

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

MAINTENANCE

ECHO BOX TS-488A/UP

Note. This manual replaces AF TO S3A1-371-2, 15 December 1955, for use within the Department of the Army.

This copy is a reprint which includes current pages from Changes 1 through 3.
--

HEADQUARTERS, DEPARTMENT OF THE ARMY
SEPTEMBER 1958

Technical Manual

No. 11-6625-220-25

HEADQUARTERS,
DEPARTMENT OF THE ARMY
Washington 25, D. C., 3 September 1958**ECHO BOX TS-488A/UP**

SECTION	PAGE
I	DESCRIPTION AND LEADING PARTICULARS 1
	1-3. Equipment Supplied 1
	1-5. Description 1
	1-7. Purpose Of Equipment 1
	1-9. Frequency Range 1
	1-11. Power Supply 1
	1-13. Location and Function Of Operating and Adjustment Controls 2
II	TEST EQUIPMENT AND SPECIAL TOOLS 3
III	PREPARATION FOR USE AND SHIPMENT 3
	3-1. Unpacking and Inspection 3
	3-6. Preparation For Use 4
	3-8. Coupling To Radar For Testing 4
	3-16. Reshipment 4
IV	THEORY OF OPERATION 4
	4-1. General Operation 4
	4-7. Function Of Mechanical Components 6
	4-11. Functional Operation Of Electrical Components 6
V	ORGANIZATIONAL AND OPERATIONAL MAINTENANCE 9
	5-1. Trouble Analysis 9
	5-9. Care and Replacement Of Crystal Diode 9
	5-11. Minor Repair and Adjustment 10
	5-18. Lubrication 10
	5-21. Inspection Schedule 10
VI	FIELD AND FASRON MAINTENANCE 12
	6-3. Waveguide Assembly 12
	6-6. Minor Tropicalization 13
VII	WIRING DIAGRAMS 13
	INDEX 14

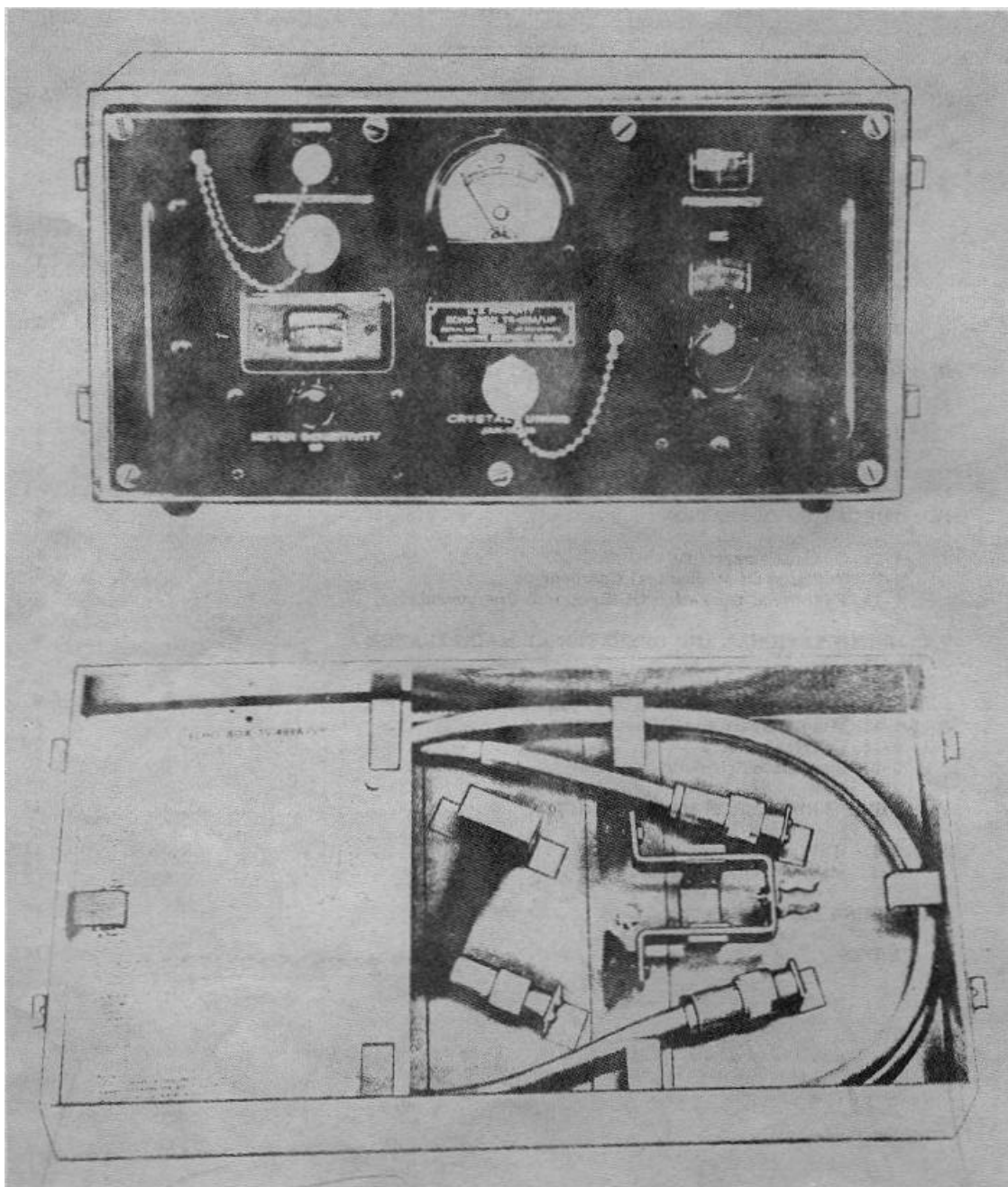


Figure 1-1. Echo Box TS-488A/UP

SECTION I DESCRIPTION AND LEADING PARTICULARS

1-1. GENERAL.

1-2. This handbook contains service instructions for Echo Box TS-488A/UP manufactured by Aermotive Equipment Corporation, Kansas City, Missouri and is issued as one of four basic handbooks covering the equipment. The other three handbooks are: Handbook of Operating Instructions (T.O. 33A1-3-71-1); Handbook of Overhaul Instructions (T.O. 33A1-3-71-3) and Illustrated Parts Breakdown (T.O. 33A1-3-71-4).

1-3. EQUIPMENT SUPPLIED.

1-4. The complete equipment consists of the items listed in Table I.

1-5. DESCRIPTION. (See figure 1-1.)

1-6. The complete equipment is housed in a metal carrying case with a removable cover. The pick-up antenna, antenna mounting bracket, wrenches, trouble shooting chart, and interconnecting cable are all mounted to the inside of the cover. The instrument controls and indicators are exposed when the cover is removed. The top of the instrument serves as a control panel and contains the controls and indicators necessary for operation of the Echo Box. The controls and indicators are: TUNING control, two FREQUENCY indicator dials, METER SENSITIVITY control, DB indicator dial, CRYSTAL TUNING control, and Output Meter. In addition, the control panel contains a holder for spare JAN -1N23B crystals and the Echo Box INPUT connector for connecting the Echo Box to radar directional coupler or to the pick-up antenna. The pickup antenna is used to pick up transmitted energy

from the radar and reradiate the energy from the Echo Box back to the radar.

1-7. PURPOSE OF EQUIPMENT.

1-8. Echo Box TS-488A/UP is a portable test instrument used to check the performance of radar equipment. The Echo Box is used to check the over-all radar system performance and to make the following radar equipment checks:

- a. Comparative measurement of average power output of radar transmitter.
- b. Frequency spectrum of radar transmitter.
- c. Radar transmitter for multiple moding.
- d. Radar transmitter for frequency pulling.
- e. Speed of recovery of radar T-R box and receiver.

1-9. FREQUENCY RANGE.

1-10. The Echo Box operates over a frequency range of 8990 to 9610 megacycles per second. Frequency measurements may be obtained to within ± 8 megacycles at normal temperature and humidity. Frequencies 60 megacycles apart may be read to within ± 1.5 megacycles.

1-11. POWER SUPPLY.

1-12. Operation of the Echo Box is entirely dependent on r-f energy picked up from the radar transmitter under test.

**TABLE I
EQUIPMENT SUPPLIED**

Quantity	Name	Army/Navy Type Designation
1	Echo Box (including the following items)	TS-488A/UP
1	Pick-up Antenna	AT-68/UP
1	Antenna Bracket	
1	Interconnecting Cable	CG-92A/U
1	Trouble Shooting Chart	
2	Wrench	