

**TM 9-4910-585-14&P**

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**TECHNICAL MANUAL**

**OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT  
AND GENERAL SUPPORT MAINTENANCE MANUAL  
INCLUDING REPAIR PARTS LIST  
FOR  
LIGHT, IGNITION TIMING (MAGNETO)  
MODEL NO. 235  
(AUTO TEST)  
(NSN 4910-00-255-1449)**

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**HEADQUARTERS, DEPARTMENT OF THE ARMY  
NOVEMBER 1981**



Technical Manual

NO. 9-4910-585-14&P

HEADQUARTERS  
DEPARTMENT OF THE ARMY  
Washington, DC, 10 November 1981

**Operator's, Organizational, Direct Support  
and General Support Maintenance Manual  
(Including Repair Parts List)**

**LIGHT, IGNITION TIMING (MAGNETO)  
MODEL NO. 235  
(NSN 4910-00-255-1449)**

**REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS**

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2, located in the back of this manual direct to: Commander, US Army Armament Material Readiness Command, ATTN: DRSAR-MAS, Rock Island, IL 61299. A reply will be furnished directly to you.

**NOTE**

This manual is published for the purpose of identifying an authorized commercial manual for the use of the personnel to whom this timing light is issued.

Manufactured by: AUTO TEST  
411 W. 8th Street  
Neillsville, WI 54456

Procured under Contract No. DAAA09-76-C-6351

This technical manual is an authentication of the manufacturers' commercial literature and does not conform with the format and content specified in AR 310-3, Military Publications. This technical manual does, however, contain available information that is essential to the operation and maintenance of the equipment.

INSTRUCTIONS FOR REQUISITIONING PARTS

NOT IDENTIFIED BY NSN

When requisitioning parts not identified by National Stock Number, it is mandatory that the following information be furnished the supply officer.

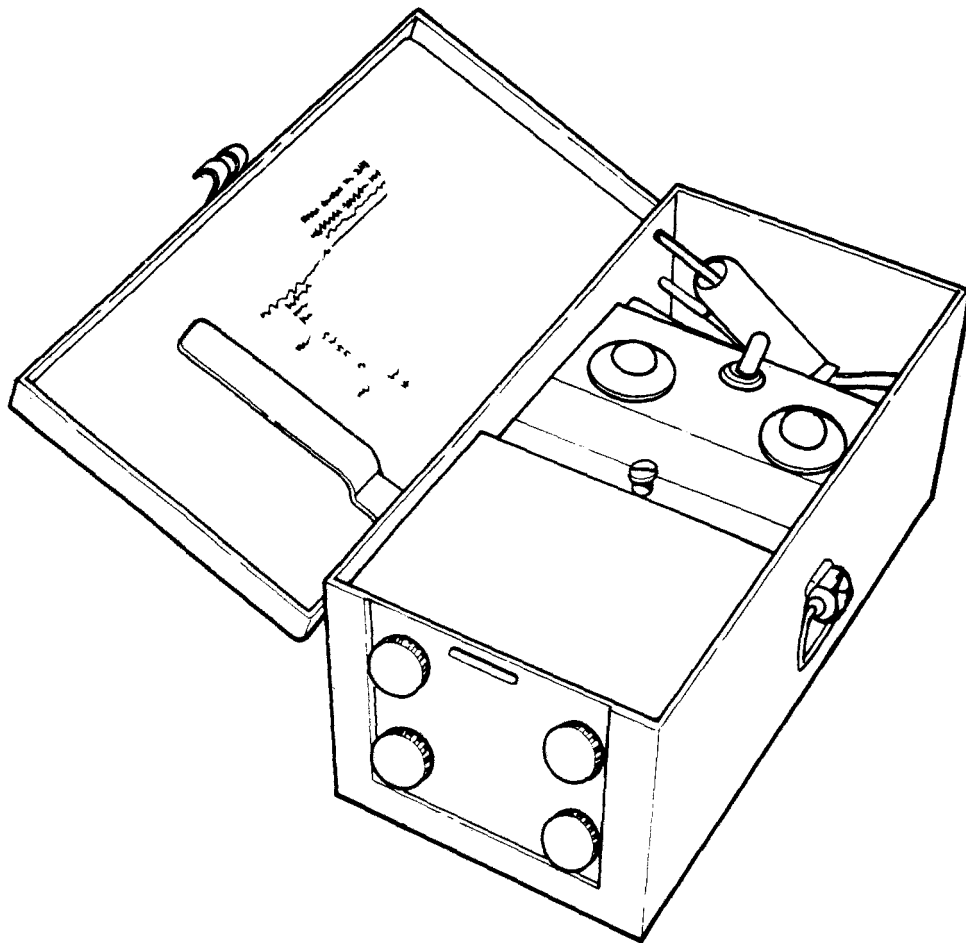
- 1 - Manufacturer's Federal Supply Code Number - 3D233
- 2 - Manufacturer's Part Number exactly as listed herein.
- 3 - Nomenclature exactly as listed herein, including dimensions, if necessary.
- 4 - Manufacturer's Model Number - Model No. 235
- 5 - Manufacturer's Serial Number (End Item)
- 6 - Any other information such as Type, Frame Number, and Electrical Characteristics, if applicable.
- 7 - If DD Form 1348 is used, fill in all blocks except 4, 5, 6, and Remarks field in accordance with AR 725-50.

Complete Form as Follows:

- (a) In blocks 4, 5, 6, list manufacturer's Federal Supply Code Number - 3D233 followed by a colon and manufacturer's Part Number for the repair part.
- (b) Complete Remarks field as follows:  
Noun: (nomenclature of repair part)  
For: NSN: 4910-00-255-1449  
Manufacturer: Auto Test

Model: No. 235  
Serial: (of end item)

Any other pertinent information such as Frame Number,  
Type, Dimensions, etc.



LIGHT, IGNITION TIMING (MAGNETO)

MODEL 235  
NSN 4910-00-255-1449

MODEL NO. 235  
MAGNETO TIMING LIGHT

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PURPOSE

The Model No. 235 timing instrument has been designed to visually indicate, either singly or simultaneously, the synchronization of magnetos in a single or dual ignition system.

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OPERATING INSTRUCTIONS

It is important to refer to the applicable engine manual for the specific engine being worked on and for detailed breaker point adjustment procedures.

Insert batteries (two size D dry cells) in accordance with instructions in the BATTERY POWER SUPPLY section of this manual.

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INSTRUMENT APPLICATIONS

a. TO TIME SINGLE MAGNETO

- (1) Connect the BLACK (common/negative) lead to ground on magneto primary.
- (2) Connect either one of the RED (positive) leads to magneto primary.
- (3) Place switch to the ON position.
- (4) Crank or rotate the magneto breaker cam slowly.
- (5) When a lamp glows, the magneto points are open.

b. TO SYNCHRONIZE TWO (2) MAGNETOS OR A SECOND SET OF BREAKERS IN A DUAL MAGNETO

- (1) Following the same procedure as above, connect the other RED lead to the primary of the other magneto or second set of points.
- (2) Crank or rotate magneto breaker cam slowly.
- (3) When both sets of points of the magneto are open, both indicator lamps will glow. When one set of points closes, the one corresponding lamp goes out.

- (4) While rotating the magneto slowly, if both lamps glow at the same time and conversely if both go out at the same time, the magneto points being checked are properly synchronized.
- (5) IMPROPER TIMING of the points is indicated when the two lamps do not glow at the same time while the magneto cam is being rotated. An adjustment must be made on the points to bring the lamps into synchronization.

Refer to the applicable engine manual for correct breaker point adjustment procedure. With instrument hooked up, proceed with point adjustment until proper synchronization is accomplished.

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#### INSTRUMENT MAINTENANCE

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#### BATTERY POWER SUPPLY

Model 235 Magneto Timing Light operates on 3 volts DC with two (2) size D dry cell batteries.

TO INSTALL OR REPLACE BATTERIES - Remove battery cover by rotating hold-down thumb screw counterclockwise and lifting cover.

#### CAUTION

When orienting batteries, one battery must be placed in one direction and the other battery must be inserted in the opposite direction.

Follow the polarity diagram on the battery holder.

DO NOT STORE THIS INSTRUMENT WITH BATTERIES IN PLACE for prolonged periods. Old batteries will leak and damage the instrument. Proper precautions must be taken to replace or remove weak or old batteries.

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#### INSTRUMENT FAILURE AND TROUBLESHOOTING

1. BATTERIES:  
Check dry cells with applicable tester. Replace weak or dead batteries with two (2) size D dry cell batteries.
2. TEST LEADS:  
Check for good connection and lead continuity.

3. GLOW LAMPS:

Replace broken or inoperable lamps with 1/4 watt, type NE-45 neon lamps with candelabra, screw type base.

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Remove complete chassis compartment from the case by removing screws on sides of cabinet.

4. SWITCH:

Check operation by reading continuity for SPST switch. Replace if defective.

5. TRANSFORMERS:

Check for continuity. Replace if defective.

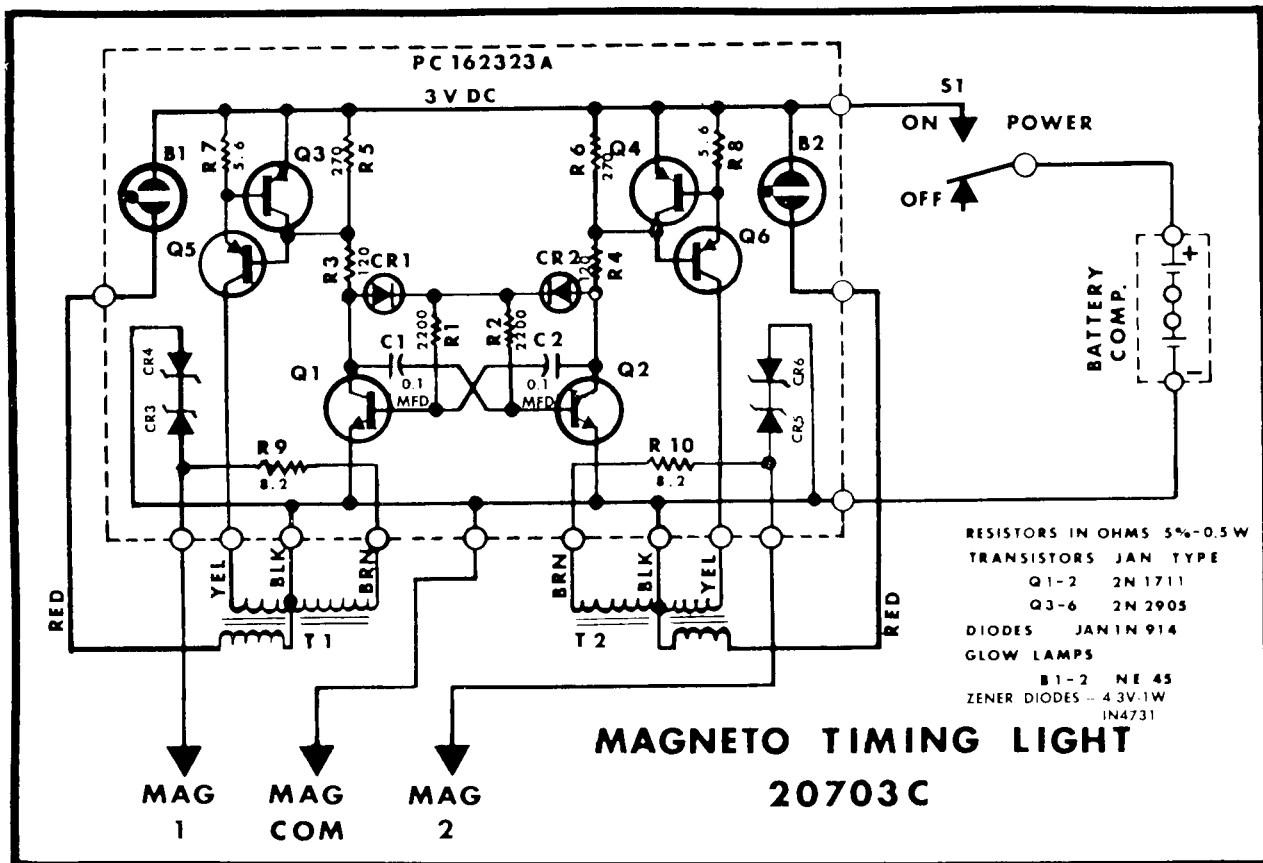
6. SEMICONDUCTORS, RESISTORS, CAPACITORS, ETC:

Check for proper qualities; replace defective components.

REFER TO PARTS LIST AND CIRCUIT DIAGRAM FOR CORRECT IDENTIFICATION OF COMPONENTS REQUIRING REPLACEMENT.

## KEYING

REF	PART NO.	DESCRIPTION
Q1-2	102 514	TRANSISTOR, NPN
Q3-6	102 515	TRANSISTOR, PNP
CR1-2	102 041	DIODE
CRS3-4-5-6	102 042	ZENER DIODE
	155 322	PAD, TRANSISTOR MTG.
R7-8	106 220	RESISTOR, 5.6 OHM 1/2 W
R9-10	106 224	RESISTOR, 8.2 OHM 1/2 W
R3-4	106 252	RESISTOR, 120 OHM 1/2 W
R5-6	106 260	RESISTOR, 270 OHM 1/2 W
R1-2	106 282	RESISTOR, 2200 OHM 1/2 W
C1-2	104 002	CAPACITOR, 0.1 UFD 100 V
	162 007	SOCKET, LAMP
B1-2	102 006	LAMP, GLOW 1/4 W
T1-2	100 101	TRANSFORMER, INVERTOR
	162 323A	BOARD, PC
	113 027	TEST LEAD ASSEMBLY, BLACK
	113 026	TEST LEAD ASSEMBLY, RED
S1	115 104	SWITCH, TOGGLE SPST
	160 034	CLIPS, BATTERY
	500 045	CHASSIS, INSTRUMENT
	500 046	CASE, INSTRUMENT
	500 047	COVER, INSTRUMENT CASE
	23123072A	NAMEPLATE
	23123073A	OPERATING INSTRUCTIONS
	23123074A	CIRCUIT DIAGRAM
	21123617A	INSTRUCTION MANUAL



By Order of the Secretary of the Army:

Official:

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Ignition Timing Light (Magneto)  
(Model No. 235)

BE EXACT. PIN-POINT WHERE IT IS

PAGE NO	PARA- GRAPH	FIGURE NO	TABLE NO
6			
1			

IN THIS SPACE TELL WHAT IS WRONG  
AND WHAT SHOULD BE DONE ABOUT IT:

What is the part number for the Diode? It is  
missing from the Parts List.

Table of contents indicates operating instructions  
are on page 3. They are on page 2.

# SAMPLE

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER

JOHN DOE

SP/3

XXX-XXXX

SIGN HERE

*John Doe*

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