editorial Remarks: The President Teddy R. has an S-meter that reads 5 dB per S-unit, double conversion receiver, external and PA speaker jacks, LED digital channel indicator, and S/RF output/SWR/Modulation meter. ■

• PRESIDENT WASHINGTON

$429.95 (President Electronics, Inc.)

General Description: A 40-channel AM/SSB transceiver for mobile, PA, fixed operation. Fine tuning ±1.25 kHz provided. Power supply 12 to 13.8 VDC with negative or positive ground and 120 VAC. Overall dimensions are 5½-in. h x 13⅝-in. w x 12⅛-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, Microphone Gain, RF Gain, Clarifier, PA/CB, AM/

CIRCLE 105 ON READER SERVICE COUPON

LSB/USB Mode, Noise Blanker. Standard accessories are microphone, mobile mounting brackets, DC power cable, AC power cable.

Receiver Section Test:

Input Sensitivity	0.45 μV
Adjacent Channel Rejection	61 dB
AGC Action	12 dB
SSB Opposite Sideband Rejection	44 dB
Input Level for S9	18 μV

Transmitter Section Test:

RF Output	3.7 watts AM, 12 watts PEP SSB
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—31 dB
Modulation Limited to 100%	yes

Editorial Remarks: The President Washington has a relative reading S-meter, double conversion receiver, external and PA speaker jacks, front panel headphone jack, LED digital channel indicator, and S/RF output meter. (Microphone gain control has no apparent effect on modulation.) ■

• PRESIDENT ZACHARY T.

$249.95 (President Electronics, Inc.)

General Description: A 40-channel AM transceiver for mobile, PA fixed operation. Power supply 12 to 13.8 VDC with negative or positive ground and 120 VAC. Overall dimensions are 4¾-in. h x 13½-in. w x 11½-in. d. Front panel controls and switches

CIRCLE 105 ON READER SERVICE COUPON

for Channel Selector, Volume, Squelch, RF Gain, Microphone Gain, PA/CB, ANL. Standard accessories are microphone, mobile brackets, DC power cable, AC power cable.

Receiver Section Test:

Input Sensitivity	0.3 μV
Adjacent Channel Rejection	59 dB
AGC Action	7 dB
Input Level for S9	55 μV

Transmitter Section Test:

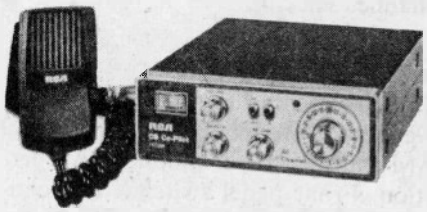
RF Output	4 watts
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—32 dB max.
Modulation Limited to 100%	yes

Editorial Remarks: The President Zachary T. has a relative reading S-meter, double conversion receiver, external and PA speaker jacks, LED digital channel indicator, front panel headphone jack, and S/RF output meter. ■

• RCA MODEL 14T260

$149.95 (RCA Dist. & Special Prods. Div.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 12 to 15 VDC, 13.8 VDC nominal, with positive or negative ground. Front panel switches and controls include Volume/Off.



CIRCLE 106 ON READER SERVICE COUPON

Squelch, RF Gain, Automatic Noise Limiter, PA/CB, TX Indicator Light, Channel Selector, S/RF Meter.

Editorial Remarks: Model 14T260 features phase lock loop circuitry and automatic modulation level control (ALC). ■

• RCA MODEL 14T270

$174.95 (RCA Dist. & Special Prods. Div.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 12 to 15 VDC, 13.8 VDC nominal, with positive or negative ground. Front panel switches and controls include Volume/Off, Squelch, SWR Cal, Delta Tune, Automatic Noise Limiter, Noise Blanker, PA/CB, LO/DX, Modu-

CIRCLE 106 ON READER SERVICE COUPON

lation and Receiving Indicator Lights, RF/CAL/SWR, Channel Selector, S/RF/SWR Meter.

Editorial Remarks: Model 14T270 features phase lock loop circuitry and controls to vary the receiver sensitivity and to calibrate the meter for SWR measurements. ■

• RCA MODEL 14T302

$299.95 (RCA Dist. & Special Prods. Div.)

General Description: A 40-channel AM/SSB transceiver for mobile, PA operation. Power source 12 to 15 VDC, 13.8 VDC nominal, with positive or negative ground. Front panel switches and controls include Vol-

CIRCLE 106 ON READER SERVICE COUPON

ume/Off, Squelch/PA, AM/USB/LSB, Clarfiier, SWR Cal, Dimmer, S-RF/CAL/SWR, Noise Blanker, LOC/DX, Channel Selector, LED Digital Channel Readout, S/RF/SWR Meter.

Editorial Remarks: Model 14T302 has a clarifier control that provides sharp tuning of SSB signals and also functions as a delta-tune control to improve off-frequency AM signals. ■

• RCA MODEL 14T303

$239.95 (RCA Dist. & Special Prods. Div.)

General Description: A 40-channel AM transceiver for base station, mobile and PA operation. Power source 120 VAC or 12 VDC with positive or negative ground. Front panel

CIRCLE 106 ON READER SERVICE COUPON

switches, jacks and controls include Volume/Off, Squelch/PA, RF Gain, SWR Cal, Tone, Noise Blanker, Automatic Noise Limiter, Delta Tune, RF/CAL/SWR, Microphone and Headphone Jacks, On-the-Air and Receive Indicator Lights, S/Mod Meter, RF/SWR Meter, Channel Selector, LED Digital Channel Readout.

Editorial Remarks: Model 14T303 features phase lock loop circuitry and has external speaker and PA speaker jacks on the rear panel. ■

• RCA MODEL 14T304

$189.95 (RCA Dist. & Special Prods. Div.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 12 to 15 VDC, 13.8 VDC nominal, with positive or negative ground. Front panel switches and controls include Volume/Off, Squelch, Dimmer, Automatic Noise Limiter, LOC/DX, PA/CB, TX Indicator Light, Channel Selector, LED Digital Channel Readout, S/RF Meter.

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Editorial Remarks: Model 14T304 features phase lock loop circuitry, a switch to vary receiver sensitivity, and a dimmer for readouts to make night driving more pleasant. ■

• RCA MODEL 14T305

$209.95 (RCA Dist. & Special Prods. Div.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 12 to 15 VDC, 13.8 VDC nominal, with positive or negative ground. Front panel switches and controls include Dimmer/On-Off, RF Gain, SWR Cal, S-RF/CAL/

SWR, Automatic Noise Limiter, Noise Blanker, PA/CB, Delta Tune, Modulation Indicator Light, LED Digital Channel Readout, S/RF/SWR Meter.

CIRCLE 106 ON READER SERVICE COUPON

Editorial Remarks: Model 14T305 has several controls on the microphone: transmit switch, up and down channel selectors, volume and squelch controls. ■

• RCA MODEL 14T410
$269.95 (RCA Dist. & Special Prods. Div.)
General Description: A 40-channel AM transceiver for mobile operation plus an AM/FM/MPX radio for in-dash installation. Power source 12 to 15 VDC, 13.8 VDC nominal, with negative ground. Front panel switches and controls include Volume/On-Off, Tone, AM/FM Selector Slidebar, FM

CIRCLE 106 ON READER SERVICE COUPON

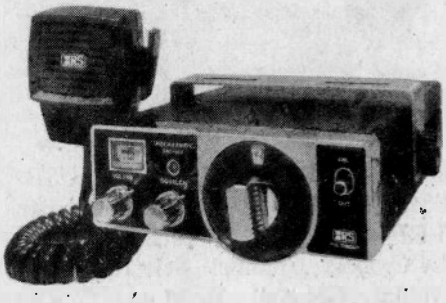
Stereo Indicator Light, Local/Distance Slidebar, Antenna Trimmer, Program Select, Balance, CB Channel Selector, S/RF Meter, Squelch, Delta Tune, CB Monitor Pushbutton, CB On-Off Pushbutton, LED Digital Channel Readout.
Editorial Remarks: Model 14T410 has a stand-by CB monitor control that permits simultaneous reception of CB calls while listening to AM or FM radio programs. ■

• REALISTIC TRC-452
$139.95 (Radio Shack)
General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 12 VDC with positive or negative ground. Front panel switches and controls include Volume/Off, Squelch, Automatic

CIRCLE 107 ON READER SERVICE COUPON

Noise Limiter, PA/CB, RF Gain, Channel Selector, LED Modulation Indicator, S/RF Meter.
Editorial Remarks: The TRC-452 has an automatic modulation gain control to eliminate the need for a power microphone while providing 100 percent modulation. ■

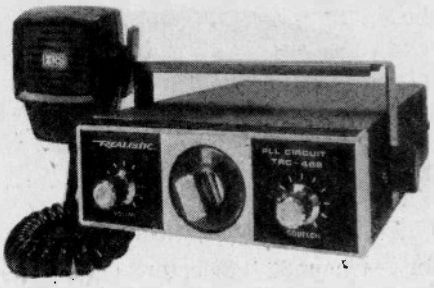
• REALISTIC TRC-467
$119.95 (Radio Shack)
General Description: A 40-channel AM transceiver for mobile operation. Power source 12 VDC with positive or negative ground. Front panel switches and controls include Vol-



CIRCLE 107 ON READER SERVICE COUPON

ume, Squelch, Automatic Noise Limiter, LED Modulation Indicator, S/RF Meter, Channel Selector.
Editorial Remarks: The TRC-467 does not have PA capability, but does offer automatic modulation gain control to eliminate the need for a power microphone while providing 100 percent modulation. ■

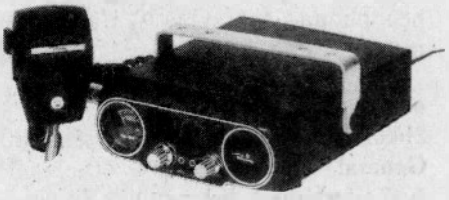
• REALISTIC TRC-468
$99.95 (Radio Shack)
General Description: A 40-channel AM transceiver for mobile operation.



CIRCLE 107 ON READER SERVICE COUPON

Power source 12 VDC with positive or negative ground. Front panel switches and controls include Volume, Squelch, LED Modulation Indicator, Channel Selector.
Editorial Remarks: This simplified, budget-priced TRC-468 model has no meter or PA capability, but does feature an automatic modulation gain control circuit to eliminate the need for a power microphone while providing 100 percent modulation. ■

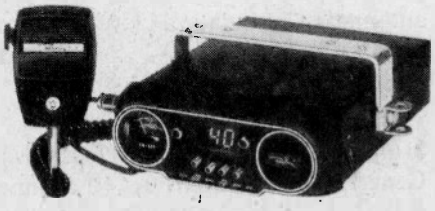
• REGENCY CB-401
$149.00 (Regency Electronics, Inc.)
General Description: A 40-channel AM transceiver for mobile, PA oper-



CIRCLE 108 ON READER SERVICE COUPON

ation. Features include a lighted S/RF meter, switchable noise limiter, 5-watt PA, LED digital readout for channel selector. ■

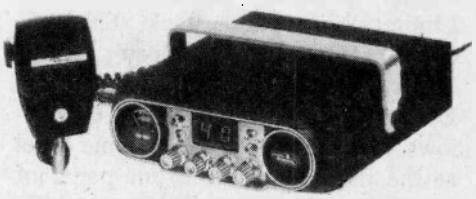
• REGENCY CB-501
$179.00 (Regency Electronics, Inc.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Front panel switches and controls include Volume, On/Off, Automatic Noise Limiter, PA/CB, Dim, Squelch, Channel Selector, S/RF meter.
Editorial Remarks: The CB-501 features ½-inch LED readout with



CIRCLE 108 ON READER SERVICE COUPON

bright/dim switch, 5-watt PA, and a choice of security or quick disconnect mounting hardware. The microphone plugs into a jack on the left front side. ■

• REGENCY CB-601
$199.00 (Regency Electronics, Inc.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Features RF Gain, Tone Slide Controls, Noise Blanker, ANL, PA,



CIRCLE 108 ON READER SERVICE COUPON

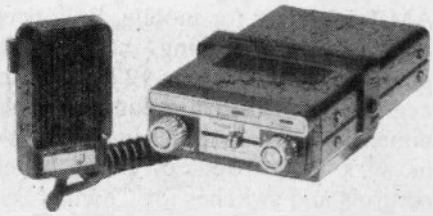
dual level LED readout for channel selector, lighted S/RF meter.
Editorial Remarks: The CB-601 is rated for 55 dB adjacent channel selectivity and comes with security or quick connect hardware. ■

• REGENCY CB-701
$219.00 (Regency Electronics, Inc.)
General Description: A 40-channel AM transceiver for base station operation. Features Mike Gain Control, LED Modulation Indicator, RF

CIRCLE 108 ON READER SERVICE COUPON

Gain, dual brightness ½-inch LEDs for the channel selector, lighted S/RF meter.
Editorial Remarks: Designed for AC/DC operation. ■

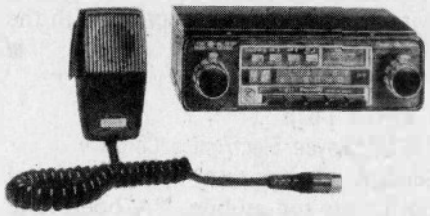
• ROYCE 1-590
$64.95 (Royce Electronics Corp.)
General Description: An economy 3-channel AM transceiver for mobile



CIRCLE 109 ON READER SERVICE COUPON

operation. Power source 12 VDC with positive or negative ground. Front panel switches and controls include Volume/On-Off, Channel Selector, Slide-Type Squelch Control.
Editorial Remarks: The Model 1-590 receiving system features single conversion superheterodyne circuitry with ceramic filter, automatic noise limiting, AGC and squelch. ■

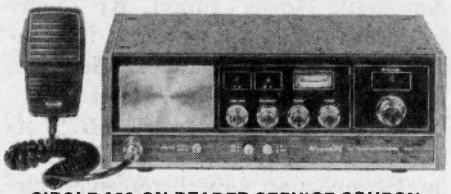
• ROYCE 1-617
$329.95 (Royce Electronics Corp.)
General Description: A 40-channel AM transceiver plus AM/FM Stereo radio for in-dash mobile operation. Front panel switches and controls include On-Off/Volume/Tone Fader, Pushbutton AM/FM station Selector, Local/Distant, Meter, LED Digital Channel Readout, CB/Radio, Standby, AM/FM, Squelch, TX-ST Indicator Light, Channel Selector/Tuning.



CIRCLE 109 ON READER SERVICE COUPON

Editorial Remarks: Model 1-617 allows you to monitor any CB channel while listening to AM or FM radio programs; the CB signal overrides the radio signals. A local-distant switch for FM also serves as an RF Gain control for CB operation. ■

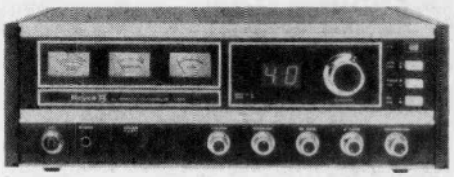
• ROYCE 1-621
$219.95 (Royce Electronics Corp.)
General Description: A 40-channel AM transceiver for base station, mobile and PA operation. Power source



CIRCLE 109 ON READER SERVICE COUPON

117 VAC or 12 VDC (13.8 EIA) with positive or negative ground. Front panel switches, jack and controls include Volume, Squelch, Tone, Tune, Power On-Off, Microphone Jack, PA/CB, Noise Limiter, TX and RX Indicator Lights, S/RF Meter, Channel Selector, LED Digital Channel Readout.
Editorial Remarks: Model 1-621 has LED indicator lights that instantly show whether you are on transmit (red) or receive (green). ■

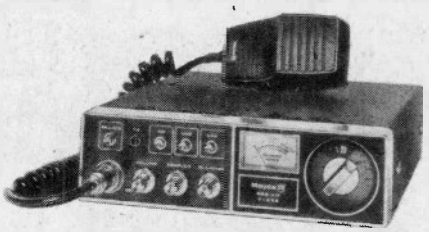
• ROYCE 1-625
$349.95 (Royce Electronics Corp.)
General Description: A 40-channel AM transceiver for base station, mobile and PA operation. Power source 115 VAC or 12 VDC (13.8 EIA) with positive or negative ground. Front panel switches, jacks and controls include Volume, Squelch, RF



CIRCLE 109 ON READER SERVICE COUPON

Gain, Delta Tune, Calibration, Power On-Off, Microphone and Headphone Jacks, Bright/Dim, TX Indicator Light, Automatic Noise Limiter, Tone, PA/CB, Channel Selector, LED Digital Channel Readout.
Editorial Remarks: Model 1-625 features three separate meters: signal strength and transmit power, calibration, SWR. ■

• ROYCE 1-632
$309.95 (Royce Electronics Corp.)
General Description: A 40-channel AM/SSB transceiver for mobile, PA operation. Power source 12 VDC (13.8 EIA) with positive or negative ground. Front panel switches, jack and controls include Volume/Off,



CIRCLE 109 ON READER SERVICE COUPON

Squelch, Clarier, PA/CB, TX Indicator Light, Channel Selector, Microphone Jack, S/RF Meter.
Editorial Remarks: The Model 1-632 front panel also has separate push-button controls for AM, LSB and USB functions. ■

• ROYCE 1-641
$399.95 (Royce Electronics Corp.)
General Description: A 40-channel AM/SSB transceiver for base station, mobile and PA operation. Power source 117 VAC or 12 VDC (13.8 EIA) with positive or negative ground. Front panel switches, jacks and controls include Volume, Squelch, Clarifier, Tone, Power, Microphone and Headphone Jacks, TX Indicator Light, RX Indicator, Channel Selector, LED Digital Channel Readout, S/RF Meter.

CIRCLE 109 ON READER SERVICE COUPON

Editorial Remarks: Model 1-641 features front-panel pushbutton controls for LSB, USB, AM, PA, CB and Noise-Blanker functions. ■

• ROYCE 1-648
$136.95 (Royce Electronics Corp.)
General Description: A 40-channel AM transceiver for mobile PA operation. Front panel switches, jack and controls include Volume, Squelch, PA/CB, Microphone Jack, Channel

CIRCLE 109 ON READER SERVICE COUPON

Selector and S/RF Meter.
Editorial Remarks: Model 1-648 offers a metal rather than plastic housing, rear panel jacks for PA and external speakers, and operation on either a positive or negative ground power source. ■

• ROYCE 1-673
$149.95 (Royce Electronics Corp.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 13.8 VDC with positive or negative ground. Front panel switches, jack and controls include Volume, Squelch, PA/CB,

CIRCLE 109 ON READER SERVICE COUPON

Automatic Noise Limiter, Microphone Jack, TX Indicator Light, Channel Selector, vertical-style S/RF meter.
Editorial Remarks: Model 1-673 offers phase lock loop circuitry amplified automatic gain control, and relay switching to permit reception with the mike disconnected. ■

• ROYCE 1-675
$169.95 (Royce Electronics Corp.)
General Description: A 40-channel transceiver for mobile, PA operation. Power source 13.8 VDC with positive or negative ground. Front panel switches, jack and controls include Volume/Off, Squelch, Tune, PA/CB,

CIRCLE 109 ON READER SERVICE COUPON

Automatic Noise Limiter, RF Gain/LOC/DX, Microphone Jack, TX Indicator Light, Channel Selector, Transmit S/RF Power Meter.
Editorial Remarks: Model 1-675 offers amplified automatic gain control, dual conversion superheterodyne circuitry with 3 ceramic filters. ■

• ROYCE 1-678
$189.95 (Royce Electronics Corp.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 13.8 VDC with

CIRCLE 109 ON READER SERVICE COUPON

positive or negative ground. Front panel switches, jack and controls include Volume, Squelch, RF Gain, Tune, PA/CB, Automatic Noise Limiter, Microphone Jack, TX Indicator Light, Channel Selector, S/RF Meter.
Editorial Remarks: Model 1-678 allows you to control the volume level at the microphone or front panel of the main unit. Other features include a metal case and an automatic modulation control circuit. ■

• ROYCE 1-680
$189.95 (Royce Electronics Corp.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 12 VDC (13.8 EIA) with positive or negative ground. Front panel switches, jack and controls include Volume/Off,

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Squelch, PA/CB, Automatic Noise Limiter, TX Indicator Light, Channel Selector, LED Digital Channel Readout, S/RF Meter.
Editorial Remarks: Model 1-680 features a built-in Amplified Automatic Gain Control (AAGC). Relay switching permits reception without mike. ■

• ROYCE 1-682
$219.95 (Royce Electronics Corp.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Variable tuning ± 1.5 kHz provided. Power supply 12 VDC with negative and positive ground. Overall dimensions are 2-13/32-in. h x 7⅞-in. w x 8-13/16-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, Fine Tuning,

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RF Gain, PA/CB, ANL, and Channel Indicator Dimming. Standard Accessories are microphone, mobile mount, DC cable.

Receiver Section Test:

Input Sensiitvity	0.5 μV
Adjacent Channel Rejection	62 dB
AGC Action	13 dB
Input Level for S9	26 μV

Transmitter Section Test:

RF Output	3.6 watts
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—30 dB
Modulation Limited to 100%	yes

Editorial Remarks: The Royce 1-682 has a relative reading S-meter, double conversion receiver, external and PA speaker jacks, S/RF output meter, submaster volume control built into microphone case, and LED digital channel indicators. ■

• SANKYO SCB-101

$149.95 (Sankyo Seiki America Inc.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Front panel switches, controls and jacks include Volume/On/Off,

CIRCLE 110 ON READER SERVICE COUPON

PA/CB, Channel Selector, Squelch, S/RF Meter, TX lamp.

Editorial Remarks: The SCB-101 has a PA speaker jack, external speaker jack, ceramic filter, ANL switch, microphone, DC power cord. ■

• SANKYO SCB-202

$199.95 (Sankyo Seiki America Inc.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Front panel switches, controls and jacks include Volume/On/Off, PA/CB, Noise Blanker, SWR-CAL,

CIRCLE 110 ON READER SERVICE COUPON

Delta Fine Tune, RF Gain, Channel Selector, illuminated S/RF/SWR Meter, microphone jack.

Editorial Remarks: The SCB-202 features a phase locked loop synthesizer, PA speaker jack, external speaker jack, output indicator lamp and comes with microphone, DC power cord and mounting bracket. ■

• SBE ASPEN (SBE-41CB)

$189.95 (SBE, Inc.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 13.8 VDC. Front panel switches, controls and jacks include Volume, Squelch, PA/CB, Local/Distance, Mike Jack, S/RF Meter, light-touch "Taku-Twirler" Channel Selector with LED digital readout.

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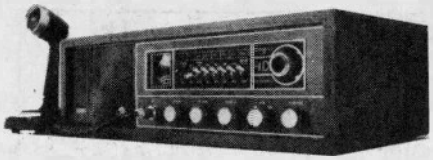
Editorial Remarks: The SBE-41CB offers a double-conversion type receiver, built-in noise limiter, automatic gain control, transmit/receive indicator lights, phase lock loop circuitry, jacks for external speaker and PA speaker, conversion to a base station with an optional AC power pack. ■

• SBE CONSOLE V (SBE-40CB)

$529.95 (SBE, Inc.)

General Description: A 40-channel AM/SSB transceiver for base station operation. An automatic power transfer circuit switches to battery operation in case of AC power failure. Front panel switches, jacks and controls include Volume, RF Gain, Squelch, AM/USB/LSB, Clarifier, Power On-Off, Speaker (Int-Ext), CB/PA, Noise Limiter, Noise Blank-



CIRCLE 111 ON READER SERVICE COUPON

er, CAL/REV, Meter (S/RF/SWR), Channel Selector, LED Digital Channel Readout, RF/S/VSWR Meter, Squelch Adjust Meter, Microphone and Headphone Jacks.

Editorial Remarks: The Console V features a channel 9 priority switch. A "micro margin" squelch adjust meter aids in preventing squelch breaking and popping while eliminating the possibility of missing weak signals. ■

• SBE CORTEZ 40 (SBE-42CB)

$219.95 (SBE, Inc.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Front panel switches, jack and controls include Volume/RF Gain/Off, Squelch/Delta Tune, PA/CB, Noise Limiter, TX and RX In-

CIRCLE 111 ON READER SERVICE COUPON

dicator Lights, Microphone Jack, Channel Selector, LED Digital Channel Readout, vertical style S/RF Meter.

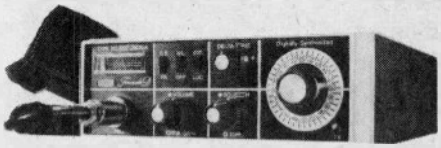
Editorial Remarks: The Cortez-40 utilizes phase lock loop circuitry and can be used with a power source with either positive or negative ground. ■

• SBE FORMULA D (SBE-26CB/A)

$229.95 (SBE, Inc.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 13.8 VDC. Front panel switches, controls and jacks include Volume/PA Gain, Squelch/Tone, Delta Tune, PA/CB, Noise Limiter, Local/Distance, Channel Selector, S/RF Meter, Mike Jack.

Editorial Remarks: The SBE-26CB/



CIRCLE 111 ON READER SERVICE COUPON

A features phase lock loop circuitry, double-conversion type receiver, jacks for external speaker and PA. Can be used as a base station with an optional 115 VAC power adapter. ■

• SBE KEY-COM 1000 (SBE-54CB)
$279.95 (SBE, Inc.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 13.8 VDC with positive or negative ground. Front panel switches and controls include Volume/Off, Delta Tune, Squelch, RF Gain, Noise Blanker, PA/CB, Lights/Dim, Noise Limiter,

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TX and RX Indicator Lights, S/RF Meter, LED Digital Channel Readout.
Editorial Remarks: Key-Com 1000 features a unique keyboard-operated programmable memory and control system which allows the user to determine channel occupancy, monitor channels, scan, automatically latch on live channels, utilize priority channel polling, etc. ■

• SBE MALIBU 40 (SBE-44CB)
$159.95 (SBE, Inc.)
General Description: A 40-channel AM transceiver for mobile operation. Front panel switches, jack and controls include Volume/Off, Squelch,

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Microphone Jack, vertical style S/RF Meter, Channel Selector.
Editorial Remarks: The Malibu-40 utilizes a special "fold-back" channel dial indicator that permits display of large channel numbers on the otherwise compact face. ■

• SBE SIDEBANDER IV (SBE-27CB/A)
$379.95 (SBE, Inc.)
General Description: A 40-channel SSB/AM transceiver for mobile, PA operation. Power source 13.8 VDC. Front panel switches, controls and jacks include Volume, RF Gain, Squelch, Clarifier, PA/CB, Noise Blanker, Noise Limiter, AM/USB/

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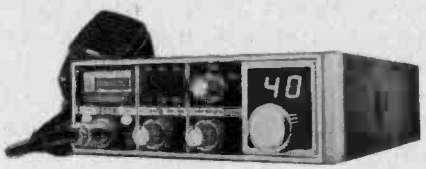
LSB, Mike Jack, S/RF Meter, Channel Selector, Transmit Light.
Editorial Remarks: The SBE-27CB/A features phase lock loop circuitry, and PA/Paging function with an external speaker. ■

• SBE SIDEBANDER V (SBE-39CB)
$419.95 (SBE, Inc.)
General Description: A 40-channel AM/SSB transceiver for mobile, PA operation. Front panel switches, jack and controls include Volume/RF Gain, Clarifier/Squelch, AM/USB/LSB, Noise Blanker, PA/CB, Noise



CIRCLE 111 ON READER SERVICE COUPON

Limiter, Microphone Jack, Channel Selector, LED Digital Channel Readout, Meter.
Editorial Remarks: Sidebander V features a channel 9 priority switch, SBE "Speech Spander" automatic microphone volume control, and a rapid-turn channel selector. ■

• SBE STOWAWAY (SBE-47CB)
$249.95 (SBE, Inc.)
General Description: A trunk-mounted 40-channel AM transceiver for mobile operation. The main transceiver module is mounted in the trunk of a vehicle to keep it out of sight. The detachable microphone is a control head containing the Speaker, Volume, Squelch, Channel Selec-

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tor (fast-slow/up-down), LED digital Channel Readout, RF/S Meter.
Editorial Remarks: The Stowaway utilizes a unique meter, in the microphone, consisting of a chain of yellow and red LEDs operating in stepper fashion. Other unique features include outputs for CB audio break-in through existing car stereo systems and an actuator output for an optional motor-driven disappearing antenna. ■

• SBE TAHOE 40 (SBE-49CB)
$179.95 (SBE, Inc.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 1⅜-in. h x 4½-in. w x 8¼-in. d. Front panel controls and switch for Channel Selector, Volume, Squelch, PA/CB. Standard accessories are microphone, mobile mount, DC power cable.

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Receiver Section Test:

Input Sensitivity	0.5 μV
Adjacent Channel Rejection	65 dB
AGC Action	3.5 dB
Input Level for S9	30 μV

Transmitter Section Test:

AM RF Output	3.6 watts
Modulation to 85%	yes
Relative Sensitivity for	

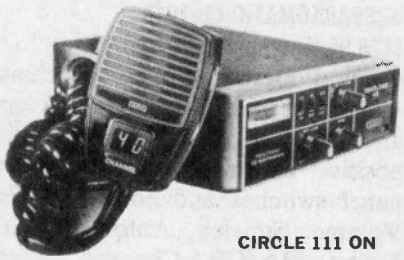
85% Modulation .....—20 dB
Modulation Limited to 100% .....yes

Editorial Remarks: The SBE Tahoe 40 has a relative reading S-meter, double conversion receiver, external and PA speaker jacks, LED digital channel indicator, and S/RF output meter. ■

• SBE TOUCH/COM (SBE-43CB)

$259.95 (SBE, Inc.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Delta tuning +2/—0.5 kHz provided. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 2-5/16-in. h x 6⅝-in. w x 9¾-in. d. Front panel controls and switches for Microphone Gain, Delta Tune, Tone, CB/PA,



CIRCLE 111 ON READER SERVICE COUPON

Noise Limiter, Local/Distance Sensitivity. Standard accessories are microphone, mobile mount, DC power cable.

Receiver Section Test:

Input Sensitivity ..... 0.45 μV
Adjacent Channel Rejection ..... 57 dB
AGC Action ..... 11 dB
Input Level for S9 ..... 20 μV

Transmitter Section Test:

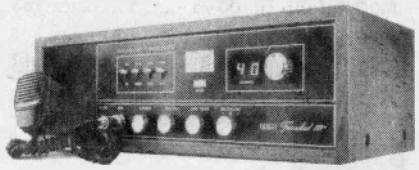
AM RF Output ..... 3.8 watts
Modulation to 85% ..... yes
Relative Sensitivity for 85% Modulation ....—22 to —40 dB
Modulation Limited to 100% .....no

Editorial Remarks: The SBE Touch/Com 40 has a relative reading S-meter, double conversion receiver, external and PA speaker jacks, and S/RF output meter. The channel selector, LED digital channel indicator and volume and squelch controls are built into the microphone. ■

• SBE TRINIDAD III (SBE-45CB)

$279.95 (SBE, Inc.)

General Description: A 40-channel AM transceiver for base, PA operation. Power supply 115 VAC or 12 VDC. Front panel switches, controls and jacks include Volume, Squelch, SWR/Sens, Deltatune, PA/CB, RF-S/SWR, CAL/REV, ANL, Channel Selector with LED digital readout, S/RF/VSWR Meter, Mike Jack. Dimensions: 5¾-in. h x 17¾-in. w x 8¾-in. d.



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Editorial Remarks: The SBE-45CB features phase lock loop circuitry, —55 dB adjacent channel rejection, PA operation with addition of an external speaker. In event of a power failure, a "fail-safe" switchover shifts input power to 12-volt battery. ■

• SCOTT DAK MARK III

$129.95 (M. H. Scott Co., Inc.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power source nominal 12.6 VDC with positive or negative ground. Front panel switches, jack and controls include Volume/Off, Squelch, Delta Tune, PA/CB, Automatic Noise Limiter, Transmission

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Modulation Indicator Light, Microphone Jack, S/RF Meter, Channel Selector.

Editorial Remarks: The Mark III also has jacks for external speaker or headphones and jack for PA speaker; dual-conversion receiver; high-level modulation with automatic fast attack compressor amplifier to insure "signal punch." ■

• SEARS ROADTALKER MODEL 3806

$99.50 (Sears, Roebuck and Co.)

General Description: A 40-channel AM transceiver for mobile operation. Power source 12 VDC with positive or negative ground. Front panel switches and controls include Volume/Off, Squelch, Modulation Indicator Light, S/RF Meter, Channel Selector.

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Editorial Remarks: Model 3806 offers phase lock loop circuitry but no PA capability. ■

• SEARS ROADTALKER MODEL 3807

$119.50 (Sears, Roebuck and Co.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 12 VDC with positive or negative ground. Front panel switches and controls include

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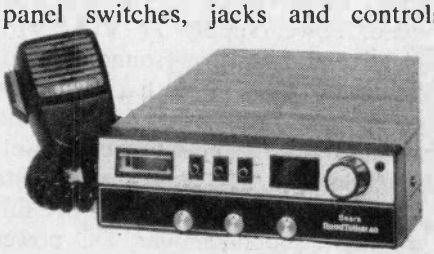
Volume/Off, RF Gain/SWR-Cal, Squelch, Fine Tuning, SWR/RF/CAL, Noise Blanker/Off, PA/CB, Modulation and TX Indicator Lights, S/RF Meter, Channel Selector, LED Digital Channel Readout.

Editorial Remarks: Model 3807 comes with a quick disconnect power cord. ■

• SEARS ROADTALKER MODEL 3808

$149.50 (Sears, Roebuck and Co.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 12 VDC with postive or negative ground. Front panel switches, jacks and controls



CIRCLE 113 ON READER SERVICE COUPON

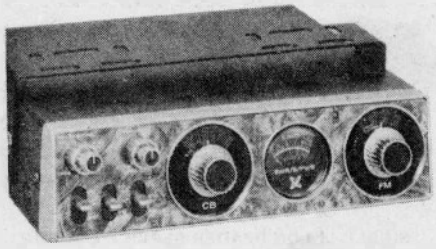
include Volume, Squelch, RF Gain, Automatic Noise Limiter/Off, PA/CB, Brit/Dim, TX Indicator Light, S/RF/SWR Meter, Channel Selector, LED Digital Channel Readout, Microphone Jack.

Editorial Remarks: Model 3808 features phase lock loop circuitry. ■

• SEARS MODEL 28-62674

$179.99 (Sears, Roebuck and Co.)

General Description: A 40-channel AM transceiver for mobile, PA operation; plus mono FM radio. Power source 12 VDC with positive or negative ground. Front panel switches and controls include Power Off/Volume / Tone, Squelch / SWR / Fine Tune, PA/CB/ACC, CB-LO/DX/FM-LO, CB / Stand-by / FM, CB Channel Selector, FM Station Selector, S/RF/SWR Meter, Antenna Indicator Light.



CIRCLE 113 ON READER SERVICE COUPON

Editorial Remarks: Model 62674 features phase lock loop circuitry and a built-in limiter without control. ■

• SHARP CB-2260

$139.95 (Sharp Electronics Corp.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Delta tuning ± 1.2 kHz provided. Power supply 12 VDC with negative and positive ground. Overall dimensions are 2¼-in. h x 5⅞-in. w x 8¾-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch/PA, ANL, and Delta Tuning. Standard accessories are microphone, mobile mount, DC power cable.

Receiver Section Test:

Input Sensitivity	0.3 μV
Adjacent Channel Rejection	64 dB
AGC Action	2 dB
Input Level for S9	7.0 μV

Transmitter Section Test:

RF Output	3.7 watts
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—17 dB
Modulation Limited to 100%	yes

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Editorial Remarks: The Sharp CB-2260 has a relative reading S-meter, double conversion receiver, external and PA speaker jacks, and an S/RF output meter. ■

• SHARP CB-2460

$149.95 (Sharp Electronics Corp.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Front panel switches, controls and jacks include Volume, Squelch/PA, Automatic Noise Limiter, Delta Tune, Mike Jack, Channel Selector with LED digital readout, and S/RF Meter.

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Editorial Remarks: The CB-2460 features a flashing red light for emergency channel 9, phase lock loop circuitry, crystal-controlled transmitter, dual conversion type receiver. Harmonic suppression is claimed to exceed 60 dB. ■

• SONAR MODEL FS-2340

$495.00 (Sonar Radio Corp.

General Description: A 40-channel AM transceiver for base station operation. Front panel switches, jack and controls include Volume, Squelch, RF Gain, Fine Tuning, Automatic Noise Limiter, Microphone Jack, Meter, Channel Selector, LED Digital Channel Readout.

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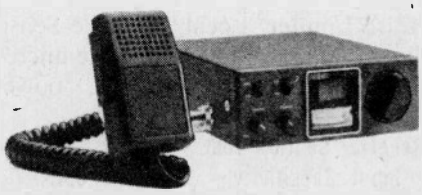
Editorial Remarks: The FS-2340 features phase lock loop circuitry, built-in low-pass filter, conversion with voice oriented audio. ■

• SPARKOMATIC CB-1040

$129.95 (Sparkomatic Corp.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 12 VDC with positive or negative ground. Front panel switches and controls include Volume, Squelch, Automatic Noise limiter, PA/CB, Channel Selector,



CIRCLE 116 ON READER SERVICE COUPON

LED digital readout, S/RF Meter, Transmit Modulation Light.

Editorial Remarks: The CB-1040 features PLL digital frequency synthesizing, jacks for external speaker and PA. ■

• SPARKOMATIC CB-1140

$129.95 (Sparkomatic Corp.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 2-in. h x 5½-in. w x 7-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, ANL, PA/CB. Standard accessories are microphone, mobile mount, DC power cable.

Receiver Section Test:

Input Sensitivity	0.3 μV
Adjacent Channel Rejection	55 dB

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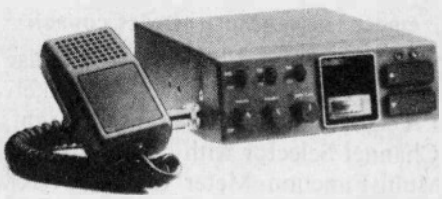
AGC Action ..... 7 dB
Input Level for S9 ..... 35 μV
Transmitter Section Test:
RF Output ..... 3.9 watts
Modulation to 85% ..... yes
Relative Sensitivity for 85% Modulation ..... —18 dB
Modulation Limited to 100% ..... yes

Editorial Remarks: The Sparkomatic CB-1140 has a relative reading S-meter, double conversion receiver, external and PA speaker jacks, and S/RF output meter. ■

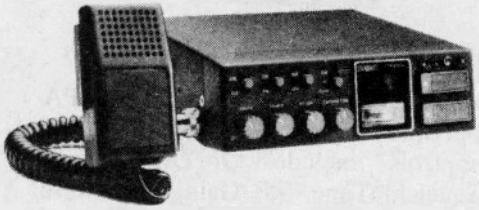
• SPARKOMATIC CB-2040
$159.95 (Sparkomatic Corp.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 12 VDC with positive or negative ground. Front panel switches and controls include Volume, Squelch, Delta Tune, Automatic Noise Limiter, PA/CB, Noise Blanker, S/RF Meter, Channel Select Touch Control Bars, LED digital readout, Transmit and Receive Lights.



CIRCLE 116 ON READER SERVICE COUPON

Editorial Remarks: The CB-2040 features complete electronic channel switching, channel indexing at one-per-second or four-per-second rate. Other features include angled front panel for easier reading, jacks for external speaker and PA. ■

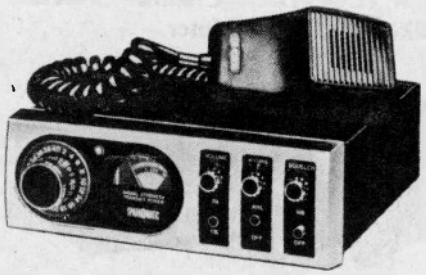
• SPARKOMATIC CB-3040
$179.95 (Sparkomatic Corp.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 12 VDC with positive or negative ground. Front panel switches and controls include Volume, Squelch, RF Gain, Delta Tune, Automatic Noise Limiter, PA/CB, Noise Blanker, CAL/RF/SWR, Channel Select Touch Control Bars, LED digital readout, Memory Control, Transmit Light, Receive Light, Antenna Warning Light.



CIRCLE 116 ON READER SERVICE COUPON

Editorial Remarks: The CB-3040 offers complete electronic channel switching, pre-programming with a "memory" button, channel indexing at one-per-second or four-per-second rate. PLL digital frequency synthesizer. ■

• SPARKOMATIC CB-4020S
$149.95 (Sparkomatic Corp.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 12 VDC with positive or negative ground. Front panel switches and controls include Volume, Squelch, PA/CB, Delta



CIRCLE 116 ON READER SERVICE COUPON

Tune, Automatic Noise Limiter, Noise Blanker, Channel Selector, S/RF Meter, Modulation Light.

Editorial Remarks: The CB-4020S features include jacks for external speaker and PA, screw-type detachable microphone, chrome mounting bracket. ■

• SPARKOMATIC CB-5000
$149.95 (Sparkomatic Corp.)
General Description: A 40-channel AM transceiver for base station operation. Front panel switches, controls and jacks include Volume, Squelch,

CIRCLE 116 ON READER SERVICE COUPON

PA/CB, Automatic Noise Limiter, Headphone Jack, Mike Jack, Channel Selector, LED digital readout, Transmit Modulation Light.

Editorial Remarks: The CB-5000 has PLL digital frequency synthesis circuitry, jacks for external speaker and PA, detachable microphone. AC/DC operation. ■

• STANDARD HORIZON 29A
$229.95 (Standard Communications)
General Description: A 40-channel AM transceiver for mobile, PA operation. Fine tuning ± 1.5 kHz is provided. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 2.9-in. h x 6.9-in. w x 8.6-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, RF Gain, Fine Tuning, CB/PA (Hail), Noise Blanker, ANL. Standard accessories are microphone, mobile mount, DC power cable.

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Receiver Section Test:
Input Sensitivity ..... 0.6 μV
Adjacent Channel Rejection ..... 63 dB
AGC Action ..... 10 dB
Input Level for S9 ..... 95 μV
Transmitter Section Test:
RF Output ..... 3.8 watts
Modulation to 85% ..... yes
Relative Sensitivity for 85% Modulation ..... —18 dB

Editorial Remarks: The Standard Horizon 29A has an S-meter that reads 5 dB per S-unit, a double conversion receiver, jacks for external and PA speakers (the PA jack and switching is labeled "hailer"), a control built into the microphone that adjusts the modulation level from al-

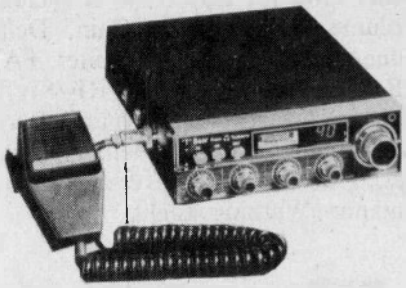
most full off to maximum, and S/RF output meter. ■

• STONER MODEL PRO-40
$995.00 (Stoner)
General Description: A 40-channel AM/SSB transceiver for base station operation. Front panel switches, jacks and controls include Volume, RF Gain, Squelch, Clarifier, Whistlestop (filter to null out heterodyne whistles caused by AM carriers), Headphone and Microphone Jacks. The front panel also has pushbutton controls for AC, AM, MIC, Noise Blanker 1,

CIRCLE 118 ON READER SERVICE COUPON

Noise Blanker 2, SB, HF, SLOW, FAST, NULL.
Editorial Remarks: This truly offbeat base station also features a long LED digital channel readout that not only indicates the channel number but gives the frequency in six digits; this display is driven by a microprocessor which autotracks when channels are changed. There's a newly developed SWR indicator that reveals mis-tuning of the antenna. A computer microprocessor automatically selects channel 16 (the sidebanders' calling channel) upon the application of power. Data entry switches are used to shift the channels in either direction at fast or slow rate. The elimination of an RF stage and the use of a mixer with hot carrier diodes do away with cross-modulation interference (bleedover). "Extraordinary selectivity" is achieved through use of two separate crystal filters. ■

• TEABERRY 'T' BEAR
$199.99 (Teaberry Electronics Corp.)
General Description: A 40-channel



CIRCLE 119 ON READER SERVICE COUPON

AM transceiver for mobile and PA operation. Front panel switches and controls include On/Off/Volume, Squelch, Tone, RF Gain, PA, Noise Blanking/Off, Brit/Dim, Channel Selector, Meter, Digital Channel Indicator. The microphone jack is on the left side.
Editorial Remarks: The 'T' Bear is but one of 13 new Teaberry models ranging in price from $149.99 to $439.99. ■

• TRAM D12
$169.95 (Tram/Diamond Corp.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 13.8 VDC with positive or negative ground. Front panel switches, controls and jacks include Volume, Mike Gain, Automatic Noise Limiter, Squelch, RF Gain (LOC-DX), Channel Selector, Mike Jack, S/RF Meter.

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Editorial Remarks: Notable features of the D12 include compact design (front microphone receptacle also saves space), anti-theft mounting, PA capability. ■

• TRAM TD32
$239.95 (Tram/Diamond Corp.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Front panel switches and controls include RF Gain, Microphone Gain, Noise Blanker, Adjustable Noise Limiter, Delta Tune, HF Tone Control, PA Gain, PA/CB. Other controls built into the micro-

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phone include Channel Selector, Volume, Squelch, LED Digital Readout.
Editorial Remarks: The TD32 features a unique two-speaker system consisting of one conventional speaker in the cabinet and a separate speaker in the front panel to add high frequencies. ■

• TRAM D42
$249.95 (Tram/Diamond Corp.)
General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 13.8 VDC with positive or negative ground. Front panel switches and controls include Volume, RF Gain, SWR, Mike Gain,

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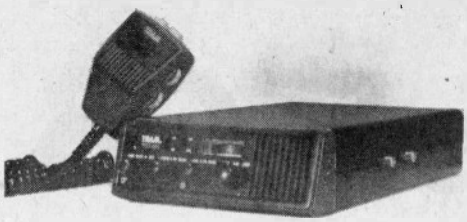
Squelch, Tone, Automatic Noise Limiter, Delta Tune, Noise Blanker, PA/CB, SWR/CAL, Transmit Light, Channel Selector with digital display, Multi-Function Meter (S/RF/SWR).
Editorial Remarks: The Tram D42 features PA capability, anti-theft mounting device, microphone gain control. ■

• TRAM TD52
$429.95 (Tram/Diamond Corp.)
General Description: A 40-channel AM/SSB transceiver for mobile, PA operation. Front panel controls include RF Gain, Microphone Gain, Noise Blanker, Adjustable Noise Limiter, HF Tone Control, PA Gain. Other controls built into the microphone include Channel Selector, Volume and Clarifier, LED Digital



CIRCLE 120 ON READER SERVICE COUPON

Readout.

Editorial Remarks: The TD52 features a unique two-speaker system consisting of one conventional speaker in the cabinet and a separate speaker in the front panel to add high frequencies. ■

• TRAM D62

$449.95 (Tram/Diamond Corp.)

General Description: A 40-channel AM/SSB transceiver for mobile, PA operation. Power source 13.8 VDC with positive or negative ground. Front panel switches and controls include Volume, RF Gain, SWR, Mike Gain, Clarifier, Squelch, AM/LSB/

CIRCLE 120 ON READER SERVICE COUPON

USB, Noise Blanker, SWR/CAL, PA/CB, Transmit Light, Channel Selector with digital readout, Multi-Function Meter (power output, SWR, S).

Editorial Remarks: The Tram D62 features an antenna monitor that indicates antenna failure, and a microphone gain control to ensure high level modulation under all operating conditions. ■

• TRAM DIAMOND D201

$895.00 (Tram/Diamond Corp.)

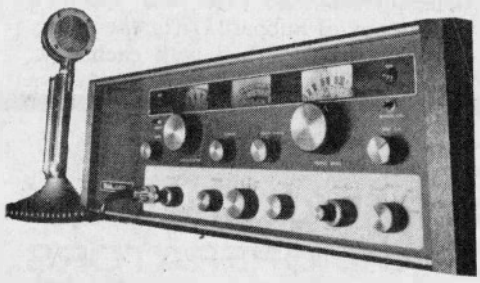
General Description: A 23-channel AM/SSB transceiver for fixed operation. Fine tuning ±800 Hz provided. Power supply 120 VAC. Overall dimensions are 7⅜-in. h x 21½-in. w x 12-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, Clarifier, Manual Variable Receiver Tuning, Microphone Gain, RF Gain, Transmit Tone, Receive Tone, SWR Meter Calibrate, Variable Noise Limiter, AM/LSB/ USB Mode, Crystal Controlled/ Manual Receiver Tuning, Noise Blanker, Manual Dial Calibrator, SWR Meter Function. Standard accessories are Astatic D104 microphone and stand, AC power cord.

Receiver Section Test:

Input Sensitivity	0.3 μV
Adjacent Channel Rejection	77 dB
AGC Action	21 dB
SSB Opposite Sideband Rejection	60+ dB
Input Level for S9	30 μV

Transmitter Section Test:

RF Output	5.2 watts AM, 15 watts PEP SSB
Modulation to 85%	yes
Relative Sensitivity to 85% Modulation	user adjustable
Modulation Limited to 100%	yes



CIRCLE 120 ON READER SERVICE COUPON

Editorial Remarks: The Tram/Diamond D201 has an S-meter that reads 5/7 dB per S-unit, double conversion receiver, external speaker jack, jack for remote control T/R switch (remote T/R switch not supplied), and S/RF output/SWR meter. There are external tune and load adjustments for the transmitter. ■

• TRAN SONIC MCB-40

$79.95 (Tran Sonic Industries Inc.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 13.8 VDC with poistive or negative ground. Front panel switches, jack and controls

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include Volume, Squelch, Automatic Noise Limiter, PA/CB, LED/TX Light, Channel Selector, S/RF Meter.

Editorial Remarks: The MCB-40 features a front-threaded microphone jack; external jacks for added speaker and PA; channel selector with lighted large upper and lower case numerals indicating signal and TX power. ■

• TRAN SONIC MCB-41

$89.95 (Tran Sonic Industries Inc.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 13.8 VDC with positive or negative ground. Front panel switches, jack and controls include Volume, Delta Tune, Noise

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Blanker/Automatic Noise Limiter, PA/CB, Microphone Jack, Channel Selector, LED Digital Channel Readout, S/RF Meter.

Editorial Remarks: The MCB-41 features a front-threaded microphone jack; jacks for external speaker and PA speaker; built-in negative/positive power cord; phase lock loop circuitry. ■

• TRAN SONIC MCB-44

$89.95 (Tran Sonic Industries Inc.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 13.8 VDC with positive or negative ground. Front panel switches, jack and controls include Volume / Off, Delta Tune,

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Squelch, PA/CB, Automatic Noise Limiter, Microphone Jack, TX/RX Lamps, Channel Selector, S/RF Meter, LED Digital Channel Readout.

Editorial Remarks: The MCB-44 comes with power microphone (no

(Continued from page 106)

Class D CB

Lots has happened in the CB world since the last edition of the CB BUYERS GUIDE, but the basics remain the same: you can't be a good CBer without reading, understanding and observing the simple rules governing CB operation. For that reason the Federal Communications Commission (FCC) requires that all licensees maintain an up-to-date copy of Subpart D of Part 95 of the CB Rules and Regulations. In fact, the FCC now specifies that a copy of Subpart D (or the entire Part 95) be furnished with each new Class D Citizens Band transceiver sold.

If you don't already have a copy of the CB rules and regs you can include the copy of Subpart D printed below in your station records, updating it as needed to keep it current, and you're legal! Since the CB BUYERS GUIDE comes out only once a year, CBers can keep up-to-date on Subpart D by reading ELEMENTARY ELECTRONICS—a bi-monthly publication. In fact, ELEMENTARY ELECTRONICS has a record of publishing proposed Subpart D changes and exact actual changes long before

FCC RULES AND REGULATIONS PART 95—CITIZENS RADIO SERVICE EDITED EDITION FOR CB OPERATORS

SUBPART D—CITIZENS BAND (CB) RADIO SERVICE GENERAL

§95.401 Basic and purpose.

These rules are designed to provide a private short-distance radiocommunications service for the business or personal activities of licensees, all to the extent that the uses are not specifically prohibited in this part.

§95.403 Definitions.

For the purpose of this part, the following definitions shall be applicable. For other definitions, refer to Part 2 of this chapter.

Citizens Band (CB) Radio Service station. A station in the Personal Radio Services licensed to be operated for radiotelephony only, on an authorized frequency in the 26.96-27.41 MHz band.

Mobile station. A station intended to be operated while in motion or during halts at unspecified points.

(b) Miscellaneous definitions.

Antenna structures. The term "antenna structures" includes the radiating system, its supporting structures and any appurtenances mounted thereon.

Control point. A control point is an operating position which is under the control and supervision of the licensee, at which a person immediately responsible for the proper operation of the transmitter is stationed, and at which adequate means are available to aurally monitor all transmissions and to render the transmitter inoperative.

Dispatch point. A dispatch point is any position from which messages may be transmitted under the supervision of the person at a control point.

External radio frequency power amplifiers. As defined in § 2.815(a) and as used in this part, an external radio frequency power amplifier is any device which, (1) when used in conjunction with a radio transmitter as a signal source is capable of amplification of that signal, and (2) is not an integral part of a radio transmitter as manufactured.

Harmful interference. Any emission, radiation or induction which endangers the functioning of a radio-navigation service or other safety service or seriously degrades, obstructs or repeatedly interrupts a radio-communication service operating in accordance with applicable laws, treaties, and regulations.

Man-made structure. A man-made structure is any construction other than a tower, mast or pole.

Omnidirectional antenna. An antenna designed so the maximum radiation in any horizontal direction is within 3 dB of the minimum radiation in any horizontal direction.

Person. The term "person" includes an indvidual partnership, association, joint-stock company trust or corporation.

Remote control. The term "remote control" when applied to the use or operation of a personal radio services station means control of the transmitting equipment of that station from any place other than the location of the transmitting equipment, except that direct mechanical control or direct electrical control by wired connections of transmitting equipment from some other point on the same premises, craft or vehicle shall not be considered to be remote control.

Single sideband emission. An emission in which only one sideband is transmitted. The carrier, or a portion thereof, also may be present in the emission.

Double sideband emission. An emission in wihch both upper and lower sidebands resulting from the modulation of a particular carrier are transmitted. The carrier, or a portion thereof, also may be present in the emission.

Station authorization. Any construction permit, temporary permit, license, or special temporary authorization issued by the Commission.

APPLICATIONS AND LICENSES

§95.411 Eligibility for station license.

(a) Subject to the general restrictions of § 95.413, any person is eligible to hold an authorization to operate a station: *Provided,* That if an applicant for a station authorization is an individual or patrnership, such individual or each partner is eighteen or more years of age; An unincorporated asso-

Rules and Regulations

the FCC, through the Government Printing Office, has an opportunity to update the Subpart D it sells to consumers.

Our Canadian friends will find that there has been no need to edit their CB rules–the Canadian Government has done a fine job in writing the rules for the General Radio Service. They are short, simple, easy to read, and provide the same legal frame as our Part 95.

The Canadian Department of Communications has advised that certain changes in the GRS rules are anticipated–including probable expansion to 40 channels. Licensees in the General Radio Service should, therefore, keep abreast of developments affecting their operation.

Okay, CBers, plunge right in and read our edited version of Part 95 for Class D operators. You may discover a few items you missed when you yawned through the original. Good reading and many happy hours of CB-ing in '77! □

ciation, when licensed under the provisions of this paragraph, may upon specific prior approval of the Commission provide radiocommunications for its members.

NOTE: While the basis of eligibility in this service includes any state, territorial, or local governmental entity, or any agency operating by the authority of such governmental entity, including any duly authorized state, territorial, or local civil defense agency, it should be noted that the frequencies available to stations in this service are shared without distinction between all licensees and that no protection is afforded to the communications of any station in this service from interference which may be caused by the authorized operation of other licensed stations.

(b) No person shall hold more than one station license.

§95.413 General citizenship requirements.

A station license shall not be granted to or held by a foreign government or a representative thereof.

§95.415 Standard forms to be used.

(a) *FCC Form 505. Application for Station License in the R/C or CB Service.* This form shall be used when:

(1) Application is made for a new station authorization.

(2) Application is made for modification of any existing station authorization in those cases where prior Commission approval of certain changes is required (see §95.435).

(3) Application is made for renewal of an existing station authorization, or for reinstatement of such an expired authorization.

(b) *FCC Form 555-B. Temporary Permit, in the CB Service.* This form shall be used when application is made by an individual for temporary operating authorization.

(c) *FCC Form 703. Application for Consent to Transfer of Control of Corporation Holding Construction Permit or Station License.* This form shall be used when application is made for consent to transfer control of a corporation holding any station authorization.

§95.417 Filing of applications.

(a) To assure that necessary information is supplied in a consistent manner by all persons, standard forms are prescribed for use in connection with the majority of applications and reports submitted for Commission consideration. Standard numbered forms applicable to this Service are discussed in § 95.415, and may be obtained from the Washington, D.C. 20554, office of the Commission, or from any of its engineering field offices.

(b) All formal applications for new, modified, or renewal station authorizations shall be submitted to the Commission's office, Gettysburg, Pa. 17326. An application for a temporary permit shall be made by completing and making the certifications required by FCC Form 555-B.

Applications for consent to transfer of control of a corporation holding a station authorization, requests for special temporary authority or other special requests and correspondence relating to an application for a station authorization shall be submitted to the Commission's Office at Washington, D.C. 20554, and should be directed to the attention of the Secretary.

(c) Unless otherwise specified, an application shall be filed at least 60 days prior to the date on which it is desired that Commission action thereon be completed. In any case where the applicant has made timely and sufficient application for renewal of license, in accordance with the Commission's rules, no license with reference to any activity of a continuing nature shall expire until such application shall have been finally determined.

(d) A temporary permit may not be held by an applicant already holding a station license.

(e) Failure on the part of the applicant to provide all the information required by the application form, or to supply the necessary exhibits or supplementary statements may constitute a defect in the application.

(f) Applicants proposing to construct a radio station on a site located on land under the jurisdiction of the U.S. Forest Service, U.S. Department of Agriculture, or the Bureau of Land Management, U.S. Department of the Interior, must supply the information and must follow the procedure prescribed by § 1.70 of this chapter.

§95.419 Mailing address furnished by licensee.

Except for applications submitted by Canadian citizens pursuant to agreement

between the United States and Canada (TIAS No. 6931), each application shall set forth and each licensee shall furnish the Commission with an address in the United States to be used by the Commission in serving documents or directing correspondence to that licensee. Unless any licensee advises the Commission to the contrary, the address contained in the licensee's most recent application will be used by the Commission for these purposes.

§95.421 Who may sign applications.

(a) Except as provided in paragraph (b) of this section, applications, amendments thereto, and related statements of fact required by the Commission shall be personally signed by the applicant, if the applicant is an individual; by one of the partners, if the applicant is a partnership; by an officer, if the applicant is a corporation; or by a member who is an officer, if the applicant is an unincorporated association. Applications, amendments, and related statements of fact filed on behalf of eligible government entities, such as states and territories of the United States and political subdivisions thereof, the District of Columbia, and units of local government, including incorporated municipalities, shall be signed by such duly elected or appointed officials as may be competent to do so under the laws of the applicable jurisdiction.

(b) Applications, amendments thereto, and related statements of fact required by the Commission may be signed by the applicant's attorney in case of the applicant's physical disability or of his absence from the United States. The attorney shall in that event separately set forth the reason why the application is not signed by the applicant. In addition, if any matter is stated on the basis of the attorney's belief only (rather than his knowledge), he shall separately set forth his reasons for believing that such statements are true.

(c) Only the original of applications, amendments, or related statements of fact need be signed; copies may be conformed.

(d) Applications, amendments, and related statements of the fact need not be signed under oath. Willful false statements made therein, however, are punishable by fine and imprisonment. U.S. Code, Title 18, section 1001, and by appropriate administrative sanctions, including revocation of station license pursuant to section 312(a) (1) of the Communications Act of 1934, as amended.

§95.423 Defective applications.

(a) If an applicant is requested by the Commission to file any documents or information not included in the prescribed application form, a failure to comply with such request will constitute a defect in the application.

(b) When an application is considered to be incomplete or defective, such application will be returned to the applicant, unless the Commission may otherwise direct. The reason for return of the applications will be indicated, and if appropriate, necessary additions or corrections will be suggested.

§95.425 Amendment or dismissal of application.

(a) Any application may be amended upon request of the applicant as a matter of right prior to the time the application is granted or designated for hearing. Each amendment to an application shall be signed and submitted in the same manner and with the same number of copies as required for the original application.

(b) Any application may, upon written request signed by the applicant or his attorney, be dismissed without prejudice as a matter of right prior to the time the application is granted or designated for hearing.

§95.427 Partial grant.

Where the Commission, without a hearing, grants an application in part, or with any privileges, terms, or conditions other than those requested, the action of the Commission shall be considered as a grant of such application unless the applicant shall, within 30 days from the date on which such grant is made, or from its effective date if a later date is specified, file with the Commission a written rejection of the grant as made. Upon receipt of such rejection, the Commission will vacate its original action upon the application and, if appropriate, set the application for hearing.

§95.429 License term.

Licenses will normally be issued for a term of 5 years from the date of original issuance, major modification, or renewal.

§95.431 Types of operation authorized.

Stations are authorized as mobile stations only; however, they may be operated at fixed locations in accordance with other provisions of this part.

§95.433 Transfer of license prohibited.

A station authorization may not be transferred or assigned. In lieu of such transfer or assignment, an application for new station authorization shall be filed in each case, and the previous authorization shall be forwarded to the Commission for cancellation.

§95.435 Changes in terms of license.

(a) Commisison approval is required to increase the number of transmitters authorized for a particular station.

(b) Commission approval is not required to change either of the following terms:

1. Name of a licensee (without changes in the ownership, control or corporate structure.)
2. Mailing address of a licensee.

Although prior approval of the Commission is not required for any of these changes, prompt written notice must be furnished to the Commission as soon as possible after the change has been implemented. This notice, which may be in letter form, shall contain the name and address of the licensee as they appear in the Commission's records the new name and/or address, and the call signs and classes of all radio stations authorized to the licensee under this part. This notice shall be sent to FCC, Gettysburg, PA, 17325, and a copy shall be maintained with the records of the station.

(c) Commission approval is not required to substitute transmitting equipment at any station, provided that the equipment employed is included in the Commission's "Radio Equipment List" and is listed as acceptable for use in this Service.

§95.437 Limitations on antenna structures.

(a) All antennas (both receiving and transmitting) and supporting structures associated or used in conjunction with a station operated from a fixed location must comply with at least one of the following:

(1) The antenna and its supporting height above ground level; or (2) The antenna and its supporting structure does not exceed by more than 20 feet the height of any natural formation, tree or man-made structure on which it is mounted; or

(3) The antenna is mounted on the transmitting antenna structure of an-

other authorized radio station and exceeds neither 60 feet above ground level nor the height of the antenna supporting structure of the other station; or

(4) The antenna is mounted on and does not exceed the height of the antenna structure otherwise used solely for receiving purposes, which structure itself complies with subparagraph (1) or (2) of this paragraph.

(5) The antenna is omnidirectional and the highest point of the antenna and its supporting structure do not exceed 60 feet above ground level and the highest point also does not exceed one foot in height above the established airport elevation for each 100 feet of horizontal distance from the nearest point of the nearest airport runway.

NOTE—A work sheet will be made available upon request to assist in determining the maximum permissible height of an antenna structure.

(b) Subpart I of Part 1 of this chapter contains procedures implementing the National Environmental Policy Act of 1969. Applications for authorization of the construction of certain classes of communications facilities defined as "major actions" in § 1.305 thereof, are required to be accompanied by specified statements. Generally these classes are:

(1) Antenna towers or supporting structures which exceed 300 feet in height and are not located in areas devoted to heavy industry or to agriculture.

(2) Communications facilities to be located in the following areas:

(i) Facilties which are to be located in an officially designated wilderness area or in an area whose designation as a wilderness is pending consideration;

(ii) Facilities which are to be located in an officially designed wildlife preserve is pending consideration;

(iii) Facilities which will affect districts, sites, buildings, structures or objects, significant in American history, architecture, archaeology or culture, which are listed in the National Register of Historic Places or are eligible for listing (see 36 CFR 800.22 (d) and (f) and 800.10); and

(iv) Facilities to be located in areas which are recognized either nationally or locally for their special scenic or recreational value.

(3) Facilities whose construction will involve extensive change in surface features (e.g. wetland fill, deforestation or water diversion).

NOTE—The provisions of this paragraph do not include the mounting of FM, television or other antennas comparable thereto in size on an existing building or antenna tower. The use of existing routes, buildings and towers is an environmentally desirable alternative to the construction of new routes or towers and is encouraged.

If the required statements do not accompany the application, the pertinent facts may be brought to the attention of the Commission by any interested person during the course of the license term and considered de novo by the Commission.

STATION OPERATING REQUIREMENTS

§95.451 Station authorization required.

No radio station shall be operated in this service except under and in accordance with an authorization granted by the Federal Communications Commission.

§95.453 Posting station license

(a) The current authorization, or a clearly legible photocopy thereof, for each station (including units of a station) operated at a fixed location shall be posted at a conspicuous place at the principal fixed location from which such station is controlled, and a photocopy of such authorization shall also be posted at all other fixed locations from which the station is controlled. If a photocopy of the authorization is posted at the principal control point, the location of the original shall be stated on that photocopy.

(b) The current authorization for each station operated as a mobile station shall be retained as a permanent part of the station records, but need not be posted.

§95.455 Authorized frequencies.

(a) The following frequencies may be used for communications between stations:

MHz-26.965; 26.925; 26.985; 27.005; 27.015; 27.025; 27.035; 27.055; 27.075; 27.085; 27.105; 27.115; 27.125 27.135; 27.155; 27.165; 27.175; 27.185; 27.205; 27.215; 27.225; 27.235; 27.245; 27.255; 27.265; 27.275; 27.285; 7.205; 27.305; 27.315; 27.325; 27.335; 27.345; 27.355; 27.265; 27.275; 27.285; 27.295; 27.305;

(b) Special conditions.

(1) These frequencies are available on a shared basis with other stations in this Service.

(2) These frequencies are subject to no protection from interference due to the operation of industrial, scientific, or medical devices within the 26.96-27.28 MHz band.

(3) The frequency 27.065 MHz shall be used solely for:

(i) Emergency communications involving immediate safety of life of individuals or the immediate protection of property or

(ii) Communications necessary to render assistance to a motorist.

§95.457 Policy governing the availability of frequencies.

(a) Each frequency available for use by stations in this service is available on a shared basis only, and will not be assigned for the exclusive use of any one applicant; however; the use of a particular frequency may be restricted to (or in) one or more specified geographical areas.

(b) All applicants and licensees in this service shall cooperate in the selection and use of the frequencies assigned or authorized, in order to minimize interference and thereby obtain the most effective use of the authorized facilities.

§95.459 Telephony only.

(a) Transmitters used at stations in this service are authorized to transmit telephony (voice), either single or double sideband.

(b) Tone signals or signaling devices may not be used, except for functions such as tone operated squelch or selective calling circuits used primarily to establish or maintain voice contact. Signals may not be used solely to attract attention or to control remote objects or devices.

(c) The transmission of audible tone signals or a sequence of tone signals for the operation of the tone operated squelch or selective calling circuits shall not exceed a total of 15 seconds duration. Continuous transmission of a subaudible tone for this purpose is permitted. For the purposes of this section, any tone or combination of tones having no frequency above 150 hertz shall be considered subaudible.

§95.461 Permissible communications.

Stations are authorized to transmit the following types of communications:

(a) Communications to facilitate the personal or business activities of the licensee.

(b) Communication relating to:

(1) The immediate safety of life or the immediate protection of property in accordance with § 95.463.

(2) The rendering of assistance to a motorist, mariner or other traveler.

(3) Civil defense activities in accordance with § 95.477.

(4) Other activities only as specifically authorized pursuant to § 95.465.

(c) Communications with stations authorized in other radio services except as prohibited in § 95.501 (a) (3).

§95.463 Emergency and assistance to motorist use.

(a) All stations shall give priority to the emergency communications of other stations which involve the immediate safety of ilfe of individuals or the immediate protection of property.

(b) Any station in this service may be utilized during an emergency involving the immediate safety of life of individuals or the immediate protection of property for the transmission of emergency communications. It may also be used to transmit communications necessary to render assistance to a motorist.

(1) When used for transmission of emergency communications certain provisions in this part concerning use of frequencies (§ 95.455); prohibited uses (§ 95.501(a) (3)); operation by or on behalf of persons other than the licensee (§ 95.465) and duration of transmissions (§ 95.469(a) and (b) shall not apply.

(2) When used for transmissions of communications necessary to render assistance to a traveler, the provisions of this Part concerning duration of transmission § 95.469(b) shall not apply.

(3) The exemptions granted from certain rule provisions in subparagraphs (1) and (2) of this paragraph may be rescinded by the Commission at its discretion.

(c) If the emergency use under paragraph (b) of this section extends over a period of 12 hours or more, notice shall be sent to the Commission in Washington, D.C., as soon as it is evident that the emergency has or will exceed 12 hours. The notice should include the identity of the stations participating, the nature of the emergency, and the use made of the stations. A single notice covering all participating stations may be submitted.

§95.465 Operation by, or on behalf of, persons other than the licensee.

(a) Transmitters authorized in this service must be under the control of the licensee at all times. A licensee shall not transfer, assign, or dispose of, in any manner, directly or indirectly, the operating authority under his station license, and shall be responsible for the proper operation of all units of the station.

(b) Stations may be operated only by the fololwing persons, except as provided in paragraph (c) of this section:

(1) The licensee;

(2) Members of the licensee's immediate family living in the same household;

(3) The partners, if the licensee is a partnership, provided the communications relate to the business of the partnership;

(4) The members, if the licensee is an unincorporated association, provided the communications relate to the business of the association;

(5) Employees of the licensee only while acting within the scope of their employment;

(6) Other persons, upon specific prior approval of the Commission shown on or attached to the station license, under the following circumstances:

(i) Licensee is a corporation and proposes to provide private radiocommunication facilities for the transmission of messages or signals by or on behalf of its parent corporation, another subsidiary of the parent corporation, or its own subsidiary. Any remuneration or compensation received by the licensee for the use of the radiocommunication facilities shall be governed by a contract entered into by the parties concerned and the total of the compensation shall not exceed the cost of providing the facilities. Records which show the cost of service and its nonprofit or cost-sharing basis shall be maintained by the licensee.

(ii) Other cases where there is a need for other persons to operate a unit of licensee's radio station. Requests for authority may be made either at the time of the filing of the application for station license or thereafter by letter. In either case, the licensee must show the nature of the proposed use and that it relates to an activity of the licensee, how he proposes to maintain control over the transmitters at all times, and why it is not appropriate for such other person to obtain a station license in his own name. The authority, if granted, may be specific with respect to the names of the persons who are permitted to operate, or may authorize operation by unnamed persons for specific purposes. This authority may be revoked by the Commission, in its discretion, at any time.

(c) An individual who was formerly a station licensee shall not be permitted to operate any station licensed to another person until such time as he again has been issued a valid radio station license, when his license has been:

(1) Revoked by the Commission.

(2) Surrendered for cancellation after the institution of revocation proceedings by the Commission.

(3) Surrendered for acncellation after a notice of apparent liability to forfeiture has been served by the Commission.

§95.467 Telephone answering services.

(a) Notwithstanding the provisions of § 95.465 a licensee may install a transmitting unit of his station on the premises of a telephone answering service. The same unit may not be operated under the authorization of more than one licensee. In all cases, the licensee must enter into a written agreement with the answering service. This agreement must be kept with the licensee's station records and must provide, as a minimum, that:

(1) The licensee will have control over the operation of the radio unit at all times;

(2) The licensee will have full and unrestricted access to the transmitter to enable him to carry out his responsibilities under his license;

(3) Both parties understand that the licensee is full responsible for the proper operation of the station; and

(4) The unit so furnished shall be used only for the transmission of communications to other units belonging to the licensee's station.

(b) A station licensed to a telephone answering service shall not be used to relay messages or transmit signals to its customers.

§95.469 Duration of transmissions.

(a) All communications or signals, regardless of their nature, shall be restricted to the minimum practicable transmission time. The radiation of energy shall be limited to transmissions modulated or keyed for actual permissible communications, tests, or control signals. Continuous or uninterrupted transmissions from a single station or between a number of communicating stations is prohibited, except for communications involving the immediate safety of life or property.

(b) All communications between stations (interstation) shall be restricted to not longer than five (5) continuous minutes. At the conclusion of this 5 minute period, or the exchange of less than 5 minutes, the participating stations shall remain silent for at least one minute.

(c) All communications between units of the same station (intrastation) shall be restricted to the minimum practicable transmission.

§95.471 Station identification.

(a) The call sign of a station shall consist of either three letters followed by four digits or shall consist of four letters followed by four digits. The call sign of a station operating under a temporary permit shall consist of three letters followed by five digits.

(b) Each transmission of the station call sign shall be made in the English language by each unit, shall be complete, and each letter and digit shall be separately and distinctly transmitted. Only standard phonetic alphabets, nationally or internationally recognized, may be used in lieu of pronunciation of letters for voice transmission of call signs. A unit designator or special identification may be used in addition to the station call sign but not as a substitute therefor.

(c) Except as otherwise provided, all transmissions from each unit of a station shall be identified by the transmission of its assigned call sign at the beginning and end of each transmission or series of transmissions, but at least at intervals not to exceed ten (10) minutes.

§95.473 Station location.

(a) A station may be used or operated anywhere in the United States subject to the provisions of paragraph (b) of this section.

(b) A mobile station authorized in this service may be used or operated on any vessel, aircraft, or vehicle of the United States: *Provided*, That when such vessel, aircraft, or vehicle is outside the territorial limits of the United States, the station, its operation, and its operator shall be subject to the governing provisions of any treaty concerning telecommunications to which the United States is a party, and when within the territorial limits of any foreign country, the station shall be subject also to such laws and regulations of that country as may be applicable.

§95.475 Dispatch points and remote control.

(a) No authorization is required to install dispatch points.

(b) Operation of any station by remote control is prohibited except remote control by wire upon specific authorization by the Commission when satisfactory need is shown.

§95.477 Civil defense communications.

A licensee of a station authorized under this part may use the licensed radio facilities for the transmission of messages relating to civil defense activities in connection with official tests or drills conducted by, or actual emergencies proclaimed by, the civil defense agency having jurisdiction over the area in which the station is located: *Provided*, That:

(a) The operation of the radio station shall be on a voluntary basis.

(b) Such communications are conducted under the direction of civil defense authorities.

(c) As soon as possible after the beginning of such use, the licensee shall send notice to the Commission in Washington, D.C., and to the Engineer in Charge of the Radio District in which the station is located, stating the nature of the communications being transmitted and the duration of the special use of the station. In addition, the Engineer in Charge shall be notified as soon as possible of any change in the nature of or termination of such use.

(d) In the event such use is to be a series of pre-planned tests or drills of the same or similar nature which are scheduled in advance for specific times or at certain intervals of time, the licensee may send a single notice to the Commission in Washington, D.C., and to the Engineer in Charge of the Radio District in which the station is located, stating the nature of the communications to be transmitted, the duration of each such test, and the times scheduled for such use. Notice shall likewise be given in the event of any change in the nature of or termination of any such series of tests.

(e) The Commission may, at any time, order the discontinuance of such special use of the authorized facilities.

STATION ADMINISTRATION REQUIREMENTS

§95.501 Prohibited communications.

(a) A station shall not be used:

(1) For any purpose, or in connection with any activity, which is contrary to Federal, State, or local law.

(2) For the transmission of communications containing obscene, indecent, profane words, language, or meaning.

(3) To communicate with an Amateur Radio Service station, an unlicensed station, or foreign stations except for communications pursuant to § 95.463(b) and § 95.477.

(4) To convey program material for retransmission, live or delayed, on a broadcast facility.

NOTE—A station may be used in connection with, administrative, engineering, or maintenance activities of a broadcasting station; A station may be used in the gathering of news items or preparation of programs: Provided, that the actual or recorded transmissions of the station are not broadcast any any time in whole or in part.

(5) To intentionally interfere with the communications of another station.

(6) For the direct transmission of any material to the public through a public address system or similar means.

(7) For the transmission of music, whistling, sound effects, or any material for amusement or entertainment purposes, or solely to attract attention.

(8) To transmit the word "MAYDAY" or other international distress signals, except when the station is located in a ship, aircraft, or other vehicle which is threatened by grave and imminent danger and requests immediate assistance.

(9) For advertising or soliciting the sale of any goods or services.

(10) For transmitting messages in other than plain language. Abbreviations including, nationally or internationally recognized operating signals, may be used only if a list of all such abbreviations and their meaning is kept in the station records and made available to any Commission representative on demand.

(11) To carry on communications for hire, whether the remuneration or benefit received is direct or indirect.

(b) A station may not be used to communicate with, or attempt to communicate with, any unit of the same or another station over a distance of more than 150 miles.

(c) A licensee of a station who is engaged in the business of selling radio transmitting equipment shall not allow a customer to operate under his station license. In addition, all communications by the licensee for the purpose of demonstrating such equipment shall consist only of brief messages addressed to other units of the same station.

§95.503 False signals.

No person shall transmit false or deceptive communications by radio or identify the station he is operating by means of a call sign which has not been assigned to that station.

§95.505 Current copy of rules required.

Each licensee in this service shall maintain as a part of his station records a current copy of Subpart D of Part 95, Personal Radio Services, of this chapter. Additional requirements of a technical nature may be found in Subpart E of this part.

§95.507 Answers to notices of violations.

(a) Any licensee who appears to have violated any provision of the Communications Act or any provision of

this chapter shall be served with a written notice calling the facts to his attention and requesting a statement concerning the matter. FCC Form 793 may be used for this purpose.

(b) Within 10 days from receipt of notice or such other period as may be specified, the licensee shall send a written answer, in duplicate, direct to the office of the Commission originating the notice. If an answer cannot be sent nor an acknowledgement made within such period by reason of illness or other unavoidable circumstances, acknowledgement and answer shall be made at the earliest practicable date with a satisfactory explanation of the delay.

(c) The answer to each notice shall be complete in itself and shall not be abbreviated by reference to other communications or answers to other notices. In every instance the answer shall contain a statement of the action taken to correct the condition or omission complained of and to preclude its recurrence. If the notice relates to violations that may be due to the physical or electrical characteristics of transmitting apparatus, the licensee must comply with the provisions of § 95.621 and the answer to the notice shall state fully what steps, if any, have been taken to prevent future violations, and, if any new apparatus is to be installed, the date such apparatus was ordered, the name of the manufacturer, and the promised date of delivery. If the installation of such apparatus requires a construction permit, the file number of the application shall be given, or if a file number has not been assigned by the Commission, such identification shall be given as will permit ready identification of the application. If the notice of violation relates to lack of attention to or improper operation of the transmitter, the name and license number of the operator in charge, if any, shall also be given.

§95.509 External radio frequency power amplifiers prohibited.

No external radio frequency power amplifier shall be used or attached, by connection, coupling attachment or in any other way at any station.

NOTE.—An external radio frequency power amplifier at a station will be presumed to have been used where it is in the operator's possession or on his premises and there is extrinsic evidence of any operation of such station in excess of power limitations provided under this rule part unless the operator of such equipment holds a station license in another radio service under which license the use of the said amplifier at its maximum rated output power is permitted.

§95.511 Transmitter Service and Maintenance.

(a) Except as provided in paragraph (b) of this section, all transmitter adjustments or tests while radiating energy during or coincident with the construction, installation, servicing, or maintenance of a radio station in this service, which may affect the proper operation of such stations, shall be made by or under the immediate supervision and responsibility of a person holding a first- or second-class commercial radio operator license, either radiotelephone or radio telegraph, as may be appropriate for the type of emission employed, and such person shall be responsible for the proper functioning of the station equipment at the conclusion of such adjustments or tests. Further, in any case where a transmitter adjustment which may affect the proper operation of the transmitter has been made while not radiating energy by a person not the holder of the required commercial radio operator license or not under the supervision of such licensed operator, other than the factory assembling or repair of equipment, the transmitter shall be checked for compliance with the technical requirements of the rules by a commercial radio operator of the proper grade before it is placed on the air.

(b) Except as provided in § 95.621 and in (c) of this section, no commercial radio operator license is required to be held by the person performing transmitter adjustments or tests during or coincident with the construction, installaion, servicing, or maintenance of transmitters used at stations authorized prior to May 24, 1974: *Provided*, That there is compliance with all of the following conditions:

(1) The transmitting equipment shall be crystal-controlled with a crystal capable of maintaining the station frequency within the prescribed tolerance;

(2) The transmitting equipment either shall have been factory assembled or shall have been provided in kit form by a manufacturer who provided all components together with full and detailed instructions for their assembly by non-factory personnel;

(3) The frequency determining elements of the transmitter, including the crystal(s) and all other components of the crystal oscillator circuit, shall have been preassembled by the manufacturer, pretuned to a specific available frequency, and sealed by the manufacturer so that replacement of any component or any adjustment which might cause off-frequency operation cannot be made without breaking such seal and thereby voiding the certification of the manufacturer required by this paragraph;

(4) The transmitting equipment shall have been so designed that none of the transmitter adjustments or tests normally performed during or coincident with the installation, servicing, or mainte-

FCC FIELD ENGINEERING OFFICES

Addresses of the following FCC Field Engineering Offices can be found in local directories under "United States Government." All communications with Field Offices should be addressed to the Engineer in Charge.

Alabama: Mobile, AL 36602
Alaska: P.O. Box 644, Anchorage, AK 99510
California: Los Angeles, CA 90012
California: San Diego, CA 92101
California: San Francisco, CA 94111
Colorado: Denver, CO 80202
District of Columbia: Washington, DC 20554
Florida: Miami, FL 33130
Florida: Tampa, FL 33602
Georgia: Atlanta, GA 30303
Georgia: P.O. Box 8004, Savannah, GA 31402
Hawaii: P.O. Box 1021, Honolulu, HI 96808
Illinois: Chicago, IL 60604
Louisiana: New Orleans, LA 70130
Maryland: Baltimore, MD 21201
Massachusetts: Boston, MA 02109
Michigan: Detroit, MI 48226
Minnesota: St. Paul, MN 55101
Missouri: Kansas City, MO 64106
New York: Buffalo, NY 14202
New York: New York, NY 10014
Oregon: Portland, OR 97204
Pennsylvania: Philadelphia, PA 19106
Puerto Rico: P.O. Box 2987, San Juan, PR 00903
Texas: Beaumont, TX 77701
Texas: Dallas, TX 75202
Texas: Houston, TX 77002
Virginia: Norfolk, VA 23502
Washington: Seattle, WA 98104

CBers Going North

U.S. CBers planning to visit Canada should keep in mind that to operate their radios in that country they must obtain prior authorization from the Canadian Department of Communications. Such permission is easy to obtain. All U.S. CBers need do is write to the DOC regional office listed below which is nearest to their proposed point of entry to Canada, requesting a copy of the application for registration of their station. At least six weeks should be allowed for mailing and processing delays.

ATLANTIC REGION
Regional Director
Department of Communications
7th floor
Terminal Plaza Building
P.O. Box 1290
12222 Main Street
MONCTON, N.B.
Canada E1C 8P9

QUEBEC REGION
Regional Director
Department of Communications
20th floor
2085 Union Street
MONTREAL, Que.
Canada H3A 2C3

ONTARIO REGION
Regional Director
Department of Communications
8th floor
55 St. Clair Avenue East
TORONTO, Ont.
Canada M4T 1M2

CENTRAL REGION
Regional Director
Department of Communications
2300-One Lombard Place
WINNIPEG, Man.
Canada R3B 2Z8

PACIFIC REGION
Regional Director
Department of Communications
325 Granville Street, Room 300
VANCOUVER, B.C.
Canada V6C 1S5

nance of the station, or during the normal rendition of the service of the station, or during the final assembly of kits or partially preassembled units, may reasonably be expected to result in off-frequency operation, excessive input power, overmodulation, or excessive harmonics or other spurious emissions; and

(5) The manufacturer of the transmitting equipment or of the kit from which the transmitting equipment is assembled shall have certified in writing to the purchaser of the equipment (and to the Commission upon request) that the equipment has been designed, manufactured, and furnished in accordance with the specifications contained in the foregoing subparagraphs of this paragraph. The manufacturer's certification concerning design and construction features of station transmitting equipment, as required if the provisions of this paragraph are invoked, may be specific as to the particular unit of transmitting equipment or general as to a group or model of such equipment, and may be in any form adequate to assure the purchaser of the equipment or the Commission that the conditions described in this paragraph have been fulfilled.

(c) Any tests and adjustments necessary to correct any deviation of a transmitter of any station in this service from the technical requirements of the rules in this part shall be made by, or under the immediate supervision of, a person holding a first- or second-class commercial operator license, either radiotelephone or radiotelegraph, as may be appropriate for the type of emission employed.

§95.513 Modification of transmitters.

(a) Transmitting equipment type accepted for use in this service shall not be modified by the user. Changes which are specifically prohibited include:

(1) Internal or external connection or addition of any part, device or accessary not included by the manufacturer with the transmitter for its type acceptance. This shall not prohibit the external connection of antennas or antenna transmission lines, antenna switches, passive networks for coupling transmission lines or antennas to transmitters, or replacement of microphones.

(2) Modification in any way not specified by the transmitter manufacturer and not approved by the Commission.

(3) Replacement of any transmitter part by a part having different electrical characteristics and ratings from that replaced unless such part is specified as a replacement by the transmitter manufacturer.

(4) Substitution or addition of any transmitter oscillator crystal unless the crystal manufacturer or transmitter manufacturer has made an express determination that the crystal type, as installed in the specific transmitter type, will provide that transmitter type with the capability of operating within the frequency tolerance specified in § 95.615 (a).

(5) Addition or substitution of any components, crystal or combination of crystals, or any other alteration to enable transmission on any frequency not authorized for use by the licensee.

(b) Only the manufacturer of the particular unit of equipment type accepted for use in CB stations may make the permissive changes allowed under the provisions of Part 2 of this chapter for type acceptance. However, the manufacturer shall not make any of the following changes to the transmitter without prior written authorization from the Commission:

(1) Addition of any accessory or device not specified in the application for type acceptance and approved by the Commission in granting said type acceptance.

(2) Addition of any switch, control, or external connection.

(3) Modification to provide capability for an additional number of transmitting frequencies.

§95.515 Tests and adjustments.

All tests or adjustments of radio transmitting equipment involving an external connection to the radio frequency output circuit shall be made using a nonradiating dummy antenna. However, a brief test signal, either with or without modulation, as appropriate, may be transmitted when it is necessary to adjust a transmitter to an antenna for a new station installation or for an existing installation involving a change of antenna or change of transmitters, or when necessary for the detection, measurement, and suppression of harmonic or other spurious radiation. Test transmissions using a radiating antenna shall not exceed a total of 1 minute during any 5-minute period, shall not interfere with communications already in progress on the operating frequency, and shall be properly identified as required by § 95.471, but may otherwise be unmodulated as appropriate.

§95.521 Inspection of stations and station records.

All stations and records of stations in this service shall be made available for inspection upon the request of an authorized representative of the Commission made to the licensee or to his representative. Unless otherwise stated in this part, all required station records shall be maintained for a period of at least 1 year. □

CANADIAN DEPARTMENT OF COMMUNICATIONS
General Radio Service Regulations

GENERAL RADIO REGULATIONS—PART I

Fees for Licences

4. (2) The fee payable for a station licence authorizing the performance of a General Radio Service is

(a) thirteen dollars and fifty cents for a licence that is valid for a period of three fiscal years;

(b) nine dollars for a licence that is valid for two fiscal years; or

(c) four dollars and fifty cents for a license that is valid for one fiscal year or less.

United States Citizens

12. (2) A citizen of the United States may operate in Canada a radio station that is

(a) owned by himself and licensed by the Government of the United States as a Class D station in the Citizens Radio Service and authorized by the Minister to be operated in Canada; or

(b) licensed by the Minister and not required, under the General Radio Regulations Part II, to be operated by a person holding a certificate of proficiency.

GENERAL RADIO REGULATIONS—PART II

2. (1) (v) "General Radio Service" (is) a service provided by land or mobile stations for personal, or private business radiotelephone communication and the radio control of models.

GENERAL RADIO SERVICE

(Operation)

70. (1) Subject to these Regulations, a licence for a station performing a General Radio Service shall be in force for a period not exceeding three fiscal years.

(2) In this section "fiscal year" means a twelve-month period commencing on the first day of April and ending on the thirty-first day of March following.

(3) In sections 71 to 80 "licensed station" means a station licensed to perform a General Radio Service.

71. A licence for a station performing a General Radio Service may authorize the licensed station to be operated

(a) in any craft or vehicle;

(b) at fixed locations; or

(c) while carried on the person.

72. (1) Subject to subsection (2), the frequencies authorized to be used by each licensed station on a shared basis, subject to no protection from interference caused by the operation of industrial, scientific and medical apparatus in the frequency band 26.96–27.28 Mc/s, are as follows:

26.965 Mc/s	27.115 Mc/s
26.975 Mc/s	27.125 Mc/s
26.985 Mc/s	27.135 Mc/s
27.005 Mc/s	27.155 Mc/s
27.015 Mc/s	27.165 Mc/s
27.025 Mc/s	27.175 Mc/s
27.035 Mc/s	27.185 Mc/s
27.055 Mc/s	27.205 Mc/s
27.065 Mc/s	27.215 Mc/s
27.075 Mc/s	27.225 Mc/s
27.085 Mc/s	
27.105 Mc/s	

(2) Licensed stations may only use the frequency of 27.065 Mc/s

(a) for radiocommunications that involve the immediate protection of lives or property; or

(b) to establish communication with other stations.

73. (1) A licensed station may carry on two-way radiotelephone communication with stations that are

(a) licensed to perform a General Radio Service;

(b) licensed by the Government of the United States as Class D stations in the Citizens Radio Service if the licensees of the Class D stations are authorized by the Minister to operate them in Canada; or

(c) exempted from licensing under subsection 6(3).

(2) The type of communications referred to in subsection (1) may include transmissions of signals for the actuation of radio receivers to establish and maintain voice communication.

73.1. The maximum power authorized for use by a licensed station is

(a) where determined on the basis of direct current input power, five watts to the anode or collector circuit of the transmitter amplifier stage supplying radio frequency energy to the antenna; or

(b) where determined on the basis of radio frequency output power,

(i) twelve watts peak envelope power for transmitters producing suppressed carrier, reduced carrier, controlled carrier or other types of single sideband emissions, or

(ii) four watts carrier power for transmitters producing other types of emissions,

as measured at the transmitter output terminals when terminated by an impedance matched load.

74. (1) A licensed station shall be used only for communication concerning the business activities and personal affairs of the licensee.

(2) A licensed station shall not be used for any of the following purposes:

(a) activity contrary to federal or provincial law or municipal by-laws;

(b) the transmission of music or other material for amusement or entertainment;

(c) broadcasting or any transmission in connection with broadcasting;

(d) transmissions of any nature to the public through a public address system;

(e) transmission of a frivolous nature;

(f) transmissions directed to any person or station beyond the ground wave coverage range of the station;

(g) communication used in itself as a diversionary or recreational activity; or

(h) calls directed to stations generally.

(2a) Notwithstanding paragraph (h) of subsection (2), in an emergency, calls for assistance may be transmitted as a call to "GRS Stations" specifying the area concerned.

(3) No tolls shall be levied or collected on account of any business transacted or messages transmitted or received by means of a licensed station.

75. (1) Each exchange of communications between licensed stations shall not exceed five consecutive minutes duration and upon the termination of an exchange of communications no further transmission shall be made until the lapse of two minutes or until interference will not be caused to other stations using the same frequency.

(2) The emission of a carrier wave is prohibited except when actual communications are being transmitted or for making brief test transmissions.

(3) A licensed station shall transmit its assigned call sign

(a) at the beginning and at the end of each exchange of communications in

which it is engaged, and

(b) at the end of each test transmission.

76. (1) No transmission by a licensed station shall

(a) cause any interference to other licensed radio stations operating outside the frequency band 26.96–27.28 Mc/s;

(b) cause any interference to a private receiving station; or

(c) interfere maliciously with the communications of another station operating in the General Radio Service.

(2) In the event of interference as referred to in subsection (1) being caused by a licensed station, the licensee may be required by a departmental radio inspector to take such steps as are necessary for the prevention of further interference or to restrict or cease operation of the station pending a satisfactory adjustment of the radio apparatus of the station.

77. (1) Each licensee shall be responsible at all times for the control and operation of his licensed station.

(2) Each licence for a station performing a General Radio Service is subject to the condition that the operator of the licensed station shall be

(a) the licensee of the station, or

(b) a person other than the licensee, if that person is twelve years of age or more,

and notwithstanding anything in these Regulations, such operator is not required to be the holder of any certificate of proficiency in radio.

(3) Licensed stations are exempt from the radio log requirements of section 36.

Operation of Radio Apparatus for Model Control

77A. (1) Notwithstanding sections 72 to 74, the licensee of a station performing a General Radio Service may also operate radio apparatus intended solely for the purpose of controlling the operation of models.

(2) Radio apparatus described in subsection (1) shall be operated subject to the following conditions:

(a) it shall be operated on one or more of the discrete frequencies

(i) 26.995, 27.045, 27.095, 27.145 and 27.195 Mc/s, where it is operated for any purpose, or

(ii) 72.08, 72.24, 72.40 and 72.96 Mc/s, where it is operated solely for controlling the operation of model aircraft;

(iii) 72.16, 72.32 and 75.64 Mc/s where it is operated for controlling the operation of any type of model,

(b) it shall use only amplitude tone modulation or on-off keying of the unmodulated carrier; and

(c) the d.c. power input to the anode or collector circuit of the transmitter stage supplying radio frequency energy to the antenna shall not exceed

(i) five watts for operation on any frequency referred to in subparagraph (i) of paragraph (a), and

(ii) one watt for operation on any frequency referred to in subparagraph (ii) of paragraph (a).

(3) Radio apparatus described in subsection (1) is not subject to section 78, but shall be apparatus that is approved by the Minister as being technically acceptable for licensing.

Equipment

78. The radio apparatus of a licensed station shall be of a type that has been approved in accordance with the applicable Radio Standards Specification issued by the Minister and shall bear the departmental type-approval number assigned to that radio apparatus.

79. (1) A person holding a valid licence issued by the Government of the United States for a Class D station in the Citizens Radio Service may operate his radio station in Canada for such period as the Minister prescribes if

(a) he submits an application in a form approved by the Minister, and

(b) he is authorized in writing by the Minister to operate the station in Canada.

(2) Any person operating a station in Canada under subsection (1) shall operate that station as if it were a licensed station subject to sections 71 to 77.

(3) For the purpose of subsection (3) of section 75 the assigned call sign of any station operated under subsection (1) of this section is the call sign assigned to it by the licensing authority of the United States followed by the name of the province where it is located and its general geographical location in the province.

EXEMPTION FROM LICENSING

6. (3) A radio station is exempt from the operation of section *2A of the Act if

(a) it operates only in the frequency band 26.97 to 27.27 Mc/s;

(b) the station is used only for two-way radiotelephone communication with

(i) other stations to which this subsection applies,

(ii) stations performing a General Radio Service, or

(iii) stations licensed by the Government of the United States as Class D stations in the Citizens Radio Service and operated in Canada pursuant to section 79.

(c) it is not capable of emitting Hertzian waves of a field strength greater than that produced by the radio frequency energy radiated by a single antenna element not exceeding five feet in length fed from a transmitter having a plate or collector power input of 100 milliwatts to the final radio stage; and

(d) the transmitter emissions of the station are suppressed to 20 dB or more below the unmodulated carrier on frequencies below 26.97 Mc/ and above 27.27 Mc/s.

(3a) A radio station that is exempt from the operation of section *2A of the Act under subsection (3) and that communicates with a station described in subparagraph (ii) or (iii) of paragraph (b) of that subsection is subject to sections 72 to 77 as if it were a licensed station.

* Section 3 as amended.

(4) No station referred to in this section shall be operated so as to cause interference to any licensed radio station or private receiving station.

(5) Where interference is caused by a station referred to in this section, the operator of the station may be required by a departmental radio inspector to take such steps as are necessary for the prevention of further interference or to restrict or cease operation of the station pending a satisfactory adjustment of the equipment. ■

Ask Hank, He Knows!

(Continued from page 32)

Watt Gives?

How many watts equal one joule?

–R. R., Chatsworth, CA

You're trying to trick me! One joule is equal to one watt-second. Energy is equal to power times time. You must be studying high school physics.

Can't Please Them All

What am I going to do with my 23 channel rig? It's worthless! This FCC fourty-channel switch is killing me.

–A. O., Denver, CO

You can always give your 23 channel rig to me if you think it's worthless. My problem is that I can talk on one channel at a time only. If you a businessman, you need only one channel, at most two in reserve. If you are a hobbyist, 23 of 40 is 57.5% of the action.

Wants More Juice

Is it possible to increase the charging capacity (power) of one six-twelve volts battery charger?

–P. C., Trujillo Alto, PR

I'd say no! The transformer is designed for a certain maximum current. To replace it would require a large expense. Also, the meter, rectifiers, and possibly the internal wiring must be replaced. It's easier to buy a new unit.

(Continued on next page)

Ask Hank, He Knows!

Can You Top This One

Which antenna is most sensitive—¼-wave, ½-wave or full-wave?
—R.H., Cleveland, OH

The full-wave antenna pulls in the most signal, giving the largest possible voltage (in micro-volts) across the antenna terminal. However, imagine driving around with a full-wave CB antenna. Whereas, I heard of an SWLer in Texas who had a 30-mile—long wire antenna. Seems he strung his top rung of barbed wire on the fence using old coke bottles as insulators. Now is that a tall story, or not?

It Takes Time

How come you guys use last year's catalogs? What's wrong with the 1977 ones?
—K.K., Brooklyn, NY

Nothing, in fact we prefer the latest catalogs whenever we specify parts and equipment. However, we work on the early 1977 issues in 1976 before the catalogs come out. Hope you understand.

Hi, Old Timer

I found White's Radio Log in the back of COMMUNICATIONS WORLD *which you publish. I haven't seen White's in more than 30 years, it was like finding an old friend. I remember in the old days the listing included network affiliations. Why not now?*
—O.B., Miami, FL

Network affiliations are not as important today as they were years ago. There are a lot more independents in AM than ever before. FM is practically non-network. Only TV remains, and even now many TV stations are independents that pick the best of two or more networks.

No Choice

I just got my CB license and it has four letters, not three. Which ones should I use?
—C. H., Tampa, FL

Your call begins with KAAC and you use all four letters. The FCC ran out of three letter calls. The way CB is going, they'll run out of four letter calls. Check the FCC Rules in this issue. They made a change.

So Long TVI

I hear the FCC will require the owner of CB sets causing TVI to add low-pass filters to the RF output. I like the idea, and is it true? —C. E., New Orleans, LA

It's true and I think it's a good idea also. The TVI filter will not harm or reduce the efficiency of the CB set. If anything, it's a reminder that the set needs some retuning by a qualified serviceman.

In Time

Where can I obtain a schematic and a parts list for an electronic digital stopwatch?
—J. W., New Salisbury, IN

The Editor tells me just such a project is in the works and it has calculator options. Watch for it in ELEMENTARY ELECTRONICS.

Thought in Harness

Is Co-phasing two antennas that important, or is one antenna really enough?
K.D., So. Fallsburgh, NY

If you are using two antenans on one vehicle, yes. If you are using one antenna, and would like to know if two are better, yes. But let me say that two antennas do not give you twice the signal that one would offer. What two antennas do is give an improved bidirectional radiation pattern better than one antenna does. Of course, we are talking about mobile antennas mounted on the worst ground plane in the world—your car. The harness of cables interconnecting the antennas and the CB set do two things of importance. One, the harness provides the correct cable lengths so that the antennas will be in step with each other, and two, the harness provides the antennas' impedance matching for minimum SWR and power transfer. This is co-phasing and it may be important to you.

Woe is Who

I am the president of our Ham school Radio Club. Our club (sorry to say) is going downhill due to the rapid expansion of CB radio. We need people to join our club, but more and more people are going to CB radio. What is going to happen to amateur radio?
—B.M., Northampton, MA

Don't worry about Ham radio. They are like the Marines—they're looking for a few good men! CBers who decide chit-chatting 20 miles apart or thereabout, is kid sutff, will work for their ham ticket to pull in a rare 6 to 9 thousand mile DX. The Ham's day is coming!

Forget It and Enjoy It

What happens if my 23-channel rig does not pass the new FCC minimum radiation requirements? —B. E., Walden, NY

It probably can't, and it makes no difference. Your set was acceptable under the standards in existence prior to January 1, 1977 and therefore can be used after that date. All sets manufactured on or after January 1, 1977 must pass the new standards.

From Tavarish

Do I have to be a citizen to get a CB license?
—F. S., Los Angeles, CA

Heck, no! There is a requirement that you are not an agent for a foreign government—and that goes for citizens and aliens alike. Should you be barred from getting a license for this reason, the FCC may waver this rule should you state that your station would be used for personal reasons and not for business. Write and ask the FCC today.

Right Next Door

Where can I get some books that will help me prepare for my Commercial First-Class FCC License? —T. T., Bath, PA

Right in your home state is Tab Books, Blue Ridge Summit, PA 17214 which publishes many books that you can use in your studies. Also, write to Howard W. Sams & Co., Inc., 4300 West 62nd Street, Indianapolis, IN 46206. ■

Which of these fascinating electronic gadgets would you like to build?

A photo print-timer that does everything but turn out the lights! Designed by a darkroom craftsman, it features instant reset, backlighted digit-set dials, pushbutton stop and start.

A battery-operated dickey flasher —guaranteed to liven up **any** party! Suddenly, your shirt buttons start flashing sequentially! Some people laugh. Others just stare. But it's funniest when they try to ignore you!

A shortwave station finder/marker. Suppose you pick up an interesting but elusive station in Papeete, Kuwait or Kinshasa. This stable wide-band oscillator lets you relocate it any time you like—**without** hours of searching.

A nostalgic crystal radio set—just like the one your grandad had. You make it with a Quaker Oats box.

A futuristic pulse-width modulated mini-audio amplifier. It can boost the volume of a pocket radio to dancing level!

A solid-state wind-chill factor meter that can tell you instantaneously just how cold you feel!

A compact, portable gas alarm for home, trailer, car or boat. It detects many kinds of dangerous fumes—and could easily save your life!

Elementary Electronics features low-cost, practical projects like these in every issue!

Mail coupon today for your complimentary copy!

Yes, every issue of ELEMENTARY ELECTRONICS brings you step-by-step instructions, with photos and diagrams, for all kinds of devices you'll enjoy building —and be proud to own!

But that's not all. You also get instructive articles on electronics, CB and shortwave. Lively columns. Exciting features that make ELEMENTARY ELECTRONICS America's most absorbing, down-to-earth magazine for the electronics and radio hobbyist.

Invaluable Basic Courses in electronic theory!

For example, you get the fundamental training you need to construct your projects successfully—or lay the groundwork for an electronics career.

Each issue presents a Basic Course that helps you master an important aspect of electricity or electronics. Recent subjects included: *Resistors in Combination. Understanding Transformer Action. Introduction to Alternating Current.* And *Understanding Semiconductors.*

Our readers tell us these Basic Courses are one of the magazine's most popular and valued features.

A magazine with a personality all its own!

You'll meet a lot of interesting people in the pages of ELEMENTARY ELECTRONICS Like Hank Scott, our Workshop Editor. He conducts a regular letters-from-readers column called "Ask Hank, He Knows!" If you have any trouble on a project—or with *anything* electrical—just ask Hank. He knows!

And Kathi Martin, KGK3916, our Citizens Band Editor. She writes "Kathi's CB Carousel"—the most entertaining and informative CB feature you'll find anywhere!

Plus the people who contribute our columns on shortwave, antique radio, new products, electronics news tid-bits —and much, much more!

All our writers, editors and columnists know their stuff backwards and forwards. And they know how to make it interesting! With the same kind of straightforward language you use yourself when discussing electronics or radio.

What's more, they have fun. Which means *you'll* have fun, too!

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INDEX TO ADVERTISERS CB BUYER'S GUIDE 1977

CB XCVR CHECKOUT

(Continued from page 93)

battery needed) having a side-mounted thumb wheel for volume control. Automatic gain built into the circuit. ■

• TRAN SONIC MCB-49

$79.95 (Tran Sonic Industries Inc.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 13.8 VDC with positive or negative ground. Front panel switches, jack and controls include Volume, Squelch, Delta Tune, PA/CB, Automatic Noise Limiter,

CIRCLE 80 ON READER SERVICE COUPON

Microphone Jack, S/RF Meter, LED TX/RX Lamp, Channel Selector with upper and lower case numbering.

Editorial Remarks: The MCB-49 also features a screw fit antenna jack, external speaker jack, PA jack, phase lock loop circuitry. ■

• TRAN SONIC MCB-66S

$99.95 (Tran Sonic Industries Inc.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power source 13.8 VDC with positive or negative ground. Front panel switches, jack and controls include Volume, Squelch, PA/CB, Delta Tune, Automatic Noise Limit-

CIRCLE 80 ON READER SERVICE COUPON

er, Microphone Jack, TX / RX Lamps, S/RF Meter, LED Digital Channel Readout.

Editorial Remarks: The MCB-66S features a power microphone (no batteries needed) with built-in channel selectors and volume control. The main panel also has a scanner channel selector, voice or manual channel selector, stop button for channel lock-in. ■

LAST MINUTE REPORT!

• COBRA 77X

$149.95 (Dynascan Corp.)

General Description: A 40-channel AM transceiver for mobile, PA operation. Power supply 12 to 13.8 VDC with negative or positive ground. Overall dimensions are 2¼-in. h x 5⅞-in. w x 8½-in. d. Front panel controls and switches for Channel Selector, Volume, Squelch, Dynamike (microphone gain), PA/CB, ANL. Standard accessories are microphone, mobile mount, DC power cable.

Receiver Section Test:

Input Sensitivity	0.5 μV
Adjacent Channel Rejection	64 dB
AGC Action	10 dB
Input Level for S9	100 μV

Transmitter Section Test:

AM RF Output	3.7 watts
Modulation to 85%	yes
Relative Sensitivity for 85% Modulation	—26 dB maximum
Modulation Limited to 100%	no

Editorial Remarks: The Cobra 77X has an S-meter that reads 6 dB per S-unit, double conversion receiver, external and PA speaker jacks, and S/RF output meter. ■

"I have confirmation on the data, sir. It now reads 12 regular, 3 without sugar, 4 black, 16 danish, and 2 English muffins."

CLASSIFIED MARKET PLACE

CB BUYERS' GUIDE—PUBLISHED ANNUALLY. The rate per word for Classified Ads is $1.00 each insertion, minimum ad $15.00 payable in advance. Capitalized words 40¢ per word additional. To be included in next issue, write to R. S. Wayner, DAVIS PUBLICATIONS, INC., 229 Park Ave. So. NY 10003.

ADDITIONAL INCOME

$300 WEEKLY, mailing circulars. Samples; 39¢ (Stamps). Gramco, DPBX 99371, Tacoma, WA 98499.

$1 INVESTMENT pays $50 yearly. ($50 pays $2500). Information and detailed instructions $1.00. Cew Company, 533 Wooster Rd., Mt. Vernon, OH 43050.

EARN EXTRA MONEY at home—Mailing commission circulars. Rush addressed stamped envelope. Free details. Especialties, Box 474-DA, Mundelein, IL 60060.

HOMEWORKERS! Stuff envelopes, make big money. Free details. Partridge, Buckfield Lane, Greenwich, CT 06830.

AUTO PARTS & ACCESSORIES

PREVENT THEFT with Auto-Guard $6.95. California residents add tax. Webster Products, Dept. Jun69 1773 S. Holt, Los Angeles, CA 90035.

BLUEPRINTS, PATTERNS & PLANS

WHAT'S going on in housing? Get advice on how to economize in modernizing or improving or adding space from idea to completion. Working blueprints available. Send $1.35 for 110 Better Building Ideas to: Davis Publications, Inc., 229 Park Avenue So., N.Y. NY 10003.

NEW CRAFT-PRINT CATALOG—Choose from over 100 great easy-to-build plans. Send $1.50 (completely refunded with your first order). BOAT BUILDER, (CP Div.)—229 Park Avenue South, New York, NY 10003.

BUSINESS OPPORTUNITIES

FREE BOOK '20042 Unique, Proven Enterprises." Fabulous "Unknowns"! Work home! Haylings, Carlsbad, CA 92008.

$30.00 HUNDRED Stuffing Our Circulars into Stamped Addressed Envelopes. Immediate Earnings. Beginners Kit $2.00. COLOSSI, 1433-61 Street, DC-5, Brooklyn, NY 11219.

MAKE Magnetic Signs. Big profits. Details, Universal, Lenora, KS 67645.

1000% PROFIT Bronzing Baby Shoes. Free Literature. NBC, Box 1904-DG, Sebring, FL 33870.

HOMEWORK! BIG MONEY addressing, mailing envelopes. Exciting offer 10¢. Linco Services, 3636 Peterson, Chicago 60659.

$25 DAILY POSSIBLE stuffing envelopes! Free details. Srevices, Box 715D, Lynbrook, NY 11563.

HOW WOULD YOU LIKE TO RECEIVE 100 LETTERS A DAY, EACH CONTAINING $2.00? WILL SEND COPY OF PLANS PLUS 6 FORMULAS FOR $2.00. RUSH $2.00 TO MELCOLE INC., P.O. BOX 64733, 5920 UNIVERSITY, DALLAS, TX 75206

$700 WEEKLY. Stuff envelopes. 25¢ Aquarius, Box 18438, Milwaukee, WI 53218.

$300 WEEKLY. Unique mailing program. FREE details. Write, Lad, Box 53A, Atlanta, ID 83601.

MAKE $1000 per month mailing letters. Free details. Tate, Box 443-DP, Morehead City, NC 28557.

LIFETIME Opportunity for mechanically inclined individuals. Operate Successful Manufacturing Business. Mark, 92-L Brighton 11th, Brooklyn, NY 11235.

$3000.00 MONTHLY. Immediate income. Stuff envelopes at home. Information, send self-addressed stamped envelope. Cottage, Box 730 DFF, Baldwin Park, CA 91706.

GUARANTEED $178.00 WEEKLY. Work 1 hour daily. Free Brochure. FAS, Box 13703, San Antonio, TX 78213.

CBERS

LISTEN!! to your car stereo and CB at the same time. Tape CB calls automatically. "AVASC" the hottest new communication accessory on the market. Write: Project Support Engineering 750 N. Mary Avenue, Sunnyvale, CA 94086.

DETECTIVES

POLICE SECURITY INVESTIGATIVE schematics and equipment listings. Quimtronix, Box 548-DV, Seattle, WA 98111.

DO-IT-YOURSELF

FANTASTIC source book—"201 Free Plans for You"—$3.00. Stuart, 46 Hillside Rd., Stony Brook, NY 11790.

EDUCATION & INSTRUCTION

UNIVERSITY DEGREES BY MAIL! Bachelors, Masters, Ph.D.s. . . . Free revealing details. Counselling. Box 389 SHP-67, Tustin, CA 02680.

INFORMATIVE HANDBOOK—For people with an interest in electronics and desire to know more. Covers basic electricity, resistors, capacitors, microwaves, facts on frequency, about fuses, circuit breakers, crystals and much more. Send $1.50 for your copy (includes postage) to: Electronics Theory Handbook, 229 Park Avenue South, N.Y., NY 10003.

EMBLEMS & DECALS

CB LICENSE VINYL DECAL KIT—Pre-cut numerals (30), letters (52), mounting sticker, $1.25 kit, 5 kits $5.00. Payment with order. Masco, 6 Glen Road Sparta, NJ 07871.

FOR SALE—MISCELLANEOUS

METRIC CONVERSION TABLES for miles to kilometres and List send 25¢ and stamped addressed envelope P.O. Box 91 Spotswood, NJ 08884.

GIFTS THAT PLEASE

SAVE 200% free jewelry catalog. Variety Products, 511 Water St., Plant City, FL 33566.

MINIATURE OIL PAINTINGS hand-painted by Chinese artist. Two for $5.00 postpaid. Money order only. Sun Great Trading Company, 65 Mintsu Road, Taichung, Taiwan.

BRAND NEW—A quarterly science fiction magazine by Isaac Asimov. Send $5.40 for 4 issues (includes shipping & postage) to Isaac Asimov's Science Fiction Magazine, 229 Park Ave. South, New York, NY 10003.

HYPNOTISM

FREE Fascinating Hypnosis Information! Startling! DLMH, Box 487, Anaheim, CA 92805.

INVENTIONS WANTED

INVENTIONS, ideas, wanted! Presentation to Industry. IMI, Suite 1200-DP, 401 Wood, Pittsburgh, PA 15222.

INVENTORS want investors. Chas Alexander, 216 West Jackson Blvd., Chicago, IL 60606.

MAILING LISTS

QUALITY names. $12/1000, $2/100. Debus, 918 Buena Vista Ave. Arnold, Md. 21012.

MISCELLANEOUS

WIN BETTING HARNESS RACES. SATISFACTION GUARANTEED or PURCHASE PRICE REFUNDED. $3.00. PISCIELLA, 804 COLBY, DELRAN, NEW JERSEY 08075.

WHOLESALE DIAMONDS, uncut stones from Knoctie. Sample $2.95. Wagar's, 9647 League, Upper Lake, CA 95485.

NEW! CB Radio Digest, latest Nitty-gritty. Free details. Especialties Box 474-DP, Mundelein, IL 60060.

MONEYMAKING OPPORTUNITIES

$500.00 WEEKLY! IMMEDIATE. Guaranteed home income stuffing envelopes. FREE Supplies! Send 25¢, Stamp. Profits, B275-DP6, Belen, NM 87002.

FREE "1001 ODDS"! $10,000-$100,000 actually made at home! Never get over it! Publico, Carlsbad, CA 92008.

$1,000 MONTHLY POSSIBLE! Mailing Commission letters. Information—FREE! Opportunities, Box 721SM, Lynbrook, NY 11563.

MAKE MONEY NOW! Pros reveals how to write an effective classified ad. Get "How To Write A Classified Ad That Pulls." Includes certificate worth $2.00 towards a classified ad. Send $1.50 (includes postage) to R. S. Wayner, Davis Publications, Inc., 229 Park Avenue South, New York, NY 10003.

$3 HOURLY stuffing envelopes. Easy work. Details free. Feldco, Box 228 Ryder, Brooklyn 11234.

$25.00 DAILY POSSIBLE stuffing envelopes! Details FREE. SERVICE, Box 715SM, Lynbrook, NY 11563.

BIG $$$$ mailing letters. Free details. Shields, 18635 Gloverdale, Covina, CA 91722.

$200 WEEK working evenings at home. Write: Pacific. Box 657, Aberdeen, WA 98520.

YOUR Own prosperous mail order business! WITH COMMISSION CIRCULARS. Rush addressed stamped envelope. Free details. Hale, Box 474-DM, Mundelein, IL 60060.

MONEYMAKING OPPORTUNITIES—Cont'd

HOMEWORKERS Needed!! $500/Thousand stuffing envelopes. Free supplies! Send stamp addressed envelope. Brown Enterprises, 156½ Central, Holland, MI 49423.

$1,000.00 MONTHLY possible stuffing envelopes. National. P.O. Box 343, Randallstown, MD 21133.

$250.00 PROFIT/THOUSAND possible STUFFING MAILING ENVELOPES! Offer: Rush stamped addressed envelope—Kings-KDV X21487 Fort Lauderdale, Florida, 33316.

AMAZING profits stuffing envelopes. Free details. Anthony, 459 Cove Rd., Pennsauken, NJ 08110.

$1,000 per month and more. Fantastic opportunity. Details 25¢. Simone Marketing, P.O. Box 7161-C2, Watertown, MA 02172.

$30.00 HUNDRED STUFFING our circulars into stamped addressed envelopes. Beginners kit $2.00, Mustachi, P.O. Box 46, Brooklyn, NY 11219.

PERSONAL

JAPANESE introductions! Girls' photographs, descriptions, brouchure, details. $1.00 INTER-PACIFIC, Box 304-SC, Birmingham, MI 48012.

RECORD Telephone conversations privately-automatically. Leave recorder Unattended. Robert's, Box 49SM, Parkridge, IL 60068.

DATES GALORE! Meet singles-anywhere. Call DATELINE, toll-free (800) 451-3245.

SINGLE? Widowed? Divorced? Nationwide introductions; Identity, Box 315-DC, Royal Oak, MI 48068.

FREE DETAILS on how to borrow $300-$3000 entirely by mail. Write Postal Finance, Dept. 24-04, 6018 Maple, Omaha, NB 68104.

BEAUTIFUL MEXICAN GIRLS Wanting American Boy-Friends. Deatils, Photos "Free". World, Box 3876-DC, San Diego, CA 92103.

JAPANESE Girls Make Wonderful Wives. We have large number of listings. Many interested in marriage. Only $1.00 brings application, photos, names, descriptions, questionnaire. Etc. Japan International, Box 156 AA, Carnelian Bay, CA 95711.

AUTHENTIC DICTIONARY of CB SLANG. Q-SIGNALS, HANDLES and MUCH MORE ONLY $2.98. R.A. Products, R.F.D., I Box 130 Belen, NM 87002.

1000 LADIES PHOTOS matrimonial catalog $5.00. Intercontact Publishing, Box 737, Fort Lauderdale, FL 33302.

BEAUTIFUL MEXICAN GIRLS! Friendship, marriage! Photos, information Free. "Latins." Box 1716-DD, Chula Vista, CA 92012.

LATIN AMERICAN GIRLS appreciate their men. Let us introduce you to a dark-eyed, unspoiled beauty. Complete application package and photo selection only $2.00: Maria Garcia, Box 80801D, San Diego, CA 92138.

ADULT Pleasure Products—over 600 items! Giant catalog $1.00. Clifton's D-1068, Saugus, CA 91351.

PROFITABLE OCCUPATIONS

$70,000 ANNUALLY doing nothing. $15,000 guaranteed. Free details. Dept.-7, Imagineering, POB.-6061-A, Knoxville, TN 37914.

RADIO & TV

BI-LINEAR AMPLIFIER, 2-30 MHz, (Ham) 100 watt mobile. Construction plans, $3.00. Igor, Box 5516-GF1, Walnut Creek, CA 94596.

SPECIAL SERVICES

CBERS: Help Prevent radio thefts. Free details: Hale, Box 474-DP, Mundelein, IL 60060.

SURPLUS EQUIPMENT

GIANT Bargain Packed Canadian Surplus Catalogs $1.00. Etco Electronics-DG, Box 741, Montreal "A."

TELEVISION PROJECTORS

TV Projection—Lens $15.95 complete system available. Free info, JG Color TV, Box 63, Montgomery, NY 12549.

LITERATURE LIBRARY

301. Get acquainted with the new *EICO* products, designed for the professional technician and electronics hobbyist. Included in brochure are 7 IC project kits, *EICO's* "Foneaids," security products and many varied kits.

302. *International crystal* has illustrated folders containing product information on radio communications kits for experimenters (PC boards; crystals; transistor RF mixers & amplifiers; etc.).

303. *Regency* has a new low cost/high performance UHF/FM repeater. Also in the low price is their 10-channel monitoradio scanner that offers 5-band performance.

304. *Dynascan's* new *B & K* catalog features test equipment for industrial labs, schools, and TV servicing.

305. Before you build from scratch, check the *Fair Radio Sales* latest catalog for surplus gear.

306. Get *Antenna Specialists'* catalog of latest mobile antennas, test equipment, wattmeters, accessories.

307. Want a deluxe CB base station? Then get the specs on *Tram's* super CB rigs.

308. Compact is the word for *Xcelite's* 9 different sets of midget screwdrivers and nutdrivers with "piggyback" handle to increase length and torque. A handy show case serves as a bench stand also.

310. *Turner* has two booklets on their Signal Kicker antennas. They give specifications and prices on their variety of CB base and mobile line. Construction details help in your choice.

311. *Midland Communications'* line of base, mobile and hand-held CB equipment, marine transceivers, scanning monitors, plus a sampling of accessories are covered in a colorful 18-page brochure.

312 *The EDI (Electronic Distributors, Inc.)* catalog is updated 5 times a year. It has an index of manufacturers literally from A to X (ADC to Xcelite). Whether you want to spend 29 cents for a pilot-light socket or $699.95 for a stereo AM/FM receiver, you'll find it here.

313. Get all the facts on *Progressive Edu-Kits* Home Radio Course. Build 20 radios and electronic circuits; parts, tools, and instructions included.

315. *Trigger Electronics* has a complete catalog of equipment for those in electronics. Included are kits, parts, ham gear, CB, hi fi and recording equipment.

316. Get the *Hustler* brochure illustrating their complete line of CB and monitor radio antennas.

317. *Teaberry's* new brochure presents their complete lines of CB and marine transceivers and scanners for monitoring police, fire and other public service frequencies.

318. CBers, *GC Electronics'* 16-page catalog offers the latest in CB accessories. There are base and mobile mikes and antennas; phone plugs; adaptors and connectors; antenna switchers and matchers; TVI filters; automotive noise suppressor kits; SWR power and FS meters; etc.

319. *Browning's* mobiles and its famous Golden Eagle base station, are illustrated in detail in the new 1977 catalog. It has full-color photos and specification data on Golden Eagle, LTD and SST models, and on "Brownie," a dramatic new mini-mobile.

320. *Edmund Scientific's* new catalog contains over 4500 products that embrace many sciences and fields.

321. *Cornell Electronics'* "Imperial Thrift Tag Sale" Catalog features TV and radio tubes. You can also find almost anything in electronics.

322. *Radio Shack's* 1977 catalog colorfully illustrates their complete range of kit and wired products for electronics enthusiasts—CB, ham, SWL, hi-fi, experimenter kits, batteries, tools, tubes, wire, cable, etc.

323. Get *Lafayette Radio's* "new look" 1977 catalog with 260 pages of complete electronics equipment. It has larger pictures and easy-to-read type. Over 18,000 items cover hi-fi, CB, ham rigs, accessories, test equipment and tools.

327. *Avanti's* new brochure compares the quality difference between an Avanti Racer 27 base loaded mobile antenna and a typical imported base loaded antenna.

328. A new free catalog is available from *McGee Radio*. It contains electronic product bargains.

329. Semiconductor Supermart is a new 1977 catalog listing project builders' parts, popular CB gear, and test equipment. It features semiconductors—all from *Circuit Specialists*.

330. There are over 450 electronic kits described in *Heath's* new catalog. Virtually every do-it-yourself interest is included—TV, radios, stereo & 4-channel, hi-fi, etc.

331. *E. F. Johnson* offers their CB 2-way radio catalog to help you when you make the American vacation scene. A selection guide to the features of the various messenger models will aid you as you go through the book.

332. If you want courses in assembling your own TV kits, *National Schools* has 10 from which to choose. There is a plan for GIs.

333. Get the new free catalog from *Howard W. Sams*. It describes 100's of books for hobbyists and technicians—books on projects, basic electronics and related subjects.

334. *Sprague Products* has L.E.D. readouts for those who want to build electronic clocks, calculators, etc. Parts lists and helpful schematics are included.

335. The latest edition of the *TAB BOOKS* catalog describes over 450 books on CB, electronics, broadcasting, do-it-yourself, hobby, radio, TV, hi-fi, and CB and TV servicing.

337. *Pace* communications equipment covers 2-way radios for business, industrial and CB operations. Marine radiotelephones and scanning receivers are also in this 18-p. book.

338. "Break Break," a booklet which came into existence at the request of hundreds of CBers, contains real life stories of incidents taking place on America's highways and byways. Compiled by the *Shakespeare Company*, it is available on a first come, first serve basis.

342. *Royce Electronics'* new full-color catalog up dates information on their CB transceivers (base, mobile, handheld). It also describes new product lines—CB antennas and a VHF marine radiotelephone.

344. For a packetful of material, send for *SBE's* material on UHF and VHF scanners, CB mobile transceivers, walkie-talkies, slow-scan TV systems, marine-radios, two-way radios, and accessories.

345. For CBers from *Hy-Gain Electronics Corp.* there is a 50-page, 4-color catalog (base, mobile and marine transceivers, antennas, and accessories). Colorful literature illustrating two models of monitor-scanners is also available.

350. Send for the free *NRI/McGraw Hill* 100-page color catalog detailing over 15 electronics courses. Courses cover TV-audio servicing, industrial and digital computer electronics, CB communications servicing, among others. G.I. Bill approved, courses are sold by mail.

352. Send for the free descriptive bulletin from *Finney Co.* It tells all about their new auto FM radio signal booster (eliminates signal fading).

353. *MFJ* offers a free catalog of amateur radio equipment—CW and SSB audio filters, electronic components, etc. Other lit. is free.

354. A government FCC License can help you qualify for a career in electronics. Send for information from *Cleveland Institute of Electronics*.

355. New for CBers from *Anixter-Mark* is a colorful 4-page brochure detailing their line of base station and mobile antennas, including 6 models of the famous Mark Hellwhip.

356. Send for *Continental Specialties* new breadboarding prototest devices. They vary in prices from a mini-budget kit at $19.95. Featured is the new logic monitor, giving information on what it does, how it works, and how to use it.

357. *Dage Scientific Instruments* offers a 16-page booklet on how to build an electronic thermometer with control. Included is an introductory course on thermocouples, schematics and many applications.

358. *PixTronics* announces its new Model 200 Super Sensitive Electronic Darkroom Exposure Meter, used to determine the correct exposures of all black-and-white and color negatives. Useable with any enlarger.

359. *Electronics Book Club* has literature on how to get up to 3 electronics books (retailing at $58.70) for only 99 cents each . . . plus a sample Club News package.

CB BUYERS' GUIDE
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New York, NY 10001

1977 Edition

Void After November 5, 1977

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315	316	317	318	319	320	321	322	323	327	328	329
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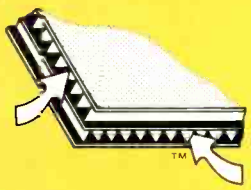

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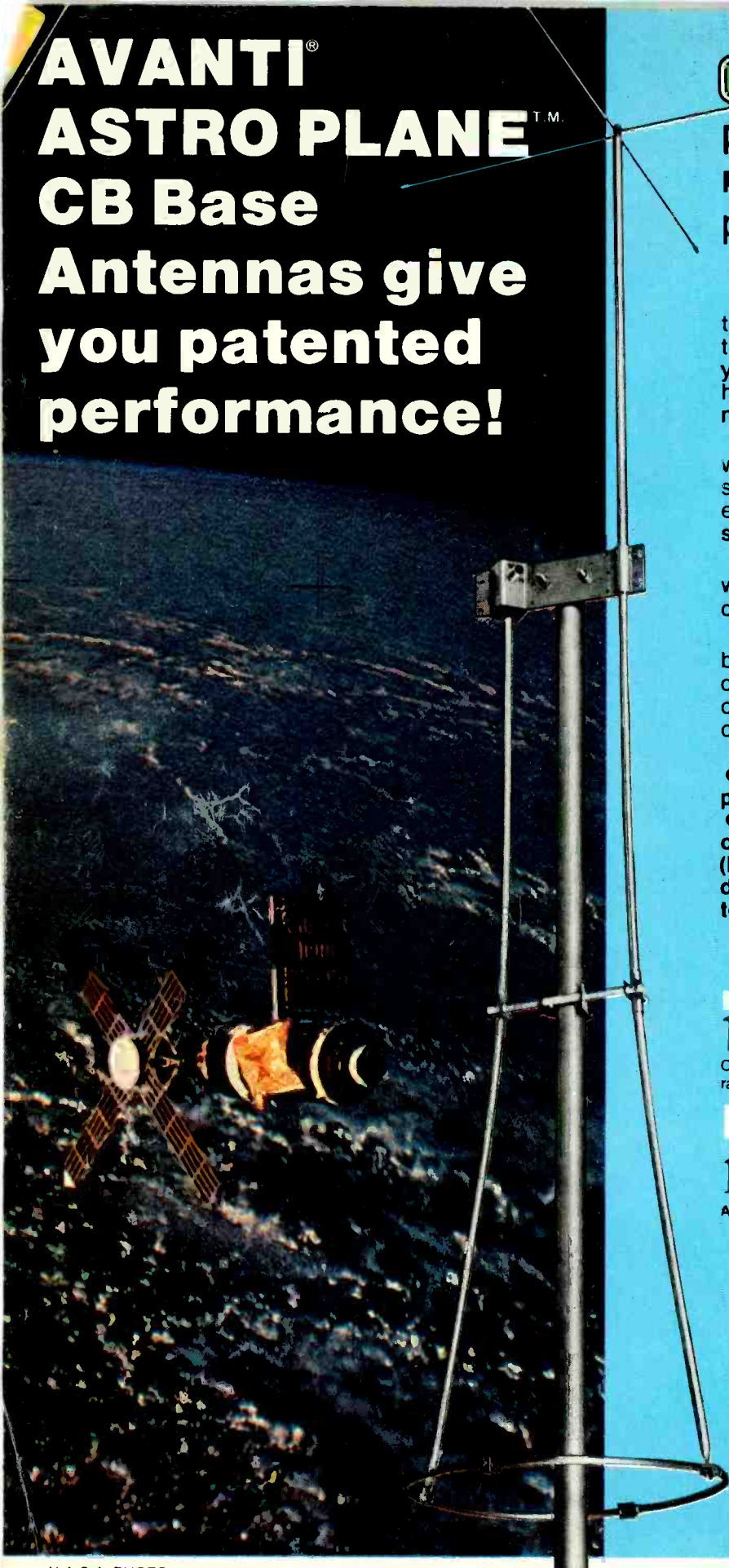

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CO-INDUCTIVE design of this patented antenna gives long range, noise free performance.

The result of years of research & development the ASTRO PLANE has top radiation which means that your signal gets out from the highest part of your antenna. Your signal radiates about 15 feet higher than with other antennas which radiate near the bottom.

The ASTRO PLANE has a lower angle of radiation which makes more efficient use of the radiated signal by allowing it to hug the curvature of the earth instead of shooting your power up into the sky.

The ASTRO PLANE has 4.46 db gain over isotropic which gives you a stronger signal and better clearer reception.

You'll get long lasting, trouble free performance because it is compact in design — without long drooping radials, without coils to burn of short out, and with direct ground construction to help dissipate static charges and lightning.

● Stainless steel radials concentrate signal power on top ● Rigid heavy-duty aluminum tubing ● No long drooping radials to ice up or break off ● So unique it's backed by a U.S. patent (Patent #3587109) ● No coils to burn out or detune ● Easy assembly ● Lightweight — easy to install on simple pipe mast

Ordinary collinear or ground plane antenna signals are blocked...they radiate from the bottom.

ASTRO PLANE gets its signal over obstacles...it radiates from the top.

SPECIFICATIONS

Total Length — 12 feet	Vertical Polarity
Weight — 4 lbs.	Aircraft Quality Aluminum
Power Gain — 4.46 db	SWR — Pre-tuned — Less than 1.2:1
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Omnidirectional — needs no rotor	

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CIRCLE 9 ON READER SERVICE COUPON