

MANUAL
for selling
RADIO STORAGE
BATTERIES

PHILCO



PHILADELPHIA
STORAGE BATTERY COMPANY
PHILADELPHIA, PA., U.S.A.

1600

Manual

for selling

Radio

Storage Batteries

Introduction

THIS manual is designed to help you, the radio dealer, sell your customers the enjoyment, satisfaction and pleasure of long distance radio reception—not as a scientific or technical discussion of radio.

As you—and every experienced radio dealer knows, continued and satisfactory long distance reception is possible only when the proper apparatus is used. The apparatus described in this manual represents today the highest developments in the radio field.

PHILCO

RADIO STORAGE BATTERY SALES MANUAL



**The Complete Philco Battery Equipment
That Puts Radio in the Parlor**

A safe, convenient, economical and highly efficient power service for all radio receiving sets.

Why Storage Batteries Should be Used for Radio

Storage batteries—as every experienced radio dealer knows—are absolutely necessary for clear, uninterrupted “DX” or distance radio reception. This is true whether the standard full-powered tubes or the so-called “peanut” (low-voltage) tubes are used. And here’s the reason—

Any variation in voltage of a radio battery, either in the “A” or “B” circuit, is immediately reflected in the radio service. Frequent, troublesome re-tuning and crackling noises are the most common annoyances resulting from the use of dry batteries.

Storage batteries give a strong, *uniform* flow of current and their voltage remains constant over long periods. When their voltage does begin to drop they can be recharged easily and at small cost.

Dry batteries, however, commence to lose charge and their voltage begins to drop the minute they are turned out by the factory. *And whether in actual use or on the dealer’s shelf, this loss goes on continuously until the battery is worn out.* Furthermore, dry batteries are so sluggish in their action and so high in internal resistance that their voltage falls off rapidly when they are used for more than an hour or two at a time.

That’s why constant voltage and uniform flow of current—so vital to satisfactory radio reception—are impossible with dry batteries. In addition—internal corrosion, imperfect internal connections and faulty depolarization are frequent sources of noise or trouble from dry batteries.

Storage batteries are also *far more economical*. The saving in one year, as compared with dry batteries, will almost always pay off the full cost of the storage battery equipment.

Philco Radio Storage Batteries are Dryamic

Why Philco Drynamic Storage Batteries Should be Used

Philco Drynamic Radio Batteries are *designed especially for radio work*—not adaptations of batteries originally made for some other purpose. With all the convenience of dry batteries, they have the long life, uniform voltage and famous time-tested features of the Philco Diamond-Grid STORAGE Batteries for automobiles.

Charged DRY at the factory, the life of a Philco Drynamic Radio Battery doesn't start until you pour in the Philco Electrolyte. There's no deterioration in stock—no initial charging—no acid sloppage. You carry them in stock like any other package goods.

Philco Drynamic Batteries are ready for radio use just as soon as the cells are filled with Philco Electrolyte. They deliver 50 per cent or more of their rated capacity *without any initial charging*—and full rated capacity and over after subsequent recharging.

Philco Radio "A" Batteries, with their tremendous reserve capacity, give a strong, steady flow of current over long periods. This means uniformly strong power in the detector and amplifier tubes—noiseless service—freedom from troublesome adjustments.

Philco Radio "B" Batteries—by reason of their scientific design, uniform voltage and perfect insulation—absolutely do away with those annoying dry battery noises and save the user from expensive dry battery replacements.

Philco Radio Storage Batteries are Drynamic



RADIO STORAGE BATTERY SALES MANUAL

• Philco Drynamic “Peanut Tube” “A” Circuit Batteries

Dry batteries, by reason of their unsteady voltage and unreliability, have been found unsatisfactory even for service in the “A” circuit of radio sets having the “peanut” or low-voltage (low-power) tubes.

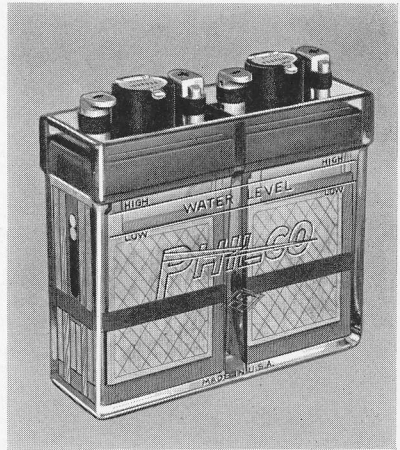
Two special types of 2-cell Philco Batteries, therefore, have been designed for this particular service. They eliminate the objectionable features of dry batteries, insure the clearest possible reception and do away with the need for frequent, troublesome adjustments of the filament rheostats and tuning dials.

Philco Type UD44 Battery

The Philco Type UD44 Battery, guaranteed 2 years, is designed to supply current for tubes rated at 3 volts—.06 ampere (UV199, C299, DV-1, etc.) as well as for tubes rated at 1.1 volts—.25 ampere (WD-11, WD-12, “N”, C-11, C-12, etc).

This 2-cell storage battery occupies less space than three No. 6 dry cells—its dimensions being $2\frac{3}{16}$ " x $6\frac{5}{8}$ " x $6\frac{1}{2}$ " high—yet it gives *uniform* voltage and for a longer period than three dry batteries. Where the current draw is as great as when four or more tubes are used, dry cells are so very unreliable that a storage battery is practically a necessity.

The two cells are used in series for 3-volt tubes, and in parallel for 1.1-volt tubes, as shown in Diagrams No. 1 and No. 2, on page 6. The battery will deliver 18 ampere-hours capacity at 4 volts, with the cells connected in series, or 36 ampere-hours at 2 volts with the cells connected in parallel. This capacity will light the filament of a WD-11 tube for 144 hours or a UV199 tube for 300 hours.



Type UD44 Battery

Philco Radio Storage Batteries are Drynamic

Philco Dynamic "Peanut Tube"

"A" Circuit Batteries—Continued

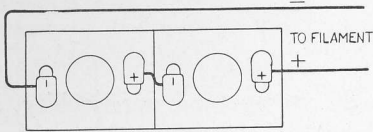


Diagram No. 1
Series connection of
UD44 Battery for 4-volt operation

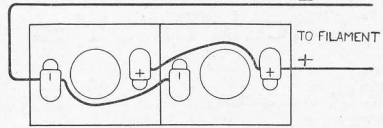
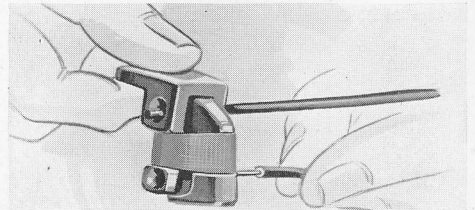
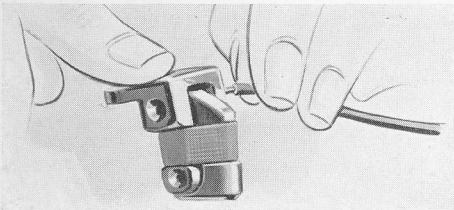


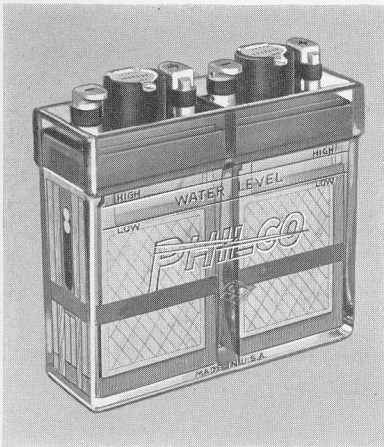
Diagram No. 2
Parallel connection of
UD44 Battery for 2-volt operation

New Philco Snap Terminals Make Connection Changes Easy



Snap Terminals

Philco Type UD44 Batteries are equipped with a remarkable new non-corrodible snap terminal which grasps and releases the wire with merely a slight pressure from one finger. An eight-year-old boy can disconnect a Philco Battery from a radio set, connect it with a Philco Charger, plug in on the lighting current, disconnect the battery from the charger, disconnect the battery from the radio set.



Visible Water Gauge

Where the cells are used in parallel with 1.1-volt tubes, it is advisable and easy to change to the series connection for charging (see Diagram No. 1). This will save current and the battery will charge more quickly.

Visible Water Gauge on Glass Container

High- and low-water lines—moulded into the strong, pressed-glass container of the Philco Type UD44 Battery—tell at a glance whether the cells need water.

Philco Radio Storage Batteries are Dynamic

Philco Drynamic "Peanut Tube" "A" Circuit Batteries—Continued

The cover has a new type filler-vent that need not be removed to add water—the water being poured into the large funnel-shaped top. In addition, the vent is designed with large expansion chambers, which keep the battery dry and clean on the outside.

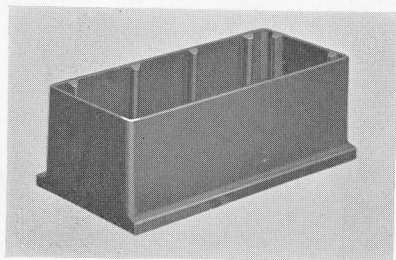
Visible Charge Indicator on Battery

The Philco Type UD44 Battery has a charge indicator visible through the glass end of the battery. It consists of two balls of different densities—mounted in a hard rubber cage—which rise and fall as the specific gravity of the electrolyte changes.

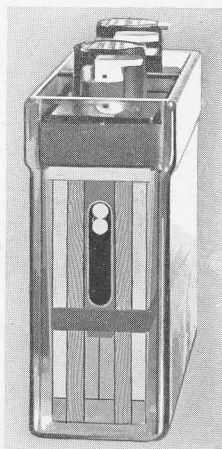
When both balls are up the battery is fully charged. When one ball is up and one down the battery is fairly well charged, but not fully charged. When both balls are down, the battery is discharged to the point where re-charging is necessary. The progress of the charge can be noted by the rising of first one then the other ball.

Construction Features

The Philco Type UD44, in common with other Philco Radio Batteries, is made with the famous Diamond-Grid Plates, Quarter-sawed Hard Wood Separators and Philco Slotted Rubber Retainers described at the end of this catalog. The plates are extra thick and double wood separators are used between them, thus insuring the utmost in service and life.



Rubber Tray



Visible Charge Indicator

Rubber Tray

The soft rubber tray or base shown in the illustration has been designed to fit snugly over the bottom of the UD44 glass container to add stability to the battery when otherwise unsupported. Vertical ribs on the inner faces of the tray walls provide space to catch any liquid that may accidentally be spilled in watering the battery.

Philco Radio Storage Batteries are Drynamic



RADIO STORAGE BATTERY SALES MANUAL

Philco Drynamic "Peanut Tube"

"A" Circuit Batteries—Continued

Philco Type 74 RAR and RW

These Philco Batteries are designed for radio owners who prefer a battery with sufficient capacity to operate "peanut" or low-voltage tubes for several months without recharging. Each battery consists of two cells with convenient terminals by which the cells may be connected in series for 4-volt or in parallel for 2-volt operation.

The capacity of these batteries is 80 ampere hours at 4 volts or 160 hours at 2 volts. This capacity is sufficient to light the filament of a WD-11 or equivalent tube for 640 hours, or a UVI99 or equivalent tube for 1330 hours.

These batteries are assembled in hard rubber jars, hard wood case, and contain the same rugged plates and separators as are used in Philco Radio "A" Batteries for standard 5-volt tubes.

Following are the main specifications of the Philco Drynamic "A" Batteries for "peanut" or low-voltage tubes:

	Type UD44		Type 74 RAR and RW	
Voltage	4.0	2.0	4.0	2.0
Ampere-hour capacity	18	36	80	160
Hours lighting one tube UV199, C299, DV-1	300		1330	
Hours lighting one tube WD-11, WD-12, "N", C-11, C-12	144		640	
Width and length	2 ⁹ / ₁₆ " x 6 ⁵ / ₈ "		6 ¹ / ₁₆ " x 7 ⁵ / ₁₆ "	
Overall height	6 ¹ / ₂ "		9 ¹ / ₄ "	
Weight, pounds (filled)	8		26	



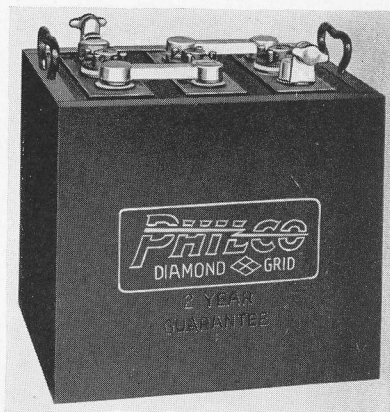
Philco Radio Storage Batteries are Drynamic

Philco Dynamic Radio "A" Batteries for Standard 6 Volt Tubes

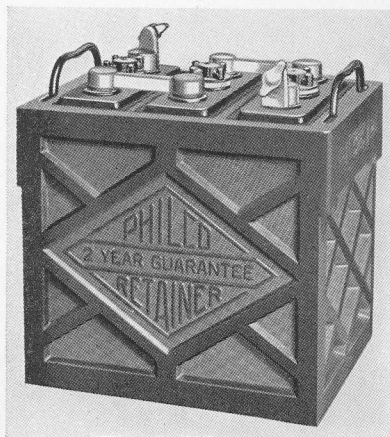
The standard types of tube are designed to operate at 5 volts at the filament, from a 6-volt storage battery. The excess voltage of the battery is needed for proper voltage adjustment and is taken up by filament rheostat.

Philco Dynamic Radio "A" Batteries for standard tubes are made in two types—TYPE RAR and TYPE RW.

Type RAR—the highest-capacity, longest-life battery ever built for radio service—is guaranteed for TWO YEARS but built to long outlast even this long guarantee.



Type RAR Battery



Type RARX Battery

Type RW, guaranteed for one year, meets the demand for a thoroughly dependable standard tube battery of moderate price. It has the same famous Diamond-Grid Plates and Quarter-sawed Separators as the RAR Type, but not the Philco Slotted Retainers.

For the utmost in appearance as well as in utility there are also handsome *de luxe* batteries with sturdy diamond-ribbed hard rubber cases—the 76 RARX, 80 ampere-hour battery, and the 96 RARX, 100 ampere-hour battery. These batteries are listed at an advance of \$5.00 above types 76 RAR and 96 RAR respectively.

The specifications of these batteries are shown on the following page.

Philco Radio Storage Batteries are Dynamic



RADIO STORAGE BATTERY SALES MANUAL

Specification Table of Philco Radio "A" Batteries for Standard 6 Volt Tubes

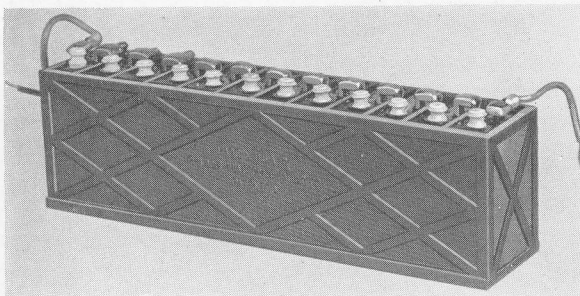
	Type 56 RAR or RW	Type 76 RAR or RW	Type 96 RAR or RW	Type 116 RAR or RW	Type 136 RAR or RW
Voltage	6.0	6.0	6.0	6.0	6.0
Ampere-hour capacity	50	80	100	125	150
Length, inches	6 $\frac{7}{16}$	9 $\frac{1}{16}$	10 $\frac{3}{8}$	11 $\frac{1}{16}$	14 $\frac{5}{16}$
Width and height	All sizes 7 $\frac{5}{16}$ " wide x 9 $\frac{1}{4}$ " high				
Weight, pounds (filled)	28	45	56	64	80
Capacity expressed in hours lighting of $\frac{1}{4}$ -ampere tubes UV201-A, C301-A	1 tube	200	320	400	500
	2 tubes	100	160	200	250
	3 tubes	67	106	133	167
	4 tubes	50	80	100	125
	5 tubes	40	64	80	100
	6 tubes	33	53	66	83

With tubes which take one ampere of filament current per tube, such as the UV200, C300, the hours capacity is one-fourth that shown in the table.

Philco Radio Storage Batteries are Dynamic

The Philco Drynamic Radio "B" Battery

The Philco Drynamic Radio "B" Battery—Type 224 RB—is a 12-cell, 24-volt battery unit of scientific design, compactly sealed in an attractive diamond-ribbed hard rubber case—a fit companion for the finest radio receiver.



Type 224 RB Battery

It meets the requirements of discriminating professional and amateur operators who are not satisfied with the comparatively short life, high cost and unsatisfactory service of the dry batteries often used initially in the "B" circuit.

The correct design, perfect insulation and uniform voltage made possible by using only the finest of materials in the Philco Drynamic Radio "B" Battery not only eliminate the annoying dry battery noises so frequently blamed on "static," but enable this little battery to hold its charge and give longer service than other "B" Batteries, occupying more space.

The shape and size, $2\frac{3}{16}$ " wide x $10\frac{3}{16}$ " long x $3\frac{3}{16}$ " high, of this battery is such that it is easy to handle and use. Several units can be grouped side by side, occupying a very small space.

Philco Drynamic Radio "B" Batteries under ordinary conditions will operate the "B" circuit for one to two months on a full charge, but should be charged once or twice a month for best results.

From one to six batteries may be charged at one time at a current cost of less than two cents each by the use of the remarkable new Philco Charger.

This "B" Battery, like all Philco Radio Batteries, is DRYNATIC—that is, shipped to the dealer charged, but absolutely dry. It cannot deteriorate in stock as its life doesn't start until you or your customer pours in the Philco Electrolyte.

Philco Radio Storage Batteries are Drynamic

The Philco Dynamic Radio "B" Battery—Continued

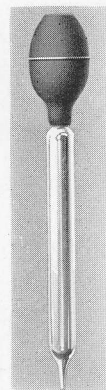
The sealed monobloc construction of the Philco "B" Battery makes it easy to keep clean. It may be held under a faucet and freely rinsed, after which any adhering water should be wiped or blotted off.

Syringe-Type Measuring Filler

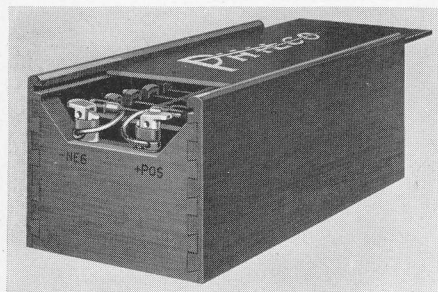
For convenience in filling and adding water, a special syringe-type measuring filler is supplied with Philco Radio "B" Batteries.

Individual "B" Batteries are equipped with flexible, rubber-covered terminal wires five inches long integrally joined to the terminal posts through cast-on lead heads.

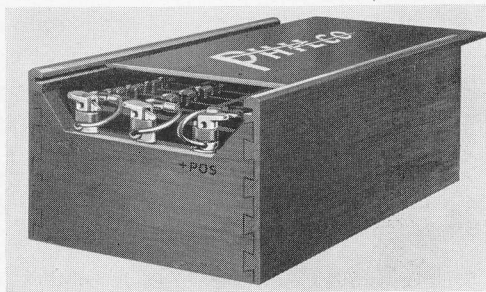
"B" Batteries are also made up in two-battery (48-volt) and three-battery (72-volt) units in hardwood trays provided with the convenient Philco Snap Terminals for making connections to either receiving set or Charger.



Measuring
Filler



Two Unit "B" Battery Tray
48 Volts



Three Unit "B" Battery Tray
72 Volts

A sliding cover protects the batteries from dust and from the possibility of being short-circuited or discharged by contact with tools or other metallic articles.

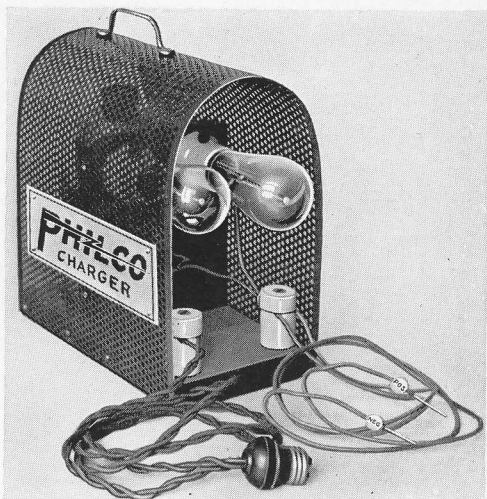
Philco Radio Storage Batteries are Dynamic

Philco Charger and the New Philco Charging Technique

The Philco Charger (patents applied for)—used in conjunction with the new Philco Charging Technique—is a revolutionary development in radio storage battery engineering. It takes the storage battery out of the cellar and puts it in the parlor. It takes recharging out of the realms of Science and makes it so easy and simple that the most inexperienced person can do it safely and inexpensively.

The Philco Charger is a new type of electrolytic rectifier. Born of necessity—because no satisfactory charger for “B” Batteries existed—this new Philco Charger will also successfully charge all makes of “A” Batteries such as are used with low-voltage, high-efficiency tubes and 6-volt “A” Batteries used with single-tube or two-tube sets. It is absolutely odorless and noiseless in operation. By charging after every time or every other time the set is used, the Charger can be used with big sets employing three, four, five or six storage battery tubes of UV301-A or C-301-A type.

The Charger is furnished with an eight-foot cord, an attachment plug to screw into a lamp or wall socket, and with leads to attach to the battery terminals. Two porcelain lamp sockets are provided to take standard 110- to 120-volt Mazda lamps for regulation of the charging rate. Using different sizes of lamps, the current may be regulated to properly charge from one to six Philco Type 224 RB “B” Batteries and Philco Type UD44 or other “A” Batteries. The Charger is shipped with dry Philco Charger Salts in the jar and is ready for use after water has been added and the salts dissolved.



Philco Charger

Philco Radio Storage Batteries are Drynamic



RADIO STORAGE BATTERY SALES MANUAL

Philco Charging Technique

Philco Charging Technique is a simple and safe method of operating radio storage batteries which is made possible by the Philco Charger and Philco Snap Terminal. It is built around the idea of slow charging at current rates so low that the battery cannot be overheated or injured in any way *no matter how long or how often it is charged.*

Equally important—it eliminates all danger of gassing and of any acid spray coming out of the vents. This makes it perfectly safe to charge a battery in the living room, and batteries so charged will ordinarily need water added to them only once or twice a year.

The Philco Charger is absolutely noiseless in operation and batteries cannot discharge back in case the current supply is interrupted, so that charging may be done at night with perfect safety and without annoyance.

Instructions for Use of New Philco Charger

To put a new Charger into commission, lift the jar from the socket in the base board and pull it out without removing the wires from the posts. Unscrew jar from cover. Fill the jar with pure water to a level three-quarters of an inch below the soft rubber ring under the cover. Stir well with a clean stick for a few minutes until the salts are practically all dissolved. Screw the jar back into the cover and place the jar back in position.

Place in the sockets standard Mazda lamps of the size specified in the diagrams for particular requirements and of the proper voltage for the house current (110-125 volts) *Never use lamps totalling more than 100 watts.*

Connect the Charger wire marked (Pos.) for Positive, to the Positive terminal of the battery and the other, or Negative, charger wire (Neg.) to the Negative terminal of the battery. Where two or three sets of "B" Batteries are to be charged "in parallel" as shown in the diagrams below, their Positive terminals must be connected together and their Negative terminals connected together and the grouped batteries must then be connected to the Charger the same as a single

Philco Radio Storage Batteries are Drynamic

Instructions for Use of New Philco Charger—Continued

battery. This can be done conveniently by means of the special paralleling jumpers provided for the purpose.

Charging Instructions

Connect the attachment plug to a lamp or wall socket of the alternating current house supply and close the charging circuit by screwing in one or both of the charger lamps as recommended in the following:

- (1) To charge "A" Batteries use two lamps totalling 100 watts. That is, two 50-watt lamps or one 40 and one 60.

If more than one battery is to be charged, connect them in series to a total of not more than 12 volts, that is, six 2-volt batteries, three 4-volt batteries or two 6-volt batteries. (See Diagrams No. 3 and No. 4.)
Average charging rate 0.35 ampere.

- (2) To charge one Philco "B" Battery, use one 25-watt lamp and connect the battery as shown in Diagram No. 5.
- (3) To charge two Philco "B" Batteries, use one 25-watt lamp and connect batteries in series as shown in Diagram No. 6.
- (4) To charge three Philco "B" Batteries, use one 50-watt lamp, remove all wires used to connect batteries together for use in series on the radio set, and connect batteries in parallel as shown in Diagram No. 7.

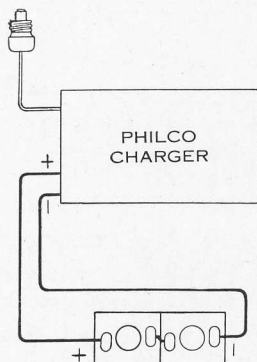


Diagram No. 3

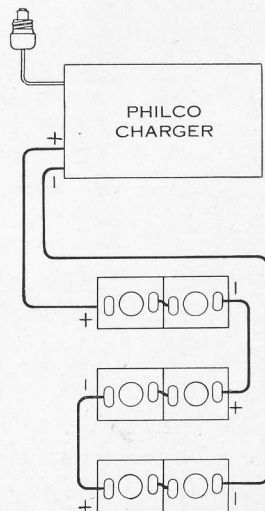
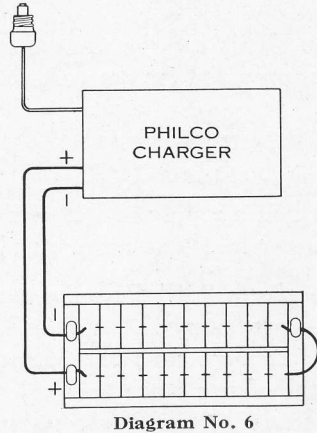
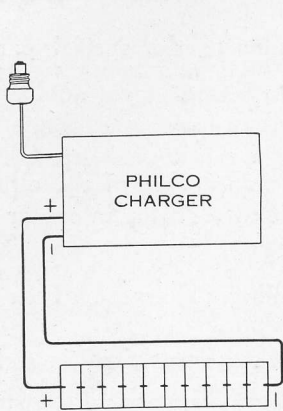


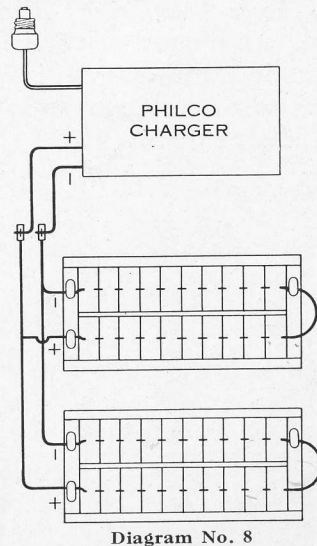
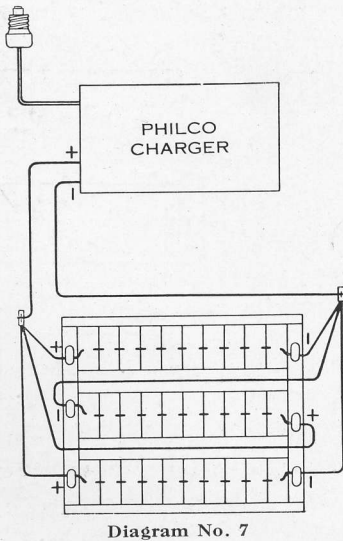
Diagram No. 4

Philco Radio Storage Batteries are Drydynamic

Instructions for Use of New Philco Charger—Continued



- (5) To charge four Philco "B" Batteries, use one 50-watt lamp and connect batteries in series parallel as shown in Diagram No. 8.
- (6) To charge six Philco "B" Batteries, use one 50- and one 25-watt lamp and connect batteries in series parallel as shown in Diagram No. 9.



Philco Radio Storage Batteries are Drymatic

Instructions for Use of New Philco Charger—Continued

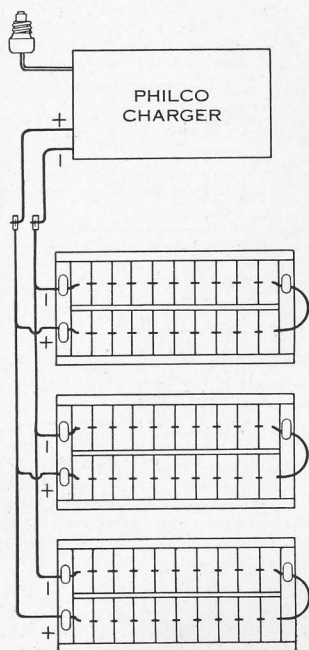


Diagram No. 9

Charging UD44 Type

Most users prefer to charge at regular intervals rather than wait until the battery is completely discharged. We recommend that Philco Type UD44 "A" Batteries be charged every week or every other week for fifteen to twenty hours, with the cells connected in series as shown in Diagram No. 1.

Observation of the charge indicator in the end of the battery will tell whether or not enough charge is being given. At least once in two months the charge should be made long enough to cause both indicator balls to rise.

If the battery has been discharged to the point where it will no longer light the filaments, about sixty hours' charging will be required to bring the battery to the fully charged condition. The minimum hours of charge required with the cells in series (Diagram No. 1) for each hour of discharge or use of the battery, with different numbers of low-voltage tubes, are shown in the following table:

Kind of Tube	Hours Charge per Hour of Use	
	UV199, C299, DV-1	WD-11 and 12, C-11 and 12
1 Tube	12 min.	23 min.
2 Tubes	24 min.	45 min.
3 Tubes	35 min.	1 hr. 10 min.
4 Tubes	45 min.	1 hr. 30 min.
5 Tubes	55 min.	1 hr. 50 min.
6 Tubes	1 hr. 5 min.	2 hrs. 15 min.

Charging RAR and RW Types

Large "A" Batteries charged with the Philco Charger as instructed above will require at least three-quarters of an hour charge for each hour the battery has

Philco Radio Storage Batteries are Drynamic

Instructions for Use of New Philco Charger—Continued

been used to light the filament of one UV201-A or equivalent quarter-ampere tube. When used to light UV200 or equivalent one-ampere tubes, the battery will require three hours charge for each hour of use:

Kind of Tube	Hours Charge per Hour of Use	
	(UV201-A, C301-A, etc.)	(UV200, C300, etc.)
1 Tube	45 min.	3 hours
2 Tubes	1 hr. 30 min.	6 hours
3 Tubes	2 hrs. 15 min.	
4 Tubes	3 hrs.	
5 Tubes	3 hrs. 45 min.	
6 Tubes	4 hrs. 30 min.	

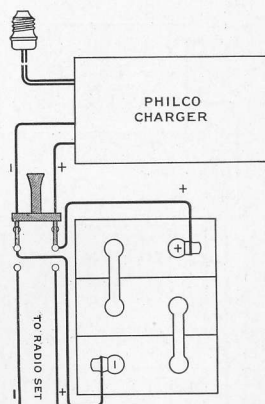


Diagram No. 10

Showing connections to a double-pole, double-throw switch for switching "A" Battery to Charger or to radio set.

Charging "B" Batteries

Philco "B" Batteries charged with the Philco Charger in accordance with the above instructions will receive a charging rate of approximately .05 ampere.

(An exception is where one battery is charged singly, in which case the rate will be about .07 ampere and the charges should be proportionately shorter.) Give *new* "B" Batteries their first charge after two weeks' use. After that it is best to charge every two or three weeks. Charge fifteen to twenty hours each time. If the "B" Batteries become completely discharged before the regular time for recharging, charge longer or at more frequent intervals in the future, after first giving a complete recharge by leaving them on for thirty-six hours. This long charge may be interrupted by an evening's use of the batteries if desired.



Philco Radio Storage Batteries are Dynamic



RADIO STORAGE BATTERY SALES MANUAL

Care and Renewal of Philco Charger

When the Charger is in use, the current which charges the batteries also passes through the regulating lamps on the Charger, lighting them to partial brilliancy. After 500 to 1000 hours' use, the aluminum electrode and the solution will need to be renewed, and this will be indicated by the lamps burning at full brilliancy. A heavy incrustation will usually form on the aluminum electrode at this time also. Changes in the lamp brilliancy are especially noticeable when charging "B" Batteries. The lamps will normally burn brightly when the current is first turned on, and will become less brilliant after a few minutes when the Charger commences to rectify the current. When renewal of the Charger is necessary the lamps will continue to burn at full brilliancy even with the "B" Battery connected.

An incrustation or growth on the anode or permanent electrode is of no consequence and does not interfere with the operation of the Charger. However it is advisable to remove such a growth, if heavy, when making a renewal. The materials used in the Charger are not injurious to the hands.

Add pure water to the Charger cell through the filling vent as needed to keep the water level one-half to three-quarters of an inch below the bottom of the cover. Water may be added conveniently by means of a large spoon, or the top of the cell may be tipped outward to add water from a small pitcher or bottle.

Be very careful that no trace of battery acid is ever allowed to get into the Charger cell, as it will cause the Charger to stop rectifying. If that occurs, a renewal with Philco Charger Salts and a Philco Aluminum Electrode will make it as good as new.

Never attempt to charge either the "A" or "B" Batteries while connected to the receiving set.

Important: The success of the Philco Charger is mainly due to improvements in the solution. The use of any of the ordinary rectifier solutions mentioned in the technical literature will cause overheating of the Charger and reduce its current yield and life. Philco Charger Salts contain expensive ingredients but when used with Philco Aluminum Electrodes give results all out of proportion to the comparatively small renewal cost.

Philco Radio Storage Batteries are Dynamic



RADIO STORAGE BATTERY SALES MANUAL

Philco Sales and Manufacturing Policies

THE purpose of this section is to supply in ready reference form brief information regarding Philco Radio Batteries and the national policies governing their distribution.

Philco Radio Storage Batteries are Dynamic

Famous Time-Tested Features of the Philco Battery

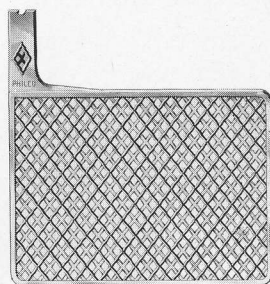
Type RAR (Guaranteed Two Years)

Philco Drynamic Radio "A" Batteries, Type RAR, are made with Diamond-Grid Plates, Philco Slotted Retainers and Philco Quarter-sawed Separators—the same famous time-tested features used in the long-life, high-powered Philco Diamond-Grid Batteries for automobiles, mine locomotives and other heavy duty services.

Philco Diamond-Grid Plates

The Philco Diamond-Grid—the framework of a Philco plate—is a form of construction used the world over in engineering work where maximum strength is demanded. Braced in every direction against shock and strain, a Philco plate can't buckle—can't warp—can't short-circuit like the ordinary bar grid plate.

But that is not all. The framework of the Philco Diamond-Grid is double latticed to lock the active, power-producing material on the plates. That means the front and rear bars of the Diamond-Grid are "staggered"—made to cross each other—thus holding the active material tightly in place.

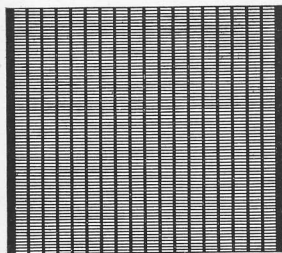


Diamond-Grid

Philco Slotted Retainer

The Philco Slotted Retainer is probably the most important single factor in making Philco Drynamic Batteries the longest lived in their field.

The prime function of the Retainer is to prevent the active material from dropping off the positive plates, which is the natural tendency of the active material in any battery as the battery grows older.



Philco Retainer

The Philco Retainers are placed one on each side of each positive plate, thus acting as a retaining wall. The Retainer is a thin sheet of hard rubber, perforated by almost innumerable slots. The slots are so numerous that they permit the free passage of current and acid, but each slot is so narrow that the

Philco Radio Storage Batteries are Drynamic

Famous Time-Tested Features of the Philco Battery—Continued

Retainer is, in effect, a solid wall through which the particles of active material cannot pass.

This brings up the secondary, though almost equally important, function of the Philco Retainer—that of protecting the wood separators from contact with the positive active material, thus preventing any self-discharge. It is admitted by the trade that Philco Retainer Type Batteries will hold their charge over longer periods than any other type battery.

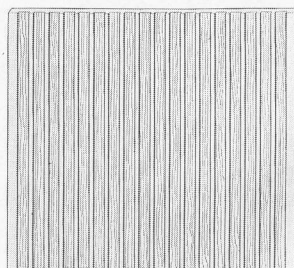
To sum up, the Philco Retainer has two functions—retaining and protecting. It retains even small particles of material from coming into contact with the wood, and prevents contact between the positive plate and the wood separators.

This eliminates insulation trouble and gives the positive plates time to grow old naturally; the retaining function of the Philco Retainer then comes into play and prevents the shedding, treeing, etc., with the result a battery that will last longer than was ever thought possible.

Philco Quarter-sawed Hard Wood Separators

Philco Separators are carefully quarter-sawed from hard, resinous timbers cut from trees one thousand or more years old. Quarter-sawing provides alternating hard and soft grain on either surface of each separator—soft grain for free circulation of current and acid—hard grain to resist wear and insure permanent spacing of plates for perfect insulation.

The Diamond-Grid, Quarter-sawed Hard Wood Separators and the Philco Retainer are responsible for the exceptionally long life and freedom from trouble characteristic of Philco Batteries. These features are patented.



Quarter-sawed Hard Wood
Separator

Type RW (Guaranteed for One Year)

Type RW meets the demand for a thoroughly dependable, standard tube battery of moderate price. It has the same famous Diamond-Grid Plates and Quarter-sawed Hard Wood Separators as the RAR Type, but not the Philco Slotted Retainers.

Philco Radio Storage Batteries are Dynamic



RADIO STORAGE BATTERY SALES MANUAL

Famous Time-Tested Features of the Philco Battery—Continued

Type UD44 (Guaranteed Two Years)

The Philco Type UD44 is made with the Diamond-Grid Plates, Quarter-sawed, Hard Wood Separators and Philco Slotted Rubber Retainers. The plates are extra thick, and double wood separators are used between them, thus insuring the utmost in service and life.

Type 224RB

Contains Diamond-Grid Plates, Quarter-sawed Separators but no Philco Retainers. Its convenient size and sealed monobloc construction make it easy to keep clean, thus preserving its attractive appearance.

Dynamic Batteries

(Reg. U.S. Pat. Off.)

Dynamic is the registered trade name of all Philco Radio Batteries. Charged DRY at the factory under an exclusive patented process, the life of a Philco Dynamic Radio Battery doesn't start until the Philco Electrolyte is poured in.

There's no deterioration in stock—no initial charging—no acid sloppage. You carry them in stock like any other package goods.

Philco Dynamic Batteries are ready for radio use just as soon as the cells are filled with Philco Electrolyte. They deliver 50 per cent or more of their rated capacity *without any initial charging*—and full rated capacity and over after subsequent recharging.

Philco Electrolyte

To insure best results from these Philco Dynamic Batteries, Philco Electrolyte should be used.

Philco "A" Electrolyte for Philco "A" Batteries and Philco "B" Electrolyte for "B" Batteries. Each has been prepared in the Philco laboratory of the correct strength and composition for use in the "A" and "B" Batteries.

Philco "A" Electrolyte is furnished in either 12-gallon carboys or in one-quart glass bottles, which are shipped in standard packages of four and twelve bottles per case.

Philco "B" Electrolyte is shipped in sealed glass bottles which contain sufficient for the original filling of one radio "B" Battery. These are shipped in standard packages of ten bottles per case.

Philco Radio Storage Batteries are Dynamic



RADIO STORAGE BATTERY SALES MANUAL

Philco Electrolyte—Continued

Directions for Mixing Electrolyte

Electrolyte may be prepared by mixing chemically pure sulphuric acid and distilled water. In ordering acid specify "To be in accordance with specifications of the Philadelphia Storage Battery Company." Mix the acid and water in a stoneware crock or lead-lined tank, stirring with a clean wooden paddle. In mixing strong acid (1.835) with water, ALWAYS ADD THE ACID SLOWLY TO THE WATER, STIRRING CONSTANTLY. NEVER ADD WATER TO STRONG ACID. A violent action with heat results, which is very dangerous.

After the mixture has cooled to room temperature (70° to 80° F.) check the specific gravity with a hydrometer. If the specific gravity is not correct, adjust by adding water or acid as required to dilute or strengthen the mixture.

The table below shows the volume of water in quarts to be mixed with ten quarts of acid to make up either 1.250 Electrolyte required for Philco "B" Batteries or 1.300 Electrolyte required for Philco "A" Batteries. If more or less Electrolyte is required, change the quantities but keep the same proportions of acid and water.

Specific Gravity Desired	1.250		1.300	
	Acid (Quarts)	Water (Quarts)	Acid (Quarts)	Water (Quarts)
Using Acid of 1.400 Sp. Gr. (42° Be)	10	7	10	4
Using Acid of 1.835 Sp. Gr. (66° Be)	10	32	10	25

Philco Charging Technique

Philco Technique is far more than a catchy phrase. It stands for an idea of the utmost importance which is yet so simple as to have been overlooked, namely, that storage batteries can be made absolutely clean, dry and safe for parlor use by charging in place at much lower rates than have heretofore been used, and charging more frequently. This is made practicable by the Philco Charger and charging conveniences herein described.

External Appearance

Great care is taken in the factory to make Philco Batteries so attractive that their appearance will add to their salability.

Being Drynamic, they are dry and clean, and should look as fresh and new after a few months in your stock as the day they were unpacked.

Philco Radio Storage Batteries are Drynamic



RADIO STORAGE BATTERY SALES MANUAL

Care of Stock

Dynamic Batteries should be kept in a clean, dry place, where it is not excessively warm. It is advisable to cover them with paper as a protection against dust and thus preserve their new appearance. They require no other attention until you are ready to put them into service.

Instruction Tags

Complete instruction tags for the information of both you and the user are attached to all Philco Batteries. It is important that these instructions be strictly followed.

Exhibition Batteries

Exhibition one-cell batteries, Type 76 RAR, are supplied to Philco Distributors at our net cost of \$5.00 each, f. o. b. Philadelphia or your nearest depot.

One end of the case is cut away so that the Diamond-Grid, Philco Retainers and Quarter-sawed Separators are in plain view for demonstrating purposes.

Philco Battery Age Code

	1922	1923	1924	1925
January	YY	AA	Y	A
February	UU	HH	U	H
March	CC	OO	C	O
April	JJ	XX	J	X
May	RR	EE	R	E
June	ZZ	LL	Z	L
July	GG	TT	G	T
August	NN	BB	N	B
September	WW	II	W	I
October	BB	PP	D	P
November	KK	MM	K	M
December	SS	FF	S	F

Philco Radio Storage Batteries are Dynamic



RADIO STORAGE BATTERY SALES MANUAL

Philco Drynamic Radio Battery Guarantee

Philco Retainer Type "A" Batteries, 2 years.

Diamond-Grid Wood Separator "A" Batteries, 1 year.

When the Guarantee Begins

The guarantee period shall begin with the date of sale to the purchaser.

Conditions of the Guarantee

1. In case of failure, the Philco Distributor who sold the battery, or the Philadelphia Storage Battery Company itself, will fulfill the guarantee by allowing to the owner, on the purchase of a Philco replacement battery of the same type, a reduction from the regular consumer price proportional to the number of months by which the original battery failed to give its respective guaranteed service.

2. The guarantee covers all ordinary wear and tear, but does not cover failure due to accident, neglect or abuse.

3. The battery shall be subject to adjustment when it is unable to deliver 80 per cent of its rated capacity.

4. The battery shall be considered to have given service up to within 10 days previous to receipt of request for adjustment by the Philadelphia Storage Battery Company.

Free Repair Policy

We will supply to any contract Philco Distributor free of charge, f. o. b. factory or depot, the necessary material for the replacement of any part that may prove defective in a new Philco Radio Battery, within ninety days after purchase by the operator, provided the purchase date is within a reasonable time after the branded date on the battery and subject to the following conditions:

- (1) The Distributor will properly install the material, delivering the battery to the customer in good condition, making no charge for material or labor.

Philco Radio Storage Batteries are Drynamic



RADIO STORAGE BATTERY SALES MANUAL

Free Repair Policy—Continued

- (2) We reserve the right to require Distributors to return any parts claimed to be defective, transportation prepaid to factory or depot, for inspection.
- (3) When the Distributor makes a request for free replacement of parts, the request must be in writing, clearly specifying,
 - Type
 - Brand Letters
 - Date of Purchase by Owner
 - Nature of Trouble
- (4) No credit will be allowed to the Distributor for labor, sealing compound, Philco electrolyte or current.

Standard Packing

When batteries are ordered in quantities which do not permit shipment in standard boxes, an additional charge is required.

Standard Packages

Type	No. Packed per box
56 RAR and RW	5
76 RAR and RW	5
96 RAR and RW	3
116 RAR and RW	2
136 RAR and RW	2
224 RB	10
224 RB (2 unit)	5
224 RB (3 unit)	5
UD 44	10
Philco Charger	5

It must be perfectly evident to you that the cost of packing individual batteries is excessive, and our prices have been arranged to give the Distributor who orders thoughtfully and economically the full advantage of the saving thus effected.

Philco Radio Storage Batteries are Dynamic



RADIO STORAGE BATTERY SALES MANUAL

Standard Packing—Continued

No reductions can be made on any combination of either types or units, and if a depot or warehouse is unable to fill an order complete, thus being unable to use standard boxes, the allowance cannot be made.

Return of Batteries for Credit

It is our sincere desire to protect each contract Philco Distributor against a possible error in judgment which may prompt him to order an occasional battery for which he does not find a ready sale.

Batteries may be returned for credit subject to the following conditions:

Direct Authorized Contract

- (1) The Distributor must be under contract and in good standing.
- (2) The Distributor must secure authorization in writing from his Branch Office to return the battery or batteries before shipment is made.
- (3) The battery must be unused and in good condition.
- (4) Transportation must be prepaid by the Distributor.
- (5) A Drynamic Battery must be returned not later than twelve months after shipment from the factory or depot.
- (6) A Drynamic Battery will then be credited at 90 per cent of the then current price.

If the Distributor purchases through an authorized Philco wholesaler the wholesaler must first authorize the Distributor to return the battery in question before any battery is shipped, and in such case the battery must be shipped to the wholesaler.

The above proposition is limited to five (5) batteries each sixty (60) days. Beyond this the loss is too great for us to stand and the following is effective:

More than five (5) Drynamic Batteries will be accepted at 75 per cent of the current price.

Philco Radio Storage Batteries are Drynamic



RADIO STORAGE BATTERY SALES MANUAL

Philco National Advertising

Philco national advertising is not only big, powerful and convincing, but it is continuous—year in and year out. The leading advertising medium of the world—the big national magazines—are driving home the name Philco to more than 32,000,000 persons month after month.

The Saturday Evening Post and the *Literary Digest*, with a combined circulation of approximately 3,600,000 copies per week, are the two publications purchased regularly by thousands of progressive business men for their advertising alone.

The American Magazine, with a circulation of 1,800,000 and more than 7,210,000 readers, is the magazine of success, and every product advertised in its pages gains added prestige by being there.

The National Geographic, with its circulation of over 850,000, is carrying the Philco story to a select group of influential, well-to-do men and women, the vast majority of whom own or are potential buyers of radio batteries.

The farm population of the United States is playing an increasingly large part in the radio field this year and the *Farm Journal*, with its 1,150,000 circulation, is a regular monthly visitor in a large percentage of these farm homes.

Successful Farming, with a circulation of 850,000 copies per month, reaches into the very heart of the great farm population.

Radio News is the “Bible” of the radio fan. In its editorial and advertising pages he expects to find the latest developments in radio science.

Some idea of the scope of Philco’s national advertising can be had by the fact that if the general magazines carrying Philco’s advertising were laid end to end, they would reach from New York City to Omaha, Nebraska—a distance of over 1500 miles.

In addition, the Philadelphia Storage Battery Company co-operates with the Distributor to the fullest extent in supplying the most complete line of newspaper advertisements, booklets, folders, letters, mailing cards, signs, posters, ever put out by a battery manufacturer.

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Philco Local Advertising

The chief object of our national advertising is to make it easy for our Distributors to SELL Philco Batteries. It is up to you to make it easy for radio owners to BUY Philco Batteries.

The best way to make it easy for people to buy is by tying up to Philco's national advertising. Here are six ways of doing it—

1. Erection of your Philco sign
2. Advertising in local newspapers
3. Mailing cards
4. Letters—regular correspondence—soliciting business
5. Window displays—folders and pamphlets
6. Show cards—counter cards

We earnestly recommend advertising in your local papers as one of the most important steps in tying up to the national advertising, as it not only tells them where you are but through its circulation it reaches a large percentage of your potential customers.

By using the electrotypes or mats (write for proof sheet), which we supply you at cost price, you will designate your store as Radio Battery Headquarters and incidentally link your name to that of Philco, which is known to thousands upon thousands of radio enthusiasts as a battery which they can buy with perfect confidence.

Both electrotypes or mats of standard Philco Slugs are available, and these also are supplied at cost price. Every Philco Distributor should use them in special newspaper advertisements, catalogs, booklets, circulars, folders, etc., and on letter heads, bill heads and envelopes.



Philco Radio Storage Batteries are Dynamic



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Philco Radio Storage Batteries are Drynamic

Sales Offices and Depots
of the
Philadelphia
Storage Battery Company

General Offices and Factory
Ontario and C Streets
Philadelphia, Pa.

SALES OFFICES

Atlanta, Ga.	128 West Peachtree Street
Boston	740 Commonwealth Avenue
Buffalo	417 Lafayette Square Building
Chicago	1621 South Michigan Avenue
Cleveland	510 Commercial Bank Building
Columbus	1032 Atlas Building
Huntington, W. Va.	Hotel Huntington Bourse
Kansas City	3310 Main Street
Minneapolis	501 Lincoln Bank Building
New York City	824 Liggett Building, 41 E. 42d Street
Omaha	316 South 19th Street
Philadelphia	Ontario and C Street
Pittsburgh	302 Park Building
Portland, Ore.	45 N. Park Street
San Francisco	37 Spear Street
St. Louis	2115 Olive Street
Wilkes-Barre	P. O. Box 352

Philadelphia Storage Battery Company of Texas
602 South Ervay Street, Dallas, Texas

