



## TACHOMETERS

Aircraft engine tachometers indicate the number of revolutions per minute at which the engine crankshaft is revolving. They are divided into two general classes, mechanical tachometers and electrical tachometers. The mechanical types are single instruments mounted on the instrument panel and connected directly, by a flexible driveshaft, to the engine tachometer drive. The electrical types are remote indicating instruments, with a generator or autosyn transmitter attached to the engine tachometer drive and connected electrically to the indicator on the instrument panel.

There are three kinds of mechanical tachometers, centrifugal, magnetic, and chronometric, of which the chronometric only is now used by the Army.

A centrifugal tachometer consists of a flyweight unit spun by a rotating shaft. As the speed of the engine increases, centrifugal force moves the flyweights outward. This movement of the flyweights is proportional to the shaft's speed, and is measured and translated into revolutions per minute on the indicator dial by mechanical linkage.

A magnetic tachometer consists of a magnet turning inside a metal drum. The turning of the magnet produces an eddy current drag, causing the drum to turn. The drum is connected to the indicator hand, and is restrained in its rotation by a calibrating spring, so that the amount of rotation is proportionate to the speed of the magnet, and, therefore, to the speed of the engine.

A chronometric tachometer consists of a timing mechanism, a counter, and a coordinating mechanism. The counter counts the revolutions of the flexible shaft within the period of time set up by the timing mechanism, and the coordinating mechanism indicates on the dial the revolutions per minute.

Electrical tachometers are of several types. One employs a generator, connected to the crankshaft of the engine, and an indicator which is essentially a volt-

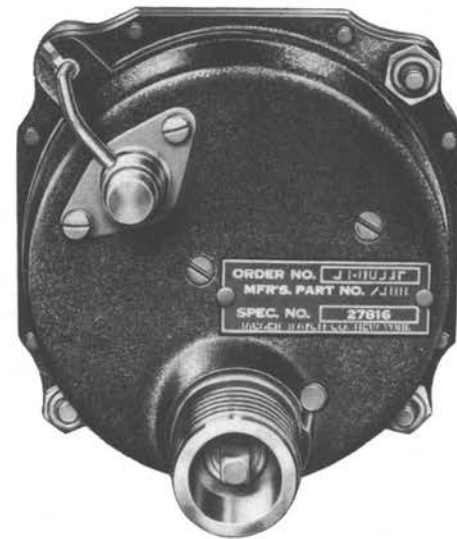
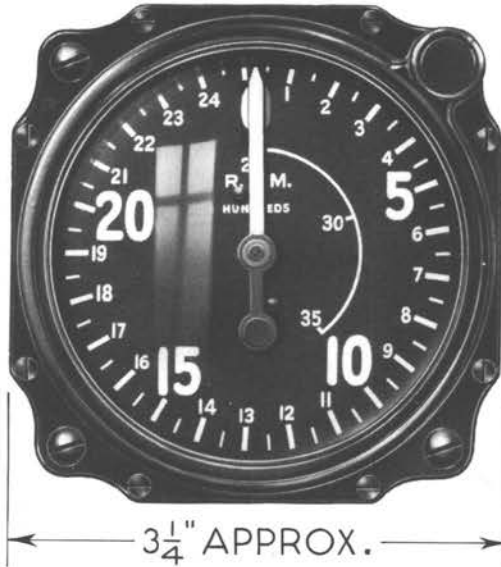
meter. The generator may be either the direct current type or the single phase alternating current type. When the latter is used, the current is rectified to direct current in the indicator. Another type uses a three phase alternating current generator and an indicator containing a synchronous motor. This motor runs in synchronism with the generator, and drives a magnet assembly consisting of two plates, each carrying five small magnets. A disk, mounted on a shaft, is placed between the magnet plates, and is restrained from rotating by a spiral spring. As the magnet spins, it produces a torque which tends to turn the disk. The pointer, connected to the same shaft as the disk, indicates how far the disk deflects.

The autosyn transmitter consists of a centrifugal flyweight governor unit and an autosyn motor. The governor unit is driven from the engine tachometer drive by a flexible shaft, and is composed of three flyweights. One end of this unit is fixed to the transmitter spindle, and the other, connected to a plunger, is free to travel along the spindle under the action of the flyweights moving outward. Movement of the plunger causes the rotor of the autosyn transmitter to rotate. This change in the position of the transmitter rotor induces a like change in the position of the indicator rotor, and the pointer on the dial indicates this change.

Aircraft engines procured by the Army and Navy are equipped with one of two types of tachometer mounting pads and drives. Type I is a screw type mount, and type II is a square pad with four mounting studs. To correspond with these, the tachometer transmitter may have either a screw mount or a pad mount. The flexible shaft used for mechanical tachometers is attached to a screw mount. On engines where a flexible shaft is to be used, pad mounts can be adapted to a type I mount by an outlet adapter AN4041. This adapter should never be used, however, to adapt a pad mount to a screw-mounting generator. The adapter is not designed for this purpose, and will break off when subjected to vibration.



# TACHOMETERS INSTRUMENTS—ENGINE



## TACHOMETER—CHRONOMETRIC ARMY TYPE C-7

NAMES: Chronometric tachometer  
Engine speed indicator  
Shaft-driven tachometer

Tachometer  
Tachometer assembly  
Tachometer—engine speed indicator

DESCRIPTION: The Army type C-7 tachometer is a mechanical tachometer which is connected directly to the engine tachometer drive.

CHARACTERISTICS:

Dimensions	approximately 3 1/4 by 3 1/4 by 3 1/8 inches
Weight	approximately 1 1/4 pounds
Range	0 to 3500 revolutions per minute
Dial	2 3/4 inches diameter
Lighting	individual three volt rim lamp
Dial markings	Radioactive luminous

RELATIONSHIP OF PARTS: Used with: Army type A-1 (drawing number OK-38) or A-2 (drawing number AN9205) tachometer drive shafts. These flexible shafts are furnished by the airplane contractor.

### ARMY

A. E. REFERENCE NUMBER: 61-8500

SPECIFICATIONS:

General	94-27141-H
Detail	94-27816
Superseded	27816

AN OR A. A. F. DRAWING NUMBER: None

TYPE DESIGNATION: C-7

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army types C-9 and C-9A, A. E. Reference Number 61-8650.

SHIPPING DATA: Shipped as a complete unit.

### NAVY

There is no Navy equivalent for the Army item.

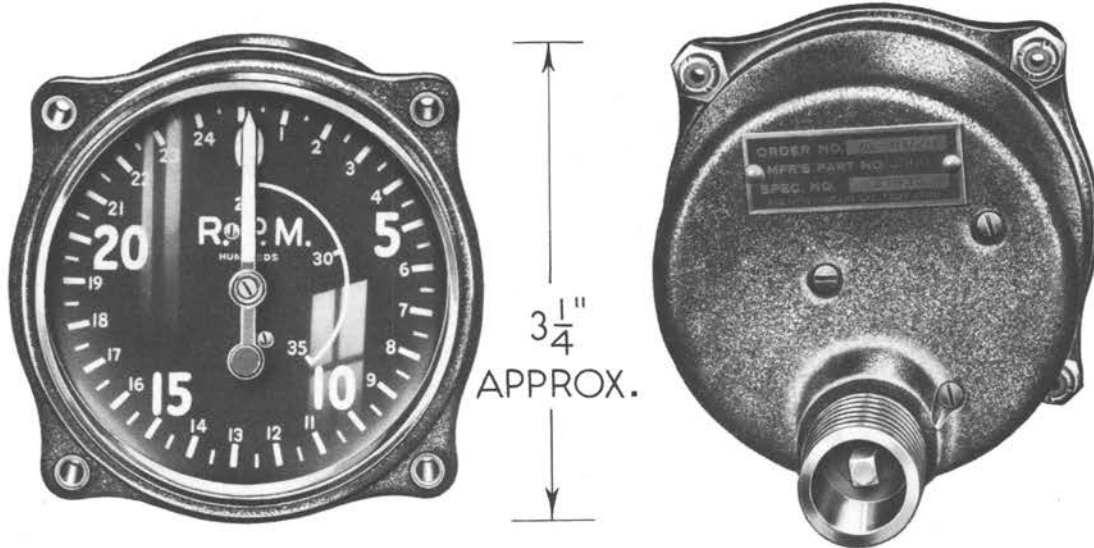
#### ALL MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Type Identification	Manufacturer's Part Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Jaeger Watch Co., Inc.	C-7*	2300	A-B	6100359525	AN05-5C-1	106A/906	
	C-9*	3800	A-B	6100359770	AN05-5C-1	106A/843	No individual rim lamp. Phosphorescent markings.
	C-9A*	4700	A	6100359775	AN05-5C-1	None	No individual rim lamp. Fluorescent markings.
	C-11*	4770	A-B	6100359820	AN05-5C-1	106A/1086	0 to 4500 rpm. No individual rim lamp. Fluorescent markings.

\*A. A. F. types.



# TACHOMETERS INSTRUMENTS—ENGINE



## TACHOMETER—CHRONOMETRIC

ARMY TYPE C-9A

FORMER ARMY TYPE C-9

NAMES: Chronometric tachometer  
Chronometer tachometer  
Engine speed indicator  
Shaft-driven tachometer

Tachometer  
Tachometer assembly  
Tachometer—engine speed indicator

DESCRIPTION: The Army type C-9A tachometer is a mechanical tachometer which is connected directly to the engine tachometer drive.

CHARACTERISTICS:

Dimensions . . . . . approximately 3 1/4 by 3 1/4 by 3 1/8 inches  
Weight . . . . . approximately 1 1/4 pounds  
Range . . . . . 0 to 3500 R.P.M.  
Dial . . . . . 2 3/4 inches diameter  
Lighting . . . . . see chart

RELATIONSHIP OF PARTS: Used with: Army type A-1 (drawing number OK-38) or A-2 (drawing number AN9205) tachometer drive shaft. These flexible shafts are furnished by the airplane contractor.

### ARMY

A. E. REFERENCE NUMBER: 61-8650

SPECIFICATIONS:

General . . . . . 94-27141-H  
Detail . . . . . 94-27930

TYPE DESIGNATION: C-9A. Former Army type C-9

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type C-11, A. E. Reference Number 61-8660.

SHIPPING DATA: Shipped as a complete unit.

### NAVY

There is no Navy equivalent for this Army item.

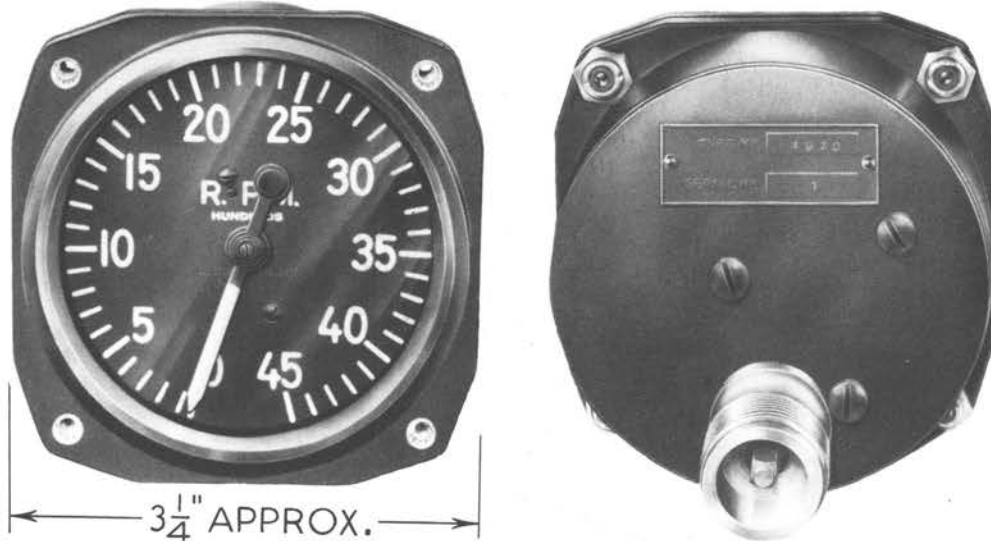
**ALL MODELS BELOW ARE INTERCHANGEABLE**  
Models are used in services as noted in column 4  
**A-Army, N-Navy, B-British, C-Commercial**

Manufacturer	Manufacturer's Type Identification	Manufacturer's Part Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Jaeger Watch Co., Inc.	C-9*	3800	A-B	6100359770	AN05-5C-1	106A/843	Radioactive luminous and phosphorescent markings.
	C-9A*	4700	A	6100359775	AN05-5C-1		Fluorescent markings.
	C-11*	4770	A-B	6100359820	AN05-5C-1	106A/1086	0 to 4500 rpm. Fluorescent markings.

\*A. A. F. type.



# TACHOMETERS INSTRUMENTS—ENGINE



## TACHOMETER—CHRONOMETRIC ARMY TYPE C-11

**NAMES:** Chronometric tachometer  
Chronometer tachometer  
Engine speed indicator  
Shaft-driven tachometer

Tachometer  
Tachometer assembly  
Tachometer—engine speed indicator

**DESCRIPTION:** The Army type C-11 tachometer is a mechanical tachometer which is directly connected to the engine tachometer drive.

**CHARACTERISTICS:**

Range.....	0 to 4500 R.P.M.
Dial.....	2 3/4 inches diameter
Dimensions.....	approximately 3 1/4 by 3 1/4 by 4 inches
Weight.....	approximately 1 1/4 pounds
Lighting.....	Fluorescent markings

**RELATIONSHIP OF PARTS:** Used with: Army type A-1 (drawing number OK-38) or A-2 (drawing number AN9205) tachometer drive shaft. These flexible shafts are furnished by the airplane contractor.

### ARMY

A. E. REFERENCE NUMBER: 61-8660

**SPECIFICATIONS:**

General.....	94-27141-H
Detail.....	94-27353
Superseded.....	27353

**TYPE DESIGNATION:** C-11

**A. S. C. STOCK NUMBER:** Refer to chart.

**TECHNICAL ORDER NUMBER:** Refer to chart.

**PRODUCTION STATUS:** Under procurement. Supersedes Army type C-9 and C-9A, tachometers. A. E. Reference Number 61-8650.

**SHIPPING DATA:** Shipped as a complete unit.

### NAVY

There is no Navy equivalent for this Army item.

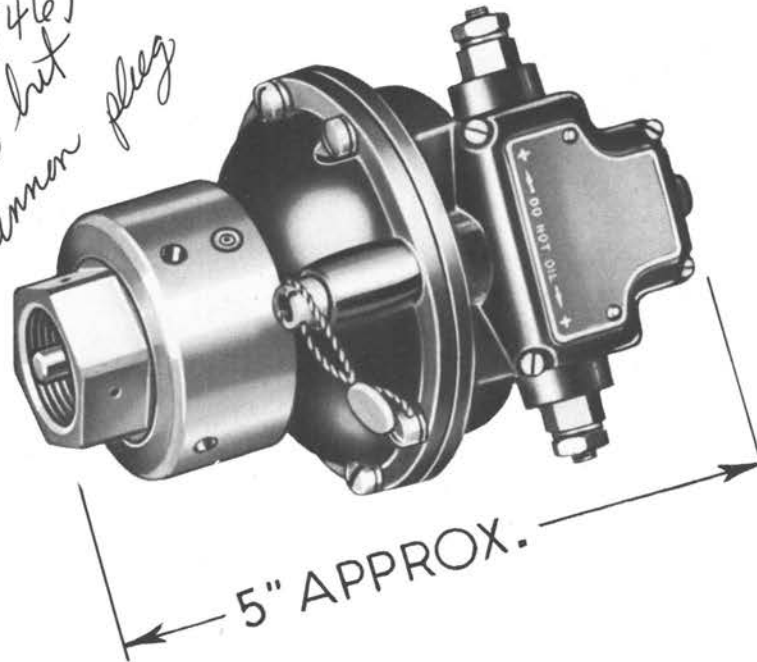
**ALL MODELS BELOW ARE INTERCHANGEABLE**  
Models are used in services as noted in column 4  
**A-Army, N-Navy, B-British, C-Commercial**

Manufacturer	Manufacturer's Type Identification	Manufacturer's Part Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Jaeger Watch Co., Inc.	C-11*	4770	A-B	6100359830	AN 05-5C-1	106A/1086	
	C-9*	3800	A-B	6100359770	AN 05-5C-1	106A/843	0 to 3500 rpm only. Radioactive luminous and phosphorescent markings.
	C-9A*	4700	A	6100359775	AN 05-5C-1		0 to 3500 rpm only.

\*AAF type.



*All 724-C for same type but with 2 pin cannon plug (66846)*



**GENERATOR — SCREW MOUNT TACHOMETER**  
**ARMY TYPE E-4**

- |  |                      |
|--|----------------------|
| NAMES: Screw mount tachometer generator  | Magneto assembly     |
| Generator assembly                       | Magneto generator    |
| Generator assembly — tachometer          | Tachometer generator |
| Generator assembly — tachometer (single) | Tachometer magneto   |

DESCRIPTION: The Army type E-4 screw mount tachometer generator is a direct current generator, capable of operating two E-4 tachometer indicators.

CHARACTERISTICS:

- Weight.....approximately 2¼ pounds
- Dimensions.....approximately 4 inches diameter by 5 inches long
- Electrical connector.....terminal studs
- Mount connection.....swivel nut

RELATIONSHIP OF PARTS: Used with Army type E-4 tachometer indicator, A. E. Reference Number 61-8677. An Army type A-4 engine synchronism indicator, A. E. Reference Number 61-4600, can be used with two of these generators to indicate the difference in R.P.M. of two engines.

**ARMY**

A. E. REFERENCE NUMBER: 61-8676

SPECIFICATIONS:

- General.....94-27240-C
- Detail.....27817

MANUFACTURER'S DRAWING AND PART NUMBER: Weston Electrical Instrument Corporation  
76548 Model 544, Type B-6.

TYPE DESIGNATION: E-4

A. S. C. STOCK NUMBER: 6100162250

TECHNICAL ORDER NUMBER: 05-5B-1

PRODUCTION STATUS: Not under procurement for initial installation.

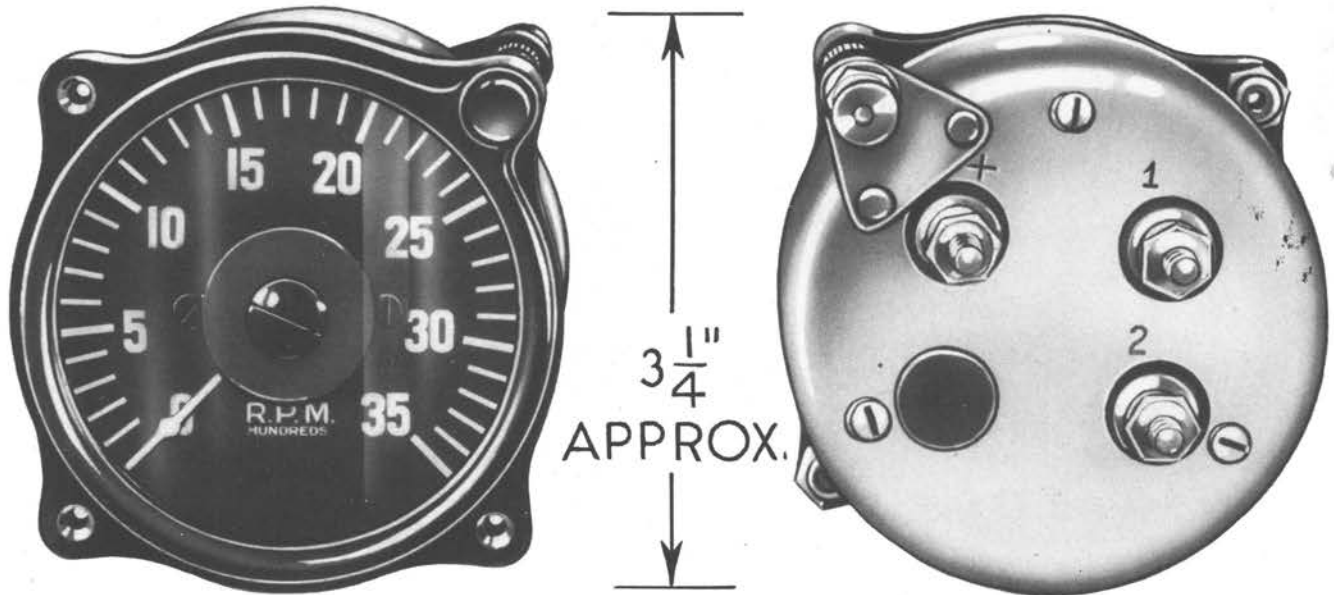
SHIPPING DATA: Shipped as a complete unit.

**NAVY**

There is no Navy equivalent for this item.

**BRITISH**

BRITISH REFERENCE NUMBER: 106A/546



**INDICATOR—TACHOMETER**  
**ARMY TYPE E-4**

NAMES: Tachometer indicator  
 Engine speed indicator  
 Electric tachometer

Indicator assembly  
 Indicator assembly—tachometer  
 Indicator assembly—tachometer (single)

DESCRIPTION: The Army type E-4 tachometer indicator is a direct current voltmeter type instrument, which registers the voltage output of an Army type E-4 tachometer generator, and translates this voltage into terms of revolutions per minute of the engine speed.

CHARACTERISTICS:

Range..... 0 to 3500 revolutions per minute  
 Dial..... 2¾ inches diameter  
 Lighting..... individual; single wire, 3-volt lamp  
 Markings..... radioactive luminous material  
 Weight..... approximately 1¾ pounds  
 Dimensions..... approximately 3¼ by 3¼ by 3¼ inches  
 Electrical connector..... terminal studs

RELATIONSHIP OF PARTS:

Used with Army type E-4 screw mount tachometer generator, A. E. Reference Number 61-8676.

**ARMY**

A. E. REFERENCE NUMBER: 61-8677

SPECIFICATIONS:

General..... 94-27240-C  
 Detail..... 27817

TYPE DESIGNATION: E-4

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation

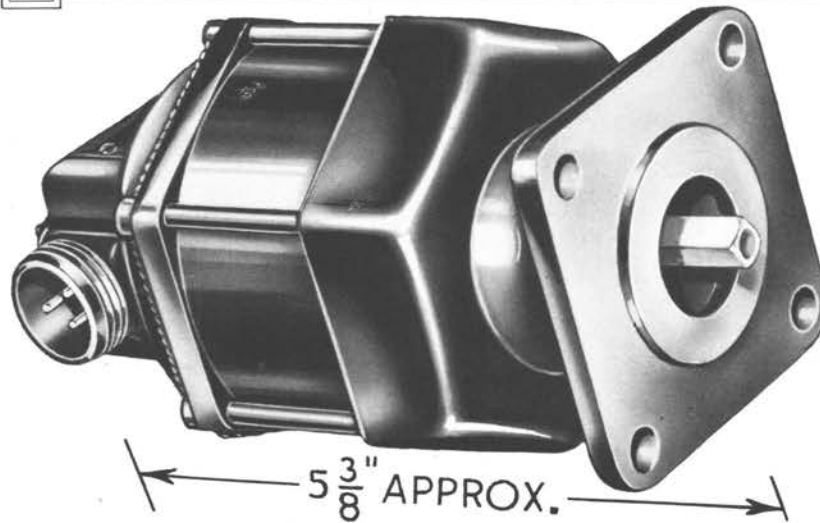
SHIPPING DATA: Shipped as a complete unit.

**NAVY**

There is no Navy equivalent for this item.

**MODELS BELOW ARE INTERCHANGEABLE**  
**Models are used in services as noted in column 3**  
**A-Army, N-Navy, B-British, C-Commercial**

Manufacturer	Manufacturer's Drawing and Part Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Weston Electrical Instrument Corp.	89567	A-B	6100240250	05-5B-1	106A/545
	86864	A	6100240000	05-5B-1	



### GENERATOR—PAD MOUNT TACHOMETER

AN 5531-1    FORMER ARMY TYPES E-9, E-9A, E-13, E-14    F. S. S. C. NUMBER 88-G-1335

- NAMES: Pad mount tachometer generator  
 Generator  
 Generator—tachometer  
 Magneto generator  
 Generator assembly tachometer pad
- Generator—electric tachometer  
 Generator—stud mount  
 Tachometer generator—pad mount  
 Generator assembly—tachometer

DESCRIPTION: This pad mount tachometer generator consists of a four-pole permanent magnet rotor and a three-phase stator winding. As the engine speed changes, the output frequency of the generator changes, causing a corresponding change in the speed of the indicator's synchronous motor. The electrical connector is at right angles to the drive shaft.

CHARACTERISTICS:

- Weight . . . . . approximately 2 3/4 pounds  
 Dimensions . . . . . approximately 5 3/4 by 3 1/8 by 3 1/2 inches  
 Electrical connector . . . . . AND10066-14S-1P

RELATIONSHIP OF PARTS: Used with tachometer indicator, A. E. Reference Number 61-8703, or dual tachometer indicator, A. E. Reference Number 61-8802. When used with dual indicator, two generators are required.

**ARMY** A. E. REFERENCE NUMBER: 61-8701

SPECIFICATIONS:

- Detail . . . . . AN-G-16  
 Superseded . . . . . 94-27371, 94-27950A (E-9A), 94-27950 (E-9),  
 94-27354 (E-13), 94-27355 (E-14)

AN PART NUMBER: AN5531-1

AN DRAWING NUMBER: AN5531

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement. Supersedes Army Types E-9A, E-9, E-13, E-14 pad mount generators.

SHIPPING DATA: Shipped as a complete unit.

**NAVY** SPECIFICATIONS:

- Detail . . . . . AN-G-16  
 Superseded . . . . . BuAer Spec. SQ.-109

AN DRAWING NUMBER: AN5531

AN PART NUMBER: AN5531-1

F. S. S. C. NUMBER: 88-G-1335

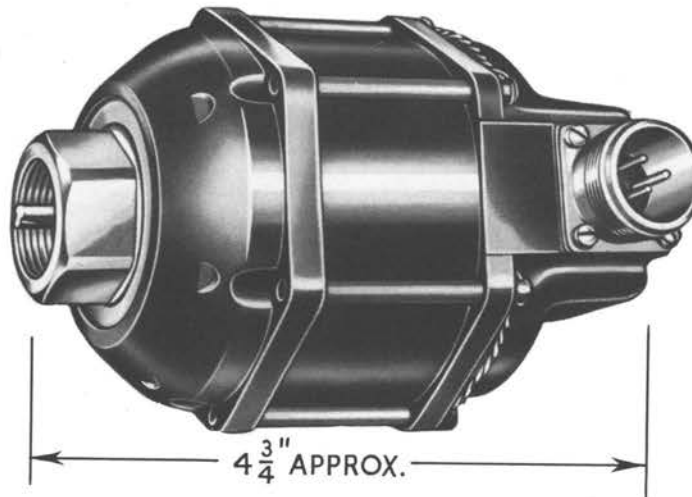
TECHNICAL NOTE NUMBER: 9-41

PROCUREMENT STATUS: Standard—G. F. E.—Order through A. S. O. by F. S. S. C. number

**ALL MODELS BELOW ARE INTERCHANGEABLE**  
**Models are used in services as noted in column 3**  
**A-Army, N-Navy, B-British, C-Commercial**

Manufacturer	Manufacturer's Model Identification	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Current Model (X)
General Electric Co.	2CM58AL	A-B	6100163150	05-5D-1	106A/1324	X
Kollsman Instrument Division	655G-01	A-B	6100163240	05-5E-1	106A/1324	
	655G-02	A-B	6100163250		106A/942	
	770G-01	A-N-B			106A/1324	X

\*To be considered interchangeable if this feature is adaptable to installation concerned.



### GENERATOR—SCREW MOUNT TACHOMETER

AN5531-2      FORMER ARMY TYPES E-9 AND E-9A      F. S. S. C. NUMBER 88-G-1330

NAMES: Screw mount tachometer generator	Generator assembly tachometer screw
Magneto assembly	Generator—electric tachometer
Magneto generator	Tachometer generator—screw mount
Screw mount tachometer	

DESCRIPTION: This screw mount tachometer generator consists of a four-pole permanent magnet rotor and a three-phase stator winding. As the engine speed changes, the output frequency of the generator changes, causing a corresponding change in the speed of the indicator's synchronous motor. The electrical connector is at right angles to the drive shaft.

**CHARACTERISTICS:**

Weight.....	approximately 2 <sup>3</sup> / <sub>4</sub> pounds
Dimensions.....	approximately 4 <sup>3</sup> / <sub>4</sub> by 3 <sup>1</sup> / <sub>8</sub> by 3 <sup>1</sup> / <sub>2</sub> inches
Electrical connector.....	AND10066-14S-1P

RELATIONSHIP OF PARTS: Used with tachometer indicator, A. E. Reference Number 61-8703 or A. E. Reference Number 61-8777, or dual tachometer indicator, A. E. Reference Number 61-8802. When used with dual indicator, two generators are required.

**ARMY**

A. E. REFERENCE NUMBER: 61-8702  
SPECIFICATIONS:

Detail.....	AN-G-16
Superseded.....	94-27950A (E-9A), 94-27950 (E-9), 94-27371

AN DRAWING NUMBER: AN5531-2  
A. S. C. STOCK NUMBER: Refer to chart.  
TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.  
Supersedes Army types E-9A and E-9 screw mount generators.

SHIPPING DATA: Shipped as a complete unit.

**NAVY**

TYPE DESIGNATION: AN5531-2

SPECIFICATIONS:

Detail.....	AN-G-16
Superseded.....	BuAer Spec. SQ-109A

AN DRAWING NUMBER: AN5531  
F. S. S. C. NUMBER: 88-G-1330  
TECHNICAL NOTE NUMBER: 9-41

PROCUREMENT STATUS: Standard—  
G. F. E. order through A. S. O. by  
F. S. S. C. number.

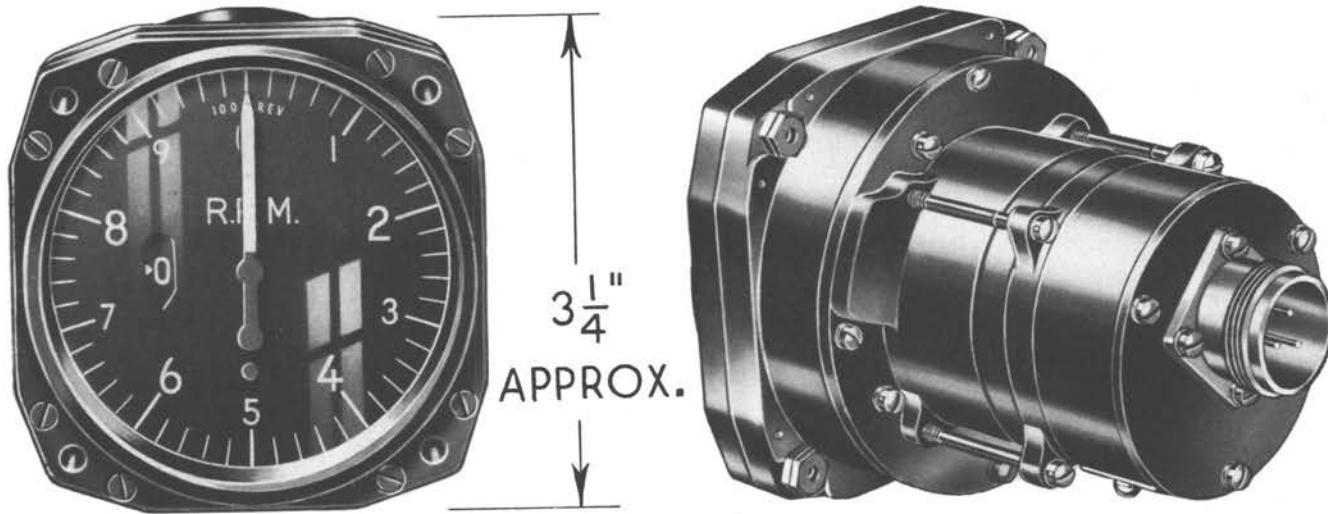
**ALL MODELS BELOW ARE INTERCHANGEABLE**  
Models are used in services as noted in column 3  
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Current Model (X)	Remarks
General Electric Co.	2CM5BAM	A-B	6100163275	05-5D-1	106A/1355	X	
	2CM7AAA	A-B	6100163280	05-5D-1	106A/1431	X	
Kollsman Instrument Division	677G-01	A-B	6100163263	05-5E-1	106A/1355		
	677G-02	A	6100163264	05-5E-1			Electrical connector plug parallel to drive shaft.*
	774G-01	A-N-B			106A/1355	X	

\* To be considered interchangeable if this feature is adaptable to installation concerned.



# TACHOMETERS INSTRUMENTS — ENGINE



## INDICATOR — TACHOMETER

ARMY TYPE E-9A

FORMER ARMY TYPE E-9

NAMES: Tachometer indicator  
Engine speed indicator  
Indicator assembly tachometer (single)  
Indicator—electric tachometer

Tachometer—engine speed indicator  
Sensitive electric tachometer indicator  
Electric tachometer

DESCRIPTION: The Army type E-9A tachometer indicator consists of a three phase alternating current synchronous motor and an indicating element. By using the magnetic drag principle, the speed of the synchronous motor is transmitted to the indicating element, which registers it on a dial marked in revolutions per minute.

### CHARACTERISTICS

Range . . . . . 0 to 3500 R.P.M. in 3 1/2 revolutions of the pointer  
Dial . . . . . 2 3/4 inches diameter  
Markings . . . . . fluorescent luminescent  
Weight . . . . . approximately 1 1/4 pounds  
Dimensions . . . . . approximately 3 1/4 by 3 1/4 by 5 inches  
Electrical connector . . . . . AND10066-14S-1P

RELATIONSHIP OF PARTS: Used with pad mount tachometer generator, A. E. Reference Number 61-8701, or screw mount tachometer generator, A. E. Reference Number 61-8702.

### ARMY

A. E. REFERENCE: 61-8703

### SPECIFICATIONS:

General . . . . . 94-27370  
Detail . . . . . 94-27950A  
Superseded . . . . . 94-27950

TYPE DESIGNATION: E-9A

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by tachometer indicator, AN5530-1, A. E. Reference Number 61-8777.

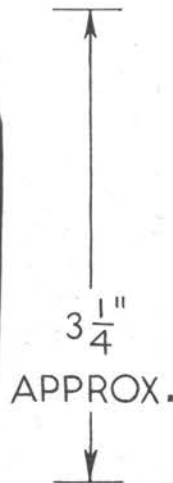
SHIPPING DATA: Shipped as a complete unit.

### NAVY

There is no Navy equivalent for this item.

### ALL MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 3 A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Type or Model Identification	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
General Electric Co.	8DJ13AAH	A-B	6100241270	05-5D-1	106A/1139	
	8DJ13AAS	A-B	6100241300	05-5D-1	106A/1015	Phosphorescent scale marking.
	8DJ13AAW	A	6100241303	05-5D-1		Phosphorescent scale marking.
	8DJ13ABN	A-B	6100238825	05-5D-1	106A/1372	Army type E-13, 0 to 4500 rpm. Phosphorescent scale marking.
Kollsman Instrument Division	656K-03	A-B	6100241280	05-5E-1	106A/872	Army type E-9, Radioactive scale markings.
	590BK-01	B-C			106A/922	
	590SD-01					
	771K-03	A				Army type E-13, 0 to 4500 rpm. Radioactive scale markings.
	771K-01	C				



### INDICATOR—TACHOMETER

**AN 5530-1 FORMER ARMY TYPE E-13 F. S. S. C. NUMBER 88-I-2385**

NAMES: Tachometer indicator  
Engine speed indicator  
Indicator—electric tachometer

Indicator assembly—tachometer (single)  
Electric tachometer

DESCRIPTION: AN5530-1 tachometer indicator consists of a three-phase alternating current synchronous motor and an indicating element. By using the magnetic drag principle, the speed of the synchronous motor is transmitted to the indicating element, which registers on a dial marked in engine crankshaft revolutions per minute.

**CHARACTERISTICS:**

- Markings..... fluorescent
- Weight..... approximately 1 1/4 pounds
- Range..... 0 to 4500 revolutions per minute in 330 degrees pointer travel
- Dial..... 2 3/4 inches diameter
- Dimensions..... approximately 3 1/4 by 3 1/4 by 5 inches
- Electrical connector..... AND10066-14S-1P

RELATIONSHIP OF PARTS: Used with: Pad mount tachometer generator, A. E. Reference Number 61-8701, or screw mount tachometer generator, A. E. Reference Number 61-8702.

#### ARMY

A. E. REFERENCE NUMBER: 61-8777

**SPECIFICATIONS:**

- General..... 94-27370
- Detail..... AN-I-3
- Superseded..... 94-27354

AN OR A. A. F. DRAWING NUMBER: AN5530

AN PART NUMBER: AN5530-1

TYPE DESIGNATION: Former type E-13

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.  
Supersedes Army type E-9A tachometer indicator, A. E. Reference Number 61-8703.

SHIPPING DATA: Shipped as a complete unit.

#### NAVY

TYPE DESIGNATION: AN5530-1

SPECIFICATIONS: Detail..... AN-I-3

AN OR N. A. F. DRAWING NUMBER:  
AN5530

A. S. O. OR F. S. S. C. STOCK NUMBER:  
88-I-2385

PROCUREMENT STATUS: Standard—  
G. F. E.—Order through A. S. O. by  
F. S. S. C. number.

**ALL MODELS BELOW ARE INTERCHANGEABLE**  
**Models are used in services as noted in column 3**  
**A-Army, N-Navy, B-British, C-Commercial**

Manufacturer	Manufacturer's Model Identification	Used By	Army Technical Order Number	Remarks
Kollsman Instrument Division	771K-03	A-N		
	771K-01	C		
General Electric Co.	8DJ13ABN	A	05-5D-1	Phosphorescent markings.

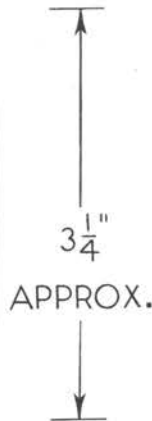
**TYPE INTERCHANGEABILITY**

A. A. F. Type  
E-9A

Remarks  
0 to 3500 rpm; phosphorescent markings.



# TACHOMETERS INSTRUMENTS—ENGINE



## INDICATOR—DUAL TACHOMETER

**AN5530-2 FORMER ARMY TYPE E-14 F. S. S. C. NUMBER 88-I-2375**

NAMES: Dual tachometer indicator  
Indicator assembly—tachometer (dual)  
Tachometer indicator

Indicator assembly—tachometer  
Indicator—electric tachometer  
Electric tachometer

DESCRIPTION: AN5530-2 dual tachometer indicator consists of two synchronous motors. Two indicating elements interpret the speed of the synchronous motors in terms of engine speed. This indicator shows the speed of two engines simultaneously.

**CHARACTERISTICS:**

- Dimensions . . . . . approximately 3 1/4 by 3 1/4 by 5 inches
- Weight . . . . . approximately 2 pounds
- Range . . . . . 0 to 4500 revolutions per minute in 330 degrees pointer travel
- Dial . . . . . 2 3/4 inches diameter
- Lighting . . . . . fluorescent markings
- Electrical connectors . . . . . AND10066-14S-1P

RELATIONSHIP OF PARTS: Used with: Two pad mount tachometer generators, A. E. Reference Number 61-8701, or two screw mount tachometer generators, A. E. Reference Number 61-8702.

### ARMY

A. E. REFERENCE NUMBER: 61-8802

**SPECIFICATIONS:**

- General . . . . . 94-27370
- Detail . . . . . AN-I-3
- Superseded . . . . . 94-27355

AN OR A. A. F. DRAWING NUMBER: AN5530

AN PART NUMBER: AN5530-2

TYPE DESIGNATION: Former type E-14

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

### NAVY

**SPECIFICATIONS:**

- Detail . . . . . AN-I-3

AN OR N. A. F. DRAWING NUMBER: AN5530

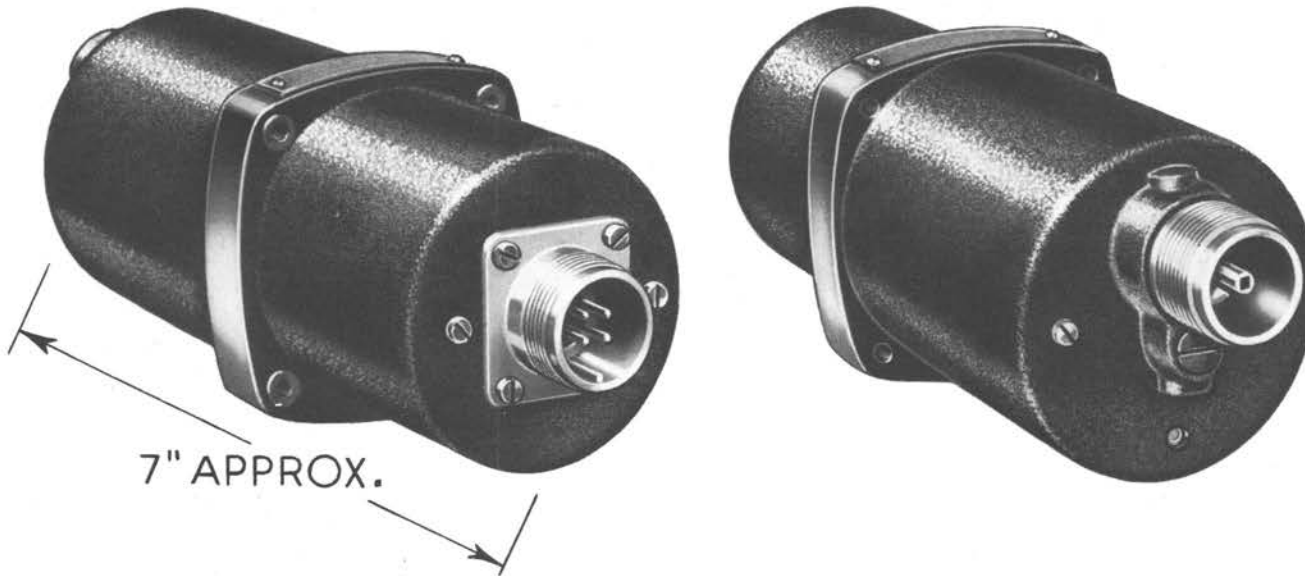
F. S. S. C. STOCK NUMBER: 88-I-2375

PROCUREMENT STATUS: Standard—G. F. E.—Order through A. S. O. by F. S. S. C. Number

**MODELS BELOW ARE INTERCHANGEABLE**  
**Models are used in services as noted in column 4**  
**A-Army, N-Navy, B-British, C-Commercial**

Manufacturer	Manufacturer's Type and/or Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Remarks
General Electric Co.	8DJ19AAB	V-4149384	A	6100241545	
Kollsman Instrument Division	751K-02		N		Equivalent to AN5530-3; F.S.S.C. Number 88-I-2380; has built-in synchroscope.





### TRANSMITTER — TACHOMETER

#### ARMY TYPE E-10

NAMES: Tachometer transmitter  
Autosyn transmitter

Autosyn tachometer transmitter

DESCRIPTION:

The type E-10 tachometer transmitter consists of a mechanical (governor) type mechanism, connected through a linkage to an autosyn type transmitter. The assembly is used with an autosyn type indicator.

CHARACTERISTICS:

Weight..... approximately 1 1/4 pounds  
Dimensions..... approximately 2 1/4 by 2 1/4 by 7 inches

RELATIONSHIP OF PARTS: Two Army type E-10 transmitters are required with each Army type E-10 tachometer indicator, A. E. Reference Number 61-8726.

#### ARMY

A. E. REFERENCE NUMBER: 61-8727

SPECIFICATIONS: Detail..... 94-27972

TYPE DESIGNATION: E-10

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: 05-55B-1

PRODUCTION STATUS: Under procurement.

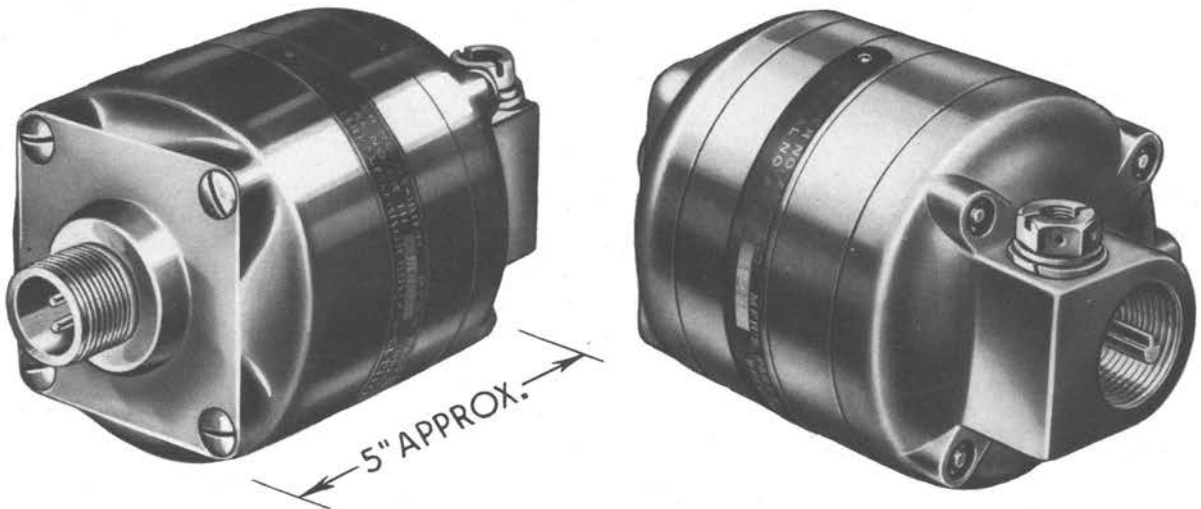
SHIPPING DATA: Shipped as a complete unit, approximately 25 transmitters to a carton.

#### NAVY

There is no Navy equivalent for the Army item.

**ALL MODELS BELOW ARE INTERCHANGEABLE**  
Models are used in services as noted in column 3  
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	British Reference Number
Pioneer Instrument Division	4350-2A-A2	A	6100438780	
	4350-2A-B2	A-B-C	6100438790	106A/202



**GENERATOR—SCREW MOUNT TACHOMETER**  
**ARMY TYPE E-12**

**NAMES:** Screw mount tachometer generator  
Electric tachometer  
Generator  
Generator Assembly—tachometer axial  
Magneto assembly  
Magneto generator  
Tachometer generator  
Generator assembly—tachometer  
Transmitter—Tachometer

**DESCRIPTION:** This Army type E-12 screw mount tachometer generator is a single-phase alternating current generator. Its electrical connector is mounted parallel to the drive shaft, and it has sufficient capacity to operate two tachometer indicators.

**CHARACTERISTICS:**  
Weight.....approximately 2 pounds  
Dimensions.....approximately 5 by 3 by 3 inches  
Electrical connector.....AND10066-12S-3P

**RELATIONSHIP OF PARTS:** Used with:  
One or two Army type E-12 tachometer indicators, A. E. Reference Number 61-8753

**ARMY**

A. E. REFERENCE NUMBER: 61-8751

**SPECIFICATIONS:**  
General.....94-27240-C  
Detail.....94-27311  
Superseded.....27311

**TYPE DESIGNATION:** E-12  
**A. S. C. STOCK NUMBER:** Refer to chart.  
**TECHNICAL ORDER NUMBER:** Refer to chart.  
**PRODUCTION STATUS:** Under procurement.  
**SHIPPING DATA:** Shipped as a complete unit.

**NAVY**

There is no Navy equivalent for this item.

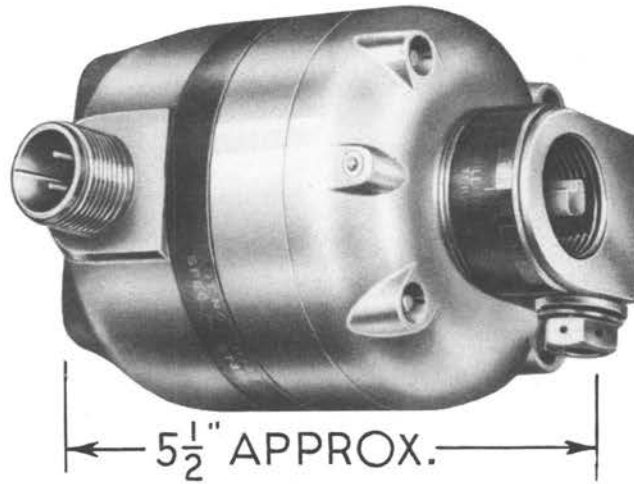
**MODELS BELOW ARE INTERCHANGEABLE**  
**Models are used in services as noted in column 3**  
**A-Army, N-Navy, B-British, C-Commercial**

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Weston Electrical Instrument Corp.	102594	A-B	6100163290	05-5B-2	106A/1123	Axial electrical connection, A. E. Reference Number 61-8751. See Note 1 and 2.
	105290	A	6100163293	05-5B-2		Right angle electrical connection, A. E. Reference Number 61-8752. See Note 1 and 2.

**INTERCHANGEABILITY NOTE:**

Note 1—These generators are dimensionally and functionally interchangeable and may be interchanged for each other; however, consideration must be given in individual installation to the different placement of the electrical connectors.

Note 2—These generators are not interchangeable with Weston commercial model 752, which is similar in appearance. The commercial model gives a much lower output.



### GENERATOR—SCREW MOUNT TACHOMETER ARMY TYPE E-12

NAMES: Screw mount tachometer generator      Generator—tachometer (right angle)  
 Generator assembly—tachometer (right angle)      Magneto assembly  
 Generator—electric tachometer      Magneto generator

DESCRIPTION: This Army type E-12 screw mount tachometer generator is a single-phase alternating current generator, designed for mounting on a type I tachometer mounting pad (drawing AND10005). This generator has its electrical connector mounted at right angles to the drive shaft, and has sufficient capacity to operate two tachometer indicators.

**CHARACTERISTICS:**

Weight..... approximately 2 pounds  
 Dimensions..... approximately 5 1/2 by 5 by 3 inches  
 Electrical connector..... AND10066-12S-3P

**RELATIONSHIP OF PARTS:** Used with:

One or two Army type E-12 tachometer indicators, A.E. Reference Number 61-8753

**ARMY**

A. E. REFERENCE NUMBER: 61-8752

**SPECIFICATIONS:**

General..... 94-27240-C  
 Detail..... 94-27311  
 Superseded..... 27311

TYPE DESIGNATION: E-12

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

**NAVY**

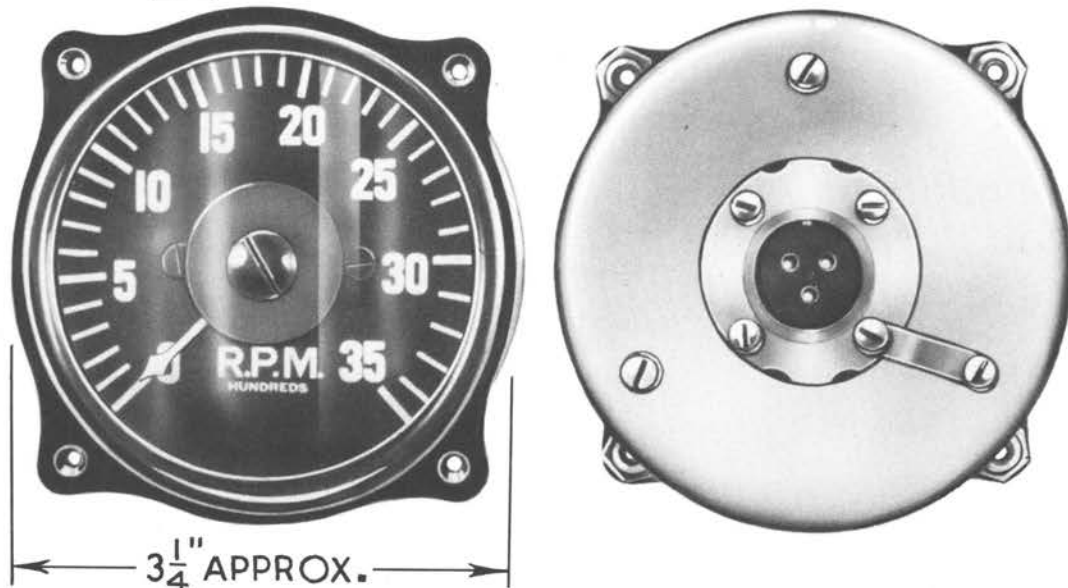
There is no Navy equivalent for this item.

**MODELS BELOW ARE INTERCHANGEABLE**  
**Models are used in services as noted in column 3**  
**A-Army, N-Navy, B-British, C-Commercial**

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Weston Electrical Instrument Corp.	105290	A	6100163293	05-5B-2		See Notes.
	102594	A-B	6100163290	05-5B-2	106A/1123	Axial electrical connection. See Notes.

**INTERCHANGEABILITY NOTE:**

Note 1—These generators are dimensionally and functionally interchangeable, and may be interchanged for each other; however, consideration must be given in individual installation to the different placement of the electrical connectors.  
 Note 2—These generators are not interchangeable with Weston commercial model 752, which is similar in appearance.



**INDICATOR—TACHOMETER**  
**ARMY TYPE E-12**

NAMES: Tachometer indicator  
Engine speed indicator

Indicator assembly—tachometer

DESCRIPTION: The Army type E-12 tachometer indicator is a voltmeter type instrument, which registers the voltage output of an Army type E-12 single-phase alternating current generator. The alternating current is converted to direct current by means of a copper oxide rectifier contained in the indicator.

CHARACTERISTICS:

Range.....	0 to 3500 revolutions per minute
Dial.....	2 3/4 inches diameter
Lighting.....	fluorescent markings
Weight.....	approximately 1 1/4 pounds
Dimensions.....	approximately 3 1/4 by 3 1/4 by 4 inches
Electrical connector.....	AND10066-14S-1P

RELATIONSHIP OF PARTS: Used with:

Army type E-12 tachometer generator, A. E. Reference Number 61-8751, or A. E. Reference Number 61-8752

**ARMY**

A. E. REFERENCE NUMBER: 61-8753

SPECIFICATIONS:

General.....	94-27240-C
Detail.....	94-27311
Superseded.....	27311

MANUFACTURER'S DRAWING AND PART NUMBER: Weston Electrical Instrument Corporation 102459

TYPE DESIGNATION: E-12

A. S. C. STOCK NUMBER: 6100241390

TECHNICAL ORDER NUMBER: 05-5B-2

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

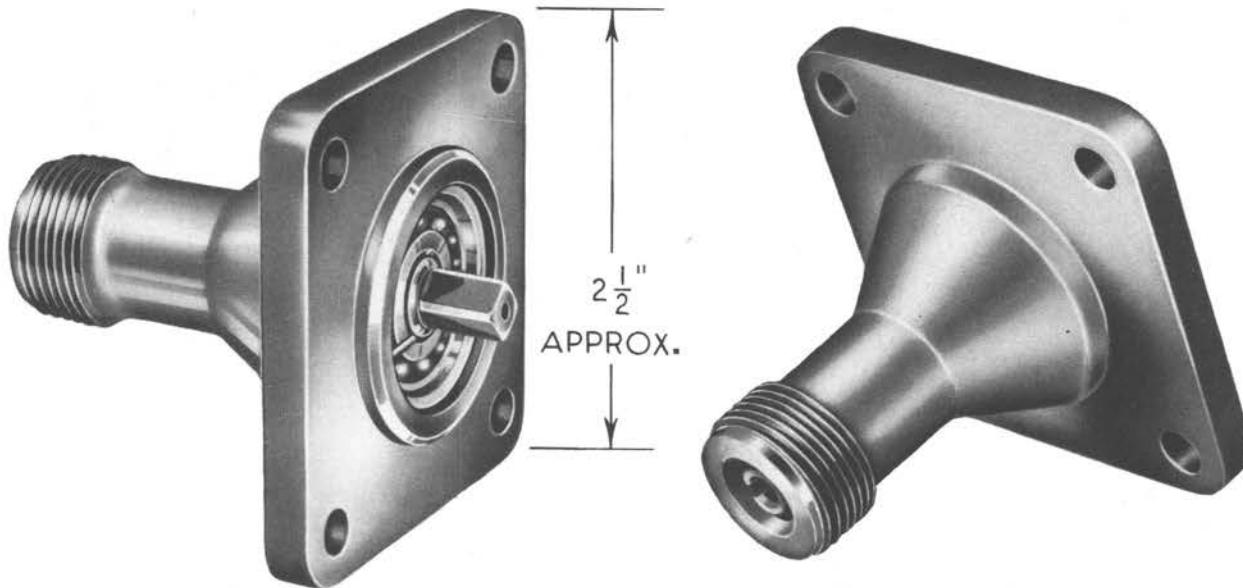
**NAVY**

There is no Navy equivalent for this item.

**BRITISH**

BRITISH REFERENCE NUMBER: 106A/1111





### ADAPTER — ENGINE TACHOMETER OUTLET

AN 4041    A. E. R. NUMBER 61-200    F. S. S. C. NUMBER 88-A-227

NAMES: Engine tachometer outlet adapter  
Screw mount adapter  
Tachometer adapter

Adapter assembly—type I to type II engine tachometer

DESCRIPTION: The adapter is used to attach a flexible tachometer shaft to an engine when the engine is provided with a pad or type II tachometer drive. One end of the adapter is mounted on the engine tachometer mounting pad by four equally spaced bolts; the other end has a screw outlet for attaching the tachometer shaft. The adapter is not designed to support a tachometer generator, and should not be used for this purpose.

CHARACTERISTICS:

Dimensions ..... approximately 2 1/2 by 2 1/2 by 2 1/4 inches  
Weight ..... 1/2 pound

RELATIONSHIP OF PARTS: Used with:

Army type C-7, A. E. Reference Number 61-8500, Army type C-9, A. E. Reference Number 61-8650, or Army type C-11, A. E. Reference Number 61-8660, when the engine drive is designed for a pad mounted tachometer generator.

#### ARMY

A. E. REFERENCE NUMBER: 61-200  
AN DRAWING NUMBER: AN4041 (Army-Navy Standard Issue of Drawing Number 39B4243)  
A. S. C. STOCK NUMBER: 6100002250  
PRODUCTION STATUS: Not under procurement for initial installation.  
SHIPPING DATA: Shipped as a complete unit.

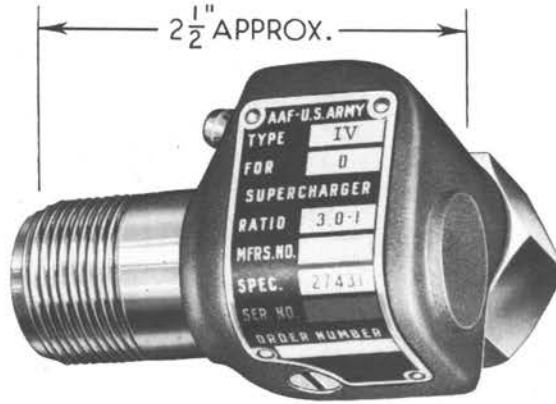
#### NAVY

DRAWING NUMBER: AN4041  
F. S. S. C. NUMBER: 88-A-227  
PROCUREMENT STATUS: Sub-standard—G. F. E.—Order through A. S. O. by F. S. S. C. number.

**MODELS BELOW ARE INTERCHANGEABLE**  
Models are used in services as noted in column 4  
**A-Army, N-Navy, B-British, C-Commercial**

Manufacturer	Manufacturer's Model Identification	Manufacturer's Part Number	Used By	Air Service Command Stock Number	British Reference Number
Air Associates	*AN4041		A-N-B	6100002250	106A/486
The S. S. White Dental Manufacturing Co.		2570-Y	B		106A/486

\*AN drawing



### ADAPTER—TURBOSUPERCHARGER TACHOMETER DRIVE

NAMES: Tubosupercharger tachometer drive adapter      Gear box adapter  
Tachometer adapter      Adapter assembly—tachometer drive

DESCRIPTION: These adapters are attached to the tachometer drive outlet on the oil pump of a turbosupercharger in order to obtain a speed reduction of 20 to 1 between the turbosupercharger shaft and the tachometer. One end of the adapter is screwed directly into the turbosupercharger oil pump tachometer shaft outlet. The other end is at right angles and has a nut to receive one end of the flexible tachometer drive shaft.

Five gear ratios are available to provide proper speed reduction; the ratio used depending upon the drive ratio between the turbosupercharger shaft and its tachometer outlet.

CHARACTERISTICS:

Weight.....approximately 1/2 pound  
Dimensions.....approximately 2 1/2 by 2 by 1 1/2 inches

RELATIONSHIP OF PARTS: Used with:

Tachometer generator drive shaft Army type A-3, A. E. Reference Number 61-7500 and Army type C-1 turbosupercharger.

#### ARMY

A. E. REFERENCE NUMBER: Refer to chart.

SPECIFICATIONS: Detail.....27431

TYPE DESIGNATION: Refer to chart.

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

#### NAVY

There is no Navy equivalent for this item.

**ALL MODELS BELOW ARE INTERCHANGEABLE**  
Models are used in services as noted in column 3  
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	A. E. Reference Number	Army Type	Gear Ratio	Turbo-supercharger Drive Ratio
Peerless of America	7800-1	A	6100002265	61-272	I	2.1:1	9.5:1
	7800-2	A	6100002270	61-273	II	2.4:1	8.3:1
	7800-3	A	6100002275	61-274	III	3.0:1	6.65:1
	7800-4	A	6100002280	61-275	IV	3.8:1	5.25:1
	7800-5		6100002285	61-276		2.0:1	10:1



LENGTH 24" APPROX.

**SHAFT — TACHOMETER GENERATOR DRIVE**

**ARMY TYPE A-3**

NAMES: Tachometer generator drive shaft  
Tachometer shaft

DESCRIPTION: The Army type A-3 tachometer generator drive shaft is composed of a wire around which two, or more, layers of steel wire are wound in opposite directions. It has a casing of bronze, spirally wound flexible tubing covered with a non-magnetic wire braid, and will operate in either direction at speeds up to 9000 revolutions per minute.

CHARACTERISTICS:

Length.....approximately 24 inches  
Weight.....approximately 1 pound

RELATIONSHIP OF PARTS: Used to connect tachometer generators with aircraft engines or turbo-superchargers, and to connect any governing or warning device which may be used with a turbo-supercharger.

**ARMY**

A. E. REFERENCE NUMBER: 61-7500

SPECIFICATIONS: Detail.....27432

MANUFACTURER'S PART NUMBER: S. S. White Dental Manufacturing Company 3683Y-Q

TYPE DESIGNATION: A-3

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

**NAVY**

There is no Navy equivalent for this item.