

TM 11-487E

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

John J. Neumann

DIRECTORY OF SIGNAL CORPS EQUIPMENTS

POWER EQUIPMENT

DEPARTMENT OF THE ARMY • MARCH 1951

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

TM 11-487E

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DIRECTORY OF SIGNAL CORPS
EQUIPMENTS

POWER EQUIPMENT



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FOREWORD

This is the fifth of a series of nine separate manuals, each covering the standard, substitute standard, and limited standard Signal Corps equipments in a particular field. The nine manuals cover, respectively, radio communication equipment, wire communication equipment, ground radar and recognition equipment, radio direction finding equipment, power equipment, photographic equipment, meteorological equipment, test equipment, and miscellaneous equipment.

The items of equipment are presented in this manual by nomenclature type numbers in alphabetical and numerical sequence. These type numbers are prominently displayed in the upper right-hand corner of the right-hand pages of the manual, and the nomenclature type names of the equipments are listed alphabetically in the index at the back of the manual, and the nomenclature type numbers are listed alphabetically and numerically in the table of contents in the front of the manual.

An illustration and the following information are given for each item of equipment:

Nomenclature.	Description and application.
Status.	Technical characteristics.
Signal Corps stock number.	Dimensions and weight.
Technical literature.	

The following abbreviations are used in this manual:

ac	alternating current	lb	pound
amp	ampere	lg	long
approx	approximately	ma	milliampere
C	centigrade	min	minute
contd	continued	No.	number
c-w	continuous-wave	pt	pint
cy	cycle	qt	quart
dc	direct current	r-f	radio-frequency
F	Fahrenheit	rpm	revolutions per minute
ft	foot	rms	root mean square
gal	gallon	Std	Standard
hp	horsepower	TM	Technical Manual
in.	inch	uf	microfarad
kva	kilovolt-ampere	v	volt
kw	kilowatt	w	watt

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BD-77-L



Figure 1. Dynamotor Unit BD-77-L and Mounting FT-107.

Status: Standard. Stock No.: 3H1777.2.
Reference: TM 11-934.

Dynamotor Unit BD-77-L is a rotary machine designed to convert 14-volt dc to 1,000-volt dc at .35 ampere. Mounted on top of the dynamotor is a relay-fuse box containing a starting relay of the solenoid type, a noise filter system, fuses, and terminating receptacles.

Dynamotor Unit BD-77-L is used to furnish transmitter high voltage in the operation of Radio Sets AN/VRC-1 and SCR-193-D, -G, -H, -J, -K, -KB, -KW, -L, -M, -P, -Q, -R, -S, -T, and -U.

TECHNICAL CHARACTERISTICS

INPUT: 14-v dc, 40 amp.
OUTPUT: 1,000-v dc, 35 amp.
TYPE: 2-pole, ball-bearing, totally inclosed.
OPERATING SPEED: 6,000 rpm.
POWER SOURCE: 12- to 14-v dc, such as storage battery.
TEMPERATURE RISE: 55° C rise for ½-hour continuous duty at full-rated load (if operated for greater length of time the dust covers of the dynamotor and the cover of the relay fuse box must be removed).

DIMENSIONS AND WEIGHTS

Dynamotor Unit BD-77-L on Mounting FT-107 measures approximately 11 inches long, 7½ inches wide, 10½ inches high, and it weighs 38.6 pounds unpacked.

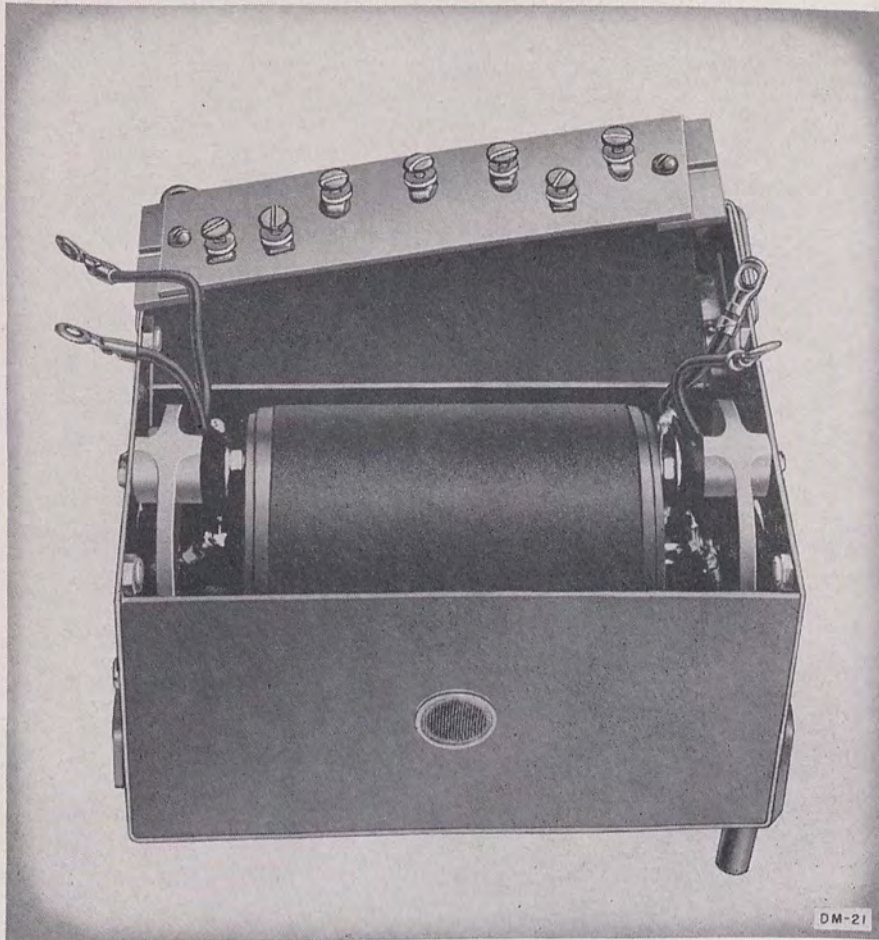


Figure 2. Dynamotor DM-21, with Filter FL-6.

Status: Standard. *Stock No.:* 3H1621. *Reference:* TM 11-850.

Dynamotor DM-21 is a completely inclosed, self-contained rotary machine (including Filter FL-6) designed to change 12- to 14-volt dc to 260-volt dc to provide required plate voltage for the operation of radio receiver circuits.

Dynamotor DM-21 is used to furnish plate voltage in the operation of Radio Receivers BC-312 and BC-314.

TECHNICAL CHARACTERISTICS

POWER INPUT: 12 to 14 v. dc (under full-load conditions).

POWER OUTPUT: 260 v dc, 82 ma.

TYPE OF INSTALLATION: Installed as a component in Radio Receivers BC-312 and BC-314.

DIMENSIONS AND WEIGHTS

Dynamotor DM-21 measures approximately 3½ inches by 5½ inches by 6 inches.

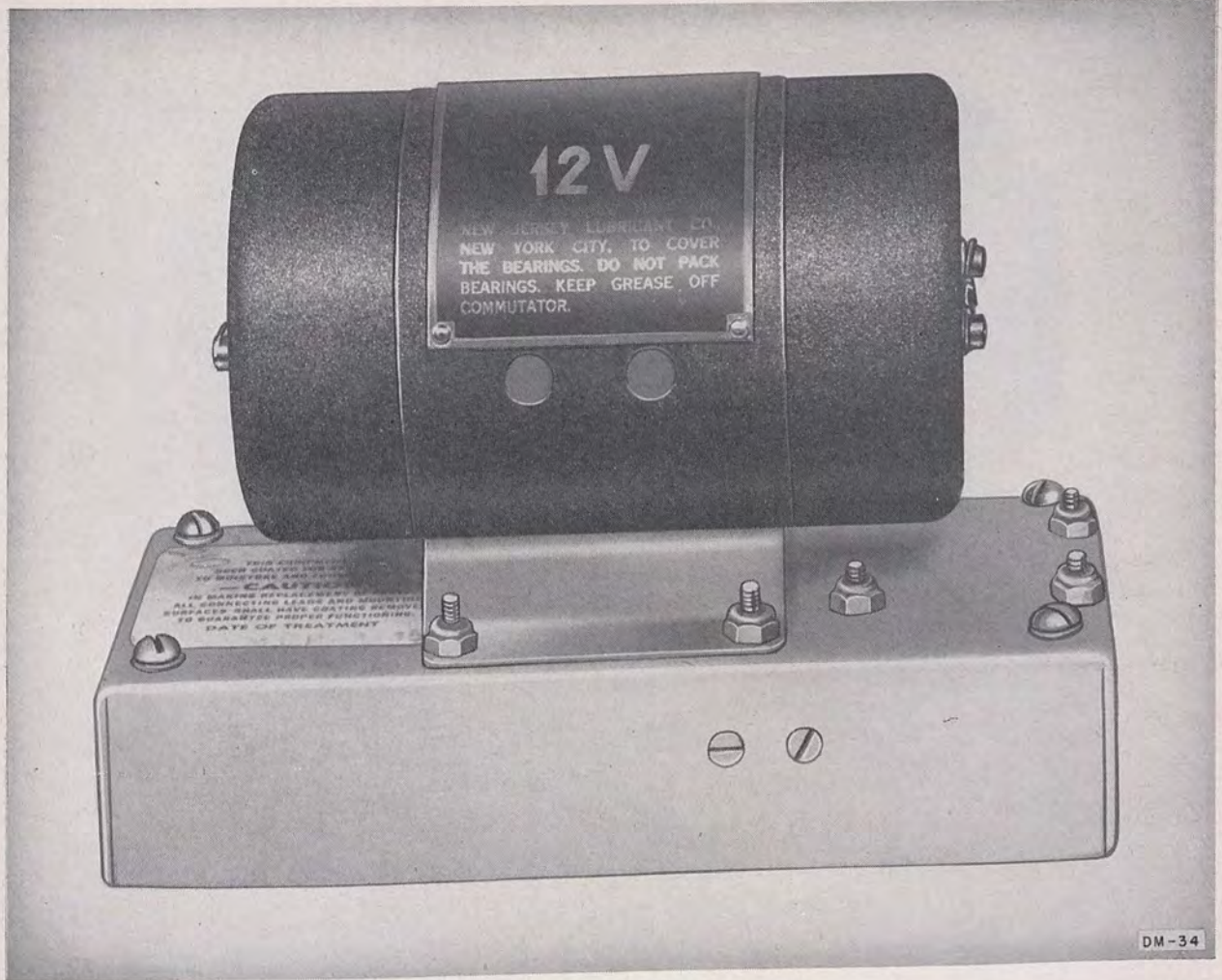


Figure 3. Dynamotor DM-34, side view.

Status: Standard. *Stock No.:* 3H1634. *Reference:* TM 11-620.

Dynamotor DM-34 is a compact, lightweight, totally inclosed, rotary machine designed to convert 12-volt dc from a vehicular battery to 220-volt dc at .08 ampere.

The dynamotor is shunt-wound. Primary and secondary windings are wound in the same armature slots, but the two windings are brought out to separate commutators mounted on opposite ends of the armature shaft.

Dynamotor DM-34 and Dynamotor DM-36 are similar in all respects except input voltage: Dynamotor DM-34 operates from a 12-volt battery, and Dynamotor DM-36 operates from a 24-volt battery.

Dynamotor DM-34 is used to furnish high-voltage for the operation of radio receivers in Radio Control Central AN/TRQ-1, Radio Sets AN/TRR-3, AN/VRC-5, SCR-508, SCR-528, SCR-608, and SCR-628.

TECHNICAL CHARACTERISTICS

INPUT: 12 v dc.
 OUTPUT: 220 v dc, .08 amp.
 TYPE: Shunt-wound.

DIMENSIONS AND WEIGHTS

Dynamotor DM-34 measures 6½ inches long, 3 inches deep, 4½ inches high, and it weighs 4.7 pounds unpacked.

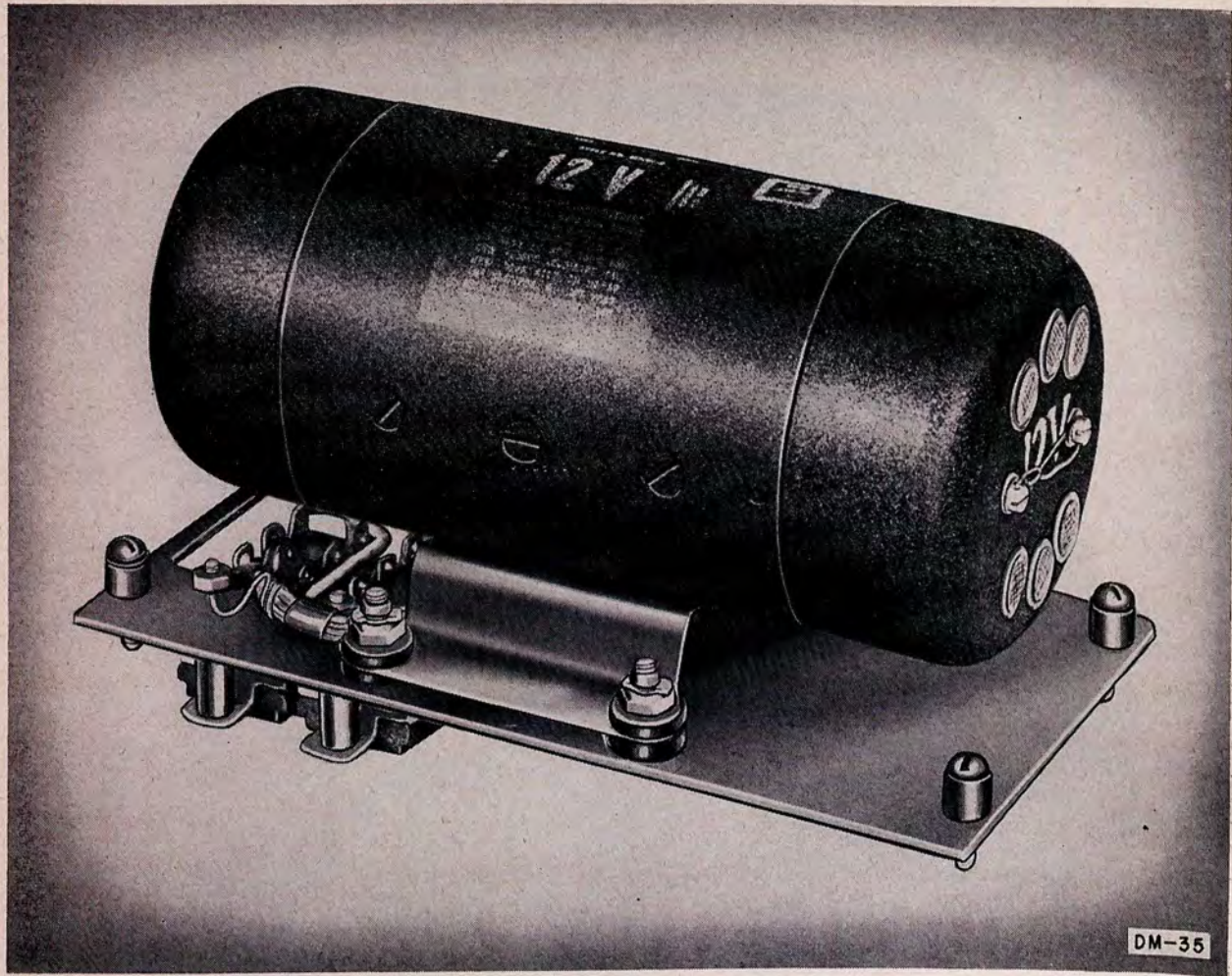


Figure 4. Dynamotor DM-35, side view.

Status: Standard. *Stock No.:* 3H1635. *Reference:* TM 11-620.

Dynamotor DM-35 is a compact, lightweight, rotary machine designed to convert 12-volt dc to 625-volt dc at .225 ampere.

The dynamotor is compound-wound. The primary and secondary are wound in the same armature slots but the two windings are brought out to separate commutators mounted on opposite ends of the armature shaft.

Dynamotors DM-35 and DM-37 are similar in all respects except input voltage: Dynamotor DM-35 operates from a 12-volt battery, and Dynamotor DM-37 operates from a 24-volt battery.

Dynamotor DM-35 is used to furnish transmitter high voltage in the operation of Radio Con-

trol Central AN/TRQ-1, Radio Sets AN/TRT-1, AN/VRC-5, SCR-508, SCR-528, SCR-608, and SCR-628.

TECHNICAL CHARACTERISTICS

INPUT: 12 v dc, 18 amp.

OUTPUT: 625 v dc, .225 amp.

TYPE: Compound-wound (Later models totally inclosed.

Earlier models have screened breathing vents in end covers. This does not affect power rating).

OPERATING SPEED: 8,000 rpm.

TEMPERATURE RISE: Winding 45° C.; frame 30° C.; intermittent operation—5 min. on, 15 min. off.

DIMENSIONS AND WEIGHTS

Dynamotor DM-35 measures 8¼ inches long, 4½ inches deep, 5½ inches high, and it weighs 9.2 pounds unpacked.

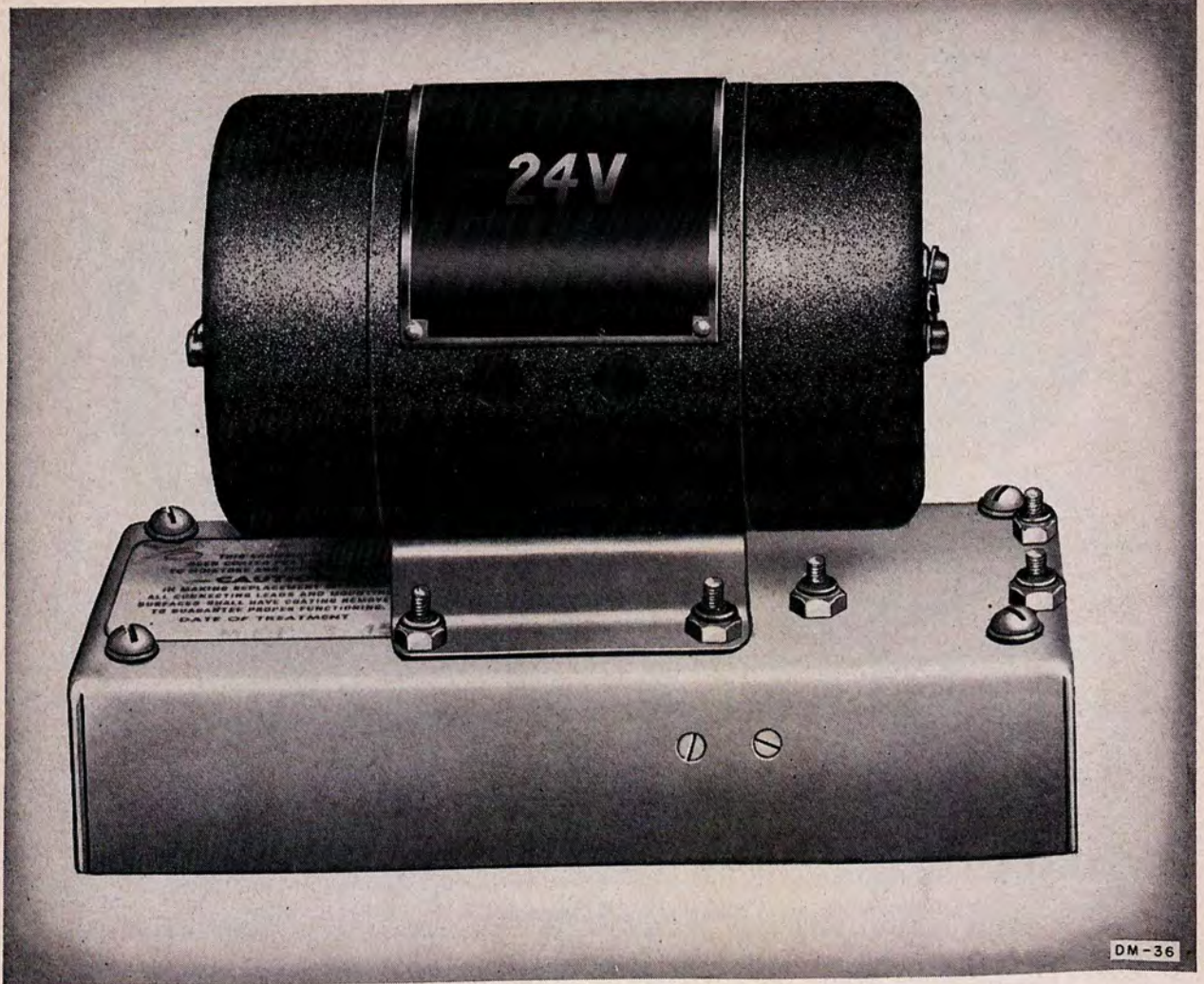


Figure 5. Dynamotor DM-36.

Status: Standard. *Stock No.:* 3H1636. *Reference:* TM 11-620.

Dynamotor DM-36 is a compact, lightweight, totally inclosed, rotary machine designed to convert 24-volt dc from a vehicular battery to 220-volt dc at .08 ampere.

The dynamotor is shunt-wound. Primary and secondary windings are wound in the same armature slots but the two windings are brought out to separate commutators mounted on opposite ends of the armature shaft.

Dynamotors DM-36 and DM-34 are similar in all respects except input voltage: Dynamotor DM-36 operates from a 24-volt battery, and Dynamotor DM-34 operates from a 12-volt battery.

Dynamotor DM-36 is used to furnish high voltage for the operation of the receiver of Radio Control Central AN/TRQ-1, Radio Sets AN/TRR-3, AN/VRC-5, SCR-508, SCR-528, SCR-608, and SCR-628.

TECHNICAL CHARACTERISTICS

INPUT: 24 v dc.
 OUTPUT: 220 v dc, .08 amp.
 TYPE: Shunt-wound.

DIMENSIONS AND WEIGHTS

Dynamotor DM-36 measures 6½ inches long, 3 inches deep, 4½ inches high, and it weighs 4.7 pounds unpacked.

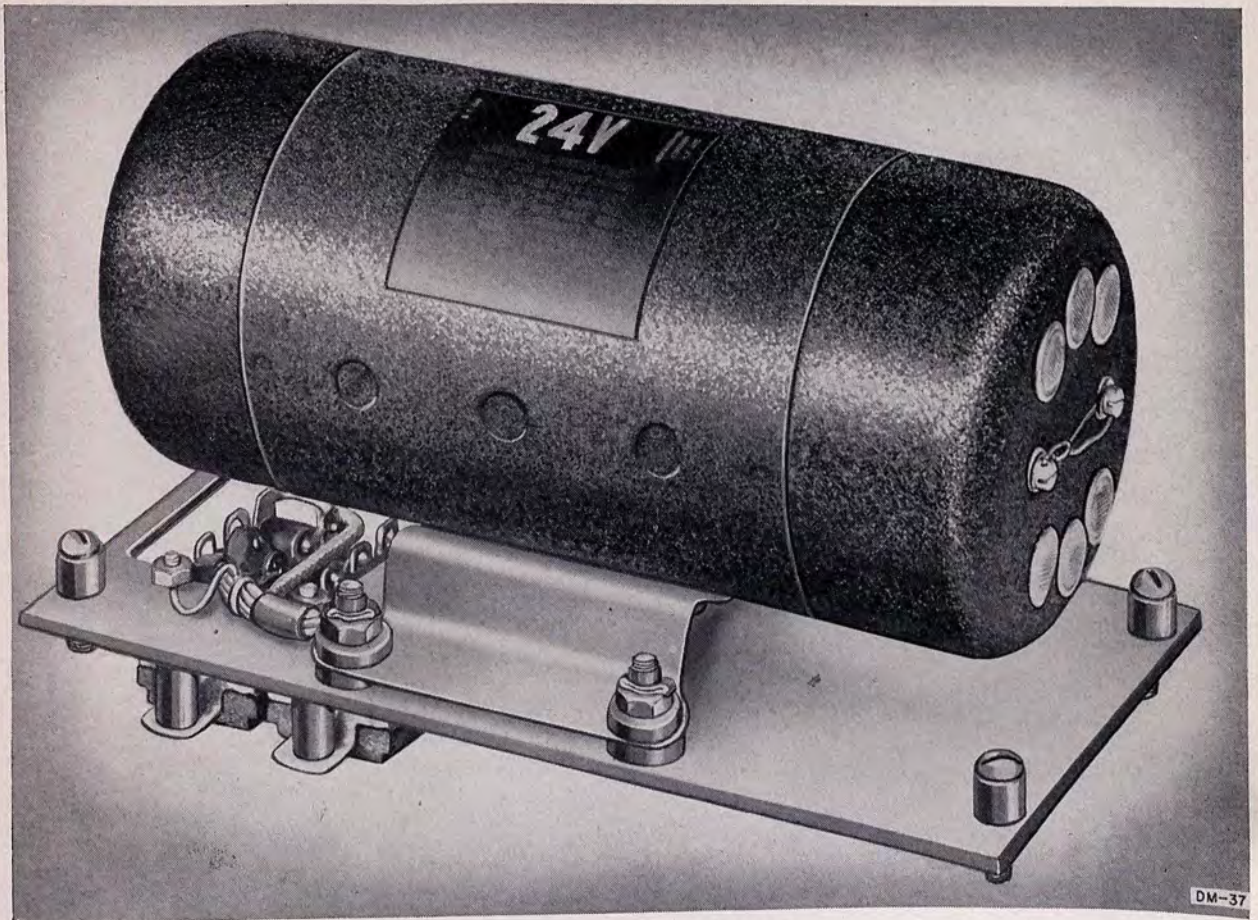


Figure 6. Dynamotor DM-37.

Status: Limited/Std. *Stock No.:* 3H1637.
Reference: TM 11-620.

Dynamotor DM-37 is a compact, lightweight, rotary machine designed to convert 24-volt dc to 625-volt dc at .255 ampere.

The dynamotor is compound-wound. The primary and secondary are wound in the same armature slots but the two windings are brought out to separate commutators mounted on opposite ends of the armature shaft.

Dynamotors DM-37 and DM-35 are similar in all respects except input voltage: Dynamotor DM-37 operates from a 24-volt battery, and Dynamotor DM-35 operates from a 12-volt battery.

Dynamotor DM-37 is used to furnish high voltage for the operation of the transmitter of Radio Sets AN/VRC-5, SCR-508, SCR-528, and SCR-608.

TECHNICAL CHARACTERISTICS

INPUT: 24 v dc, 9 amp.

OUTPUT: 625 v dc, .255 amp.

TYPE: Compound-wound (Later models totally inclosed.

Earlier models have screened breathing vents in end covers. This does not affect power rating).

OPERATING SPEED: 8,000 rpm.

DIMENSIONS AND WEIGHTS

Dynamotor DM-37 measures $8\frac{1}{4}$ inches long, $4\frac{1}{2}$ inches deep, $5\frac{1}{2}$ inches high, and it weighs 9.2 pounds unpacked.

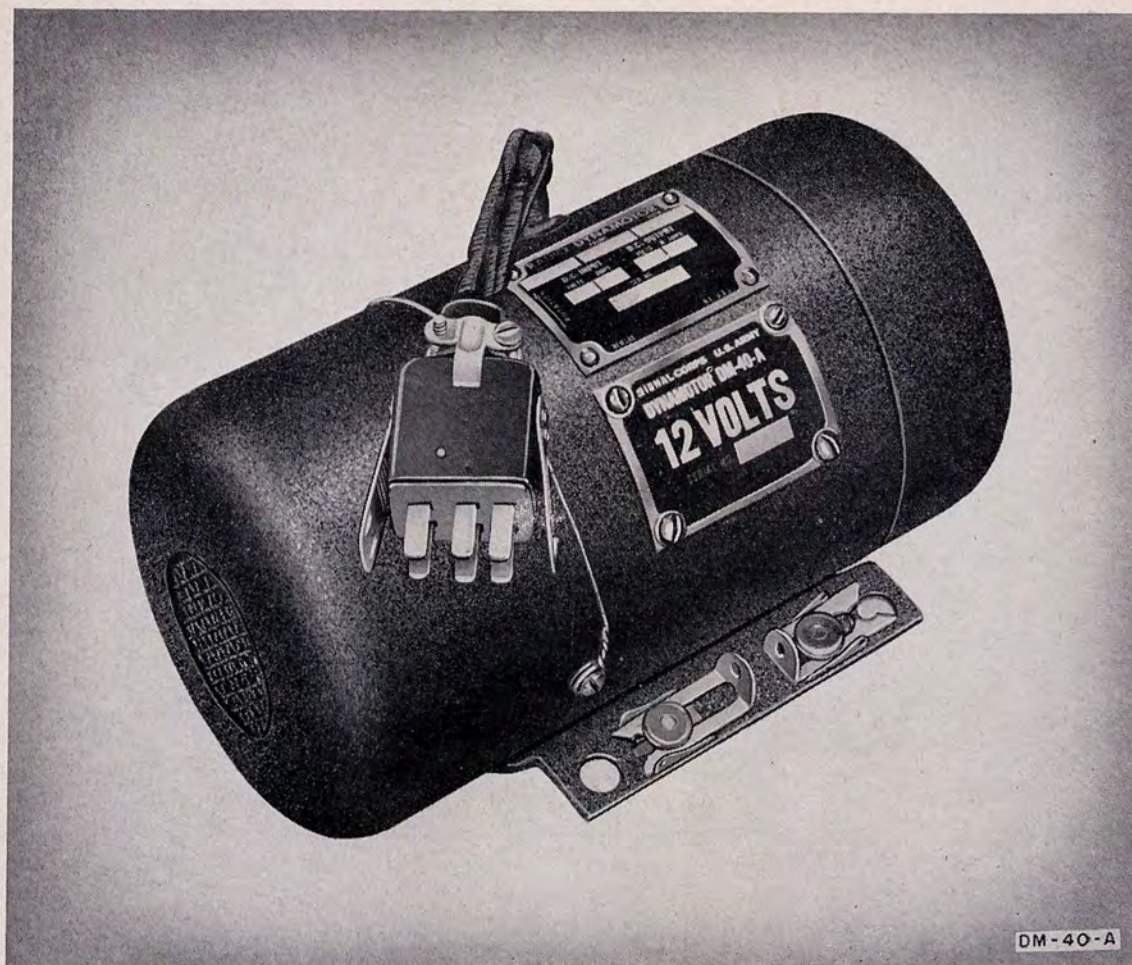


Figure 7. Dynamotor DM-40-A.

Status: Standard. *Stock No.:* 3H1640. *Reference:* TM 11-630.

Dynamotor DM-40-A is a compact, lightweight, rotary machine designed to convert 12-volt dc to 147-volt dc at 118 ma.

Dynamotor DM-40-A and Dynamotor DM-41-A are similar in all respects except input voltage. Dynamotor DM-40-A operates from a 12-volt vehicular storage battery, and Dynamotor DM-41-A operates from a 24-volt vehicular battery.

Dynamotor DM-40-A is used to furnish power for the operation of Radio Receiver BC-652-A in Radio Set SCR-506-A.

TECHNICAL CHARACTERISTICS

INPUT: 12 v dc, 3 amp.
 OUTPUT: 147 v dc, 118 ma.
 TYPE: Plug-in type.

DIMENSIONS AND WEIGHTS

Dynamotor DM-40-A weighs 12 pounds unpacked, and the volume is .49 cubic foot unpacked.



Figure 8. Dynamotor DM-41-A.

Status: Standard. *Stock No.:* 3H1641. *Reference:* TM 11-630.

Dynamotor DM-41-A is a compact, lightweight, rotary machine designed to convert 24-volt dc to 147-volt dc at 118 ma.

Dynamotor DM-41-A and Dynamotor DM-40-A are similar in all respects except input voltage. Dynamotor DM-41-A operates from a 24-volt vehicular storage battery, and Dynamotor DM-40-A operates from a 12-volt vehicular battery.

Dynamotor DM-41-A is used to furnish power for the operation of Radio Receiver BC-652-A in Radio Set SCR-506-A.

TECHNICAL CHARACTERISTICS

INPUT: 24 v dc, 1.5 amp.
 OUTPUT: 147 v dc, 118 ma.
 TYPE: Plug-in type.

DIMENSIONS AND WEIGHTS

Dynamotor DM-41-A measures $6\frac{7}{8}$ inches long, $3\frac{1}{2}$ inches in diameter, and weighs $6\frac{1}{2}$ pounds unpacked.

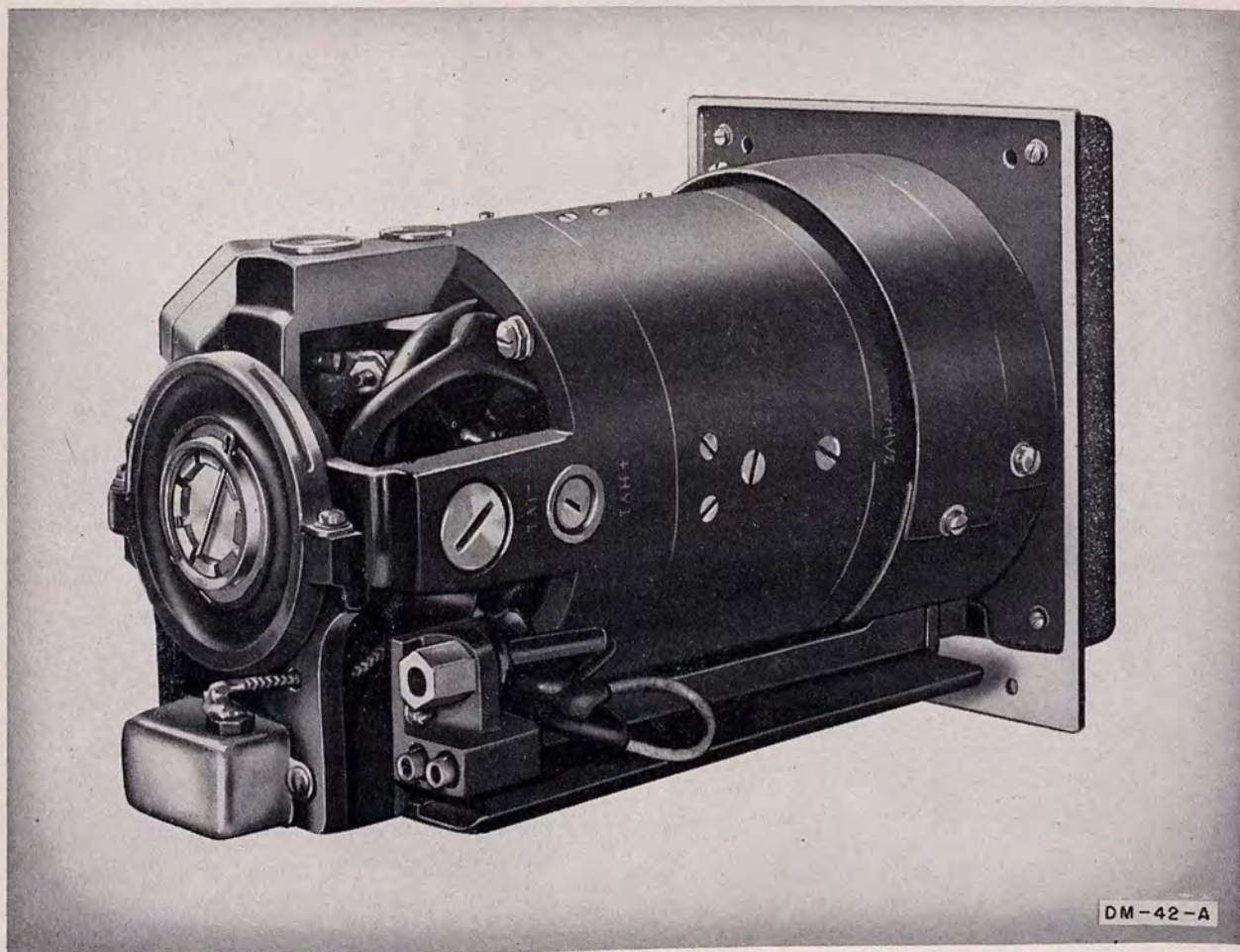


Figure 9. Dynamotor DM-42-A.

Status: Standard. *Stock No.:* 3H1642. *Reference:* TM 11-630.

Dynamotor DM-42-A is a compact, light-weight, rotary machine designed to convert 12-volt dc to 460-volt dc at 185 ma and 925-volt dc at 220 ma. It is used to furnish high voltage for the operation of the transmitter of Radio Set SCR-506-A.

Two 500-volt commutators are used in series to supply the 1,000 volts required by the transmitter. One 500-volt commutator is located at the front of the dynamotor and the other at the rear. A fixed winding on the stator supplies 1,000-cycle voltage for c-w sidetone.

Dynamotor DM-42-A and Dynamotor DM-43-A are similar in all respects except input voltage. Dynamotor DM-42-A operates from a 12-

volt vehicular storage battery, and Dynamotor DM-43-A operates from a 24-volt vehicular battery.

TECHNICAL CHARACTERISTICS

INPUT: 12 v dc, 39 amp.

OUTPUT: 460 v dc, 185 ma; 925 v dc, 220 ma.

SIDETONE VOLTAGE (into a 500-ohm load):

Full—7 v.

Tap—2 v.

TYPE: Plug-in type. All connections to transmitter are made through plugs located at the rear of the dynamotor.

DIMENSIONS AND WEIGHTS

Dynamotor DM-42-A measures 11 inches long and 5 inches in diameter. The Mounting Plate measures 6.32 inches wide by 7 inches high. Dynamotor DM-42-A weighs approximately 30 pounds unpacked.

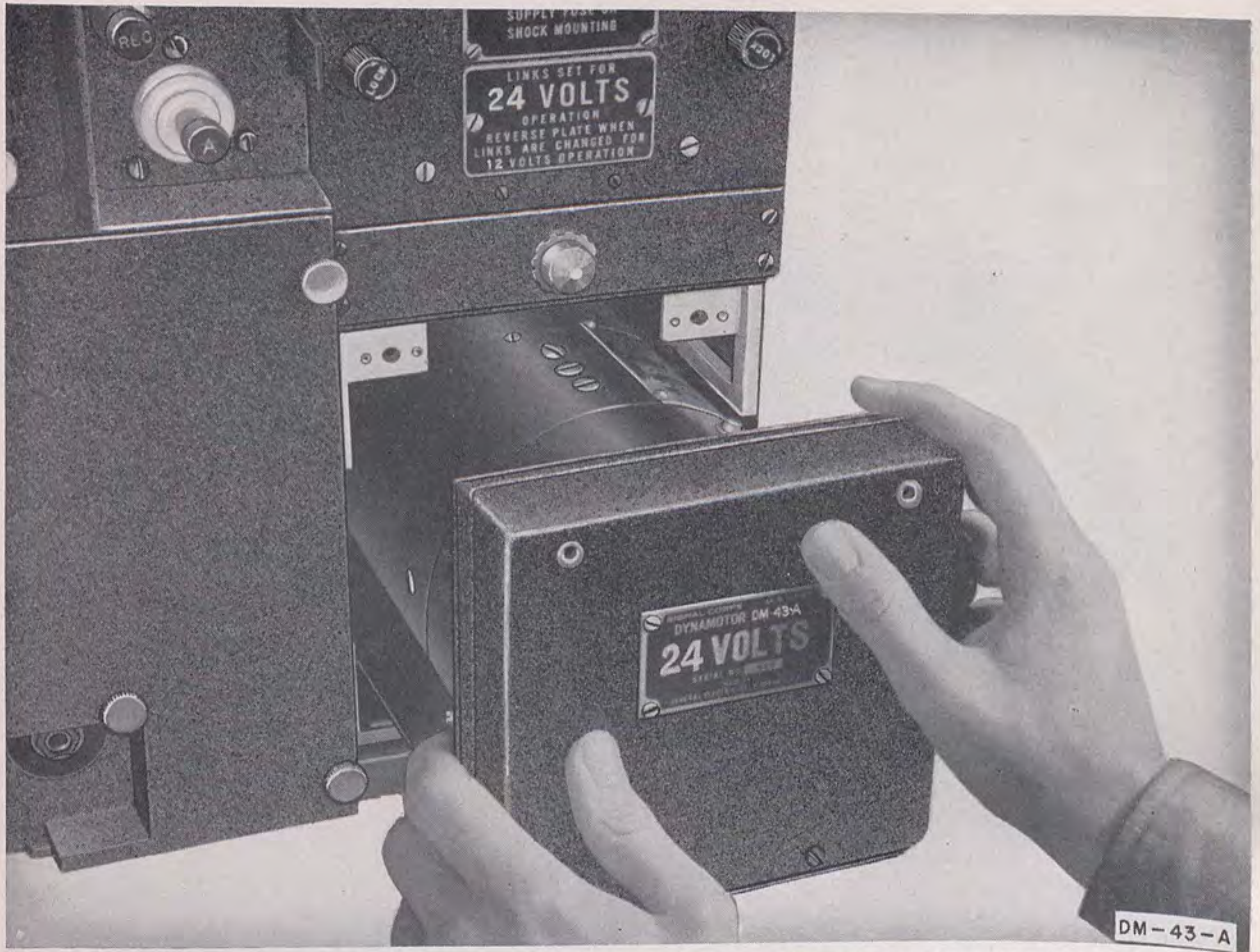


Figure 10. Dynamotor DM-43-A, showing installation in Radio Transmitter BC-653-A.

Status: Standard. *Stock No.:* 3H1643. *Reference:* TM 11-630.

Dynamotor DM-43-A is a compact, light-weight, rotary machine designed to convert 24-volt dc to 460-volt dc at 185 ma, and 925-volt dc at 220 ma. It is used to furnish high voltage for the operation of the transmitter of Radio Set SCR-506-A.

Two 500-volt commutators are used in series to supply the 1,000 volts required by the transmitter. One 500-volt commutator is located at the front of the dynamotor and the other at the rear. A fixed winding on the stator supplies 1,000-cycle voltage for c-w sidetone.

Dynamotor DM-43-A and Dynamotor DM-42-A are similar in all respects except input voltage. Dynamotor DM-43-A operates from a

24-volt vehicular storage battery, and Dynamotor DM-42-A operates from a 12-volt vehicular battery.

TECHNICAL CHARACTERISTICS

INPUT: 24 v dc, 20 amp.

OUTPUT: 460 v dc, 185 ma; 925 v dc, 220 ma.

SIDETONE VOLTAGE (into a 500-ohm load):

Full—7v.

Tap—2 v.

TYPE: Plug-in type. All connections to transmitter are made through plugs located at the rear of the dynamotor.

DIMENSIONS AND WEIGHTS

Dynamotor DM-43-A measures 11 inches long and 5 inches in diameter. The Mounting Plate measures 6.32 inches wide by 7 inches high. Dynamotor DM-43-A weighs approximately 30 pounds unpacked.

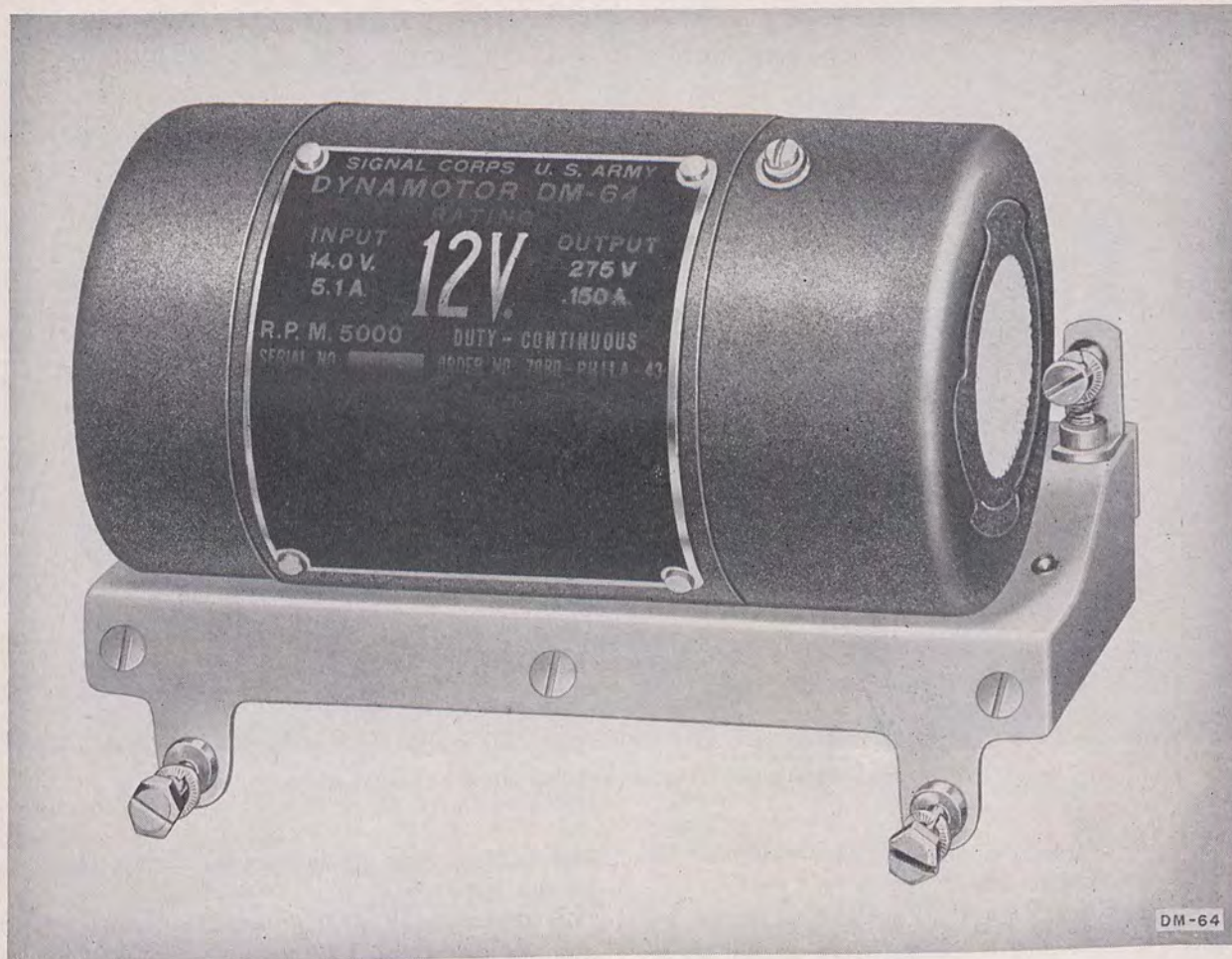


Figure 11. Dynamotor DM-64.

Status: Standard. *Stock No.:* 3H1664. *Reference:* TM 11-601.

Dynamotor DM-64 is a compact, lightweight, rotary machine designed to convert 12-volt dc to 200-volt dc.

Dynamotor DM-64 is dustproof and vapor-proof, has built-in d-c filter, and is designed for continuous duty.

Dynamotor DM-64 and Dynamotor DM-66 are similar in all respects except input voltage. Dynamotor DM-64 operates from a 12-volt storage battery, and Dynamotor DM-66 operates from a 24-volt battery.

Dynamotor DM-64 is used to furnish power for radio receivers in the operation of Radio Sets AN/MRQ-2, SCR-808, and SCR-828.

TECHNICAL CHARACTERISTICS

INPUT: 14 v dc, 5.1 amp.
 OUTPUT: 275 v dc, .150 amp.
 TYPE: Continuous duty.
 OPERATING SPEED: 5,000 rpm.

DIMENSIONS AND WEIGHTS

Dynamotor DM-64 measures $6\frac{5}{8}$ inches long, $3\frac{1}{4}$ inches deep, $4\frac{1}{4}$ inches high, and it weighs 5.25 pounds unpacked.

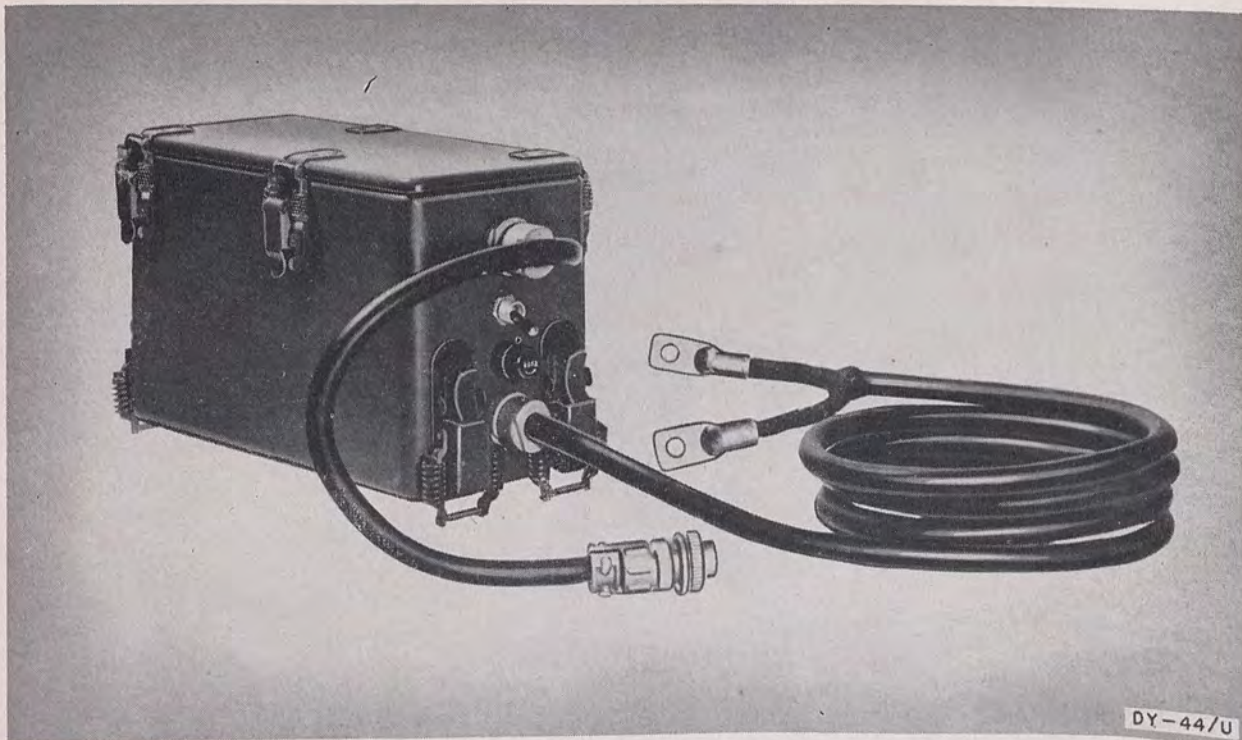


Figure 12. Dynamotor DY-44/U, showing output and input cables.

Status: Standard. *Stock No.:* 3H1535-44.
Reference: TM 11-5035.

Dynamotor DY-44/U is a rotary machine designed to change d-c voltage from 28-volt dc to 12.9-volt dc. The unit consists of the dynamotor proper, which is inclosed in a cylindrical steel case; a filter system; an aluminum outer case; and the necessary cabling.

The filter system, designed to eliminate line noise, consists of a capacitor and choke coil network. The dynamotor is electrically connected as a plug-in part when the outer case cover is in place. Removal of the outer cover disconnects (unplugs) the dynamotor from the filter system.

The unit is equipped with two cables permanently fixed to the front of the outer case. The output cable is 15 inches long, terminated in an AN-3106-14S-7S type connector for attaching to radio equipment. The input cable is 7 feet long

and is fitted with spade lugs for connecting to a 24-volt battery.

Dynamotor DY-44/U is used to furnish power for the operation of Radio Set SCR-619-A. It is intended for installation in mobile equipment installed in vehicles equipped with a 24-volt battery.

TECHNICAL CHARACTERISTICS

POWER INPUT: 28 v dc at 3 amp.

POWER OUTPUT: 12.9 v dc at 3.5 amp.

RUNNING SPEED: 4,500 rpm at full load.

RUNNING TEMPERATURE: Not to exceed +60° C. (+140° F.) at any ambient temperature between +10° C. and +65° C. (+50° F. and +149° F.)

DIMENSIONS AND WEIGHTS

Dynamotor DY-44/U (excluding cables) measures 11 inches long, 5¼ inches wide, 6 inches high, and it weighs 18 pounds unpacked. Packed for export it weighs 30 pounds, and the total volume is 1.6 cubic feet.

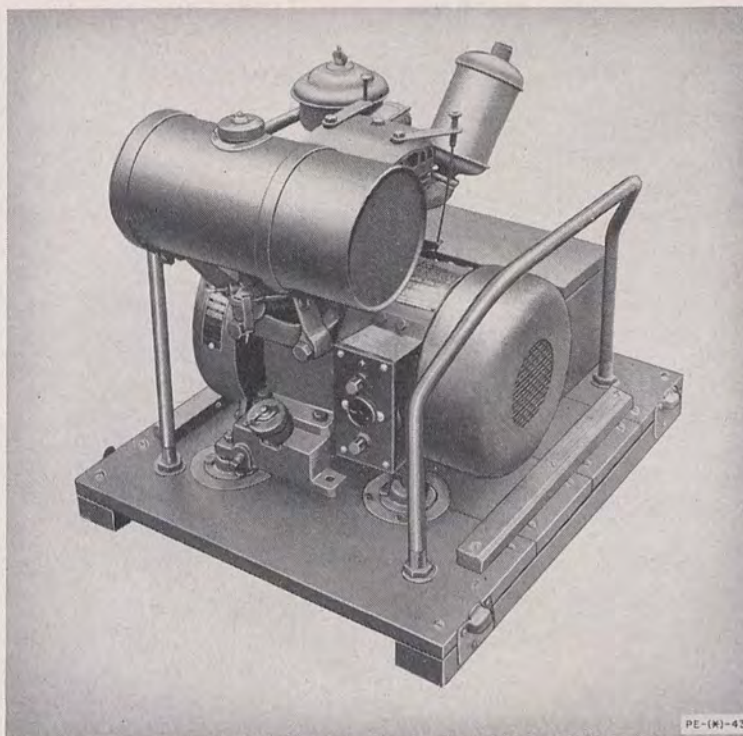


Figure 13. Power Unit PE-HH-43.

Status: Limited/Std. *Stock No.:* 3H4543.11.
Reference: TM 11-302.

Power Unit PE-(*)-43 represents Power Units PE-HC-43, PE-HD-43, PE-HE-43, PE-HF-43, PE-HG-43, and PE-HH-43. Power Unit PE-(*)-43 is a compact, portable, electric generating set consisting of a 1-cylinder, 4-cycle, L-head, air-cooled, manual-starting (rope) gasoline engine directly connected to a d-c generator of the 4-pole, shunt-wound type.

The unit is shock-mounted on a wooden base which forms the bottom of a permanent packing crate in which the unit is transported.

Power Unit PE-(*)-43 is used to furnish power for the operation of Charging Set SCR-169 of which it is a component (Charging Set SCR-169 is described under its own nomenclature in this volume).

TECHNICAL CHARACTERISTICS

Engine

MAKE: Briggs & Stratton.
MODEL: AP.
RATED: 1.5 hp at 2,350 rpm.
CYLINDERS: 1.
Bore: 2.25 in.
Stroke: 2.25 in.
CYCLE: 4.

HEAD: L.
VALVES:

Intake—Alloy steel.
Exhaust Silchrome steel.

OPERATING SPEED: 2,350 rpm.

COOLING: Air.

FUEL USED: Gasoline.

FUEL TANK CAPACITY: 1 gal.

FUEL CONSUMPTION PER HOUR (RATED LOAD):
.2 gal.

LUBRICATION SYSTEM: Pump and splash.

CRANKCASE OIL CAPACITY: 1.5 qt.

AIR CLEANER: Oil-bath type.

STARTING: Manual (rope).

GOVERNOR: Flyball.

IGNITION: Magneto.

Generator

MAKE: Pioneer Gen-E-Motor.

TYPE OF GENERATOR: d-c; 4 pole, shunt-wound.

RATING: .55 kw (550 w), 32 v, 17.5 amp.

WIRES: 2.

OPERATING SPEED: 2,350 rpm.

DRIVE: Direct.

COMPLETE UNIT

DIMENSIONS AND WEIGHTS

Power Unit PE-(*)-43 measures 22 $\frac{5}{8}$ inches long 20 $\frac{3}{8}$ inches wide, 22 $\frac{1}{2}$ inches high, crated; and it weighs 161 pounds crated. Packed for export it weighs approximately 270 pounds, and the total volume is 10 cubic feet.

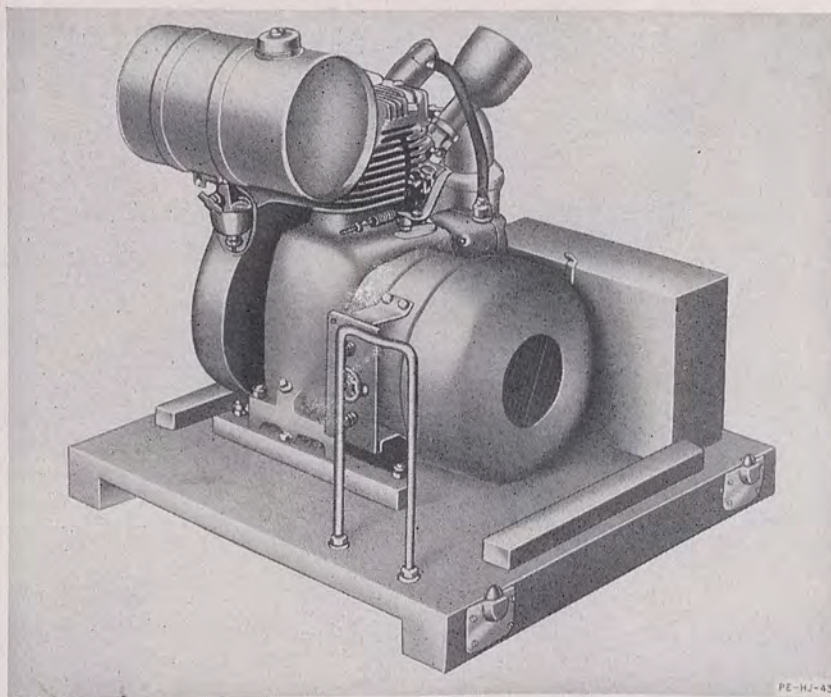


Figure 14. Power Unit PE-HJ-43.

Status: Limited/Std. *Stock No.:* 3H4543.9.
Reference: TM 11-302.

Power Unit PE-HJ-43 is a compact, portable, electric generating set consisting of a 1-cylinder, 4-cycle, L-head, air-cooled, manual-starting (rope) gasoline engine, directly connected to a d-c generator.

The unit is shock-mounted on a wooden base which forms the bottom of a permanent packing crate in which it is transported.

Power Unit PE-HJ-43 is used to furnish power for the operation of Charging Set SCR-169 of which it is a component (Charging Set SCR-169 is described under its own nomenclature in this volume). Power Unit PE-HJ-43 differs from other Power Units PE-(*)-43 only in the make and model of engine used.

TECHNICAL CHARACTERISTICS

Engine

MAKE: Wisconsin.
MODEL: AB.
RATED: 2.85 hp at 2,350 rpm.
CYLINDERS: 1.
Bore: 2.5 in.
Stroke: 2.75 in.
COMPRESSION RATIO: 5.1 to 1.
CYCLE: 4.

HEAD: L.
VALVES:
Intake—Alloy steel.
Exhaust Silchrome steel.
OPERATING SPEED: 2,350 rpm.
COOLING: Air.
FUEL USED: Gasoline.
FUEL TANK CAPACITY: 1.25 gal.
FUEL CONSUMPTION PER HOUR (RATED LOAD):
.5 gal.
LUBRICATION SYSTEM: Pump and splash.
CRANKCASE OIL CAPACITY: 1.75 qt.
AIR CLEANER: Oil-bath type.
STARTING: Manual (rope).
GOVERNOR: Flyball.
IGNITION: Magneto.

Generator

MAKE: Pioneer Gen-E-Motor.
TYPE OF GENERATOR: D-c.
RATING: .5 kw (550 v), 32 v, 17.5 amp.
WIRES: 2.
OPERATING SPEED: 2,350 rpm.
DRIVE: Directly connected.

COMPLETE UNIT

DIMENSIONS AND WEIGHTS

Power Unit PE-HJ-43 measures 23½ inches long, 22⅝ inches wide, 24½ inches high crated; and it weighs 175 pounds crated. Packed for export it weighs 260 pounds, and the total volume is 10 cubic feet.

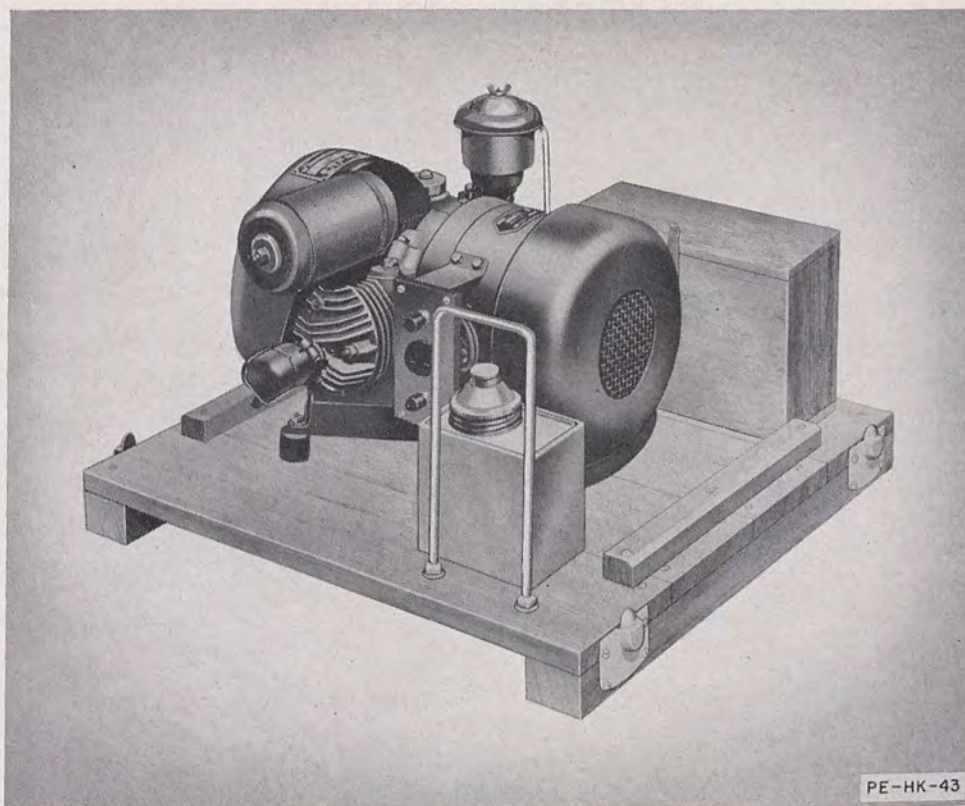


Figure 15. Power Unit PE-HK-43.

Status: Limited/Std. *Stock No.:* 3H4543.10.
Reference: TM 11-302.

Power Unit PE-HK-43 is a compact, portable, electric generating set consisting of a 1-cylinder, 2-cycle, air-cooled, manual-starting (rope) gasoline engine directly connected to a d-c generator.

The unit is shock-mounted on a wooden base which forms the bottom of a permanent packing crate in which the unit is transported.

Power Unit PE-HK-43 is used to furnish power for the operation of Charging Set SCR-169 of which it is a component (Charging Set SCR-169 is described under its own nomenclature in this volume). Power Unit PE-HK-43 differs from other Power Units PE-(*)-43 only in the make and type of engine used.

TECHNICAL CHARACTERISTICS

Engine

MAKE: Jacobsen.
MODEL: J-150.
RATED: 1.35 hp at 2,350 rpm.
CYLINDERS: 1.
Bore: 2.25 in.
Stroke: 1.75 in.

CYCLE: 2.
HEAD: Valveless.
OPERATING SPEED: 2,350 rpm.
COOLING: Air.
FUEL USED: Gasoline and oil mixed.
FUEL TANK CAPACITY: 1 gal.
FUEL CONSUMPTION PER HOUR (RATED LOAD):
.3 gal.
LUBRICATION SYSTEM: Oil mixed with gasoline.
AIR CLEANER: Oil-bath type.
STARTING: Manual (rope).
GOVERNOR: Air vane.
IGNITION: Flywheel magneto.

Generator

MAKE: Pioneer Gen-E-Motor.
TYPE OF GENERATOR: D-c.
RATING: 55 kw (550 w), 32 v, 17.5 amp.
WIRES: 2.
OPERATING SPEED: 2,350 rpm.
DRIVE: Direct.

COMPLETE UNIT

DIMENSIONS AND WEIGHTS

Power Unit PE-HK-43 measures 25 $\frac{5}{8}$ inches long, 23 $\frac{1}{2}$ inches wide, 16 $\frac{5}{16}$ inches high, crated; and it weighs 138 $\frac{3}{4}$ pounds crated. Packed for export it weighs 220 pounds, and the total volume is 7 cubic feet.

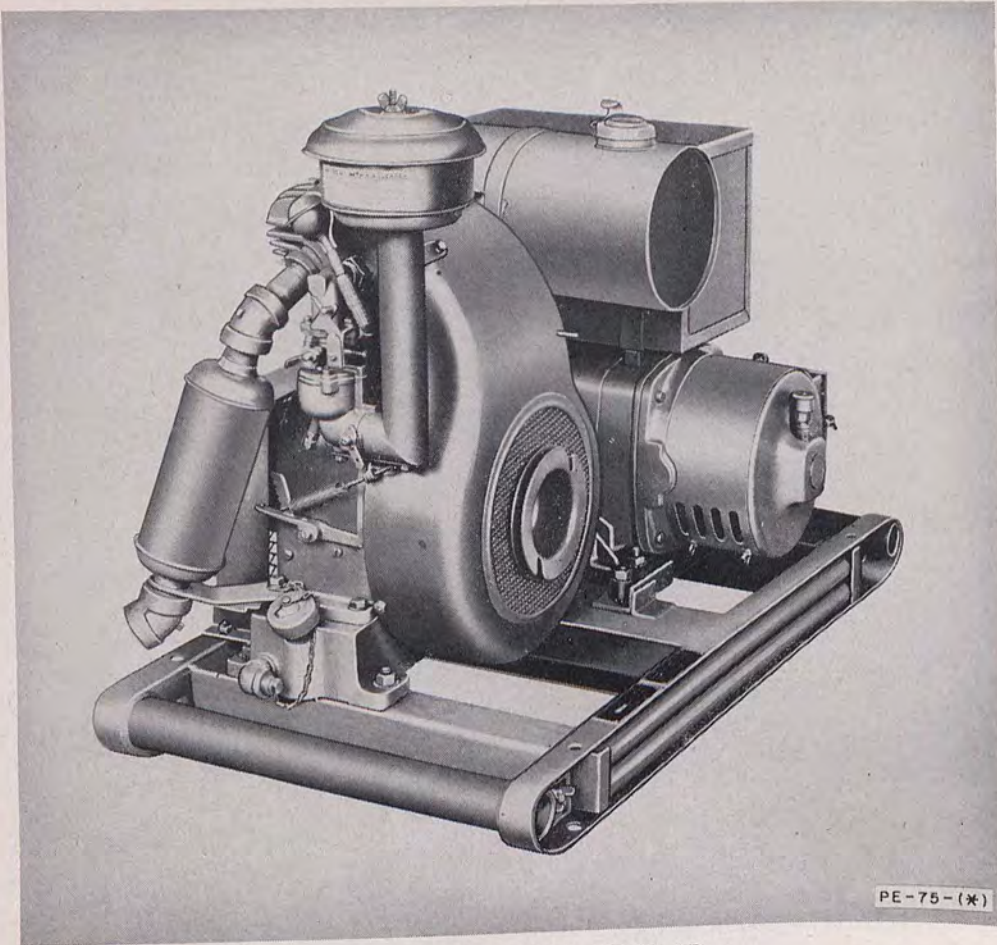


Figure 16. Power Unit PE-75-AB.

Status: Standard. *Stock No.:* 3H4575. *Reference:* TM 11-900.

Power Unit PE-75-(*), represents Power Units PE-C, -D, -J, -K, -P, -S, -T, -U, -AA, -AB, -AC, and -AD. Power Unit PE-75-(*), is a self-contained, compact, portable, electric generating set consisting of a 1-cylinder, 4-cycle, L-head, air-cooled, manual-starting (rope), gasoline engine with an a-c, self-excited, belt-driven generator.

Power Unit PE-75-(*), is assembled on a welded-steel skid base. Tubular end members of the skid-base frame can be used for carrying the power unit. In addition, four wooden carrying handles for insertion in the tubular end members are secured in channel members of the skid base.

Power Unit PE-75-(*), is used to furnish power for the operation of Auxiliary Telephone

Central Equipment (AN/GTA-1, Radio Set AN/TRC-1, Radio Terminal Set AN/TRC-3, Radio Relay Set AN/TRC-4, Radio Set AN/TRC-8, Radio Terminal Set AN/TRC-11, Radio Relay Set AN/TRC-12, Spotting Set AN/TVQ-1, Public Address Set AN/UIQ-1, Projector Equipment PH-408, Radio Sets SCR-188-A, SCR-624-B, Telephone Central Office Sets TC-1 and TC-2, Telegraph Central Office Set TC-3, Auxiliary Telephone Central Equipment TC-5, Telephone Central Office Set TC-10, Telephone Terminal Set TC-21, and Mobile Meteorological Station SCM-1.

TECHNICAL CHARACTERISTICS

Engine

MAKE: Briggs & Stratton.
MODEL: ZZ.
RATED: 6.5 hp at 2,400 rpm.

CYLINDERS: 1.
 Bore: 3 in.
 Stroke: 3.25 in.
 COMPRESSION RATIO: 4.84 to 1.
 CYCLE: 4.
 HEAD: L.
 VALVES:
 Intake—Alloy steel.¹
 Exhaust—Silchrome.
 OPERATING SPEED: 2,400 rpm.
 COOLING: Air.
 FUEL USED: Gasoline.
 FUEL TANK CAPACITY: 1.25 gal.
 FUEL CONSUMPTION PER HOUR (RATED LOAD):
 .65 gal.
 LUBRICATION SYSTEM: Pump and splash.
 CRANKCASE OIL CAPACITY: 1.5 qt.
 AIR CLEANER: Oil-bath.
 STARTING: Manual (rope).
 GOVERNOR: Flyball type.
 IGNITION: Flywheel type magneto.

Generator

MAKE: Leland Electric or Westinghouse.²

MODEL: 9900E3625 (Leland Electric); 28CX212 (West-
 inghouse).
 TYPE OF GENERATOR: A-c, self-excited.
 RATING: 2.5 kw (2,500 w), 120 v, 22 amp.
 POWER FACTOR: 100 percent.
 CYCLE: 60.
 PHASE: 1.
 WIRES: 2.
 OPERATING SPEED: 1,800 rpm.
 DRIVE: 2 V-belts.
 NUMBER AND TYPE OF BEARING: 2 No. 1232-H.

COMPLETE UNIT

DIMENSIONS AND WEIGHTS

Power Unit PE-75-(*) measures approximately 36 inches long, 19½ inches wide, 26½ inches high, and it weighs 330 pounds unpacked. Packed for export it weighs 445 pounds, and the total volume is 16 cubic feet.

¹ Power Unit PE-75-AD has Stellite exhaust valve and valve seat and an Austenetic intake valve.

² All models of Power Unit PE-75-(*), except the PE-75-AB, use the Leland Electric generator. Power Unit PE-75-AB uses the Westinghouse generator.

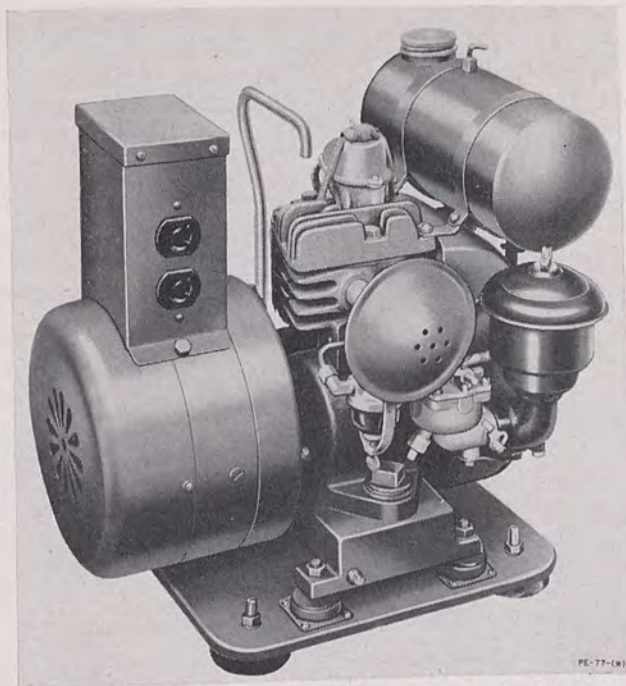


Figure 17. Power Unit PE-77-A, shown with wooden base removed.

Status: Limited/Std. Stock No.: 3H1577.
Reference: TM 11-903.

Power Unit PE-77-(*) represents Power Units PE-77-A, -B, -C, -D, and -E. Power Unit PE-77-(*) is a self-contained, compact, portable, electric generating set consisting of a 1-cylinder, 4-cycle, L-head, air-cooled, manual-starting (rope) gasoline engine directly connected to a d-c generator. It is mounted on a wooden base equipped with a crate cover.

Power Unit PE-77-(*) is used to furnish power for the operation of Teletypewriter Set EE-97-A.

TECHNICAL CHARACTERISTICS

Engine

MAKE: Briggs & Stratton.
MODEL: PE-77-A, -B, and -C: model IL; PE-77-D, -E: model I.
RATED: 1.3 hp at 2,650 rpm.
CYLINDERS: 1.
Bore: 2 in.
Stroke: 1.5 in.
COMPRESSION RATIO: 4.26 to 1.
CYCLE: 4.
HEAD: L.
VALVES:
Intake—Alloy steel.
Exhaust—Silchrome steel.
OPERATING SPEED: 2,650 rpm.
COOLING: Air.

FUEL USED: Gasoline.
FUEL TANK CAPACITY: .5 gal.
FUEL CONSUMPTION PER HOUR (RATED LOAD): .2 gal.
LUBRICATION SYSTEM: Pump and splash.
CRANKCASE OIL CAPACITY: .75 qt.
AIR CLEANER: Oil-bath type.
STARTING: Manual (rope).
GOVERNOR: PE-77-A, -B, -C: Air-vane type; PE-77-D, -E: Flyball.
IGNITION: Flywheel type magneto.

Generator

MAKE: Pioneer Gen-E-Motor.
MODEL: 77.
TYPE OF GENERATOR: D-c.
RATING: .25 kw (250w), 115 v, 2.2 amp.
WIRES: 2.
OPERATING SPEED: 2,650 rpm.
DRIVE: Direct.

COMPLETE UNIT

DIMENSIONS AND WEIGHTS

Power Unit PE-77-A, -B, -C, and -D measures 20 inches long, 16 inches wide, 22 inches high, and it weighs 72 pounds unpacked.

Power Unit PE-77-E measures 22 inches long, 12 inches wide, 22 inches high, and it weighs 83 pounds unpacked.

Power Unit PE-77-(*) in carrying case (wooden base and crate cover) weighs 110 pounds, and the total volume is 5 cubic feet. Packed for export it weighs 225 pounds, and the total volume is 7½ cubic feet.

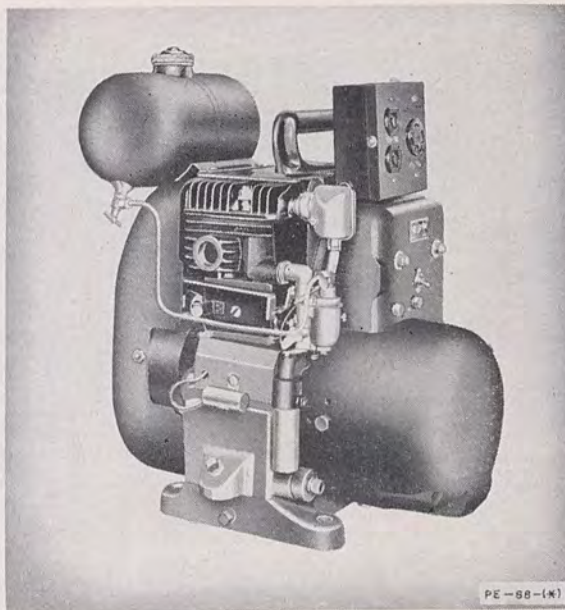


Figure 18. Power Unit PE-88

Status: Substitute/Std. *Stock No.:* 3H4588.
Reference: TM 11-997.

Power Unit PE-88-(*), represents Power Units PE-88 and -A. Power Unit PE-88-(*), is a self-contained, compact, portable, electric generating set consisting of a 1-cylinder, 4-cycle, L-head, air-cooled, manual-starting (rope) or electric-starting (on 12-volt battery) gasoline engine directly connected to an a-c self-exciting generator.

Installation requires a minimum space of 6 feet by 6 feet and at least a 24-inch space from the nearest wall. The installation base should be able to support at least 100 pounds.

Power Unit PE-88-(*), can be used at any installation where a power unit having the capabilities of Power Unit PE-88-(*), is required.

TECHNICAL CHARACTERISTICS

Engine

MAKE: D. W. Onan & Sons.
MODEL: 358-S.
RATED: 1 hp at 1,800 rpm.
CYLINDERS: 1.
Bore: $2\frac{1}{4}$ in.
Stroke: $2\frac{1}{4}$ in.
COMPRESSION RATIO: 5 to 1.
CYCLE: 4.
HEAD: L.
VALVES:
Intake—Silchrome.
Exhaust—Silchrome.
OPERATING SPEED: 1,800 rpm.
COOLING: Air.

FUEL USED: Gasoline.
FUEL TANK CAPACITY: 2 gal.
FUEL CONSUMPTION PER HOUR (RATED LOAD):
.15 gal.
LUBRICATION SYSTEM: Pump and splash.
CRANKCASE OIL CAPACITY: 1 qt.
AIR CLEANER: Oil-bath type.
STARTING: Manual (rope) and electric on 12-volt battery.
GOVERNOR: Mechanical, flyball.
IGNITION: Flywheel magneto.

Generator

MAKE: D. W. Onan & Sons.
TYPE OF GENERATOR: A-c, self-excited.
RATING: .35 kw (350 w), 110 v, 3.2 amp.
POWER FACTOR: 80 percent.
CYCLE: 60.
PHASE: 1.
WIRES: 2.
OPERATING SPEED: 1,800 rpm.
DRIVE: Direct.

COMPLETE UNIT

DIMENSIONS AND WEIGHTS

Power Unit PE-88 measures $16\frac{1}{2}$ inches long, $18\frac{3}{4}$ inches wide, $19\frac{1}{4}$ inches high, and it weighs 84.5 pounds unpacked. Packed for shipment it measures 25 inches long, 20 inches wide, 24 inches high, and it weighs 139 pounds.

Power Unit PE-88-A measures $17\frac{1}{8}$ inches long, $14\frac{3}{16}$ inches wide, $19\frac{1}{2}$ inches high, and it weighs 90 pounds unpacked. Packed for shipment it measures 26 inches long, 20 inches wide, 23 inches high, and it weighs 146 pounds.

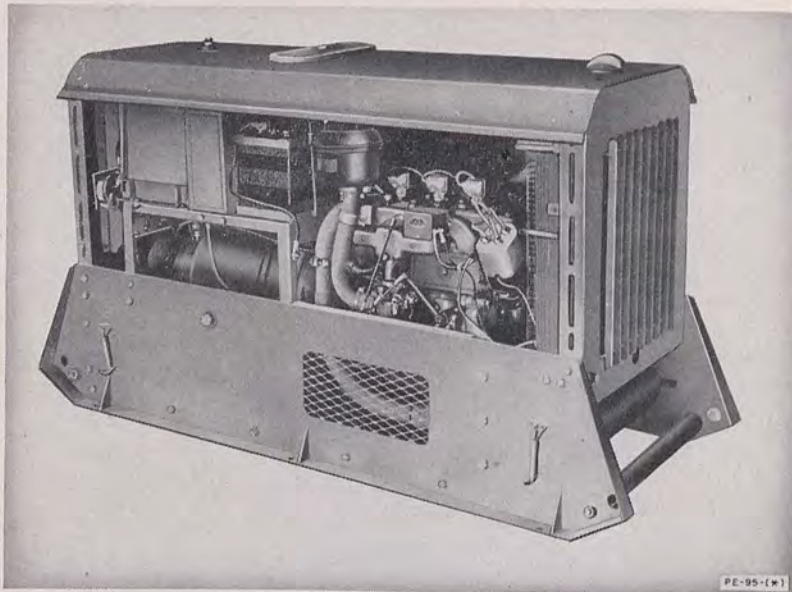


Figure 19. Power Unit PE-95-A, panels removed.

Status: Standard. *Stock No.:* 3H4595. *Reference:* TM 11-904.

Power Unit PE-95-(*), represents Power Units PE-95-A, -B, and -C. Power Unit PE-95-(*), is a complete, self-contained, transportable, electric generating set consisting of a 4-cylinder, 4-cycle, L-head, liquid-cooled, electric-starting gasoline engine directly connected to an a-c generator of the revolving-field, self-excited type.

A control panel is mounted at one end of the unit on which all necessary meters, terminals, and controls are mounted. The complete assembly is mounted on a welded-steel skid base and inclosed within a sheet metal housing. The housing is provided with doors and removable panels enabling the operator to reach any part of the equipment.

Power Unit PE-95-(*), normally is installed in Trailer K-52. Power Unit PE-95-(*), is used to furnish power for the operation of Radio Sets AN/TRC-5, AN/TRC-6, SCR-399, SCR-499, Radio Control Central AN/TRQ-1, Radio Direction Finder Central TC-8, and Radio Intercept Central TC-9.

TECHNICAL CHARACTERISTICS

Engine

MAKE: Ford Motor.
 MODEL: ONY.
 RATED: 20 hp at 1,200 rpm.
 CYLINDERS: 4.
 Bore: $3\frac{3}{16}$ in.
 Stroke: $3\frac{3}{4}$ in.

COMPRESSION RATIO: 6.1 to 1.

CYCLE: 4.

HEAD: L.

VALVES:

Intake—Alloy steel.

Exhaust—Chrome nickel alloy.

OPERATING SPEED: 1,200 rpm.

COOLING: Liquid.

COOLING SYSTEM CAPACITY: $4\frac{1}{4}$ gal.

FUEL USED: Gasoline.

FUEL TANK CAPACITY: $10\frac{1}{2}$ gal.

FUEL CONSUMPTION PER HOUR (RATED LOAD):
 1.2 gal.

LUBRICATION SYSTEM: Pressure.

CRANKCASE OIL CAPACITY: 4 qts.

AIR CLEANER: Oil-bath type; 2 pt.

STARTING: Electric (on 12-v battery).

GOVERNOR: Flyball.

IGNITION: Magneto.

Generator

MAKE: D. W. Onan & Sons.

TYPE OF GENERATOR: 5 kw (5,000 w), 115 v, 54.8 amp.

POWER FACTOR: 80 percent.

CYCLE: 60.

PHASE: 1.

WIRES: 2.

OPERATING SPEED, 1,200 rpm.

DRIVE: Direct.

NUMBER AND TYPE OF BEARINGS: 1 ball.

COMPLETE UNIT

DIMENSIONS AND WEIGHTS

Power Unit PE-95-(*), measures 73 inches long, 27 inches wide, 39 inches high, and it weighs 1,360 pounds unpacked. Packed for export it weighs 1,700 pounds, and the total volume is 84 cubic feet (2.1 ship tons).

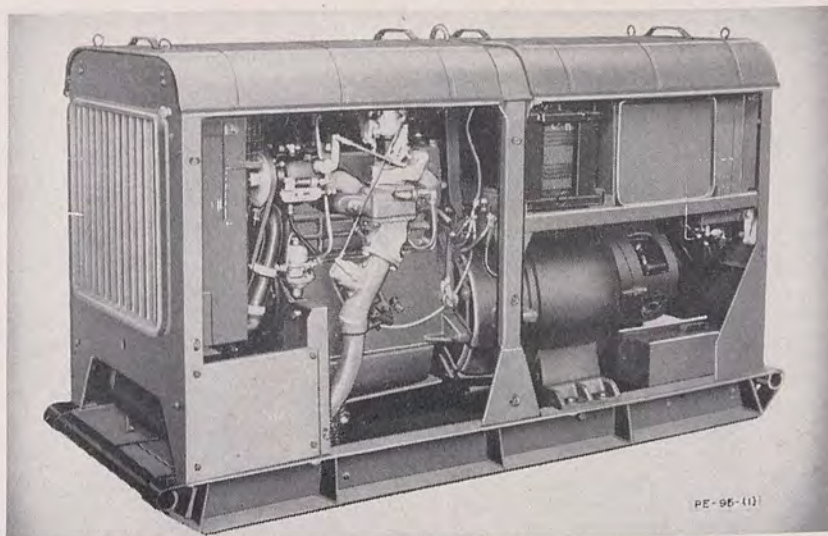


Figure 20. Power Unit PE-95-(1), panels removed.

Status: Standard. *Stock No.:* 3H4595G. *Reference:* TM 11-904.

Power Unit PE-95-(1) represents Power Units PE-95-G and -H. Power Unit PE-95-(1) is a complete, self-contained, transportable, electric generating set consisting of a 4-cylinder, 4-cycle, L-head, liquid-cooled, electric-starting gasoline engine directly connected to an a-c generator of the revolving-field, self-excited type.

A control panel is mounted at one end of the unit on which all necessary meters, terminals, and controls are mounted. The complete assembly is mounted on a welded-steel skid base and inclosed within a sheet metal housing. The housing is provided with doors and removable panels enabling the operator to reach any part of the equipment.

Power Unit PE-95-(1) normally is installed in Trailer K-52. Power Unit PE-95-(1) is used to furnish power for the operation of Radio Sets AN/TRC-5, AN/TRC-6, SCR-399, SCR-499, Radio Control Central AN/TRQ-1, Radio Direction Finder Central TC-8, and Radio Intercept Central TC-9.

TECHNICAL CHARACTERISTICS

Engine

MAKE: Willys Overland.

MODEL: JP 441.

RATED: 35 hp at 1,800 rpm.

CYLINDERS: 4.

Bore: $3\frac{1}{8}$ in.

Stroke: $4\frac{3}{8}$ in.

COMPRESSION RATIO: 6.5 to 1.

CYCLE: 4.

HEAD: L.

VALVES:

Intake—Alloy steel.

Exhaust—Alloy steel.

OPERATING SPEED: 1,800 rpm.

COOLING: Liquid.

COOLING SYSTEM CAPACITY: $15\frac{1}{2}$ qt.

FUEL USED: Gasoline.

FUEL TANK CAPACITY: $10\frac{1}{2}$ qt.

FUEL CONSUMPTION PER HOUR (RATED LOAD):
1.8 gal.

LUBRICATION SYSTEM: Pressure.

CRANKCASE OIL CAPACITY: 5 qt.

AIR CLEANER: Oil-bath type.

STARTING: Electric (12-v battery).

GOVERNOR: Flyball.

IGNITION: Battery and distributor.

Generator

MAKE: D. W. Onan & Sons.

MODEL: OS-10.

TYPE OF GENERATOR: A-c, revolving field, self-excited.

RATING: 10 kw (10,000 w), 120/240 v, 104/52 amp.

POWER FACTOR: 80 percent.

CYCLE: 60.

PHASE: 1.

WIRES: 3.

OPERATING SPEED: 1,800 rpm.

DRIVE: Direct.

BEARINGS: 1 ball.

COMPLETE UNIT

DIMENSIONS AND WEIGHTS

Power Unit PE-95-(1) measures 68 inches long, 28 inches wide, 39 inches high, and it weighs 1,556 pounds unpacked. Packed for export it weighs 1,800 pounds, and the total volume is 84 cubic feet (2.1 ship tons).

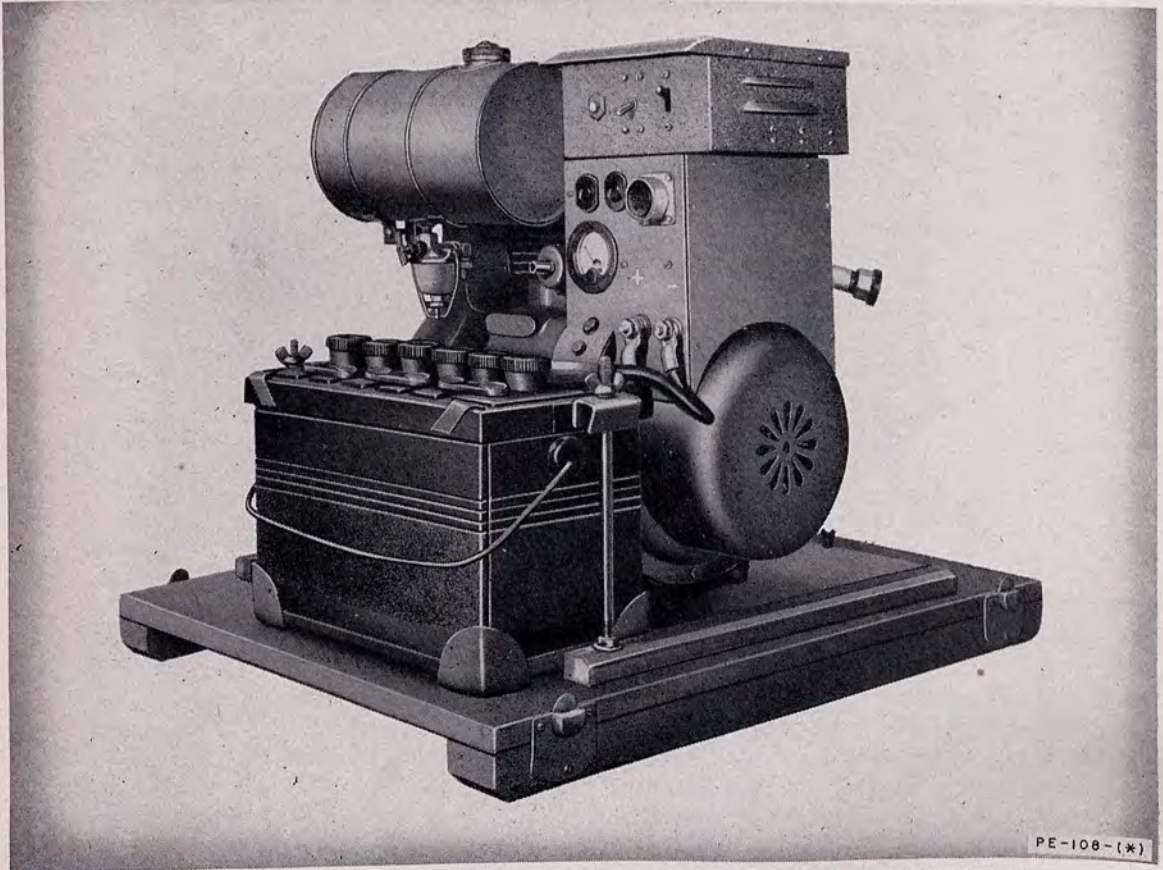


Figure 21. Power Unit PE-108-E, mounted on wooden base, showing starting battery.

Status: Limited/Std. *Stock No.:* 3H4600-108.
Reference: TM 11-927.

Power Unit PE-108-(*) represents Power Units PE-108-A, -B, -C, and -E.

Power Unit PE-108-(*) is a portable, self-contained, electric generating set consisting of a 1-cylinder, 4-cycle, L-head, air-cooled, gasoline engine directly connected to a dual-wound generator of the rotating armature type with integral self-excitation.

Power Unit PE-108-(*) may be started electrically by remote control or manually by means of starting rope (Power Unit PE-108-E may also be started by the push button on the control panel).

The complete unit, including 12-volt starting battery, is shock-mounted on a wooden base which forms the bottom of a permanent crate (Chest CH-131) in which the unit is transported.

Power Unit PE-108-(*) is used to furnish power for the operation of Radio Sets SCR-543-A, -B, and -C.

TECHNICAL CHARACTERISTICS

Engine

MAKE: Wisconsin.

MODEL:

(PE-108-A, -B, -C) : AA.

(PE-108-E) : AB.

RATED:

(PE-108-A, -B, -C) : 1.4 hp at 1,800 rpm.

(PE-108-E) : 2.3 hp at 1,800 rpm.

CYLINDERS: 1.

Bore: (PE-108-A, -B, -C) : 2.25 in.

(PE-108-E) : 2.5 in.

Stroke: 2.75 in.

COMPRESSION RATIO:

(PE-108-A, -B, -C) 4.4 to 1.

(PE-108-E) 4.6 to 1.

CYCLE: 4.

HEAD: L.

VALVES:

Intake—Alloy steel.

Exhaust—Silchrome.

OPERATING SPEED: 1,800 rpm.

COOLING: Air.

FUEL USED: Gasoline.

FUEL TANK CAPACITY: 1 gal.

FUEL CONSUMPTION PER HOUR (RATED LOAD):
 .25 gal.
 LUBRICATION SYSTEM: Pump and splash.
 CRANKCASE OIL CAPACITY: 1 qt.
 AIR CLEANER: Dry type.
 STARTING: Electric (on 12-v battery) or manual (rope).
 GOVERNOR: Flyball.
 IGNITION: Magneto.

Generator

MAKE: Pioneer Gen-E-Motor.
 MODEL: BA-6.
 TYPE OF GENERATOR: Dual-wound, a-c, d-c, rotating
 armature, self-excited.
 RATING:
 (d-c) : .3 kw (300 w), 12.5 v, 24 amp.

(a-c) : .6 kw (600 w) 110 v, 6.5 amp.
 POWER FACTOR: 80 percent.
 CYCLE: 60.
 PHASE: 1.
 WIRES: 2.
 OPERATING SPEED: 1,800 rpm.
 DRIVE: Direct.

COMPLETE UNIT
 DIMENSIONS AND WEIGHTS

Power Unit PE-108-(*) measures 30 inches long, 28 inches wide, 27 inches high, and it weighs 250 pounds unpacked. In carrying case it weighs 277 pounds, and the total volume is 13 cubic feet. Packed for export it weighs 429 pounds, and the total volume is 18.1 cubic feet.



Figure 22. Power Supply Unit PE-120-A.

Status: Standard. Stock No.: 3H4496-120.

Reference: TM 11-615.

Power Supply Unit PE-120-A is a vibrator-type power supply designed to furnish power for the operation of Radio Sets SCR-610-A and SCR-610-B.

This unit is designed to operate from a 6-, 12-, or 24-volt vehicular storage battery.

The case housing Power Supply Unit PE-120 is similar to Case CS-79 and has clips so that Radio Receiver and Transmitter BC-659 can be mounted on top of and secured to this unit.

TECHNICAL CHARACTERISTICS

INPUT:	RECEIVING:	TRANSMITTING:
6 v.	3.0 amp.	4.5 amp.
12 v.	2.0 amp.	2.75 amp.
24 v.	1.5 amp.	2.0 amp.
OUTPUT:		
90 v at 40 ma.		
150 v at 40 ma.		
6 v at 250 ma.		
1.5 v at 900 ma.		

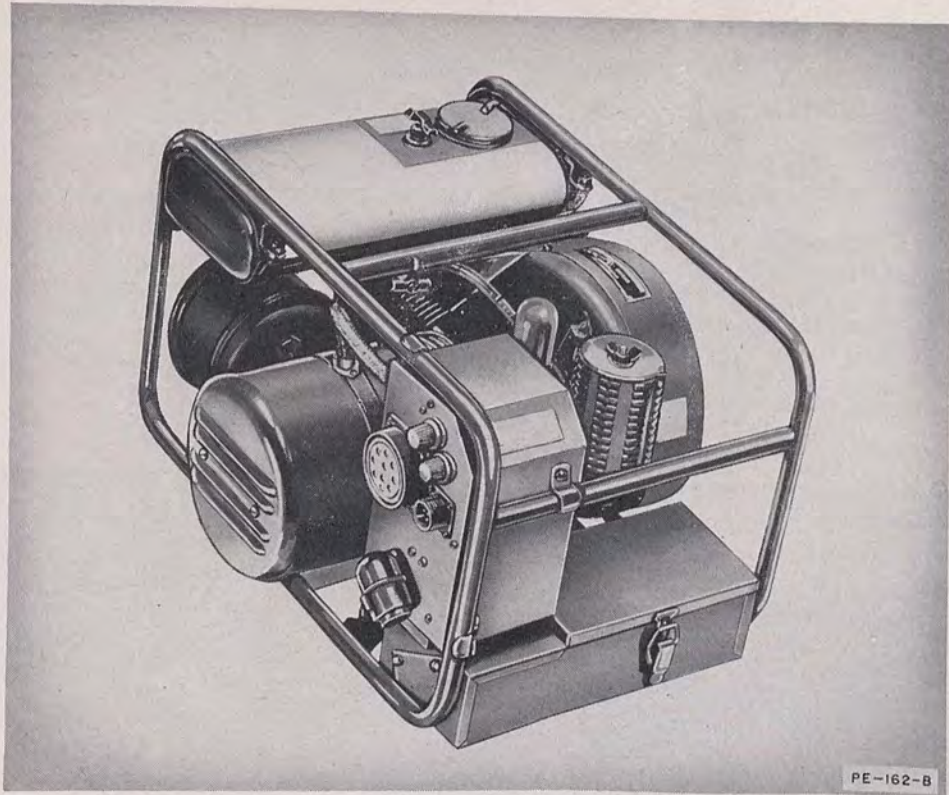


Figure 23. Power Unit PE-162-B.

Status: Standard. *Stock No.:* 3H4600-162B.
Reference: TM 11-971.

Power Unit PE-162-B is a compact, light-weight, portable, electric generating set consisting of a 1-cylinder, air-cooled, 2-cycle, manual-starting (rope) gasoline engine directly connected to a d-c, shunt-wound, self-excited, four-pole generator.

The complete power unit is contained in an open frame of tubular construction and is mounted on four rubber shock mountings.

Power Unit PE-162-B is used to furnish power for the operation of Radio Receiver and Transmitter BC-1306 in Radio Set SCR-694-C.

TECHNICAL CHARACTERISTICS

Engine

MAKE: Jacobsen.
MODEL: J-100 (Sig C Engine GE-12-D).
RATED: 1 hp at 3,000 rpm.
CYLINDERS: 1.
Bore: 2 in.
Stroke: 1½ in.
COMPRESSION RATIO: 5.5.
CYCLE: 2.
HEAD: Valveless.

OPERATING SPEED: 3,000 rpm.
COOLING: Air.
FUEL USED: Gasoline and oil.
FUEL TANK CAPACITY: ½ gal.
FUEL CONSUMPTION PER HOUR (RATED LOAD):
.15 gal.
LUBRICATION SYSTEM: Gas and oil mixed.
AIR CLEANER: Dry type.
STARTING: Manual (rope).
GOVERNOR: Electric solenoid type.
IGNITION: Flywheel magneto.

Generator

MAKE: Leland Electric.
MODEL: Sig C GN-50-A.
TYPE OF GENERATOR: D-c, shunt-wound, open, 4-pole (self-excited).
RATING: .15 kw (150 w), 500 v, .25 amp, 6.2 v, 3.5 amp.
OPERATING SPEED: 3,000 rpm.
DRIVE: Direct.
NUMBER AND TYPE OF BEARINGS: 2-ball.

COMPLETE UNIT

DIMENSIONS AND WEIGHTS

Power Unit PE-162-B measures 17½ inches long, 16½ inches wide, 10¾ inches high, and it weighs 57½ pounds unpacked. Packed for export it weighs 125 pounds, and the total volume is 5 cubic feet.



Figure 24. Battery Charger PE-163, in use.

Status: Standard. *Stock No.:* 7A368-163.
Reference: TM 11-2549.

Battery Charger PE-163 consists of a self-contained, portable, charging unit with carrying case and Battery Connecting Kit MC-695. This charging unit is designed to convert 115-volt, 60-cycle ac into dc for charging at controllable rates Batteries BB-51, BB-52, and BB-205/U; it may be used also to check their condition of charge.

The charging unit consists essentially of a power transformer, a copper-sulphide contact-type rectifier, a vacuum-tube rectifier, current control rheostats, an ammeter, test circuits, input cord, and the necessary switches and jacks.

Battery Connecting Kit MC-695 (a component of Battery Charger PE-163) is used with the charging unit so that the batteries during charge may be located at sufficient distance from the charger to prevent acid fumes and electrolyte from damaging the charger.

One to three sets of three Batteries BB-52 (36-volt B-battery) and one to three Batteries BB-51 (6-volt A-battery) or BB-205/U (2-volt A-battery) may be charged simultaneously.

Battery Charger PE-163 is a component of Meteorological Station Set AN/TMQ-4, General, and AN/TMQ-4, Tropical, and Radio Set SCR-658.

TECHNICAL CHARACTERISTICS

POWER INPUT: 115 v, 60 cy ac, 28 w minimum.

POWER OUTPUT: 2 v, 6 v, 108 v, dc, charging; 175 to 525 ma on 6-v load; 24 to 72 ma on 108-v load.

TYPE: Copper-sulphide contact type rectifier (converts low-voltage ac to dc for charging Batteries BB-51 and BB-205/U); double-diode vacuum-tube, full-wave rectifier (converts high-voltage ac into dc for charging Batteries BB-52).

CORDING: Input cord (6 ft lg) and plug, attached to unit.

NUMBER AND TYPE OF TUBES: 2 electron tubes 6X5GT (1 required, 1 running spare).

DIMENSIONS AND WEIGHTS

Battery Charger PE-163, in carrying case measures approximately 12 inches long, 10 $\frac{3}{4}$ inches wide, 5 $\frac{1}{2}$ inches high, and it weighs approximately 16 $\frac{1}{4}$ pounds.

Battery Charger PE-163 with Battery Connecting Kit MC-695 and spare parts, in two individual cartons, packed for shipment in a wooden crate measures approximately 24 inches long, 18 inches wide, 12 inches high, weighs 40 pounds, and the total volume is approximately 3 cubic feet.

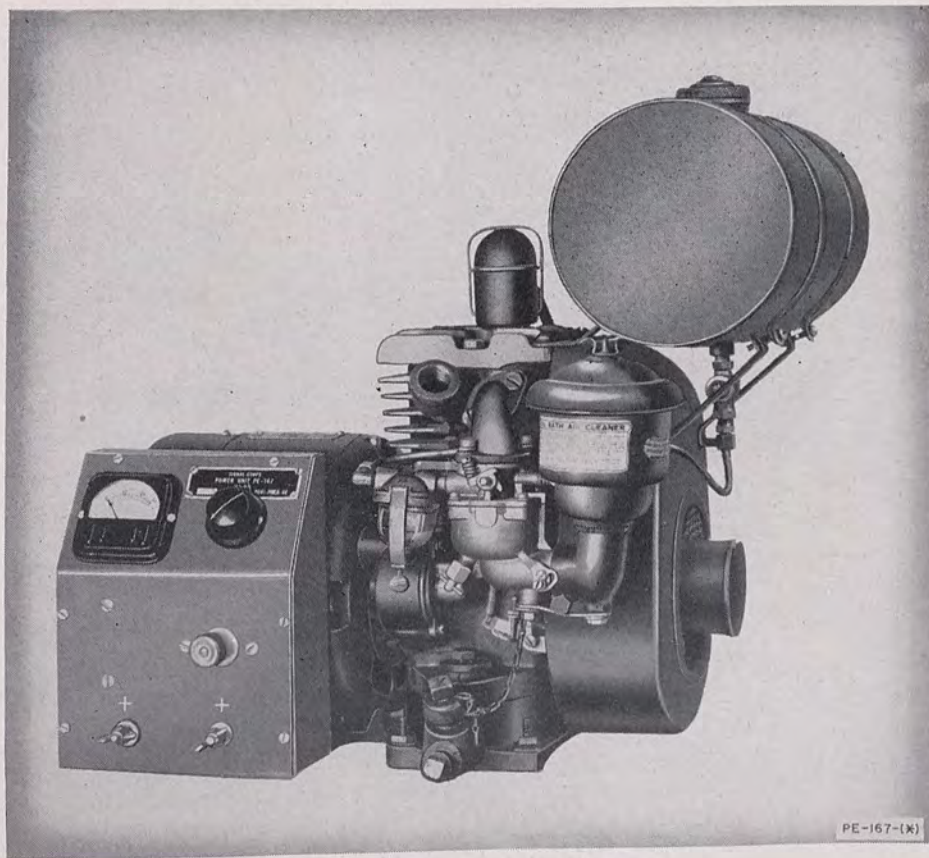


Figure 25. Power Unit PE-167.

Status: Limited/Std. *Stock No.:* 3H4600-167.
Reference: TM 11-946.

Power Unit PE-167-(*), represents Power Units PE-167 and -A. Power Unit PE-167-(*), is a compact, lightweight, self-contained, portable, electric generating set consisting of a single-cylinder, 4-cycle, L-head, air-cooled, manual-starting (rope) gasoline engine directly connected to a d-c generator.

This power unit is used for battery charging.

TECHNICAL CHARACTERISTICS

Engine

MAKE: Briggs & Stratton.
MODEL: NP.
RATED: 1.4 hp at 2,350 rpm.
CYLINDERS: 1.
Bore: 2 in.
Stroke: 2 in.
COMPRESSION RATIO: 5 to 1.
CYCLE: 4.
HEAD: L.
OPERATING SPEED: 2,350 rpm.
COOLING: Air.

FUEL USED: Gasoline.
FUEL TANK CAPACITY: 1 gal.
FUEL CONSUMPTION PER HOUR (RATED LOAD):
.06 gal approx.
LUBRICATION SYSTEM: Pump and splash.
CRANKCASE OIL CAPACITY: 1 pt.
AIR CLEANER: Oil-bath type.
STARTING: Manual (rope) or electric (battery).
GOVERNOR: Flyball.
IGNITION: Magneto.

Generator

MAKE: Atlas Aircraft.
MODEL: 3DP2.
TYPE OF GENERATOR: D-c.
RATING: .35/.175 kw (350/175 w), 12/6 v, 28/24 amp.
WIRES: 2.
OPERATING SPEED: 2,350 rpm.
DRIVE: Direct connected.

COMPLETE UNIT

DIMENSIONS AND WEIGHTS

Power Unit PE-167-(*), measures approximately 18 inches long, 12½ inches wide, 17 inches high, and it weighs 79¼ pounds unpacked. Packed for export it weighs 108 pounds, and the total volume is 3.6 cubic feet.

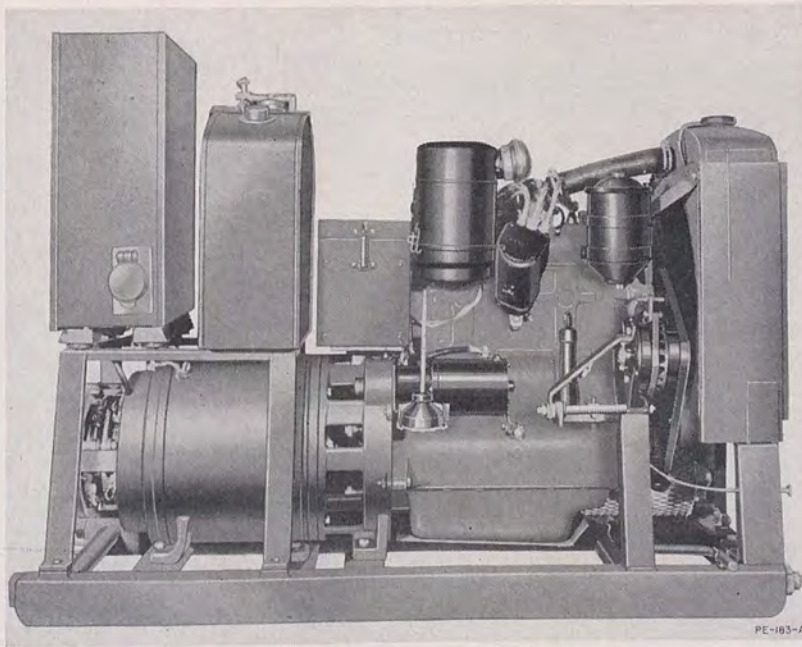


Figure 26. Power Unit PE-183-A.

Status: Substitute/Std. *Stock No.:* 3H4600-183. *Reference:* TM 11-937.

Power Unit PE-183-A is a self-contained, air transportable, electric generating set consisting of a 4-cylinder, 4-cycle, L-head, liquid-cooled, electric-starting gasoline engine directly connected to an a-c generator, of the revolving-field type with integral excitation, and a control panel. The entire assembly is mounted on a welded-steel skid base.

Twenty feet of flexible fuel line is provided, together with a 1/2-inch, round, plated steel pipe of sufficient length to reach the bottom of a 50-gallon drum.

Power Unit PE-183-A is used to furnish power for the operation of Radio Set SCR-682.

TECHNICAL CHARACTERISTICS

Engine

MAKE: Willys Overland.

MODEL: 442.

RATED: 35 hp at 1,800 rpm.

CYLINDERS: 4

Bore: 3 1/8 in.

Stroke: 4 3/8 in.

COMPRESSION RATIO: 6.5 to 1.

CYCLE: 4.

HEAD: L.

VALVES:

Intake—Alloy steel.

Exhaust—Alloy steel silchrome.

OPERATING SPEED: 1,800 rpm.

COOLING: Liquid.

COOLING SYSTEM CAPACITY: 20 qt.

FUEL USED: Gasoline.

FUEL TANK CAPACITY: 10.5 gal.

FUEL CONSUMPTION PER HOUR (RATED LOAD):
1.4 gal.

LUBRICATION SYSTEM: Pressure.

CRANKCASE OIL CAPACITY: 5 qt.

AIR CLEANER: Oil-bath type.

STARTING: Electric, 6 v.

GOVERNOR: Flyball (King Seely No. 26710-326).

IGNITION: Magneto.

Generator

MAKE: Hobart.

TYPE OF GENERATOR: A-c, revolving field, exciter built-in.

RATING: 5 kw (5,000 w), 120 v, 52 amp.

POWER FACTOR: 80 percent.

CYCLE: 60.

PHASE: 1.

WIRES: 2.

OPERATING SPEED: 1,800 rpm.

DRIVE: Direct.

TYPE OF BEARINGS: Ball.

COMPLETE UNIT

DIMENSIONS AND WEIGHTS

Power Unit PE-183-A measures 59 inches long, 24 inches wide, 40 1/2 inches high, and it weighs 1,035 pounds unpacked.

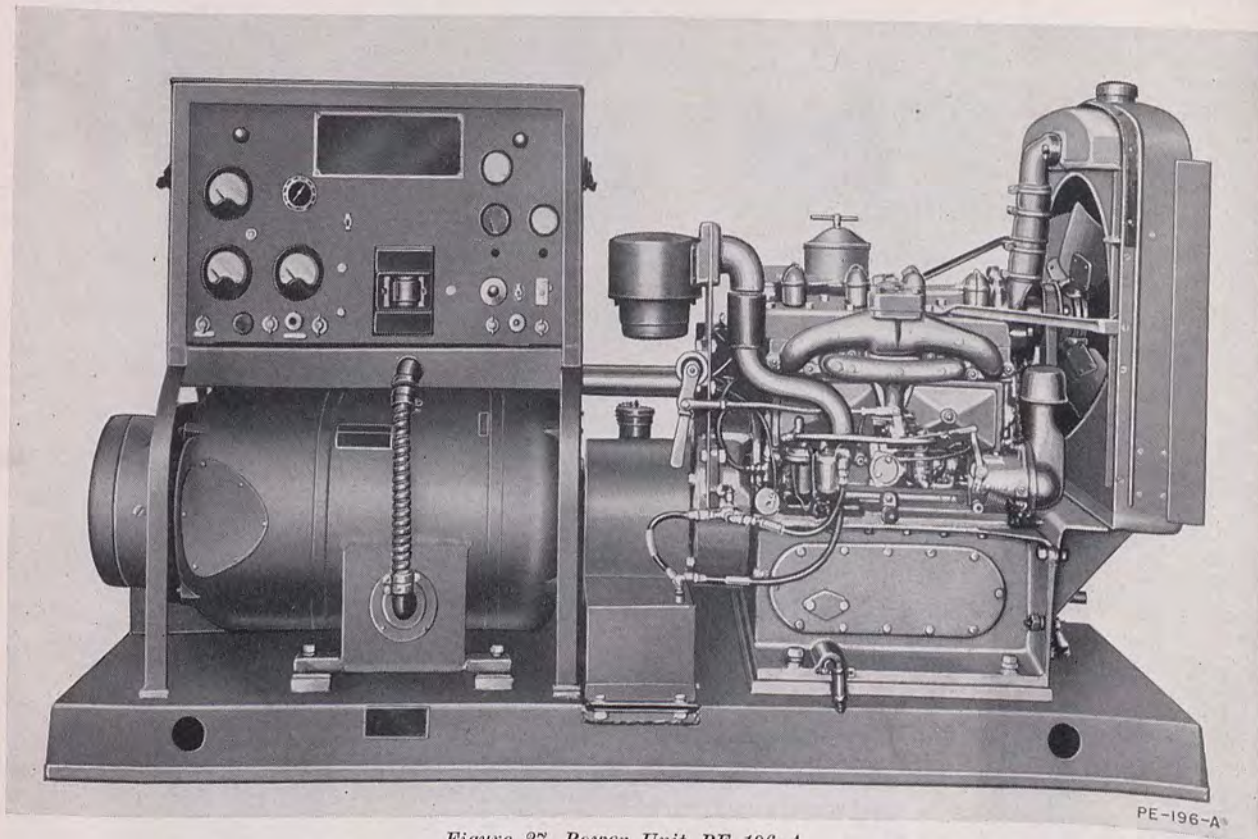


Figure 27. Power Unit PE-196-A.

Status: Limited/Std. *Stock No.:* 3H4600-196A.

Power Unit PE-196-A is a transportable, electric generating set consisting of a 4-cylinder, 4-cycle, L-head, liquid-cooled, electric-starting gasoline engine directly connected to an a-c generator of the revolving-field type.

Power Unit PE-196-A is used to furnish power for the operation of Radio Set SCR-682.

TECHNICAL CHARACTERISTICS

Engine

MAKE: Waukesha.
 MODEL: FC.
 RATED: 14 hp at 1,200 rpm.
 CYLINDERS: 4.
 Bore: 3.25 in.
 Stroke: 4 in.
 CYCLE: 4.
 HEAD: L.
 VALVES:
 Intake—Alloy steel.
 Exhaust—Alloy steel.
 OPERATING SPEED: 1,200 rpm.
 COOLING: Liquid.
 COOLING SYSTEM CAPACITY: 20 qt.
 FUEL USED: Gasoline.

FUEL TANK CAPACITY: 10 gal.
 FUEL CONSUMPTION PER HOUR (RATED LOAD): .8 gal.
 LUBRICATION SYSTEM: Pressure.
 CRANKCASE OIL CAPACITY: .4 qt.
 AIR CLEANER: Oil-bath type.
 STARTING: Electric, 12 v.
 GOVERNOR: Flyball mechanical.
 IGNITION: American Bosch, MJC4C magneto.

Generator

MAKE: American custom built.
 MODEL: Frame-1326.
 TYPE OF GENERATOR: A-c, revolving-field exciter, direct connected.
 RATING: 5 kw (5,000 w), 120 v, 52.5 amp.
 POWER FACTOR: 80 percent.
 CYCLE: 60.
 PHASE: 1.
 WIRES: 2.
 OPERATING SPEED: 1,200 rpm.
 DRIVE: Direct.
 TYPE OF BEARINGS: Roller.

COMPLETE UNIT

DIMENSIONS AND WEIGHTS

Power Unit PE-196-A measures 72 inches long, 30 inches wide, 41½ inches high, and it weighs 1,800 pounds unpacked.

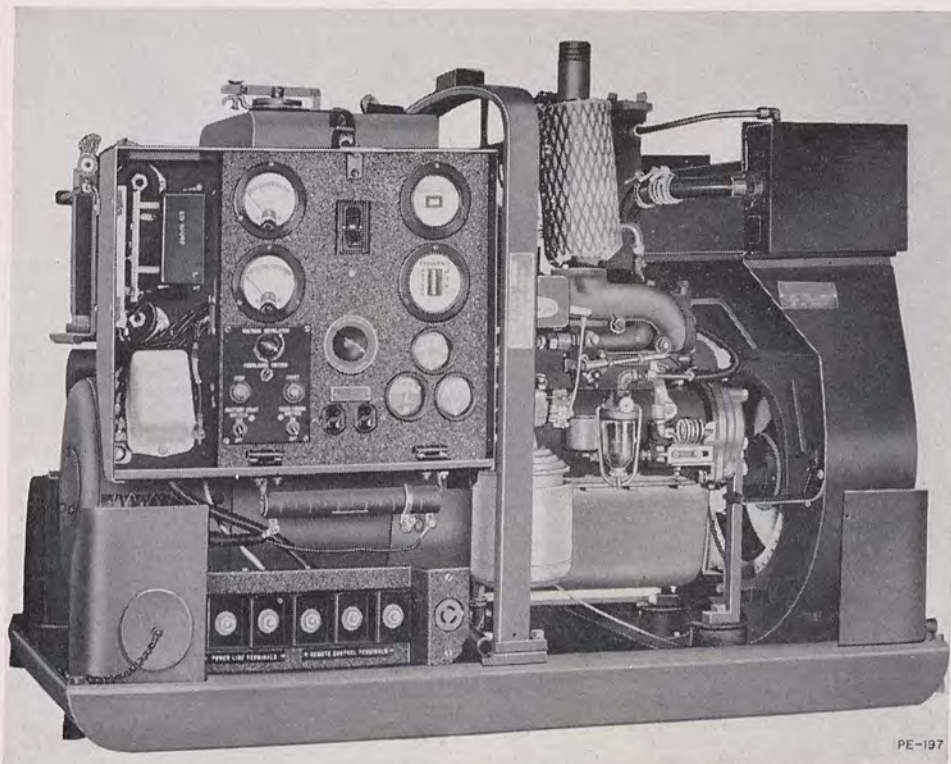


Figure 28. Power Unit PE-197, with metal housing removed.

Status: Standard. *Stock No.:* 3H4600-197.
Reference: TM 11-940.

Power Unit PE-197 is a self-contained, transportable, electric generating set consisting of a 4-cylinder, 4-cycle, L-head, liquid-cooled, electric-starting gasoline engine directly connected to an a-c generator of the revolving-field type. The entire assembly is mounted on a welded-steel skid base and is inclosed in a sheet metal housing.

Power Unit PE-197 is used to furnish power for the operation of Radar Monitoring Set AN/CPN-14.

TECHNICAL CHARACTERISTICS

Engine

MAKE: Hercules.
MODEL: ZXB.
RATED: 13.5 hp at 1,800 rpm.
CYLINDERS: 4.
 Bore: $2\frac{5}{8}$ in.
 Stroke: 3 in.
COMPRESSION RATIO: 6.3 to 1.
CYCLE: 4.
HEAD: L.
VALVES:
 Intake—Chrome nickel steel.
 Exhaust—Austenite.
OPERATING SPEED: 1,800 rpm.

COOLING: Liquid.
FUEL USED: Gasoline.
FUEL TANK CAPACITY: 5 gal.
FUEL CONSUMPTION PER HOUR (RATED LOAD):
 1.2 gal.
LUBRICATION SYSTEM: Pressure.
CRANKCASE OIL CAPACITY: 4 qt.
AIR CLEANER: Oil-bath type.
STARTING: Electric, 6 v.
GOVERNOR: Flyball.
IGNITION: Battery, Autolite coil.

Generator

MAKE: Hobart.
MODEL: 5-J.
TYPE OF GENERATOR: A-c, revolving-field.
RATING: 5 kw (5,000 w), 120 v, 52.5 amp.
POWER FACTOR: 80 percent.
CYCLE: 60.
PHASE: 1.
WIRES: 2.
OPERATING SPEED: 1,800 rpm.
DRIVE: Direct.
NUMBER AND TYPE OF BEARINGS: Single ball.

COMPLETE UNIT

DIMENSIONS AND WEIGHTS

Power Unit PE-197 measures 44 inches long, 22 inches wide, $31\frac{1}{4}$ inches high, and it weighs 790 pounds unpacked. Packed for export it weighs 1,261 pounds, and the total volume is 56 cubic feet (1.4 ship tons).

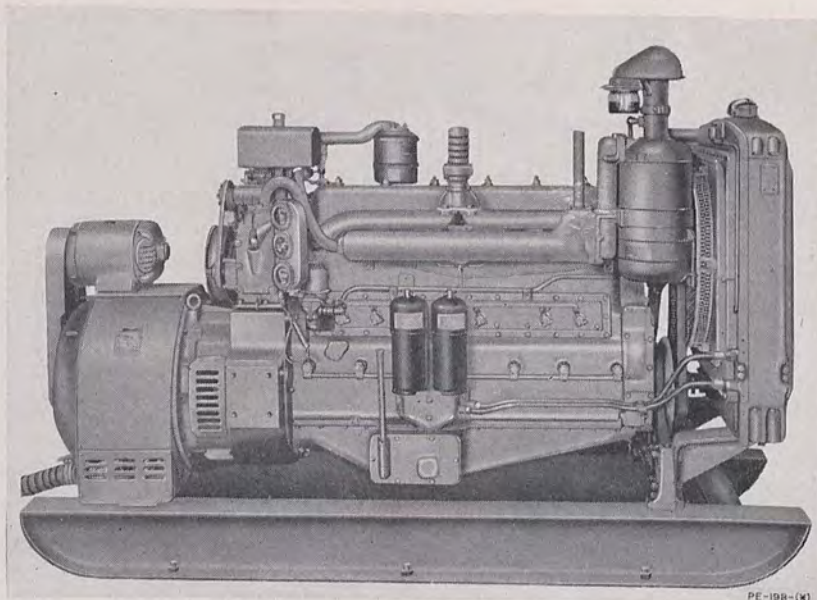


Figure 29. Power Unit PE-198-B.

Status: Limited/Std. *Stock No.:* 3H4600-198B (PE-198-B), 3H4600-198C (PE-198-C).
Reference: TM 11-936 (PE-198-C).

Power Unit PE-198-(*), represents Power Units PE-198-B and -C. Power Unit PE-198-(*), is a transportable, electric generating set consisting of a 6-cylinder, 4-cycle, valve-in-head, liquid-cooled, Diesel engine directly connected to an a-c generator of the revolving-field type. The unit is provided with a small gasoline cranking engine and a 24-volt electric starting system. Either one or both may be used in starting the equipment.

Power Unit PE-198-(*), can be used at any installation where a power unit of the capabilities of Power Unit PE-198-(*), is required.

TECHNICAL CHARACTERISTICS

Engine

MAKE: Caterpillar tractor.
 MODEL: 4600.
 RATED: 53 hp at 1,200 rpm.
 CYLINDERS: 6.
 Bore: 4.25 in.
 Stroke: 5.5 in.
 COMPRESSION RATIO: 17 to 1.
 CYCLE: 4.
 HEAD: Valve-in-head.
 VALVES:
 Intake—Alloy steel.
 Exhaust—Silchrome.

OPERATING SPEED: 1,200 rpm.
 COOLING: Liquid.
 COOLING SYSTEM CAPACITY: 56 qt.
 FUEL USED: Diesel fuel oil.
 FUEL TANK CAPACITY: Separate tank.
 FUEL CONSUMPTION PER HOUR (RATED LOAD):
 3 gal.
 LUBRICATION SYSTEM: Pressure.
 CRANKCASE OIL CAPACITY: 22 qt.
 AIR CLEANER: Oil-bath type.
 STARTING: Gasoline cranking engine and 24-v electric starter.
 GOVERNOR: Flyball.
 IGNITION: Compression.

Generator

MAKE: Louis Allis.
 TYPE OF GENERATOR: A-c, revolving-field.
 RATING (PE-198-B): 20 kw, 20,000-w amp; 115/230 v, 112/56 amp; (PE-198-C): 20 kw, 20,000-w amp; 110/220 v, 202/101 amp.
 POWER FACTOR: 80 percent.
 CYCLE: 60.
 PHASE:
 (PE-198-B): 3.
 (PE-198-C): 1.
 WIRES: 9.
 OPERATING SPEED: 1,200 rpm.
 DRIVE: Direct.
 NUMBER AND TYPE OF BEARINGS: 2 ball.

COMPLETE UNIT

DIMENSIONS AND WEIGHTS

Power Unit PE-198-(*), measures 99½ inches long, 32 inches wide, 49 inches high, and it weighs 4,520 pounds unpacked.

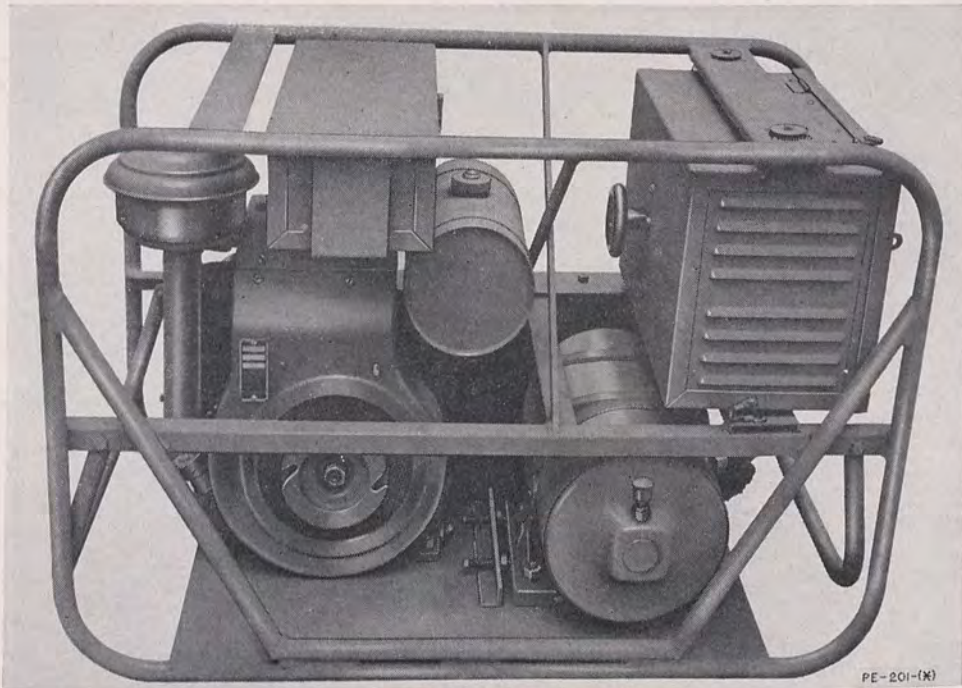


Figure 30. Power Unit PE-201-A.

Status: Limited/Std. *Stock No.:* 3H4600-201.
References: TM 11-914 (PE-201-A), TM 11-914C (PE-201-C).

Power Unit PE-201-(*) represents Power Units PE-201-A, -B, and -C. Power Unit PE-201-(*) is a portable, self-contained, electric generating set consisting of a 1-cylinder, 4-cycle, L-head, air-cooled, manual-starting (rope) gasoline engine with an a-c, d-c generator of the revolving-field, dual-winding, belt-driven type.

Power Unit PE-201(*) is used to furnish power for the operation of Telephone Terminal Set TC-21, Telephone Terminal CF-1, and Telegraph Terminal CF-2.

TECHNICAL CHARACTERISTICS

Engine

MAKE: Briggs & Stratton.
MODEL: B.
RATED: 3.3 hp at 2,400 rpm.
CYLINDERS: 1.
Bore: 2 $\frac{5}{8}$ in.
Stroke: 2 $\frac{5}{8}$ in.
COMPRESSION RATIO: 4.5 to 1.
CYCLE: 4.
HEAD: L.
VALVES:
Intake—Alloy steel.
Exhaust—Silchrome steel.

OPERATING SPEED: 2,400 rpm.
COOLING: Air.
FUEL USED: Gasoline.
FUEL TANK CAPACITY: 1 gal.
FUEL CONSUMPTION PER HOUR (RATE LOAD):
.5 gal.
LUBRICATION SYSTEM: Pump and splash.
CRANKCASE OIL CAPACITY: 3 pt.
AIR CLEANER: Oil-bath type.
STARTING: Manual (rope).
GOVERNOR: Flyball.
IGNITION: Flywheel magneto.

Generator

MAKE: Leland Electric.
MODEL: A-50.
TYPE OF GENERATOR: A-c, d-c, revolving-field.
RATING:
(d-c): .3 kw (300 w), 14.5 v, 20 amp.
(a-c): 1 kw (1,000 w), 115 v, 8.3 amp.
POWER FACTOR: 100 percent.
CYCLE: 60.
PHASE: 1.
WIRES: 2.
OPERATING SPEED: 1,800 rpm.
DRIVE: V-belt.
NUMBER AND TYPE OF BEARINGS: 2 ball.

COMPLETE UNIT

DIMENSIONS AND WEIGHTS

Power Unit PE-201-(*) measures 36 inches long, 19 inches wide, 24 inches high, and weighs approximately 340 pounds unpacked. Packed for export it weighs 450 pounds, and the total volume is 17 cubic feet.

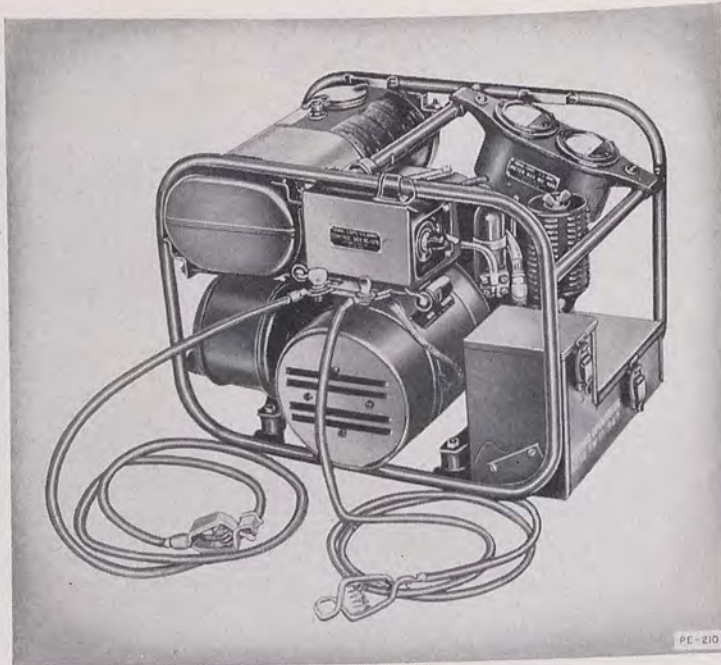


Figure 31. Power Unit PE-210, set up for use.

Status: Substitute/Std. *Stock No.:* 3H4600-210. *Reference:* TM 11-947.

Power Unit PE-210 is a compact, lightweight, portable, electric generating set consisting of a 1-cylinder, 2-cycle, air-cooled, manual-starting (rope) or battery-starting gasoline engine directly connected to a d-c generator of the shunt-wound, compensated, 4-pole type.

Two Cords CD-1334 are furnished with Power Unit PE-210. Each cord is a single conductor, terminated in a spade lug at one end and an alligator clip at the other end.

A canvas cover, equipped with carrying handle, is furnished for protecting the power unit from dampness and dust when the unit is not in use and during transportation.

Power Unit PE-210 is used to furnish power for the charging of storage batteries. It may also be incorporated as an aid in starting larger units in subzero temperatures.

TECHNICAL CHARACTERISTICS

Engine

MAKE: Jacobsen.
 MODEL: Sig C GE-12-B.
 RATED: 1.25 hp at 3,600 rpm.
 CYLINDERS: 1.
 Bore: 2. in.
 Stroke: 1½ in.

COMPRESSION RATIO: 5.5 to 1.
 CYCLE: 2.
 HEAD: Valveless.
 OPERATING SPEED: 3,600 rpm.
 COOLING: Air.
 FUEL USED: Gasoline.
 FUEL TANK CAPACITY: 1 gal.
 FUEL CONSUMPTION PER HOUR (RATED LOAD):
 .2 gal.
 LUBRICATION SYSTEM: Gasoline and oil mixed.
 AIR CLEANER: Dry type.
 STARTING: Manual (rope) or electric, on storage battery.
 GOVERNOR: Electric.
 IGNITION: Flywheel magneto.

Generator

MAKE: Electric Motors & Specialty.
 MODEL: Sig C GN-52-B.
 TYPE OF GENERATOR: D-c, shunt-wound, compensated, 4-pole.
 RATING: .450 kw (450 w), 15 v, 30 amp.
 WIRES: 2.
 OPERATING SPEED: 3,600 rpm.
 DRIVE: Direct.
 NUMBER AND TYPE OF BEARINGS: 1 ball.

COMPLETE UNIT

DIMENSIONS AND WEIGHTS

Power Unit PE-210 measures 17¾ inches long, 16¼ inches wide, 13¾ inches high and weighs 65 pounds unpacked. Packed for export it weighs 122 pounds, and the total volume is 5 cubic feet.

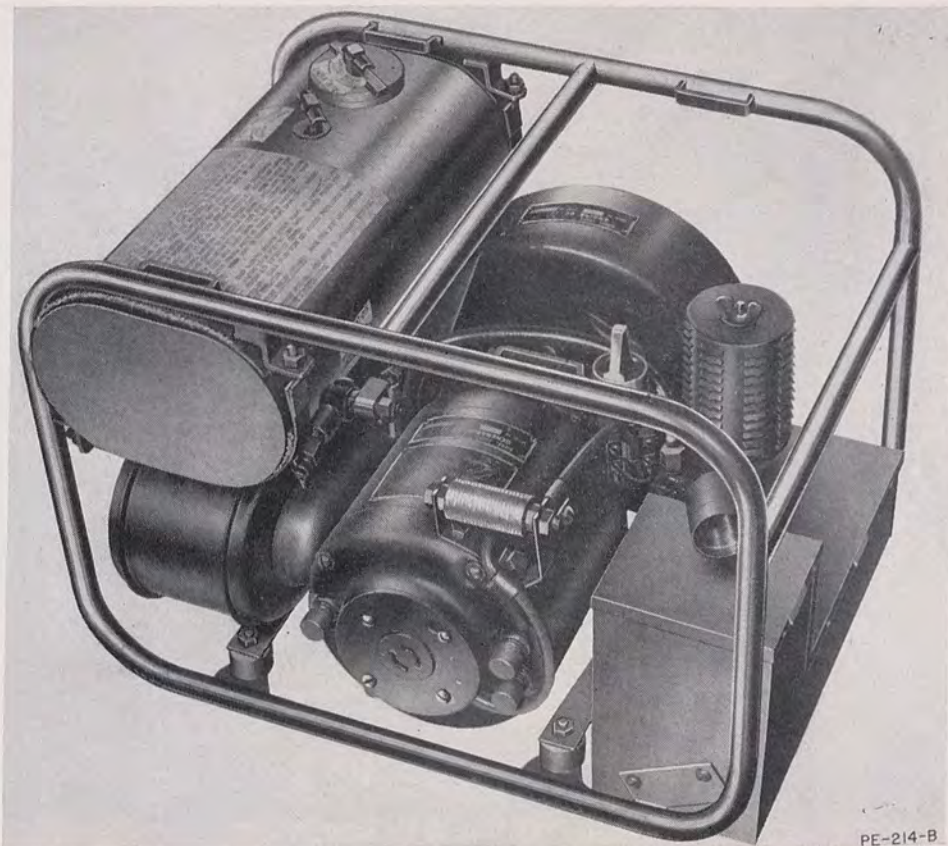


Figure 32. Power Unit PE-214-B.

Status: Substitute/Std. *Stock No.:* 3H4600-214. *Reference:* TM 11-945.

Power Unit PE-214-B is a compact, lightweight, portable, electric generating set consisting of a 1-cylinder, 2-cycle, air-cooled manual-starting (rope) gasoline engine directly connected to an a-c generator of the permanent magnet, self-exciting type.

Power Unit PE-214-B is used to furnish power for the operation of Public Address Set AN/TIQ-3, Repeater Set TC-23, and Repeater Set TC-37.

TECHNICAL CHARACTERISTICS

Engine

MAKE: Jacobsen.
 MODEL: J-100 (modified Sig C Engine GE-12B).
 RATED: 1.25 hp at 3,600 rpm.
 CYLINDERS: 1.
 Bore: 2 in.
 Stroke: 1½ in.
 CYCLES: 2.
 HEAD: Valveless.
 OPERATING SPEED: 3,600 rpm.
 COOLING: Air.
 FUEL USED: Gasoline and oil, mixed.

FUEL TANK CAPACITY: 1 gal.
 FUEL CONSUMPTION PER HOUR (RATED LOAD): .15 gal.
 LUBRICATION SYSTEM: Oil mixed with gasoline.
 AIR CLEANER: Dry type.
 STARTING: Manual (rope).
 GOVERNOR: Solenoid type, electric.
 IGNITION: Flywheel magneto.

Generator

MAKE: Electric Motor & Specialty.
 MODEL: A1 (Sig C Gn-51-B).
 TYPE OF GENERATOR: A-c, permanent magnet.
 RATING: .3 kw (300 w), 120/240 v, 2.6/1.3 amp.
 POWER FACTOR: 100 percent.
 CYCLE: 60.
 PHASE: Single.
 WIRES: 2.
 DRIVE: Direct.
 NUMBER AND TYPE OF BEARINGS: 1 ball.

COMPLETE UNIT

DIMENSIONS AND WEIGHTS

Power Unit PE-214-B measures 17¾ inches long 14⅞ inches wide, 12⅜ inches high, and it weighs 54 pounds unpacked. Packed for export this unit weighs 140 pounds and the total volume is 7.2 cubic feet.

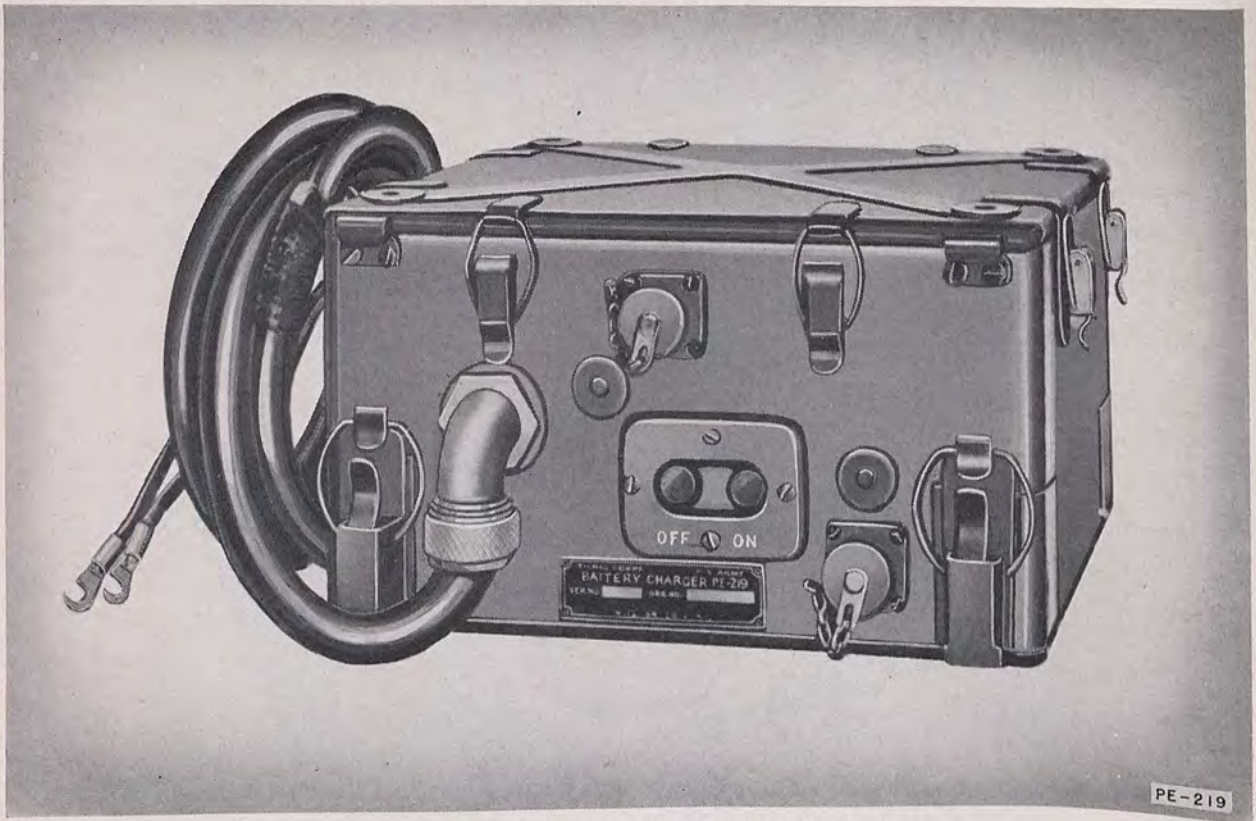


Figure 33. Battery Charger PE-219.

Status: Standard. *Stock No.:* 3H230-219.

Reference: TM 11-982.

Battery Charger PE-219 is a self-contained, compact, portable charging unit of the vibrator type, designed to charge three Batteries BB-54-A in series from a 6-, 12-, or 24-volt d-c source. The unit is housed in a waterproof metal case and is provided with water-sealed cables and connectors.

The charger uses one plug-in vibrator which also serves as a rectifier. No tubes are used in the charger, and a circuit-breaker is used instead of fuses. There is no necessity for adjustment on any part of this unit.

Battery Charger PE-219, designed for vehicular mounting, will charge a 6-volt radio storage battery whether the battery is disconnected or connected to the radio set and will operate whether the radio set is on or off.

Although primarily intended as a component of Radio Set SCR-619, Battery Charger PE-219 may be used with other sets which use three Batteries BB-54-A in series when equipped with matching connectors.

TECHNICAL CHARACTERISTICS

MINIMUM OPERATING VOLTAGE: 5.7 v.
 MAXIMUM OPERATING VOLTAGE: 30 v.
 TYPE OF CURRENT: Dc.
 VIBRATOR FREQUENCY: 120 cy.
 INPUT VOLTAGE: 6, 12, or 24.
 OUTPUT VOLTAGE: 7.
 OUTPUT: 3 to 10 amp.

Note. Output will vary, depending on state of charge in battery being charged, condition of vehicular battery, and ambient temperature.

CORDING: The vehicular cable supplied with the battery charger is attached with a permanent waterproof connection. This is the only connection to the charging battery source. The unit is provided with two female connectors for attaching Cords CD-1294.

DIMENSIONS AND WEIGHTS

Battery Charger PE-219 measures $6\frac{11}{32}$ inches high, $12\frac{1}{8}$ inches wide, $12\frac{5}{16}$ inches deep, and it weighs 35 pounds unpacked. Packed for shipment it weighs approximately 51 pounds.



Figure 34. Vibrator Power Supply PE-237.

Status: Standard. *Stock No.:* 3H6800-237.

Reference: See note below.

Vibrator Power Supply PE-237 is a compact, self-contained, vehicular unit designed to convert 6-, 12-, or 24-volt d-c input into necessary operating voltages for radio receiver and transmitter units.

The unit incorporates two independent supply system: a heavy duty unit for supplying power to the receiver and transmitter for normal two-way communication, and a small unit for supplying only receiver voltage during long periods of listening. A switch is provided inside the cover which allows the operator to change all connections simultaneously to correspond with the voltage of the vehicular battery. A circuit breaker in the battery circuit protects the unit in case of accidental short circuit. The unit is housed in a water-tight metal case.

Vibrator Power Supply PE-237 is used to furnish power for the operation of Receiver-Transmitter RT-77/GRC-9 in Radio Set AN/GRC-9 and Radio Receiver and Transmitter BC-1306 in Radio Set SCR-694-C.

Note. TM 11-230C, Radio Set SCR-694-C, TM 11-Radio Set AN/GRC-9.

TECHNICAL CHARACTERISTICS

POWER INPUT:

- 6 v dc, 36 amp.
- 12 v dc, 17 amp.
- 24 v dc, 9.5 amp.

HEAVY DUTY SECTION OUTPUT:

- Transmitter plate: 525 v at 95 ma.
- Receiver plate: 105 v at 42 ma.
- Transmitter filament: 6.5 v at 2 amp.
- Keying relay: 6.0 v at 500 ma.
- Receiver filament: 1.35 v at 450 ma.

LIGHT DUTY SECTION OUTPUT:

- Receiver filament: 1.35 v at 450 ma.
- Receiver plate: 100 v at 17 ma.

NUMBER AND TYPE OF TUBES:

- 2 tubes 1005 (1 required, 1 spare).
- 2 tubes 1006 (1 required, 1 spare).

TYPE OF INSTALLATION: Vehicular.

DIMENSIONS AND WEIGHTS

Vibrator Power Supply PE-237 measures 18 inches long, 10 inches wide, 10 inches deep, and it weighs pounds unpacked.

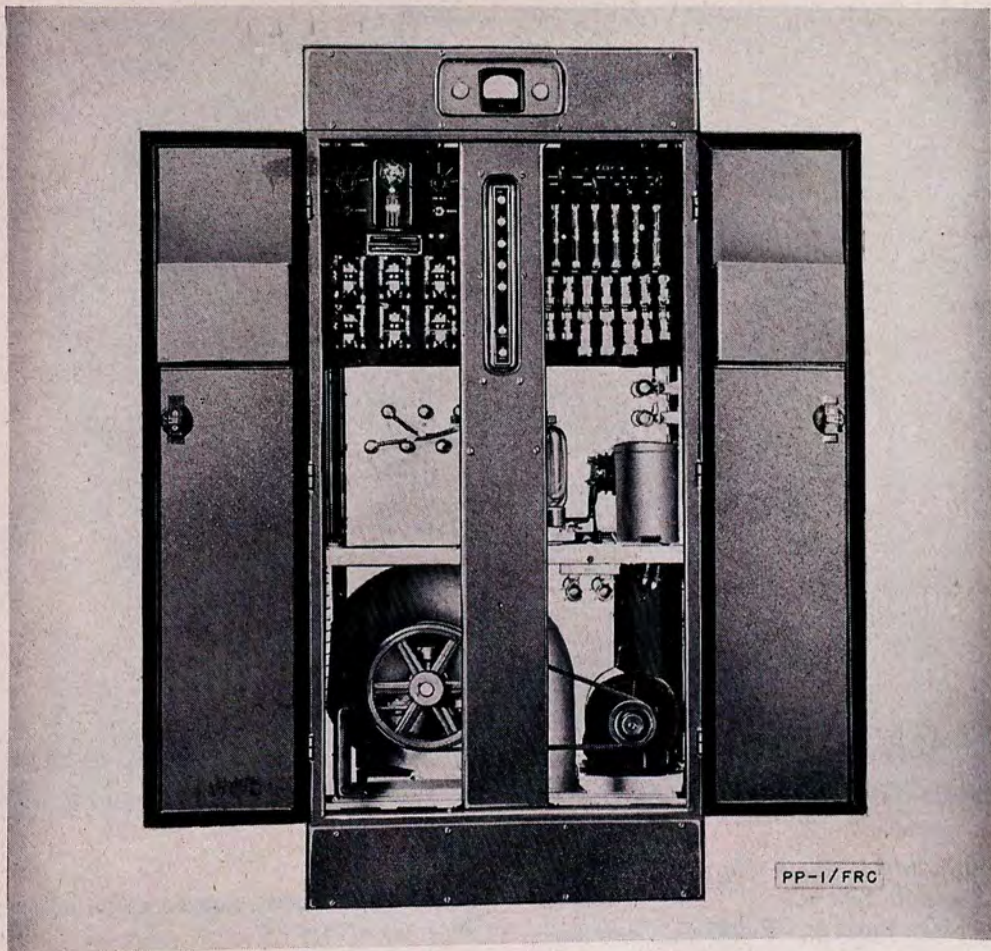


Figure 35. Power Rectifier PP-1/FRC, front view, doors open.

Status: Standard. *Stock No.:* 3H4698-1. *Reference:* TM 11-820.

Power Rectifier PP-1/FRC is a full-wave electronic tube type power rectifier designed to supply all power for plate, filament, and control circuits of Radio Transmitter T-4/FRC, T-5/FRC, and Modulator MD-1/FRC.

The power rectifier unit serves as high-voltage power supply for the entire transmitting equipment. It incorporates also all of the relays and contactors necessary for control of the entire equipment and a heavy-duty blower for forced air cooling of all units.

TECHNICAL CHARACTERISTICS

POWER INPUT: 230 v, 50/60 cy, 50 amp, single-phase.
POWER OUTPUT: 1,600 v dc at 5 amp, 230 v ac 50/60 cy, 60 v dc at 1.5 amp (control circuits).

TYPE: Electronic tube, full-wave.

CORDING: One 30-foot interconnection cable and 1 set of patch cables provided.

NUMBER AND TYPE OF TUBES: 12 electron tubes 872A (4 required, 8 running spares).

TYPE OF INSTALLATION: Fixed station.

DIMENSIONS AND WEIGHTS

Power Rectifier PP-1/FRC, housed in steel cabinet, measures 61 inches high, 24 inches deep, 27½ inches wide, and it weighs 690 pounds.

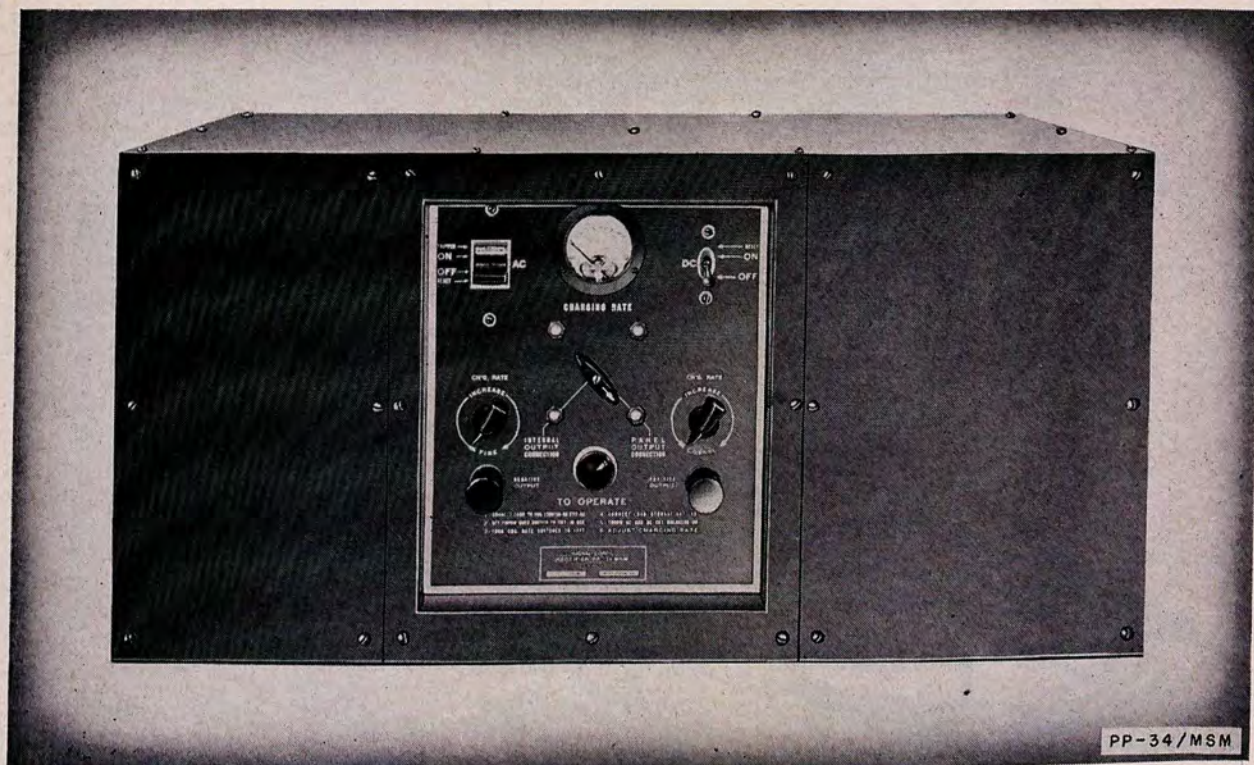


Figure 36.—Rectifier Power Unit PP-34/MSM, front view.

Status: Standard. *Stock No.:* 3H4956-39.

Reference: TM 11-965.

Rectifier Power Unit PP-34/MSM is a portable, compact self-contained, full-wave selenium disk rectifier designed for converting 100- to 120-volt, single-phase, 50- to 60-cycle a-c power to 30-volt d-c power for charging lead-acid storage batteries of up to 12 cells.

This unit consists of three sections mounted in an angle-iron frame and covered with sheet-steel panels, and includes a transformer and autotransformer, four rectifier stacks made up of selenium rectifying disks, an ammeter, a-c circuit breaker, d-c circuit breaker, pilot lamp, motor-driven ventilating fan, and the necessary switches, tap switches, and power and charging cables.

TECHNICAL CHARACTERISTICS

POWER INPUT: Maximum power input approx 3,000 w with full load on d-c output. Input power source—100 to 120 v, single-phase, 50 to 60 cy ac.

POWER OUTPUT: Maximum power output, 30 v, 50 amp dc at temperatures -40°C to $+40^{\circ}\text{C}$ (104°F .), and 40 amp at 55°C (131°F .).

TYPE: Full-wave, selenium disk.

TYPE OF INSTALLATION: Temporary or permanent. In permanent installations, mounting holes may be drilled through the bottom panel and the angle-iron frame.

DIMENSIONS AND WEIGHTS

Rectifier Power Unit PP-34/MSM measures $13\frac{1}{2}$ inches by $28\frac{1}{2}$ inches by 16 inches, and it weighs 160 pounds unpacked.

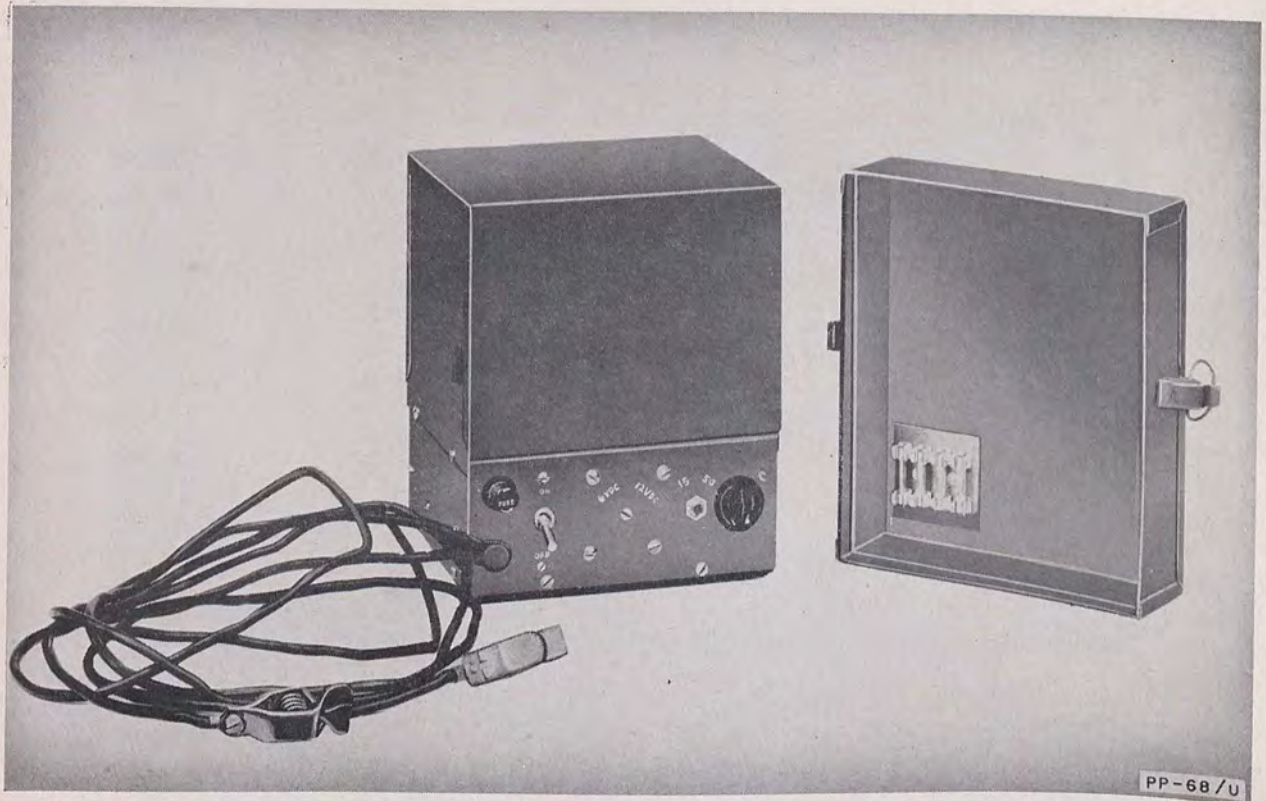


Figure 37. Vibrator Pack PP-68/U, side cover removed, showing controls and battery cable.

Status: Standard. Stock No.: 3H700-68. Reference: TM 11-2648.

Vibrator Pack PP-68/U is a portable, vibrator-type power supply designed to convert 6- or 12-volt dc to 110-volt, 60-cycle ac.

This unit consists of a steel chassis on which are mounted an output transformer, a vibrator unit, and a six-prong socket for the vibrator unit. Mounted on the front of the chassis assembly are an output receptacle, a fuse post, and the necessary switches with a 6-foot, 2-wire battery cable terminating in two battery clips. Capacitors and resistors are mounted inside the chassis. The side cover, which is attached to the chassis and to the top cover by catch fasteners, is equipped with a steel carrying handle.

Vibrator Pack PP-68/U is used to furnish power for the operation of Tube Tester I-177 which is part of Test Set I-56K and, while this is its principal application, it may also be used to sup-

ply input power not exceeding 50 watts to other test equipment requiring 110-volt, 60-cycle, ac.

TECHNICAL CHARACTERISTICS

POWER (INPUT AND OUTPUT): Input is supplied either by a 6-v or a 12-v storage battery. Output voltage is 105 to 115 v for loads of 15 to 50-w, as per the following table:

Input voltage (d-c v)	Input current (d-c amp)	Output voltage (a-c v)	Output power (w)
6	4.0	105	15
6	11.25	105	50
12	2.0	105	15
12	5.25	115	50

TYPE: Synchronous vibrator power supply.

DIMENSIONS AND WEIGHTS

Vibrator Pack PP-68/U measures 8¾ inches high, 8¾ inches wide, 9⅝ inches deep, and it weighs 22 pounds. Packed in an individual cardboard carton measuring 12½ inches high, 10 inches wide, and 10 inches deep, each packaged unit weighs 24½ pounds.

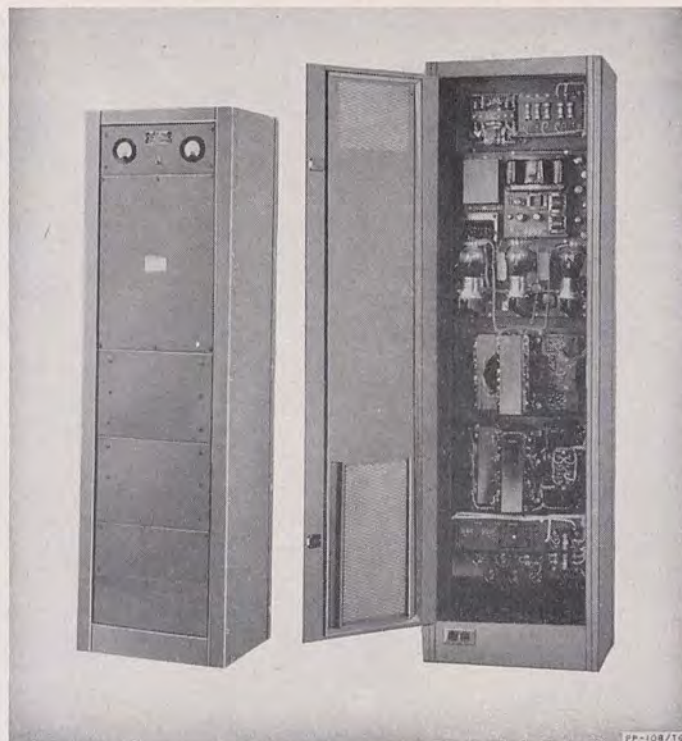


Figure 38. Rectifier Power Unit PP-108/TG, showing front view and rear view with door open.

Status: Standard. *Stock No.:* 3H4698-108.
Reference: TM 11-968.

Rectifier Power Unit PP-108/TG is a reactance controlled tube rectifier designed to supply d-c power for the operation of telegraph printing equipment. Its output of 120-volts dc is closely regulated, and the power unit will maintain its power output voltage within ± 2 percent from a light load of approximately 1 ampere to a full load of 25 amperes.

Conversion of a-c line current to dc is accomplished by six half-wave, gas-filled rectifier tubes which are automatically controlled by a regulating circuit, using several electronic tubes and three-legged reactors.

The equipment consists of five principal assemblies as follows: meter section, control section, transformer section, regulator section, and filter section. These assemblies are independently constructed on steel chassis and are then positioned within a relay rack cabinet to form a single unit. The cabinet is fitted with a full-length door in the rear. Openings in the cabinet are provided for ventilation. A ventilating fan and an air filter may be added when this equipment is to be used in the tropics.

TECHNICAL CHARACTERISTICS

POWER INPUT: 230 v, 60 cy, 3-phase ac. The 60-cy frequency may vary between the limits of 55 and 65 cy, and the voltage may vary from 210 to 250 v.

POWER OUTPUT: 25 amp continuous at 120-v dc with a ripple (a-c) content not in excess of 3 v rms at full load when primary voltages are unequal, and not in excess of 1 v rms when the phase voltages are equal. Rectifier tubes will permit short duration overloads up to 35 amp.

TYPE: Reactance-controlled tube rectifier.

NUMBER AND TYPE OF TUBES:

6 tubes OC3/VR-105 (2 required, 4 running spares).

9 tubes 5Y3G (3 required, 6 running spares).

9 tubes 6SJ7GT (3 required, 6 running spares).

6 tubes 6V6GT (2 required, 4 running spares).

9 tubes 2050 (3 required, 6 running spares).

18 tubes Sig C stock No. 2JCE206 (6 required, 12 running spares).

TYPE OF INSTALLATION: Rectifier Power Unit PP-108/TG is floor mounted and operates in a vertical position. The cabinet has openings and knock-outs for conduit or through wiring. One or more rectifiers may be mounted in a group.

DIMENSIONS AND WEIGHTS

Rectifier Power Unit PP-108/TG measures $76\frac{1}{4}$ inches high, $21\frac{1}{4}$ inches wide, 18 inches deep, and it weighs 800 pounds unpacked. Packed for shipment it weighs 945 pounds.

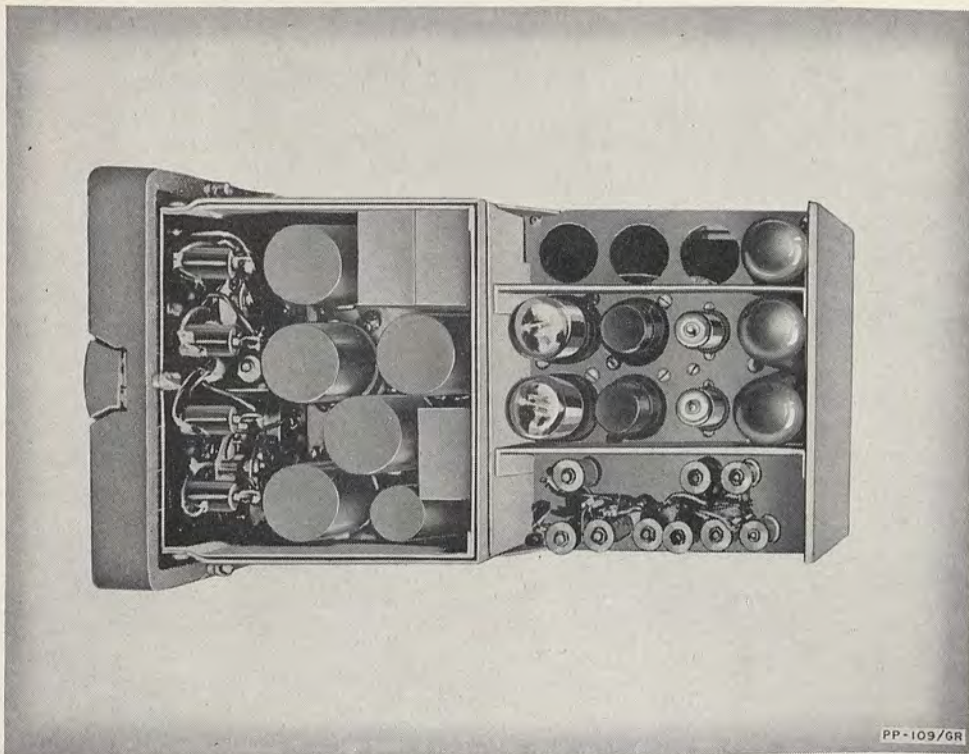


Figure 39. Power Supply PP-109/GR, top view of chassis.

Status: Standard. Stock No.: 3H4497-109.

Power Supply PP-109/GR is a vibrator-type power supply deriving power from a 12-volt storage battery and is designed to supply the plate, filament, bias, and control voltages in the operation of Receiver-Transmitter RT-66/GRC, RT-67/GRC, or RT-68/GRC. Means are provided for turning on the power circuits which supply the receiver only or those circuits which supply both the receiver and the transmitter. In addition, provisions are made for selecting the range of output voltages as required for high-power or low-power operation of the receiver-transmitters.

This unit consists of a panel and chassis assembly inclosed in an immersion-proof metal case with an aluminum outer skin wrinkled or rigidized to increase resistance to shock. The bottom of the case is provided with runners to permit rapid insertion of power supply on a mounting base. All operating controls, fuses, spare fuse holder, cable connectors, and Dzus fasteners are mounted on the front of the panel. This unit is designed to operate satisfactorily in any altitude up to 10,000 feet maximum.

Power Supply PP-109/GR is used in conjunc-

tion with Receiver-Transmitters RT-66/GRC, RT-67/GRC, or RT-68/GRC when these units are used in vehicular installation or in any other type of installation involving the use of storage batteries.

TECHNICAL CHARACTERISTICS

NOMINAL INPUT VOLTAGE: 12.6 v dc.

NOMINAL INPUT CURRENT: 15 amp.

OUTPUT VOLTAGES:

	High power (v dc)	Low power (v dc)
Receiver filaments.....	6.3	6.3
Transmitter filaments.....	6.3	6.3
Relay control circuits.....	6.3	6.3
Receiver plates.....	85	85
Transmitter plates.....	150	90
	250	150
	450	215
Transmitter bias.....	-27	0

NORMAL OPERATING TEMPERATURE: From -40° C. (-40° F.) to +65° C. (+150° F.).

TYPE: Vibrator.

NUMBER AND TYPE OF TUBES: 2 tubes 1007, 1 tube OA2, 1 tube OB2.

DIMENSIONS AND WEIGHTS

Power Supply PP-109/GR measures 9 inches high, 7¼ inches wide, and 12¹³/₁₆ inches long. The total weight of the unit with case is approximately 35 pounds.



Figure 40. Power Supply PP-112/GR, front view.

Status: Standard. Stock No.: 3H4497-112.

Power Supply PP-112/GR is a vibrator-type power supply deriving power from a 24-volt storage battery and is designed to supply the plate, filament, bias and control voltages in the operation of Receiver-Transmitters RT-66/GRC, RT-67/GRC, or RT-68/GRC. Means are provided for turning on the power circuits which supply the receiver only or those circuits which supply both the receiver and the transmitter. In addition, provisions are made for selecting the range of output voltages as required for high-power or low-power operation of the receiver-transmitters.

This unit consists of a panel and chassis assembly inclosed in an immersion-proof metal case with an aluminum outer skin wrinkled or rigidized to increase resistance to shock. The bottom of the case is provided with runners to permit rapid insertion of power supply on a mounting base. All operating controls, fuses, spare fuse holder, cable connectors, and Dzus fasteners are mounted on the front of the panel. This unit is designed to operate satisfactorily in any altitude up to 10,000 feet.

Power Supply PP-112/GR is used in conjunc-

tion with Receiver-Transmitters RT-66/GRC, RT-67/GRC, or RT-68/GRC when these units are used in vehicular installation or in any other type of installation involving the use of storage batteries.

TECHNICAL CHARACTERISTICS

NOMINAL INPUT VOLTAGE: 25.2 v dc.

NOMINAL INPUT CURRENT: 9.5 amp.

OUTPUT VOLTAGES:	High power (v dc)	Low power (v dc)
Receiver filaments.....	6.3	6.3
Transmitter filaments.....	6.3	6.3
Relay control circuits.....	6.3	6.3
Receiver plates.....	85	85
Transmitter plates.....	150	90
	250	150
	450	215
Transmitter bias.....	-27	0

NORMAL OPERATING TEMPERATURE: From -40° C. (-40° F.) to $+65^{\circ}$ C. ($+150^{\circ}$ F.).

TYPE: Vibrator.

NUMBER AND TYPE OF TUBES: 2 tubes 1007, 1 tube OA2, 1 tube OB2.

DIMENSIONS AND WEIGHTS

Power Supply PP-112/GR measures 9 inches high, $7\frac{1}{4}$ inches wide, and $12\frac{13}{16}$ inches long. The total weight of the unit with case is approximately 35 pounds.

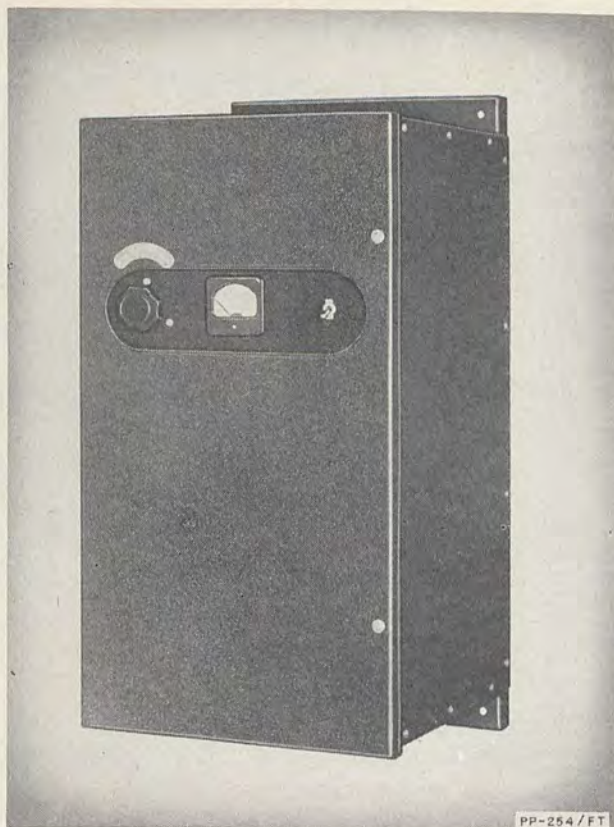


Figure 41. Rectifier Battery Charger PP-254/FT.

Status: Standard. *Stock No.:* 3H4701-3. *Reference:* TM 11-2067.

Rectifier Battery Charger PP-254/FT (Trojan model No. 27820) is a full-wave, Argon-gas electronic tube type, battery charging unit designed to convert ac to dc for the purpose of charging lead-acid storage batteries. The rate of charge is adjustable and the output current is filtered to permit charging of telephone central batteries while batteries are in service.

Rectifier Battery Charger PP-254/FT is a self-contained unit that requires no accessory equipment. It consists of an autotransformer, a two-winding transformer, a reactor, a choke coil, two rectifier tubes, an ammeter, a tap switch, an off-on control switch, and accessory items all mounted on a steel base. The assembly is inclosed in a ventilated metal case with a hinged front cover.

Rectifier Battery Charger PP-254/FT is used with Telephone Central Office Set AN/FTC-8 and, although it is designed particularly for the charging of telephone batteries, it may also be used to

charge any other lead-acid batteries within the limits of this rectifier unit.

TECHNICAL CHARACTERISTICS

POWER INPUT: 100 to 125 or 200 to 250 v, 40/60 cy, single-phase ac.

POWER OUTPUT: 25 to 30 v, 30 amp (capacity 10 to 12 cells of lead-acid storage battery at 30 amp).

TYPE: Full-wave, Argon-gas electronic tube.

NUMBER AND TYPE OF TUBES: 4 rectifier bulbs, 15 amp, 60 v, Sig C stock No. 3H615 (2 required, 2 running spares).

TYPE OF INSTALLATION: Mounted and operated on a wall or can be placed and operated on a flat level surface.

DIMENSIONS AND WEIGHTS

Rectifier Battery Charger PP-254/FT measures 16 $\frac{3}{8}$ inches long, 16 $\frac{5}{16}$ inches deep, 34 inches high, and weighs 215 pounds unpacked. It is packed for shipment in a wooden case measuring 43 inches by 23 inches by 21 $\frac{1}{2}$ inches and weighs 310 pounds. Spare parts are packed in a wooden box measuring 17 inches by 14 $\frac{3}{4}$ inches by 19 inches and weighs 35 pounds. The total volume, packed for export, is 12 cubic feet.

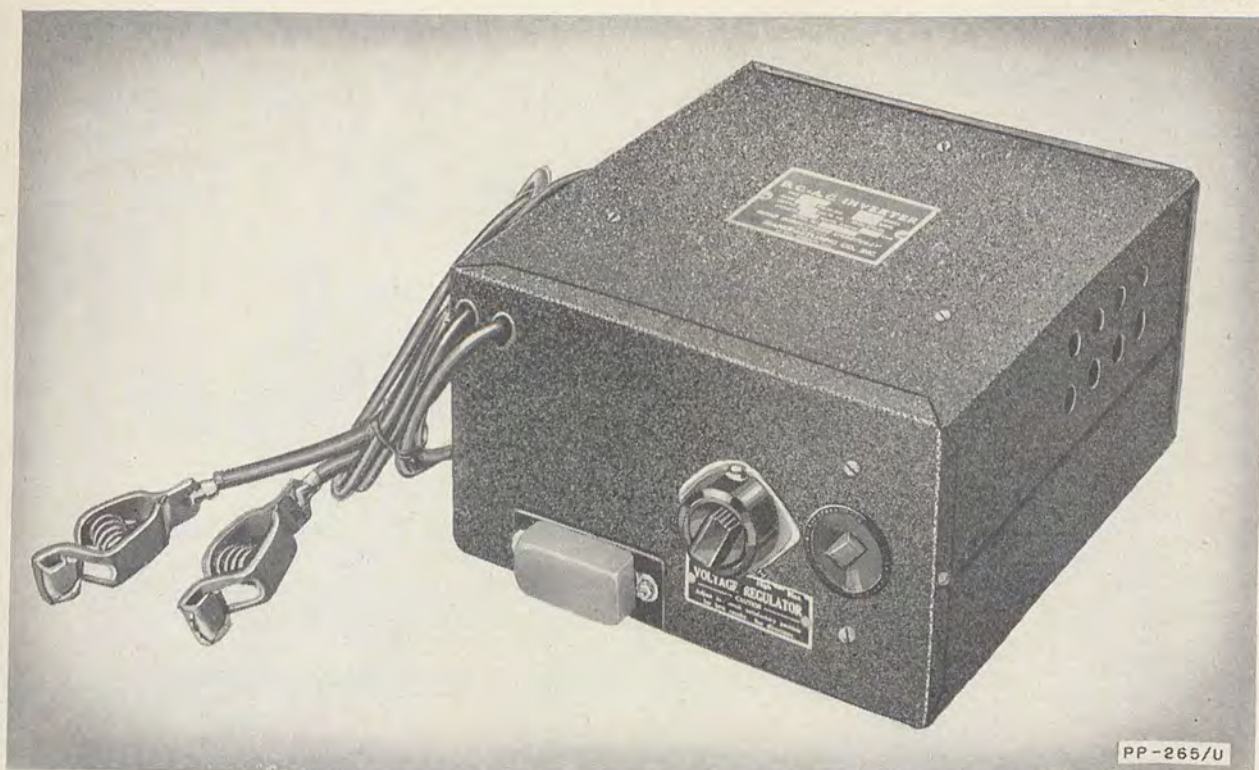


Figure 42. Vibrator Inverter PP-265/U.

Status: Limited/Std. *Stock No.:* 3H2577-1.
Reference: TM 11-2519.

Vibrator Inverter PP-265/U is a compact, self-contained portable vibrator type inverter designed to convert 12-volt dc to 110-volt, 60-cycle ac at a continuous output wattage of 100 watts, for the operation of a-c radio equipment or other electronic apparatus having a power factor not lower than 80 percent and an input rating not exceeding 90 watts.

The inverter chassis, on which the transformer, vibrator, and primary filter assembly are mounted, is inclosed in a sheet metal case fitted with two metal covers. The voltage regulator switch, an a-c output receptacle, and a 15-ampere fuse mounting are accessible from the exterior of the unit.

The d-c input is brought to the unit through two rubber-covered cables approximately 3 feet long, equipped with battery clips. The clips are not polarized. These cables enter the cabinet through insulated grommets at the upper left-hand corner of the front panel.

This unit should be located in a cool, dry, well-ventilated place and should be kept off damp ground and out of direct sunlight.

Vibrator Inverter PP-265/U can be used at any installation where a vibrator type inverter of the capabilities of Vibrator Inverter PP-265/U is required.

TECHNICAL CHARACTERISTICS

POWER INPUT: Input current is approx 11.2 amp from a 12-v storage battery operating load of 100 w at unity power factor (for example, a 100-w lamp bulb). When the unit is operating with no load the input current is approx .7 amp with voltage regulator in MAX position.

POWER OUTPUT: The continuous a-c output is 100 w at 110-v, 60-cy. Maximum intermittent wattage is 125 w.

TYPE: Vibrator.

DIMENSIONS AND WEIGHTS

Vibrator Inverter PP-265/U measures $7\frac{7}{8}$ inches wide, $8\frac{3}{16}$ inches deep, $4\frac{1}{2}$ inches high, and it weighs 17 pounds.

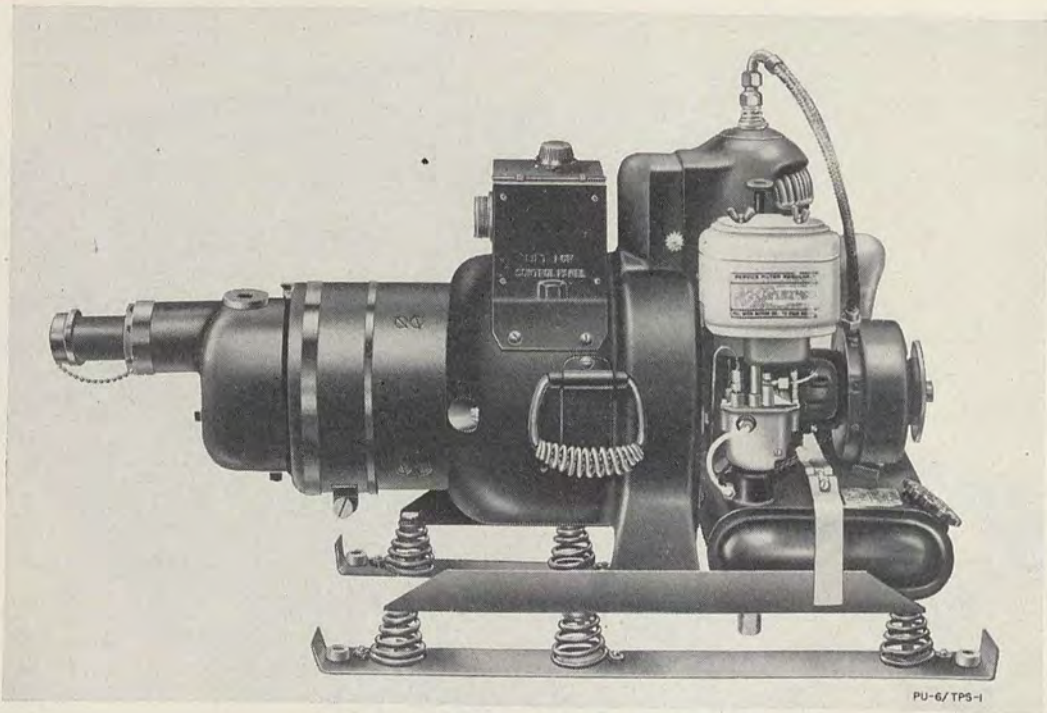


Figure 43. Power Unit PU-6/TPS-1.

Status: Standard. *Stock No.:* 3H4531-6. *Reference:* TM 11-933.

Power Unit PU-6/TPS-1 is a compact, self-contained, portable electric generating set consisting of a 1-cylinder, 2-cycle, air-cooled, manual-starting (rope) gasoline engine directly connected to an a-c/d-c generator of the dual-winding type. A waterproof canvas cover is furnished with this power unit.

Power Unit PU-6/TPS-1 is used to furnish power for the operation of Test Sets AN/MPM-7, AN/MPM-11, AN/MPM-15, AN/MPM-20, Radio Set AN/TPS-3, and Transmitting Set AN/TPT-1.

TECHNICAL CHARACTERISTICS

Engine

MAKE: Homelite.
 MODEL: HRU-AD.
 RATED: 4.5 hp at 4,000 rpm.
 CYLINDERS: 1.
 Bore: 2 $\frac{3}{8}$ in.
 Stroke: 2 $\frac{1}{2}$ in.
 COMPRESSION RATIO: 5.85 to 1.
 CYCLE: 2.
 HEAD: Valveless.
 OPERATING SPEED: 4,000.
 COOLING: Air.
 FUEL USED: Gasoline and oil mixed.

FUEL TANK CAPACITY: 1 gal.
 FUEL CONSUMPTION PER HOUR (RATED LOAD): .6 gal.
 LUBRICATION SYSTEM: Oil and gasoline mixed.
 AIR CLEANER: Oil-bath type.
 STARTING: Manual (rope).
 GOVERNOR: Flyball, mechanical.
 IGNITION: Flywheel, magneto.

Generator

MAKE: Homelite.
 MODEL: Dual-voltage.
 TYPE OF GENERATOR: A-c/d-c, dual-winding.
 RATING:
 (d-c): .4 kw (400 w), 27.0 v, 14 amp.
 (a-c): 1.4 kw (1,400 w), 120 v, 12 amp.
 POWER FACTOR: 100 percent.
 CYCLE: 400.
 PHASE: 1.
 WIRES: 2.
 OPERATING SPEED: 4,000 rpm.
 DRIVE: Direct.
 NUMBER AND TYPE OF BEARING: 1 ball.

COMPLETE UNIT

DIMENSIONS AND WEIGHTS

Power Unit PU-6/TPS-1 measures approximately 35 inches long, 17 inches wide, 21 inches high, and it weighs 128 pounds unpacked. Packed for export it measures 40 inches long, 21 $\frac{1}{2}$ inches wide, 23 $\frac{1}{8}$ inches high, and it weighs 235 pounds. The total volume is approximately 12 cubic feet.

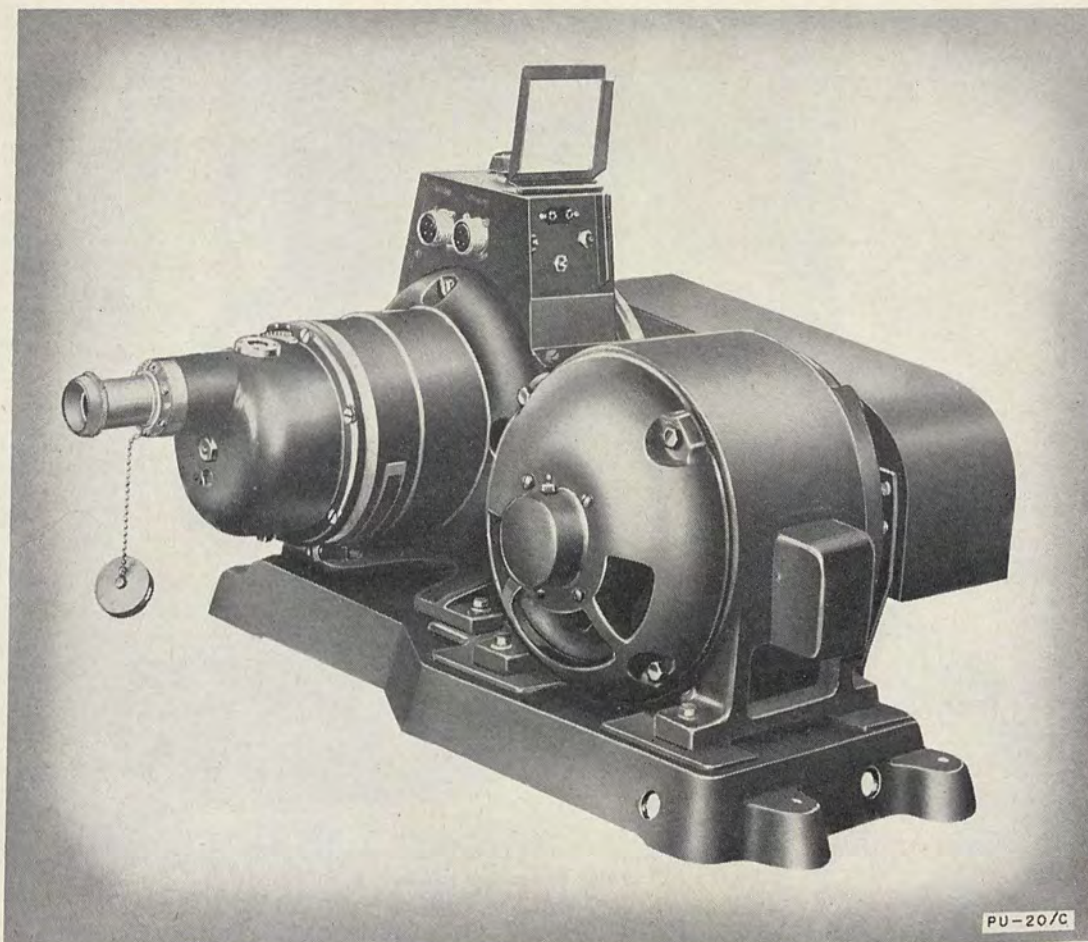


Figure 44. Motor Generator PU-20/C.

Status: Standard. *Stock No.:* 3H3370-20.
Reference: TM 11-978.

Motor Generator PU-20/C is a compact, transportable, electric generating set consisting of a 3-horsepower, 1,800-rpm, 115/230-volt, single-phase, 60-cycle a-c electric motor, and an a-c/d-c, dual-output, belt-driven generator. The motor-generator is designed to convert 60-cycle ac to 400-cycle ac (120 volts, 1,400 watts) and to 28-volt dc (400 watts). The set is mounted on a metal base.

Motor Generator PU-20/C is used to furnish power for the operation of Radio Sets AN/TPS-1 and AN/TPS-3 and for testing airborne radio sets at flying fields.

TECHNICAL CHARACTERISTICS

Motor

TYPE: Induction.
HORSEPOWER: 3.

INPUT VOLTAGE: 115/230 v ac.
CYCLE: 60.
PHASE: 1.
AMPERES: 20/40.
POWER FACTOR: 90 percent.
OPERATING SPEED: 1,800 rpm.

Generator

TYPE: A-c/d-c, dual-output.
RATING:
 (a-c): 1.4 kw (1,400 w), 120 v, 11.7 amp.
 (d-c): .4 kw (400 w), 28 v, 14.3 amp.
POWER FACTOR: 90 percent.
CYCLE: 400.
PHASE: 1.
WIRES: 2.
OPERATING SPEED: 4,000 rpm.
DRIVE: Belt.
BEARINGS: 3-ball.

COMPLETE UNIT

DIMENSIONS AND WEIGHTS

Power Unit PU-20/C measures 33 inches long, 28 inches wide, 18 inches high, and it weighs 285 pounds.

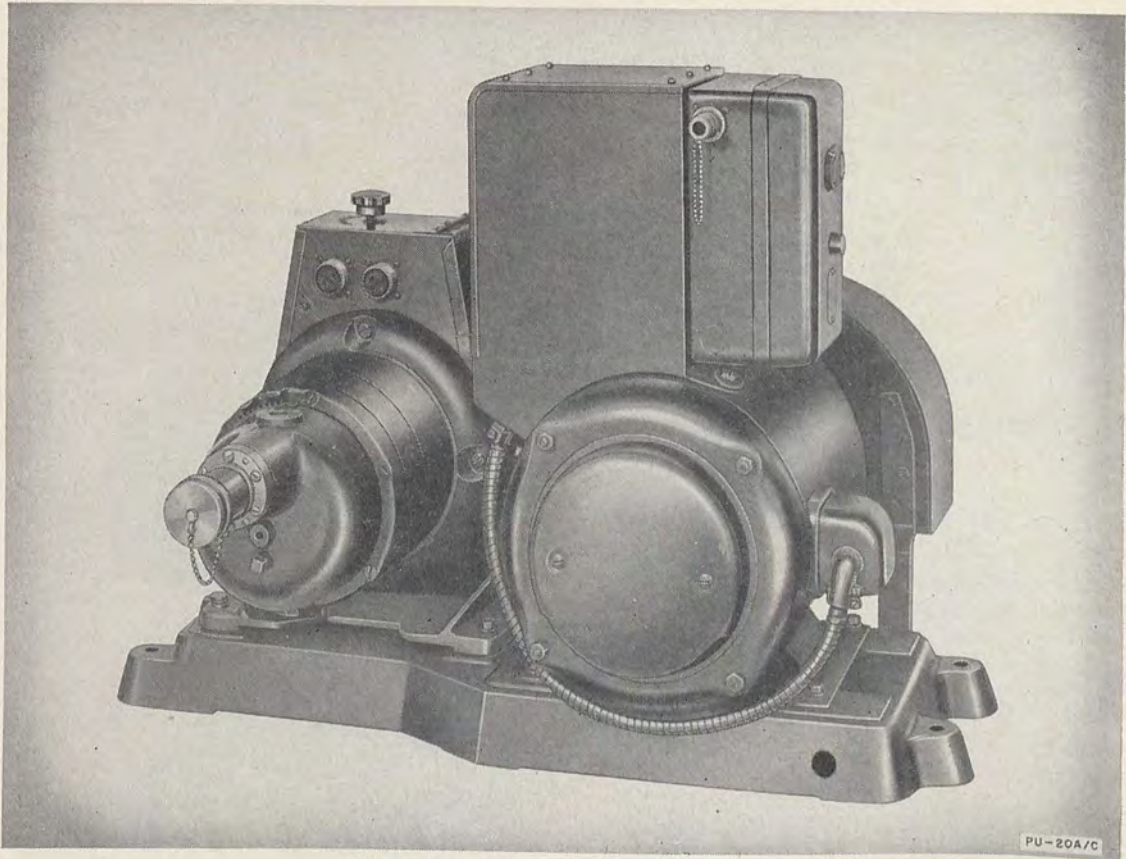


Figure 45. Motor Generator PU-20A/C.

Status: Standard. *Stock No.:* 3H3370-20.
Reference: TM 11-978.

Motor Generator PU-20A/C is a compact, transportable, electric generating set consisting of a 3-horsepower, 1,750-rpm, 115/230-volt, single-phase, 60-cycle a-c electric motor, and an a-c/d-c, dual-output, belt-driven generator. The motor generator is designed to convert 60-cycle ac to 400-cycle ac (120 volts, 1,400 watts) and to 28-volt dc (400 watts). The set is mounted on a metal base.

In addition to the control box which is mounted on top of the stator shell, Motor Generator PU-20A/C is provided with a motor control unit, mounted over the motor, which starts and stops the motor in event of overload, permits the operation of the motor on either 110 or 220 volts, and provides for motor starting and stopping from a remote point.

Motor Generator PU-20A/C is used to furnish power for the operation of Radio Sets AN/TPS-1 and AN/TPS-3, and for testing airborne radio sets at flying fields.

TECHNICAL CHARACTERISTICS

Motor

TYPE: Induction.
HORSEPOWER: 3.
INPUT VOLTAGE: 115/230 v ac.
CYCLE: 60.
PHASE: 1.
AMPERES: 2/40.
POWER FACTOR: 90 percent.
OPERATING SPEED: 1,750 rpm.

Generator

TYPE: A-c/d-c, dual-output.
RATING:
 (a-c): 1.4 kw (1,400 w), 120 v, 11.7 amp.
 (d-c): .4 kw (400 w), 28 v, 14.3 amp.
POWER FACTOR: 90 percent.
CYCLE: 400.
PHASE: 1.
WIRES: 2.
OPERATING SPEED: 4,000 rpm.
DRIVE: Belt.
BEARING: 3-ball.

COMPLETE UNIT

DIMENSIONS AND WEIGHT

Power Unit PU-20A/C measures 35 inches long, 28 inches wide, 23½ inches high, and it weighs 310 pounds.

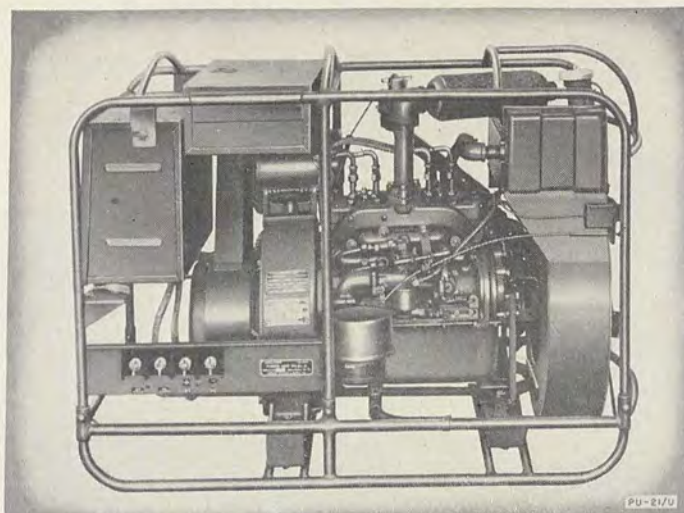


Figure 46. Power Unit PU-21/U.

Status: Standard. *Stock No.:* 3H4531-21.
Reference: TM 11-974.

Power Unit PU-21/U is a compact, self-contained transportable electric generating set consisting of a 4-cylinder, 4-cycle, L-head, liquid-cooled, manual-starting (hand-crank) gasoline engine directly connected to a permanent magnet a-c generator (alternator) and a d-c generator which is belt-driven from an adapter shaft. Fuel is supplied from an outside source through a 15-foot fuel hose provided with the unit.

A control cabinet containing all necessary equipment for controlling the electrical output is mounted at the generator end of the unit. The ignition switch and the choke control are mounted on a separate panel mounted above the fan intake on the radiator end of the unit. The entire unit is mounted on a welded-steel pipe frame, and a canvas cover is provided for protection against the weather.

Power Unit PU-21/U can be used for the operation of Radio Set AN/TPS-1 or at any installation where a power unit of the capabilities of the Power Unit PU-21/U is required.

TECHNICAL CHARACTERISTICS

Engine

MAKE: Hercules.
MODEL: ZXB.
RATED: 13.5 hp at 1,714 rpm.
CYLINDERS: 4.
Bore: 2 $\frac{5}{8}$ in.
Stroke: 3 in.
COMPRESSION RATIO: 6.5 to 1.
CYCLE: 4.

HEAD: L.
OPERATING SPEED: 1,714 rpm.
COOLING: Liquid.
COOLING SYSTEM CAPACITY: 7 qt.
FUEL USED: Gasoline.
FUEL TANK CAPACITY: Separate tank.
FUEL CONSUMPTION PER HOUR (RATED LOAD): 1.5 gal.
LUBRICATION SYSTEM: Pressure.
CRANKCASE OIL CAPACITY: 3 $\frac{1}{2}$ qt.
AIR CLEANER: Oil-bath type.
STARTING: Manual (hand crank).
GOVERNOR: Flyball.
IGNITION: Magneto.

Generator

A-C GENERATOR (ALTERNATOR):
MAKE: Carson Machine.
MODEL: CPM-28-2.
RATING: 4 kw (4,000 w), 120 v, 41.6 amp.
POWER FACTOR: 80 percent.
CYCLE: 400.
PHASE: 1.
WIRES: 2.
OPERATING SPEED: 1,714 rpm.
DRIVE: Direct.
D-C GENERATOR:
MAKE: Franklin.
MODEL: GN-7U.
RATING: .75 kw (750 w), 28 v, 26.8 amp.
OPERATING SPEED: 3,428 rpm.
DRIVE: Belt-driven from adapter shaft.
BEARINGS: 2-ball.

COMPLETE UNIT

DIMENSIONS AND WEIGHTS

Power Unit PU-21/U measures 46 $\frac{1}{4}$ inches long, 21 inches wide, 32 $\frac{1}{2}$ inches high, and it weighs 535 pounds unpacked.

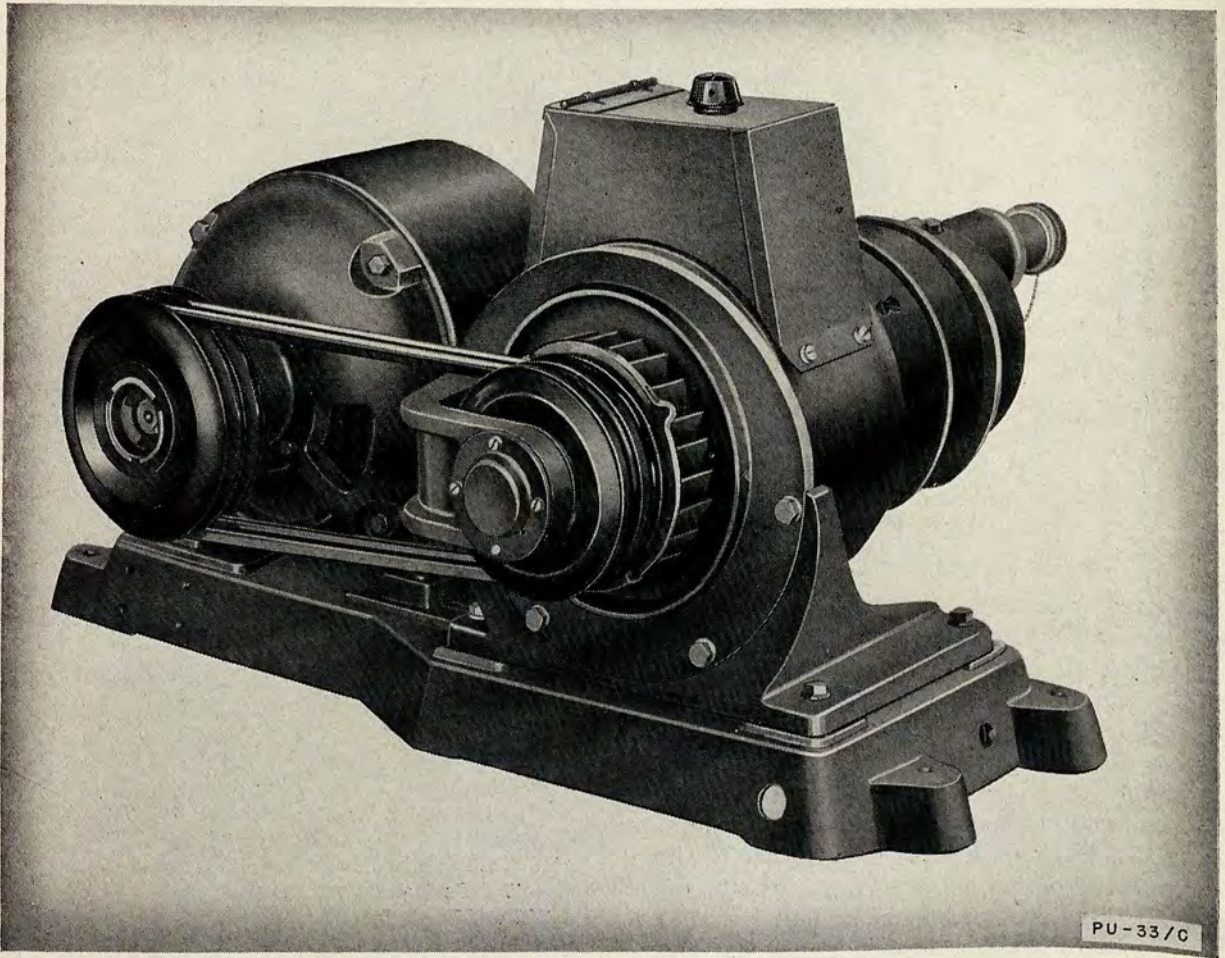


Figure 47. Motor Generator PU-33/C with belt guard removed.

Status: Standard. *Stock No.:* 3H3370-33.
Reference: TM 11-969.

Motor Generator PU-33/C is a compact, transportable, totally inclosed electric generating set consisting of a 5-horsepower, 3,600-rpm, 220/440-volt, 3-phase, 60-cycle electric motor and a dual-output, belt-driven generator. The motor generator is designed to convert 60-cycle ac to 400-cycle ac (120 volts, 1,400 watts) and to 28-volt dc (400 watts). The generating set is mounted on a metal base and is provided with a control box and a weatherproof output box.

Motor Generator PU-33/C is used to furnish power for the operation of Radio Sets AN/TPS-1 and AN/TPS-3 and for testing airborne radio sets at flying fields.

TECHNICAL CHARACTERISTICS

Motor

TYPE: Induction.

HORSEPOWER: 5.
INPUT VOLTAGE: 220/440 v ac.
CYCLE: 60.
PHASE: 3.
OPERATING SPEED: 3,600 rpm.

Generator

TYPE: A-c/d-c dual-output.
RATING:
 (a-c) : 1.4 kw (1,400 w), 120 v, 11.7 amp.
 (d-c) : .4 kw (400 w), 28 v, 14.3 amp.
POWER FACTOR: 90 percent.
CYCLE: 400.
PHASE: 1.
WIRES: 2.
OPERATING SPEED: 4,000 rpm.
DRIVE: Belt.
BEARINGS: 3-ball.

COMPLETE UNIT

DIMENSIONS AND WEIGHTS

Motor Generator PU-33/C measures 33 inches long, 28 inches wide, 18 inches high, and it weighs 285 pounds.

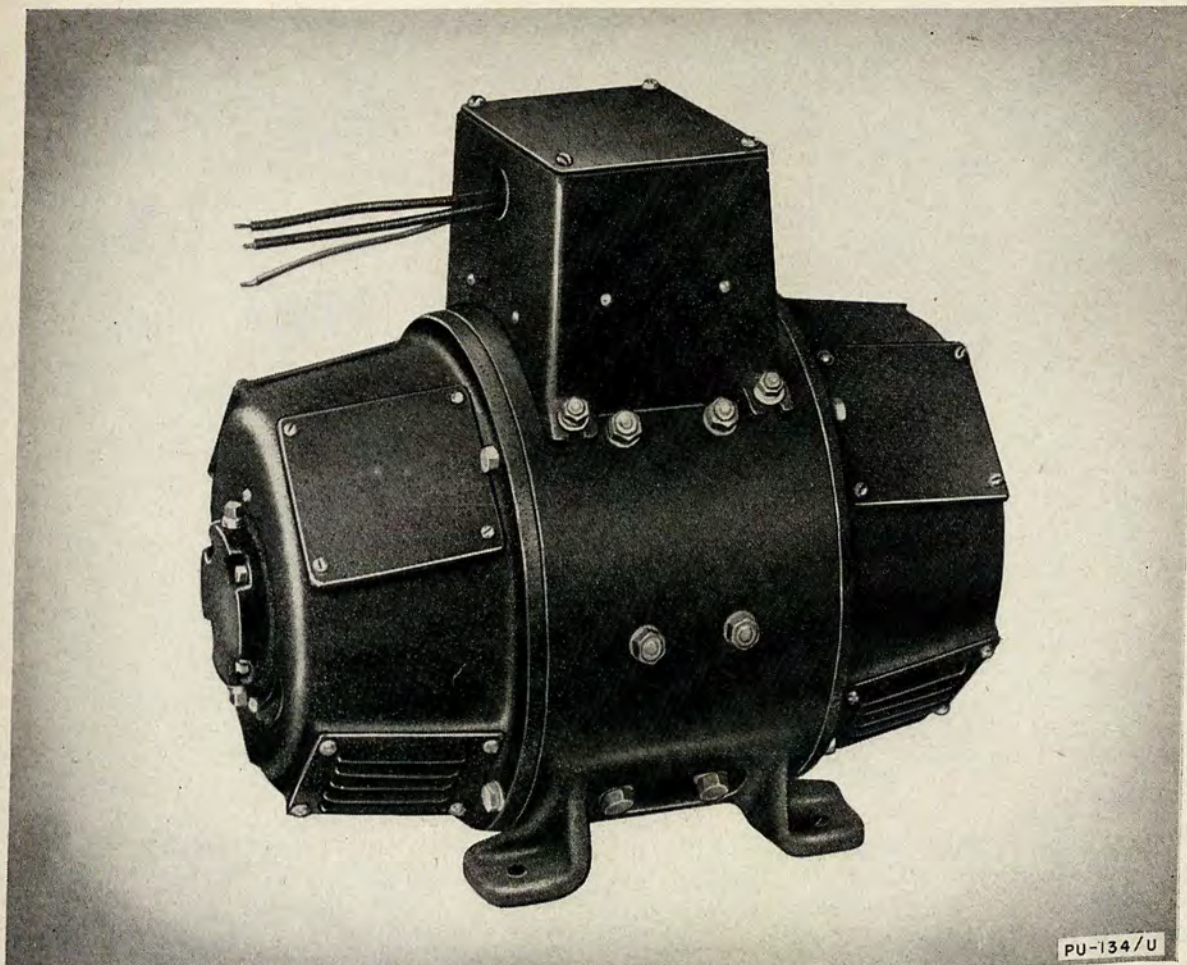


Figure 48. Rotary Converter PU-134/U.

Status: Standard. *Stock No.:* 3H5190-1. *Reference:* TM 11-985.

Rotary Converter PU-134/U is a rotating-armature unit designed to convert 230-volt dc to 110-volt, 60-cycle, single-phase ac. It has a stationary d-c field and a dual-wound, ball-bearing supported rotary armature. The unit is fan-ventilated, semi-enclosed and it includes a filter unit.

The principal application of Rotary Converter PU-134/U is on shipboard where 230-volts dc is available, and where 110-volt, 60-cycle, single-phase current is needed to power equipment in which the a-c requirements do not exceed 600-volt amperes at about 85 percent power factor.

TECHNICAL CHARACTERISTICS

INPUT VOLTS: 230 v dc.

OUTPUT VOLTS: 110 v, 60 cy, single-phase ac.

INPUT CURRENT: 4.1 amp.

OUTPUT CURRENT: 5.45 amp (ac at 85% to 100% power factor).

OUTPUT IN VOLT AMPERES: 600 v-amp.

INPUT D-C LINE FUSE: 30 amp.

NORMAL TEMPERATURE RISE: 40° C.

ARMATURE SPEED: 1,800 rpm.

ARMATURE BEARINGS: Ball.

D-C BRUSH SUPPRESSION: .1 uf (brush to frame).

D-C INPUT LINE SUPPRESSION: .5 uf on each conductor (line to frame) after iron-core choke coils.

A-C BRUSH SUPPRESSION: .1 uf (brush to frame).

A-C LINE SUPPRESSION FILTER: .01 uf from each conductor to frame *before* r-f choke coils. .3 uf from each conductor to frame *after* r-f choke coils.

DIMENSIONS AND WEIGHTS

Rotary Converter PU-134/U measures 15 $\frac{3}{4}$ inches long, 9 $\frac{3}{4}$ inches wide, 13 inches high, and it weighs 122 pounds unpacked. Packed for export it weighs 150 pounds.

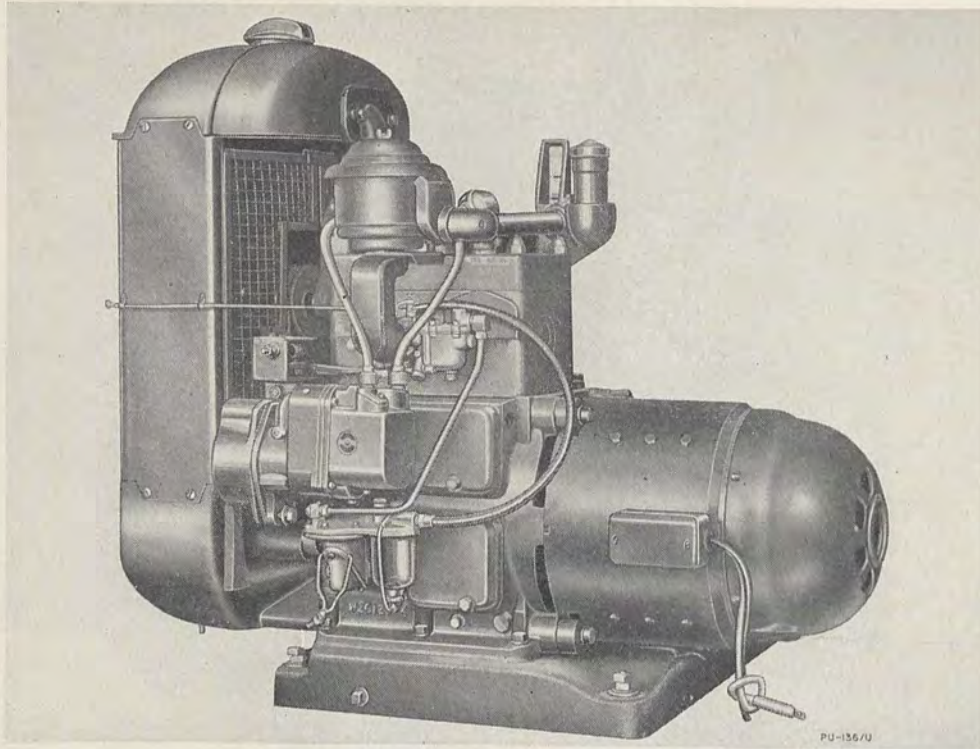


Figure 49. Engine Generator PU-136/U.

Status: Limited/Std. *Stock No.:* 3H4512.3.

Engine Generator PU-136/U (similar to ONAN-W3M-13) is a transportable electric generating set consisting of a 2-cylinder, 4-cycle, L-head, liquid-cooled, manual-starting (crank) gasoline engine directly connected to an a-c self-excited generator.

Engine Generator PU-136/U can be used at any installation where an engine generator of the capabilities of Engine Generator PU-136/U is required.

TECHNICAL CHARACTERISTICS

Engine

MAKE: D. W. Onan & Sons.
 MODEL: W3M.
 RATED: 7 hp at 1,800 rpm.
 CYLINDERS: 2.
 Bore: 3 in.
 Stroke: 2¾ in.
 COMPRESSION RATIO: 5½ to 1.
 CYCLE: 4.
 HEAD: L.
 OPERATING SPEED: 1,800 rpm.
 COOLING: Liquid.
 COOLING SYSTEM CAPACITY: 9 qt.
 FUEL USED: Gasoline.

FUEL TANK CAPACITY: 5 gal (remote tank).
 FUEL CONSUMPTION PER HOUR (RATED LOAD):
 .51 gal.
 LUBRICATION SYSTEM: Pressure and spray.
 CRANKCASE OIL CAPACITY: 6 qt.
 AIR CLEANER: Oil-bath type.
 STARTING: Manual (crank).
 GOVERNOR: Flyball.
 IGNITION: Magneto.

Generator

MAKE: D. W. Onan & Sons.
 MODEL: W2C.
 TYPE OF GENERATOR: A-c.
 RATING: 3 kw (3,000 w) 115 v, 27.3 amp.
 POWER FACTOR: 100 percent.
 CYCLE: 60.
 PHASE: 1.
 WIRES: 2.
 OPERATING SPEED: 1,800 rpm.
 DRIVE: Direct.
 NUMBER AND TYPE OF BEARINGS: 1, Hoover.

COMPLETE UNIT

DIMENSIONS AND WEIGHTS

Engine Generator PU-136/U measures 35 inches long, 16 inches wide, 30½ inches high and it weighs 450 pounds unpacked. Its weight when crated is 630 pounds. Packed for export it weighs 662 pounds, and the total volume is 34 cubic feet (approximately .9 ship ton).

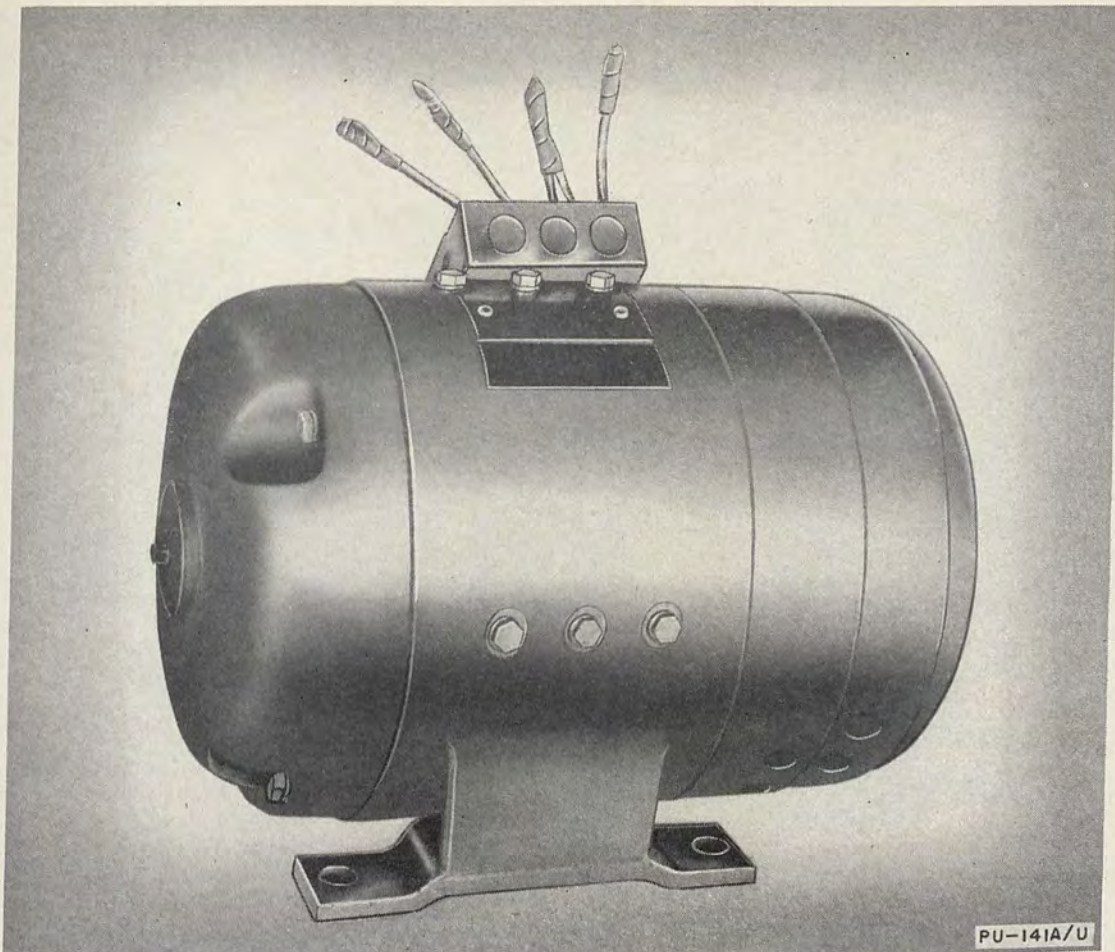


Figure 50. Rotary Converter PU-141A/U.

Status: Standard. *Stock No.:* 3H5191-141A.
Reference: TM 11-5507.

Rotary Converter PU-141A/U is a small, rotating armature unit designed to convert 32-volt dc to 110-volt, 60-cycle ac. This converter may be used as a power supply for any equipment which does not require more than 400 watts ac at 80 percent power factor.

Rotary Converter PU-141A/U is a fan-ventilated, semienclosed unit with a stationary d-c field, a dual-wound rotating armature and is filtered by means of four .1-uf capacitors.

When installing this unit, it should be bolted in place on a suitable foundation which will keep the unit about 6 inches off the floor. The unit should be insulated from the foundation by use of rubber mounting blocks if they are available. At least 2 feet of space should be provided on all sides to

permit proper air circulation and accessibility for servicing.

Rotary Converter PU-141A/U can be used at any installation where a rotary converter of the capabilities of Rotary Converter PU-141A/U is required.

TECHNICAL CHARACTERISTICS

INPUT: 32 v dc, 18 amp.

OUTPUT: 115 v ac, single-phase, 500 v-amp, 400 w (80% power factor).

TEMPERATURE RISE: 40° C.

SPEED: 1,800 rpm.

BEARINGS: Ball.

DIMENSIONS AND WEIGHTS

Rotary Converter PU-141A/U measures $14\frac{15}{16}$ inches long, $10\frac{1}{4}$ inches wide, $10\frac{1}{2}$ inches high, and it weighs 125 pounds unpacked. Packed for shipment it weighs 160 pounds.

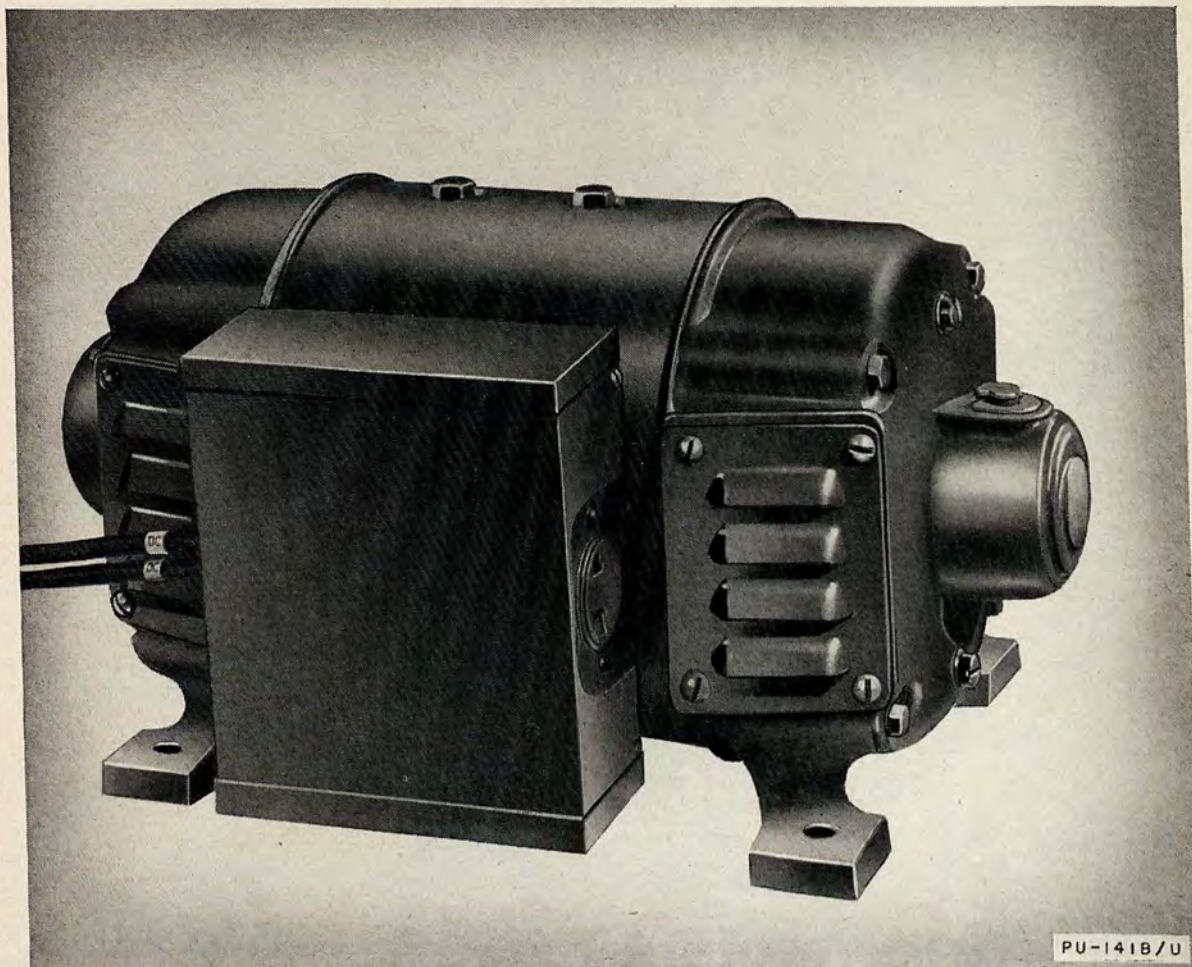


Figure 51. Rotary Converter PU-141B/U.

Status: Standard. *Stock No.:* 3H5182.2. *Reference:* TM 11-5507.

Rotary Converter PU-141B/U is a small, rotating armature unit designed to convert 32-volts dc to 110-volt, 60-cycle, single-phase ac (maximum 425 watts ac at 85 percent power factor). It consists of the basic unit and of a filter and outlet box assembly which is mounted on the side of the converter.

This unit is fan-ventilated, semienclosed, with a stationary d-c field and a dual-wound rotating armature.

When installing Rotary Converter PU-141A/U, the surface selected should be level and solid enough to support the weight of the equipment, with at least 2 feet of space allowed on all sides, to permit air circulation and accessibility for servicing. This unit should be mounted on a founda-

tion which will keep it about 6 inches off the floor.

Rotary Converter PU-141B/U can be used at any installation where a rotary converter of the capabilities of Rotary Converter PU-114B/U is required.

TECHNICAL CHARACTERISTICS

INPUT: 32 v dc, 25 amp, 800 w.
 OUTPUT: 110 v ac, 60 cy, single-phase 4.55 amp, 500 v-amp,
 425 w (85% power factor).
 TEMPERATURE RISE: 40° C.
 SPEED: 3,600 rpm.
 BEARINGS: Sleeve.

DIMENSIONS AND WEIGHTS

Rotary Converter PU-141B/U measures 12 $\frac{7}{8}$ inches long, 8 $\frac{7}{8}$ inches wide, 7 $\frac{1}{4}$ inches high, and it weighs 46.5 pounds unpacked. Two Rotary Converters PU-141B/U packed for shipment weigh 119 pounds.

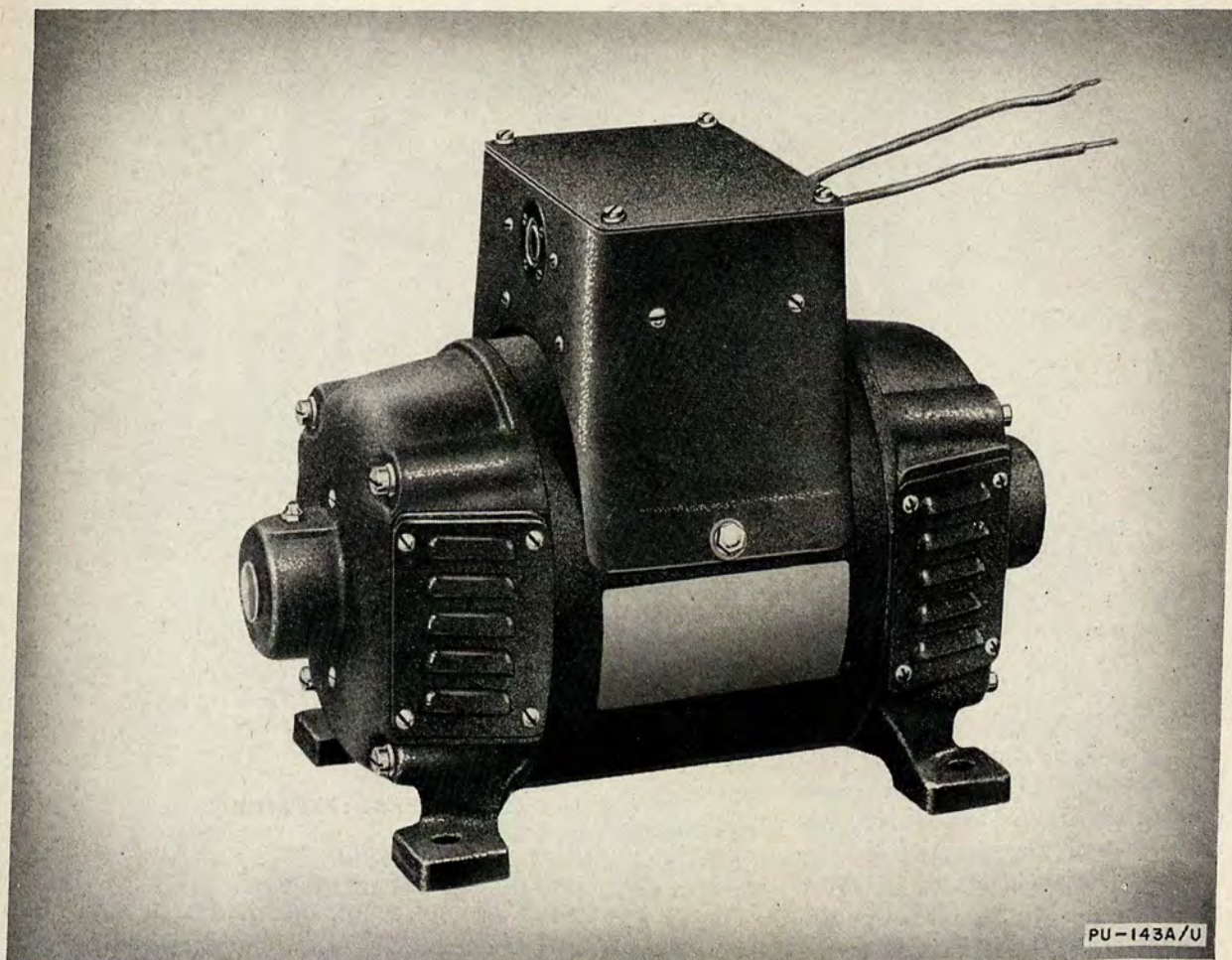


Figure 52. Rotary Converter PU-143A/U.

Status: Standard. *Stock No.:* 3H5182.5. *Reference:* TM 11-984.

Rotary Converter PU-143A/U is a small, rotating armature unit designed to convert 24-volt dc to 110-volt, 60-cycle, ac (maximum 380 watts ac at 85 to 100 percent power factor).

Rotary Converter PU-143A/U is fan-ventilated, semienclosed, and has a stationary d-c field and a rotary armature. The electrical noise suppressor (filter box) is mounted on top of the converter.

When installing Rotary Converter PU-143A/U, at least 2 feet of space should be provided on all sides to permit ample air circulation and accessibility for servicing. The converter should be installed on a suitable foundation which will hold the unit about 6 inches above the floor.

Rotary Converter PU-143A/U can be used at any installation where a rotary converter of the capabilities of Rotary Converter PU-143A/U is required.

TECHNICAL CHARACTERISTICS

INPUT: 24 v dc, 27 amp.

OUTPUT: 110 v ac, 60 cy, single-phase; 380 w (85 to 100% power factor).

TEMPERATURE RISE: 104° F. (40° C).

SPEED: 3,600 rpm.

BEARINGS: Ball.

DIMENSIONS AND WEIGHTS

Rotary Converter PU-143A/U measures 13 $\frac{1}{2}$ inches long, 7 $\frac{1}{2}$ inches wide, 9 $\frac{1}{2}$ inches high, and it weighs 60 pounds unpacked. Packed for shipment, it weighs 85 pounds.

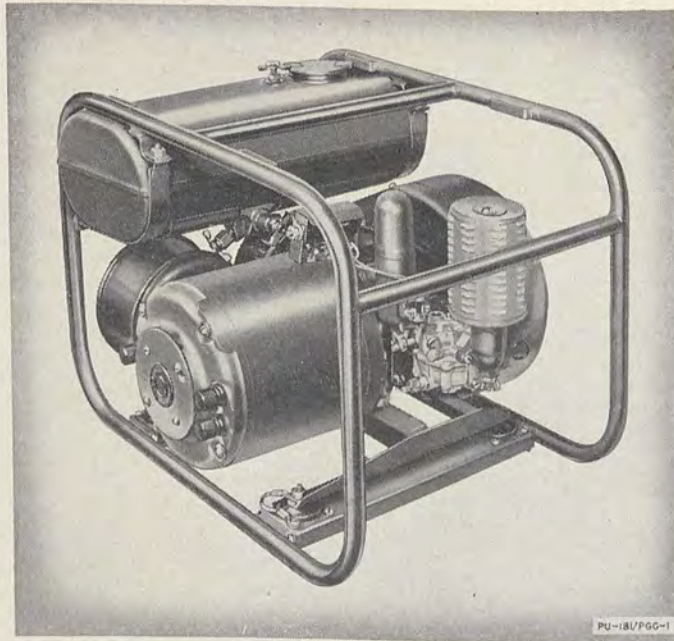


Figure 53. Engine Generator PU-181/PGC-1

Status: Standard. *Stock No.:* 3H1927-18.

Engine Generator PU-181/PGC-1 is a compact, lightweight, gasoline-engine-driven electric generating set. It consists of a 120/240-volt, 60-cycle, single-phase, a-c, permanent magnet generator (Signal Corps Generator GN-51-C) which is directly coupled to Signal Corps Engine GE-12-F. Engine GE-12-F is a single-cylinder, two-stroke-cycle, air cooled gasoline engine which develops 1.25 horsepower at 3,600 revolutions per minute. The complete unit is supported on rubber shock mountings within a tubular steel frame.

Case CY-739/PGC-1 is supplied as a protective housing for transportation of the unit and Bag CW-191/PGC-1 is supplied to protect the unit when not in operation.

Engine Generator PU-181/PGC-1 is intended as a source of power for Signal Corps Teletypewriter Set AN/PGC-1. It may also be used to furnish power for other equipment requiring power within its rated capacity.

TECHNICAL CHARACTERISTICS

Engine

MAKE: Jacobsen.
 MODEL: Sig C Engine GE-12-F.
 RATED: 1.25 hp at 3,600 rpm.
 CYLINDERS: 1.
 Bore: 2 in.
 Stroke: 1½ in.

COMPRESSION RATIO: 5.5 to 1.
 CYCLE: 2.
 HEAD: Valveless.
 OPERATING SPEED: 3,600 rpm.
 COOLING: Air.
 FUEL USED: Gasoline.
 FUEL TANK CAPACITY: 1 gal.
 FUEL CONSUMPTION PER HOUR (RATED LOAD):
 .2 gal.
 LUBRICATION SYSTEM: Oil mixed with the fuel.
 AIR CLEANER: Dry type.
 STARTING: Manual (rope).
 GOVERNOR: Electric solenoid type.
 IGNITION: Flywheel magneto.

Generator

MAKE: Electric Motors & Specialty Company.
 MODEL: Sig C Generator GN-51-C.
 TYPE: Permanent magnet a-c.
 RATING: 120/240, 60-cy, single-phase, 300 w.
 SPEED: 3,600 rpm.
 DRIVE: Direct.
 NUMBER AND TYPE BEARINGS: 2 ball.

COMPLETE UNIT

DIMENSIONS AND WEIGHTS

The overall dimensions of Engine Generator PU-181/PGC-1, exclusive of Case CY-739/PGC-1, are 17½ inches long, 14½ inches wide, and 12⅜ inches high. The overall dimensions of Case CY-739/PGC-1 are 19¾ inches long, 14½ inches wide, and 19¾ inches high. The complete weight of Engine Generator PU-181/PGC-1, Bag CW-191/PGC-1, and Case CY-739/PGC-1 including tools and spare parts, is approximately 98 pounds.

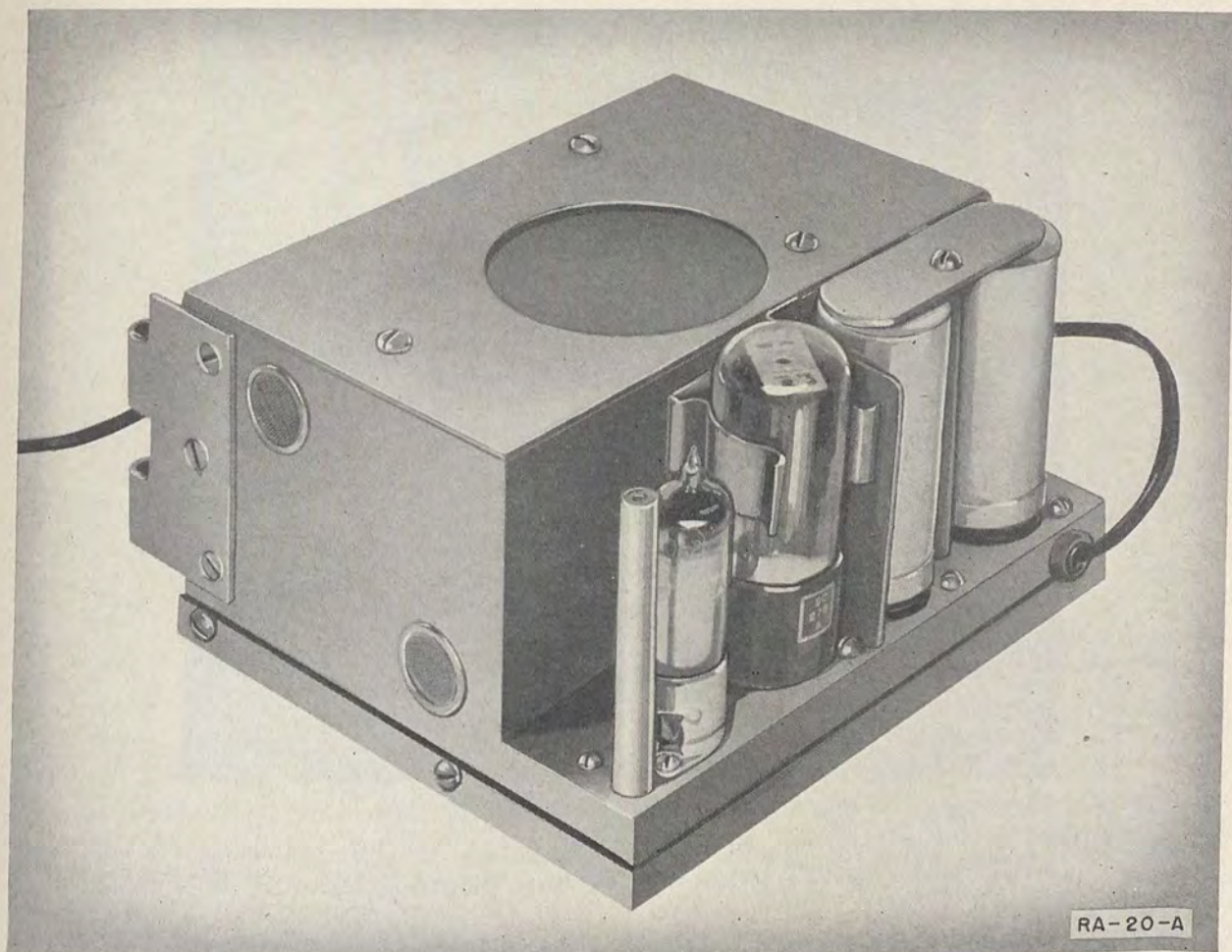


Figure 54. Rectifier RA-20-A.

Status: Standard. *Stock No.:* 2Z7320A. *Reference:* TM 11-624 (Radio Sets AN/MRC-2 and -2A). TM 11-850 (Radio Receivers BC-312, BC-314, BC-342, BC-344).

Rectifier RA-20-A is an electronic tube, full-wave rectifier designed to convert ac into dc for the operation of Radio Receivers BC-342 and BC-344. This unit operates from a 110- to 120-volt a-c supply and produces the required filament and plate voltage for the receiver circuits.

Rectifier RA-20-A consists of a power transformer, rectifier tube, choke, capacitors, voltage regulator, and terminal board mounted on a metal base with the power transformer and choke enclosed. The power transformer has a single primary winding and four secondary windings. The primary winding is tapped to provide for an input

of 110 or 120 volts. An auxiliary 12-volt winding rated at 3 amperes is provided and is used to supply voltage to the dial lamps of the receivers. Connection to a-c power source is made by means of a two-conductor cord. The rectifier is secured to the under side of the receiver chassis in the same manner as the dynamotor in a battery operated receiver.

TECHNICAL CHARACTERISTICS

POWER INPUT: 110 to 120 v, 50 to 60 cy, single-phase, ac.

POWER OUTPUT: 250 v, 75 ma dc.

TYPE: Full-wave, electronic tube.

DIMENSIONS AND WEIGHTS

Rectifier RA-20-A measures $7\frac{7}{16}$ inches long, $6\frac{57}{64}$ inches wide, $5\frac{1}{32}$ inches deep, and it weighs approximately $10\frac{1}{2}$ pounds.



Figure 55. Rectifier RA-36-J with filter reactor.

Status: Limited/Std. *Stock No.:* 3H4676. *Reference:* TM 11-951.

Rectifier RA-36-*(*) represents Rectifiers RA-36-J, -K, -L, and -Q. Rectifier RA-36-*(*) is a complete, transportable, full-wave, tungar bulb type rectifier, assembled and mounted in a fabricated sheet steel case. It is designed to convert 105- to 125-volt, 50- to 60-cycle, single-phase a-c power into dc for charging lead-acid storage batteries.

All components of Rectifier RA-36-*(*) are accessible from the front, with controls and ammeters for two separate half-wave rectifier circuits mounted on the front panel. A two-winding, tapped-primary and tapped-secondary transformer permits batteries to be charged while in use without regard to ground connections. Charging rate is regulated by the controls on the front panel. An iron-core choke coil filter reactor is mounted separately.

The principal application of Rectifier RA-36-*(*) is the furnishing of power for continuous or intermittent charging of batteries in Telephone Central Office Sets TC-1, TC-2, and TC-5, of which equipments it is a component part. In these

applications, Rectifier RA-36-*(*) is used with Cabinet BE-75 and Panel BD-90 or BD-98.

In addition, Rectifier RA-36-*(*) may be used for miscellaneous battery charging.

TECHNICAL CHARACTERISTICS

POWER INPUT: 105 to 125 v ac, 50 to 60 cy, single-phase; 1,500 w maximum consumption.

POWER OUTPUT: 6 to 48 v dc, 2 to 12 amp (adjustable) for charging 3 to 24 lead-acid storage battery cells.

TYPE: Full-wave, tungar bulb.

NUMBER AND TYPE OF TUBES: 6 electron tubes 4B26, half-wave, gas, rectifier (2 required, 4 running spares).

TYPE OF INSTALLATION: When used with Telephone Central Office Sets TC-1, TC-2, and TC-5, Rectifier RA-36-*(*) is mounted on Rack FM-30. When used for miscellaneous battery charging, Rectifier RA-36-*(*) and filter reactor may be mounted on a wall or some other suitable support.

DIMENSIONS AND WEIGHTS

The rectifier unit measures 20 $\frac{3}{16}$ by 11 $\frac{5}{8}$ by 11 $\frac{1}{2}$ inches and it weighs 82 pounds. The filter reactor measures 10 $\frac{1}{2}$ by 8 $\frac{3}{8}$ by 6 $\frac{1}{2}$ inches and it weighs 60 pounds.

Rectifier RA-36-*(*) (with filter reactor) weighs 159 pounds packed for domestic shipment, and the total volume is 2.1 cubic feet. Packed for export, it weighs 230 pounds and the total volume is 7 cubic feet (weights and volume approximate).

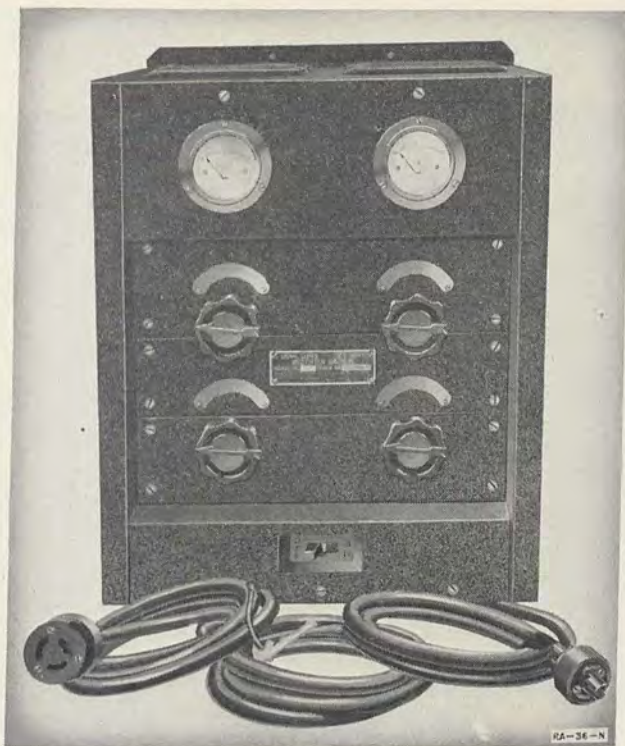


Figure 56. Rectifier RA-36-N.

Status: Limited/Std. *Stock No.:* 3H4676. *Reference:* TM 11-951.

Rectifier RA-36-N is a complete, transportable, full-wave, tungar bulb type rectifier assembled and mounted in a fabricated sheet steel case. It is designed to convert 105- to 125-volt, 50- to 60-cycle, single-phase a-c power into dc for charging lead-acid storage batteries.

All components of Rectifier RA-36-N are accessible from the front, with controls and ammeters for two separate half-wave rectifier circuits mounted on the front panel. A two-winding, tapped-primary and tapped-secondary transformer permits batteries to be charged while in use without regard to ground connections. Charging rate is regulated by controls on the front panel. Three rubber-covered cords extend from the bottom of the rectifier case for connection to a-c power source, battery circuit, and external reactor. This unit is wired to operate as a full-wave rectifier only. An iron-core choke coil filter reactor is mounted separately.

The principal application of Rectifier RA-36-N is the furnishing of power for continuous or intermittent charging of batteries in Telephone Central Office Sets TC-1, TC-2, and TC-5, of which

equipments it is a component part. In these applications, Rectifier RA-36-N is used with Cabinet BE-75 and Panel BD-90 or BD-98. In addition, Rectifier RA-36-N may be used for miscellaneous battery charging.

TECHNICAL CHARACTERISTICS

POWER INPUT: 105 to 125 v ac, 50 to 60 cy, single-phase; 1,500 w maximum consumption.

POWER OUTPUT: 6 to 48 v dc, 2 to 12 amp (adjustable) for charging 3 to 24 lead-acid storage battery cells.

TYPE: Full-wave, tungar bulb.

NUMBER AND TYPE OF TUBES: 6 electron tubes 4B26, half-wave, gas, rectifier (2 required, 4 running spares).

TYPE OF INSTALLATION: When used with Telephone Central Office Sets TC-1, TC-2, and TC-5, Rectifier RA-36-N is mounted on Rack FM-30. When used for miscellaneous battery charging, Rectifier RA-36-N and filter reactor may be mounted on a wall or some other suitable support.

DIMENSIONS AND WEIGHTS

The rectifier unit measures 21 by 15 $\frac{3}{4}$ by 11 $\frac{5}{8}$ inches and it weighs 90 pounds. The filter reactor measures 10 $\frac{1}{2}$ by 8 $\frac{3}{8}$ by 6 $\frac{1}{2}$ inches and it weighs 60 pounds.

Rectifier RA-36-N (with filter reactor) weighs 159 pounds packed for domestic shipment, and the total volume is 2.1 cubic feet. Packed for export, it weighs 230 pounds and the total volume is 7 cubic feet (weights and volume approximate).



Figure 57. Rectifier RA-37.

Status: Standard. *Stock No.:* 3H4677. *Reference:* TM 11-955.

Rectifier RA-37 is a compact, portable, full-wave, selenium disk, bridge-circuit type rectifier designed to convert 95- to 125-volt, 55- to 65-cycle a-c power to dc and supplies up to .4 ampere at 115 volts.

This unit consists of a tapped transformer (8 primary taps), a selenium dry-disk rectifier, an iron-core choke coil, and two high capacity electrolytic capacitors for filtering current, a tap-changing panel, a twist-type receptacle for the d-c load, necessary line fuse, switches, and cording. The entire unit is mounted on a welded steel chassis and is completely inclosed by a steel chassis base and a folded steel cover.

Rectifier RA-37 is transported in Chest CH-51 which may be used as a support when setting voltage taps and to keep the unit off damp ground and out of dust and dirt.

Rectifier RA-37 is designed to convert electric power from standard power lines for operating teletypewriter line units.

TECHNICAL CHARACTERISTICS

POWER INPUT: 95 to 125 v, 55 to 65 cy ac (Approx 90 w input is required for full-load output).

POWER OUTPUT: 115 v, .4 amp dc.

TYPE: Full-wave, selenium disk.

CORDING: 6-ft attached cord and plug for connection to power source.

DIMENSIONS AND WEIGHTS

Rectifier RA-37 measures 12½ inches long, 8¼ inches deep, and 6½ inches high, and it weighs 24 pounds. The unit is transported in Chest CH-51. Outside dimensions of Chest CH-51 are 16¼ inches long, 12½ inches wide, and 9¾ inches high. The weight of Rectifier RA-37 in Chest CH-51 is 41½ pounds and the volume is 1.1 cubic feet. Packed for export, the weight is 65 pounds and the total volume is 2.9 cubic feet.

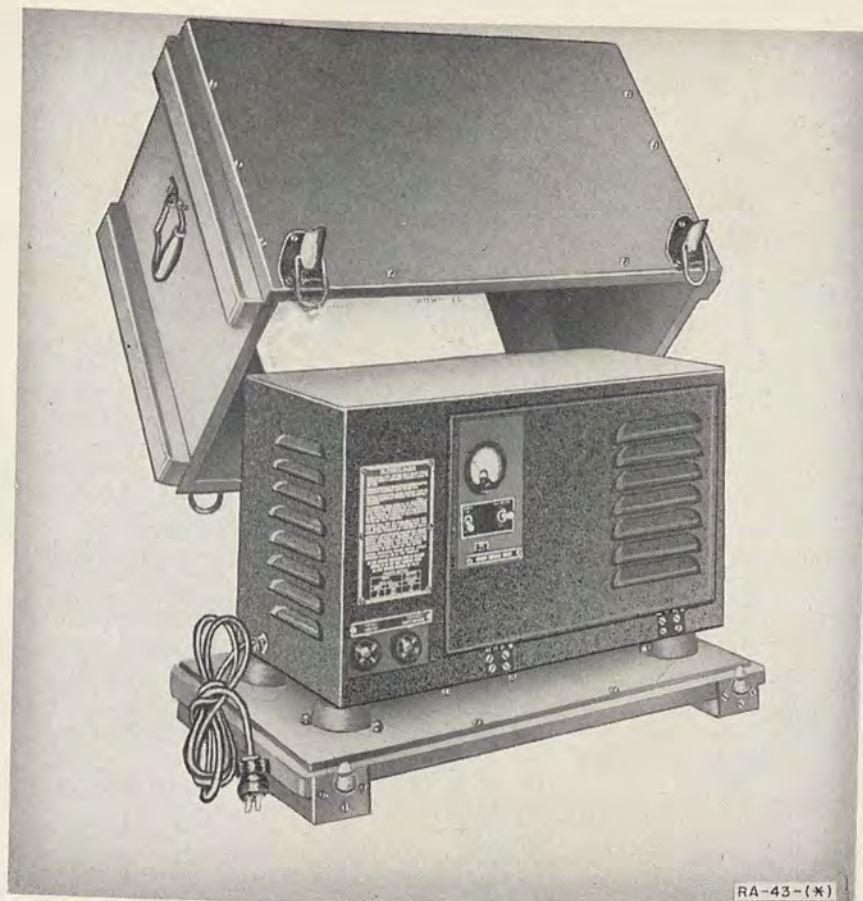


Figure 58. Rectifier RA-43-B, with portable carrying case (Case CS-82).

Status: Standard. *Stock No.:* 3H4683. *References:* TM 11-954, Rectifiers RA-43-A and -B. TM 11-4702, Repair Instructions Rectifier RA-43-B.

Rectifier RA-43-(*) represents Rectifiers RA-43-A and -B. Rectifier RA-43-(*) is a portable, self-contained, grid-controlled power unit for converting ac to dc for the operation of teletypewriter equipment used with Switchboard BD-100. It also supplies a-c power for the operation of one teletypewriter motor.

Rectifier RA-43-(*) is assembled upon a heavy steel base on which are mounted the power section, relay box, and control sections. Operating parts are inclosed in a ventilated steel cabinet. Input cord is supplied and is attached to the unit, and output receptacles are provided.

Rectifier RA-43-(*) is strongly constructed and the entire unit is shock mounted on the reinforced wooden base of Case CS-82 to which the case cover is secured by substantial catches. Case CS-82, designed for field service, is constructed of heavy plywood and is equipped with carrying handles.

TECHNICAL CHARACTERISTICS

POWER INPUT: 100 to 125 v or 200 to 250 v ac, 50 to 65 cy, single-phase (an extra transformer tap aids the proper operation of this rectifier even with abnormally low line voltage. With a full d-c load and with one teletypewriter motor connected, Rectifier RA-43-(*) requires an input of approx 1,000 w).

POWER OUTPUT:

(d-c) : Up to 4.55 amp at 115 v.

(a-c) : 1.3 amp at approx 115 v (depending on line voltage).

TYPE OF RECTIFIER: Grid-controlled.

CORDING: A-c input cord supplied with rectifier.

NUMBER AND TYPE OF TUBES: 1 tube 6F6G, 2 tubes 6GJ, 1 neon lamp, 105-125 v.

DIMENSIONS AND WEIGHTS

Rectifier RA-43-(*) measures 27½ inches long, 16½ inches wide, 16½ inches high, and it weighs 145 pounds with base of Case CS-82. The top cover of Case CS-82 measures 29½ inches long, 16½ inches wide, 16½ inches high, and it weighs 41 pounds. Rectifier RA-43-(*) packed for export, weighs approximately 252 pounds and the total volume is approximately 9 cubic feet.

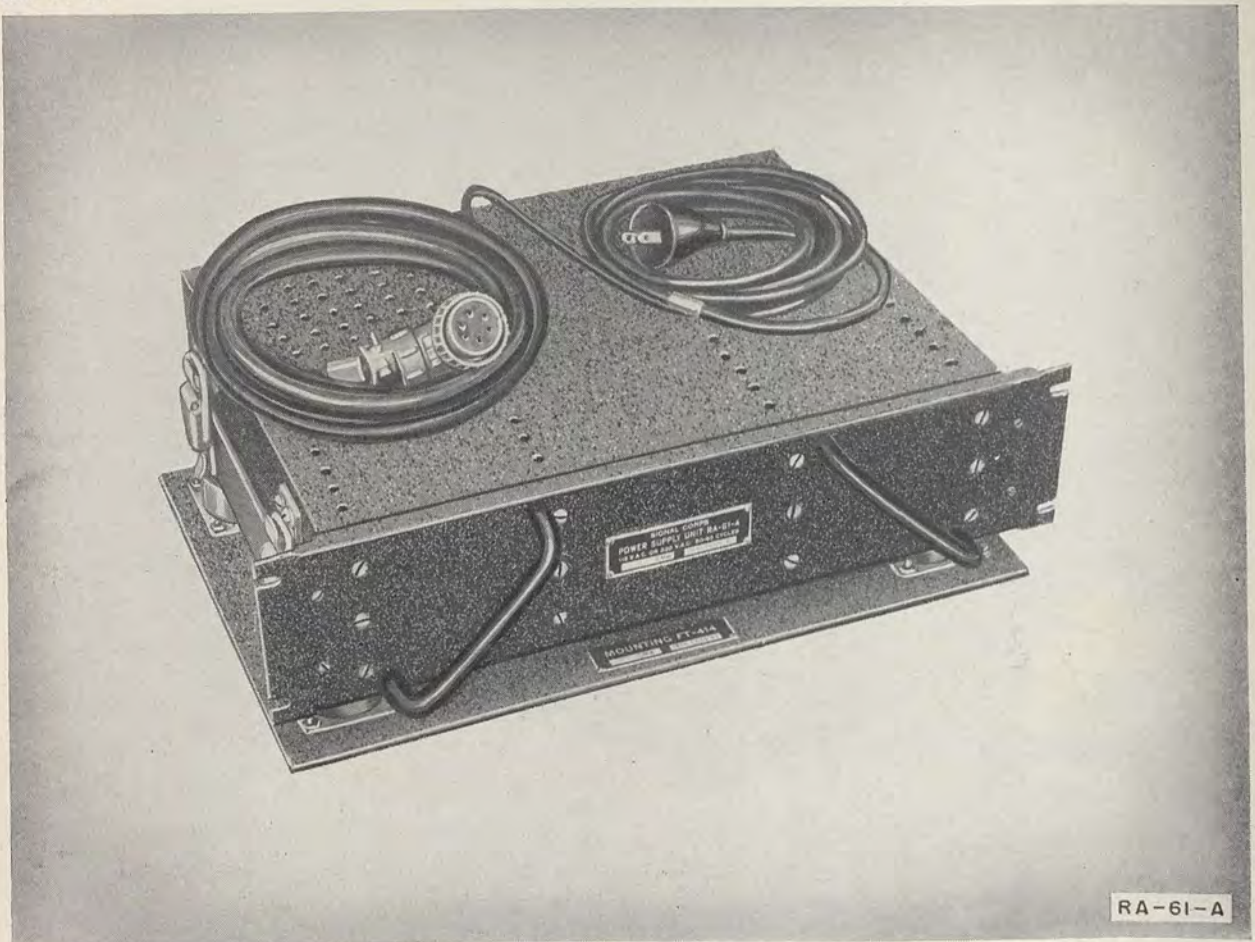


Figure 59. Power Supply Unit RA-61-A, on Mounting FT-414, showing Cord CD-872 and Cord CD-873.

Status: Standard. *Stock No.:* 3H4496-61.
Reference: TM 11-873.

Power Supply Unit RA-61-A is a compact, lightweight, single-tube, full-wave rectifier designed to convert 115- or 230-volt, 50- to 60-cycle ac into 250-volt dc at 120 ma (constant output) for plate supply, and 6.3 volts (at 6 amperes) or 12.6 volts (at 3 amperes) for filament supply voltage in the operation of radio receivers.

This unit is inclosed in a steel case, and the front panel has slots for mounting in a relay rack. It can also be operated on a table or other suitable support. In vehicular installations Mounting FT-414 is used.

Power Supply Unit RA-61-A is used to furnish plate and filament supply voltages to the receiver in the operation of Radio Sets SCR-612, SCR-613, SCR-614, and SCR-616. This unit is a component part of these radio sets.

TECHNICAL CHARACTERISTICS

POWER INPUT: 115 or 230 v, 50 to 60 cy ac.

POWER OUTPUT: 250 v at 120 ma dc for plate supply.

Filament supply voltage can be set at either 6.3 v (at 6 amp) or 12.6 v (at 3 amp) ac.

TYPE: Full-wave, single-tube.

CORDING: 1 Cord CD-872, 7 ft lg, connects Power Supply Unit RA-61-A to receiver. It is a part of Power Supply Unit RA-61-A.

1 Cord CD-873, 10 ft lg, connects Power Supply Unit RA-61-A to line supply and is furnished connected to the power unit.

NUMBER AND TYPE OF TUBES: 2 tubes 5U4G (1 required, 1 running spare).

DIMENSIONS AND WEIGHTS

Power Supply Unit RA-61-A, on Mounting FT-414, measures 19 inches long, 5 $\frac{3}{8}$ inches high, 14 inches deep, and it weighs 63.7 pounds unpacked (including Cords CD-872 and CD-873).



Figure 60. Rectifier RA-63-B.

Status: Standard. Stock No.: 3H4691-63. Reference: TM 11-962.

Rectifier RA-63-B is a portable, full-wave, selenium disk rectifier designed to convert 105- to 125-volt, single-phase, 60-cycle a-c power into dc for charging or trickle-charging lead-acid storage batteries.

This unit consists of a subassembly including one power transformer and its terminal block, one selenium rectifier stack having 8 selenium disks, one cut-out relay, and one terminal strip, all of which are mounted in a steel case. One single-pole, double-throw d-c output control switch and one circuit breaker are mounted on the back of the front panel with handles extending through the front cover.

Rectifier RA-63-B is used with Radio Sets

SCR-399 and SCR-499 to provide charging current for the auxiliary battery in Chest CH-109.

TECHNICAL CHARACTERISTICS

POWER INPUT: 105 to 125 v, 60 cy, single-phase ac.
 POWER OUTPUT: 12 v dc while charging at 5 amp or ½ amp when trickle-charging.

TYPE: Full-wave, selenium disk.
 CORDING: Rectifier RA-63-B is provided with a combination a-c power and battery charging cord and polarity-type plug.

TYPE OF INSTALLATION: Equipped with base for floor or table mounting and may be either temporarily installed or permanently installed by bolting to floor, table, or other level surface.

DIMENSIONS AND WEIGHTS

Rectifier RA-63-B measures 13½ inches long, 9¼ inches wide, and 8¾ inches high, and it weighs 27¾ pounds unpacked.

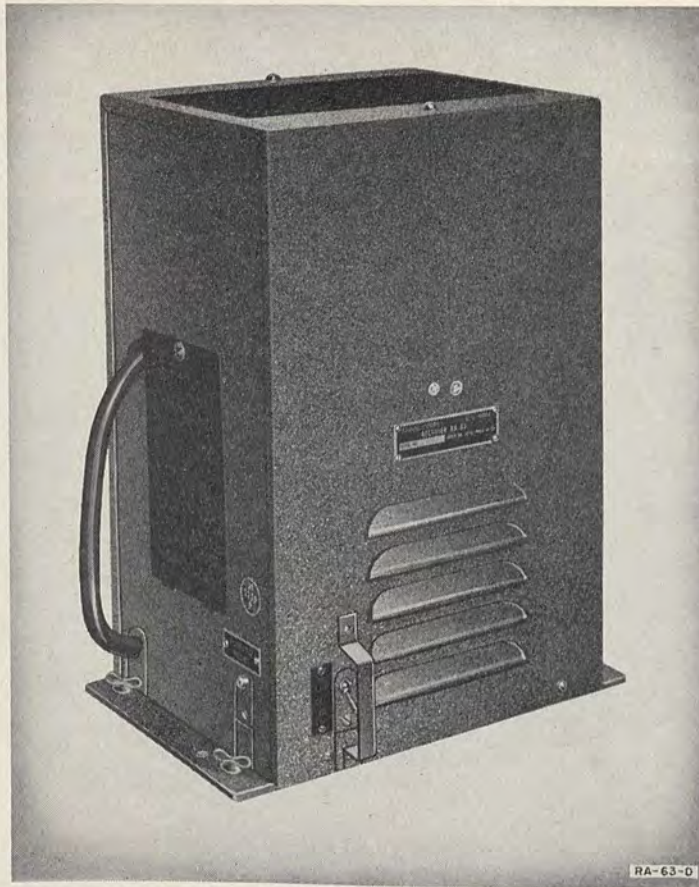


Figure 61. Rectifier RA-63-D.

Status: Standard. *Stock No.:* 3H4691-63. *Reference:* TM 11-962D.

Rectifier RA-63-D is a portable, full-wave, selenium-type rectifier designed to convert 105- to 125-volt, single-phase, 60-cycle, a-c power into dc for charging or trickle-charging lead-acid storage batteries.

This unit consists of a subassembly including one power transformer and its terminal posts, one selenium rectifier stack, one cut-out relay, and one terminal strip, all of which are mounted into a steel housing equipped with a perforated door which affords access to the interior of the unit.

Rectifier RA-63-D is used with Radio Sets SCR-399 and SCR-499 to provide charging current for the auxiliary battery.

TECHNICAL CHARACTERISTICS

POWER INPUT (a-c): 115 v ac (with control switch in HI-CHG position and with discharged battery)—2 to 2½ amp 115 v ac (with control switch in TR-CHG position and with charged battery)—1 to 1½ amp.

POWER OUTPUT (d-c): (Line voltage 115 v ac) 13 to 14 v dc (with discharged battery and control switch in HI-CHG position)—10 to 13 amp 15 v dc (with charged battery and control switch in TR-CHG position)—3 to 4 amp.

TYPE: Full-wave, selenium.

CORDING: Rectifier RA-63-D is provided with a combination a-c power and battery charging cord and polarity-type plug.

TYPE OF INSTALLATION: When used with Radio Set SCR-399-A, Rectifier RA-63-D is not packed as a separate item. The rectifier is bolted to the floor of Shelter HO-17 as part of the radio set, and no installation work should be required. When Rectifier RA-63-D is used with Radio Set SCR-499-A, it is packed as a separate component of the complete radio set.

DIMENSIONS AND WEIGHTS

Rectifier RA-63-D measures 13⁹/₁₆ inches long, 10 inches wide, 17³/₈ inches high, and it weighs 59½ pounds unpacked. When included as part of Radio Set SCR-499-A, it is packed in a wooden box 23 inches long, 19 inches wide, 16½ inches high, and the unit and box, or crate, weigh 119 pounds.

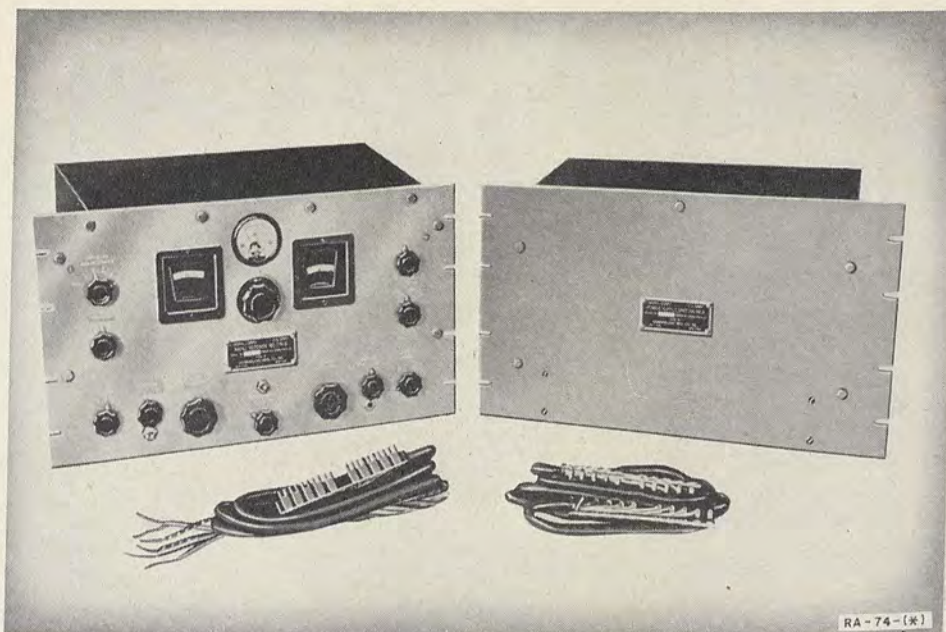


Figure 62. Power Supply Unit RA-74-B (right) with Radio Receiver BC-779-B.

Status: Standard. *Stock No.:* 3H4496-74B (RA-74-B), 3H4496-74C (RA-74-C). *Reference:* TM 11-866.

Power Supply Unit RA-74-(*), represents Power Supply Units RA-74-B and RA-74-C. Power Supply Unit RA-74-(*), is an a-c operated, electronic tube power supply unit designed to furnish filament, plate, and bias voltages to Radio Receivers BC-779-A, -B; BC-794-A, -B; BC-1004-B, -C, -D; and R-129/U.

This power supply unit consists of a steel chassis assembly on which are mounted the transformer, tubes, capacitors, chokes, and terminal block. It has a shield, or dust cover, secured to the panel and skirt of the chassis.

Power Supply Unit RA-74-(*), is similar in appearance and is electrically the same as Power Supply Units RA-84-A, -B, and RA-94-A except for variations in power transformers, the output of which is the same but in which the input requirements vary. Power Supply Unit RA-74-(*), is used in certain installations when the input characteristics of Power Supply Unit RA-84-A and -B are unsuitable.

TECHNICAL CHARACTERISTICS

POWER INPUT: 95 to 130 v, 25/60 cy ac; 190 to 260 v, 25/60 cy ac.

The transformer primary is provided with 8 taps marked 95, 105, 117, 130, 190, 210, 234, and 260.

POWER OUTPUT: 435 v, 160 ma dc; 315 v, 11 ma dc; 6.3 v, 7 amp; 5.0 v, 2 amp; 5.0 v, 3 amp.

TYPE: Electronic tube.

NUMBER AND TYPE OF TUBES: 2 electron tubes 5Z3 (1 required, 1 running spare); 2 electron tubes 80 (1 required, 1 running spare).

TYPE OF INSTALLATION: Designed for either rack or table mounting. (Mounting FT-509 is used to shock-mount Power Supply Unit RA-74-(*), in vehicular installations.)

DIMENSIONS AND WEIGHTS

Power Supply Unit RA-74-(*), measures 19 inches long, 10 inches wide, 10½ inches high, and it weighs 60 pounds unpacked. Packed for domestic shipment, the dimensions are 19⅞ inches by 13½ inches by 11⅞ inches. The weight is 63 pounds and the total volume is 1.8 cubic feet. Packed for export, the dimensions are 24½ inches by 15⅞ inches by 14⅞ inches, the weight is 89 pounds and the total volume is 3.2 cubic feet.



Figure 63. Rectifier RA-83-A, top view with cover open.

Status: Standard. *Stock No.:* 3H4699-83.
Reference: TM 11-963.

Rectifier RA-83-A is a portable, compact, self-contained, full-wave selenium disk rectifier designed for converting 115- or 230-volt, 50- to 60-cycle a-c power to 6- or 12-volt d-c power for the charging of 3- or 6-cell storage batteries.

The rectifier chassis on which all component parts are mounted is inclosed in a sheet metal case with hinged metal cover which affords access to the control panel. On the control panel are mounted necessary switches, fuse posts, an ammeter, and spare fuses. Attachment cords are stored above the control panel and protected by the hinged cover. The bottom of the chassis serves as the base of the unit, and the cover of the metal case is equipped with a carrying handle.

Rectifier RA-83-A is a component of Telephone

Terminal Set TC-21, Repeater Set TC-23, and Repeater Set TC-37.

TECHNICAL CHARACTERISTICS

POWER INPUT: 115 or 230 v, single-phase, 50 to 60 cy ac (maximum power input is approx 325 w with full-load on d-c output).

POWER OUTPUT: 20 amp at 6.0 v or 10 amp at 12.0 v dc.

TYPE: Full-wave, selenium disk.

CORDING: Rectifier RA-83-A is equipped with a-c power supply cable, 16 ft lg, with heavy duty attachment plug. D-c output cable (battery charging), 6 ft lg, is also supplied and is equipped with two battery clips.

TYPE OF INSTALLATION: Portable equipment. Should be operated in cool, dry, well-ventilated location, and kept out of direct sunlight and off damp ground.

DIMENSIONS AND WEIGHTS

Rectifier RA-83-A measures $16\frac{9}{16}$ inches high, $10\frac{3}{16}$ inches wide, $10\frac{1}{4}$ inches deep, and it weighs 51 pounds unpacked. Packed for export shipment, it weighs 64 pounds and the total volume is 1.5 cubic feet.

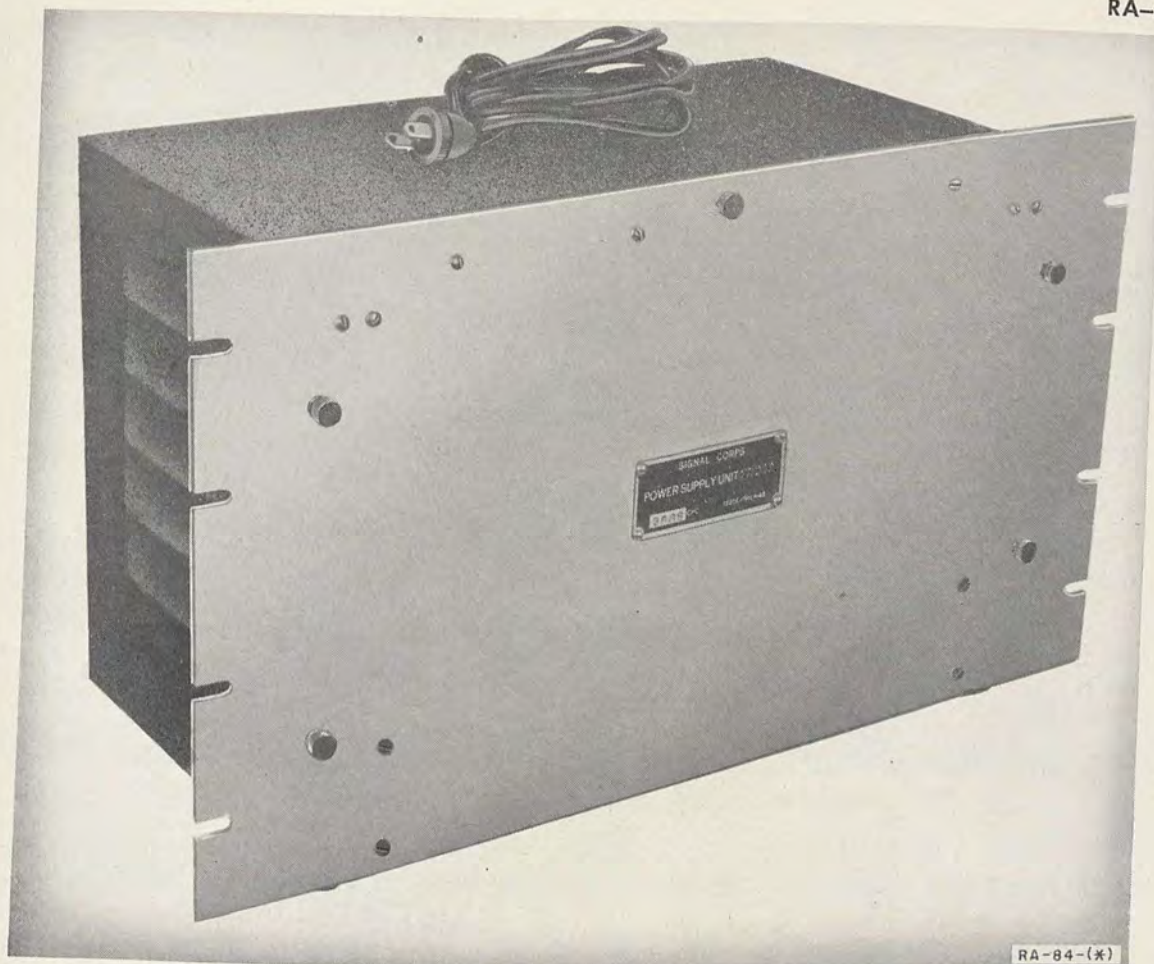


Figure 64. Power Supply Unit RA-84-A.

Status: Limited/Std. Stock No.: 3H4496-84.

Reference: TM 11-866.

Power Supply Unit RA-84-(*) represents Power Supply Units RA-84-A and RA-84-B. Power Supply Unit RA-84-(*) is an a-c operated, electronic tube power supply unit designed to furnish filament, plate, and bias voltages to Radio Receivers BC-779-A, -B, BC-794-A, -B, BC-1004-B, -C, -D, and R-129/U.

This power supply unit consists of a steel chassis assembly on which are mounted the transformer, tubes, capacitors, chokes, and terminal block. It has a shield, or dust cover, secured to the panel and skirt of the chassis.

Power Supply Unit RA-84-(*) is similar in appearance and is electrically the same as Power Supply Units RA-74-B, -C, and RA-94-A except for variations in power transformers, the output of which is the same but in which the input requirements vary.

TECHNICAL CHARACTERISTICS

POWER INPUT: 105, 115, 125 v, 50/60 cy ac. Three primary taps marked 105, 115, and 125 are provided.

POWER OUTPUT: 435, 160 ma dc; 315 v, 11 ma dc; 6.3 v, 7 amp; 5.0, 2 amp; 5.0 v, 3 amp.

TYPE: Electronic tube.

NUMBER AND TYPE OF TUBES: 2 electron tubes 5Z3 (1 required, 1 running spare); 2 electron tubes 80 (1 required, 1 running spare).

TYPE OF INSTALLATION: Designed for rack or table mounting (Mounting FT-509 is used to shock-mount Power Supply RA-84-(*) in vehicular installations).

DIMENSIONS AND WEIGHTS

Power Supply Unit RA-84-(*) measures 19 inches long, 10 inches wide, 10½ inches high, and it weighs 60 pounds unpacked. Packed for domestic shipment, the dimensions are 19¾ inches by 13 inches by 11⅝ inches. The weight is 63 pounds and the total volume is 1.7 cubic feet. Packed for export, the dimensions are 24¼ inches by 15⅝ inches by 14¾ inches. The weight is 85 pounds and the total volume is 3.1 cubic feet.

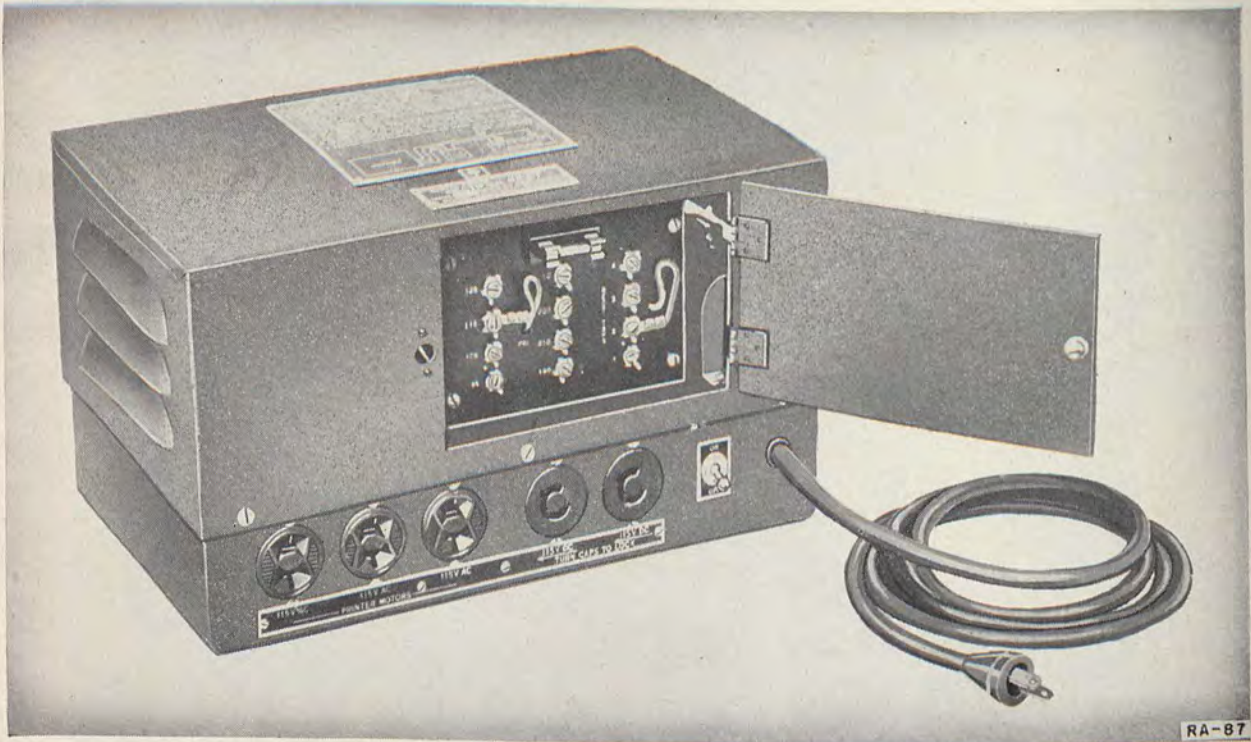


Figure 65. Rectifier RA-87, front view, with door open.

Status: Standard. *Stock No.:* 3H4699-87.
Reference: TM 11-957.

Rectifier RA-87 is a full-wave, selenium disk rectifier designed to convert 95- to 250-volt, 50- to 60-cycle, single-phase a-c power to 115-volt d-c power for the operation of teletypewriter line circuits. In addition, it provides 115-volt a-c power for the operation of teletypewriter motors.

All parts and connections are mounted on the base, or chassis, with the top and bottom inclosed in sheet steel covers. The top cover has a small door affording access to voltage tap-changing panel.

Chest Ch-158 (used with but not a part of this equipment) provides a protective box for transporting the rectifier and can be used as a support for the rectifier during operation.

Rectifier RA-87 is used to furnish power for the operation of Teletypewriter Sets EE-97-A, EE-

98-A, EE-102, Reperforator Teletypewriter Set TC-16, and Tool Equipment TE-47.

TECHNICAL CHARACTERISTICS

POWER INPUT: 95 to 125 v, 190 to 250 v, 50/60 cy ac. Maximum input power approx 600 w full-load on both a-c and d-c output circuits. Input circuit can be arranged on tap-changing panel for approximate power source voltages of 95, 105, 115, 125, 190, 210, 230, and 250 v at 50/60 cy.

POWER OUTPUT: (Available at same time or separately). Direct current—up to 46 w, 400 ma at 115 v. Alternating current—up to 500 w, 4.3 amp at 115 v.

TYPE: Full-wave, selenium disk.

DIMENSIONS AND WEIGHTS

Rectifier RA-87 measures $14\frac{9}{16}$ inches long, $8\frac{3}{8}$ inches wide, $7\frac{1}{2}$ inches high, and it weighs 40 pounds unpacked. In Chest CH-158 which measures approximately 18 inches long, $12\frac{3}{4}$ inches wide, and $10\frac{3}{4}$ inches high, the weight is 59 pounds. Packed for export in Chest CH-158, the weight is approximately 81 pounds and the total volume 3.3 cubic feet.



Figure 66. Rectifier RA-91.

Status: Standard. *Stock No.:* 3H4699-91.
Reference: TM 11-964.

Rectifier RA-91 is a full-wave, selenium disk rectifier designed to convert 115- or 230-volt, 60-cycle a-c power into dc for charging lead-acid storage batteries.

Rectifier RA-91 consists of a subassembly including a power transformer, four selenium rectifier stacks, and a filter reactor, all of which are inclosed in a steel casing. Two rotary d-c output control switches, an ammeter, fuses, and a circuit breaker are mounted on the front of the rectifier. A terminal board mounted in the back of the unit provides for arranging the input circuit of the rectifier for nominal 115- or 230-volt power.

Rectifier RA-91 is intended to replace all models of Rectifier RA-36 as a component of Telephone Central Office Sets TC-1, TC-2, and TC-10, in which applications it is used in conjunction with Cabinet BE-75 and either Panel BD-90 or BD-98. Rectifier RA-91 is also a component of Panel BD-132 (power).

TECHNICAL CHARACTERISTICS

POWER INPUT: 105 to 125 v or 210 to 250 v, 50 or 60 cy a-c power source. Power source should have a load capacity of at least 1,500 w.

POWER OUTPUT: 2 to 12 amp into a 6- to 48-v battery (3 to 24 lead-acid cells).

TYPE: Full-wave, selenium disk.

CORDING: When used in place of Rectifier RA-36, Rectifier RA-91 is equipped with an a-c power cord and plug and a battery charging circuit cord and plug. When installed in Panel BD-132 (power), the rectifier is already connected and there are no plugs required.

TYPE OF INSTALLATION: Mounted on Rack FM-30 together with Cabinet BE-75 when used as a component of Telephone Central Office Sets TC-1, TC-2, or TC-10. Panel BD-132 contains Rectifier RA-91 mounted as an integral part.

DIMENSIONS AND WEIGHTS

Rectifier RA-91 measures 21 inches long, 15 $\frac{7}{8}$ inches wide, 21 inches high, and it weighs 155 pounds unpacked. Packed for export, it weighs 195 pounds and the total volume is 5 cubic feet.

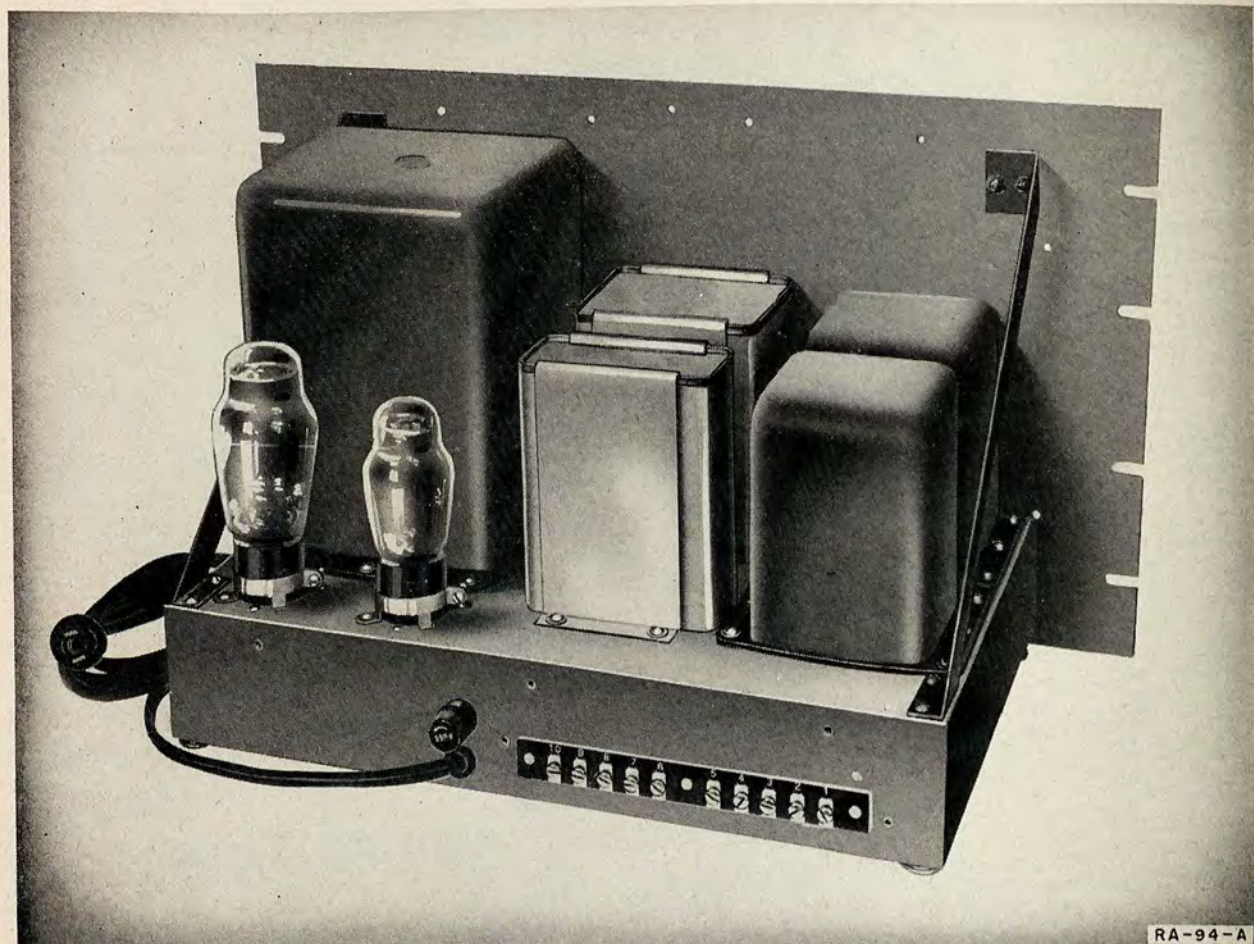


Figure 67. Power Supply Unit RA-94-A, top view of chassis.

Status: Limited/Std. Stock No.: 3H4496-94.

Reference: TM 11-866.

Power Supply Unit RA-94-A is an a-c operated, electronic tube power supply unit designed to furnish filament, plate, and bias voltages to Radio Receivers BC-779-A, -B, BC-794-A, -B, and BC-1004-B, -C, -D, and R-129/U.

This power supply unit consists of a steel chassis assembly on which are mounted the transformer, tubes, capacitors, chokes, and terminal block. It has a shield, or dust cover, secured to the panel and skirt of the chassis.

Power Supply Unit RA-94-A is similar in appearance and is electrically the same as Power Supply Units RA-74-B, -C, and RA-84-A, -B except for variations in power transformers, the output of which is the same but in which the input requirements vary.

Power Supply Unit RA-94-A is a component of Radio Set SCR-244-B and Radio Set SCR-704.

TECHNICAL CHARACTERISTICS

POWER INPUT: 115 or 230, v, 50/60 cy ac; two taps marked 115 and 230 are provided.

POWER OUTPUT: 435 v, 160 ma dc; 315 v, 11 ma dc; 6.3 v, 7 amp; 5.0 v, 2 amp; 5.0 v, 3 amp.

TYPE: Electronic tube.

NUMBER AND TYPE OF TUBES:

2 electron tubes 5Z3 (1 required, 1 running spare).

2 electron tubes 80 (1 required, 1 running spare).

TYPE OF INSTALLATION: Designed for either rack or table mounting (Mounting FT-509 is used to shock-mount Power Supply Unit RA-94-A in vehicular installation).

DIMENSIONS AND WEIGHTS

Power Supply Unit RA-94-A measures 19 inches long, 10 inches wide, 10½ inches high, and it weighs 60 pounds unpacked. Packed for export, the dimensions are 24¼ inches by 15¾ inches by 14¾ inches. The weight is 85 pounds and the total volume is 3.1 cubic feet.



Figure 68. Rectifier RA-120.

Status: Standard. *Stock No.:* 3H4691-120.
Reference: TM 11-953.

Rectifier RA-120 is a full-wave vacuum tube and selenium disk rectifier capable of converting 115- or 230-volt, 50/60-cycle, single-phase a-c power into dc for supplying plate and filament voltages for the operation of Radio Receiver and Transmitter BC-620 in Radio Set SCR-510, and Radio Receiver and Transmitter BC-659 in Radio Set SCR-610.

Rectifier RA-120 is assembled on a box-type chassis with a single interior deck and is housed in a metal case. The rectifier may be attached to either Radio Receiver and Transmitter BC-620 in Radio Set SCR-510 or Radio Receiver and Transmitter BC-659 in Radio Set SCR-610 by means of trunk fasteners. It is electrically connected in these applications by a short length of cable and

an amphenol connector as is done in using Plate Supply Units PE-117 and PE-97.

TECHNICAL CHARACTERISTICS

POWER INPUT: 105 to 125 v, 50/60 cy, single-phase ac, .7 amp; 210 to 260 v, 50/60 cy, single-phase ac, .35 amp.
POWER OUTPUT: 1.6 v dc, .65 amp; 1.6 v dc, .925 amp; 95 v dc, .033 amp; 85 v dc, .045 amp; 6.85 v dc, .255 amp; 148 v dc, .045 amp.

TYPE: Full-wave vacuum tube and full-wave selenium disk.

NUMBER AND TYPE OF TUBES:

- 1 ballast tube (Sig C stock No. 2J10T1).
- 1 ballast tube (Sig C stock No. 2J2H8).
- 1 electron tube 1007.
- 1 electron tube OB3/VR90.

DIMENSIONS AND WEIGHTS

Rectifier RA-120 measures 15 inches long, 14 inches wide, 5 inches high, and it weighs 30 pounds unpacked. Packed for shipment, the dimensions are 18 inches by 20 inches by 10 inches, and the weight is 40 pounds.

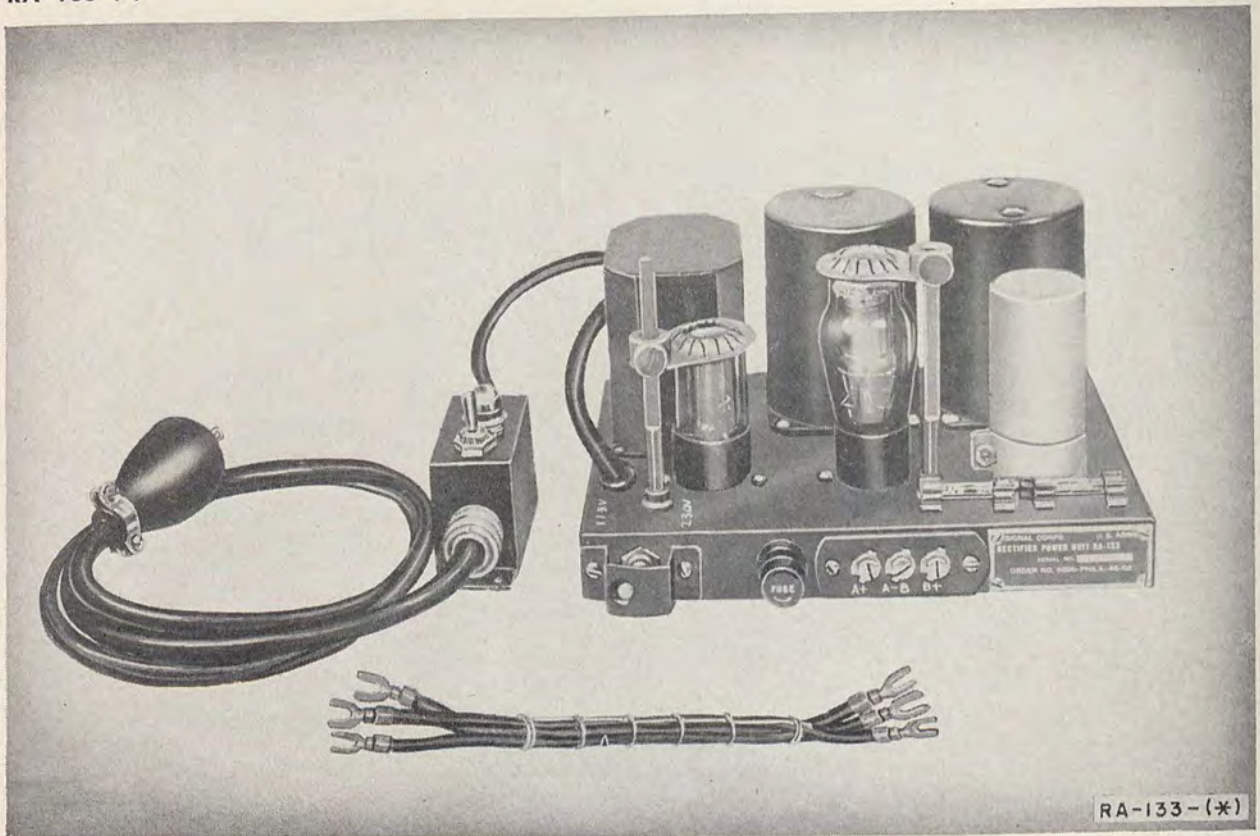


Figure 69. Rectifier Power Unit RA-133.

Status: Standard. *Stock No.:* 3H4691-133.

Rectifier Power Unit RA-133-(*), represents Rectifier Power Units RA-133 and RA-133-A. Rectifier Power Unit RA-133-(*), is an a-c operated electronic tube power supply (filter included) with regulated output designed to replace the regular battery pack supplying power for the operation of Frequency Meter BC-221-B, -M, -N, -O, -P, -Q, -R, -T, -AA, -AC, -AE, -AF, -AG, -AH, -AJ, -AK, -AL, and -AN.

This rectifier power unit consists of a chassis assembly and line control box. The power cord is a part of and is connected to the line control box approximately 18 inches from the chassis assembly. All tubes, transformers, capacitors, chokes, fuses, and the 115-230 voltage selector switch are mounted on the chassis assembly.

Rectifier Power Unit RA-133-(*), fits into the battery compartment of Frequency Meter BC-221-B, -M, -N, -O, -P, -Q, -R, -T, -AA, -AC, -AE, -AF, -AG, -AH, -AJ, -AK, -AL, and -AN,

but certain minor modifications to the cabinet of the frequency meter are necessary to prevent mechanical interference.

Components are hermetically sealed and impregnated for tropical use.

TECHNICAL CHARACTERISTICS

POWER INPUT: 110 to 130 v or 220 to 260 v, 50/60 cy, single-phase ac.

POWER OUTPUT: 121.5 to 135 v dc, .02 amp; 5 to 6.6 v ac, 1 amp.

TYPE: Full-wave electronic tube.

NUMBER AND TYPE OF TUBES: 1 rectifier tube 6X5GT, 1 regulator tube OD3/VR150.

DIMENSIONS AND WEIGHTS

Rectifier Power Unit RA-133-(*), measures approximately $8\frac{3}{4}$ inches wide, $5\frac{5}{16}$ inches high, and 6 inches deep. Packed for shipment, the outer dimensions of the carton in which shipment is forwarded are 10 inches by $8\frac{3}{4}$ inches by $6\frac{2}{3}$ inches, and the packaged unit weighs approximately 12 pounds.

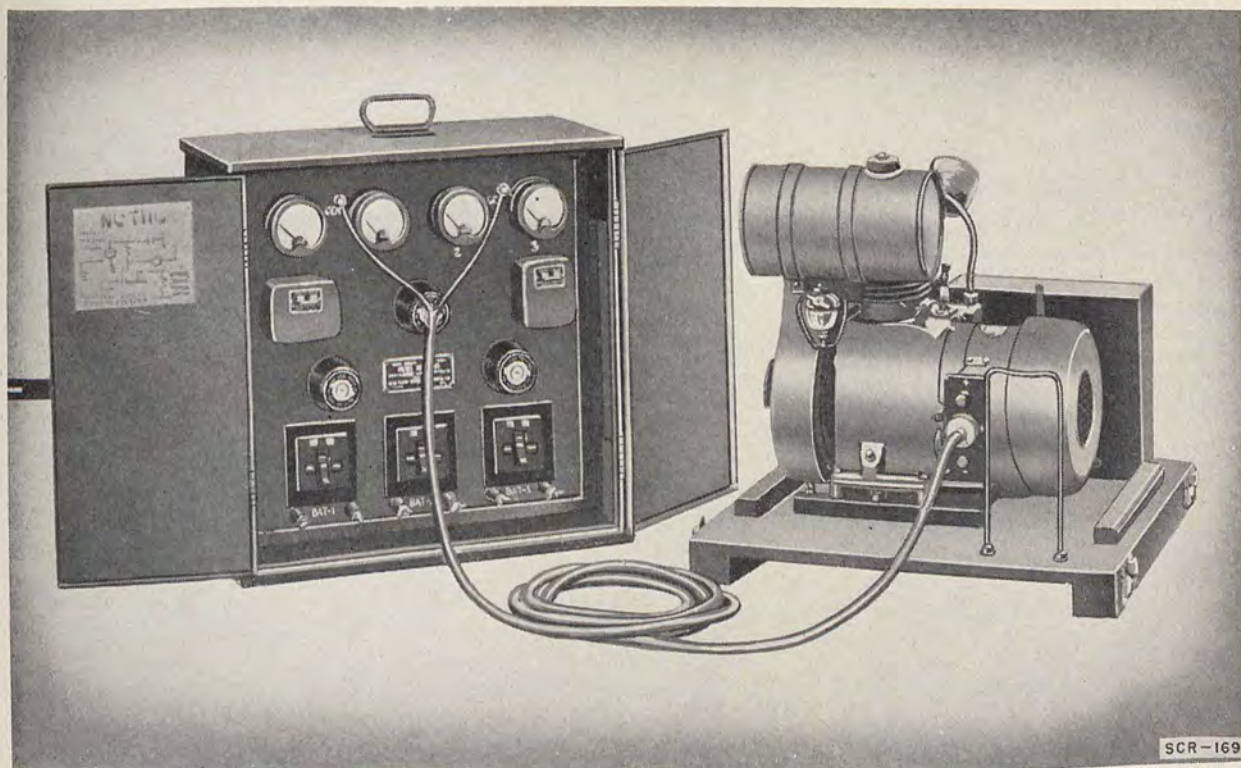


Figure 70. Charging Set SCR-169, showing Panel BD-()-61, Cord CD-107, and Power Unit PE-HJ-43.

Status: Limited/Std. *Stock No.:* 3H799.
Reference: TM 11-302.

Charging Set SCR-169 is a portable battery charging equipment designed for the charging of storage batteries in the field. It will charge batteries of 2 to 24 volts.

Charging Set SCR-169 consists of one Power Unit PE-(*)-43 (see note below), or one Power Unit PE-HJ-43, or one Power Unit PE-HK-43; one Panel BD-()-61, and one Cord CD-107.

Note. Power Unit PE-(*)-43 represents Power Units PE-HC-43, PE-HD-43, PE-HE-43, PE-HF-43, PE-HG-43, and PE-HH-43.

Power Unit PE-(*)-43, or PE-HJ-43, or PE-HK-43 will deliver 550 watts at 32-volts dc. These power units are described under their own nomenclature in this volume.

Panel BD-61 is a control board mounted in a cabinet. All necessary meters, controls, and connections for operation of three charging circuits are mounted on the board.

Cord CD-107 is a two conductor, rubber-insulated cord, 15 feet long. It is used to connect Panel BD-61 to the power unit. One end of the cord is provided with two hook type terminals marked

plus and minus; the other end is furnished with a polarized plug.

TECHNICAL CHARACTERISTICS

OUTPUT: Power Unit PE-(*)-43, or Power Unit PE-HJ-43, or Power Unit PE-HK-43. Maximum output of generator—550 w at 32-v dc, 17.5 amp.

CIRCUIT OUTPUT: Maximum per circuit—24 v, 7.5 amp. Any number of batteries may be charged on any one of the three charging circuits, provided that the total voltage of the batteries being charged does not exceed 24 v. The following table shows the number of batteries that may be connected and charged on each of the three charging circuits:

Volts per battery	Number of batteries per charging circuit	Maximum charging rate per charging circuit (amp)
2	12	7.5
4	6	7.5
6	4	7.5
12	2	7.5
24	1	7.5

DIMENSIONS AND WEIGHTS

Panel BD-61 measures 22¼ by 22½ by 10¼ inches and it weighs 100 pounds. Cord CD-107 is 180 inches long and it weighs 3 pounds.

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