

 **TONO**

2M - 90G

VHF ALL MODE LINEAR AMPLIFIER

取扱説明書 INSTRUCTION MANUAL

このたびは TONO の G₀ シリーズ 2M-90G お買い上げいただきありがとうございます。
取扱説明書をご使用前に最後までお読みになりましてご愛用下さい。

東野電気株式会社

〒371 群馬県前橋市元総社町98
TEL 0272(53)1221(代)

TONO CORPORATION

98 MOTOSOJA-MACHI MAEBASHI-SHI 371 JAPAN
TEL 0272(53)6955(代)
TELEX (0)3422-732

2 M - 90 G

INSTRUCTION MANUAL

FEATURES

- * All mode high-power linear amplifier: the 2M-90G is specially designed for transceivers of 10W output.
- * Incorporates a high-output transmitting amplifier and a low-noise RX preamp using GaAs FET.
- * RECEIVE/TRANSMIT/PASSING THROUGH status is easy switch-selectable.
- * Automatic transmit/receive switching by carrier control system. PTT remote terminal also provided.
- * The 2M-90G uses choice parts and composite elements only. Compact, high efficiency design holds high stability of the circuits.
- * Incorporates the NG circuit to protect power transistors.

SPECIFICATIONS

Frequency	144 - 146 MHz
Mode	FM, SSB, CW, RTTY
I/O Impedance	50 ohms
Power Inputs	10 - 15 W
Power Output	80 - 90 W (at 15W drive)
Preamp Gain	15dB ca.
Voltage	13.8V DC standard (minus grounded)
Current	15A ca. (at max. output)
Dimension	147 W x 223 D x 50.5 H (mm)

PRECAUTIONS

1. The output power of the companion transceiver is to be applied to drive this unit. Ensure that the driving power SHOULD NOT exceed 15W. Overdriving power may result in damage of power transistors of the 2M-90G.
2. The 2M-90G requires 13.8V DC power source. At mobile operation, ensure that the input voltage stays under 15V. A stabilizing power source to be used with the unit should be capable of supplying 15A at 13.8V output with minimum ripple. A power source without RFI-proof system may disturb normal operation of

the unit. As a cure, connect capacitors of $250\mu\text{F}$, $0.1\mu\text{F}$, $0.01\mu\text{F}$, 300pF and 100pF in parallel between the plus and minus DC outputs of the power source.

3. Always operate the unit with an antenna whose SWR is under 1:1.5 at operating frequency. Ensure that the loading coil of the antenna, if any, withstands high output power. Some antennas with loading coil get unstable SWR due to swings of the element when in operation. Those antennas are undesirable.
4. Always avoid operation in over 40°C environment. Install the unit away from direct heat such as heat vent or the engine room when mounted in mobile stations.
5. Never reverse the polarity. The unit should be directly connected to the battery when mounted in an automobile.
6. Any adjustment or modification to the unit done by unqualified personnel may result in damage not covered under warranty.
7. Connect to the remote PTT terminal or use the T.D. function to operate SSB or CW. It may result in damage of preamp otherwise.

OPERATION

1. With the unit's full-automatic transmit/receive switching circuit it only requires connection with an antenna, power input, and power source to get it started.

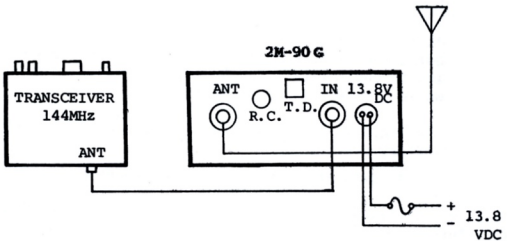
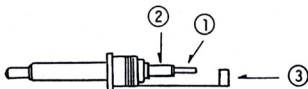


Figure 1

Because of the one-second time delay, the T.D. switch should be turned OFF at operation on FM or RTTY, and ON on SSB or CW.

2. For more convenient operation on SSB or CW, use the remote PTT terminal (R. C. jack) so that the communication controlled by transceiver would be available. In this case, turn the T. D. switch off.
Insert the accessory plug to the R. C. jack after wiring according to one of the following (A), (B) or (C).

Figure 2



- (A) In case of a transceiver with a terminal supplying +5 to 13.8V DC in receiving and 0V in transmission, connect the terminal to ① shown in Figure 2 and ground to ③ .
- (B) In case of a transceiver with a relay terminal (RL MAKE) that shorts only in transmit state, connect the terminal to ② shown in Figure 2 and ground to ③ .
- (C) In case of a transceiver without the terminal mentioned in (A) or (B) above, pull out a wire which supplies +5 to 13.8V DC only in transmit state from circuit and connect it to ① shown in Figure 2 and ground to ③ .

TROUBLESHOOTING

The 2M-90G incorporates the NG circuit to protect power transistors. The following causes turn on the NG circuit, and the unit will be in the passing through state. The NG lamp also lights to inform of trouble while the NG circuit is working.

1. Input voltage is over 15V. (The NG circuit is turned on even by a momentary overvoltage.)
2. The SWR is greater than 1:1.5 due to troubles in antenna line.

Once the NG circuit works, it can be released and reset only by manually turning off TX AMP or RX AMP switch and turning it back on after several seconds. The NG lamp goes out to inform that the NG circuit is not on.

In rare instances of automobile that cause voltage fluctuation to the unit when the T. D. switch (time constant switching) is on, transmit/receive switching circuit cannot be performed properly. As a cure, make modification to the automobile, or use the remote PTT terminal referring to no. 2 of "OPERATION".

FRONT PANEL SWITCHES & INDICATIONS

- TX AMP switch ... Turns on/off the transmitting amplifier. When it is ON, PO lamp illuminates and notifies that power is on. It is in "Passing through" status when the switch is OFF.
- RX AMP switch ... Turns on/off the receiving amplifier. When it is ON, PO lamp is illuminated. It is in "Passing through" status when the switch is OFF.
- PO lamp Lights when power is applied to the unit.
- ON AIR lamp Lights when the transmitting amplifier is working. (Doesn't light in transmitting status nor when NG circuit is working.)
- RX lamp Lights when the receiving amplifier is working. (Doesn't light in receiving status nor when the NG circuit is working.)
- NG lamp Lights when the NG circuit is working. --refer to the chapter "TROUBLESHOOTING" for detail.

NOTE: The transmitting and receiving amplifiers can be separately operated by manual switching.

REAR PANEL CONNECTIONS & SWITCHES

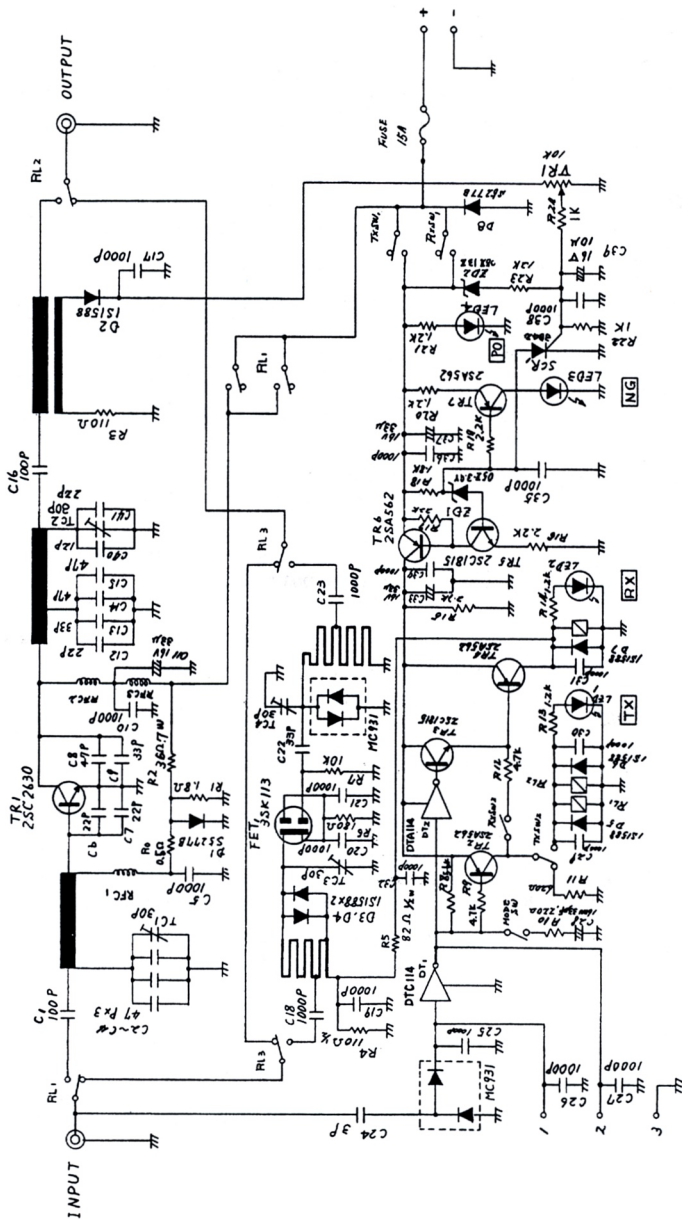
- IN connector Connects to the antenna terminal of the transceiver.
- ANT connector ... Output for the antenna line.
- T. D. switch Time Delay switch. Push it to give one-second delay between transmitting and receiving.
- R. C. jack Remote PTT terminal to be connected to the PTT terminal of the transceiver and switches receive/transmit by control from the transceiver.
- 13.8V DC cord ... Connects to the 13.8V DC power source. The red one is plus; black minus.

ACCESSORIES

- Instruction Manual 1 Plug 1 Rubber Feet 4
Mount Bracket 2 4 x 6mm Screw 4

2M-90G 回路図

CIRCUIT DIAGRAM



指定なき抵抗は1/4Wとする。
部品及び回路等は技術開示、その他により予告なく変更のことがあります。

ALL RESISTORS ARE IN 1/4W UNLESS OTHERWISE NOTED
ON ACCOUNT OF THE TECHNICAL DEVELOPMENT AND FOR
OTHER REASONS, ALL OF THE PARTS AND THE CIRCUIT ARE
SUBJECT TO CHANGE WITHOUT NOTICE