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DEPARTMENT OF THE ARMY TECHNICAL MANUAL

ORGANIZATIONAL AND FIELD
MAINTENANCE MANUAL

PULSE GENERATOR SETS AN/UPM-15 AND AN/UPM-15A

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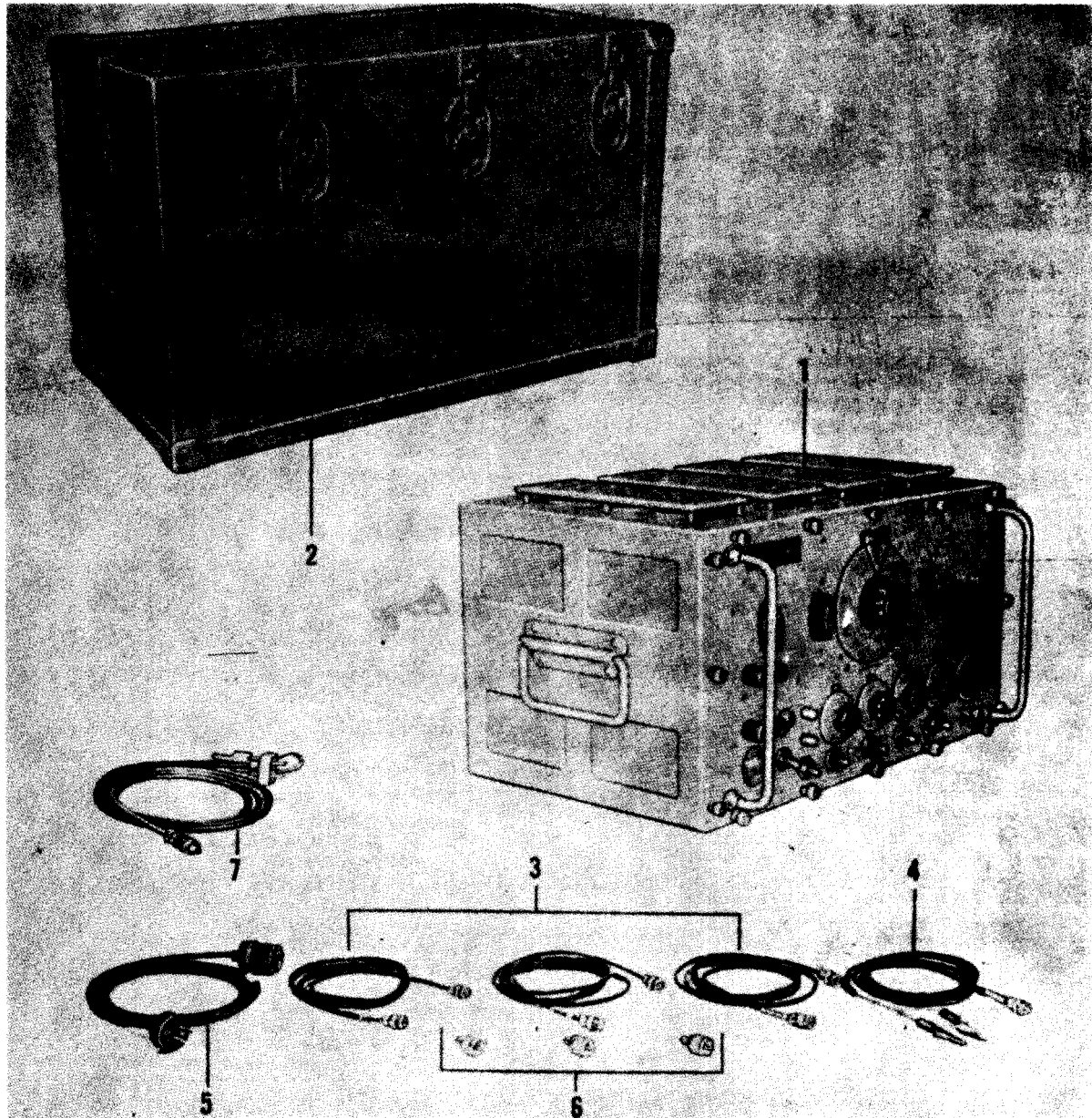
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***This manual, together with TM 11-6625-368-10, 27 September 1960, and TM 11-6625-368-50, 27 September 1960, supersedes TM 11-1177, 1 February 1957.**

INTRODUCTION

The purpose of the Handbook of Service Instructions is to provide adequate information which will aid the technician in servicing and repairing this equipment.

All symbols, reference designations, and abbreviations used in this manual are in accordance with JAN-STD-15 and MIL-STD-16.



1. Pulse Generator TS-592A/UPM-15, TS-592B/UPM-15 or SG-343/UPM-15A
2. Transit Case CY-672/U
3. Cord CX-409E/U
4. RF Cable Assembly CG-521/U
5. Cord CX-337/U (supplied with AN/UPM-15)
6. Adapter UG-273/U
7. Cable Assembly, Power Electrical CX-3135/U (supplied with AN/UPM-15A)

Figure 1-1. Pulse Generator Set AN/UPM-15 and AN/UPM-15A

SECTION I

DESCRIPTION AND LEADING PARTICULARS

1-1. GENERAL.

1-2. This handbook of Service Instructions covers instructions for repair, replacement, adjustment and re-calibration of Pulse Generator Set AN/UPM-15 and AN/UPM-15A, manufactured by A. R. F. Products Inc., River Forest, Illinois.

1-3. PURPOSE OF EQUIPMENT.

1-4. Pulse Generator Set AN/UPM-15 or AN/UPM-15A (figure 1-1) is a general purpose video electronic generator for use in the calibration of radar equipment, in field, depot maintenance, and in laboratory work. It produces output wave shapes that are essentially rectangular. By means of manual controls, it is possible to produce a wide range of pulse amplitudes, widths, repetition rates and delays. It is possible to synchronize the equipment either with an external oscillator, or with external sources producing wide varieties of waveforms, frequencies and amplitudes.

1-5. CAPABILITIES.

1-6. OUTPUTS. This pulse generator supplies steeply rising and falling pulses at any positive or negative potential within a range of ± 200 volts. A choice of one or two output pulses is provided. Width of pulses is continuously variable from 0.5 to 100 usec. Amplitude of the pulses is variable from 0.0 to 200 volts. The pulse generator also supplies a sync pulse of approximately 1.3 usec width and a positive 25 to 75 volts amplitude. The sync pulse is delayable with respect to the output pulse or pulses and is available at a separate front panel connector.

1-7. EXTERNAL SIGNALS. Externally-supplied synchronizing signals may have an amplitude of from 5 to 100 volts. External signal frequency may vary from 50 to 10,000 cps. However, if the signal is a sawtooth shape, the minimum acceptable frequency is 250 cps.

1-8. AMBIENT TEMPERATURE RANGE. The pulse generator is designed to operate within a temperature range of -20°C (-4°F) to $+55^{\circ}\text{C}$ ($+131^{\circ}\text{F}$).

1-9. LIMITATIONS.

1-10. INTERNAL OSCILLATOR CALIBRATION. Calibration of the repetition rate ("PULSE RATE" dial) is accurate within ± 5 percent at a temperature of $+20^{\circ}\text{C}$ ($+70^{\circ}\text{F}$). Accuracy is within ± 10 percent at the high and low ends of the temperature range stated in paragraph 1-8.

1-11. PULSE OUTPUTS. Accuracy of all controllable characteristics of pulse output is within ± 10 percent.

1-12. BIAS CONTROL. With an externally applied syn-

chronizing signal of up to 100 volts, the pulse output may be synchronized by the bias control with any positive value of the external signal up to 95 volts.

1-13. TUBE COMPLEMENT. The pulse generator contains 27 electron tubes which are listed in Table 1-1.

TABLE 1-1. ELECTRON TUBE COMPLEMENT

Qty	JAN - Type Number	Reference Symbol No.	Function
4	JAN6AU6WA	V1	oscillator
		V3, V4, V24	amplifier
5	JAN5814A	V2, V6, V13	amplifier
		V14, V15	multivibrator
1	JAN6D4	V5	pulse generator
4	JAN12AT7 WA	V7, V9, V11 V12	amplifier
2	JAN5725/6AS6W	V8, V10	phantastron
2	JAN6AH6	V16, V17	amplifier
1	JAN6AN5	V18	amplifier
1	JAN829B	V19	amplifier
1	JAN6005/6AQ5W	V20	amplifier
1	JAN5R4WGA	V21	rectifier
2	JAN6AS7G	V22, V23	amplifier
1	USN6626/0A2WA	V25	voltage regulator
1	JAN6X4W	V26	rectifier
1	USN6627/0B2WA	V27	rectifier

1-14. FUSE COMPLEMENT. Two type 3AG, 4 ampere fuses are in the power line circuit. Two spare fuses, mounted on the front panel, are marked "SPARES".

1-15. PULSE FREQUENCY RANGES. There are three pulse rate frequency ranges marked "A", "B" and "C". Range "A" covers from 50 to 280 cps, "B" 280 to 1600 cps, "C" 1600 to 10,000 cps.

1-16. OUTPUT CHARACTERISTICS. Table 1-2 displays the characteristics of the sync pulse and the output pulses. There is a choice of one or two output pulses. Their width and amplitude are produced by a single set of controls so the waveforms of output pulses are the same. The first output pulse may lead or lag