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DEPARTMENT OF THE ARMY TECHNICAL MANUAL

OPERATOR'S MANUAL
PULSE GENERATOR SETS
AN/UPM-15 AND AN/UPM-15A

**This reprint includes all changes in effect at the time of
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HEADQUARTERS, DEPARTMENT OF THE ARMY
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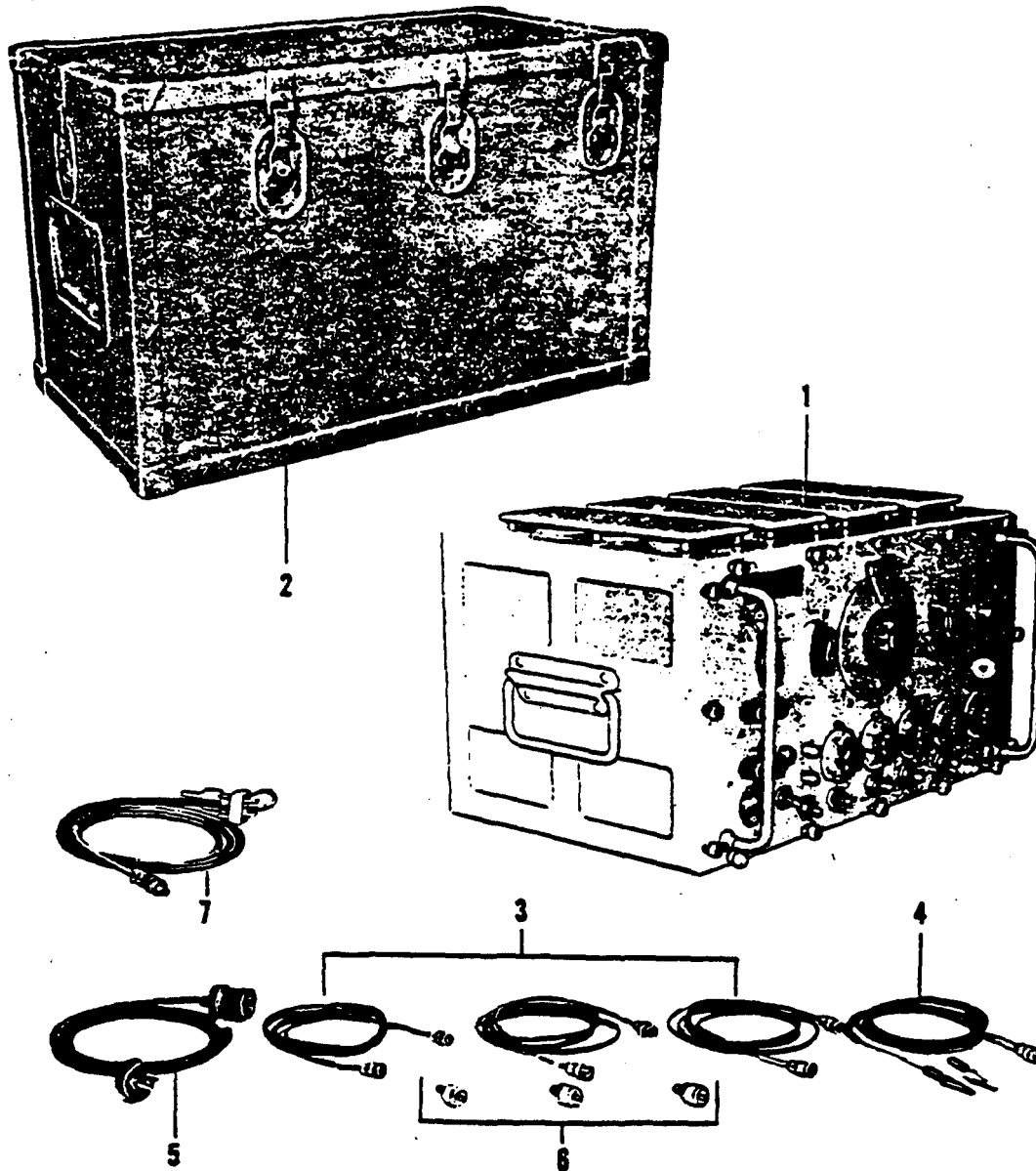
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*This manual, together with TM 11-6625-368-24, 27 September 1960, and TM 11-6625-368-50, 27 September 1960, supersedes TM 11-1177, 1 February 1957.



1. Pulse Generator TS-592A/UPM-15, TS-592B/UPM-15 or SG-343/UPM-15A
2. Transit Case CY672/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
GENERAL DESCRIPTION

1-1. GENERAL

1-2. This handbook provides information for the operation 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. It is intended to be used in the calibration of radar equipment in field and 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 internal oscillator, or with external sources producing wide varieties of waveforms, frequencies and amplitudes.

1-5. EQUIPMENT SUPPLIED.

1-6. The pulse generator set consists of the components shown in Table 1-1 or 1-2. No other equipment is required.

Table 1-1. Equipment Supplied with AN/UPM-15

Qty	Name of Component	Government Type Designation
1	Pulse Generator	TS-592A/UPM-15 or TS-592B/UPM-15
1	Transit Case	CY-672/U
1	Cord (6 ft)	CX-337/U
3	Cord (6 ft)	CG-409E/U
1	Cord (6 ft)	CG-521/U
3	Adapter	UG-273/U

Table 1-2. Equipment Supplied with AN/UPM-15A

Qty	Name of Component	Government Type Designation
1	Pulse Generator	SG-343/UPM-15A
1	Transit Case	CY-672/U
1	Cable Assy, Power Electrical	CX-3135/U
3	Cord	CG-409E/U
3	Adapter	UG-273/U
1	RF Cable Assy	CG-521/U

1-7. CAPABILITIES.

1-8. OUTPUTS. The pulse generator provides a 1.5 usec sync pulse and one or two output pulses. The sync pulse and the output pulse(s) are available at different front panel connectors. Output pulses are essentially rectangular in shape. The total time base available is 250 usec. Minimum separation is 2 usec. The second output pulse can be turned off.

1-9. EXTERNAL SIGNALS. Externally supplied 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.

1-10. AMBIENT TEMPERATURE RANGE. The pulse generator is designed to operate within a temperature range of -20°C (-4°F) to $+55^{\circ}\text{C}$ ($+131^{\circ}\text{F}$).

1-11. LIMITATIONS.

1-12. INTERNAL OSCILLATOR CALIBRATION. Calibration of the repetition rate ("PULSE RATE") dial is accurate within ± 5 percent at a temperature of $\pm 21^{\circ}\text{C}$ (70°F). Accuracy is ± 10 percent at the high and low ends of the temperature range stated in paragraph 1-10.

1-13. PULSE OUTPUTS. Accuracy of all controllable characteristics of pulse outputs is ± 10 percent.

1-14. BIAS CONTROL. With an externally applied synchronizing 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.

1-15. POWER REQUIREMENTS. This pulse generator requires 115 volts ± 10 percent, single phase, 50 to 1000 cps. It draws approximately 275 watts.

NOTE

Illustration of waveforms and specific numerical values, stated are based on waveforms produced in an oscilloscope having 0.03 usec rise time.

1-16. THEORY OF OPERATION.

1-17. PULSES. The pulse generator supplies a sync pulse and a choice of one or two output pulses. The sync pulse in figures 1-2 and 1-3 is available at the SYNC OUT connector shown in figure 2-1. The output pulses in figures 1-2 and 1-3 are available at the OUTPUT connector shown in figure 2-1. In the rest of this discussion the sync pulse and the one or two output pulses are lumped together and called the pulse pattern. The pulse pattern is repeated at a frequency of from 50 to 10,000 cps depending on the setting of the operating controls. A typical pulse pattern is shown at the top of figure 1-2. The repetition of the same pulse pattern is shown at the bottom of figure 1-2.