

NCX-5 MARK II TRANSCEIVER



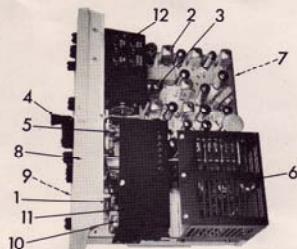
NATIONAL'S NCX-5 TRANSCEIVER is dramatically superior in concept and performance to the finest equipment previously available to the amateur, and is the first transceiver designed as a total amateur station for the 80, 40, 20, 15, and 10 meter bands. The NCX-5 is rated at a conservative 200 watts PEP, and incorporates every feature required for complete fixed-station or mobile operation without compromise. By any criterion, the NCX-5 is superior to ordinary transceivers. **DIAL CALIBRATION:** NCX-5 dial calibration is accomplished with a technique previously used in only the most expensive laboratory or military equipment — a digital counter with read-out direct in kilocycles on each amateur band with additional counter calibration to 100 cycles. Tuning rate (10 Kc. per knob revolution) is identical on all bands, and parallax is zero. **STABILITY:** The NCX-5 is double-conversion with crystal-controlled high frequency oscillators on each band and a linear solid-state VFO. The use of a transistorized VFO eliminates the warm-up drift characteristic of tubes (as their internal element structures stabilize with heat) and provides stability from a cold start which is equivalent to that of the best tube-type oscillators after "warm-up". The VFO transistors are double-regulated against input voltage variation, eliminating wander resulting from varying A.C. line voltage or car generator output. **SELECTIVITY:** NCX-5 transmit and receive selectivity is achieved with National's 8-pole (8 crystal) high frequency lattice filter. With a nearly rectangular 6-60 db shape factor of 1.7 to 1, the NCX-5 filter is superior to any filter of any type ever manufactured for amateur service. The 6 db bandwidth of the National filter is 2.8 Kc., chosen for minimum spectrum space consistent with pleasing voice quality. Sideband and carrier suppression is 50 db minimum. **TOTAL STATION PERFORMANCE:** The NCX-5 is a total transceiver, intended for direct replacement of separate receiver-transmitter combinations. Instantly selectable upper or lower sideband is, of course, incorporated, as well as a TRANSCEIVE VERNIER to permit ± 5 Kc. receiver tuning independent of transmitter frequency. A separate high quality AM detector and AM carrier insertion is provided for compatible AM operation, and grid-block break-in keying with adjustable release time is incorporated for CW. The optional VX-501 VFO console allows completely independent control of receiver and transmitter frequencies as well as transceive operation, and in addition provides choice of five crystal-controlled transmit or transceive frequencies for net or novice use. ALC (automatic level control) is built in for maximum talk-power without flat-topping or splatter, and external ALC input is provided for use with the NCL-2000 2 KW amplifier. The NCX-5 incorporates two RF stages in the receiver section for increased sensitivity and spurious signal rejection, and fast attack, slow decay AGC is provided for clean SSB/CW reception without the distortion, pops, clicks or thumps characteristic of many receivers. The D'Arsonval precision meter automatically switches between PA current and S-meter readings, and choice of VOX, push-to-talk, or manual operation may be selected from the front panel. The infrequently used VOX, microphone gain, and carrier insertion controls are mounted at the inside top front of the NCX-5, accessible through the hinged cabinet lid. The mobile mount for the NCX-5 is included with the transceiver. Deluxe oiled walnut cabinets are separately available for the NCX-5, NCX-A, and VX-501 VFO console for custom home installations or to complement den or living room furnishings. Naturally, the NCX-5 carries National's exclusive One-Year Guarantee against component failure. Carefully compare the NCX-5 with the most high-priced equipment available — spec for spec, feature for feature, it can't be matched at twice its price.

SATTERFIELD ELECTRONICS INC.
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SPECIFICATIONS

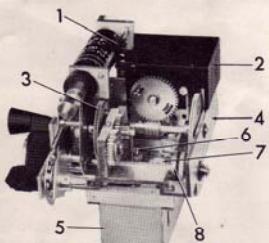
FREQUENCY RANGE: With crystals supplied 3,500 to 4,000 Kc., 7,000 to 7,300 Kc., 14,000 to 14,500 Kc., 21,000 to 21,500 Kc., 28,500 to 29,000 Kc. (Three additional crystals required if coverage of entire 28,000-30,000 Kc. band is desired.) **POWER INPUT:** 200 watts PEP SSB; 200 watts CW; 100 watts AM. **R.F. POWER OUTPUT (Nominal):** 120 watts PEP SSB; 120 watts CW; 30 watts AM. **TYPES OF EMISSION:** SSB (selectable upper or lower sideband), AM, CW. **OUTPUT IMPEDANCE RANGE:** 40-50 ohms minimum, Pi network. **FREQUENCY DETERMINATION:** Double conversion with crystal-controlled high frequency oscillators and tunable second oscillator. **SSB GENERATION:** National 8-pole crystal lattice filter; 6-60 db shape factor 1.7 to 1; Bandwidth 2.8 Kc. at 6 db; Center frequency 6.0218 Mc. **DIAL ACCURACY:** One kilocycle over entire 500 Kc. tuning range on all bands. **DIAL CALIBRATION:** 100 cycles on all bands. **TUNING RATIO:** Identical on all bands; 10 Kc. per 360° rotation of main tuning control. **FREQUENCY STABILITY:** NMT 500 cps in first 30 minutes after turn-on; long-term stability nominally ± 50 cps per hour in room ambient conditions. **SUPPRESSION:** Carrier —50 db, unwanted sideband —50 db, 3rd order distortion products —30 db at full output. **RECEIVER SENSITIVITY:** 0.5 uv for 10 db S/N in SSB mode. **AUDIO OUTPUT:** Better than 2 watts; 3.2 ohms. **MICROPHONE INPUT:** High impedance. **METERING:** PA cathode current on transmit; S-meter on receive. **CONTROLS:** Front Panel: Main Tuning, Band Selector, 10 Meter Segment Selector, Transceive Vernier, Sideband Selector, Audio Gain, R.F. Gain, Calibrator, Exciter Tune, P.A. Tune, P.A. Load, Dial Adjust, Function, VOX-PTT Switch, MOX-OFF Switch, Microphone Input. Internal Controls (Accessible at front of transceiver through hinged lid): Microphone Gain, VOX Sensitivity, VOX Delay, Carrier Insertion. **REAR PANEL:** Antenna, Bias Adjust, Phones or Speaker, Key, Power Input, ALC Input, VFO Input, Spare, Calibrator Socket, External Relay Control. **TUBE AND SEMI-CONDUCTOR COMPLEMENT:** 20 tubes, 19 semi-conductors, 42 functions; Parallel 6JB6's in P.A. **DIMENSIONS:** 6-5/16" H, 13-5/8" W, 11-5/8" D. **MECHANICAL:** 1/8" solid extruded aluminum front panel, hydro-etched off-white matte finish; Perforated steel enclosure with hinged lid. Gray-blue wrinkle enamel finish; Cadmium plated steel chassis; National Prestige series knobs, matte black with machined aluminum caps. **SHIPPING WEIGHT:** 26 pounds. **POWER REQUIREMENTS:** 700 V.D.C. at 300 Ma., 280 V.D.C. at 200 Ma., —80 V.D.C. at 10 Ma., 12.6 V. at 5A.

NCX-5 MARK II TRANSCEIVER



CHASSIS TOP VIEW

1. D'Arsonval meter is automatically switched to read either signal strength or cathode current.
2. National 2.8 Kc 8-pole crystal lattice filter used for transmit and receive selectivity is superior to any other filter ever manufactured for amateur use.
3. Solid-State balanced modulator for stable, "stay-put" carrier balance.
4. Spinner knob for rapid band-scanning at 10 Kc per turn.
5. Solid state VFO and digital counter mechanism provides 100 cps calibration and "instant-on" stability.
6. Shielded final amplifier with parallel 6JB6 tubes in Pi-network for 200 watt PEP input on all bands.
7. External relay control for use with NCL-2000 linear amplifier.
8. Solid extruded aluminum front panel for rugged, mechanically stable construction; anodized for long wear and scratch resistance.
9. Front panel control of VOX, push-to-talk, or manual operation.
10. Plug-in high quality relay.
11. Shielded mixer and driver stages.
12. Infrequently used controls easily accessible when hinged lid on cabinet is raised.



LINEAR TUNING MECHANISM

The digital frequency counter and solid state VFO of the NCX-5 provides 100 cycle calibration on each amateur band and stability from turn-on equal to the best vacuum tube oscillators after warm-up. The entire unit is mounted on the NCX-5 chassis as a separate sub-assembly.

1. Special Geneva Movement on counter mechanism for smooth clickless rotation.
2. Linear tuning capacitor to provide one kilocycle dial accuracy over entire band.
3. Precision gears for anti-backlash, smooth dial operation.
4. Massive aluminum extrusion serves as foundation for entire assembly.
5. Oscillator circuit, shielded against air movement.
6. Oscillator and buffer transistors.
7. Adjustable temperature compensating capacitor tailored to each oscillator.
8. Clutch mechanism for dial adjust allows change of counter reading without change of frequency.



The ultimate amateur station . . . The NCX-5 transceiver with matching NCX-A AC supply/speaker console and VX-501 VFO console, the 2000 watt NCL-2000 table-top linear amplifier, and the solid state HRO-500 receiver for superior reception of all signals between five kilocycles and 30 Mc.

NCX-5 ACCESSORIES

POWER SUPPLIES: Power supplies are available for both fixed and mobile operation of the NCX-5. The matching NCX-A AC supply/speaker console provides all necessary operating voltages together with a built-in PM speaker, and may be powered by either 115 or 230 V.A.C. 50-60 cycle primary voltage — an important consideration when the NCX-5 is to be used on DXpeditions or outside the U.S. or Canada. Resting current/full load voltage regulation is 2%, and solid state rectifiers and husky components are employed for cool operation. Interconnecting plug-in cable supplied — just add mike and antenna to NCX-5 and you're on the air. Dimensions 6-5/16" H x 8-7/16" W x 11-5/8" D; shipping weight 25 lbs. The National transistorized mobile power supply operates from 14 volt nominal D.C. sources, either positive or negative ground. Continuous overload and reverse polarity protection is provided.

VX-501 VFO CONSOLE: The VX-501 VFO console matches the appearance of the NCX-5 and is identical in dimensions to the NCX-A AC supply/speaker console. The VX-501 incorporates the same solid state linear VFO with 100 cps calibration used in the NCX-5, and provides the following frequency control:

1. Transceive operation using the NCX-5 VFO.
2. Transceive operation using the VX-501 VFO.
3. Transmit with NCX-5 VFO, receive with VX-501 VFO.
4. Transmit with VX-501 VFO, receive with NCX-5 VFO.

The VX-501 may be used to provide all of the advantages of separate transmitter-receiver combinations for round-table or DX operation, plus the ability to select transceive operation at the flip of a switch. In addition, up to five crystals may be inserted in the VX-501 to crystal-control the VX-501 VFO console in any of the above four modes. Crystal control may be found very useful in net operation or for a frequently-used round-table frequency, and, in addition, immediately allows the NCX-5 to be used by the novice amateur since CW power input of the transceiver may easily be reduced to 75 watts — thereby completely complying with F.C.C. rules governing novice operation. The VX-501 is powered from the NCX-5 transceiver, and the interconnecting cable is supplied.

DELUXE OILED WALNUT ENCLOSURES: The NCX-5, NCX-A, and VX-501 are shipped in the standard perforated steel cabinets. Where infrequent mobile or portable operation is contemplated, and where the most attractive custom or home installation is desired, optional oiled walnut enclosures may be separately ordered in addition to the standard cabinets. These enclosures are manufactured of furniture grade oiled walnut veneer, and are produced in limited quantities only. The WX-5 enclosure should be ordered for the NCX-5 transceiver, and the AC-WX-5 specified for either the NCX-A or VX-501.

CRYSTAL CALIBRATOR: The XCU-27 standard 100 Kc. crystal calibrator fits into the accessory socket on the rear panel of the NCX-5. When the VX-501 VFO console is used, the XCU-27 is plugged into the VX-501 and controlled from the VX-501 front panel.

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