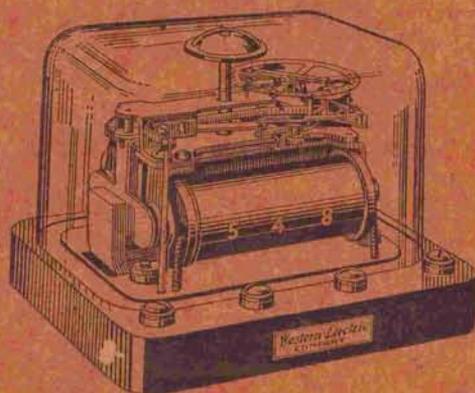


Western Electric
RAILROAD TELEPHONE
AND
SELECTIVE APPARATUS



FOREWORD

This catalog contains up to date information on all new apparatus, on improvements and changes in other apparatus and circuits as well as most of the apparatus parts used by the railroads on their Telephone Train Dispatching and Message Circuits.

We have prepared this catalog as a reference for our customers when they are estimating on new train dispatching circuits or when ordering material for the maintenance of their present circuits.

It is manifestly impossible to show and describe all types and combinations of railroad telephone apparatus. We strongly recommend the use of standard equipment as listed herein, but in cases where special apparatus is necessary, we would be pleased to receive your inquiries.

Although improvements are constantly being made, we are prepared to furnish equipment for repairs, additions or extensions to any existing installations. If the code number is not known, it will be found advisable to send us samples of the apparatus desired, in order that we may identify the material wanted and facilitate the handling and filling of the order.

Small repair parts should always be ordered by sample.

At each Western Electric Distributing House Railway Telephone Engineers are located who will cheerfully render any assistance desired by the customer.

Western Electric Company
INCORPORATED

TRAIN DISPATCHING CIRCUITS

Layouts and Discussion

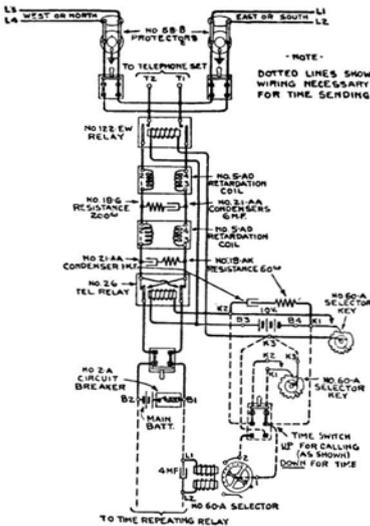
The function of railway selective apparatus is to provide a quick and reliable means to call selectively one of the large numbers of Way Stations on the same telephone line without producing a signal at any of the other stations.

The general layout of train dispatching circuits is divided into two parts—the Way Stations and the Dispatcher's Station.

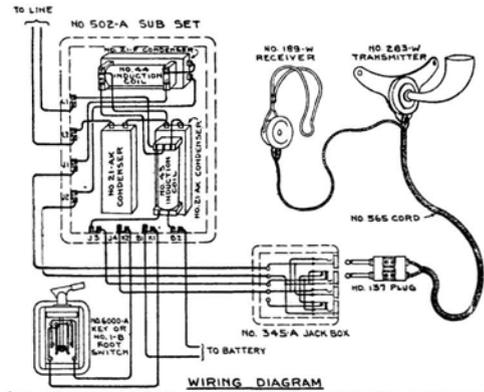
At the Dispatcher's end of the line are located his telephone apparatus for receiving and transmitting messages, an apparatus case holding the various parts required in the circuit for protection and successful operation, a key case and a key for each Way Station to be called. Each key has a different code and corresponds to the code of some one particular station.

At each Way Station is located the Telephone Apparatus to receive and transmit messages and a selector set with its associated apparatus, the code of the selector in the set corresponding to the code of one of the keys at the dispatcher's station.

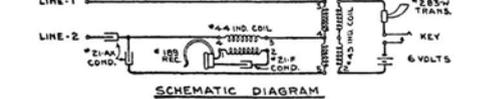
The No. 60A Selector Keys are located in a case on the dispatcher's desk and the No. 60A Selectors in the Selector Sets at the Way Stations. Both the No. 60A Selector Keys and the No. 60A Selectors can be set for any one of the codes in table No. 1.



Drawing No. 1



WIRING DIAGRAM



SCHEMATIC DIAGRAM

Drawing No. 2

We recommend the following lists of material for telephone train dispatching circuits:

DISPATCHERS SELECTOR APPARATUS—SEE DRAWING NO. 1

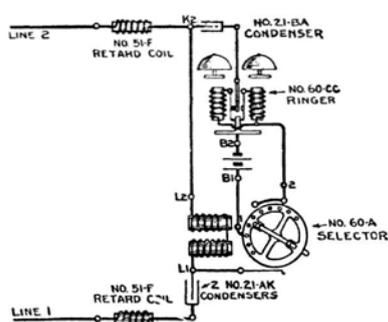
- 1 No. 60A selector apparatus case.
- *1 No. 60A selector key case, capacity 24 stations or
- *1 No. 60B selector key case, capacity 36 stations or
- *1 No. 60C selector key case, capacity 48 stations or
- *1 No. 60D selector key case, capacity 60 stations or

- 1 No. 60A selector key for each way station or
- 1 No. 60B selector key for each way station when No. 160B selector set is installed.
- 1 No. 60B selector key for each extension at way stations when No. 160B sets are installed.

*Any one of the four selector key cases may be chosen, depending on the number of keys to be placed in the case.

The No. 160B selector set is installed at stations where there is more than one local phone. A No. 60B key is used for each phone at the station. For further information, see description of No. 60B selector.

DISPATCHERS TELEPHONE APPARATUS—SEE DRAWING NO. 2



Drawing No. 3

- 1 No. 345A jack box.
- 1 No. 502A desk set box.
- 3 No. 283W transmitters.
- 3 No. 189W receivers.
- 3 No. 565-6 ft. cords.
- 3 No. 137 plugs.
- 3 No. 3B transmitter attachments.
- 1 No. 1B foot switch.
- 1 No. 1A foot switch attachment.
- 1 No. 2A foot switch attachment.
- 1 No. 299F hand generator box.

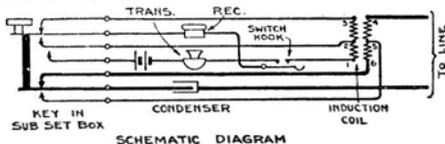
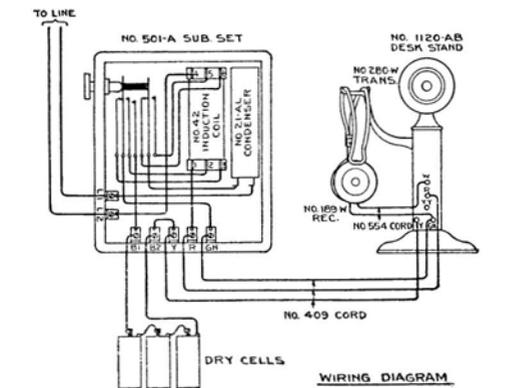
Note. The hand generator box is installed when it is desired to call portable or siding sets which are equipped with magneto ringers.

WAY STATION SELECTOR APPARATUS—SEE DRAWING NO. 3

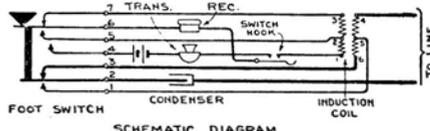
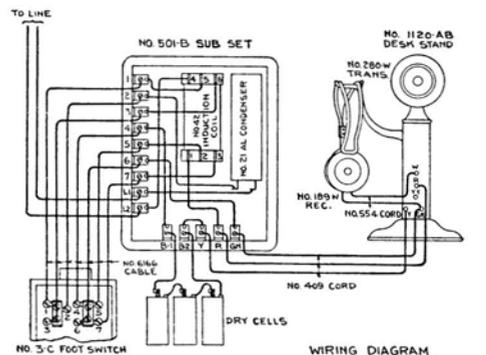
- 1 No. 160A selector set or
- 1 No. 160B selector set with
- 1 No. 127J extension bell for each additional station.

Note. Use the No. 160B selector set when there is more than one local phone.

TRAIN DISPATCHING CIRCUITS
Layouts and Discussion



Drawing No. 4



Drawing No. 5

WAY STATION TELEPHONE APPARATUS—SEE DRAWING Nos. 4 AND 5

- | | |
|---------------------------------|---|
| 1 No. 501A desk set box or | 1 No. 1148DD transmitter arm for wall mounting or |
| 1 No. 501B desk set box with | 1 No. 1148DC transmitter arm for top of table or |
| 1 No. 3C foot switch | 1 No. 1120AB desk stand or |
| 1 No. 1A foot switch attachment | 1 No. 1120C transmitter arm |
| 1 No. 2A foot switch attachment | 1 No. 1A battery box. |

PORTABLE TELEPHONE SETS

- | | | |
|--------------------------------|--------|--------------------------------|
| 1 No. 1330E telephone set with | } or { | 1 No. 1332A telephone set with |
| 1 No. 5 line pole or | | 1 No. 5 line pole or |
| 1 No. 3 line pole | | 1 No. 3 line pole |

Note: The No. 1330E set is recommended where a generator is required.

SIDING SETS

- | | |
|-------------------------------|----------------------------|
| 1 No. 1317BK telephone set or | 1 No. 1293AE telephone set |
|-------------------------------|----------------------------|

TABLE No. 1

TABLES OF CODE SETTINGS

Total Steps in Each Code—17				Total Code Settings—78			
2-2-13	3-2-12	4-2-11	5-2-10	6-2-9	7-2-8	8-2-7	9-2-6
2-3-12	3-3-11	4-3-10	5-3-9	6-3-8	7-3-7	8-3-6	9-3-5
2-4-11	3-4-10	4-4-9	5-4-8	6-4-7	7-4-6	8-4-5	9-4-4
2-5-10	3-5-9	4-5-8	5-5-7	6-5-6	7-5-5	8-5-4	9-5-3
2-6-9	3-6-8	4-6-7	5-6-6	6-6-5	7-6-4	8-6-3	9-6-2
2-7-8	3-7-7	4-7-6	5-7-5	6-7-4	7-7-3	8-7-2	
2-8-7	3-8-6	4-8-5	5-8-4	6-8-3	7-8-2		
2-9-6	3-9-5	4-9-4	5-9-3	6-9-2			
2-10-5	3-10-4	4-10-3	5-10-2				
2-11-4	3-11-3	4-11-2					
2-12-3	3-12-2						
2-13-2							
10-2-5	11-2-4	12-2-3	13-2-2				
10-3-4	11-3-3	12-3-2					
10-4-3	11-4-2						
10-5-2							

SETTING SELECTORS

The No. 60A selector operates on a total of 17 steps. The selector is not stepped up by successive impulses but by three sets of successive impulses. In the code wheels of the selectors are punched a number of holes in which code pins are so located that after the first set of impulses, the code wheel will be in a position for the holding spring to engage with the first code pin. The second code pin is located so that after the second set of impulses the code wheel will be in position for the holding spring to engage with the second code pin. The third set of impulses advances the code wheel so that the permanent code pin is in position to engage with the holding spring. When the permanent pin is held, the contact spring is directly over and makes contact with the first ringing terminal, completing the bell circuit.

TRAIN DISPATCHING CIRCUITS

Layout and Discussion

TIME SENDING

In addition to the operation just described, the No. 60A selector is provided with a second or time-ringing terminal for receiving time. For this purpose, all selectors are advanced by successive steps to the time receiving position, which is five steps beyond the ringing position; that is, for the No. 60A selectors, the ringing position is set for a total of seventeen steps; the time receiving position for twenty-two steps. A regular key, set for twenty-two successive impulses is provided to advance the selectors to this position.

DESCRIPTION OF APPARATUS

A description of the use of the other apparatus shown on drawings Nos. 1 and 3 is as follows:

2A CIRCUIT BREAKER

The No. 2A circuit breaker is of the over-load type and is used in the dispatcher's circuit to open the main battery line in case of a short on the line or in any part of the sending circuit.

122EW RELAY

The No. 122EW relay is to connect the main battery to the sending circuit at the beginning of the operation of the calling key and disconnect the battery at the end of the operation of the calling key.

26A TELEGRAPH RELAY

The function of this relay is to reverse the polarity of the main battery current so that each succeeding impulse sent over the line is in an opposite direction to the preceding one. This relay is controlled by the local battery and K-1—K-2 (drawing No. 1) contacts of the calling key.

5AD RETARDATION COIL—6 M. F. CONDENSERS

The retardation coils and condensers are used to smooth out the impulses of current used for operating the selectors while calling so as not to cause an objectionable sharp click in the receiver, but merely a slight dull thump that is not objectionable and does not interfere with the telephone transmission.

58B PROTECTORS

The 58B protector is used to protect the inside apparatus against damage from high voltages by providing a shunt path, on each side of the line, through an air gap between the copper blocks to a well established ground connection. This ground connection should be well and permanently made. A fuse in each side of the line is also provided to guard the drop wires against an abnormal current. Seven ampere fuses are generally used.

51F RETARDATION COIL

The function of the two retardation coils, one connected to each line terminal, is to act as choke coils for high frequency voltages as lightning, etc.

60CG RINGER

The function of the ringer is to call the way station operator and also to give time signals. The ringer is a vibrating direct current ringer and is provided with contact springs for opening its own circuit intermittently. When the selector operates, a local circuit through the local battery and the ringer is completed and operates the ringer for approximately two seconds until the selector is released from the ringing position. The ringer is further arranged so that while ringing, an answer-back or tone is heard by the dispatcher, indicating to him that the bell has operated properly.

501A AND B DESK SET BOX

Drawings Nos. 4 and 5

The 501A and B desk set boxes are high efficiency sets, designed for way station use. They replace the No. 295 sets used in our original dispatching circuits. The 295 sets are so arranged that part of the current is shunted to the receiver, varying the characteristics of the line with each receiver removed from the hook. If ten or more receivers are off of the hook at the same time, transmission between the terminals of the line is reduced. This difficulty is eliminated in the No. 501 set, as the secondary of the induction coil, in series with the condenser, is permanently bridged across the line, so that the characteristics of the line does not materially change whether one or all of the stations are listening in at the same time.

In the 501A and B sets, the operator is always insulated from the line by the arrangement of the induction coil, the secondary of which, in series with the condenser, is bridged across the line. The transmitter, receiver, etc., are connected to the primary only. The induction coil has a break down of approximately 1,000 volts A.C. between the windings.

TRAIN DISPATCHING APPARATUS

Layout and Discussion

The sets are made so that by means of a key, maximum efficiency is obtained for both receiving and transmission. For receiving, all the windings of the coil are active in picking up the voice currents. By closing the key, a large part of the impedance of the coil is cut out, allowing the transmission energy to flow freely to the line, thus giving maximum efficiency for transmission. When the switch is closed to the transmitting position, the receiver is not cut out entirely, but is left across part of the coil so that the dispatcher can, in case of error, break in on an operator repeating an order. In the No. 501A set, the key for switching from listening to the talking position is included in the box. The No. 501B set is the same as the No. 501A, except that the key is omitted, the wiring being brought to terminals in the set, so that a foot switch (No. 3C) or separate key can be used.

The transmitter arms or desk stands used with the No. 501 sets should be equipped with the No. 189W low wound receivers. The same receiver is used both at the Way Station and the Desk Dispatcher's Set.

The No. 501 sets will work satisfactorily on lines partially equipped with other sets. We recommend them for all new work, but do not recommend mixing the equipment of any line. It is better to keep the equipment uniform, particularly for maintenance purposes.

No. 502A Desk Set Box

Drawing No. 2

The No. 502A is a new high efficiency dispatcher's set, designed with an anti-side tone feature and so that the dispatcher is at all times insulated from the line.

As the dispatcher wears his receiver continually, his battery circuit is closed a large portion of the time. With the anti-side tone, the dispatcher's voice and other noises in the dispatcher's office are kept out of his receiver.

The Nos. 43 and 44 induction coils insulate the dispatcher from the line and have a break down of approximately 1000 volts A.C.

The arrangement of the condensers keeps down the thumps from the signalling impulses thus protecting the dispatcher's ears.

With the No. 502A Set, Foot Switch No. 1B, Receiver No. 189W, Transmitter No. 283W with No. 3B Transmitter Attachments and Cord No. 565 with the No. 137 plug are used. In other respects, the No. 502 set is very similar to the No. 501 sets, already described.

SELECTOR KEY D-10611

In circuits where a larger number of code settings than can be secured with the No. 60A key are desired, use Selector Key No. D-10611, which has a capacity of 253 code settings, shown in Table No. 2. Other apparatus in the circuit will be the same as already described under the No. 60A type. The code wheels of the selectors are made so that any number of code settings from 6 to 378 is possible.

Total Steps in Each Code—27

Table No. 2

Total Code Settings—253

Table with 10 columns of code settings (e.g., 2-2-23, 3-2-22, 4-2-21, 5-2-20, 6-2-19, 7-2-18, 8-2-17, 9-2-16, 10-2-15, 11-2-14, 12-2-13, 13-2-12, 14-2-11, 15-2-10, 16-2-9, 17-2-8, 18-2-7, 19-2-6, 20-2-5, 21-2-4, 22-2-3, 23-2-2, 3-2-22, 3-2-21, 3-2-20, 3-2-19, 3-2-18, 3-2-17, 3-2-16, 3-2-15, 3-2-14, 3-2-13, 3-2-12, 3-2-11, 3-2-10, 3-2-9, 3-2-8, 3-2-7, 3-2-6, 3-2-5, 3-2-4, 3-2-3, 3-2-2, 4-2-21, 4-2-20, 4-2-19, 4-2-18, 4-2-17, 4-2-16, 4-2-15, 4-2-14, 4-2-13, 4-2-12, 4-2-11, 4-2-10, 4-2-9, 4-2-8, 4-2-7, 4-2-6, 4-2-5, 4-2-4, 4-2-3, 4-2-2, 5-2-20, 5-2-19, 5-2-18, 5-2-17, 5-2-16, 5-2-15, 5-2-14, 5-2-13, 5-2-12, 5-2-11, 5-2-10, 5-2-9, 5-2-8, 5-2-7, 5-2-6, 5-2-5, 5-2-4, 5-2-3, 5-2-2, 6-2-19, 6-2-18, 6-2-17, 6-2-16, 6-2-15, 6-2-14, 6-2-13, 6-2-12, 6-2-11, 6-2-10, 6-2-9, 6-2-8, 6-2-7, 6-2-6, 6-2-5, 6-2-4, 6-2-3, 6-2-2, 7-2-18, 7-2-17, 7-2-16, 7-2-15, 7-2-14, 7-2-13, 7-2-12, 7-2-11, 7-2-10, 7-2-9, 7-2-8, 7-2-7, 7-2-6, 7-2-5, 7-2-4, 7-2-3, 7-2-2, 8-2-17, 8-2-16, 8-2-15, 8-2-14, 8-2-13, 8-2-12, 8-2-11, 8-2-10, 8-2-9, 8-2-8, 8-2-7, 8-2-6, 8-2-5, 8-2-4, 8-2-3, 8-2-2, 9-2-16, 9-2-15, 9-2-14, 9-2-13, 9-2-12, 9-2-11, 9-2-10, 9-2-9, 9-2-8, 9-2-7, 9-2-6, 9-2-5, 9-2-4, 9-2-3, 9-2-2, 10-2-15, 10-2-14, 10-2-13, 10-2-12, 10-2-11, 10-2-10, 10-2-9, 10-2-8, 10-2-7, 10-2-6, 10-2-5, 10-2-4, 10-2-3, 10-2-2, 11-2-14, 11-2-13, 11-2-12, 11-2-11, 11-2-10, 11-2-9, 11-2-8, 11-2-7, 11-2-6, 11-2-5, 11-2-4, 11-2-3, 11-2-2, 12-2-13, 12-2-12, 12-2-11, 12-2-10, 12-2-9, 12-2-8, 12-2-7, 12-2-6, 12-2-5, 12-2-4, 12-2-3, 12-2-2, 13-2-12, 13-2-11, 13-2-10, 13-2-9, 13-2-8, 13-2-7, 13-2-6, 13-2-5, 13-2-4, 13-2-3, 13-2-2, 14-2-11, 14-2-10, 14-2-9, 14-2-8, 14-2-7, 14-2-6, 14-2-5, 14-2-4, 14-2-3, 14-2-2, 15-2-10, 15-2-9, 15-2-8, 15-2-7, 15-2-6, 15-2-5, 15-2-4, 15-2-3, 15-2-2, 16-2-9, 16-2-8, 16-2-7, 16-2-6, 16-2-5, 16-2-4, 16-2-3, 16-2-2, 17-2-8, 17-2-7, 17-2-6, 17-2-5, 17-2-4, 17-2-3, 17-2-2, 18-2-7, 18-2-6, 18-2-5, 18-2-4, 18-2-3, 18-2-2, 19-2-6, 19-2-5, 19-2-4, 19-2-3, 19-2-2, 20-2-5, 20-2-4, 20-2-3, 20-2-2, 21-2-4, 21-2-3, 21-2-2, 22-2-3, 22-2-2, 22-2-1

TRAIN DISPATCHING SERVICE

Layout and Discussions

SETTING KEYS

To set the key, two styles of segments are provided—one, a flat segment, which holds the contact closed, while the inner spring passes over it; the other segment has a bent-up part, which engages with an insulated piece on the outer spring, raising the spring sufficiently to keep the contacts open, while the outer spring passes over it. Each key requires two segments to give three sets of impulses. If the first number in the code is odd, a flat segment is required; a bent-up segment, if the number is even. If the last number of the code is even, a flat segment is required; a bent-up segment, if the last number is odd. The first segment is set so that the inner contact spring in passing over the first set of teeth on the impulse wheel gives the number of closures and openings of the contact represented by the first number of the code; either the closure or the opening of the contact counts one. The other segment is set so that the contact springs in passing over the third set of teeth on the impulse wheel give the number of closures and openings of the contact as represented by the last number in the code. The second number of the code is the difference between seventeen—the total number of steps in the code—and the sum of the first and third sets of impulses.

OPERATION OF CIRCUIT

After the key and selector have been set for a certain code, the sequence of operation of the various parts of the system, when a call is made, is as follows:

The dispatcher gives the key, in the key case, corresponding to the selector at the station to be called, a quarter of a turn. When the key is released; contact K-1—K-3 (drawing No. 1) is closed continually throughout the operation of the key, operating the No. 122EW (stick or slow-acting) relay, connecting the main battery through the contacts of the 26A relay and the two No. 5AD retardation coils to the line.

As the key turns and the contact spring passes over the unmasked teeth on the impulse wheel, contacts K-1—K-2 are closed intermittently, operating the pole changing relay (No. 26A) in such a manner as to send a sequence of reverse impulses to the line corresponding to the unmasked teeth on the impulse wheel of the calling key operated. At the first impulse sent over the line by the key, the stepping and retaining pawls are thrown into engagement with the ratchet or stepping wheel, after which the wheel is stepped forward a number of steps equal to the number of impulses sent out by the relay. For example, take a certain code such as 8-5-4.

The first set of impulses sent out by the contact spring is 8. The wheels of all the selectors on the line step in synchronism and all selectors are advanced eight steps; then during an interval of approximately one second, the retractile spring returns all selectors to normal position, except those that have a code pin in the code wheel at the eighth position for the holding spring to engage.

The second set of reverse impulses (five in number) causes all the selectors to advance five steps. Of the selectors that were held in an advance position, after the first set of impulses, only the one called will now have a code pin in position to be engaged by the holding spring. The selectors that were returned to the normal position before and have code pins at the fifth step from normal position will be in a position to be held by the holding spring. All other selectors will return to normal position during the second long period of approximately one second.

The third set of reverse impulses (four in number) advance all selectors four steps. The selectors that have advanced from a normal position and have a code pin at the fourth step will be held; also, the selectors held at the fifth step on the second set of impulses, and have a code pin four steps in advance of the fifth will be held; the selector that was held on the first set of impulses at the eighth step, advanced on the second set of impulses five steps and held and now has the code pin set four steps in advance, will be held. All other selectors will return to the normal position. Some of the selectors may be held up on the first or second code pin, but will not have been advanced to the third or ringing pin, as a total of seventeen steps is required to reach this position. (Only the one with the 8-5-4 code will be so advanced).

The selector that has been advanced to the ringing position will hold this position for approximately two seconds, closing the ringing circuit and causing the signal to sound. During the ringing, an answer-back or tone is heard in the dispatcher's receiver, indicating that the bell at the station is being rung. After the ringing period, the key delivers one impulse to the line and all selectors advance one step. This releases all code pins and the code wheels of all the selectors are returned to normal position by means of the retractile spring. A similar sequence is followed in the operation of selectors arranged for different code settings.

TRAIN DISPATCHING APPARATUS

Layout and Discussion

60B SELECTOR AND KEY

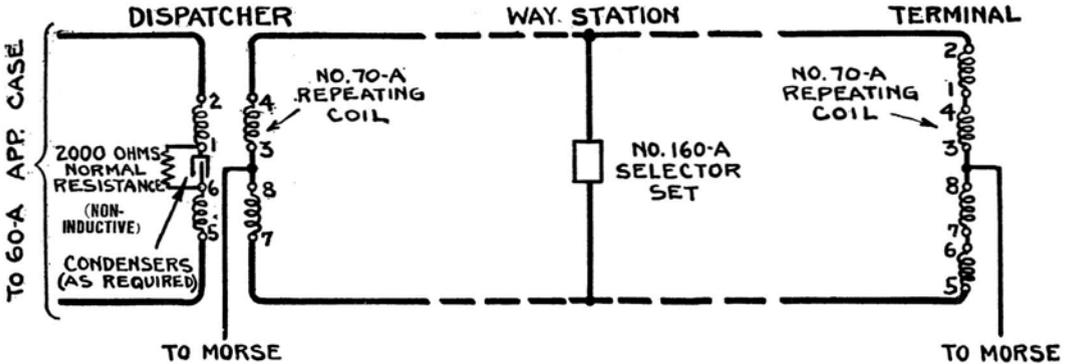
The No. 60B selector is a multiple type selector, differing from the No. 60A in that it is equipped with four selector ringing terminals instead of one, so that any one of four local signal circuits can be closed by the same selector independently. The 60B selector is not equipped for receiving time signals.

The 60B key and selector are set in the same manner as are the 60A type. In the B type, the total number of impulses is increased by 2, 4 or 6; the code settings are shown in table No. 3.

TABLE NO. 3. FOR NO. 60B SELECTOR

Total steps to "A" contact in each code 17. Total code settings 48.
Total steps to "B" contact in each code 19. Total code settings 48.
Total steps to "C" contact in each code 21. Total code settings 48.
Total steps to "D" contact in each code 23. Total code settings 48.

3- 2-12A, B, C, D			
3- 3-11A, B, C, D	5- 2-10A, B, C, D	7-2-8A, B, C, D	8-2-7A, B, C, D
3- 4-10A, B, C, D	5- 3-9A, B, C, D	7-3-7A, B, C, D	8-3-6A, B, C, D
3- 5-9A, B, C, D	5- 4-8A, B, C, D	7-4-6A, B, C, D	8-4-5A, B, C, D
3- 6-8A, B, C, D	5- 5-7A, B, C, D	7-5-5A, B, C, D	8-5-4A, B, C, D
3- 7-7A, B, C, D	5- 6-6A, B, C, D	7-6-4A, B, C, D	8-6-3A, B, C, D
3- 8-6A, B, C, D	5- 7-5A, B, C, D	7-7-3A, B, C, D	8-7-2A, B, C, D
3- 9-5A, B, C, D	5- 8-4A, B, C, D	7-8-2A, B, C, D	
3-10-4A, B, C, D	5- 9-3A, B, C, D		
3-11-3A, B, C, D	5-10-2A, B, C, D	11-2-4A, B, C, D	12-2-3A, B, C, D
3-12-2A, B, C, D		11-3-3A, B, C, D	12-3-2A, B, C, D
		11-4-2A, B, C, D	
	10- 2-5A, B, C, D		
	10- 3-4A, B, C, D		
	10- 4-3A, B, C, D		
	10- 5-2A, B, C, D		
9- 2-6A, B, C, D			
9- 3-5A, B, C, D			
9- 4-4A, B, C, D			
9- 5-3A, B, C, D			
9- 6-2A, B, C, D			
13- 2-2A, B, C, D			



NOTE:

CONDENSERS TO BE REMOVED
FROM ALL SELECTOR SETS.

Schematic of Simplex Circuits

All lines can be simplex or where train and message wires are installed, a phantom can be secured in addition to two simplexes. This proposition is somewhat involved and we prefer that you send the data on your circuit to us and let us make recommendations to fit your special case. In sending the information, be sure to always state the size and kind of wire, the number of stations, location of the dispatcher's station, the number of branch lines, number of stations and size and kind of wire on the branch line and any special additional information that you have that applies to your local conditions. The more information sent, the better recommendations can be made to cover your requirements.

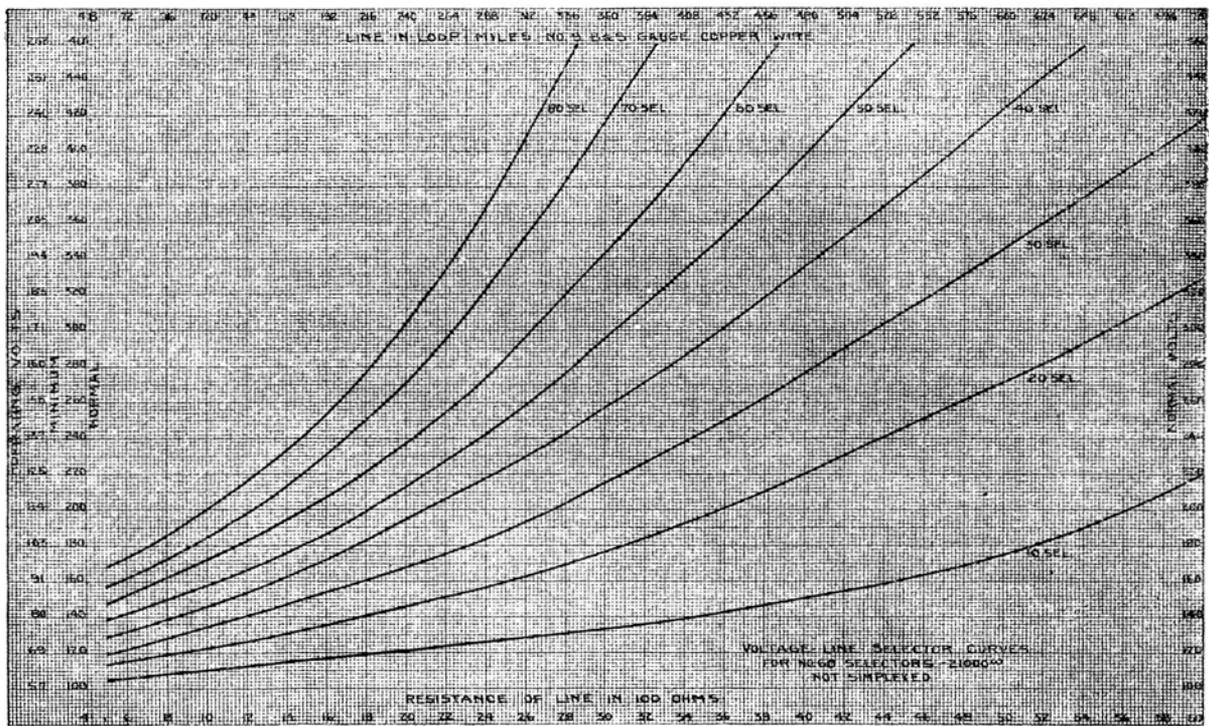
TRAIN DISPATCHING CIRCUITS

Layout and Discussion

BATTERIES

Dry cells are usually used for the batteries. These cells gradually increase in internal resistance and decrease somewhat in potential so that they should be examined frequently to see that the potential obtained when the current is flowing under operating condition is maintained somewhere near normal. It is very essential that this rating be made when the current is flowing and not when the battery is on open circuits. The local relay battery should be approximately ten volts—in no case less than $7\frac{1}{2}$.

The determination of the voltage of the main battery depends upon the total resistance of the line wire and the number of selector sets on the line, so that the voltage for each system must be determined. The following sets of curve will aid you in determining the voltage to be used.



VOLTAGE CURVES

At the top of these curves, note a scale, showing the length of the circuit in loop miles, using No. 9 B & S gauge copper. If any other size or kind of wire is used, figure the resistance of the line and use the scale at the bottom of the curve. For example, suppose you have a circuit 200 miles No. 9 B & S copper wire with thirty selectors. Referring to the top of the scale, you will find that this distance falls between 192 and 216. Interpolate between these two numbers to obtain the 200. When this point is determined draw a line perpendicularly downward until the curve showing the thirty selectors is reached. Then from this point draw a line horizontally to the left to the scale shown. You will obtain the normal operating voltage of approximately 160 or the minimum operating voltage of 91. The minimum operating voltage is the amount required just to operate the selector at the far end of the line. The value of the normal operating voltage should be 75 to 100 volts higher than the minimum. The batteries should not be allowed to drop more than ten per cent. in potential from the normal operating voltage.

TRAIN DISPATCHING CIRCUITS**Layout and Discussion****OLDER TYPE CIRCUITS**

The following information is given for the use of our customers, who have older type circuits and wish to make extensions to these circuits or wish to purchase material for their maintenance.

DISPATCHER'S TELEPHONE APPARATUS

1 No. 345A jack box.	3 No. 137 plugs.
1 No. 295AJ desk set box.	3 No. 3B transmitter attachments.
3 No. 283W transmitters.	1 No. 1B foot switch.
3 No. 189W receivers.	1 No. 1A foot switch attachment.
3 6 foot No. 375 cords.	1 No. 2A foot switch attachment.
	1 No. 299F hand generator box.

WAY STATION TELEPHONE APPARATUS

1 No. 295AK desk set box.	1 No. 1A Foot switch attachment.
1 No. 465C key or	1 No. 2A foot switch attachment.
1 No. 3B foot switch	

SETS WITH THREE CONDUCTOR DESK SET CORD

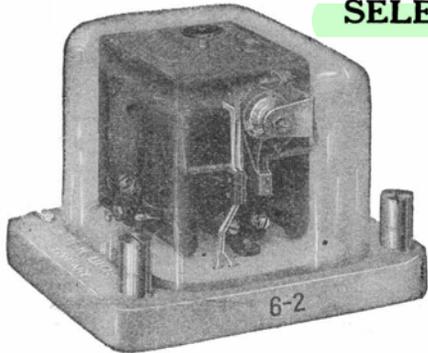
1 No. 1020AB desk set or	1 No. 1048DC transmitter arm for top of table
1 No. 1048DD transmitter arm for wall mounting or	or 1 No. 1020C transmitter arm

SETS WITH FOUR CONDUCTOR DESK SET CORD

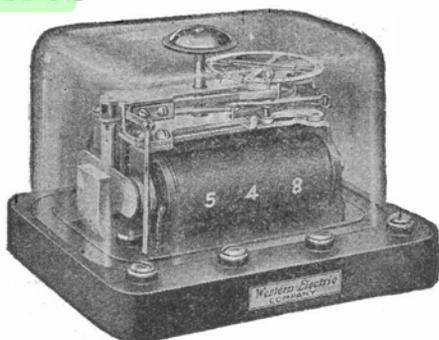
1 No. 1048GD transmitter arm for wall mounting or	1 No. 1020E transmitter arm or
1 No. 1048GC transmitter arm for top of table or	1 No. 1020BR desk set

For further information concerning the operation or technical points on the apparatus described, refer to the data given in this catalog and to the bulletin published by the Western Electric Company on the Maintenance of the Western Electric Calling Apparatus, used in connection with Railway Train Dispatching Telephone Systems.

SELECTIVE APPARATUS



No. 50-B Selector

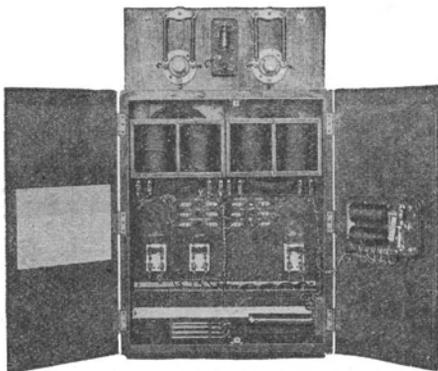


No. 60-A Selector

Selectors

Code No.	Description	Resistance in Ohms	Used
*50A	Bridging selector mounted on a porcelain base and protected by a glass cover. Capacity 48 stations.	3750	At way stations on train dispatching circuits in Nos. 101A and 102A selector sets.
*50B	Group selector, first selects a group and then from this group the particular station desired. Capacity 65 stations.	16000	At way stations on train dispatching circuits in Nos. 101A and 102A selector sets.
*50C	Same as No. 50A except it is of low resistance and operates from a local battery in the set. Capacity 48 stations.	9.4	At way stations in No. 102C selector sets.
*50D	Same as No. 50B except it is moistureproof. Capacity 65 stations.	16000	In No. 1A semaphore set.
50F	A group selector in which contacts are mechanically locked at ringing position. Capacity 65 stations.	9.4	At way stations in No. 102F selector sets.
60A	Alternating selector, mounted on phenol base and supplied with a glass cover. Operates on 17 impulses and has capacity of 78 stations. Also equipped for receiving time signals.	21000	At way stations in No. 160A selector sets.
60B	Similar to No. 60A except it is equipped with 4 ringing terminals so that four bells in the same station can be rung by the same selector. Not equipped for receiving time signal. Operates on 17 impulses and has a capacity of 48 stations.	21000	At way stations in No. 160A selector sets.

*Specify on order the number of stations for which the selectors are desired. In the Nos. 50B and D specify the group number and number of stations.

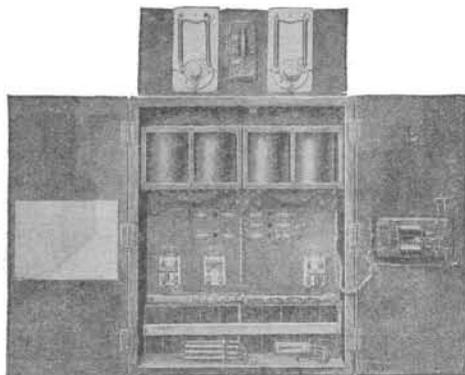


No. 53-A Selector Apparatus Case, Open

Selector Apparatus Cases

Code No.	Equipment	Dimensions	Used At
53A	2 No. 58B protectors. 2 No. 5AD retardation coils. 9 No. 21AA condensers. 3 No. 18AK resistances. 1 No. 18G resistances. 1 No. 35D resistance. 1 No. 27A relay. 1 No. 2A circuit breaker. 3 No. 709 Trumbull switches. 2 No. 48 protector mounting.	1 ft. 4 1/8 in. x 2 ft. 7 3/4 in. x 12 3/8 in.	Dispatchers office on train dispatching circuits.
	} Mounted on one plate.		

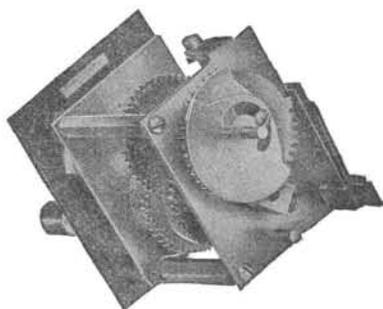
SELECTIVE APPARATUS



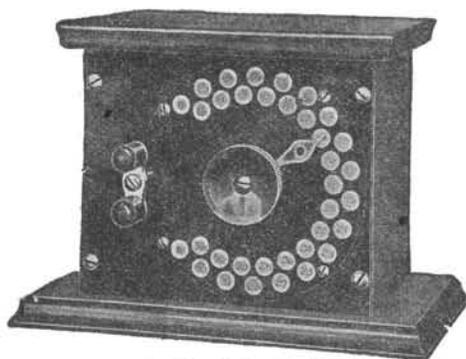
No. 60-A Selector Apparatus Case

Selector Apparatus Cases

Code No.	Equipment	Dimensions	Used at
60A	2 No. 58B protectors. 2 No. 5AD retardation coils. 8 No. 21AA condensers. 2 No. 18AK resistances. 1 No. 18G resistance. 1 No. 122EW relay. 1 No. 26A telegraph relay. 1 No. 2A circuit breaker. 3 No. 709 Trumbull knife switches. 1 No. 48 protector mounting.	1 ft. 4 $\frac{1}{8}$ in. x 2 ft. 7 $\frac{1}{4}$ in. x 12 $\frac{3}{8}$ in.	Dispatcher's office on train dispatching circuits.
61A	1 No. 47A repeating coil. 2 No. 21AA condensers. 1 700 ohm Ward Leonard resistance DM 700 type. 1 No. 78A retardation coil. 3 No. 709 Trumbull porcelain switches. 2 No. 9171 Bryant porcelain receptacles. 2 No. 12061 ballast lamps.	2 ft., 5 $\frac{1}{8}$ in. x 12 $\frac{3}{8}$ in. x 6 $\frac{1}{8}$ in.	Battery Stations on intercommunicating message circuits.



No. 50-A Selector Key



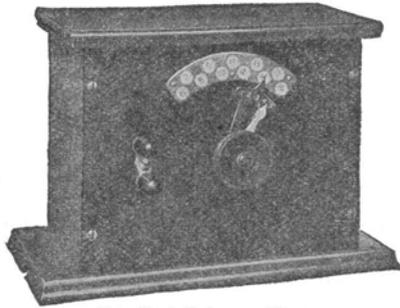
No. 51-D Selector Key

Selector Keys

Code No.	Description	Used in
*50A	Individual key. Can be adjusted to select any station from 1 to 35.	Nos. 50A, B or C selector key cases. At dispatcher's office. With No. 50A selectors.
*50B	Individual key. Can be adjusted to select any station from 1 to 48.	Nos. 50A, B or C selector key cases. At dispatcher's office. With No. 50A selectors.
50C	Individual key. Can be adjusted to select any station from 6-1 to 12-5.	Nos. 50A, B or C selector key cases. At dispatcher's office. With No. 50B selectors.
*50D	Individual key. Can be adjusted to select any station from 6-1 to 18-5.	Nos. 50A, B or C selector key cases. At dispatcher's office. With No. 50B selectors.
*50E	Individual key. Can be adjusted to select any station from 1 to 50.	Nos. 50A, B or C selector key cases. At dispatcher's office. With No. 50C selectors.
*50F	Individual key. Can be adjusted to select any station from 1-3 to 21-1.	Nos. 50A, B or C selector key cases. At dispatcher's office. With No. 50F selectors.
51D	Master calling key same as No. 51C except that the capacity of the stations is 1 to 35 inclusive.	For test boards in connection with No. 50A selectors.

***Note:** All No. 50 type keys can be removed separately from their key cases without disturbing the circuit of any other key in the case.

SELECTIVE APPARATUS



No. 53-A Selector Key



No. 61-A Selector Key

Code No.	Description	Capacity
53A	Master calling key. Capacity 55 stations. Mounts 2 No. 34B resistances.	
60A	Individual key. Can be adjusted to select any station from 1 to 78 and advancing all selectors to the time receiving position.	
60B	Individual key. Can be adjusted for calling any of the code settings given for the No. 60B selectors.	
61A	Master key to control the sequence of calling impulses for all codes totalling 17 impulses. Consists of a driving mechanism and impulse wheel mounted on a shaft and control springs mounted on the base. It is furnished with a slotted cover thru which levers extend, allowing changes to be made in the code settings to correspond with the codes of the Nos. 60A and B selectors.	

Selector Keys

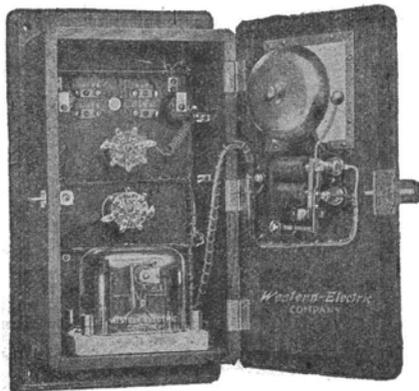
Used in connection with No. 50B selectors. Also at way stations on intercalling circuits. Nos. 60A, B or C selector key cases. At dispatcher's office. With No. 60A selector. Nos. 60A, B, C or D selector key cases At dispatcher's office. With No. 60B selectors. On circuits equipped with the Nos. 60A and B selectors when set for a total of 17 impulses to the first or A terminal. Also used on the intercall circuits.



No. 50-A Selector Key Case

Selector Key Cases

Code No.	Capacity Keys	Description	Dimensions in. x in. x in.
50A	24	Cabinet for mounting No. 50 type selector keys. 4 rows of 6 keys per row.	15 1/4 in. x 5 5/8 in. x 12 1/2 in.
50B	36	Cabinet for mounting No. 50 type selector keys. 4 rows of 9 keys per row.	21 1/4 in. x 5 5/8 in. x 12 1/2 in.
50C	50	Cabinet for mounting No. 50 type selector keys. 5 rows of 10 keys per row.	23 1/4 in. x 5 5/8 in. x 15 1/2 in.
60A	24	Same as No. 50A but designed to mount No. 60 type selector keys.	12 3/4 in. x 15 1/4 in. x 5 5/8 in.
60B	36	Same as No. 50B but designed to mount No. 60 type selector keys.	12 3/4 in. x 21 1/4 in. x 5 5/8 in.
60C	48	Similar to No. 50C but designed to mount No. 60 type selector keys in 4 rows of 12 keys per row.	12 3/4 in. x 27 1/4 in. x 5 5/8 in.
60D	60	Cabinet for mounting No. 60 type selector keys. 4 rows of 15 keys per row.	12 3/4 in. x 33 1/4 in. x 5 5/8 in.



No. 101A Selector Set—Open

Selector Key Spaces

Code No.	Description	Used in
50A	Key spaces, black finish.	No. 50A, B and C, and No. 60A, B and C, key cases in spaces not equipped with keys.

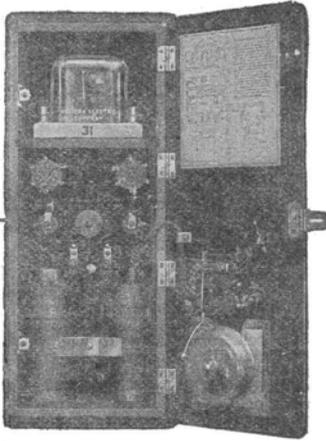
Selector Sets

The following selectors and associated apparatus are the older type D.C. and are listed for convenience in ordering sets for maintenance and extensions to existing circuits.

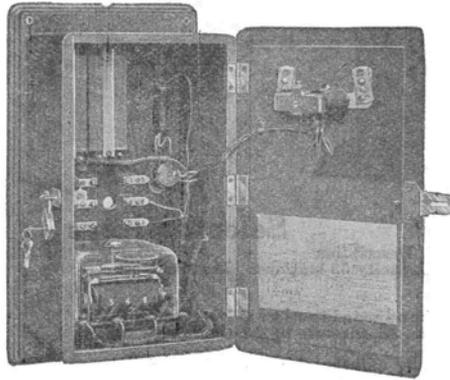
Code No.	Equipment	Dimensions	Used at
*101A	Box equipped with: 1 No. 101402 bell. 2 No. 51F retardation coils. 1 No. 21U condenser. 1 No. 1F resistance. 1 No. 50A selector.	13 3/4 in. x 9 1/4 in. x 6 1/4 in.	Way stations on train dispatching circuits operated on central energy basis.
*101B	Same as No. 101A, except equipped with: No. 50B selector.		

*Nos. 101A and 101B sets are arranged for but not equipped with 2 No. 34A resistances.

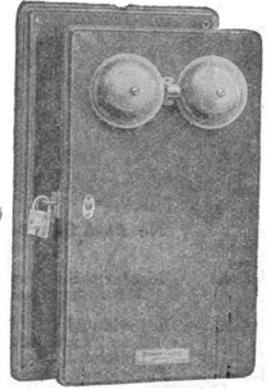
SELECTIVE APPARATUS



No. 102A Selector Set—Open



No. 160A Selector Set—Open



No. 160A Selector Set—Closed

Selector Sets

The following selectors and associated apparatus are the older type D.C. and are listed for convenience in ordering sets for maintenance and extensions to existing circuits.

Code No.	Description	Used at
†102A	Box equipped with: 1 No. 101404 bell. 2 No. 51F retardation coils. 1 No. 5G resistance. 1 No. 50A selector. Arranged for, but not equipped with 2 dry cells.	Way stations on train dispatching circuits operated on local battery basis.
†102B	Same as No. 102A, except equipped with: No. 50B selector and 1 No. 5T resistance in place of No. 5G.	
Code No.	Description	
†102C	Similar to No. 102A. Box equipped with: 1 No. 50C selector. 1 No. 190M relay. 1 No. 101404 bell. 1 No. 5G resistance.	2 No. 51F retardation coils. 1 spl. No. 43 retardation coil.
†102E	Similar to No. 102A. Box equipped with: 1 No. 50C selector. 1 No. 190M relay.	2 No. 51F retardation coils.
†102F	Similar to No. 102A. Box equipped with: 1 No. 50F selector. 1 No. 190M relay. 1 No. 5G resistance. 1 No. 12018 bell.	2 No. 51F retardation coils.

†Nos. 102A, B, C, E and F sets are arranged for but not equipped with 1 No. 34A resistance. These resistances are ordered separately in accordance with the circuit requirements.

Alternating Current Selector Sets

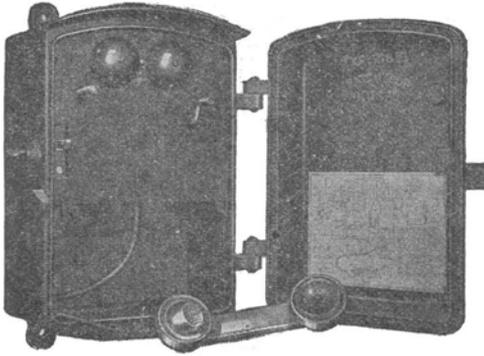
RECOMMENDED FOR ALL NEW INSTALLATIONS

Code No.	Equipment	Dimensions	Used at
160A	Box equipped with: 1 No. 60A selector. 1 No. 60CG ringer. 2 No. 51F retardation coils. 1 No. 21BA condenser. 1 No. 21AA condenser. 1 No. 21AL condenser.	6½ in. x 9¼ in. x 17 in.	Way stations on A.C. train dispatching and message circuits.
160B	Box equipped with: 1 No. 60B selector. 1 No. 60CG ringer. 1 No. 21AA condenser. 1 No. 21AL condenser. 1 No. 21BA condenser. 2 No. 51F retardation coils.	6½ in. x 9¼ in. x 17 in.	In way stations on A.C. circuits.
161A	Box equipped with: 1 No. 60A selector. 1 No. 47A repeating coil. 2 No. 21AB condensers. 1 No. 21U condenser. 2 No. 51F retardation coil. 1 No. 60C ringer. 2 No. 17 gongs.	6½ in. x 9¼ in. x 17 in.	In way stations in intercall circuits with No. 61A selector apparatus case and No. 61A selector key.

TELEPHONE SETS

Batteries are not supplied with telephone sets and should be ordered separately.

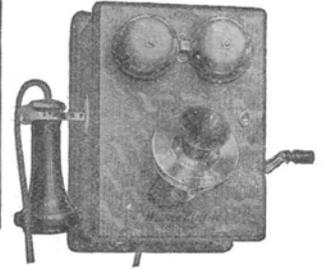
For further description of telephone sets not shown under this heading, see the Telephone Apparatus Section in the Western Electric Year Book.



No. 1278-G Telephone Set

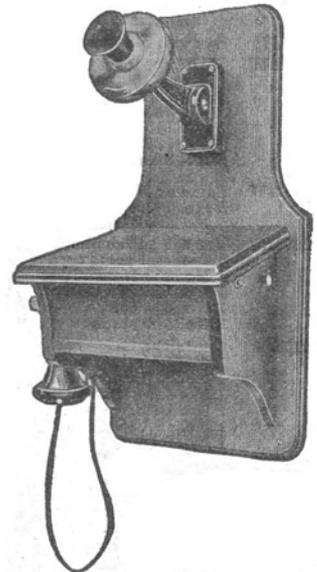


No. 1293-AD Telephone Set



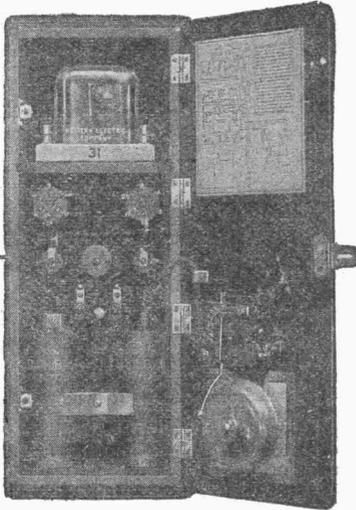
No. 1305-AC Telephone Set

Code No.	Description
1278G	Weatherproof metal set particularly adapted for street railway service. Five-bar A.C. generator and 1000 ohm unbiased ringer. Includes: <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>1 No. 48C generator. 1 No. 25E repeating coil. 1 No. 29 induction coil. 2 No. 1 protector blocks. 2 No. 2 protector blocks. 2 No. 3 protector micas.</p> </div> <div style="width: 45%;"> <p>2 500 volt, 1 ampere fuses. 1 No. 5-B lock. 1 door switch for opening circuit when door is closed. 1 No. 51AG ringer. 1 No. 1001F hand set. 2 Blue Bell dry cells furnished only when ordered.</p> </div> </div>
1278H	Same as No. 1278G, excepting a hasp and staple are substituted for the No. 5-B lock so that standard switch locks may be used.
1293AD	Small wall telephone set, having the battery mounted separately. Provided with high efficiency transmission circuit. For use as siding telephone on train dispatching circuits. Employs push button for use when talking. Contains: <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>1 No. 4BG ringer. 1 No. 21AA condenser. 1 No. 29 induction coil. 1 No. 51A retardation coil. 1 No. 1003A push button for 3/8 in. mounting. 2 No. 329 cords, 6 in.</p> </div> <div style="width: 45%;"> <p>1 No. 143AA switch hook for 3/8 in. mounting. 1 No. 3E transmitter bracket. 1 No. 508W receiver with 2 ft. No. 446 cord. 1 No. 284W transmitter.</p> </div> </div>
1293AE	Same as the No. 1293AD, except that this set is equipped with a No. 186W head receiver, No. 143AC switch hook and No. 546 cord.
1293AK	Same as the No. 1293AD, less ringer.
1293AL	Same as the No. 1293AE, less ringer.
1305AC	Small, moistureproof, wall phone, having a transmitter bracket and switch hook with black finish. Consists of: <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>1 No. 45BG ringer. 1 special No. 48C generator (D-25590). 1 No. 3E transmitter bracket. 1 No. 143Y switch hook for 3/8 in. in.</p> </div> <div style="width: 45%;"> <p>1 No. 144AW receiver. 1 special No. 291W transmitter (D-4605). 1 special No. 446 cord 2 1/2 ft. 2 No. 385 cords 7 in.</p> </div> </div> <p style="text-align: center;">1 special induction coil (D-757). Arranged for but not equipped with No. 21 type condensers.</p>
1312A	Standard wall type composite telephone set. Contains: <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>1 No. 12G retardation coil. 1 No. 21D condenser. 1 No. 21U condenser. 1 No. 21H condenser. 1 No. 143AB switch hook. 1 Spec. No. 390B push button.</p> </div> <div style="width: 45%;"> <p>1 No. 1C howler. 1 No. 5 induction coil. 1 interrupter P-101495. 1 2 1/2 ft. No. 521 receiver cord. 1 spl. No. 286W transmitter. 1 No. 144AW receiver.</p> </div> </div>
6023A	Desk type composite telephone. Consists of: <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>1 No. 311A desk set box. 1 No. 1020U desk stand.</p> </div> <div style="width: 45%;"> <p>1 No. 8D connecting block. 1 No. 465 C key.</p> </div> </div>

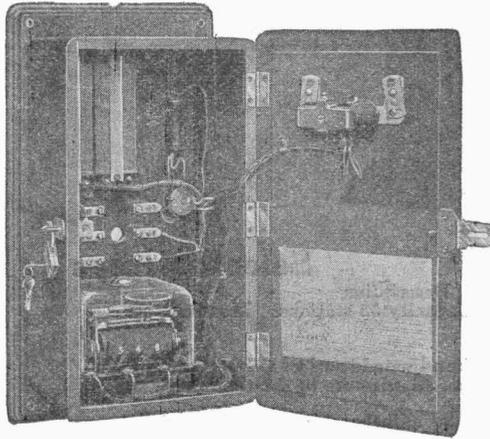


No. 1312-A Telephone Set

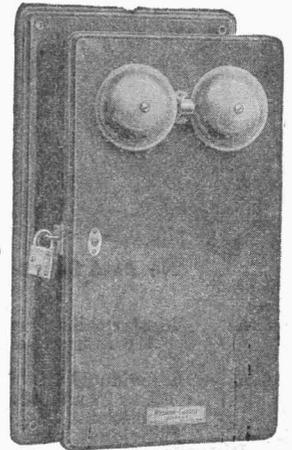
TELEPHONE SETS



No. 1317 Telephone Set



No. 1317 Telephone Set (open)

No. 1317-CN Type
Telephone Set

Code No.	Description
1317P	Local battery wall Telephone for heavily loaded lines where code ringing is employed. Contains: 1 No. 323W transmitter 1 No. 143AW receiver 1 No. 521 receiver cord 2 1/2 feet. 1 No. 547 transmitter cord 1 No. 548 transmitter cord 1 No. 13 induction coil 1 No. 38BG ringer 1 No. 48A generator 1 No. 143Y switch hook 2 No. 540 cords 1 No. 8A transmitter bracket
1317S	Same as No. 1317P, excepting that a No. 21W condenser is wired in series with the receiver.
1317W	Wall type telephone set for use on standard railway dispatcher's telephone circuits at sidings and similar places for use of conductors and trainmen. Provided with high efficiency transmission circuit. Employs push button for use when talking. 5 bar A.C. generator and 2500 ohm unbiased ringer. Contains: 1 No. 48A generator 1 No. 38BG ringer 1 No. 21AA condenser 1 No. 29 induction coil 1 No. 51A retardation coil 1 No. 143AA switch hook 1 No. 8A transmitter bracket 1 No. 1003A push button for 1/8 inch wood work 1 2 foot No. 446 receiver cord 1 No. 280W transmitter 1 No. 508W receiver 1 No. 547 cord 1 No. 548 cord 2 No. 540 cords
1317AD	Same as No. 1317W telephone set, excepting No. 38BG ringer is omitted. Can be equipped with No. 38 type ringers if desired.
1317AE	Same as No. 1317AW telephone set, excepting No. 38BG ringer is omitted.
1317AH	Wall type local battery telephone for moderately loaded line where code ringing is employed. 3 bar A.C. generator and 1000 ohm unbiased ringer. Contains: 1 No. 22A generator 1 No. 38AG ringer 1 No. 143Y switch hook 1 No. 13 induction coil 1 No. 8A transmitter bracket 1 2 1/2 ft. No. 521 cord 1 No. 323W transmitter 1 No. 143AW receiver 1 No. 547 cord 1 No. 548 cord 2 No. 540 cords
1317AW	Same as No. 1317W, excepting that it is equipped with: 1 No. 143AC switch hook for 1/2 in. mounting 1 No. 186W head receiver 1 No. 546 receiver cord
1317BK	For use on telephone lines exposed to high tension wire. Ringer is omitted and generator handle is insulated. All metal parts arranged for grounding. Contains: 1 No. 353 transmitter 1 No. 144AW receiver 1 No. 521 cord 2 No. 540 cords 1 No. 21 condenser 1 No. 13 induction coil 1 Spec. 4SR generator (D 13730) 1 switch hook D 19513 for 1/2 in. woodwork
1317BU	Contains: 1 No. 42 induction coil 1 No. 21AL condenser 1 No. 143AE switch hook for 1/2 in. woodwork 1 No. 1013A push button for 1/8 in. woodwork 1 No. 48A generator 1 No. 8 transmitter bracket 1 No. 349BW transmitter 1 No. 189W receiver 1 No. 546 cord 2 ft. 1 No. 547 cord 6 in. 1 No. 548 cord 6 in. 2 No. 540 cords
1317CN	For use on medium loaded code ringing lines. Contains: 1 No. 143Y switch hook for 1/2 in. woodwork 1 No. 13 induction coil 1 No. 8A transmitter bracket 1 No. 53FG ringer 1 No. 50F generator 1 No. 323W transmitter 1 No. 143AW receiver 1 No. 521 cord 2 1/2 ft. 1 No. 540 cord 1 No. 547 cord 6 in. 1 No. 548 cord 6 in.
1317CR	Same as No. 1317CN, except equipped with 1 No. 21W condenser in receiver circuit.
1317CP	Same as No. 1317CR except furnished with No. 53BG ringer. For use on heavy loaded lines, code ringing.
1317CS	Same as No. 1317CP except equipped with No. 21W condenser in receiver circuit.
1317CG	Same as No. 1317CN except furnished with No. 53AG ringer. For use on light loaded lines, code ringing.

LINE POLES



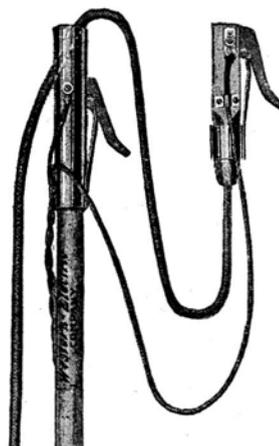
Disjointed
No. 3 Line Pole



Assembled



No. 5 Line Pole



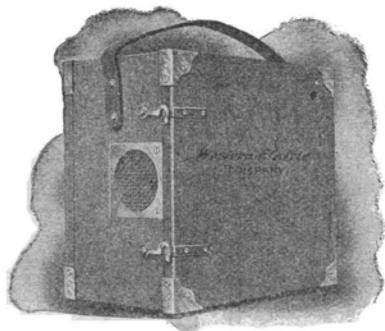
End Section
No. 5 Line Pole

Line Poles

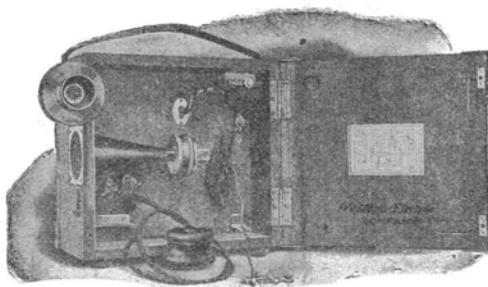
Code No.	Description	Used with
3	<p>Consists of three 6 foot sections of hickory pole with joints of brass tubing that lock in position. The pole is arranged so that the middle section can be omitted reducing the length of the pole from 18 to 12 feet.</p> <p>The top end of the upper section is equipped with two arms or spreaders hinged at their lower ends. These arms are held together by a hook and eye when the pole is not in use and when open their length is such that they will reach wires placed horizontally two feet apart. At the upper end of the spreaders are connectors that hook over the wires and are provided with a cleaning device to insure good connection.</p> <p>The pole is also equipped with 100 feet of two conductor No. 20 B. & S. gauge lamp cord with No. 62 cord tip on the pole end and 22 tip on the set end.</p>	<p>Nos. 1330E, 1331E, 1332A and 1332E portable telephone sets for connecting the sets to the line wires of a metallic circuit.</p>
4	<p>Similar to No. 3 except that it makes contact with only one metallic conductor and it is furnished with 100 feet of single conductor cord equipped with a special cord tip on the pole end and a 22 tip on the set end.</p>	<p>No. 1314A telephone set for connecting the set to the line wire of a grounded circuit.</p>
5	<p>This pole is similar to No. 3 except the two arms are replaced. The top section being equipped with two clamps, one fixed and one free. The free clamp is controlled by a cord and is connected to the pole by a flexible conductor. This pole can be used in making connection to line wires with a maximum space of 5½ feet either in a horizontal or vertical direction.</p>	<p>Nos. 1330E, 1331E, and 1332A and E telephone sets.</p>

TELEPHONE SETS

(Continued)



No. 1314-A Portable Set



No. 1314-A Set Open (front view)

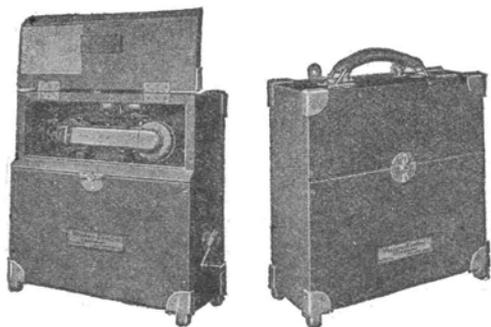
Portable Telephone Sets

Code No.

- 1314A Portable composite telephone set. Contains:
 1 No. 12M retardation coil
 1 No. 140F switch hook
 1 Spec. No. 390B push button
 1 No. 21D condenser
 1 No. 21U condenser
 1 No. 21H condenser
 1 No. 1B howler
 1 No. 3B binding post

- 3 No. 3C binding posts (special)
 1 3 ft. No. 384 cord
 1 5 1/2 in. No. 179 cord
 1 10 ft. No. 267 cord with rail clamp
 1 No. 5 induction coil
 1 interrupter P-101495
 1 No. 223W transmitter
 1 No. 133W receiver

Arranged for but not equipped with 4 Standard "Blue Bell" dry batteries unless specified in order. The weight of the set complete is about 26 lbs. Approximate dimensions 11 1/2 x 12 x 7 1/2 inches. No. 4 line pole used but should be ordered separately.



No. 1330-E Telephone Set Open and Closed



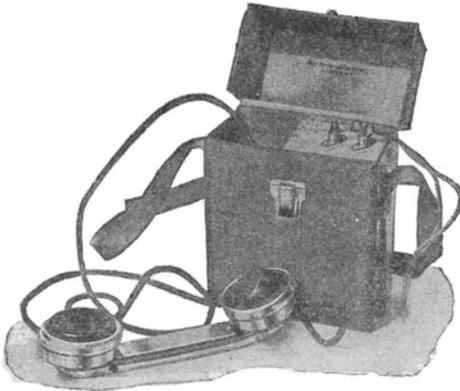
No. 1330-F Portable Set

Code No.

- 1330E Portable railway magneto telephone set. For use on long heavily loaded lines. Used with Nos. 3 or 5 line poles. Contains:
 5 bar A.C. generator and 2500 ohm biased ringer.
 1 Spec. No. 48A generator
 1 No. 32BG ringer
 1 No. 21F condenser
 1 No. 29 induction coil
 1 No. 1001C hand set
 The weight of the set complete is about 28 lbs. The size is 12 1/2 x 13 1/2 x 5 1/4 inches.
- 1330F Same as No. 1330E telephone set, except that it is equipped with:
 1 No. 146 plug and 1 6 ft. No. 509 cord for making connection with line through No. 186 Jack
 Condenser furnished only when specified
- 1331E A local battery magneto portable railroad telephone set for lightly loaded lines. For use with Nos. 3 or 5 line poles. 3 bar A.C. generator and 2500 ohm buzzer. Contains:
 1 No. 3B 2500 ohm buzzer
 1 No. 29 induction coil
 1 No. 22A generator
 1 No. 21F condenser
 The weight of the set complete is about 17 lbs. The size is 11 1/2 x 10 1/2 x 4 3/4 inches.
- 1331F Same as No. 1331E telephone set, excepting that it is equipped with:
 1 No. 146 plug
 1 6 ft. No. 509 cord for making connection to the line through 186 or 187 jacks
 1 No. 1F condenser
 2 No. 790 batteries } If specified on order

TELEPHONE SETS

(Continued)



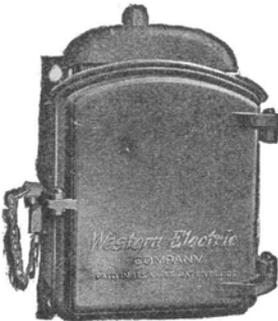
No. 1332-A Portable Set



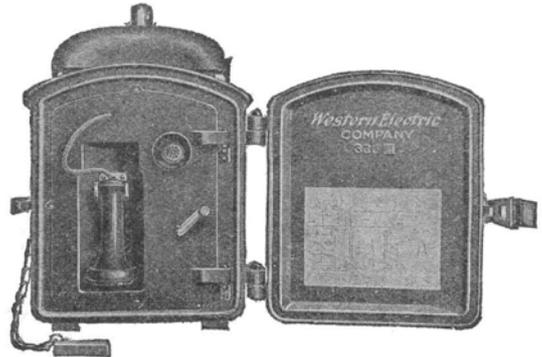
No. 1375-B Portable Set

Portable Telephone Sets

- | Code No. | Description |
|----------|---|
| 1332A | Telephone set in portable leather case with a shoulder carrying strap for use in connection with Nos. 3 or 5 line poles on train dispatching circuits. Contains:
1 No. 29 induction coil
1 No. 21M condenser
2 No. 2C binding posts
The complete set weighs approximately 6 lbs. The size is 9 $\frac{1}{8}$ x 7 $\frac{1}{2}$ x 4 inches. |
| 1332E | Same as No. 1332A, excepting that it is equipped with a No. 3B 2500 ohm buzzer. |
| 1375B | Telephone set in portable leather case with adjustable hand or shoulder carrying strap. Apparatus moisture-proofed and mounted on an aluminum frame. Contains:
1 No. 1001H hand set
1 Spl. No. 31 induction coil (D-17624)
1 No. 29E generator
1 Spec. No. 2150 ohm buzzer (D-21141)
1 No. 703 Eveready battery
Complete set weighs approximately 10 $\frac{1}{2}$ lbs. The size is 9 $\frac{3}{8}$ inches high, 3 $\frac{3}{4}$ inches deep and 6 $\frac{7}{8}$ inches wide. |
| 1398A | Local battery, portable, moisture-proof, magneto telephone set enclosed in wooden case and equipped with a hand or shoulder strap. Contains:
1 No. 29E generator
1 No. 31 induction coil (D-17624)
1 buzzer (D-21141)
1 No. 21K condenser
1 No. 703 Eveready battery
1 No. 1001H hand set |



No. 1336-F Closed

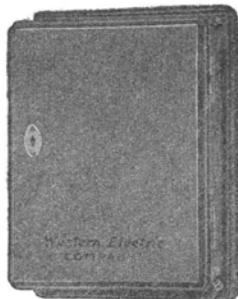


No. 1336-F Open

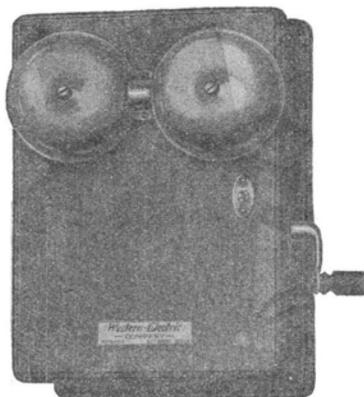
Weatherproof Telephone Sets

- | | | |
|-------|---|--|
| 1336F | An iron case set for use out of doors on train dispatching circuits. Provided with high efficiency transmission circuit. Employs push button for use when talking. Five-bar A.C. generator and 2500 ohm unbiased ringer. Contains:
1 No. 48C generator
1 No. 143K switch hook
1 No. 45BG ringer
1 No. 32 induction coil
1 No. 51B retardation coil
1 No. 21AA condenser
1 Spl. No. 1002A push button | 1 No. 292W transmitter
1 No. 508W receiver
2 No. 385 transmitter cords
1 No. 384 receiver cord
1 No. 540 cord
3 $\frac{1}{2}$ x $\frac{3}{4}$ x 2 $\frac{1}{4}$ inch leather cable holders
2 Blue Bell dry cells (when specified in order) |
| 1336H | Circuits are arranged so that it is unnecessary to use a push button for talking. Contains:
1 No. 144AW receiver
1 No. 292W transmitter
1 No. 540 cord
1 No. 384 cord, 10 $\frac{1}{2}$ ins.
2 No. 385 cords, 7 ins. | 1 No. 48C generator
1 No. 45BG ringer
1 No. 21AA condenser
1 Special No. 30 induction coil
1 No. 143AA switch hook |

DESK SET BOXES



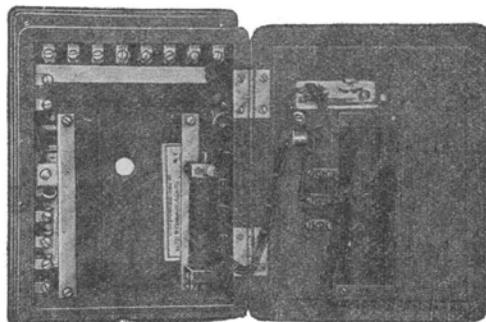
No. 295-AJ Desk Set Box



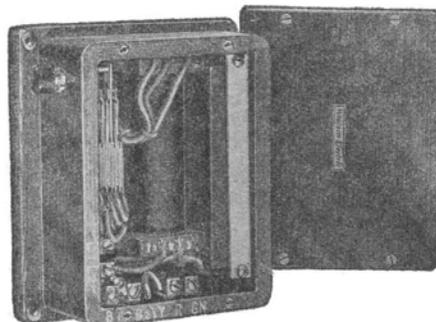
No. 300 Type Desk Set Box

Desk Set Boxes

Code No	Description	Contains:
295AJ	Used on train dispatching circuits in dispatcher's telephone set. Replaced by desk set box No. 502A for all new installations.	1 No. 29 induction coil 1 No. 21AA condenser
295AK	Used on train dispatching circuits in way station telephone sets.	1 No. 29 induction coil 1 No. 21AA condenser
Spec. 300H per D-11274	Used on train dispatching circuits in way station telephone sets.	1 No. 51 retardation coil 1 No. 21 AA generator
Spec. 300K per D-11275	Used on train dispatching circuits in way station telephone sets.	1 No. 29 induction coil 1 No. 21AA condenser 1 No. 51A retardation coil
300K	A magneto desk set box for use on heavily loaded lines where code ringing is employed. and 2500 ohm unbiased ringer.	5 bar A.C. generator 1 No. 48A generator 1 No. 13 induction coil 1 No. 51BG ringer
300L	Magneto desk set box for use on moderately loaded lines where code ringing is employed. and 1600 ohm ringer.	5 bar A.C. generator 1 No. 48A generator 1 No. 13 induction coil 1 No. 51FG ringer
300M	Same as No. 300L set excepting that it has a No. 21W condenser in series with the receiver.	
300N	Same as No. 300K excepting that it has a No. 21W condenser in series with the receiver.	



No. 311-A Desk Set Box

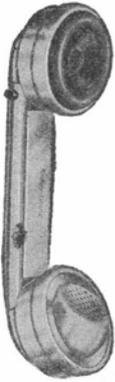


No. 501-A Desk Set Box

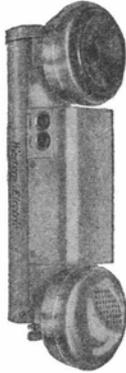
311A	For use with No. 1020U desk stand for desk type composite telephone sets. For same class of service as No. 1312A telephone set.	1 No. 21D condenser 1 No. 21H condenser 1 No. 21U condenser 1 No. 12G retardation coil	1 No. 5 induction coil 1 interrupter P-101495 1 No. 1C Howler
315H	A magneto desk set box for use on lightly loaded lines where code ringing is employed. 3 bar A. C. generator and 1000 ohm unbiased ringer.	1 No. 22A generator 1 No. 51AG ringer	1 No. 13 induction coil
501A	Used on train dispatching circuits in way station telephone sets.	1 No. 42 induction coil 1 No. 21AL condenser	1 Push button
501B	Used on train dispatching circuits in way station telephone sets.	1 No. 42 induction coil 1 No. 21AL condenser	
502A	Used on train dispatching circuits at dispatcher's station in connection with the No. 283W transmitter and No. 189W receiver.	1 No. 43 induction coil 1 No. 44 induction coil	1 No. 21F condenser 2 No. 21AK condensers

Note. Replaces No. 295AJ desk set boxes on new installations.

HAND SETS, DESK STANDS AND TELEPHONE ARMS



No. 1001-C
Hand Set



No. 1004-B Hand Set



No. 1020-AB Desk Stand



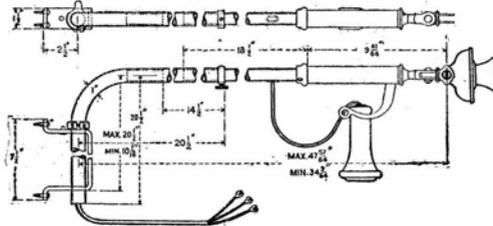
No. 1020-AL Desk Stand

Hand Sets

Code No.	Includes	Used With
1001C	Nos. 285W transmitter, 131W receiver, 6 ft. No. 366 cord, 1 No. 1C handle.	Nos. 1330E, 1330F, 1331E, 1331F, 1332A and 1332E telephones sets.
1001F	1 No. 244W transmitter. 1 5 ft. 2 in. No. 422 cord. 1 No. 131W receiver. 1 No. 1C handle.	Nos. 1278G and H telephone sets.
1001H	Nos. 244W transmitter, 131W receiver 1 No. 348 cord, 3 ft. long 1 No. 243 cord, 8 ft. long 1 No. 1A handle	No. 1375B telephone set
1004B	An aluminum hand set designed for lineman's use in connection with train dispatching circuits when signalling is not required. Includes the following: 1 Special No. 131W receiver per D-51129—70 ohm. 1 Special No. 244W transmitter per D-51130.	1 No. 32 induction coil. 1 No. 39A condenser. 1 No. 705 Eveready flash light battery.

Desk Stands

Code No.	Description	Finish	Used on
1020AB	Includes: 1 No. 20AB desk stand 1 No. 280W transmitter 1 2 1/2 ft. No. 554 cord 1 No. 186W receiver 1 9 1/2 in. No. 426 cord 1 6 ft. No. 409 cord 1 9 1/2 in. No. 427 cord	Black	Train dispatching circuits at way stations.
1020AL	Includes: 1 No. 20AL desk stand 1 No. 143AW receiver 1 No. 323W transmitter 1 No. 450 cord	Black	Regular local or central battery telephone lines.
1020U	Includes: 1 No. 20U desk stand 1 5 1/2 ft. No. 365 cord 1 No. 323W transmitter 1 2 1/2 ft. No. 412 cord 1 No. 144AW receiver 2 9 7/8 in. No. 547 cord	Black	No. 6023A desk type composite equipment.
1020BR	Includes: 1 No. 20BR desk stand 1 No. 280W transmitter 1 2 1/2 ft. No. 554 cord 1 No. 186W receiver 1 9 1/2 in. No. 426 cord 1 6 ft. No. 416 cord 1 9 1/2 in. No. 427 cord	Black	Train dispatching circuits at way stations.
1120AB	Same as No. 1020AB except that it is equipped with No. 189W low wound receiver.	Black	With No. 501A and B desk set boxes.

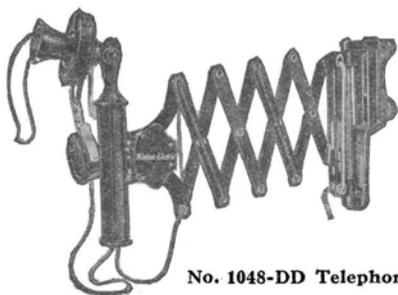


No. 1020-CC Telephone Arm

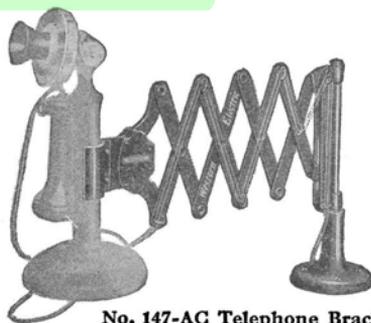
Telephone Arms

Code No.	Description	Includes:
1020CC	For regular local or central battery service. Used on flat top desks.	1 No. 550, 8 ft. cord 1 No. 549, 2 1/2 ft. cord 1 No. 547, 12 inch cord 1 No. 582, 12 inch cord
1020C	For way station use on train dispatching circuits.	1 No. 409 cord, 8 ft. 1 No. 554 cord, 2 1/2 ft. 1 No. 426 cord, 12 in. 1 No. 427 cord, 12 in.
1020E	Includes: 1 No. 20E transmitter arm 1 No. 284W transmitter 1 No. 186W receiver	1 No. 416 cord, 8 in. 1 No. 426 cord, 12 in. 1 No. 427 cord, 12 in.

TELEPHONE ARMS AND BRACKETS



No. 1048-DD Telephone Arm



No. 147-AC Telephone Bracket

Telephone Arms

Code No.	Description	Use
1048DA	Adjustable folding arm, having telephone set incorporated in it. Mounts on side of a roll top desk. Includes: 1 No. 148DA transmitter arm 1 No. 280W transmitter 1 No. 186W receiver 1 No. 409 cord, 8 ft.	1 No. 554 cord, 2 1/2 ft. 1 No. 426 cord, 9 1/2 in. 1 No. 427 cord, 9 1/2 in.
1048DB	Same as 1048DA, except mounts on sides of flat top desk or on wall.	
1048DC	Same as No. 1048DA, except mounts on top of flat top desk.	
1048DD	Same as No. 1048DA except mounts on wall in way stations where it is desired to place a flat top desk against the wall.	
1048GA	Equipped with a No. 280W transmitter, No. 186W receiver, 416 cord, 8 ft. No. 554 cord, 2 1/2 ft. No. 330 cord, 9 7/8 in. long. Mounts on side of roll top desk.	
1048GB	Same as No. 1048GA except mounts on wall or side of flat top desk.	
1048GC	Same as No. 1048GA except mounts on top of flat top desk.	
1048GD	Same as No. 1048GA except mounts on wall in way stations where it is desired to place a flat top desk against the wall.	
1120C	Transmitter arm same as the No. 1020C except that the 189W receiver is used instead of the 186W	
1148DA	Same as No. 1048DA except that it is equipped with low wound No. 189W receiver.	
1148DB	Same as No. 1048DB except that it is equipped with low wound No. 189W receiver.	
1148DC	Same as No. 1048DC except that it is equipped with low wound No. 189W receiver.	
1148DD	Same as No. 1048DD except that it is equipped with low wound No. 189W receiver.	

Train dispatching at way stations with a desk set box employing a four conductor cord and an induction coil, having the primary and secondary windings insulated from each other.

Used at way stations with the 501A and B desk set.
Used with No. 501A and No. 501B desk boxes.
Used with No. 501A and No. 501B desk set boxes.
Used with No. 501A and No. 501B desk set boxes.

Transmitter Brackets

Code No.	Description	Use
2A	Consists of an iron base steel rod about which the arm rotates. Mounts on side of roll top desks.	Used with the 147AA telephone bracket.
2B	Similar to 2A except that it mounts on wall or side of flat top desk.	Used with the 147AB telephone bracket.
2C	Similar to 2A, except that it mounts on the top of a flat top desk.	Used with the 147AC telephone bracket.
3E	For mounting insulated transmitters.	
8A	Black finish bracket, for mounting transmitters on wooden telephone sets.	Nos. 1293AD, AE, AK, AL and 1305AC telephone sets. Nos. 1317 P, S, W, AD, AH, AW, AE, BU, CN, CP, CR, CS and CG telephone sets.

Telephone Brackets

A strong collapsible arm arranged with a clamping device to hold a desk telephone stand.

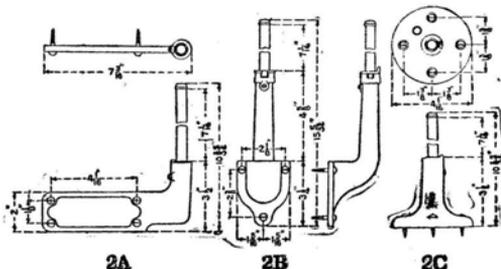
Length of arm closed, 8 1/4 inches.

Length of arm extended, 23 inches.

The desk stand is not included in price of arm, and must be ordered separately.

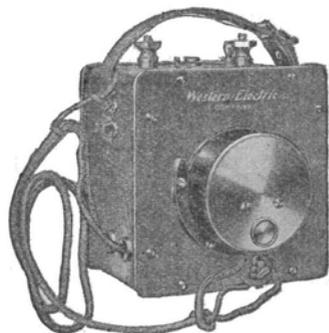
Code No.	Description	Finish
147AA	For mounting on either side of a roll top desk. Consists of a No. 47A transmitter arm and a No. 2A type arm bracket.	Black Enamel
147AB	For mounting on the side of a flat top desk or on the wall. Similar to 147AA except using No. 2B type arm bracket.	Black Enamel
147AC	For mounting on top of a flat top desk. Similar to No. 147AA except using No. 2C arm bracket.	Black Enamel

For way station use on train dispatching circuits.

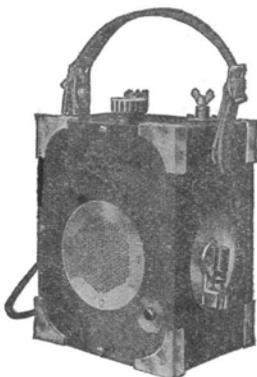


TESTING APPARATUS

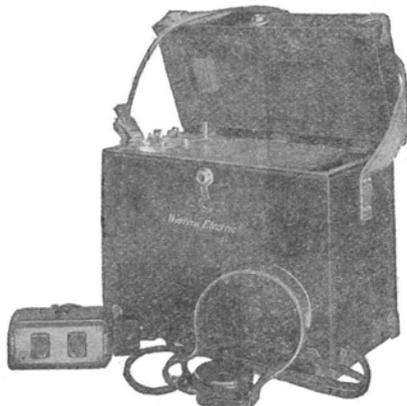
Fur further description of testing apparatus not shown under this heading, see the Telephone Apparatus Section in the Western Electric Year Book.



No. 1006D Type Test Set



No. 1017B Test Set



No. 1020A Test Set

Test Set
No. 1006 Type

Wooden box test set in which the No. 125W receiver is also used as a transmitter. The use of the No. 1017B is recommended on account of its higher transmitting efficiency. Cherry finish.

Code No.	Will Ring Through Ohms	Contains	Size of Case Inches
1006D	5000	1 No. 2A buzzer. 1 No. 22B generator. 1 No. 125W receiver. 1 3 ft. receiver cord.	6 3/4 x 6 3/4 x 4 1/2
		1 two point switch. 2 No. 9A binding posts. 2 No. 26A binding posts.	

Lineman's Test Sets
No. 1017 Type

A wooden box telephone test set equipped with a regular battery talking circuit consisting of a standard transmitter, induction coil, receiver and a special three cell dry battery unit.

Can be used either on magneto or central battery lines.
Size of case 4 1/2 x 6 3/4 x 8 1/2 inches. Birch mahogany finish. Weight, 7 lbs.

Code No.	Will Ring Through Ohms	Contains	Use
1017B	2500	1 No. 2D buzzer. 1 No. 29F generator. 12 ft. No. 572 cord. 1 No. 13 induction coil. 1 special switch.	
1017C	5000	Similar to No. 1017B except equipped with No. 29B generator.	
1017E	5000	Similar to the No. 1017B except equipped for use on composited lines, being provided with a No. 6000A interrupter.	
		1 No. 703 Eveready Tungsten battery. 1 No. 515W receiver. 1 No. 266W transmitter. 3 No. 3C binding posts.	

Cableman's Test Set
No. 16A

Size of case, 7 1/8 x 5 1/8 x 7 3/4 ins. with carrying strap. Oak finish with nickel trimmings.

Code No.	Contains	Use
16A	1 No. 31A condenser. 1 No. 13115 switch. 1 special buzzer No. 12036.	A tone testing set for use in splicing cables.
	1 No. 2A binding post. 6 Columbia dry cells Type 111*	

*Batteries not furnished unless ordered.

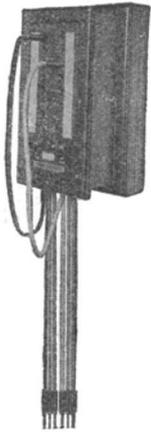
No. 1020A

Size of case, 12 x 6 3/8 x 10 1/4 inches. Birch-mahogany finish. Weight, 12 1/2 pounds without batteries.

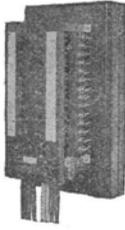
Code No.	Contains	Use
1002A	1 No. 18AC resistance. 1 No. 21K condenser. 1 induction coil vibrator unit. 1 electro-magnetic interrupter. 1 two-point battery switch. 1 No. 19A test set (exploring coil).	A tone testing set for use in locating shorts and grounds in cable. Interrupted current is sent over wires in trouble and the fault located by exploring coil and receiver.
	1 instruction book. 1 No. 189W receiver. 4 "Blue Bell" dry cells*. 1 4 ft. No. 577 cord. 1 connecting plug.	

*Batteries not furnished unless ordered.

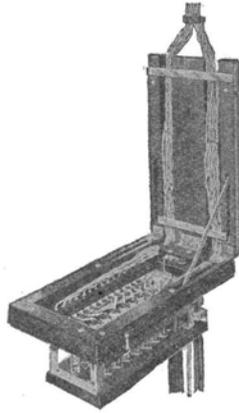
TESTING APPARATUS



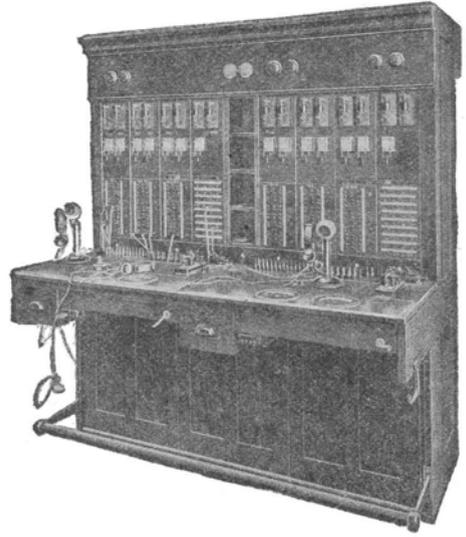
No. 2-B Test Board



No. 2-B Test Board (Cover Removed)



No. 2-B Test Board (Back Open)



Special No. 4 Toll Test Board

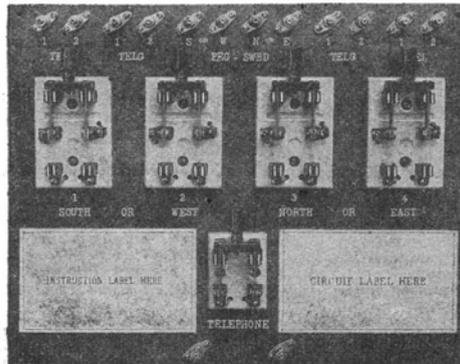
Test Boards

Code No.	Description
2A	A test board designed for use in train dispatching circuits. For two metallic circuits. Contains: 9 No. 170 jacks. 1 No. 272F key. 4 No. 116 plugs (one for each cord). 2 No. 519 cords (white) 2 ft. 6 in. 2 No. 519 cords (red) 2 ft. 6 in. 8 No. 39B apparatus blanks. 1 No. 6B apparatus blank.
2B	A test board designed for use in train dispatching circuits. For four metallic circuits. Same as No. 2a except it is fully equipped. Contains: 17 No. 170 jacks. 2 No. 272F keys. 8 No. 116 plugs (one for each cord). 2 No. 519 cords (white) 2 1/2 ft. 2 No. 519 cords (black). 2 No. 519 cords (red). 2 No. 519 cords (green).
3A	A test board designed for train dispatching circuits. For six metallic circuits. Contains: 25 No. 170 jacks. 3 No. 272F keys. 12 No. 116 plugs (one for each cord). 2 No. 519 cords (white). 2 No. 519 cords (black) 3 ft. 2 No. 519 cords (red) 3 ft. 2 No. 519 cords (green) 3 ft. 2 No. 519 cords (red with black tracer) 3 ft. 2 No. 519 cords (white with black tracer) 3 ft.

We furnish test boards for all classes of service.

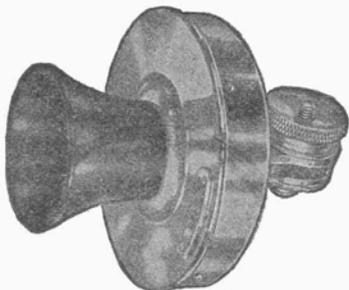
Switching and Testing Panels

We are prepared to furnish switching and testing panels to take care of any requirements. These panels are equipped with switches as shown and are used for testing and patching purposes on train dispatching and simplex block circuits. The dimensions of the No. A-102142 shown are approximately 21 in. x 15 in. x 1 1/4 in. Prices furnished on request.

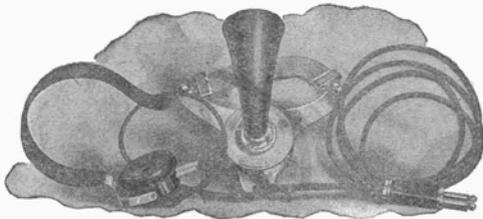


A-102142 Switching Panel

TRANSMITTERS



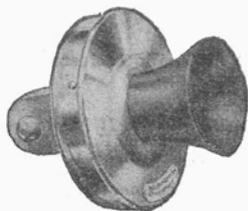
No. 284W Transmitter



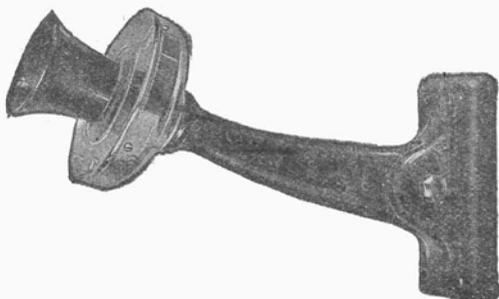
Head Telephone Set with No. 283W Transmitter



No. 285W Transmitter



No. 323W Transmitter



No. 353W Transmitter



No. 3A Transmitter Attachment

Transmitters

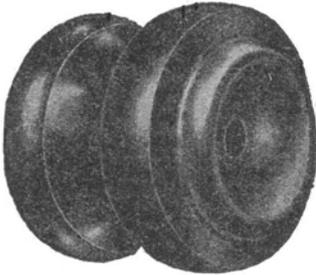
Code No.	Description	Used
228W	A non-insulated high resistance nickel finish transmitter without transmitter lug. It is provided with a bushing at the side and a No. 7 button.	On No. 1314A telephone set.
244W	An insulated high resistance nickel finish transmitter. Consists of a cylindrical brass case with a perforated metal mouth piece and an inner case. Provided with No. 16 button.	With Nos. 1001C, F, H, hand sets, 1278G, H and 1375B telephone sets.
266W	An insulated high resistance nickel finish transmitter, provided with aluminum punch cover, but without a mouth piece so it can be mounted inside box. Cords enter through brass bushing on the lower side. Equipped with No. 9 button.	Used in Nos. 1017C, F and H test sets.
280	A low resistance insulated black finish transmitter. Provided with bell and slotted lug and special No. 18 button. Mouthpiece is reinforced.	On Nos. 1020AB, BR and 1120AB desk sets, 1317W, AD, AW, AE telephone sets, 1048DA, DB, DC, DD, 1048GA, GB, GC, GD and 1148DA, DB, DC, DD telephone arms.
282W	A low resistance insulated short arm bracket type nickel finish transmitter. Mouthpiece does not project beyond edge of writing shelf. Equipped with special No. 18 button.	On Nos. 1317W, AD, AE, AW and BC telephone sets.
283W	A low resistance insulated aluminum nickel finished chest transmitter, provided with special No. 18 button.	With No. 375 cord in dispatcher's telephone set.
284W	A low resistance insulated nickel finish transmitter provided with bell, slotted lug clamping bolt, reinforced mouthpiece and a special No. 18 button.	With Nos. 1020C, E, 1120C telephone arms and Nos. 1293AD, AE, AK, AL, telephone sets.
285W	An insulated low resistance transmitter similar to the No. 244W set, uses a special No. 16 button.	On No. 1001C hand set, 1330E, F, 1331E, F and 1332A, E portable telephones.
286W	A high resistance insulated short arm bracket type black rustproof finish transmitter, provided with No. 7 button.	On No. 1312A telephone set.
291W	A high resistance, insulated nickel finish bridge type transmitter. Provided with a bell, slotted lug, bolt and lock washer.	With No. 1305AC telephone set.
292W	An insulated low resistance bridge type, moisture-proof nickel finish transmitter. Equipped with bell, slotted lug and special No. 18 button.	On Nos. 1336F and H telephone sets.
323W	A high resistance insulated nickel plated transmitter, provided with mounting lug and clamping bolt.	On Nos. 1317P, S, AH, BK, CN, CR, CP, CS, and CG; 6023A telephone sets, 1020U desk stand and 1020CC telephone arm.
329W	A high resistance, insulated nickel finish transmitter. Equipped with clamping bolt, screws and No. 7 button.	With the No. 1020AL desk stand.
349BW	An insulated black finish transmitter similar to the 323W transmitter except that it is equipped with a low resistance button.	With the No. 1317BU telephone set. Is to replace the Nos. 280 and No. 284W transmitters.
353BW	A high resistance insulated bracket type transmitter. Equipped with two cords. Nos. 547 and 548, both 9 3/4 inches. Nickel plated case with black finish bracket and arms. Replaces No. 350W transmitter.	Magneto and Central battery wall telephones, requiring insulated bracket type transmitter such as No. 1317BK telephone set.

Transmitter Attachments

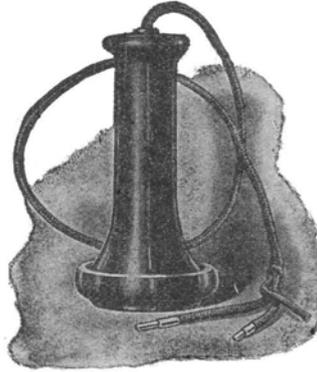
Used for supporting chest type transmitter.

Code No.	Description	Code No.	Description
2A	Buckle only	3B	Buckles and black colored tape
3A	Buckles and slate colored tape	3C	Buckles and white colored tape

RECEIVERS AND HEADBANDS



No. 133-W Receiver



No. 143-AW Receiver
No. 144-AW Receiver



No. 186-W Receiver

Code No.	Description
131W	Metal case bipolar receiver having a hard rubber ear piece and metal clamping ring. (Resistance 70 ohms).
133W	Insulated bipolar hand receiver with rubber case. (Resistance 70 ohms).
143AW	Concealed binding post bipolar hand receiver. Composition case. (Approximate resistance 75 ohms).
144AW	Same as No. 143AW, excepting the case is hard rubber. (Approximate resistance 75 ohms).
186W	A metal case, black finish, single head receiver with a rubber ear piece, and No. 3B headband. (Approximate resistance 400 ohms).

Used
With Nos. 1001C, F and H hand sets, 1278G and H, 1330 E and F, 1331E and F, 1332A and E and 1375B telephone sets.
With No. 1314A telephone set.
With Nos. 1020AL desk stand, 1317P, S, AH, BK, CN, CR, CP, CS, CG telephone sets and 1020CC telephone arm.
With Nos. 1020U desk stand, 1305AC, 1312A, 1336H and 6023A telephone sets.
With Nos. 1020AB, BR desk stands, 1293AE, AK, 1317AW, AE telephone sets, 1020C, E, 1048DA, DB, DC, DD, 1048GA, GB, GC, GD telephone arms. With Nos. 546 and 554 cords. Replaces No. 156W receivers.



No. 190



No. 3-B Headband



No. 7-A Headband

189W	Similar to the No. 186W, except wound to a low resistance. (Approximate resistance 45 ohms).
190W	Composed of two special No. 189W receivers with a wire type headband. (Approximate resistance 45 ohms).
191W	Composed of one special No. 189W (45 ohms) and one special No. 186W (400 ohms) receivers with a wire type headband.
508W	A concealed binding post hand receiver having a composition cap and case. Similar in appearance to the No. 143AW. (Resistance 550 ohms).

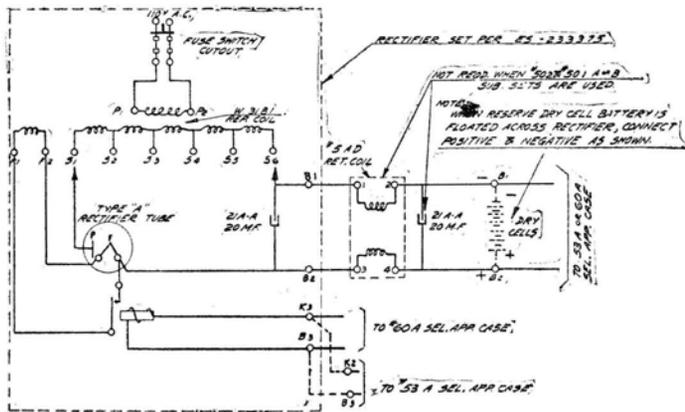
With Nos. 1120AB desk stand, 1017B, C, E, 1020A test sets, 1120C, 1148DA, DB, DC, DD telephone arms and 1317BU telephone set. At way stations with No. 501 type desk set boxes, also on No. 565 cords with breast transmitters. Replaces No. 148W receivers.
With No. 566 cords with breast transmitter. Replaces No. 147W and 153W receivers.
On No. 567 cords multiple connection. Replaces No. 164W receivers.
On Nos. 1317W, AD, 1293 AD, AK and 1336F telephone sets. Replaces No. 163W receivers.

Headbands

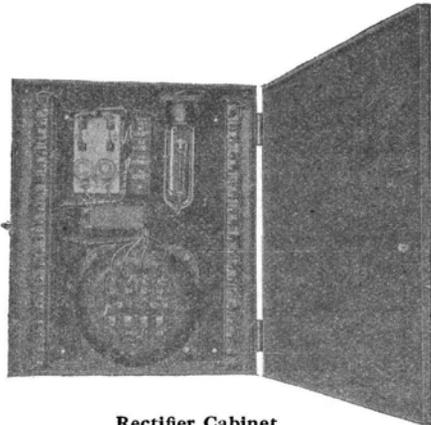
Code No.	Description
3B	A single receiver headband consisting of nickel silver wire headpiece with a black sleeving covering and a nickel silver yoke for holding the receiver.
7A	A single receiver, flat, leather covered headband.

Used
With the Nos. 186W and 189W receivers.
With the No. 186W receiver.

AUDION RECTIFIERS



Wiring Diagram



Rectifier Cabinet

Audion Rectifiers

Description

- Standard metal case, containing:
- 20 No. 21AA Condensers
 - 1 F type relay
 - 1 Bryant 30 ampere double pole, single throw, main line switch with porcelain base.
 - 2 6 ampere 125 volt, Edison base, cartridge fuses.
 - 1 type "A" vacuum tube.
 - 1 Base for vacuum tube.
 - 1 Connecting strip
 - 1 Special repeating coil, arranged so that voltages from 80 to 400 can be obtained in steps of 80.

Use

Used to connect to a 110 volt 60 cycle A.C. current to supply main sending battery D.C. current to operate selectors, in place of dry cells and motor generator sets. 2 or more circuits can be operated from the same rectifier; at no load consumes 10 watts; at full load operates at approximately 50 per cent. efficiency. Used in connecting with the 501A and B and the 502A desk sets. In cases where 295 desk sets are on the circuit, a filter is needed in addition to rectifier.

Filter

Case Containing

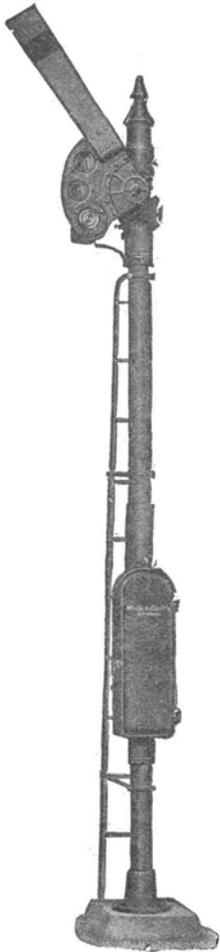
- 20 21AA condensers
- 2 5AD retardation coils

Use

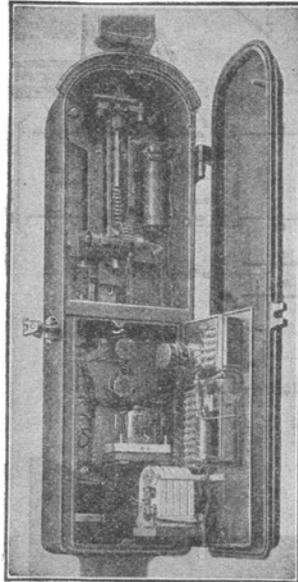
Used with rectifier when 295 desk set boxes are on the dispatching circuit.

SEMAPHORE AND TELEPHONE EQUIPMENT

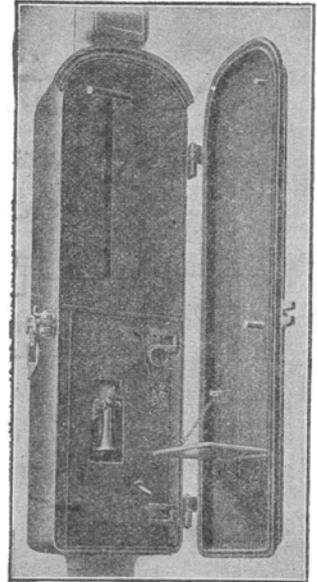
Selectively Operated



Semaphore, Selector and Telephone Apparatus along right-of-way



Interior View



Selector, Signal Mechanism, and Telephone Apparatus Case

The Western Electric combined selectively operated semaphore and telephone equipment can be used and operated in connection with a regular telephone train wire.

Particularly adapted to steam roads who do not find it practicable to keep an operator on duty at every station the entire twenty-four hours. It can be used independently or as an auxiliary to the regular telephone train dispatching system.

Electric railways will also find this equipment of great assistance in operating trains.

It can be installed either at the station or any point along the right-of-way—a siding for example. The dispatcher sets the arm in the same manner as calling a way station and is able to tell absolutely whether the arm selected came to the desired position. By means of the telephone equipment the train crew and the dispatcher are in immediate communication as soon as the train is stopped.

The weatherproof apparatus box is locked and can be opened only by keys in the possession of the proper employees.

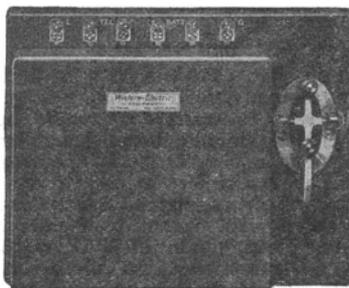
The Semaphore is of standard make and is furnished in either the upper or lower quadrant types as desired. The Semaphore blade itself can be furnished in any style or shape desired in order to conform to the practice of the railroad purchasing the equipment.

The telephone and selector apparatus is protected from the weather and all parts are moisture-proof

Standard Western Electric railway telephone equipment is used throughout.

In ordering semaphores, the following information should be given:

- | | |
|------------------------------------|---|
| Height of mast—21 feet is standard | Double or single spectacles |
| Upper quadrant—left or right, or | Color of lenses |
| Lower quadrant—left or right | Eight day burners will be provided unless otherwise specified |
| Shape and color of blade | |
| Information and prices on request. | |



No. 1A Buzzer Telegraph Set

Buzzer Telegraph Set

Code No.	Description
1A	Set includes No. 5 induction coil with interrupter, No. 12G retardation coil, 143AW receiver, 2 condensers and telegraph key. Used as an inductive telegraph set to establish Morse service where impossible to operate regular sets on account of wires being open, crossed or grounded.

BATTERIES

Dry Batteries

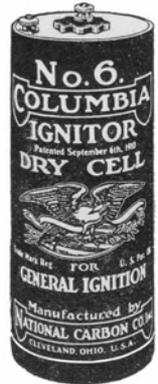
Red Label Columbia No. 6

The Red Label Columbia No. 6 is a general utility cell, furnished in round jacket. Square cartons can be supplied, if desired. Carbons are flush type.

Columbia Ignitor No. 6

The Columbia Ignitor is a heavy duty cell, supplied in flush type carbons only. It is designed especially for particularly heavy duty and is adaptable for gas engine ignition, telephone pole changers and telephone train dispatching.

The Fahnstock spring binding post can be supplied without extra charge.



Columbia Ignitor

List No.	Size of Zinc Cans	Description	Weight per Cell	No. in Bbl.	Wt. of Bbl.
6	2½ x 6	Columbia Red Label	2 lbs.	125	300
6	2½ x 6	Columbia Ignitor	2 lbs.	125	300

Western Electric Blue Bell

*Sizes of Zinc Cans	Description	Wt. Per Cell	No. in Bbl.	Wt. of Bbl. Lbs.
2½ x 6	Standard Fahnstock clip top.	2	125	300
2½ x 6	Combination screw top and binding post.	2	125	300
2½ x 6	Screw top (no binding posts).	2	125	300

*Add 1 inch to the height of cells having extended carbon plugs, and ½ inch for other styles of connection.

Red Label Blue Bell

2½ x 6	Standard binding post top (round carton).	2	125	300
2½ x 6	Standard binding post (square carton).	2	125	300
2½ x 6	Combination screw top and binding post.	2	125	300
2½ x 6	Screw top (no binding posts).	2	125	300

Oval Columbia

For Portable Telephones

For use with portable telephones. This cell is equipped with screw binding posts.

List No.	Size of Zinc Cans, Ins.	Weight per Cell, Ozs.	Weight per 100 Packed
O-4	1¼ x 2¼ x 4	11¼	80

"Everready" Guaranteed Tungsten Batteries

List No.	No. of Cells	Size Over All			Used
		Height, Ins.	Width, Ins.	Depth, Ins.	
703	3	2⅝	2⅞	⅞	In the 1017B, C, E test sets and 1375B telephone set.
790	2	4¾	1¼	..	In the 1330E, F and 1331E, F telephone sets.
792	2	2½	1⅝	1⅞	In the 1332A and E telephone sets.

Edison Primary Wet Batteries

250 Ampere Hour—Type 252 BSCO.

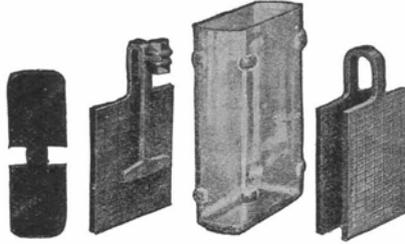
Battery—Size Overall 3¼ inches x 6 inches x 12½ inches
 Jars Only—Size Overall 2⅞ inches x 5¼ inches x 10 inches
 List 340539 complete cell with heat resisting glass jar.
 340540 complete—renewal.

Renewal Parts

- 340012 Zinc oxide assembled.
- 340013 One can caustic soda.
- 340014 One bottle special battery oil.

Edison primary cells are made in capacities of 150 to 500 amp. hours. They are suitable for circuits in which the flow of current is either continuous or intermittent; there is no deterioration while the battery is idle. For complete list of primary cells, see Western Electric Year Book.

STORAGE BATTERIES



General Lead Batteries

Titan Couple Types

Do not overlook ordering end plates or end cells.

Type	GB	GC	GP	GE
Size of plates in inches { Height	4	5	8 3/4	7 3/4
Width	3	5	5	7 3/4
Discharge in amperes for {	10 Hours	3 5/8	1 1/4	3 3/4
	8 Hours	3 3/4	1 1/2	4 1/2
	5 Hours	1	2	4 1/2
	3 Hours	1 1/2	3	6 1/2
	1 Hour	3	6	9
Normal Charging Rate	3/4	1 1/2	3	4 1/2
Outside dimensions of glass jar in inches. {	Length	1 5/8	2 1/4	2 1/2
	Width	3 3/4	6 1/4	5 1/2
	Height	6 3/4	8	12
Height of group in inches	6	7	10 1/2	9 1/2
Height of complete cell to top of strap in inches	7 1/8	8 1/4	12 1/4	11 1/4
Weight of electrolyte per jar in pounds (includes 10% extra for spillage)	1 1/5	2 1/2	5	6
Weight of one cell, including electrolyte in pounds	3 1/2	7 3/4	13 1/4	22 1/2
Dimensions of sand tray to hold ten cells, in inches. {	Length	19 1/2	26	28
	Width	5 1/2	8	3
Insulators, per tray	4	4	6	6
Additional length to be added for each jar added per tray, in inches	1 3/4	2 3/8	2 3/4	2 3/4

Battery Connector

Code No.	Description
540	Single conductor, stranded copper, moisture-proof, cord, brown cotton covering—length 5 inches for connecting dry battery. Equipped with spring or screw terminal.

Battery Boxes

Black finish pressed metal box lined with insulating material. Removable cover.

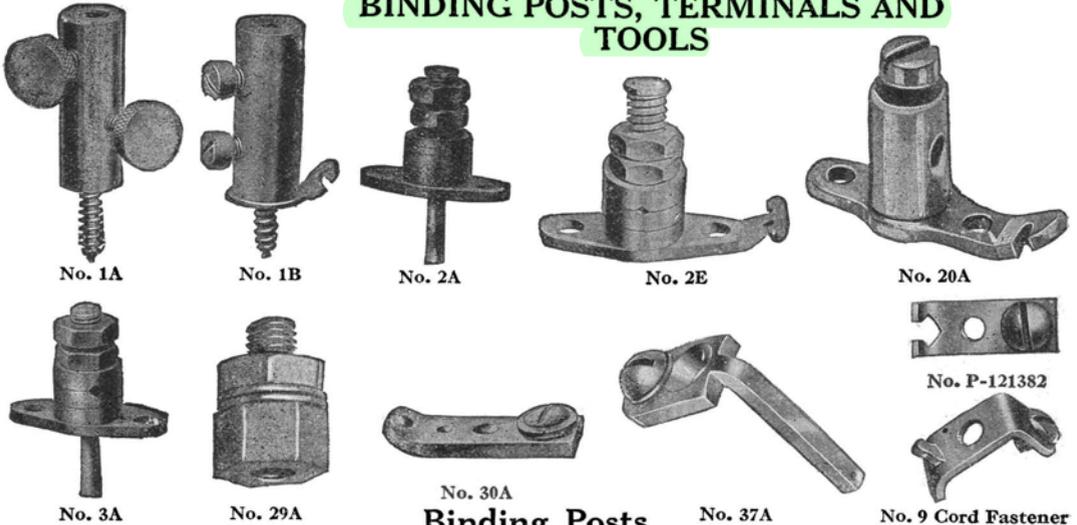
For Holding Standard Dry Cells

Code No.	Capacity Dry Cells	Dimensions, Inches
1A	3	3 1/4 x 7 15/16 x 9 7/16
2B	9	5 3/8 x 7 9/16 x 14 5/32

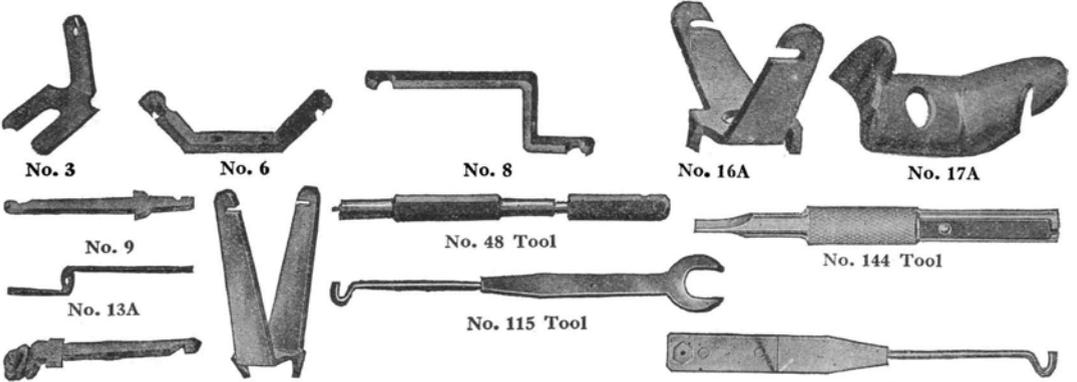


No. 1A—Battery Box

BINDING POSTS, TERMINALS AND TOOLS



Code No.	Description	Finish
1A	Thumb screw connections, no soldering terminals. Self mounting.	Brass
1B	Screw connections, one front soldering terminal. Self mounting.	Tin dipped
2A	Lock nut connections, one back soldering terminal; used with 127 type extension bell. Screw mounting.	Nickel
2E	Lock nut connection; one front soldering terminal. Screw mounting.	Brass
3A	Lock nut connections, one back soldering terminal. Screw mounting.	lacquered
3B	Wing nut connection; used in 1314A telephone set. Screw mounting.	Nickel
3C	Wing nut connections; one back soldering terminal; used on the 1017 test set. Screw mounting.	Nickel
20A	Screw connections, one front soldering terminal. Screw mounting.	Nickel
30A	Screw connection, one soldering terminal. Screw mounting.	Nickel
29A	Used in No. 8 and No. 10 cable terminals when the original binding posts break off above the lower nut.	Tinned
37A	Brass binding post, line type for miscellaneous uses.	Tinned
P-121382	Tinned binding post, line type for miscellaneous uses.	
9	Tinned cord fastener, line type for miscellaneous uses.	



Code No.	Material	Use
3	Nickel silver	On fuse posts and fuse blocks.
6	Brass, tinned ends	For the ground side of ringing leads.
8	Brass, tinned ends	On double sided connecting racks.
9	Brass, tinned ends	On No. 10 switchboards.
13A	Brass, dip tin finish	On double sided connecting racks.
13B	Brass, dip tin finish	Similar to No. 13A except 1/2 inch shorter.
14	Brass, one end tinned	For screw connection on one end.
15A	Brass, tinned ends	On one sided connecting racks.
16A	Brass, tinned ends	On repeating coils and retardation coils.
17A	Brass, tinned ends	On induction coils and telephone sets.
21A	Brass, dip tin finish	On repeating coils, induction coils and retardation coils

Tools

Code No.	Description
48	Used for adjusting Nos. 50A and 50B selectors. Consists of a wrench and screw driver. Will fit 1/4 inch and 3/8 inch nuts.
115	Used for changing Nos. 50A and 50B selectors to call different stations. It is a small double ended tool, one end consisting of a wrench for 1/4 inch hexagonal nut; the other small wire hook.
144	Used for changing No. 60A and 60B selectors to call different stations. Consists of a socket wrench and screw driver.
145	Used for changing No. 60A and 60B selectors to call different stations. Small double ended tool, one end consisting of a wrench for 1/2 inch hexagonal nut; the other end a small wire hook.

CABLE

Emergency Cable—"Circular Loom"

These emergency cables are admirably adapted for use in cases of breaks in the line caused by sleet storms, falling of bridges or fires, and are used extensively by telephone and telegraph companies. They can be strung on poles, laid on the ground or through the water, and can be subjected to rough handling and usage.

The cables are easily handled as they are furnished on reels which are provided with stands for unwinding the cable.

No. 18 gauge cables. Stranded conductors.
Furnished in 1, 2, 3, 4, 5, 7, 10 and 12 pairs.
Other size cables can be furnished if desired.

Bridle Cable—"Circular Loom"

No. 14 B. & S. GAUGE CONDUCTORS

Any specified number of conductors.

Lead Covered and Submarine Cables

We are prepared to furnish lead-covered aerial and underground and submarine cables in the various sizes to meet all requirements and would be pleased to quote prices on request. For further information refer to Telephone Section of Western Electric Year Book.

Interior Cable for Way Stations

Consists of black enamel insulated wire in twisted pairs, having distinctively colored braided coverings, and all covered with green braid.

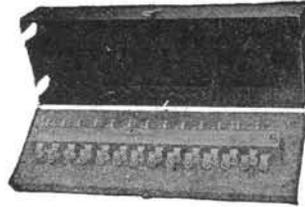
No. of Pairs	B. & S. Gauge	No. of Pairs	B. & S. Gauge
3	20	10	20
5	20		



Lead Covered Cable



No. 8-B Type—Cable Terminal Open



No. 12-A Cable Terminal

Cable Terminals

For further description on cable terminals not shown under this heading, see the Telephone Apparatus Section in the Western Electric Year Book.

No. 8 TYPE

Without Protectors

This terminal is for open wire distribution from lead-covered aerial cable. The base and bracket are cast in one piece; a groove at the back permits either wall or pole mounting. The galvanized hood is peaked and attached to the base by a chain. No arrangement is made for protective devices. A six foot No. 22 B. & S. gauge cable stub is standard, and will be furnished attached to assembled terminal, unless otherwise specified. In the field it is necessary only to splice the stub to the cable.



Closed Open
No. 14-C Cable Terminal

Code No.	Capacity, Pairs	Overall Height (Less Cable Stub)	Diameter of Hood, Ins.	Code No.	Capacity, Pairs	Overall Height (Less Cable Stub)	Diameter of Hood, Ins.
8A	10	15 1/4	6 1/4	8D	31	19 1/4	6 1/4
8B	16	15 1/4	6 1/4	8E	51	28 1/4	6 1/4
8C	26	19 1/4	6 1/4				

No. 12 TYPE
Without Protectors

This terminal is for interior distribution. It consists of a wooden base and a black finished metal cover. The terminals have solder connection at one end and screw connections at the other.

Code No.	Capacity, Pairs	Dimensions in Ins.		
		Length	Width	Depth
12A	13	11 1/4	4 1/4	1 1/4
12B	23	11 1/4	4 1/4	2 1/4
12C	33	11 1/4	4 1/4	3 1/4

No. 14 Type
Without Protectors

This is for open wire distribution from lead-covered aerial cable and can be mounted on poles or buildings. No arrangement is made for protective devices. It consists of a galvanized cast iron box with a hinge cover. The box contains porcelain terminal blocks and lock-nut binding posts. The cover is arranged for charting the pairs of wires. A six-foot No. 22 B. & S. gauge cable stub is standard, and will be furnished attached to the assembled terminal at the bottom of the box, unless otherwise ordered.

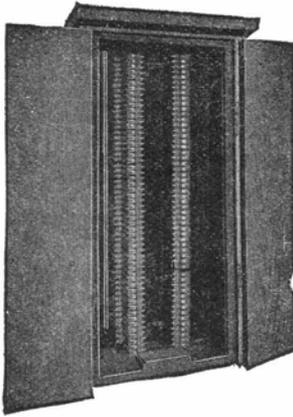
Code No.	Capacity, Pairs	Length Including Nipples	Width of Cover, Ins.	Code No.	Capacity, Pairs	Length Including Nipples	Width of Cover, Ins.
14B	11	10 1/4	7 1/4	14D	26	17 1/4	7 1/4
14C	16	12 1/4	7 1/4				

CABLE TERMINALS

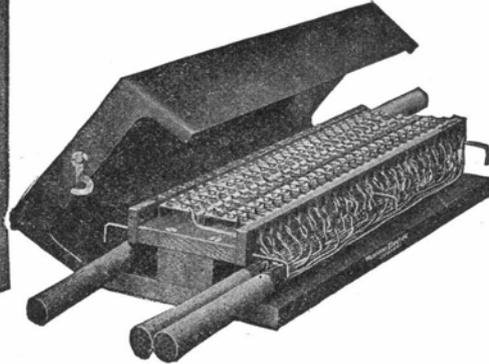
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Closed
No. 18-E
Cable Terminal



No. 17-F—Cable Terminal
Open, with Protectors



No. 19-B Cable Terminal



Open
No. 18-E Cable
Terminal

No. 17 TYPE
Arranged for Protectors

This is a hard wood cable terminal for use on poles at the junction of aerial cable and underground cable, underground cable and open wire and aerial cable and open wire.

No. 17 type terminals are provided with flat iron straps for pole mounting. The bottom of the boxes are removable so that cables may be put in from the front.

On the inner sides of the doors are painted white squares for marking up the number of cable pairs.

The outside of the terminal is green and fanning strips are provided for use without connecting blocks, unless otherwise specified in the order.

In the No. 17 type terminals the No. 1074A protectors or the No. 17B protectors on the No. 1 D, E or F connecting blocks or with the No. 1075A protectors are used.

The protectors and connecting blocks are not a part of the terminal and must be ordered separately.

Code No.	Capacity, Pairs	Height	Dimensions, Ins.		Depth
			Width		
17A	25	44 1/2	15		10 1/2
17C	50	44 1/4	22		10 1/2
17E	100	78 3/4	22		10 1/2
17F	200	78 3/4	38 1/2		11 1/2

No. 18 Type
With Protectors

This is a protected terminal for open wire distribution from underground or aerial cable. It is enclosed in a round black finished iron cover approximately 8 1/4 inches in diameter. The cover is equipped with a spring to hold it when raised to the top of the terminal and a safety chain fastening it to the base. The base is slotted at the back making the terminal suitable for either wall or pole mounting. Both cover and base are galvanized.

Terminals are equipped with:

- No. 7A fuses (7 ampere unless otherwise specified)
- No. 1 protector blocks

- No. 2 protector blocks
- No. 3 protector micas

A six-foot No. 22 B. & S. gauge cable stub is standard, and will be furnished attached to assembled terminal unless otherwise ordered.

Code No.	Capacity, Pairs	Length, Ins.	Code No.	Capacity, Pairs	Length, Ins.
18B	15	22 1/2	18E	50	46 1/2
18C	25	28 1/2	18F	60	53 1/2

No. 19 TYPE
Without Protectors

The No. 19 cable terminal is suitable for interior distributing work. It is arranged for 4 cables, which can be brought in from either end. Four wires can be connected to each terminal by means of two screw connections. It is made of hard wood, numbered, shellacked and equipped with fanning strips, terminals and a black finished sheet metal cover. It is also adaptable for unformed cable.

Code No.	Capacity, Pairs	Length	Dimensions, Ins.		Depth
			Width		
19A	14	8	5 1/2		2 1/2
19B	26	14	5 1/2		2 1/2

CORDS

Any length cord desired can be furnished. Standard length will be supplied on the order unless otherwise specified. The length is measured between the knots.

For further description of cords not shown under this heading, see the Telephone Apparatus Section in the Western Electric Year Book.

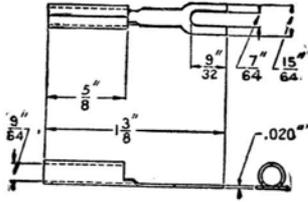
Code Nos.	Description	Standard Length	Use
179	Single conductor, tinsel, transmitter cord. Brown silk covering. No. 61 cord tips on transmitter end and No. 62 on stand end.	5½ in.	On No. 1314A telephone set.
243	Single conductor, tinsel cord. No. 62 cord tips on both ends.	8 in.	On Nos. 1001H hand set, 1375B and 1398A telephone sets.
267	Single conductor, weatherproof cord, with No. 30 cord tip on rail clamp end, No. 62 on set end.	10 ft.	With No. 1314A telephone set for rail connections.
329	Single conductor, tinsel, transmitter cord. Brown silk and cotton covering with red tracer. Cord tip No. 56 on transmitter end; No. 62 on stand end.	9¾ in.	With Nos. 1923AD, AE, AK and AL telephone sets.
330	Single conductor, tinsel transmitter cord. Brown silk covering. No. 56 cord tips on transmitter end and No. 62 on stand end.	6 ft.	On Nos. 1048GA, GB, GC and GD telephone arms.
348	Two copper conductors, weatherproof cord. Rubber and cotton insulation. Black glazed mercerized cotton covering No. 50 cord tips on test end and No. 62 on set end.	3 ft.	On Nos. 1001H hand sets, 1375B and 1398A telephone sets.
363	Four conductor, tinsel cord. Brown and maroon mercerized cotton covering. Cord tip No. 29 at the receiver end and No. 38 on transmitter end.	6 ft.	With the No. 137 plug on No. 147W double head receiver and No. 283W transmitter. Series connection. (See Cord 566.)
364	Two conductor, tinsel, receiver cord. Brown silk covering. Cord tips No. 29 on receiver end and No. 62 on stand end.	6 ft.	With No. 147W double head receivers. Receivers in series. (See Cord No. 571.)
365	Four conductor, tinsel desk stand cord. Brown silk covering. No. 62 cord tips, both ends.	5½ ft.	With No. 1020U desk stands.
366	Three conductor, tinsel cord. Black mercerized cotton covering. Cord tips No. 62 on both ends.	6 ft.	With No. 1001C hand sets. Nos. 1330 E, F, 1331E, F, and 1332A, and E Portable telephone sets.
371	Six conductor, tinsel cord. Brown silk covering. Cord tips No. 29 on receiver end; No. 38 on transmitter end.	6 ft.	With No. 137 plug. No. 147W double head receiver and No. 283W transmitter. Multiple Connection. (See Cord No. 567.)
375	Four conductor, moistureproof, tinsel cord. Black and maroon cotton covering; cord tips No. 29 on receiver end and No. 38 on transmitter end.	6 ft.	With No. 137 plug for dispatcher's head receiver and chest transmitter. (See Cord 565.)
384	Two conductor, moistureproof, tinsel receiver cord. Rubber and cotton insulation. Black cotton covering. No. 62 cord tips on both ends.	10½ in.	With Nos. 1336F, 1336H and 1314A telephone sets.
385	Single conductor, weatherproof, tinsel transmitter cord. Rubber insulation. Cord tips No. 56 on transmitter end and No. 62 on set end.	7 in.	With Nos. 1336F, 1336H and 1305AC telephone sets.
390	Single conductor, tinsel, transmitter cord. Cotton and brown silk insulation. Cord tips No. 61 on transmitter end and No. 62 on stand end.	9¾ in.	With No. 1314A telephone sets and No. 1020CC telephone arms.
409	Three conductor, (red, yellow and green), moistureproof, tinsel, desk stand cord. Black and maroon mercerized cotton covering. No. 62 cord tips on both ends.	6 ft.	With Nos. 1020AB and 1120AB desk stands, 1048DA, DB, DC, DD, 1148 DA, DB, DC, DD, 1020C and 1120C transmitter arms.
412	Two conductor, (green and red) tinsel receiver cord. Brown silk covering. No. 62 cord tips on both ends.	2½ ft.	With No. 1020U desk stands.
416	Four conductor, (green, red, blue and yellow) moistureproof, tinsel, desk stand cord. Black and maroon mercerized cotton covering. No. 62 cord tip on both ends.	6 ft.	With old type train dispatching desk stands and transmitter arms, using non-insulated transmitters. The No. 1020BR desk stands and the No. 1048GA, GC, GB and GD transmitter arms.
422	Three conductor, weatherproof, tinsel, cord. Black mercerized cotton covering. No. 62 cord tips both ends.	6 ft.	With Nos. 1278G and H telephone sets, in connection with the No. 1001F hand sets.
423	Single conductor, moistureproof, tinsel transmitter cord. Cord tips No. 61 on transmitter end and No. 62 on stand end.	9½ in.	With old types train dispatching desk stands and transmitter arms, using non-insulated transmitter.
426	Single conductors, moistureproof, tinsel transmitter cord. Single yellow tracer. Mercerized cotton covering No. 56 cord tips on transmitter end, No. 62 on stand end.	9¾ in.	With Nos. 1020AB, 1120AB, 1020BR desk stands; the Nos. 1020E, and C, 1120C, 1048DA, DB, DC, DD, 1148 DA, DB, DC and DD transmitter arms.
427	Single conductor, moistureproof, tinsel transmitter cord. Double yellow tracer. Mercerized cotton covering. No. 56 cord tip on transmitter end and No. 62 on stand end.	9¾ in.	With Nos. 1020 AB, 1120 AB, 1020 BR desk stands; Nos. 1020E, 1048 DA, DB, DC, DD and the 1148DA, DB, DC, and DD transmitter arms.
446	Two conductors, moistureproof, tinsel receiver cord. Black and maroon mercerized cotton covering. Nos. 29 and 76 cord tips on receiver end and No. 62 on sub set end.	2½ ft.	With Nos. 1317 W and AD, No. 1305 AC and the Nos. 1293 AD and AK telephone sets.

CORDS

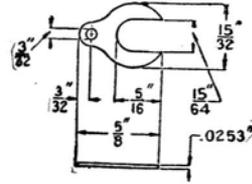
(Continued)

Code No.	Description	Standard Length	Use
450	Combination desk stand cord; consists of: 1 5½ ft. Cord No. 550 1 2½ ft. Cord No. 549 1 9½ in. Cord No. 547 1 9½ in. Cord No. 548		With the 1020AL desk stands.
493	Two conductor, twisted tinsel moistureproof, switchboard cord. Glazed cotton covering, red, white and green. Cord tip No. 38 on plug end and Nos. 8 and 45 on fastener end.	6 ft. 3 in.	Switchboards arranged for No. 47 plugs.
509	Two conductor, tinsel, waterproof cord. Rubber insulation. Black glazed cotton covering. No. 22 cord tips on set end.	6 ft.	With No. 146 plug on Nos. 1330E, F and 1331 E and F portable telephones.
510	Single conductor, moistureproof, tinsel switchboard patching cord. White glazed cotton covering. No. 75 cord tips on both ends. 2 ft. furnished unless otherwise specified.	1 ft. 2 ft. 3 ft. 4 ft. 6 ft.	Single conductor patching cord, arranged for No. 116 plug at each end.
511	Single conductor, moistureproof, tinsel switchboard cord. White glazed cotton covering. Cord tip No. 75 on plug end Nos. 45 and 8 on fastener end. 6 ft, 3 in. regularly furnished.	4 ft. 6 ft. 3 in.	Single conductor switchboard cord, arranged for No. 116 plug.
519	Single conductor, moistureproof tinsel cord. Glazed cotton covering. Cord tips Nos. 62 and 45 on cord fastener end.	3 ft.	On Nos. 2A, B and 3A with No. 116 plug.
521	Two conductor, tinsel cord, brown worsted covering. Nos. 62 cord tips on both ends.	2½ ft.	With Nos. 1312A and 1317 P, S, AH, BK, CN, CR, CP, CS and CG telephone sets.
523	Two conductor, moistureproof, linesman's receiver cord. Black mercerized cotton covering. Cord tips Nos. 30 and 76 on receiver end and No. 30 on set end.	2 ft.	With Nos. 1017 B, C, E, and No. 1006 D test sets. (See cords 572.)
525	Two conductor, moistureproof cord. Green glazed cotton covering. Similar to cord 493 except that ends are furnished for W. U. 3A double connector plug.	4 in. 1 ft. 2 ft. 3 ft. 5 ft.	Double conductor patching cord.
526	Two conductor, moistureproof cord. Red glazed cotton covering. Similar to cord No. 525.	4 in. 1 ft. 2 ft. 3 ft. 5 ft.	Double conductor patching cord. Reverse conductors, used to join as a repeater two duplex sets terminated in a jack on the switchboard.
527	Two conductor, moistureproof cord. Green glazed cotton covering. Similar to cord 525. Arranged for attaching three double conductor plugs.	1 ft. 2 ft. 3 ft.	As a "Y" patching cord to connect two loops or sets into one looping jack or to transfer a group of loops or sets from one circuit to another.
540	Single conductor, stranded copper moistureproof, battery cord. Brown cotton covering.	5 in.	For connecting dry batteries. Nos. 1317W, AD, AH, BK, BU, CN, CR, CS, CP, CG, 1330E, F and 1336 F. H telephone sets.
546	Two conductor, moistureproof, tinsel receiver cord. Black and maroon mercerized cotton covering. Cord tips No. 69 on receiver end and No. 62 on sub set end.	2½ ft.	With Nos. 1317 AW, AE, BU, CN, CR, CP, CS and CC; Nos. 1293 AE and AL telephone sets, where No. 186W receiver is used. (See cord No. 446.)
547	Single conductor, tinsel, transmitter cord. Green cotton insulation, with two orange tracers. Cord tips No. 56 on transmitter end and No. 62 on set end.	9¾ in.	With No. 1020U desk stands; Nos. 1317P, S, W, AD, AW, AH and BU telephone sets; No. 1020CC transmitter arm.
548	Same as 547 except cord tips No. 55 are used on the transmitter end.	9¾ in.	With Nos. 1317P, S, W, AD, AE, AH, AW, BU, CN, CR, CP, CS and CG telephone sets.
549	Two conductor, tinsel, receiver cord. Brown silk covering. No. 29 cord tips on receiver end and No. 62 on stand end.	2½ ft.	On the No. 1020CC telephone arm.
550	Three conductor, tinsel, moistureproof desk stand cord. Brown silk covering. No. 62 cord tips on both ends.	5½ ft.	On the No. 1020CC telephone arm.
554	Two conductor, moistureproof, tinsel, receiver cord. Black and maroon mercerized cotton covering. Cord tips No. 69 on receiver end and No. 62 on stand end.	2½ ft.	With Nos. 1020AB and 1020BR; 1120AB desk stands; Nos. 1020C, 1120C and 1048DA, DB, DC and DD; Nos. 1148 GA, GB, GC and GD transmitter arms; using the Nos. 186W or 189W receivers.
565	Four conductor, moistureproof, tinsel cord. Black and maroon cotton covering. Cord tips No. 69 on the receiver end and No. 38 on transmitter end.	5½ ft.	With No. 137 plug for dispatcher's receiver and chest transmitter, where No. 189W receiver is used. Plug not furnished unless specified on order. (See cord No. 375.)
566	Four conductor, moistureproof, tinsel cord. Black and maroon mercerized cotton covering. Cord tip No. 69 on receiver end and No. 38 on transmitter arm, plug ends.	5½ ft.	With No. 137 plug on No. 190W double head receiver and No. 283W transmitter series connection. Plug not furnished unless specified. (See cord No. 363.)
567	Six conductor, moistureproof, tinsel cord. Green silk covering. Cord tips No. 69 on receiver end and No. 38 on transmitter end.	5½ ft.	With No. 137 plug and No. 191W double head receiver and No. 283W transmitter. Multiple connection. Plug not furnished unless specified. (See cord No. 371.)
571	Two conductor, tinsel, receiver cord. Brown silk covering. Cord tips Nos. 69 on receiver end and 62 on desk stand end.	5½ ft.	With No. 190W receiver on No. 1020 type desk stands. (See cord No. 364.)
572	Two conductor, tinsel, weatherproof, receiver cord. Black mercerized cotton covering. Cord tips No. 78 on receiver end and No. 30 on set end.	2 ft.	With Nos. 1017B, C, and E test sets when the No. 189W receiver is used. (See cord No. 523.)
582	Single conductor, tinsel, transmitter cord. Green cotton covering. No. 56 cord tip on transmitter end and No. 62 on set end.	1 ft.	On the No. 1020CC telephone arm.

CORD TIPS



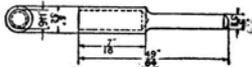
No. 8



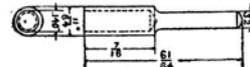
No. 22

Code No.	Description
8	Tinned brass tip.
22	Flat tinned brass tip, slotted for No. 12 screw.

Uses
On cords Nos. 493, 525 and 526.
On cord No. 509 and on Nos. 3, 4, 5 line poles.

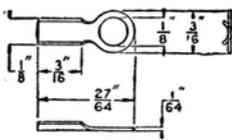


No. 29

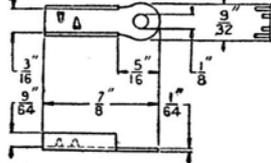


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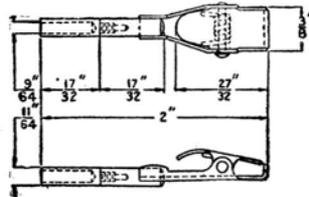
29	Nickel plated, brass tip.	On cords Nos. 363, 364, 371, 375, 446 and 549.
30	Nickel plated, brass tip.	On cords Nos. 267, 523 and 572.



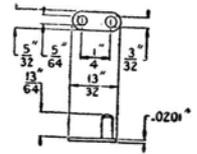
No. 38



No. 45

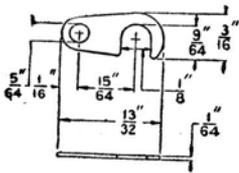


No. 50



No. 55

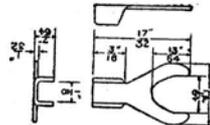
38	Tinned brass, eyelet tip.	On cords Nos. 363, 371, 375, 493, 565, 566 and 567.
45	Brass, eyelet tip.	On cords Nos. 493, 519, 525 and 526.
50	Nickel plated brass spring tip with two piece shank.	On cord No. 348.
55	Tinned silver tip with tinned brass stud.	On cord No. 548.



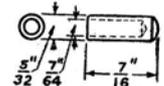
No. 56



No. 61



No. 62



No. 69

56	Tinned brass tip.	On cords Nos. 329, 330, 385, 426, 427 and 547.
61	Nickel plated, brass tip.	On cords Nos. 179, 390 and 423.
62	Tinned brass tip.	On cords Nos. 179, 243, 267, 329, 330, 364, 365, 366, 385, 390, 409, 412, 416, 422, 423, 426, 427, 446, 519, 521, 546, 547, 549, 550, 554, 571 and Nos. 3 and 5 line poles.
69	Tinned brass tip.	On cords Nos. 546, 554, 565, 566, 567 and 571.
75	Tinned brass tip.	On cords Nos. 510 and 511
76	Semi-hard rubber sleeve.	On cords Nos. 446 and 523 to cover Nos. 29 and 30 cord tips.
78	Tinned brass tip.	On cord No. 572.

DROPS AND DESIGNATION STRIPS

Drops

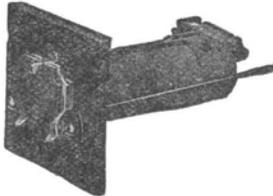
The Nos. 19 and 56 types are single spool drops with tubular iron shells and are cross-talk proof. The No. 19 type is employed especially on long bridging lines, toll lines, cord circuits, etc.

All drops are equipped with night bell contacts. The contacts of the No. 19F are made only while the drop is energized by the ringing current. In all the other drops listed below, the night bell contact remains closed until the drop is restored.

All drops will operate on alternating ringing current.

The No 56 type drops are similar to the No. 19 type except that they are arranged to mount on 1 inch centers, instead of 1 3/8 inch.

Note. It is recommended that No. 19A and B drops be replaced by No. 56A and B drops and No. 19K by No. 56L.



No. 19A Drop

Code No.	Approx. Resistance Ohms	Finish On Shutter	Code No.	Approx. Resistance Ohms	Finish On Shutter
19A	525	Black	19K	525	Brass
19B	600	Black	56A	525	Black
19C	1000	Black	56B	670	Black
19F	525	Black	56L	670	Black

Drop Mountings

No. 58 DROP MOUNTING

Code No.	No. per Strip	Centers, Ins.	Size of Plate, Ins.	For Drops No.
2	10	1 3/8	15 x 1	19 & 56
6	5	1 3/8	8 1/8 x 1	19 & 56
9	10	1 3/4	11 1/2 x 1	56
43	10	1	10 1/2 x 1	56
53	2	1 1/8	2 1/8 x 1 3/8	56
56	20	1 3/8	24 1/8 x 1	56
57	15	1 3/8	24 1/8 x 1	19 & 56
58	15	1 3/8	21 3/4 x 1	19 & 56
60	4	2	9 x 1	19 & 56
64	5	1 1/2	8 1/8 x 1	19
75	10	1 3/8	15 1/8 x 1	19 & 56
76	4	1 3/8	7 1/8 x 1	19 & 56
77	6	1 3/8	10 1/4 x 1	19 & 56

Designation Strips

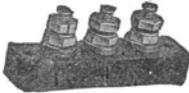
These consist of a metal holder and a thin transparent celluloid strip for protecting a strip of printed paper.



No. 8 Designation Strip

Code No.	Width Ins.	Length Ins.	Used for
8G	1/8	As specified	Miscellaneous numbering
8H	3/8	As specified	Miscellaneous numbering
8K	5/8	6 1/8 in. unless otherwise specified	Miscellaneous numbering
43A	1/8	1 1/2	Miscellaneous numbering
43B	3/8	1 1/2	Miscellaneous numbering
43C	5/8	1 1/4	Miscellaneous numbering
43D	3/4	1 1/4	Miscellaneous numbering
P-10196	3/8	1 1/4	Selector Keys

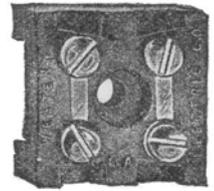
CONNECTING BLOCKS AND FUSE BLOCKS



No. 1A Connecting Block



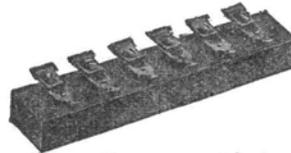
No. 10A Connecting Block



No. 11A Connecting Block



No. 6D Connecting Block



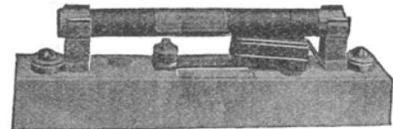
No. 8A Connecting Block

Connecting Blocks

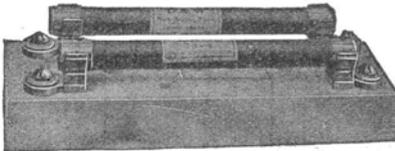
Code No.	No. of Binding Posts	Style	Size Ins.	Base
1A	3	Lock nut	2 1/2 x 3/8	Composition
1D	5	Lock nut	3 1/8 x 3/4	Hard rubber
1E	10	Lock nut	6 7/8 x 3/4	Hard rubber
1F	20	Lock nut	13 3/4 x 3/4	Hard rubber
6B	11 prs.	Lock nut	8 5/8 x 1 7/8	Composition
6C	16 prs.	Lock nut	12 3/8 x 1 7/8	Composition
6D	21 prs.	Lock nut	16 1/2 x 1 7/8	Composition
6E	26 prs.	Lock nut	19 7/8 x 1 7/8	Composition
6G	6 prs.	Lock nut	4 7/8 x 1 1/2 x 1 7/8	Composition
8A	6	For cord tip	5 x 1	Ebonized wood
8D	4	Screw	3 1/2 x 1	Wooden
8E	8	Screw	5 5/8 x 1 1/8	Wooden
8F	12	Screw	8 1/2 x 1 1/8	Wooden
10A	7 prs.	Solder and lock nut	4 1/2 x 1 1/8	Composition
10B	11 prs.	Solder and lock nut	6 3/4 x 1 1/8	Composition
10C	16 prs.	Solder and lock nut	9 1/8 x 1 1/8	Composition
10D	21 prs.	Solder and lock nut	12 3/8 x 1 1/8	Composition
10E	26 prs.	Solder and lock nut	15 1/8 x 1 1/8	Composition
11A	2 prs.	Screw	1 1/2 x 1 5/8	Composition
11B	2 prs.	Screw	1 3/8 x 1 1/2	Composition
(Same as No. 11A except equipped with a cover.)				
12A	3 prs.	Screw	1 1/2 x 1 5/8	Composition
12B	3 prs.	Screw	1 1/8 x 1 3/8	Composition
(Same as No. 12A except equipped with a cover.)				



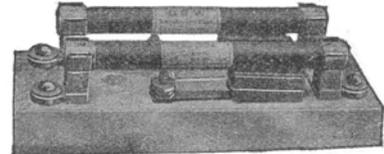
No. 2750 Fuse Block



No. 2752



No. 2751 Fuse Block



No. 2753

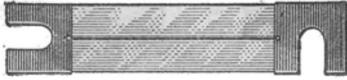
Fuse Blocks

Code No.	Type	Description
2750	Single	Without Fuses Porcelain fuse mounting 1 inch x 5 inches with one pair of brass spring fuse clips on 4 1/2 inch centers.
2751	Double	Without Fuses Porcelain fuse mounting 2 inches x 6 inches with two pairs of brass spring fuse clips on 4 1/2 in. centers.
2752	Single with arrester.	Single porcelain fuse mounting, 1 inch x 6 inches with one pair of brass spring fuse clips on 4 1/2 inch centers and a carbon block protector.
2753	Double with arrester.	Double porcelain fuse mounting, 2 inches x 6 inches with two pair of brass spring fuse clips on 4 1/2 inch centers and two carbon block protectors.

FUSES



Mica Fuse, Western Union Style



Mica Fuse, Postal Style



No. 24 Type Fuse



No. 35A

Fuses

MICA FUSES

These fuses are furnished either with copper or foil tips, and in either Western Union or Postal style. The fuse is mounted on a mica base, or inclosed between two strips of mica.

When ordering, always specify ampere capacity desired and it is best to send sample of fuse wanted (an old one will do). If this is not possible, be sure and give the following information:

- Length.
- Style (whether Western Union or Postal).
- Kind of terminals or tips (copper or tin foil).
- Use (whether for exchange or telephone protection).

Mica Fuses for No. 62D and 68A Protectors
Will Mount on 1 Inch Centers

Code No.	Carrying Capacity Amperes	Slotted for Screws No.	Code No.	Carrying Capacity Amperes	Slotted for Screws No.
24A	1 1/2	10	24B	3	6
24B	1 1/2	6	24B	4	6
24B	1 1/2	6	24C	2	10
24B	2	6			

INDICATOR ALARM FUSES

Will Mount on 1 1/4 Inch Centers

These have a spring which makes contact with an auxiliary bus bar and gives a signal when the fuse blows. They have a bead which also gives a prominent visual signal when a fuse operates. When ordering specify Code No. and capacity desired.

Code No.	Carrying Capacity Amperes	Slotted for Screws No.	Code No.	Carrying Capacity Amperes	Slotted for Screws No.
35A	1 1/2	10	35B	3	6
35B	1 1/2	6	35C	2	10
35B	2	6	35F	1/2	10



No. 7A Fuse



No. 47A Fuse



No. 12A Fuse



No. 11C Fuse



No. 2760

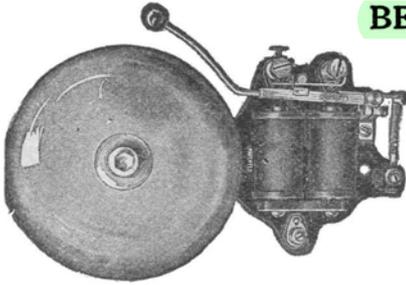
TUBULAR FUSES

Code No.	Type	Capacity, Amperes	Used
* 7A	Tubular	1 to 8	With 1074A terminals.
* 7T	Tubular	7	With B Type Cable terminals and fuse chambers.
*11C	Tubular	1 to 8	With No. 58AP, 58B, 59A and 79A protectors.
*11D	Tubular	1 to 8	With 25 protector mounting.
*12A	Tubular	1 to 8	With No. 12AP protector.

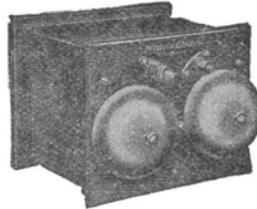
*Note. All the above fuses are supplied in capacities ranging from 1 to 8 amperes; 7 ampere fuses are standard and will be furnished unless otherwise specified.

Code No.	Type	Capacity, Amperes	Used
47A	Tubular with porcelain shell.	7	At telephone stations as an outside fuse in connection with No. 60AP protector. Also placed in drop wires of telephone circuit running parallel to high tension wires.
Spec. 47A	Tubular with porcelain shell.	1	In drop wires of telephone circuit running parallel to high tension lines.
47B	Tubular with porcelain shell.	14	At telephone stations as an outside fuse in connection with No. 79A type protector.
2760	Tubular with fibre shell.	0-5 as specified	Nos. 2750, 5751, 2752, 2753, fuse blocks.

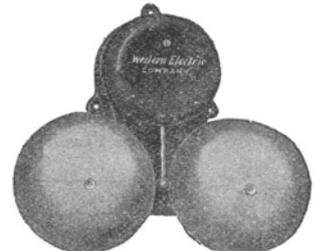
BELLS AND GONGS



No. 101402 Bell



No. 127 Type Extension Bell



No. 392 Type Loud Ringing Extension Bell

Bells

List No.	Resistance	Description
101402	1100	Ohms 4 in. direct current vibrating bell. Loud ringing.
101403	1100	Ohms 4 in. direct current vibrating bell. Loud ringing with contact on armature to operate drop.
101404	5.3	Ohms 4 in. direct current vibrating bell. Loud ringing.
12018	5	Ohms 4 in. direct current vibrating bell. Loud ringing.

Used With Nos. 101A and 101B selector sets. Nos. 101A and 101B selector sets.

Nos. 102A and 102B selector sets. No. 102F selector sets.

Extension Bells

Code No.	Ringer No.	Resistance Ohms	Gong No.	Code No.	Ringer No.	Resistance Ohms	Gong No.
127E	38A	1000	26A	Special 127E			
127F	38B	2500	26A	D-25816	38A	1000	21
Special 127E				127G	38F	1600	26A
D-5979	38A	1000	3	127H	43N	88	26A
				Special 127H	43N	88	3
				127J	60C	10	26A

Note. The No. 127H extension bell contains the No. 43NG split wound ringer and is for use on simplex circuits performing the function of a split retardation coil, as well as that of an ordinary ringer.

No. 3 cow gongs or No. 21 sleigh gongs can be furnished with the No. 127 extension bells. When No. 3 cow gongs are used No. 13 gong mountings are furnished.

No. 342 Loud Ringing Type

These extension bells consist of the No. 392 type extension bell mounted on a No. 149A backboard. This backboard has a sloping roof which protects the bell from falling water and other substances.

Code No.	Extension Bell	Code No.	Extension Bell
342J	392A	342K	392B

No. 392—Loud Ringing Type

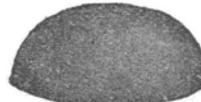
Code No.	Description
392A	1000-ohm loud ringing unbiased bell, having a metal base and cover and 6 ins. galvanized gongs. Base and cover black finish, and all parts effectively treated to withstand the action of moisture and fumes.
392B	2500-ohm bell, otherwise the same as No. 392A.
392E	1600-ohm bell, otherwise the same as No. 392A.



No. 3



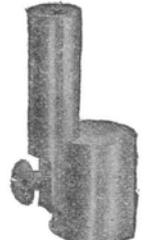
No. 10



No. 13 Gong



No. 15



No. 7 Gong Mounting

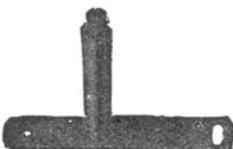
Gongs

Code No.	Description	Diameter, Ins.	Height, Ins.	Finish
3	Cow gong.	2 x 1 1/2	1 3/8	Nickel plated
10	Tea gong.	2 3/8	1 1/8	Nickel plated
13	Telephone set gong.	1 3/4	1 3/8	Nickel plated
15	Sleigh gong.	1 3/4	1 3/8	Nickel plated
*20	Telephone set gong.	3	1 3/8	Nickel plated
21	Large sleigh gong.	2	1	Black
24A	Telephone set gong.	2	1 1/8	Nickel plated
26A	Telephone set gong.	3	1 1/8	Black
28A	Loud ringing extension set gong.	6	1 1/8	Black
29A	Telephone set gong (for use on metal sets with inclosed gong).	2 1/2	1 3/8	Galvanized
*30A	Loud ringing extension set gong.	8	1 3/8	Black
31A	Same size and finish as 29A and with 29A forms a set, each have a different tone. Recommended in place of Nos. 3, 10, 13 and 15.		1 3/8	Galvanized
32A				
33A				

*Treated to resist the action of moisture and fumes.

Gong Mountings

Each gong mounting consists of a pair of gong posts or gong post extenders together with the necessary mounting screws.



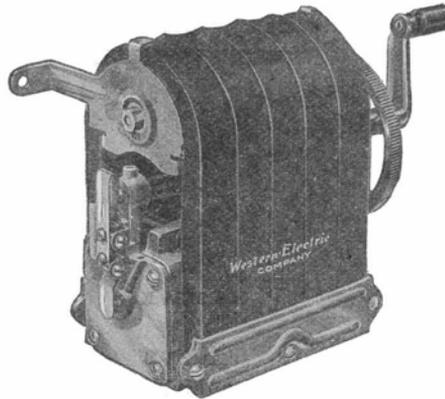
No. 3 Gong Mounting

Code No.	Length of Post or Extender, Ins.	Used with Gongs No.	Finish
3	1 1/8	3 and 10	Nickel plated
7	1 1/8	3 and 10	Brass
12	1 1/8	15	Nickel

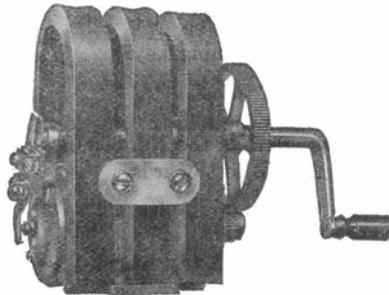
Gong Nuts

No.	Description	Thread	Dimensions, Ins.	Height	Finish
P-19097	Knurled thumb nut used with No. 3 gong mounting.	10-32	1/2	1/2	Nickel plated

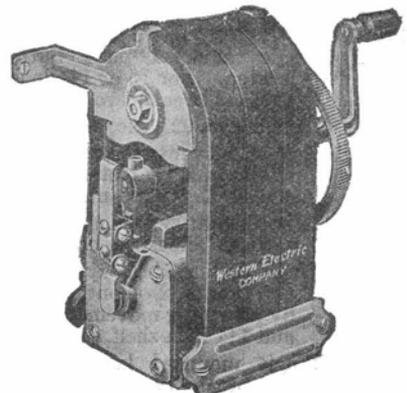
HAND GENERATORS



No. 48-A Generator



No. 22-A Generator



No. 50-A Generator

Generators

Code No.	No. of Bars	Current	Normal Condition of Generator Circuit	Used
22A	3	Alternating	Open	In No. 303A generator box, 315H desk set box, 1317A, H and 1331E and F telephone sets.
22B	3	Alternating	Closed	With the No. 1006 test set.
29B	2	Alternating	Closed	With the No. 1017B test sets.
29F	2	Alternating	Open	With Nos. 1017D and E test sets.
48A	5	Alternating	Open	In Nos. 299F generator box, 300K, L, M, N desk set boxes, 1317 P.S.W., AW, AE, BU and the 1330E and F telephone sets.
48C	5	Alternating	Open	With Nos. 1278G and H and 1336F and H telephone sets.
48R	5	Alternating	Open	With Nos. 1317BK telephone set. Similar to No. 48A generator except shaft is lengthened and it is equipped with an insulated coupling.
50A	3	Alternating	Open	In special sets where an extra high efficiency three bar generator is required.
50F	3	Alternating	Open	With the Nos. 1317 CN, CR, CP, CS and CG telephone sets. Similar to the No. 50A except that the rear mounting bracket of the No. 50A is omitted and a bracket that is part of the set is used. The generator crank is replaced by the shorter crank used with the No. 22 type generators.



No. 299-F

Code No.
299F
303G

Hand Generator Boxes

Generator	Dimensions, Ins
48A	8 x 9 x 5 ³ / ₈
50A	6 ³ / ₄ x 8 ¹ / ₈ x 5 ³ / ₈



No. 92B Key

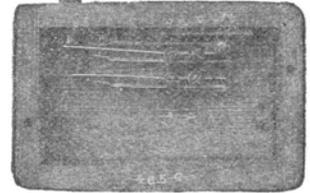
KEYS



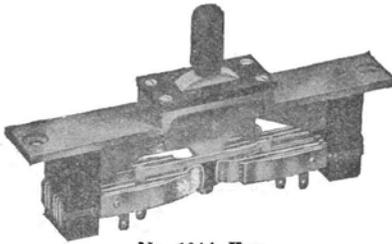
No. 378A Key



No. 465 Type Key



No. 465C Key



No. 104A Key

Keys

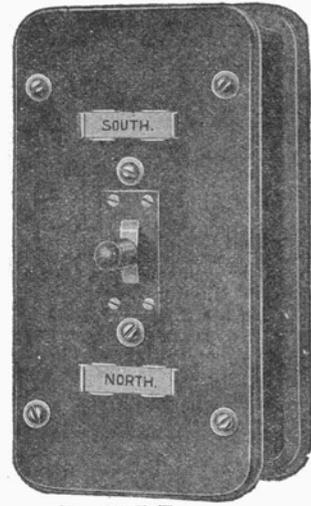
For further description on keys not shown under this heading, see the Telephone Apparatus Section in the Western Electric Year Book.

Code No.	Description	Used
92A	Single mounted push button key. Non-locking. For $\frac{7}{8}$ or $1\frac{1}{4}$ inch shelf. Makes two and breaks two contacts.	As a ringing key.
92B	Same as No. 92A except that it is a locking key.	As a listening key.
104A	Two-way lever type key. Locking side makes two contacts. Non-locking side makes two and breaks two contacts.	As a ringing and listening key.
136B	A horizontal switching key with two sets of springs. Locks in both positions.	To connect one telephone to any one of three lines. Part of the No. 6000B key.
272A	Single mounted locking key. Makes two and breaks two contacts. Key is operated by a turning movement of button. For $\frac{7}{8}$ and $1\frac{1}{4}$ inch shelf.	In Nos. 1A and 1B test boards.
272F	Single mounted locking key. Makes two and breaks two contacts. Key is operated by a turning movement of button. For $\frac{7}{8}$ and $1\frac{1}{4}$ inch shelf similar to No. 272 A, except insulated on 1000 volts.	On Nos. 2A, 2B and 3A test board.
375A	Push button ringing key; makes two and breaks two contacts and is either locking or non-locking, depending on the type lever used.	As part of the No. 6002C key.
377A	Plunger type locking key used with key lever. Makes two contacts.	In No. 6000A key.
378A	Plunger type locking key used with key lever. Makes two and breaks two contacts.	Used as a listening key.
Spec. 390B	Push button type non-locking key. Makes two and breaks two contacts.	In Nos. 1312A and 1314A telephone sets.
D-11567		
392A	Plunger type locking key used with key lever. Makes four and breaks four contacts.	In No. 335A blocking set.
393C	Non-locking, push button key, makes 3 contacts, breaks two contacts.	In the No. 6003A key.
465A	Push button key mounted in an oak box. Makes three and breaks one contact. Dimensions: $4\frac{1}{8} \times 3\frac{1}{8} \times 1\frac{3}{8}$ inches.	In old type way station telephone circuits (non-insulated transmitter) and No. 6023A telephone set.
465C	Push button type key mounted in an oak box. Dimensions $4\frac{1}{8} \times 3\frac{1}{8} \times 1\frac{3}{8}$ inches. Makes two and breaks one contact.	In train dispatching circuits for way-station operators to cut in transmitter.
Spec. 465C	Similar to No. 465C, except makes three and breaks two contacts.	In train dispatching circuits for way stations with No. 501B desk set boxes.
D-27267		
465D	Push button key, similar to the No. 465A, except that it makes one and breaks one contact.	With the No. 1317 telephone sets.

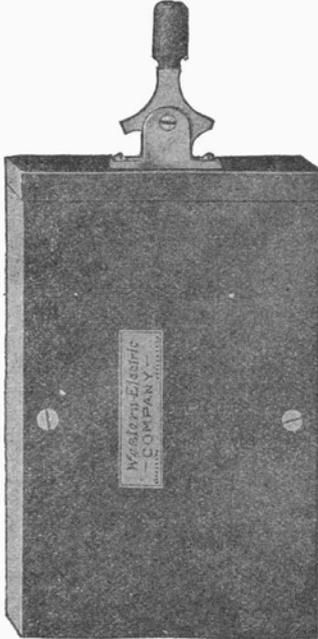
Note. When ordering keys Nos. 92A, 92B or 272A unmounted, specify the thickness of the shelf or table top in which key is to be mounted.



No. 6000A Key



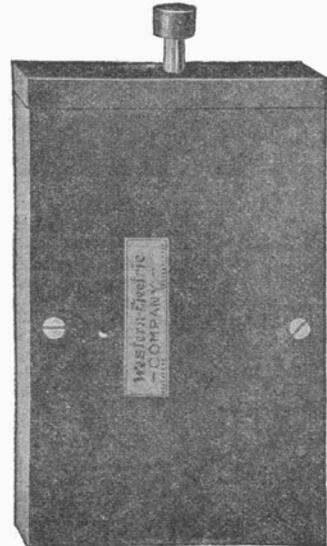
No. 6000B Key



No. 6002A



No. 6A Key
Lever



No. 6002C
Used

Code No.	Description
6000A	Plunger type key. No. 377A with No. 6A key lever mounted in a box $4\frac{3}{4} \times 3\frac{3}{8} \times 1\frac{1}{8}$ ins.
6000B	Consists of No. 136B key mounted in a No. 334 key mounting. Dimensions approximately $6\frac{1}{4} \times 3\frac{1}{8} \times 2\frac{1}{8}$ ins.
6002A	Wooden box equipped with 1 No. 378A key and 1 No. 23A key lever. Ebonized finish. Size of box $5\frac{1}{2} \times 3\frac{1}{8} \times 1\frac{3}{8}$ ins.
6002B	Wooden box equipped with 1 No. 378A key and 1 No. 6A key lever. Ebonized finish. Dimensions same as No. 6002A.
6002C	Wooden box equipped with 1 No. 375A key. Ebonized finish. Dimensions same as No. 6002A.
6003A	Wooden box equipped with a push button type key. Size of box $6\frac{1}{8} \times 3\frac{1}{8} \times 2\frac{1}{8}$ ins. Non-locking. Makes three and breaks two contacts when operated.

In dispatcher's telephone circuit.

Where it is desired to connect one telephone set to any one of three separate lines.

Intended for use as switching key to connect a telephone instrument on either one or both of two lines.

Intended for use as a switching key to connect a telephone instrument on either one or two lines.

Intended for use as a switching key to connect a telephone instrument on either one of two lines.

For operating a No. 62A interrupter.

Keys

Key Levers

Code No.	Operated Position of Lever	Description
6A	Vertical	Used with lever type keys. Black handle. Locking.
6B	Vertical	Same as No. 6A, except red handle.
14A	Horizontal	Otherwise same as No. 6A.
14B	Horizontal	Otherwise same as No. 6B.
23A		Switch key. Locks in all positions. Normally all contacts are open. When thrown to the left the inner contacts are closed; when thrown to the right, the outer contacts are closed.

SINGLY MOUNTED PUNCHED FRAME JACKS



No. 155

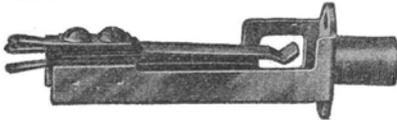
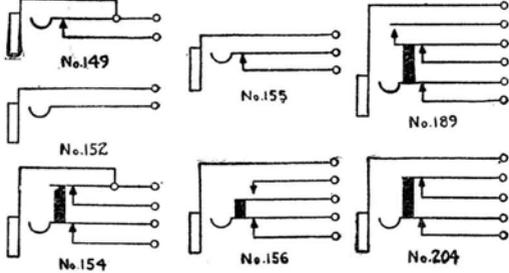
Mounting Centers

Horizontal, $\frac{1}{8}$ inch.
Vertical, $\frac{3}{8}$ inch when mounted in double horizontal rows with lugs in same direction; $\frac{5}{8}$ inch when mounted in double horizontal rows with lugs in opposite directions.

SINGLE MOUNTING LUG

HORIZONTAL SPRINGS

Used with plugs Nos. 47 and 116 except No. 185 Jack which uses No. 137. The 137 Plug can also be used with No. 152 Jack.



No. 175

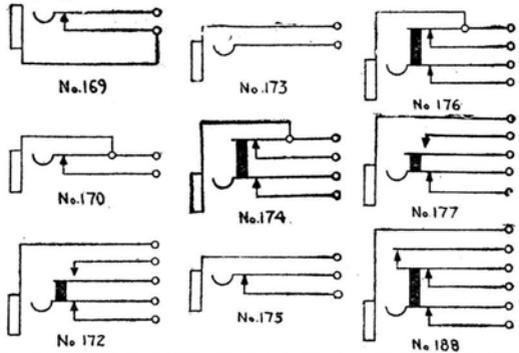
Mounting Centers

Horizontal, $\frac{1}{8}$ inch. Vertical, $1\frac{1}{8}$ inch.

DOUBLE MOUNTING LUGS

HORIZONTAL SPRINGS

Used with plugs Nos. 47 and 116 except No. 188 Jack which uses No. 47 plug only. The No. 173 Jack uses also a No. 137 plug.



No. 160

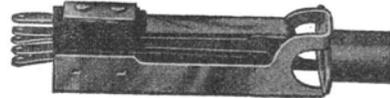
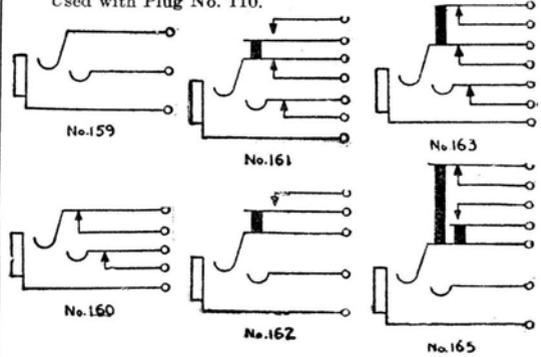
Mounting Centers

Horizontal, $\frac{3}{4}$ inch for Nos. 159 and 160; $\frac{7}{8}$ inch for Nos. 161 and 162; $\frac{3}{8}$ inch for No. 163 and $1\frac{1}{2}$ inch for No. 165.
Vertical, $\frac{3}{8}$ inch when mounted with lugs in the same direction; $\frac{1}{2}$ inch when mounted back to back in two rows.

SINGLE MOUNTING LUG

VERTICAL SPRINGS

Used with Plug No. 110.



No. 179

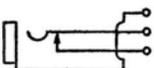
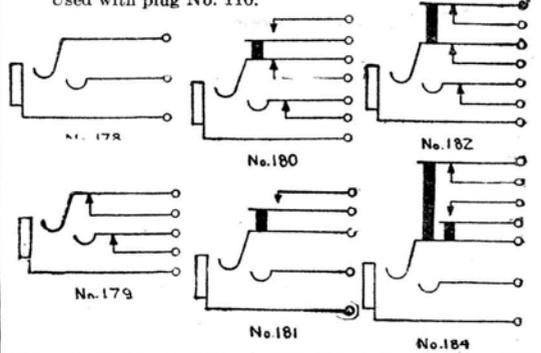
Mounting Centers

Horizontal, $\frac{3}{4}$ inch for Nos. 178 and 179; $\frac{7}{8}$ inch for Nos. 180 and 181; $\frac{3}{8}$ inch for No. 182 and $1\frac{1}{2}$ inch for No. 184.
Vertical, $1\frac{1}{8}$ inch.

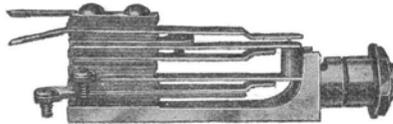
DOUBLE MOUNTING LUGS

VERTICAL SPRINGS

Used with plug No. 110.



No. 200



No. 224

SINGLY MOUNTED—BRASS FRAMES

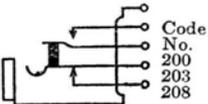
Description and Use

Highly insulated jack for miscellaneous use. 47
Highly insulated jack for miscellaneous use. 47
Highly insulated jack for mounting in Nos. 385A and 386A, B, C and 389A jack boxes. 116
Similar to No. 208. Intended for use in Nos. 385C and D, 386D, E and F and 389B jack boxes. 116
Highly insulated jack for miscellaneous use. Replaces No. 202. 1A



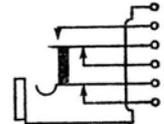
No. 208

Used with Plugs No. 47

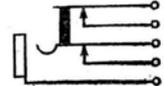


No. 203

228



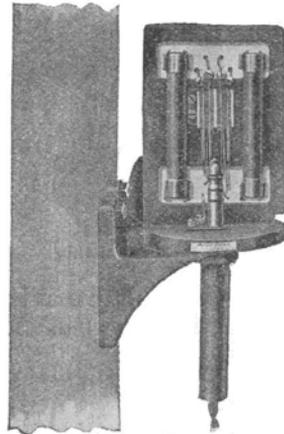
No. 224



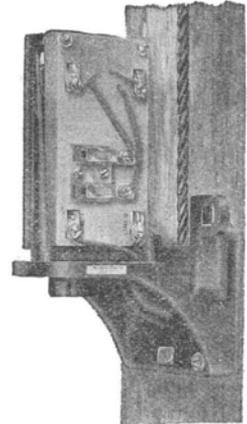
No. 228



No. 186 Jack

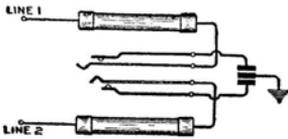


No. 186 Jack Open View



No. 186 Jack Open View

Jacks for Mounting on Poles



NO. 186 JACK WIRING

Code No.	Contacts	Used with Plugs No.	Description
186	Two	146	This jack has a cast iron cover and is arranged for mounting on poles. For the purpose of affording a means of connecting a portable set to a telephone line. Used with Nos. 1330F and 1331F telephone sets. Can also be used with the Nos. 1330E and 1331E telephone sets. Jack contains protective apparatus: 2 No. 1 protector blocks 2 No. 2 protector blocks 2 No. 3 protector micas
187	None	146	Same as No. 186 jack, excepting that it does not contain protective apparatus.

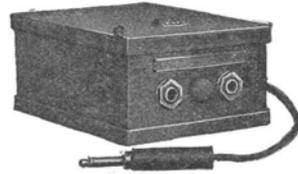


No. 345-A Jack Box

Code No. 345A

Jack Boxes

No. 345 Type



No. 385-A Jack Box

Description
Oak box designed for use in train dispatching circuits at dispatcher's office and is so arranged that two head sets can be connected to the line at the same time.
Equipped with 1 No. 30 jack mounting, 2 No. 185 jacks and 2 No. 152 jacks.
Approximate dimensions, length 5½ inches, width 4¾ inches, depth 2 inches.

Cordless Jack Boxes

Oak boxes with nickel trimming. Each box is equipped with hinge cover and a No. 1A plug attached by means of a dummy cord. The No. 389 type is split and hinged on a line midway between the upper and lower jack levels.
Telephone jack boxes Nos. 385A, B, 386A, B, C and 389A are so arranged that one telephone line can be terminated in each jack. A telephone set can be connected to any of these lines by inserting the plug in the proper jack.
Telegraph jack boxes Nos. 385C, D, 386D, E, F and 389B are so arranged that one telegraph line can be looped through each jack. Resonator set can be connected to any of these lines by inserting the plug in the proper jack. When this is done, the calling set is disconnected.

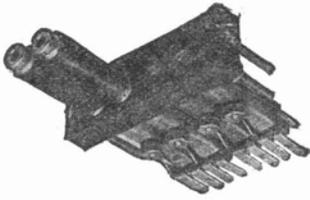
No. 385 Type					Nos. 386 and 389 Types				
Code No.	Line Equipment	Capacity	Equipped With Jacks	Service	Code No.	Line Equipment	Capacity	Equipped With Jacks	Service
*385A	2	3	208	Telephone	*386A	4	6	208	Telephone
385B	3	3	208	Telephone	*386B	5	6	208	Telephone
*385C	2	3	224	Telegraph	386C	6	6	208	Telephone
385D	3	3	224	Telegraph	*386D	4	6	224	Telegraph
					*386E	5	6	224	Telegraph
					386F	6	6	224	Telegraph
					389A	12	12	208	Telephone
					389B	12	12	224	Telegraph

Overall dimensions No. 385 type, width 4¼ inches, depth 6¼ inches, height 3¾ inches.
Overall dimensions of the No. 386 type, width 6¼ inches, depth 7 ½ inches, height 2¾ inches.
Overall dimensions of the No. 389 type, width 7 ½ inches, depth 6¼ inches, height 4¾ inches.
*No. 17C apparatus blank, illustrated in the center jack position on the cut of the No. 385A jack box, is furnished in all unequipped positions.

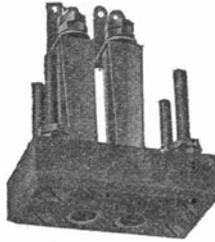
Jack and Drop Box Equipments

Note. We can furnish on order jack and drop box equipments of any kind desired.

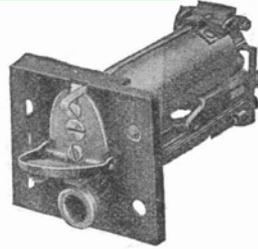
JACKS, SIGNALS AND PLUGS



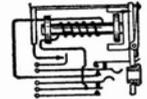
No. 30 Jack Mounting



No. 80 Jack Mounting



No. 22 Type Combined Jack and Signal



29-D TYPE
Circuit Arrangements

Jack Mountings

Code No.	Description	Dimensions, Ins.	Used With
30	Composition mounting for 4 Nos. 91, 99, 107, 152 or 185 jacks.	$3\frac{3}{4} \times 1\frac{1}{4} \times \frac{5}{8}$	Dispatcher's telephone equipment. In No. 345A desk set box.
80	Composition mounting for 2 Nos. 99, 107, 152 or 185 jacks.	$2\frac{3}{8} \times 1\frac{1}{4} \times \frac{5}{8}$	Head telephone sets with No. 137 plug.

Combined Jacks and Signals

SHUTTER TYPE

Code No.	Resistance	Mounting	Used With
22C	330	Single or 5 per strip.	Special jack boxes.
22D	1000	Single or 5 per strip.	Special jack boxes.
29D	1000	No. 92E single.	Special jack boxes.



No. 1-A



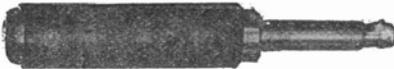
No. 110



No. 116



No. 146



No. 47



No. 137

Plugs

For further description of plugs not shown under this heading, see the Telephone Apparatus Section in the Western Electric Year Book

If cords are desired, the Code No. and other necessary information (see cords) must be given in the order.

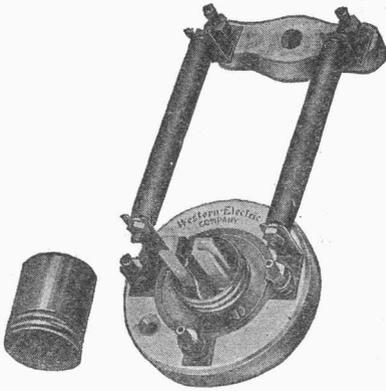
No extra charge is made for attaching cords to plugs.

Code No.	No. of Conductors	Used with Jack Nos.	Ordinarily Used with Cord Nos.
1A	1	Similar to No. 116 except fibre shell extends over shank of plug.	Jack box only.
*47A & B	2	149, 152, 155, 156, 169, 170, 172, 173, 174, 175, 176, 177, 188, 189, 204.	493 & 637.
110	3	159, 160, 161, 162, 163, 165, 178, 179, 180, 181, 182, 184.	
116	1	152, 155, 156, 172, 173, 174, 175, 176, 177, 188, 189.	510, 511, 513, 519.
**136	2	152.	} 363, 371, 375, 366, 565, 567.
**137	Twin 2	152.	
145	2	186.	
146	2	186.	509, 545.

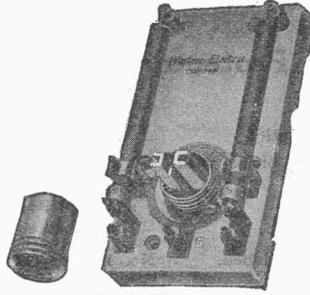
*Nos. 47A and B are the same except that the No. 47A has a red shell and the No. 47B has a black shell.

**Nos. 136 and 137 are used with the operator's head telephones.

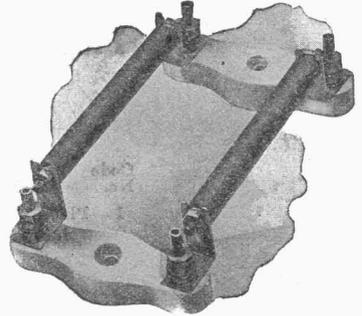
PROTECTORS



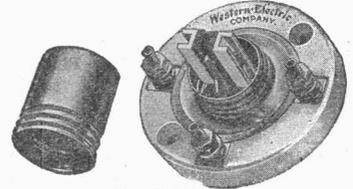
No. 58AP



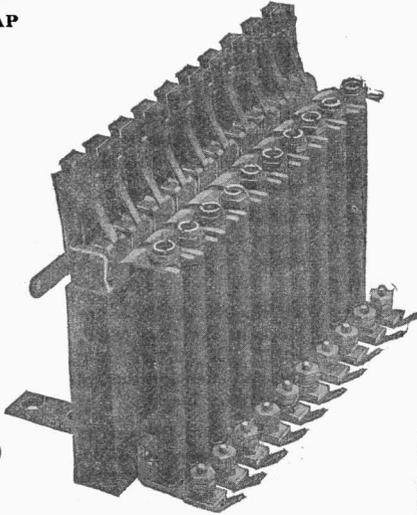
No. 12-AP Protector



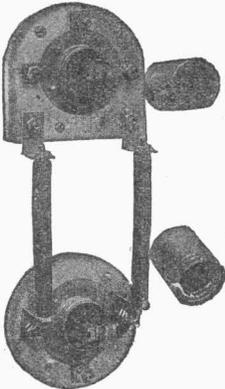
No. 59A Protector



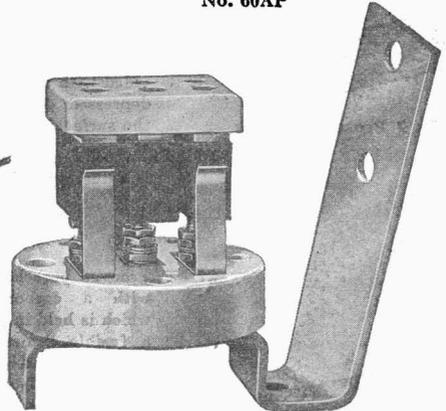
No. 60AP



No. 1074A Protector



No. 79A Protector



No. 86B Protector, Cover Removed

Protectors

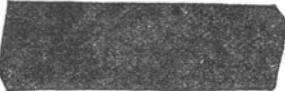
Code No.	Protects Against
12AP	High potential, abnormal and sneak currents.
58B	High potential and abnormal currents.
58AP	High potential and abnormal currents.
59A	Abnormal currents.
60B	High potential currents.
60AP	High potential currents.
79A	High potential and abnormal currents.
86B	High potential and abnormal currents.
93A	High potential and abnormal currents.
1074A*	High potential and abnormal currents.
1079AP	Protection to sub-stations in groups where lines enter building.

Consists of	
2 No. 12A fuse with heat coils.	2 No. 27 protector blocks.
2 No. 26 protector blocks.	1 No. 25 protector mounting.
2 No. 11C fuses (7 amps.).	1 No. 16 protector mounting, (line end)
2 No. 19 protector blocks.	1 No. 29 protector mounting, (instrument end).
2 No. 20 protector blocks.	1 No. 48 protector mounting.
2 No. 10 protector micas.	2 No. 26 protector blocks.
1 No. 16 protector mounting, (line end).	2 No. 19 protector blocks.
1 No. 29 protector mounting, (instrument end).	2 No. 20 protector blocks.
1 No. 48 protector mounting.	1 No. 49B protector mounting.
2 No. 11C fuses (7 amp.)	2 No. 26 protector blocks.
2 No. 19 protector blocks.	2 No. 19 protector blocks.
2 No. 20 protector blocks.	2 No. 20 protector blocks.
1 No. 49B protector mounting.	2 No. 11 protector micas.
2 No. 26 protector blocks.	A two-wire protector consisting of carbon blocks on a porcelain base and protected by a circular cast iron cover. Protector is mounted on our angular bracket.
2 No. 19 protector blocks.	10 No. 72A protector mountings.
2 No. 20 protector blocks.	10 No. 51A fuses.
2 No. 11 protector micas.	10 No. 20 protector blocks.
1 No. 52 protector mounting.	10 No. 11 protector micas.
1 No. 76A protector.	10 No. 74 cord tips.
2 No. 11C fuses (7 amps.).	Used for mounting in wooden cable terminals. Furnished 10 per strip, each strip supplied with a strap for connecting to others mounted in tiers and a strap hook by which connection may be made to the ground wire.
1 No. 11 protector mica.	1 No. 7A ampere fuse.
1 No. 74A protector mounting.	1 No. 19 protector block.
4 No. 27 protector blocks.	1 No. 20 protector block.
4 No. 11C fuses (7 amperes).	1 No. 79A mounting.
Note: Capacity 2 lines.	1 No. 80A mounting.
	4 No. 26 protector blocks.

*In ordering specify number per strip. Used in replacement in the No. 17 cable terminal.

PROTECTOR BLOCKS AND MICAS

Protector Blocks

	Code No.	Description	Used With	
	1	Plain carbon block with fuse metal.	No. 2 carbons and No. 3 protector micas in Nos. 1278G and 1278H telephone sets, No. 18 cable terminals.	
No. 1 Protector Block	2	Grooved carbon block.	No. 1 protector carbons in No. 18 type cable terminals. Also in Nos. 1278G and H telephone sets.	No. 20 Protector Block
	19	Plain copper equipped with two brass pins.	With No. 20 protector block and No. 10 mica in Nos. 58B, 60B and 79A protectors.	
	20	Grooved copper block equipped with two rubber bushings to engage the pins of the No. 19 blocks.	With No. 19 protector block and No. 10 mica in Nos. 58B, 60B and 79A protectors.	
	25	Same as No. 19 except provided with a fusible plug depressed $\frac{1}{32}$ inch below the surface of the block.	In the No. 93A protector or where fusible plug is desired.	
No. 2 Protector Block	26	Plain solid block of hard non-dusting carbon.	With the No. 27 protector block in the Nos. 58AP, 60AP and 1079AP protectors. Replaces the No. 2 protector block.	No. 26 Protector Block
	27	A grooved porcelain frame with a carbon insert which is held in place by a fusible cement. The carbon insert is below the surface of the porcelain so as to form an open space cut-out with the No. 26 protector block without the use of a separator.	With the No. 26 carbon block for sub-station and central office protection. Replaces the No. 1 protector block.	
				No. 27 Protector Block

Description of the Use of Nos. 26 and 27 Blocks

The Nos. 26 and 27 protector blocks are placed together in such a way that the No. 26 block is on the ground side and the spring of the protector mounting is placed against the carbon insert in the No. 27 block. The air gap between the two blocks is such that there will be a discharge across the gap at a definite predetermined voltage. High potentials due to lightning will cause a discharge across the air gap to the ground, but will not heat the carbon plug in the No. 27 block sufficiently to melt the cement holding it in place. A cross with power wires will cause a continued discharge across the air gap which will heat the carbon insert in the No. 27 block, melt the cement and allow the spring on the mounting to push the carbon plug of the No. 27 block into direct contact with the No. 26 block grounding the line. The cost of maintenance for these types of blocks has proven to be very low.

Protector Micras

	Code No.	Used With	
No. 3 Protector Mica	3	Nos. 1 and 2 protector blocks.	
	10	Nos. 19 and 20 protector blocks.	
	11	Nos. 19 and 20 protector blocks. Same as No. 10 only twice as thick.	No. 10 Protector Mica

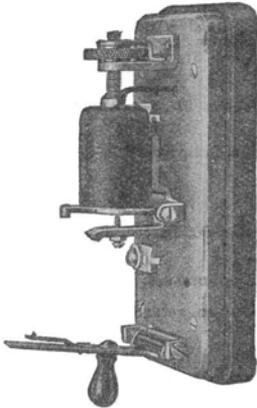
ARRESTERS, CIRCUIT BREAKERS AND SWITCHES

Metal Tube Vacuum Arrester

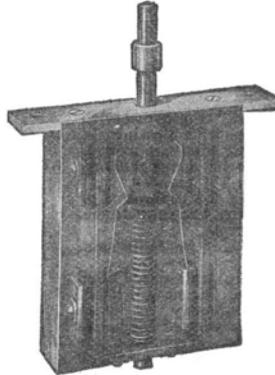


No. 144585 Vacuum Arrester

List No.	Description
148057	2 terminal, single pole.
144585	3 terminal, single pole.
140116	Vacuum tube for Nos. 144585 or 148057.
148056	Base for No. 148057.
144584	Base for No. 144585.



No. 2A Circuit Breaker



No. 1A Booth Switch



No. 1B Foot Switch

Circuit Breaker

List No.	Description
2A	An overload circuit breaker, designed to be placed in the main battery circuit of train dispatching lines to protect the relay and associated apparatus from excess currents, due to short circuits. It will carry safely a load of two amperes and is adjusted in the factory to carry .5 amperes and to operate on .6 amperes. This circuit breaker is much more sensitive and quicker than a fuse. The overall dimensions are 3 3/4 x 6 inches and extends 4 inches out from the wall.

Switches

BOOTH SWITCH

1A	For disconnecting siding telephone located in a booth, from the line when booth is locked. Operates when hasp is placed over the staple and held in place by padlock.
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No. 1A Foot Switch Attachment

FOOT SWITCHES

Code No.	Springs	Use
1B	Makes one contact.	In dispatcher's telephone set.
3B	Makes two and breaks one contact.	In way station telephone sets.
3C	Makes three and breaks two contacts.	In way station telephone sets with No. 501B desk set boxes.

FOOT SWITCH ATTACHMENTS

Code No.	Length, Ins.	Use and Description
1A	12	With all types footswitches.
1B	24	With all types footswitches.
2A	23	A 3/4 inch black enamelled conduit equipped with a 3/4 inch T. & B. bushing (List No. 97760) at one end also includes pipe strap No. 97295 and two wooden screws for mounting. Used to protect wires entering foot switches.

KNIFE SWITCHES

Porcelain Base 25 Amperes Front Connection

Code No.	Type	Size, Ins.	Used In
709	D.P.S.T.	2 x 2 3/4	Selector apparatus cases.
710	D.P.D.T.	2 5/8 x 3 3/8	Switching and testing panels.

Push Buttons

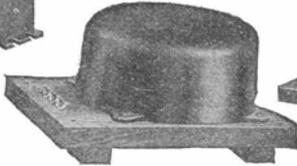
Code No.	Description	Used In
1003A	Breaks one and makes two contacts.	Nos. 1293AD, AE, AK, AL, 1317W, AD, AE, AW and 1336F telephone sets.
1006A	Breaks one and makes one contact.	No. 1317BA telephone set.
1013A	One break before make and one break before two make contacts are operated.	No. 1317BU telephone set.

For all other types of push buttons see the W. E. Year Book.

COILS AND CONDENSERS



No. 5AF



No. 5AA



No. 44F



No. 51A

Retardation Coils

Code No.	Description	Used With
5AA	Toroidal type coil enclosed in a crosstalk-proof shell and mounted on a wooden base. It has two independent groups of windings; resistance of windings 74 ohms each. Base 11 x 8 3/8 inches.	Composite circuits in place of two No. 5K or two No. 5L retardation coils.
5AD	Mounted on wooden base, and has 4 terminals brought out to clips on the base. Consists of two windings of 25 ohms resistance each. Base 9 x 9 inches.	Nos. 52A, 53A and 60A selector apparatus cases.
5AF	Toroidal type coil, in crosstalk-proof shell. Equipped with mounting brackets and has wooden base with 3 terminals. It has 4 windings, connected series aiding with tap brought out from the middle point of the series arrangement. Total resistance 330 ohms, base 3 3/8 x 3 3/8 inches.	Simplexing telephone line. Replaces No. 5AC coil.
12G	Consists of winding with a resistance of 2.3 ohm. and is equipped with movable core for varying the impedance. Size 3 1/8 x 1 x 1 1/8 inches.	Nos. 1312A and 6023A telephone sets.
12M	Resistance 2.3, similar to No. 12G but for portable sets. Base 3 1/4 x 1 inches.	No. 1314A telephone set.
44F	Two toroidal coils, each enclosed in a crosstalk-proof shell and mounted on a single wooden base. Each coil has 4 inductive windings connected permanently in series (inductive aiding); the maximum resistance of the series arrangement (L-1—L-2) is 330 ohms. Terminals arranged so protector blocks on No. 53 mounting can be associated with the coil. Same as two No. 5AF coils on one base. Base 11 3/4 x 4 1/8 inches.	Used as phantom retardation coil; replaces No. 44C.
51A	Retardation coil of one winding equipped with two brass terminals bent up to 90 degrees with the head of the coil. Resistance 520 ohms. Height 1 1/8 inch, diameter 1 1/8 inch.	Nos. 295AK, special 300H and K desk set boxes. Nos. 1293AD, AE, AK, AL, and 1317W, AD, AE, AW telephone sets.
51B	Similar to 51A excepting it is moisture-proof. Height 1 1/8 inch, diameter 1 1/8 inch.	No. 1336F telephone set.
51F	Similar to No. 51A except it has a resistance of 45 ohms. Height 1 1/8 inch, diameter 1 1/8 inch.	Nos. 101A, B, 102A, B, C, D, E, F, 160A, B and 161A selector sets.
78A	A laminated steel core mounted between two split wooden spool heads. Resistance 525 ohms. Mounted by means of angle pieces. Size 5 x 5 x 10 inches.	No. 61A selector apparatus case.



No. 21D



No. 21U



No. 21J

Condensers

Unmounted

These are of small size and made of selected material. They may be mounted in any desired position by means of a condenser strap, for instance, P-43065, and two wooden screws. The No. 21E is sometimes mounted by means of a strap, P-43121.

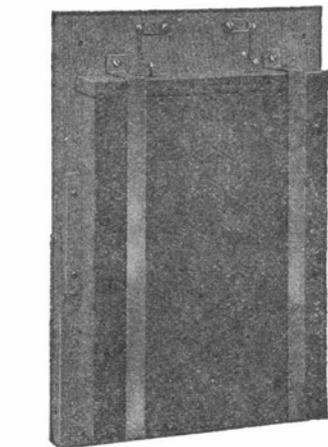
Code No.	Capacity, Mf.	Terminal Style	Size of Case, Ins.	Use
21D	2	Bent	4 1/8 x 1 3/4 x 1 5/8	Nos. 1312A and 1314A telephone sets and 311A desk set boxes. For general use.
21E	2	Straight	4 1/8 x 1 3/4 x 1 5/8	Nos. 1330E and F, 1331E telephone sets and No. 502 desk set boxes.
21F	1	Bent	4 1/8 x 1 3/4 x 1 1/8	Nos. 1312A and 1314A telephone sets, No. 311A desk set boxes, No. 84 type interrupter.
21H	.1	Bent	4 7/8 x 1 3/4 x 1 1/8	Three terminals. No. 6000A interrupter and general use.
21J	.3	Straight	4 7/8 x 1 3/4 x 1 1/8	Mounting on coil racks.
21K	1	Straight	4 1/8 x 1 3/4 x 1 1/8	Nos. 1332A and E telephone sets.
21L	2	Straight	4 1/8 x 1 3/4 x 1 5/8	For coil racks, three terminals.
21M	1	Straight	4 1/8 x 1 3/4 x 1 1/8	For general use.
21N	1	Straight	4 1/8 x 1 3/4 x 1 5/8	For telegraph work—4 terminals.
21R	.1	Straight	4 1/8 x 1 3/4 x 1 1/8	Nos. 1312A, 1314A telephone sets, 311A desk set box, 101A and B and No. 161A selector sets.
21S	.250 .125 .5	Straight	4 1/8 x 1 3/4 x 1 5/8	In Nos. 1317S, BK, CR, CS telephone sets, 300M and N desk set boxes. In receiver circuits of magneto telephonesets.
21U	.05	Bent	4 1/8 x 1 3/4 x 1 1/8	
21W	1	Bent	4 7/8 x 1 3/4 x 1 1/8	

Note. Equipped with 2 flexible leads.

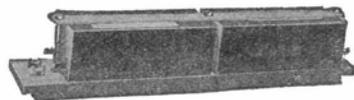
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CONDENSERS

UNMOUNTED CONDENSERS—(Continued)



No. 27B Condenser



No. 33A

Code No.	Capacity Microfarads	Style of Terminal Bent	Size of Case Ins.	Use
21Y	0.25	Bent	4 ⁷ / ₁₆ x 1 ³ / ₄ x 1 ⁵ / ₈	For telegraph work.
21AA	1	Bent	4 ⁷ / ₁₆ x 1 ³ / ₄ x 1 ⁵ / ₈	In 1293AD, AE, AK, 1317W, AD, AW, AE, 1336F, H, telephone sets; 53A, 60A, 61A selector apparatus cases; 160A, B selector sets; 295AJ, AK special 300H and K desk set boxes.
21AB	0.125 0.25 0.5	Straight	4 ⁷ / ₁₆ x 1 ³ / ₄ x 1 ⁵ / ₈	As an artificial line in connection with duplex telegraph circuits.
21AD	1	Straight	4 ⁷ / ₁₆ x 1 ³ / ₄ x 1 ⁵ / ₈	Composite sets.
21AH	.02 .02	Straight	4 ¹¹ / ₁₆ x 1 ³ / ₄ x ³ / ₄	Four terminals.
21AK	.5	Bent	4 ⁷ / ₁₆ x 1 ³ / ₄ x ¹ / ₂	In 502A desk set boxes
21AL	.25	Bent	4 ⁷ / ₁₆ x 1 ³ / ₄ x ¹ / ₂	In 160A and B selector sets, 501 A and B desk set boxes, 1317BU telephone set.
21BA	.01	Bent	4 ⁷ / ₁₆ x 1 ³ / ₄ x ¹ / ₂	Replaces the 38A resistance in the 160A and B selector sets.
23A	.1	Straight	8 ³ / ₁₆ x 6 ⁹ / ₁₆ x 1 ¹ / ₄	In No. 27B and 28B condensers for railway composite systems.
31A	0.05 0.05	Wire	4 ¹ / ₂ x 1 ⁵ / ₈ x ¹ / ₂	For general use—4 terminals.
35A	2	8 ¹ / ₈ x 6 ¹ / ₂ x 2 ⁵ / ₈	For mining sets.
39A	.35	1 ⁵ / ₈ x 1 ¹ / ₄	In the 1004B hand sets.

MOUNTED CONDENSERS

These consist of one or more of either No. 21 or No. 23 type condensers mounted on a wood base.

Code No.	Condensers Used	Capacity of Each Condensers Microfarads	Overall Dimensions Ins.	Use
27B	1 No. 23A	1	10 ⁷ / ₁₆ x 7 ¹ / ₁₆ x 2 ¹ / ₈	For railway composite systems.
28B*	1 No. 23A	1	10 ³ / ₈ x 11 x 8 ¹ / ₁₆	For railway composite systems.
33A	2 No. 21L	2	10 ³ / ₈ x 1 ⁷ / ₈ x 2 ³ / ₈	Arranged for mounting on coil racks.
33B	1 No. 21L	2	10 ³ / ₈ x 1 ⁷ / ₈ x 2 ³ / ₈	Arranged for mounting on coil racks.
33C	2 No. 21M	1	10 ³ / ₈ x 1 ⁷ / ₈ x 1 ¹ / ₄	Arranged for mounting on coil racks.
33D	1 No. 21M	1	10 ³ / ₈ x 1 ⁷ / ₈ x 1 ¹ / ₄	Arranged for mounting on coil racks.
33E	2 No. 21N	1	10 ³ / ₈ x 1 ⁷ / ₈ x 2 ³ / ₈	Arranged for mounting on coil racks.
33G	2 No. 21AD	0.5 1	10 ³ / ₈ x 1 ⁷ / ₈ x 2 ³ / ₈	Arranged for mounting on coil racks.
33H	4 No. 21L	2	10 ³ / ₈ x 1 ⁷ / ₈ x 4 ¹ / ₈	Arranged for mounting on coil racks.
36A	5 No. 21L	2	6 ³ / ₄ x 3 ³ / ₈ x 5 ¹ / ₈	For 3 x 7 cordless P.B.X. switchboards.
37A	3 No. 21L	2	6 ³ / ₄ x 1 ³ / ₄ x 5 ¹ / ₈	For 3 x 7 cordless P.B.X. switchboards.

*Mounted in a wood box with a No. 48A retardation coil.

BALANCED CONDENSERS

33Q Balanced condensers, mounted on a wooden base, intended for use in the telephone branch of composited circuits. Covers on the No. 21 type condensers painted red as a means of identification. Tested on 500 volts D.C. For continuously applied effective A.C. voltages of 60 cycles per second or less and of an approximate sine wave allow a factor of safety of 2 ¹/₂. In ordering for new composite sets the second letter of the code number, namely: A, B, C, D, etc., should be omitted, the code number should, therefore, read No. 33Q. This enables the orders to be filled with condensers of any of the different capacities, depending on stock conditions. Where condensers are ordered for replacements the second letter should be included in the code number according to the capacity required.

Code No.	Condensers Used	Minimum Capacity M. F.	Maximum Capacity M. F.
33J	2 No. 21AA	Arranged for mounting on coil racks.	
33QD	2 No. 21QD	2.10 (each)	2.14 (each)
33QE	2 No. 21QE	2.12 (each)	2.16 (each)
33QF	2 No. 21QF	2.14 (each)	2.18 (each)
33QG	2 No. 21QG	2.16 (each)	2.20 (each)
33QH	2 No. 21QH	2.18 (each)	2.22 (each)

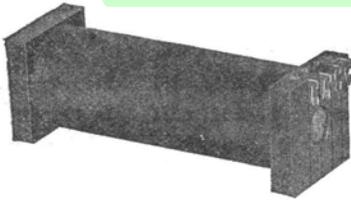
Code No. 160A Description Consists of 12 No. 21AA condensers mounted in an oak box. Has 10 Mf. capacity.

Used in A.C. train dispatching circuits when selectors are operated through a repeating coil and is connected in series with the primary windings of the repeating coil.

CONDENSER STRAPS

Code No. P43121 Bent iron strap for use with No. 21E condenser.
P43065 Straight iron strap for use with No. 21 type condensers.

COILS, INTERRUPTERS AND RELAYS



No. 5 Induction Coil



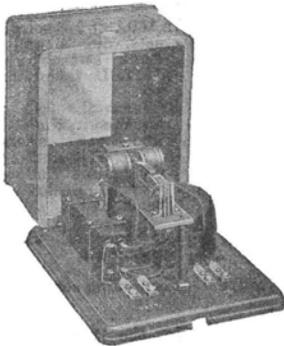
No. 13 Induction Coil

Induction Coils

Code No. 5 13 29 30 31 32 42 43 44

Size, Ins. 4 3/8 x 1 1/8 3 3/4 x 1 3 3/4 x 1 4 1/4 x 1 3/8 3 3/4 x 1 4 1/4 x 1 4 1/4 x 1 4 1/4 x 1

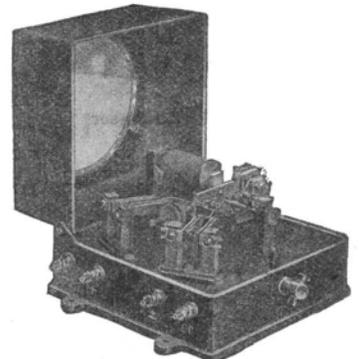
Used In Nos. 1312A, 1314A, 6023A telephone sets and 311A desk set box. Nos. 300K, L, M, N and 315H desk set boxes, 1317P, S, AH, BK, CN, CR, CP, CS and CG telephone sets, 1017B, C and E test sets. Nos. 295AJ, AK and special 300H and K desk set boxes, 1278G, H, 1293AD, AE, AK, AL, 1317W, AD, AE, AW, 1330E, F, 1331E, F and 1332A, E telephone sets. No. 1336H telephone set. No. 1375B telephone set. Moisture-proofed No. 13 coil. No. 1336F telephone set, and No. 1004B hand set. Moisture-proofed No. 29 coil. No. 501 desk set box for way stations, Nos. 1317BU telephone set. No. 502 desk set box in transmitter circuits. No. 502 desk set box in receiver circuits.



No. 62A Interrupter



No. 84E Interrupter



No. 84E Interrupter (Open)

Interrupters

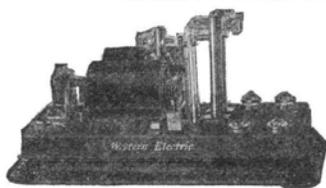
Code No. 62A 84D 84E 6000A

Description
 62A An electrically operated interrupter for furnishing alternating current for Railway Telephone Service from a direct current source. Especially adapted for use in block towers, on yard lines, etc., where several telephones are connected to the same line. Operates on five cells of dry battery and only when battery key is closed.
 84D An electrically operated automatic pole changer producing alternating current from a source of direct electromotive force for ringing purposes. Operates on one Edison BSCO No. 502 Cell. Ringing battery varies according to line conditions.
 84E Same as 84D excepting that it will give pulsating currents. Ringing battery varies according to line conditions.
 6000A A circuit interrupter attachment used in the No. 1017E test set. The attachment is associated with the generator to provide high frequency ringing current for signalling on composite lines and consists of:
 1 Commutator with bracket and mounting screw.
 1 Switch with mounting screws.
 1 No. 21K condenser with mounting strap and screws.
 1 No. 3 binding pcst with mounting screws.
 1 8 inch standard wire transposition lead.
 1 Diagram of connection.
 P-101495 High frequency interrupter used with No. 5 induction coil for signalling on composite circuits. Furnished with Nos. 1312A, 1314A and 6023A telephone sets.

Relays

Code No. K-1

Description Use
 K-1 Consists of No. 2E, flat type relays, mounted adjacent on an individual mounting; the left-hand relay being in an inverted position. When proper current is applied to the windings of the right-hand relay, the armature moves to the core, locks itself and remains in the locked position until the latch is raised by the operation of the left-hand relay. The right-hand relay operates on .218 amperes and non-operates on .15 amperes. The left-hand relay operates on .28 amperes and non-operates on .05 amperes. Used by railways in selector circuits.



No. 27A Relay

Code No.	Resistance (Ohms)	Description	Used
26A	25	Calling relay	In No. 60A apparatus case.
27A	25	Calling relay (replaces Relay List No. 100865)	In Nos. 51A and 53A apparatus cases.
122EW	100	Holding relay in calling	In No. 60A apparatus case.
190M	4800	In Nos. 102C, E and F selector sets.
120281	50	Selector sending	On inter-calling selector circuits. No. 52A selector apparatus case.

REPEATING COILS AND RESISTANCES

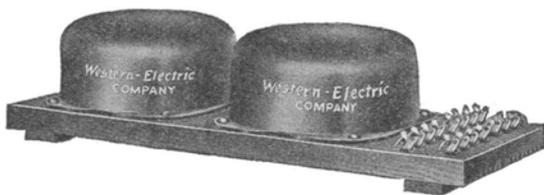
For further description of repeating coils not shown under this heading, see the Telephone Apparatus Section in the Western Electric Year Book.



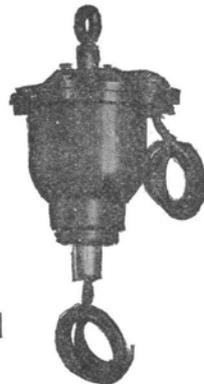
No. 25-E Repeating Coil



No. 47-A Repeating Coil



No. 46-A Repeating Coil



No. 50-A Repeating Coil

Repeating Coils

Code No.	Description	Used
25E	Toroidal type enclosed in crosstalk proof shell, and furnished with mounting lugs. Two inductive windings, each approximately 40 ohms. Impedance ratio one to one.	Nos. 1278G and 1278H telephone sets.
46A	Two toroidal type coils enclosed in crosstalk proof shells and mounted on one base. Each coil has four windings and each winding has a resistance of approximately 21 ohms.	Phantom and simplex circuits.
47A	Same as No. 46A except that it consists of one coil instead of two, and is mounted on a shorter base.	Phantom and simplex circuits.
50A	Consists of two windings on a steel core, the windings insulated from each other to withstand 25,000 volts A.C. for one minute. Resistance of inner windings 31 ohms, of outer winding 37 ohms. The coil is enclosed in a cast iron case with two porcelain bushings for bringing out the leads from each winding. Case is furnished with six-foot leads. Height 20 inches, width 9 1/2 inches, length 11 1/2 inches.	Used in telephone systems where the lines are exposed to high voltage transmission lines.
70A	Toroidal type enclosed in crosstalk proof shell and mounted on wooden base. Consists of two inner and two outer windings evenly distributed around the periphery. Lead out terminals are brought out on the opposite side of the core. Windings are wound with twisted pair. Coils are balanced within 200 crosstalk units. Formerly D-12984.	Phantom and simplex circuits in connection with A.C. selectors.



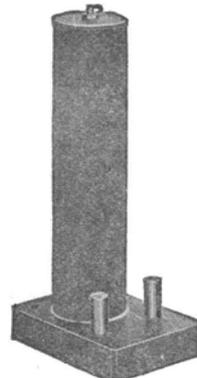
No. 1 Resistance Coil



No. 18 Resistance Coil



No. 34-A Resistance



No. 35-D Resistance Coil



No. 5 Resistance Coil

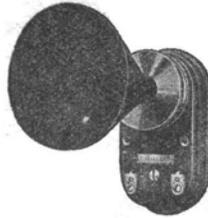


No. 31-A Resistance Coil

Resistances

Code No.	Resistance (Ohms)	Used With
1F	1000	Nos. 101A and 101B selector sets.
5G	10000	No. 102A selector set.
18A	37	Nos. 52A and 53A selector apparatus cases.
18G	200	No. 60A selector apparatus case.
18AK	60	Nos. 51A and 52A, 53A and 60A selector apparatus case.
31A	1200	Telegraph relays on composite circuits.
34A	200 to 30000 in steps of 200-9 terminals	Nos. 101A, 101B, 102A and 102B selector sets.
34B	100 to 3100 in steps of 100-6 terminals	Nos. 51C, 51D and 53A selector keys on inter-calling circuits.
34C	4 to 3124 in steps of 4 up to 64. 9 terminals	Simplex train dispatching circuits.
35D	250	Nos. 51A and 53A selector apparatus case.
38A	48000	No. 160A selector sets. Enameled resistance.

HOWLERS AND RINGERS



No. 1C Howler

Howlers

Code No.

Description

Used in

1B

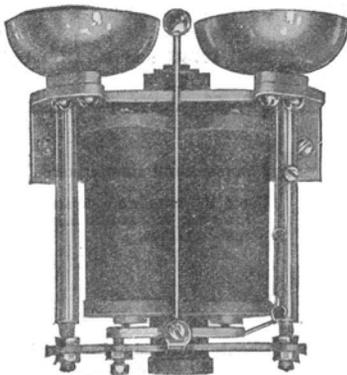
Consists of adjustable diaphragm and a resonating horn mounted on an iron bracket.

No. 1314A telephone set.

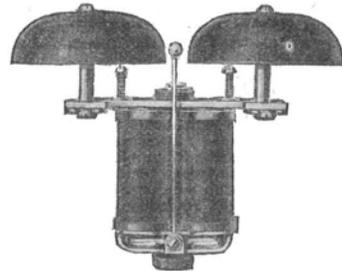
1C

Consists of adjustable diaphragm and a resonating horn mounted on a wooden base.

Nos. 1312 and 6023A telephone sets.



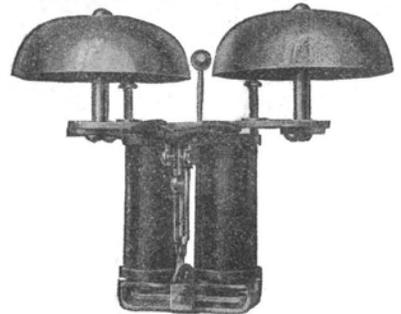
No. 32 BG Ringer



No. 38 BG Ringer



No. 51 Type



No. 60 CG Ringer

Ringers

Code No.	Resistance in Ohms	Gong No.
4BG	2500	29A
32BG	2500	13
38AG	1020	26A
38BG	2500	26A
38FG	1620	26A
43NG	88	26A
45BG	2500	20
51AG	1020	29A
51BG	2500	29A
51FG	1620	29A
53AG	1000	29A
53BG	2500	29A
53FG	1600	29A
60CG	16	26A

Used in

Nos. 1293AD and AE telephone sets.
 Nos. 1330E and F telephone sets.
 Nos. 127E and 127 special extension bell and 1317AH telephone sets.
 Nos. 127F extension bell, 1317P, S, W, AW and BK telephone sets.
 No. 127G extension bell.
 No. 127H extension bell.
 Nos. 1336F and H and 1305AC telephone sets. Moisture-proofed.
 Nos. 1278G and H telephone sets and 315H desk set box.
 Telephone sets and desk set boxes 300K and N.
 Telephone sets and desk set boxes 300L and M.
 No. 1317CG telephone sets.
 Nos. 1317CP and CS telephone sets.
 Nos. 1317CN and CR telephone sets.
 Nos. 160A, 160B and 161A selector sets.

Western Electric Company

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