

LINEAR SYSTEMS, INC.  
220 Airport Boulevard  
Watsonville, California 95076

## C E N T U R Y

400-12M

The CENTURY 400-12M is a DC-DC transistorized converter employing an entirely new design concept.

With reasonable care, the CENTURY 400-12M will perform reliably for years and is not affected by the usual causes of failure. To insure maximum operating efficiency and performance, follow the simple installation instructions:

1. Check the charging rate of your generator or alternator. Since you are trying to maintain a charge in a lead-acid storage battery, the charging voltage should not exceed 13.5 to 14.0 volts. If it is set in excess of this value, you will decrease the life and reliability of your battery. If you feel you must have a higher charging rate, it is well to remember that the tubes in your transceiver are sensitive to over-voltage and you may reduce their useful life.
2. Mounting: The CENTURY may be mounted in any convenient location. Since operation results in little noise or heat, it may be placed in the driver compartment or under the seat. The engine compartment near the battery is an excellent choice as the primary load length is minimized. The unit should be mounted in such a way that the lug is not subjected to splash or excessive road dirt.
3. Connecting: Use adequate wire for the current drain anticipated. The two positive wires should be at least #10. The negative wire to Pin 7 should also be at least a #10. Additional negative current carrying capacity should be assured through bonding the CENTURY case to the automobile body or to the negative battery terminal. Use star washers on mounting bolts to break through the anodized finish.
4. Preliminary checks: When all wiring is completed, the bias control should be adjusted to provide the bias voltage required by the transceiver in use. A fully clockwise adjustment provides maximum bias voltage. It should be adjusted to provide the voltage called for by the transceiver manufacturer.
5. Changing output voltages: Remove bottom plate and change transformer tap as indicated in the drawing.
6. Service should not be attempted without advice from the factory.



## Instruction Sheet

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### Design Philosophy

A two stage, closed loop oscillator is used in such a way that high magnetizing currents are not introduced in the power transformer. Feedback is amplified, providing for excellent regulation and dependable starting. Starting under all conditions is further improved by applying a short duration starting pulse to two of the four transistors. All power resistors found in conventional switching circuits are eliminated, adding to the efficiency.

The transistors used are especially selected to operate at their highest gain. Transistor losses are virtually eliminated by operating them in an extremely conservative fashion. This also provides greater margin for peak power demands.

### WARRANTY

All products are guaranteed against failure through faulty workmanship or materials for a period of ninety (90) days from date of purchase. In case of failure or malfunction, contact your distributor or the factory for instructions. Under no circumstances should the unit be serviced without specific instructions from the factory. Unauthorized attempts to service will void this warranty. Should it be necessary to return a unit for servicing, permission to do so must first be obtained from the factory with shipping instructions.

### WARNING

CARE MUST BE EXERCISED IN OPERATION OF THIS  
DEVICE AS DANGEROUSLY HIGH VOLTAGES ARE  
PRESENT WHEN IT IS IN USE



## PARTS LIST

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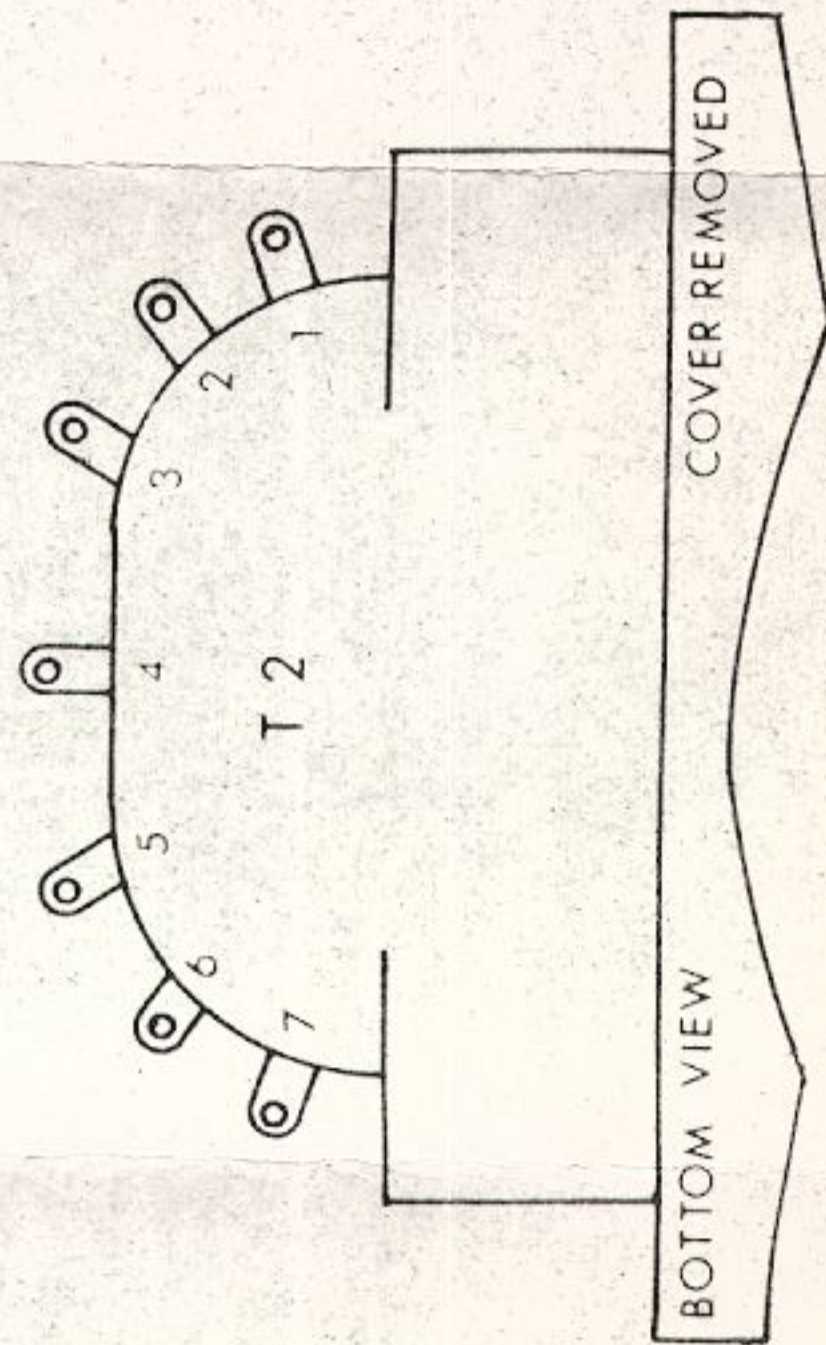
<u>PART</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
C1	1501-01208	Capacitor, Disc, Ceramic, .01 MFD 1000V
C2	1501-00120	Capacitor, Disc, Ceramic, .1 MFD 100V
C3, C4	1504-04005	Capacitor, Electrolytic, 50 MFD 50V
C5	1504-15009	Capacitor, Electrolytic, 50 MFD 150V
C6, C7, C8, C9	1504-50005	Capacitor, Electrolytic, 20 MFD 500V
C10	1504-01512	Capacitor, Electrolytic, 2000 MFD 15V
D1, D2, D3	4801-00069	Diode, 200V 1 AMP.
D4	4801-00006	Diode, 600V 1 AMP.
D5	4801-08331	Bridge, Diode, 1200V 1 AMP.
D6	4801-07006	Bridge, Diode, 600V 1 AMP.
L1	5604-00001	Choke, 1.5 Henry 200 MA.
Q1, Q2	4802-03048	Transistor, Switching, SDT-3048
Q3, Q4	4802-01810	Transistor, Power, MHT-1810
R1, R2	4703-00066	Resistor, 120 OHM 1/2 Watt $\pm$ 10%
R3, R3A, R4, R4A	4710-00203	Resistor, .47 OHM 1/2 Watt $\pm$ 10%
R5, R6	4703-00086	Resistor, 820 OHM 1/2 Watt $\pm$ 10%
R7, R8, R10	4705-00136	Resistor, 100K OHM 2 Watt $\pm$ 10%
R9	4715-00520	Potentiometer, 10K OHM 2 Watt
RY1	4500-00802	Relay, 12V
T1	5601-40411	Transformer, Switching
T2	5601-41160	Transformer, Power
TC1	5101-00400	Circuit Breaker, 40 AMP.
Pl	2101-00004	Connector, 8-Prong
*	2101-00034	Connector, Cable, 8-Prong

\*Attaches to Cable



# CHANGE OUTPUT VOLTAGE IN ACCORDANCE WITH TABLES BELOW:

L1 - PIN 1—850V	L2 - PIN 4—325V
" 2—750V	" 5—285V
" 3—650V	" 6—250V



CENTURY 400-12



# Linear Systems, Inc.

## CENTURY SERIES

### VOLTAGE COMPARISON CHART FOR ALL TRANSCEIVERS

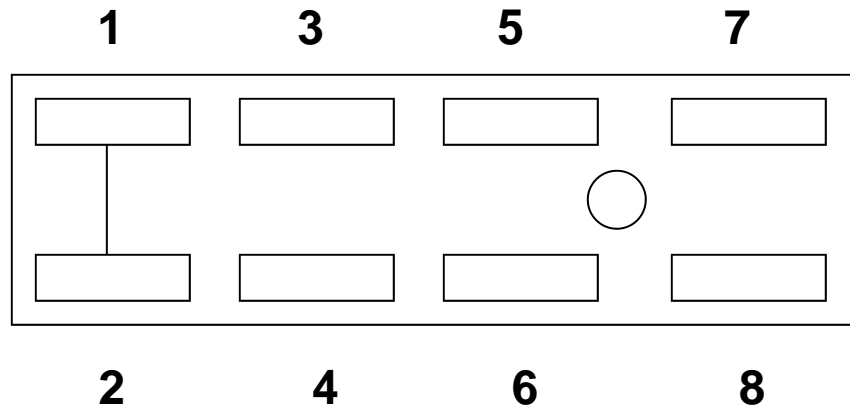
TRANSCEIVER TYPE	RECOMMENDED VOLTAGES	VOLTAGES AVAILABLE CENTURY 400	VOLTAGES AVAILABLE CENTURY 350-12	VOLTAGES AVAILABLE CENTURY 500-12
COLLINS KWM-2 / 1	820V @ 230 MA 280V @ 230 MA -60 TO - 80v	850V @ 500 MA 325v @ 200 MA 0 TO -125 V	800V @ 450 MA 325V @ 200 MA 0 TO -125V	1150V @ 450 MA 325V @ 300 MA 0 TO -125V
DRAKE TR-3 TR-4	650V @ 500 MA 250V @ 175 MA -45 TO -65 V	650V @ 700 MA 250V @ 200 MA 0 TO -125V	800V @ 450 MA 275V @ 200 MA 0 TO -125V	1150V @ 450 MA 250V @ 300 MA 0 TO -125 V
EICO 753	750V @ 300 MA 250V @ 170 MA - 100V @ 5 MA	750V @ 600 MA 250V @ 200 MA 0 TO -125V	800V @ 450 MA 275V @ 200 MA 0 TO -125V	1150V @ 450 MA 250V @ 300 MA 0 TO -125V
GALAXY III AND V	800V @ 400 MA 350V @ 200 MA -100V @ 35 MA	850V @ 500 MA 325V @ 200 MA SET BIAS TO -100V	800V @ 450 MA 325V @ 200 MA SET BIAS TO -100 V	1150V @ 400 MA 325V @ 200 MA SET BIAS TO -100V
HALLI-- CRAFTERS SR150/160	575V @ 200 MA 250v @ 175 MA -75 TO -100 V	650V @ 700 MA 250V @ 200 MA 0 TO -125V	800V @ 450 MA 275V @ 200 MA 0 TO -125V	NOT RECOMMENDED
HALLI- CRAFTERS SR-500	750V @ 500 MA 280V @ 100 MA -80 TO - 130V	750V @ 600 MA 285V @ 100 MA 0 TO -125V	800V @ 450 MA 275V @ 200 MA 0 TO -125V	1150V @ 450 MA 285V @ 300 MA 0 TO -125V
HEATHKIT SB-100 SB-101	800V @ 250 MA 300V @ 250 MA -110V @ 10 MA	850V @ 500 MA 325V @ 200 MA 0 TO -125V	800V @ 450 MA 325V @ 200 MA 0 TO -125V	1150V @ 450 MA 325V @ 200 MA 0 TO -125V
NATIONAL NCX-3 NCX-5	700V @ 500 MA 280V @ 100 MA -80V @ 10 MA	750V @ 600 MA 285V @ 200 MA SET BIAS TO -80 V	800V @ 450 MA 275V @ 200 MA SET BIAS TO -80V	1150V @ 450 MA 285V @ 200 MA SET BIAS TO -80 V
SWAN 350 400	800V @ 500 MA 275V @ 150 MA -110V @ 100 MA	850V @ 500 MA 285V @ 200 MA SET BIAS AT MAX	800V @ 450 MA 275V @ 200 MA SET BIAS AT MAX	1150V @ 459 MA 285V @ 200 MA SET BIAS AT MAX

Redrawn by Geoff Fors, WB6NVH June 2019

# LINEAR SYSTEMS

## CENTURY 400 DC-DC POWER SUPPLY

*Geoff Fors, WB6NVH*



Exterior view , male pins

- 1 — Jumpered to 2, 12V + INPUT**
- 2 — Jumpered to 1, 12V + INPUT**
- 3 — BIAS (Yel Wire)**
- 4 — Low B+ (Receiver)? (Grn wire)**
- 5 — High B++ (Trans. PA)? (Red wire)**
- 6 — Power Relay, ON/OFF (Grn wire)**
- 7 — Chassis GND, 12V - INPUT**
- 8 — DC low voltage output (Filaments)  
6V or 12V? Presume 12V + (Orn,  
Blk, Red wires)**



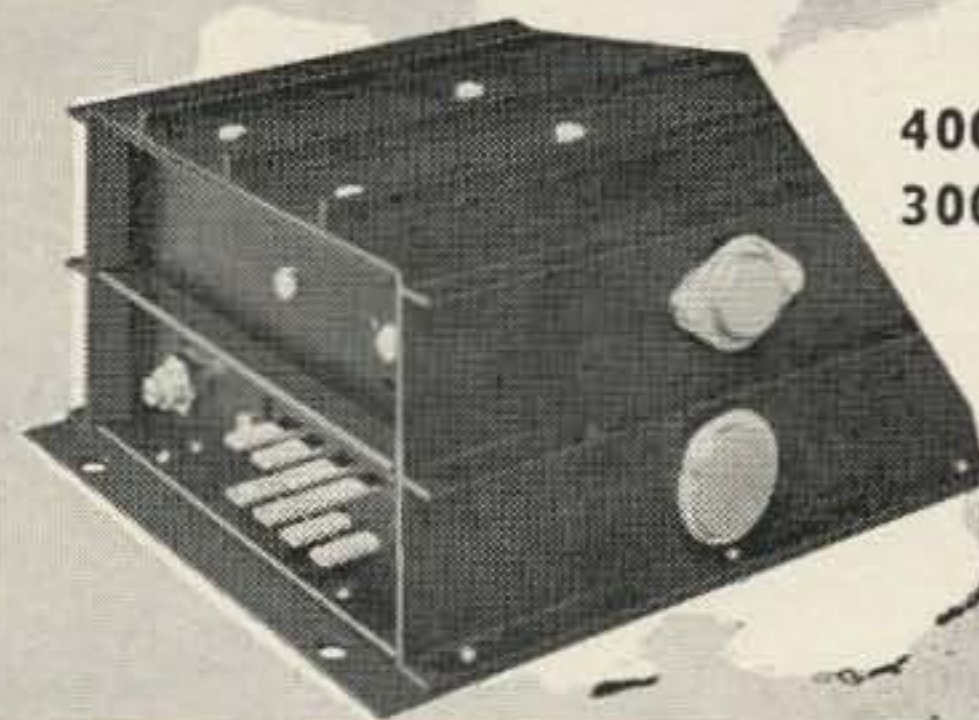
# A MAJOR BREAKTHROUGH

in MOBILE POWER SUPPLIES

THE REVOLUTIONARY

## “CENTURY”

COMPLETELY TRANSISTORIZED DC-DC CONVERTER



400 W SSB  
300 W AM

- COMPACT — Over 2½ Watts Per Cubic Inch
- CIRCUIT BREAKER PROTECTED — No Fuse Required
- EFFICIENT — Over 90%
- COOL — Only 25°C Rise
- QUIET — No Hash or Audible Noise Generated
- TOTALLY ENCLOSED — No Ventilation Required
- RELIABLE — Indestructible in Normal Applications
- REVERSE POLARITY PROOF
- PATENTED CIRCUITRY — Patents Applied for on a Completely New, Improved Technique
- FAST STARTING — In Coldest Climates

### SPECIFICATIONS

INPUT - 12-15 V.DC	
OUTPUT - 850 @ 400 MA	} HIGH VOLTAGE
750 @ 450 MA	
650 @ 500 MA	
325	} LOW VOLTAGE
285 @ 200 MA	
250	

BIAS - 0-120 NEGATIVE @ 20 MA  
REGULATION - BETTER THAN 8%  
NO LOAD TO FULL LOAD

Continuing in Production Are The  
Popular 350-12 and 350-AC Models

AVAILABLE THROUGH YOUR DEALER  
OR WRITE FOR FURTHER INFORMATION

## LINEAR SYSTEMS INC.

605 UNIVERSITY AVENUE  
LOS GATOS, CALIFORNIA

## Quieting Small Cooling Fans

In many small and medium-sized amateur installations, localized heating is a serious problem. Standard remedy for this is the installation of a small cooling fan, usually drawing less than 100 watts. This drives a blast of cooler air into the “hot spot”, lowering the temperature appreciably.

The cooling fan is usually mounted on a bracket, firmly bolted to some part of the assembly. As this is usually of thin metal, the fan vibration is communicated to the rest of the chassis, which acts like a resonator, so that the noise power output of the fan seemingly exceeds its “blow power”.

This noise nuisance can usually be abated by mounting the fan on a massive bracket—as massive as possible—and by attaching that bracket to the chassis by means of shock mounts. A sample mounting of this type is shown in Fig. 1. This procedure lowers the natural period of vibration of the fan as-

sembly; and then prevents most or all of this vibration from reaching the chassis. In happy consequence, there is less or no noise output—a bass drum is silent if you don’t bang on it. Noise can be reduced further if the fan

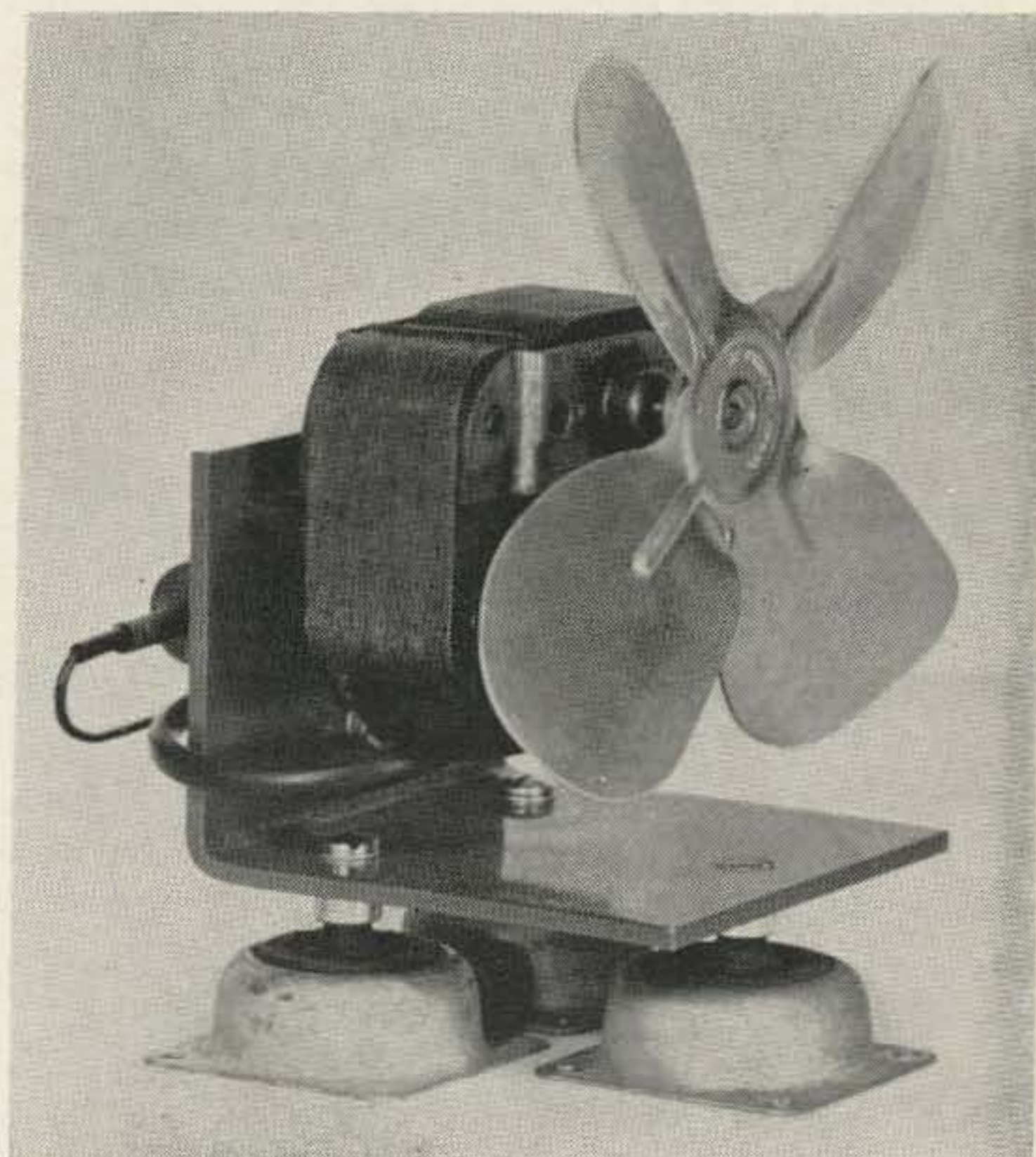


Fig. 1: Noise-reducing fan mount

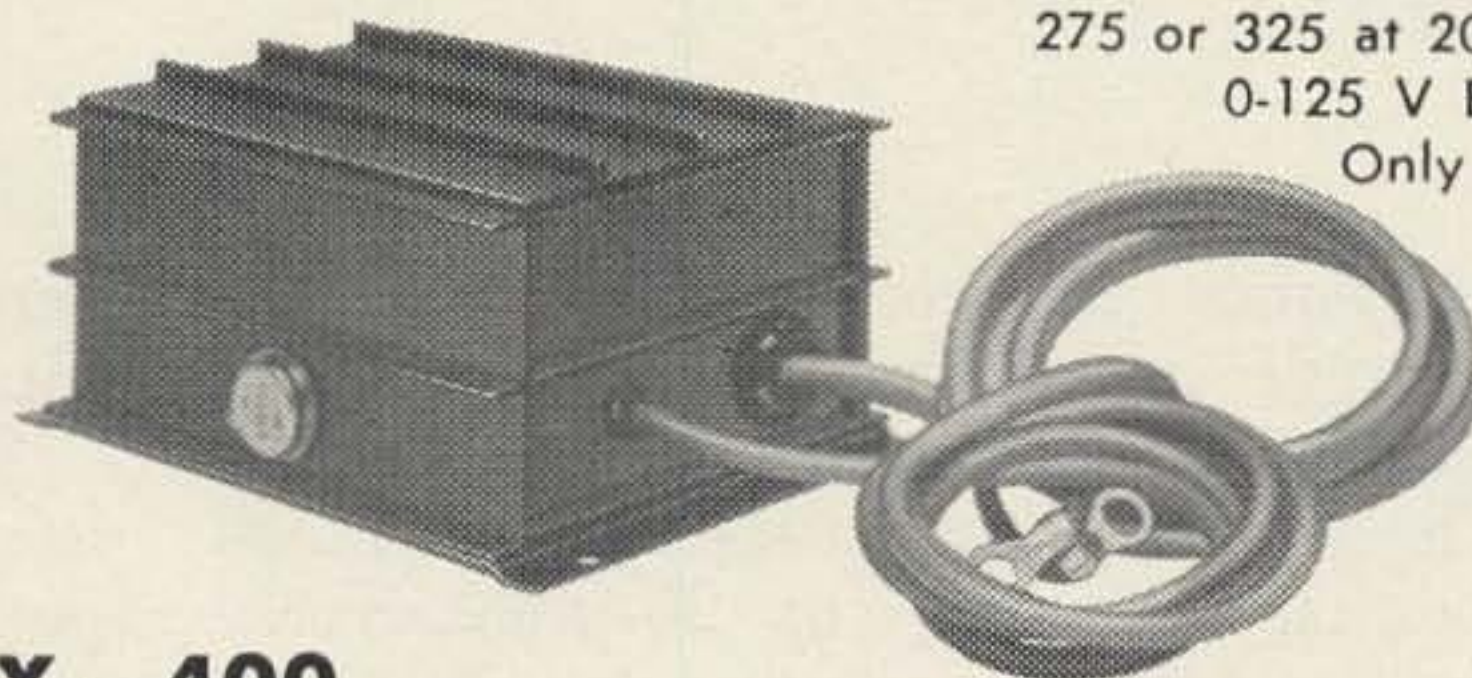


# NOW! Your Choice of **3** CENTURY Models

FROM THE LEADER IN THE FIELD  
OF TRANSISTOR POWER CONVERTERS

## **1** The **ECONOMICAL** CENTURY - 350 **NEW**

We are proud to introduce the CENTURY 350 Converter to the amateur radio fraternity. This latest addition to the Linear Systems' line of quality converters provides the mobile operator with an economical supply that features reliable performance and delivers maximum power at conservative ratings. Based on the design of the CENTURY, with its cool, quiet, efficiency, the 350 carries the same proven quality guarantee that has distinguished the products manufactured by Linear Systems.



Input: 12-15 V. DC  
Output at 13 V. DC In.  
800 at 450 MA  
275 or 325 at 200 MA  
0-125 V Bias  
Only \$114.50

## **2** The **POPULAR** CENTURY - 400

The first of the CENTURY converters to be introduced, the 400 was designed to power all transceivers, with features that marked it as a major breakthrough in the mobile supply field. Today it is proving its claim across the country as "the best supply money can buy."

Input: 12-15 V. DC  
Output at 13 V. DC In.  
850 at 500 MA  
750 at 600 MA  
650 at 700 MA  
250/285/325 at 200 MA  
0-125 V Bias  
\$145.



## **3** The **POWERHOUSE** CENTURY - 500

Recently added to the CENTURY line, the 500 delivers the extra power that is needed for high power mobile operation. A pace setter for future mobile communications with its ever-increasing power ratings, the 500 is a quality powerhouse in a compact package.

Input: 12-15 V. DC  
Output at 13 V. DC In.  
1150 V at 450 MA  
250/285/325 at 200 MA  
0-125 V Bias  
\$165.

### Note the Features of the Patented\* CENTURY Design:

- \* Finned extruded case for maximum heat dissipation.
- \* Black anodize for rapid conduction of internal heat to the fin surfaces.
- \* Patented circuitry requiring no high dissipation starting resistors.
- \* High degree of regulation for top SSB operation, producing clean signals.
- \* Regulation better than 10% no load to full load.

- \* Low ripple due to wave shape in circuit, producing no damaging spikes.
- \* Less critical of over-voltage on input.
- \* Automatic circuit breaker protected.
- \* Reverse polarity proof.
- \* Cool—Quiet—Efficient.

**\* ALL POWER CONVERTERS  
NOW SUPPLIED WITH CABLES**



A POWER SUPPLY FOR EVERY APPLICATION

**LINEAR SYSTEMS INC.**

\*PAT. APPLD. FOR

605 UNIVERSITY AVENUE

LOS GATOS, CALIFORNIA