

tion note concerns the exciter more than the Mark 6B, but since the 3-400Z power amplifier tubes are operating at full input during tune, the time should always be kept short. If longer time is required, switch to standby for a minute, and then back to TUNE for 30 seconds. With experience in tuning procedures, it will be found that 30 seconds is more than enough time.

5. After tuning all controls for maximum output indication as described, other meter readings may be observed. IG (grid current) should indicate .2 to .5 amperes in TUNE position, depending on the amount of driving power. The Swan 250 will generally supply more driving power than other transmitters or transceivers presently on the market, and so is the recommended driver. IP (plate current) should indicate at least .6 amps, and up to .9 amps, depending on driving power. The exact values of grid and plate current are not critical providing they do not exceed .6 grid amperes, and .9 plate amperes, and this only during short tuning periods.

6. SSB Voice Operation. Having followed the preceding tuning procedures, now switch the Mark 6B to "SSB" position, and its meter switch to "IP." Apply SSB voice excitation from the transceiver or driver, and advance its Mic. Gain control for an average IP reading of .35 amperes. Only occasional voice peaks should kick up to .6 amps.

CAUTION: Exercise great care in setting the Mic. Gain control. It is quite easy to produce higher meter readings, but flat-topping and distortion will result, as well as the possibility of exceeding legal power limits.

7. Monitoring and tuning with an oscilloscope. A highly recommended piece of test equipment for the complete amateur radio station is an oscilloscope suitable for monitoring transmitter output and linearity. This instrument will permit optimum tuning of both the driver and amplifier, as well as continuous monitoring during operation.

The Radio Amateur's Handbook, published by the ARRL, and the Radio Handbook by Bill Orr, published by Editors and Engineers both contain detailed information on the use of oscilloscopes for transmitter tuning and operation. These publications are recommended references for this purpose.

8. When the Mark 6B Function Switch is in "SSB" position for voice transmission, plate voltage is

increased from the TUNE-CW value. In Standby or Receive condition, the 3-400Z tubes are biased to cut-off, so IP will be zero, and EP will indicate 2900 to 3000 volts, depending on power line voltage. In TRANSMIT position, without modulation, IP will show an idling current of .18 amperes, and EP will drop to 2650 volts. With voice modulation averaging .35 amperes, EP will drop to about 2500 volts. Occasional voice syllables may drop the plate voltage further, but with proper setting of the Mic. Gain control, dynamic regulation of the power supply is more than adequate. Use of computer grade electrolytics assures long capacitor life, with a filter capacity of 40 mfd. across the plate supply. (All voltage readings above are subject to line voltage variations).

9. To operate without the Mark 6B Linear Amplifier, simply switch it to "Power OFF" position. The antenna circuit is then by-passed around the amplifier by the internal relay and the transceiver-driver will operate "Barefoot". When switching back to amplifier use, allow a few seconds for filament warm up.
10. CW Operation. To operate CW with the Mark 6B always keep the Function Switch in the TUNE-CW position in order to limit input power to 1000 watts. CAUTION: Because the Mark 6B uses a grounded grid amplifier circuit, input power measurements must include the driver stage input. If for example, the driver is running 300 watts input, the linear amplifier input must be limited to 700 watts when in CW Mode. Thus, you must first measure driver input, in order to determine how much input you may run to the Mark 6B. Use the EP meter position to measure plate voltage, and then calculate how much IP (plate current) you can run and stay within the legal limit. Then use the P.A. Load control to hold IP down to this level.

11. AM Operation. The Mark 6B Linear Amplifier may be operated in the "AM" mode at 1000 watts D.C. input and 100 percent modulation. When using a transceiver or exciter which will also operate in the SSB mode, first tune the transceiver and Mark II for SSB transmission, just as described in previous instructions. Then insert carrier in accordance with instructions furnished with the exciter. With Swan Transceivers, this is explained in tuning instructions under "AM operation."

If the exciter operates only in the AM mode, it is recommended that an oscilloscope and an audio oscillator be used for proper adjustment. Feed an audio tone of about 1000 cycles into the Mic. Jack of the exciter and couple the vertical input of the scope loosely to the output of the Mark 6B. Switch the exciter to Transmit mode and adjust