COMMANDER II VHF LINEAR AMPLIFIER

COMMAND TECHNOLOGIES, INC.
1117 WEST HIGH STREET
BRYAN, OHIO 43506
(419) 636-2721 or (419) 636-0443
IMPORTANT

Your Commander II has been equipped with a recently developed high "Q" piston type tuning capacitor. This enhancement will provide more output power.

The tuning procedure is the same as outlined in the owner's manual. However, the reduction mechanism on the tuning control requires multiple turns to tune from 144 Mhz to 148 Mhz. As a result, the pointer indicating the position of the tuning control has been eliminated. The direction still remains the same (clockwise for higher and counterclockwise for lower). When tuning keep turning the tuning control until a peak in output power is indicated on an external wattmeter.

The installation of this piston tuning capacitor provides for a more rugged and reliable amplifier including the capability to operate into an extremely high VSWR. Also, the power output ratings have been increased. These new output power ratings are:

1. FM/RTTY ........................................ 450 watts
2. CW ................................................... 650 watts
3. SSB .................................................. 1,000 watts

Refer to page seven. The plate voltage is no longer delayed. When the ON/OFF switch is turned to the on position, the plate voltage will immediately read approximately 2,650 volts no load. The time delay is still operative. A two minute warmup cycle must elapse before the amplifier is ready for operation. This will be indicated when the green power lamp comes on.

We have also extensively redesigned the Commander II. The control and bias circuit has been completely changed. In addition, we have eliminated the HIGH/LOW switch located on the front panel.

We are in the process of creating the new instruction manual and schematic diagram. We will send them to you upon completion. If you have any questions, please call us using our toll free customer service number 1-800-736-0443. Thank you.
SPECIFICATIONS
COMANDER II VHF
LINEAR POWER AMPLIFIER

FREQUENCY RANGE — 144-148 MHz
MODES — USB, LSB, RTTY, FM, CW
POWER REQUIREMENTS — 117/234VAC WITH 234VAC RECOMMENDED
RF DRIVE POWER — 10-15 WATTS NOMINAL 25 WATTS MAXIMUM (15 WATTS FM OR RTTY)
RF OUTPUT — 15+ DB GAIN OR OVER 650 WATTS (400 WATTS FM OR RTTY)
INPUT IMPEDENCE — 50 OHMS
OUTPUT IMPEDENCE — 50 OHMS NOMINAL
ANTENNA LOAD — 2:1 MAXIMUM
HARMONIC SUPPRESSION DOWN 60DB @ RATED OUTPUT
INTERMODULATION DISTORTION DOWN 30DB MINIMUM
WEIGHT — 58 lbs.
CABINET SIZE — 14¾" x 14¾" x 6"
TUBE — 3CX800A7 CERAMIC/METAL TRIODE
PRESSURIZED CHASSIS FORCED AIR COOLING

COMMAND TECHNOLOGIES, INC.
1117 WEST HIGH STREET
BRYAN, OHIO 43506
(419) 636-2721 or (419) 636-0443
INTRODUCTION

The Commander II is a Grounded Grid class Ab2 Linear Power Amplifier that operates on the Amateur 2 meter band.

A 3CX800A7 External Anode Triode with forced air cooling and modern stripline circuitry, insure efficient and conservative operation.

Reduced ratio (6 to 1) vernier drives on all tuning controls allow smooth and easy tuneup.

Front panel input tuning control allowing a higher input circuit “Q” for excellent linearity and a low input SWR to exciter all across the 2 meter band.

Automatic delay circuit for proper cathode conditioning before RF drive can be applied, extending tube life. A 50ohm resistor in the Plate Supply positive lead and a 200ohm resistor in the negative lead help protect the tube in the event of an arc.

The Commander II features a full compliment of control and metering functions including a dual Plate Voltage Switch (high/low on front panel) allowing reduced Plate Voltage for high duty cycle modes and closer in SSB or CW contacts.

A Dual Primary Power Transformer allows 117vac or 234vac operation.

!! WARNING !!

CONTACT WITH VOLTAGES IN THIS AMPLIFIER CAN BE

!!! FATAL !!!

COMMAND TECHNOLOGIES, INC.
1117 WEST HIGH STREET
BRYAN, OHIO 43506
(419) 638-3721 or (419) 638-0443
- 3 -
UNPACKING INSTRUCTIONS

Carefully remove your Commander II from its shipping carton making sure there is no damage evident from shipping. If there is any damage, notify the delivering shipper immediately, fully describing the damage.

Complete the enclosed warranty card and mail to Manufacturer.

Do not destroy the packing material, since it may be reusable later, should you require factory service, or need to transport the Amplifier for any other reason.

234 VOLT OPERATION

- JUMPERS -

1 2 3 4 5 6

1 2 3 4 5 6

117 VOLT OPERATION

COMMAND TECHNOLOGIES, INC.
1117 WEST HIGH STREET
BRYAN, OHIO 43506
(419) 636-2721 or (419) 636-0443
CAUTIONS

Do not attempt any type of service or repair on this Amplifier without first removing from AC power and allowing at LEAST 1 HOUR (60 MINUTES) FOR HIGH VOLTAGE CAPACITORS TO BLEED OFF!

Make no attempt to put this Amplifier in service with the top or bottom covers removed. CONTACT WITH VOLTAGES IN THIS CABINET CAN BE FATAL!

Never attempt operation without first connecting an appropriate antenna (2:1 SWR Max.) or a 50ohm load with sufficient rating or SERIOUS DAMAGE TO AMPLIFIER MAY RESULT.

Never operate with more than 25watts drive in SSB/CW or 15watts drive in any other mode.

Do not place the Commander II in Repeater Operation without first contacting Manufacturer for appropriate modification.

Never operate Amplifier using an extension cord.

Never cover the top of Amplifier cabinet with books, papers or other equipment as OVER-HEATING MAY RESULT.

IF ANY PROBLEM OCCURS NOT EASILY CORRECTED IN FIELD PLEASE CONTACT MANUFACTURER FOR ASSISTANCE.

COMMAND TECHNOLOGIES, INC.
1117 WEST HIGH STREET
BRYAN, OHIO 43506
(419) 636-2721 or (419) 636-0443
The Commander II is factory wired for operation from a 117VAC line. For 234VAC operation remove the power network cover on rear of Amplifier and install appropriate jumper(s) (SEE ILLUSTRATION IN THIS MANUAL) discard existing 117v plug and install proper 234v plug to mate with your receptacle.

Location of your Commander II requires that no equipment be placed directly above it, as air expelled from tube exhaust can be quite hot! Allow at least 3 inches clearance on either side of unit between other equipment. The use of the supplied bail on bottom of chassis improves air flow.

The Commander II requires a contact closure or keying circuit capable of sinking 150ma. of positive voltage (12v open circuit) to ground. Read the manual supplied with your Transceiver to find the proper external connections. On some Transceivers, this is not provided and an alternate circuit will be required. Always use shielded cable for these connections.

Connect a good quality thru line wattmeter between the Amplifier output jack and Antenna or Dummy Load using RG8 or better coax. (MICRO 8U IS NOT SUITABLE HERE!)

Connect the exciter RF output to Amplifier input using 50ohm coax. (MICRO 8U FINE HERE.)

Connect as short a ground lead as possible from a good EARTH GROUND to the units rear panel ground terminal.
OPERATING PROCEDURE

After reading this manual and completing Installation/Preparation Instructions.
Position the Commander II front panel controls as follows:
ON/OFF - OFF
OPERATE/STANDBY - STANDBY
HIGH/LOW - LOW
METER SWITCH - VP (PLATE VOLTAGE)
INPUT - CENTER OF RANGE
LOAD - FULLY LOADED (9 ON SCALE)
TUNE - CENTER OF RANGE

After presetting these controls, switch ON/OFF switch to ON position. At this time you will
hear the blower running, but no indication of plate voltage on meter.
When the green power light comes on and an indication of plate voltage on meter (approx.
1750 volts) unit is now ready for operation. This will take a little over 2 minutes (automatic
delay).

Switch meter switch to IP (plate current) position.
Switch OPERATE/STANDBY switch to OPERATE and key exciter with no RF applied. Red
transmit light should come on along with a slight indication of plate current on meter.
Apply a small amount of drive (about 5 watts) and adjust INPUT control for a rise in plate
current.
Next adjust TUNE control for maximum output as indicated on an external wattmeter. Do not
adjust LOAD at this time.
Complete these adjustments as quickly as possible.
Now place the HIGH/LOW switch in HIGH position (approx. 2650 volts) on meter in VP
position.
Again key exciter and apply full drive (25 watts maximum) and very quickly adjust TUNE,
INPUT, and LOAD for maximum output. If these adjustments take more than 60 seconds,
remove drive, wait 60 seconds and repeat.
Switch meter to IG (grid current) position, apply drive and quickly adjust LOAD control for
minimum grid current. Observe the 60 second limit for keydown time under full output
conditions. NOTE! Using exciters with 10-15 watts max output, adjust load control for
maximum output.
Return meter switch to IP position and your Commander II is ready for SSB or CW on the air
operation.
For FM and other modes, or operation in LOW plate voltage position, limit drive to 15 watts
maximum.
Normal SSB operation is indicated by plate current readings on voice peaks of approximately
1/2 to 2/3 of keydown value.

COMMAND TECHNOLOGIES, INC.
1117 WEST HIGH STREET
BRYAN, OHIO 43506
(419) 636-0443 or (419) 636-2721
## COMMANDER II — PARTS LISTS

### RESISTORS:
- R1: 50ohm 50watt
- R2: 200ohm 10watt
- R3: 10Kohm 5watt
- R4: 5ohm 2watt
- R5: 5ohm 2watt
- R6: 150Kohm 2watt
- R7: 1.6meg 1watt
- R8, R9, R10: 1meg 2watt
- R11-R16: 150Kohm 2watt

### CAPACITORS:
- C1, C2: 1000uf 16v
- C3-C8: 150uf 550v
- C9: 15pf 16v
- C10: 20pf s-mica
- C11: 20pf Variable
- C12: 24pf Variable
- C13: 10pf Variable
- C14: .006uf 5Kv
- C15: 100pf 5Kv
- C16-C27: .01uf 1Kv
- C28, 29: .01uf 1Kv
- C30-C36: .001/.01uf Bypass

### INDUCTORS:
- L1: Plate Line
- L2: Output Link
- L3, L4: Input Tune
- RFC-1: Plate Choke
- RFC-2: Filament Choke
- RFC-3: 1uf Choke

### DIODES:
- D1, D2: 1N4001
- D3, D4: 1N4002
- D5-D16: M4055
- D17: 8.2v 50watt Zener

### SWITCHES:
- SW-1: Interlock
- SW2-SW4: STDP Toggle
- RY-1, RY-2: SPDT 12v
- FY-3: Opt. Coaxial

### MISC:
- V1: 3CX800 Ceramic Tube
- T1: Plate & Control XFRMR
- T2: Filament XFRMR
- CT: CA555CE
- PL-1: IDI 12v green
- PL-2: IDI 12v red
- PL-3: 50 CFM Blower
- J1, J2, J3: 50239
- J4, J5: RCA Female
- J6: PL259
- J7: RCA Male
- F1: 20A/117v-12A/234v
- F2: 1.5A

---

COMMAND TECHNOLOGIES, INC.
1117 WEST HIGH STREET
BRYAN, OHIO 43506
(419) 636-2721 or (419) 636-0443