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# INSTRUCTION BOOK

FOR

# SIGNAL EQUIPMENT ✓SE-7-T2

RESTRICTED

PUBLISHED BY AUTHORITY
OF
THE CHIEF SIGNAL OFFICER

JULY 1, 1939

COPY 1

# INSTRUCTION BOOK

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# SIGNAL EQUIPMENT SE-7-T2

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# CONTENTS

## SECTION I - USE AND DESCRIPTION

Par. Page

1 Use 1
2 Description of Signal Lamp M-198-T2 1
3 Handle 2
4 Tools 2
5 Carrying Case 2

## SECTION II - EMPLOYMENT

6 Preparation for Use 2
7 Operation 3
8 Cleaning 3
9 Lamps 3
10 Batteries 3

## SECTION III - APPENDIX

11 Parts List for Signal Equipment SE-7-T2 4
12 Accessory Equipment 4

## LIST OF ILLUSTRATIONS

Photograph SCL-193 Signal Equipment SE-7-T2, Components

# INSTRUCTION BOOK

# FOR

# SIGNAL EQUIPMENT SE-7-T2

## SECTION I

## USE AND DESCRIPTION

1. Use. This signal equipment is intended to be used by platoon commanders of the Mechanized Cavalry for visual code signalling to vehicles under their command. The code signals correspond to the four-color flag code (clear, red, yellow, blue) except that blue is replaced by "signal green." On a clear night the range of the instrument is 400 yards in a horizontal sector of 45 degrees. The illustration shows the complete equipment.

### 2. Description of Signal Lamp M-198-T2.

a. Battery Housing. The central part of the Signal Lamp M-198-T2 is a tube 1-1/2" in diameter which is designed to accommodate two sets of batteries, each set consisting of two Batteries BA-30. On this tube is a knurled handgrip to assist in holding the signal lamp when the detachable handle described in paragraph 3 below is not used.

b. Lamp Housing. On each end of the battery housing identical lamp housings are attached and held in place by means of knurled nuts. Each housing is 2" in diameter and contains a reflector and a switch. The lamp switch is mounted on a bakelite cover. This cover fits over the back of the lamp housing and is clamped in place by a knurled nut. The reflector is secured in the housing by three setscrews which are accessible from the outside. The reflector is a standard parabolic prefocused type as used in Flashlight TL-122-A. Lamp Mazda PR-4 is a prefocused type and is held in the reflector by a screw-type base. Contact is made to the center of the base by one end of a spring which is actuated by the switch. This spring is fastened to the bakelite cover of the lamp housing. The other end of the spring makes contact with a metal element which connects to the center terminal of the battery.

c. Filter Housing. On each end of the Signal Lamp M-198-T2 there is a housing containing four different color filters mounted on a disc. The disc which holds the four glass color filters rotates about an axis which is slightly eccentric with the filter housing. The disc is rotated by means of its knurled edge which projects slightly out of one side of the filter housing. There is a spring-and-roller stop mechanism on the disc so that each color filter is centered on the reflector when in use.

d. Lenses. With each lamp housing is associated a double cylindrical lens mounted so as to spread the beam in the horizontal plane but not in the vertical plane when Signal Lamp M-198-T2 is held with the two lamps one above the other. In this position the horizontal spread is approximately 45 degrees and the vertical spread is approximately 5 degrees. The Signal Lamp M-198-T2 was designed to be used with the two lamps in a vertical line, because when operated in this position the angular separation of the lamps will be a maximum when viewed from all points of the visible sector. A wire mesh is mounted over each lens to protect it from damage. Care should be exercised in handling this equipment as the lenses have been specially ground, could not be annealed, and therefore can be easily broken. If the signal lamp is put in production the lenses will be molded and annealed, and consequently will stand usage incident to field service.

3. Handle. A pivoting handle may be used with the Signal Lamp M-198-T2 when desired, and is secured by a clamp and knurled nut. When not in use the handle will fold toward the battery housing on the side opposite the handgrip.

4. Tools. A camel's-hair brush and a jeweler's screwdriver are supplied.

5. Carrying Case. The carrying case for Signal Lamp M-198-T2 is shown in Photograph SCL-193. Space is provided for the Signal Lamp M-198-T2 to lie in a rack, and a compartment fitted with a cover provides space for batteries and spare lamps. A holder for the screwdriver is located in one corner of the carrying case and a clip is furnished on the lid for holding the camel's-hair brush.

## SECTION II

## EMPLOYMENT

6. Preparation for Use. Signal Equipment SE-7-T2 is shipped ready for use except for installation of batteries. To install batteries, loosen the knurled nuts which hold the lamp housings and remove them. Insert two Batteries BA-30 in each end with the center

terminals outward and replace the lamp housings. The knurled screws should fit into the circular part of the slots in the central housing. If desired, the handle can be removed by loosening the knurled locking nut and opening the strap which fits around the battery housing.

7. *Operation*. Each lamp is controlled separately by means of the switch on the back of each lamp housing. The desired combinations of colors are obtained by rotating the discs in the filter housings. If the handle is used it can, if desired, be rotated after loosening the knurled nut, until the projectors point in the desired direction. When the signal is being displayed the lamps should be kept in a vertical line. The Signal Lamp M-198-T2 should be held so that the knurled handgrip is *below* the handle; otherwise the signal lamp may rotate about the pin in the handle clamp.

8. *Cleaning*. Cleaning of the optical parts should be done only by a skilled mechanic. Screws should not be lost and care should be taken not to damage the reflector or glass parts. The lenses, filters and reflectors should be cleaned with the camel's-hair brush. To expose the front surface of the lens, remove the four screws which hold the plate over the wire mesh, then remove the five screws on the 5-1/4"-diameter plate of the filter housing. Both surfaces of the lens and one face of the filters can now be cleaned with the camel's-hair brush. The other face of the filters cannot be cleaned without removing the reflector. This is accomplished by loosening the knurled nut holding the bakelite plate on the lamp housing. Then loosen, but not completely remove, the three setscrews in the lamp housing. This permits the removal of the reflector. The reflector surface is silvered and coated with a thin layer of lacquer. *Care should be taken that the surface of the reflector is not scratched*. Cleaning of the reflector and the back surfaces of the filters should be done by brushing with the camel's-hair brush, rotating the disc to bring each filter over the opening. Assembly is accomplished by the reverse procedure.

9. *Lamps*. To replace lamps remove the bakelite cover and unscrew the base in the back of the reflector. The signal lamp can be tipped to allow the lamp to drop out. As Lamp Mazda PR-4 is prefocused, no adjustment on installation is necessary. Replace the base and the bakelite cover.

10. *Batteries*.

*a*. The life of the batteries should be approximately five hours for the total time the lamps are lighted, whether continuously or intermittently.

*b*. The batteries should be removed when the signal equipment is not in use. When in use the batteries in the lamp unit should be inspected daily to determine if there is any indication of swelling or bulging which will result in a leakage of the battery electrolyte. Batteries which show such a tendency should be replaced at once. Care should be taken when removing batteries to hold the lamp housing firmly. When the two knurled nuts are loosened and the lamp housing removed, the batteries should slide out of the tubing.

## SECTION III

## APPENDIX

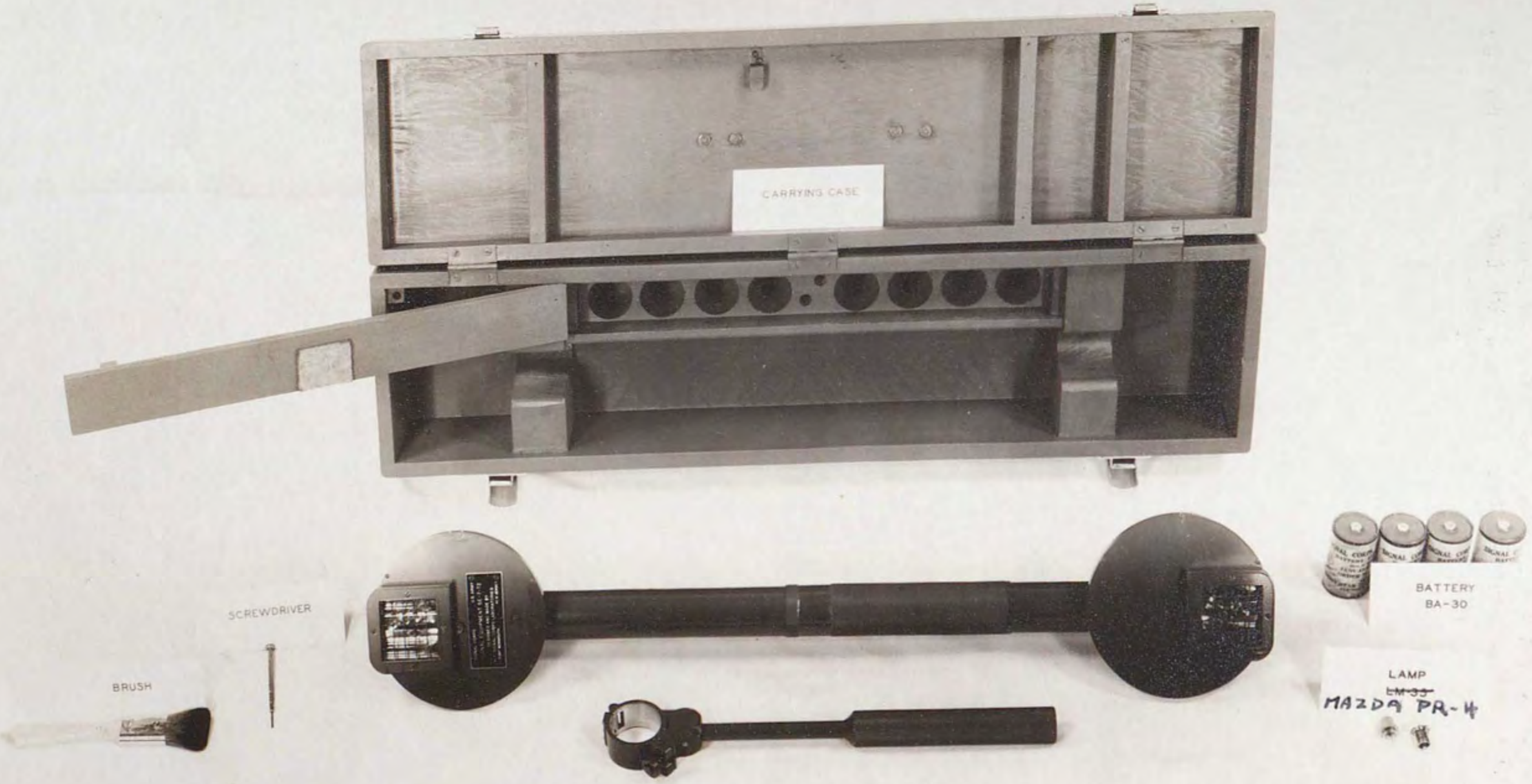
### 11. Parts List for Signal Equipment SE-7-T2.

| Item | Quantity | Nomenclature |
|---|---|---|
| 1 | 1 ea. | Signal Lamp M-198-T2 |
| 2 | 4 ea. | Battery BA-30 |
| 3 | 1 ea. | Handle |
| 4 | 2 ea. | Lamp Mazda PR-4 |

Signal Equipment SE-7-T2 (without handle) weighs 3.8 pounds. The handle weighs 0.6 pound.

### 12. Accessory Equipment.

| Item | Quantity | Nomenclature |
|---|---|---|
| 1 | 4 ea. | Battery BA-30, spare |
| 2 | 2 ea. | Instruction Book for Signal Equipment SE-7-T2 |
| 3 | 1 ea. | Brush, camel's-hair |
| 4 | 1 ea. | Case, carrying |
| 5 | 2 ea. | Lamp Mazda PR-4, spare |
| 6 | 1 ea. | Screwdriver, jeweler's |



SCL-193

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SIGNAL EQUIPMENT SE-7-T2
COMPONENTS