THE WESTERN UNION TELEGRAPH COMPANY
PLANT DEPARTMENT

STENCIL #1857-B
June 12, 1944

1

HANDBOOK FOR

TELEPRINTER MAINTAINERS

Omitted pages
are BLANK
-J.Duszynski

THE WESTERN UNION TELEGRAPH CO.
PLANT DEPARTMENT

Stencil #1857-B
June 12, 1944

TELEPRINTER HANDBOOK

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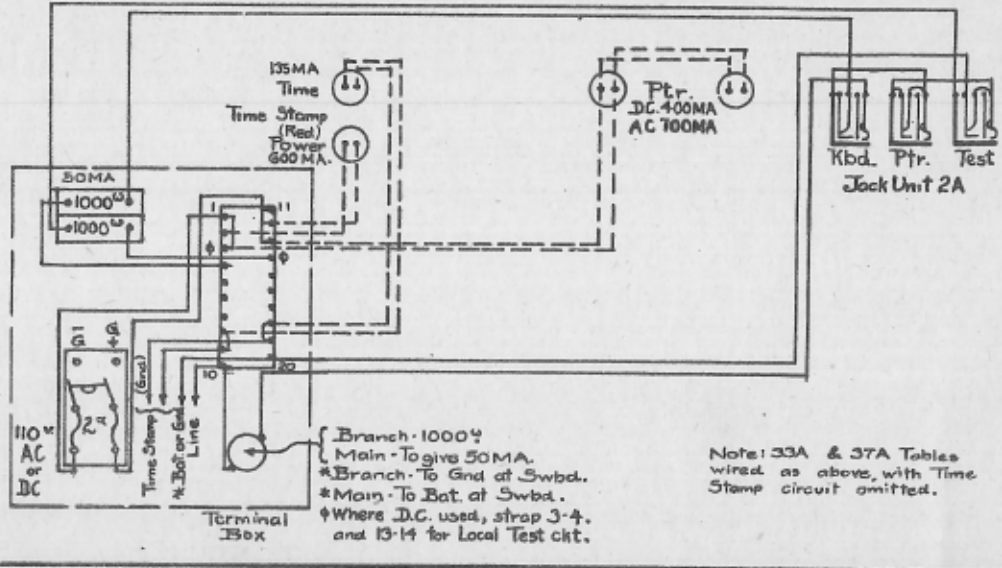
Teleprinter Operating Table 31A.



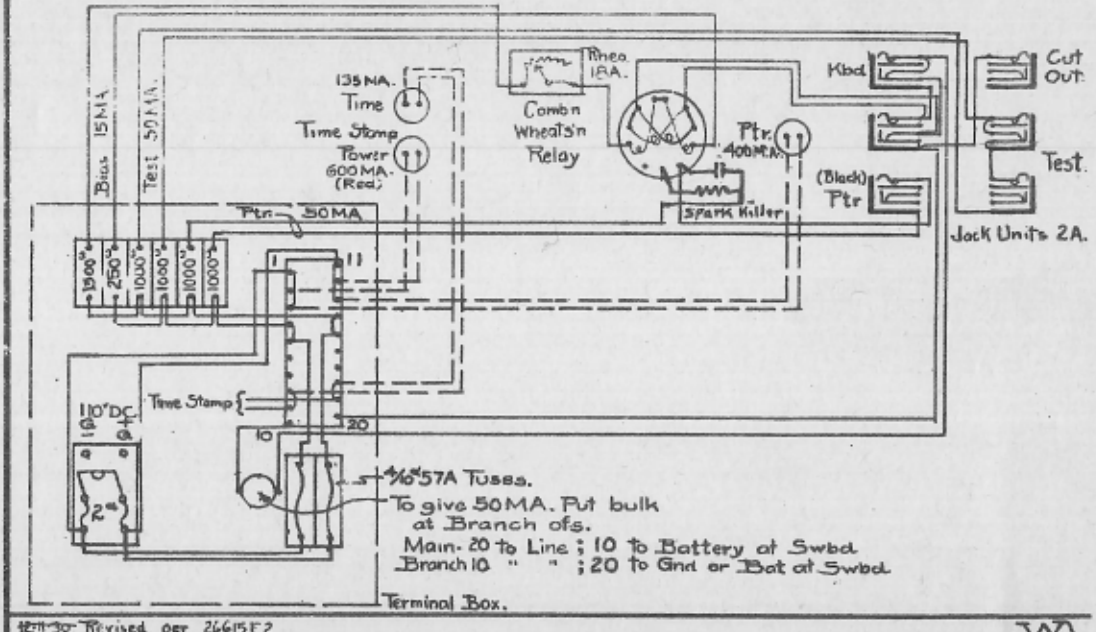
Note: 33A & 37A Tables wired as above, with Time Stamp circuit omitted.

4-11-36 Revised per 23453I2.
5-22-36 Kbd & Ptr Jacks reversed.

JWD

L 1A

Teleprinter Operating Table 32A.



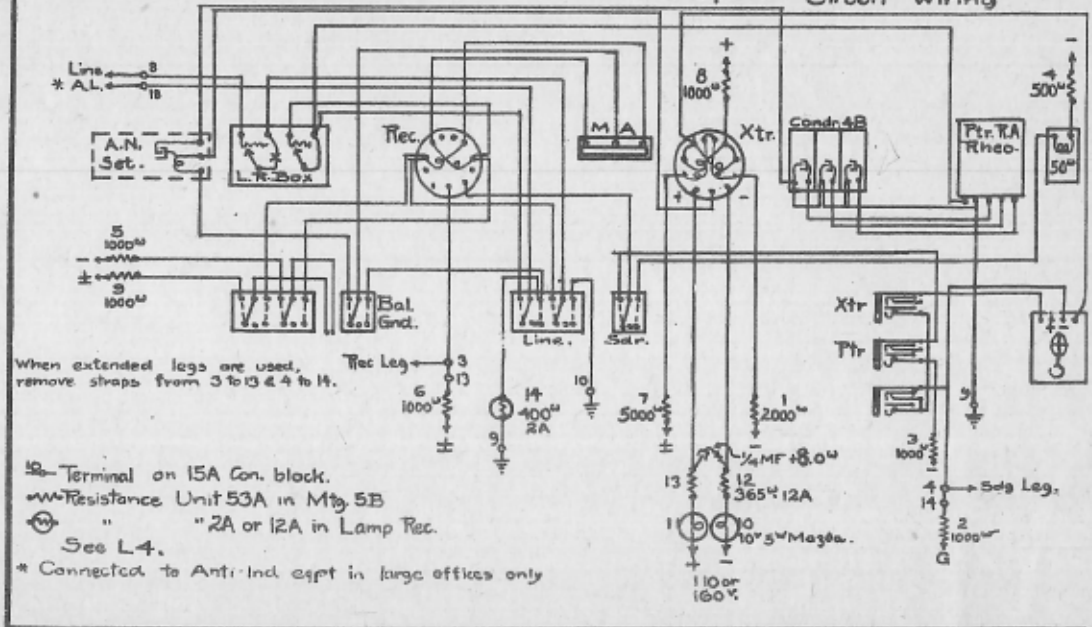
12-11-30 Revised per 26615F2
3/2/36 " for Home Record Cutout.
3/3/41 Spark Killer added.

JWD

L 28

23

Teleprinter Duplex Opr. Table 34A. Circuit Wiring

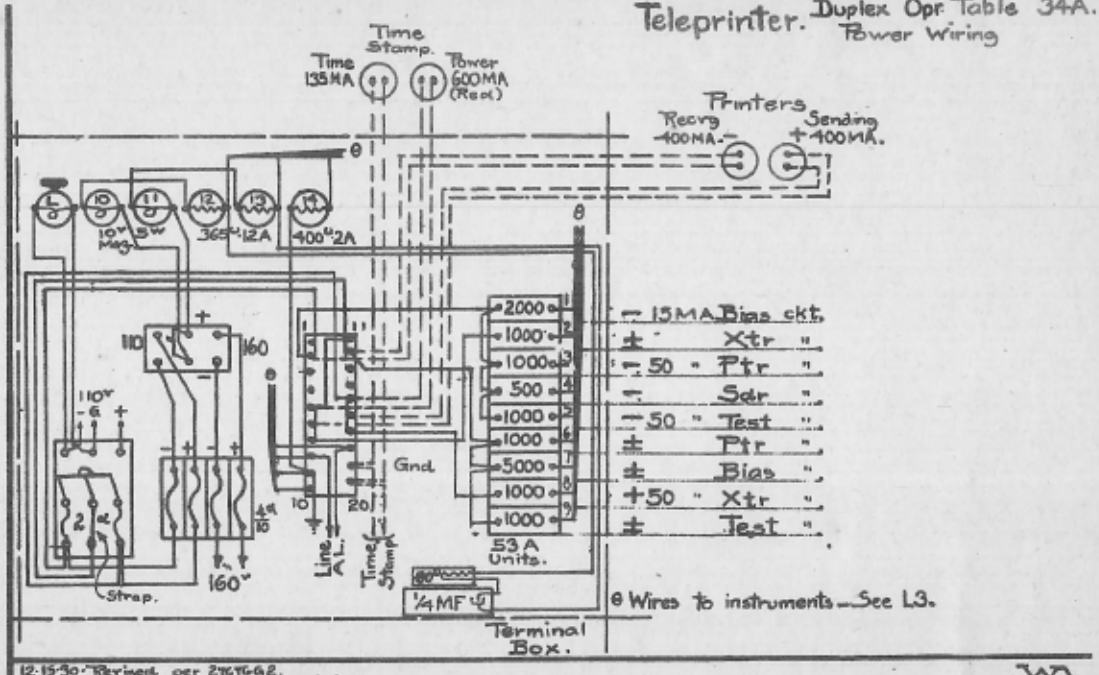


12-1530 Revised per 2767662
3-13-41 Spark Killer ohms corrected

JWD

L

Teleprinter. Duplex Opr Table 34A.
Power Wiring



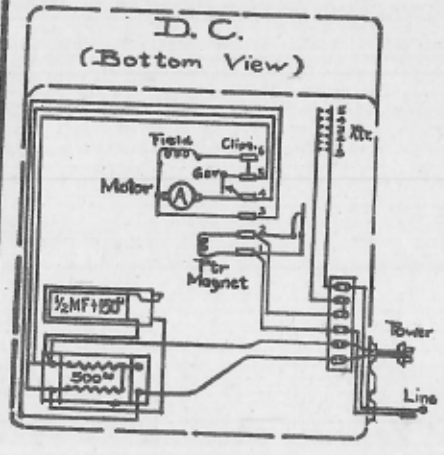
12-15-30 Revised per 2167642.
3-14-41 Spark Killer Chms corrected.

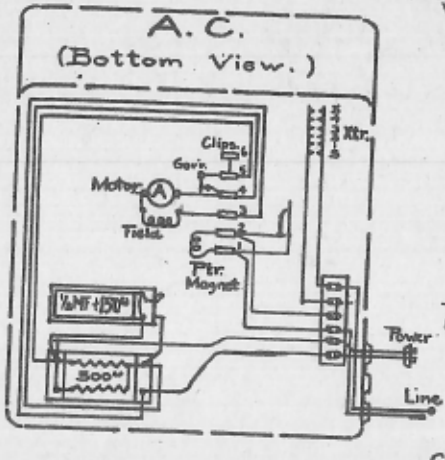
JWD

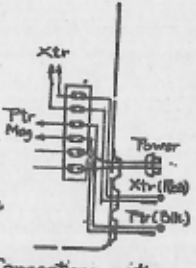
L 4A

27

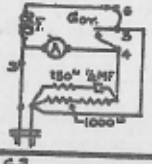
Teleprinter 2B. Wiring.



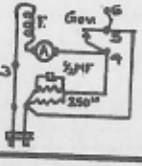




Connections with Xtr Cord for use on 32A Tables.



Schematic Motor Circuit
DC.



AC.

REVISED 7-24-31 G.S

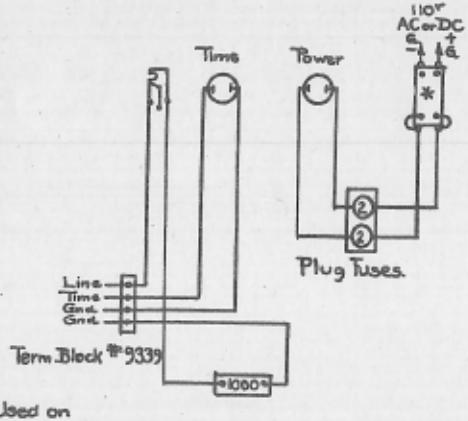
SPEC. 1822-D

JWA

L 6

Teleprinter Wiring Cabinet 1C.

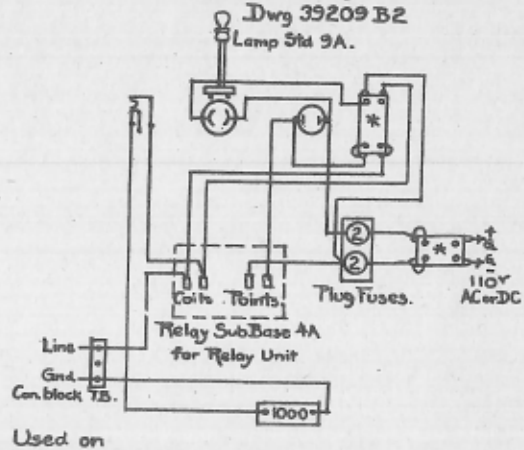
Dwg 39942 A2



Used on
51A Oprg Table - Layout dwg 39243 (Public Ofs)
39242 (Private -)

Teleprinter Wiring Cab. 1S.

Dwg 39209 B2



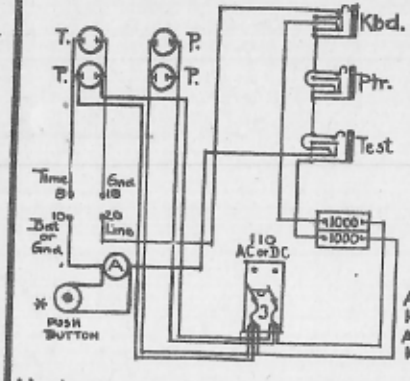
Used on
41A Oprg Table - Layout dwg 39235.
51B " "

* Tumbler Switch H&H 20583.

3-22-36 Jack reversed in 1C Cab.

L7A

Teleprinter Wiring Cab 1B.
Dwg 34228D2.



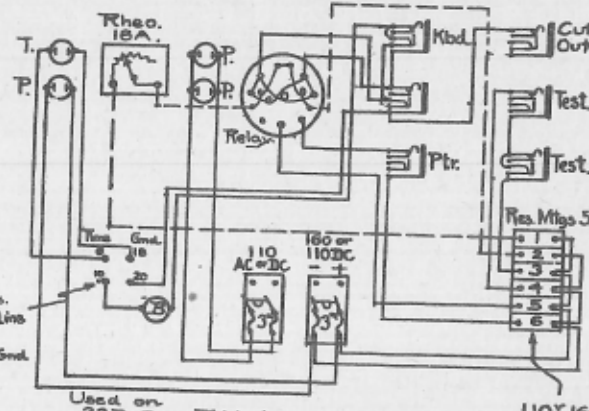
Used on
31B · Oprg Table - Layout dwg 36075.
51A " " " " 39243. (first tables Mfd)

* { PUSH BUTTON FOR CALLING IN REPEATER ATTENDANTS. To be installed only when requested by Traffic Dept.

Res. A · 1000Ω at Branch; all at Main, to give 50 MA
" B · To give 50 MA; put bulk at Branch.

See. Spec. 2480 A.

Teleprinter Wiring Cab. 2B.
Dwg 33870 D 2.



Used on
32B Oprg Table · Layout dwg 36076.
52A " " " 39941.

IF A.C. TIME STAMPS USED CONNECT 15-A BLK. LUGS 8 & 18 TO TOP TERMS. OF LEFT HAND SWITCH. IF TIME STAMPS USED NEEDING NO D.C. POWER FOR OPR. REMOVE WIRES AT RIGHT HAND SWITCH TO 'POWER' OUTLET & TAPE UP.

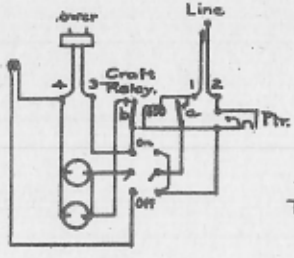
	110V	160V
1 ·	1500	1500.
2 ·	250	1500.
3-4 ·	1000	1500.
5-6 ·	1000	1500.

When Single Current Relay used, omit Bias circuit & 18A Rheostat

Revised per Dwg. 41006 B-2. FPS.
SPEC. 2480-A
9-22-36 Revised for Home Record Cutout.

L8A

Call Signal & Motor Control Boxes.

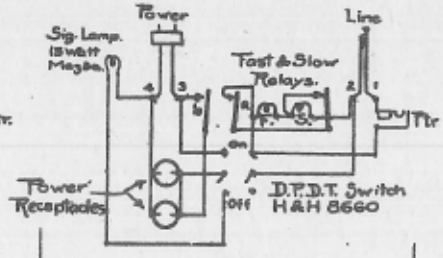


1A

Used on lines from Plan 1 Constr. or Regular Tables.

Spacing signal releases relay.
Contacts "a" shunt relay coil.
" "b" light lamp & start motor.
Throwing switch "on" puts light out & keeps motor running. Motor must be stopped by throwing switch.

Spec 2425B-Opn.
2332B-Mfr.

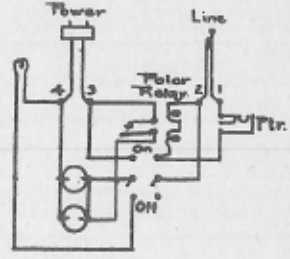


2A

Primarily for Reptrd Lines from Plan 2 (100 line) concentrator.
May be used in place of 1A Unit

Spacing signal releases Fast Relay.
Contacts "a" shunt relay coil.
" "b" light lamp & start motor.
Long spacing signal when opr pulls out releases Slow relay, removing shunt from Fast relay which oprs on next marking signal,

Spec 2698A-Opn.
" 2585A-Mfr.



3A

Used on unrepeatered lines from Plan 2 Constr.

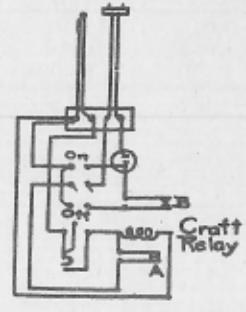
Positive Signalling battery from constr holds relay with contacts open. Negative battery from Cord ckt causes contacts to close, lighting lamp & starting motor.

Note-All types "Off" Signalling position
"On" Operating

Spec 2681A-Opn.
" 2586A-Mfr.

JVD
1-29-31

Teleprinter
Motor Control Box 1A



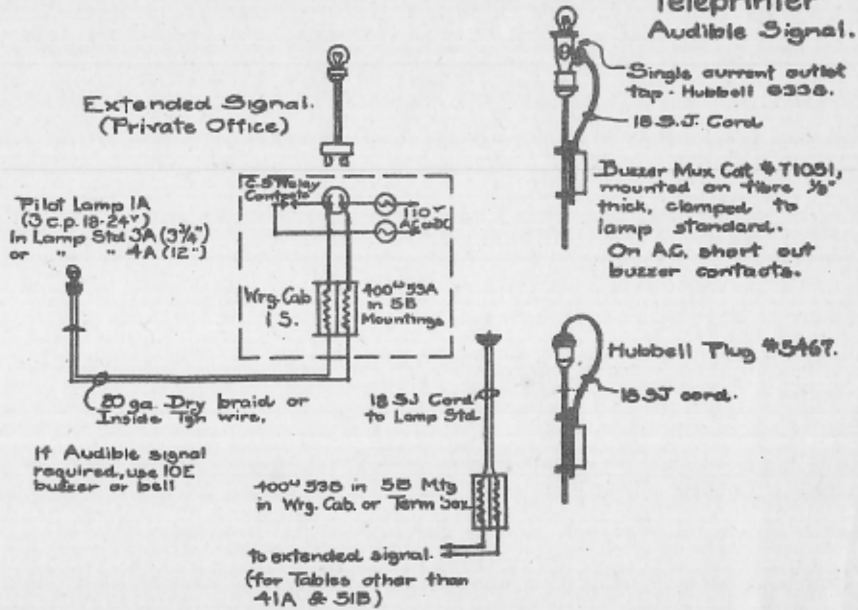
Used in Public offices to start printer on spacing signal.
Contact A shunts relay.
B (Tungsten) starts motor.
Adjustment same as 1A box.

Spec 3231 · Mfr.

JW
3-8-37

LG.HR

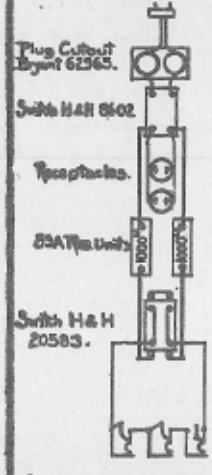
Teleprinter Audible Signal.



JW
3-8-37

41

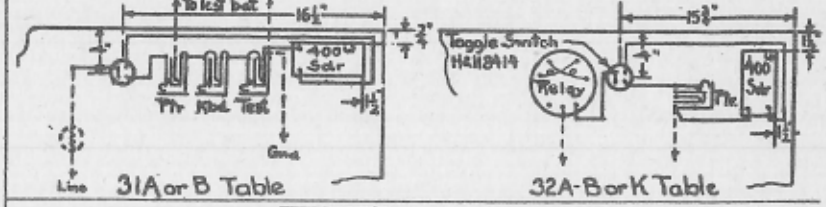
Testing Cabinet 2A

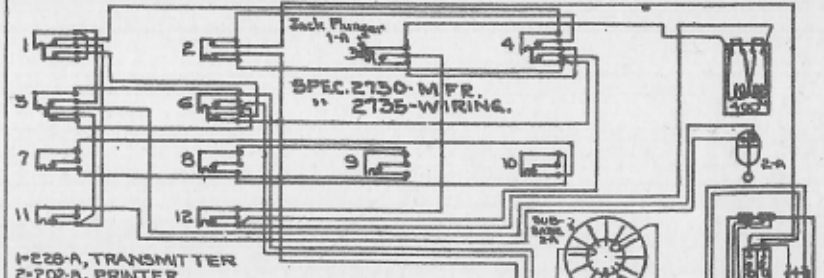


Cabinet 7" x 5" x 4" high.
Panel in front.

Spec 2575A · Opn.
" 2385A · Mfr.

Spec. 2203-D Teleprinter Time Signal Equipment.





1=228-A, TRANSMITTER
2=202-A, PRINTER
3=200-A, PRINTER CUT-OUT SWITCH JACK
4=228-A, TRANSMITTER & PRINTER
5=203-A, TRANS. IN SERIES WITH RELAY, PTR. OFF CONTACTS
6=228-A, RELAY, PRINTER OFF CONTACTS
7-8-9-10=200-A, GBI CIRCUIT
11=200-A, JACK FOR PTR. CORD-SEND. SIDE.
12= " " " " " " REC'G. SIDE.

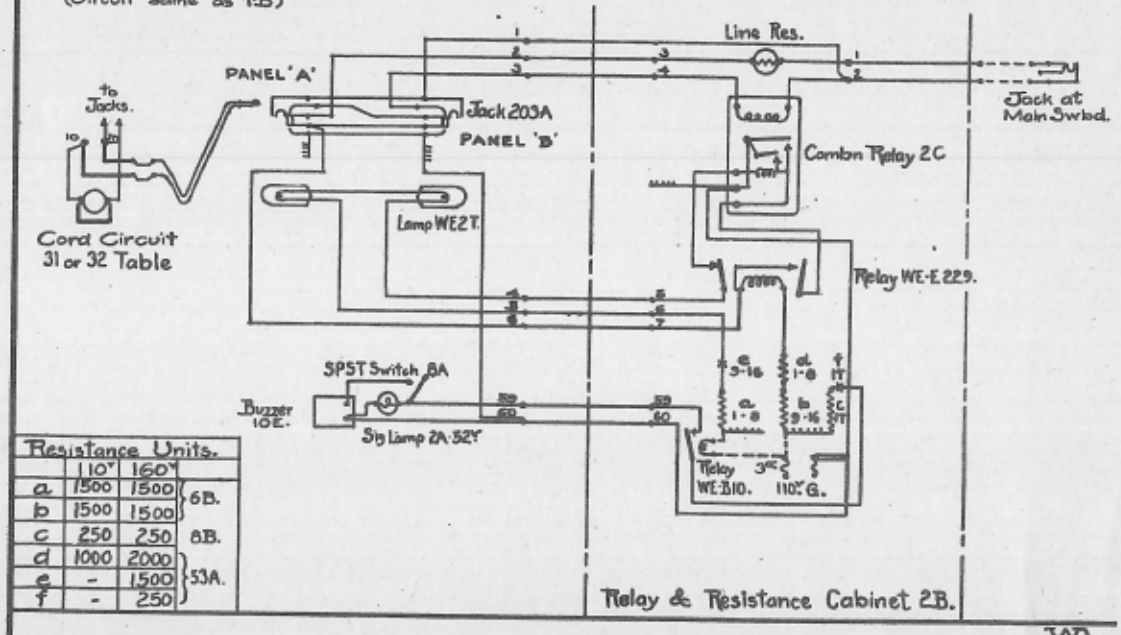
REVISED 8-18-51 G.B

JAD

L10

Plan 1-B V Belt Spec. 2308B.
" 1-A Flat " " 1839B
(Circuit same as 1-B)

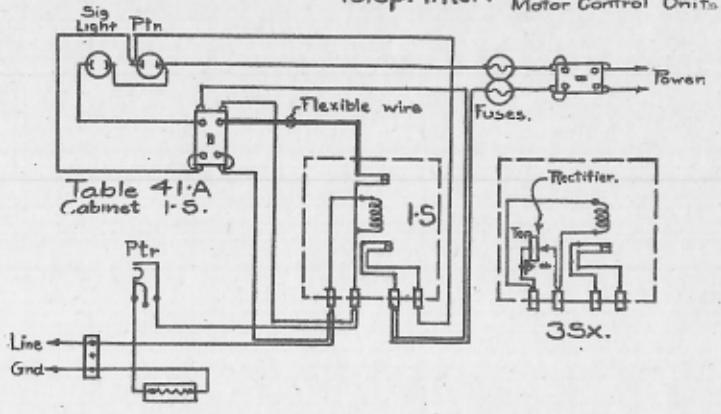
Printer Concentrator Plan 1-B V-Belt.



Resistance Units.			
	110V	160V	
a	1500	1500	6B.
b	1500	1500	
c	250	250	8B.
d	1000	2000	53A.
e	-	1500	
f	-	250	

JWD
12-27-33
L11.

Teleprinter. Call Signal & Motor Control Units.

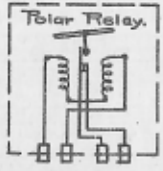


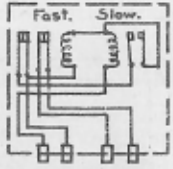
Resistance of Relays.

1A, 1S, 3Sx.	200ω	
2A & 2S	175ω	Slow Relay
	75ω	Fast "
3A & 3S	21ω	Kellogg †
	250ω	Auto Elec.†

† Auto Elec Relay has 2 adj screws in Armature.
† Kellogg " " 1 " " " "

All relays shown de-energized





Unit 3Sx added.
AUD. SGL. ADDED. F.P.S.
3-5-37 " " " REMOVED. SEE 3-2

3-13-41 Rect. designations reversed on 3-Sx.

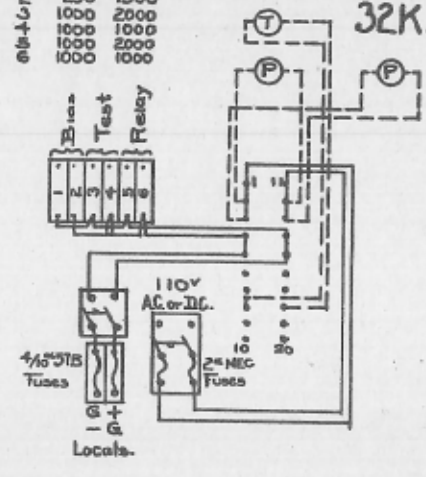
JWA
L-16B

Teleprinter Tables 32K & 34K.

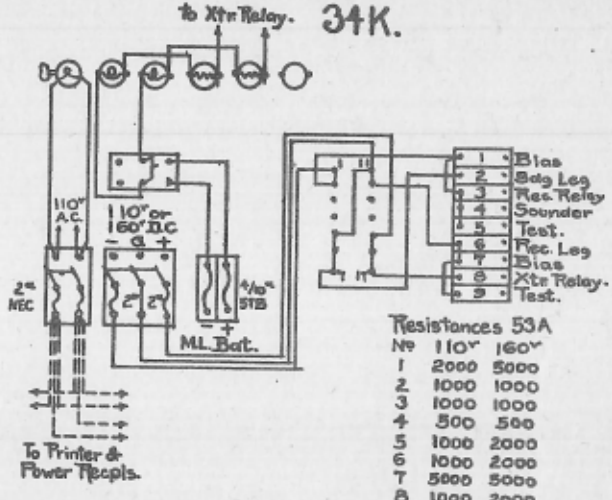
Resistances 53A.

№	110ᵛ	160ᵛ
1	1500	1500
2	250	1500
3	1000	2000
4	1000	1000
5	1000	2000
6	1000	1000

32K.



34K.



Resistances 53A

№	110ᵛ	160ᵛ
1	2000	5000
2	1000	1000
3	1000	1000
4	500	500
5	1000	2000
6	1000	2000
7	5000	5000
8	1000	2000
9	1000	1000

Other wiring same as 32A & 34A Tables.

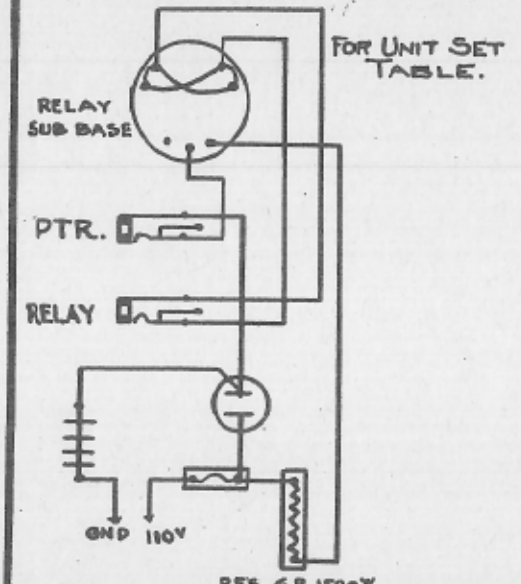
3-13-41 34K Table. Spark Killer removed. See Dwg. 28769.

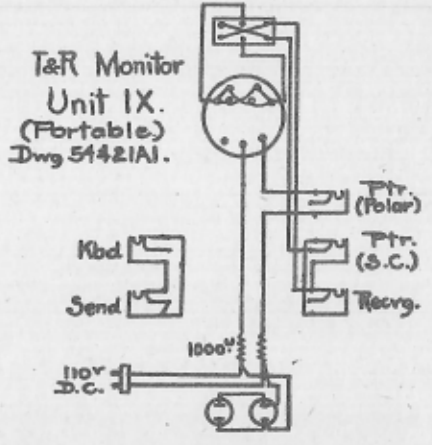
JVA 9-23-31

L17A

47

TELEPRINTER MONITOR SETS.

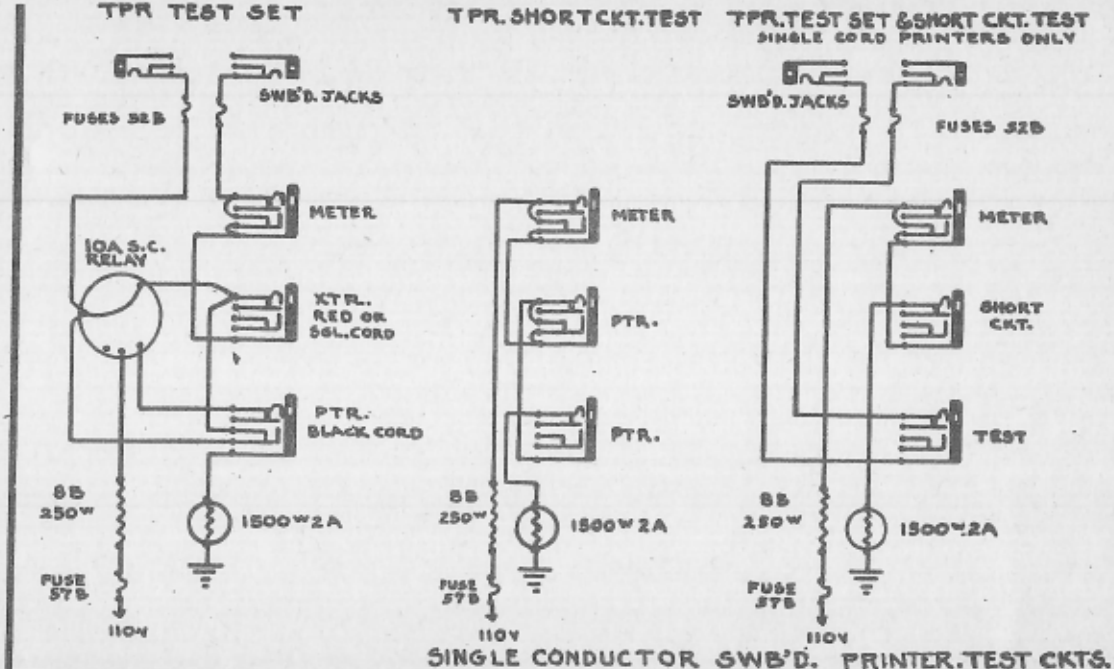




9-2-36 · Unit IX added. SND
3-19-41 Dwg. number corrected.

49

L 23B

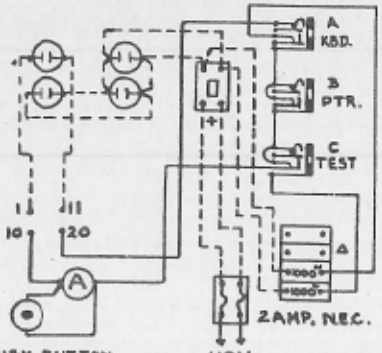


SINGLE CONDUCTOR SWB'D. PRINTER. TEST CKTS.

DWG. 45287-1 45288-1 45289-1 SPEC. 3000-A
6-23-35 RFS.

L 24

Teleprinter Wiring Cab. 1D
Dwg. 48201



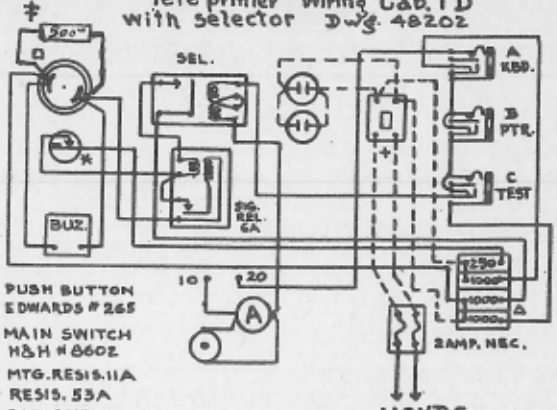
PUSH BUTTON
EDWARDS #620
USED FOR CALLING IN REPTR. ATTENDANT IF REQUIRED.

IF AC TEST CKT. NOT USEABLE

15A BLOCK CONNECTIONS
I - TIME
II - " GROUND
10 - GROUND OR BATTERY
20 - LINE

Resistance "A" at Branch: 1000, 700, 400 or 50Ω
" A - Main: Balance to give 50-60 MA

Teleprinter Wiring Cab. 1D with selector
Dwg. 48202



* PUSH BUTTON EDWARDS # 265
+ MAIN SWITCH H&H # 8602
△ MTG. RESIS. 11A RESIS. 53A
□ SIG. STD. 9A IN HUBBELL RECPT. 7210

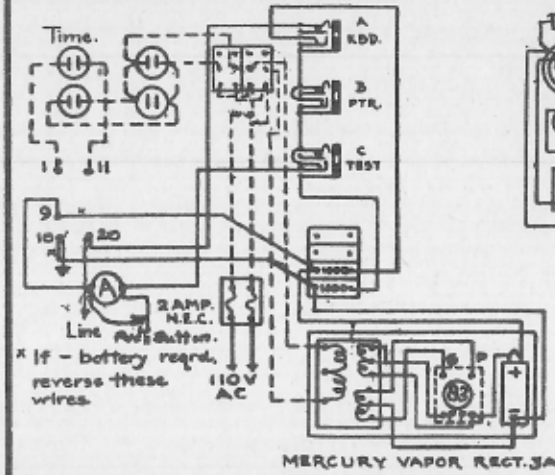
‡ REMOVE IF VISUAL SIGNAL IS USED.

NOTE 'A' - SELECTOR COILS CONNECTED IN SERIES INSTEAD MULTIPLE - APDX #1
" B Note re res "A" changed. 1-3 38.
3-13-41. RESISTOR Added across receptacle.

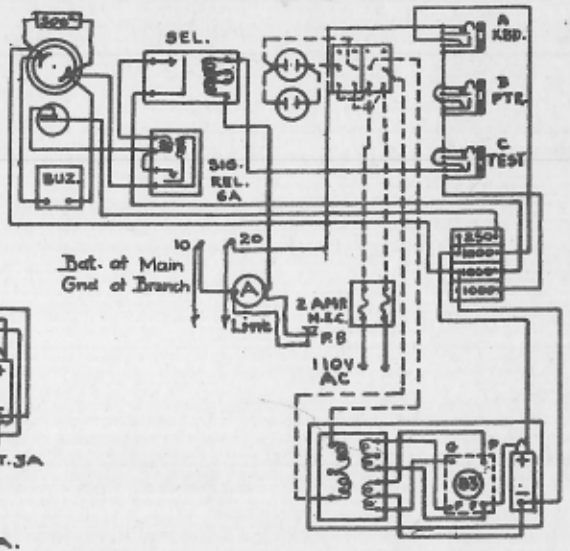
L 27C

55

Teleprinter Wiring Cab. 1R
WITH M.V. RECT. 3A DWG. 48203



Teleprinter Wiring Cab. 1R
WITH SELECTOR DWG. 48204



At Branch. Res A = 1000", 700", 400" or 50"
At Main " A = Balance to give 50-60 MA.

SPEC. 3065 A

NOTE 'A'- SELECTOR COILS CONNECTED IN SERIES INSTEAD MULTIPLE RPD K-1

NOTE 'B' 8602 SWITCH REPLACED PER SPEC. 3582-A - TUBES MARK "B3"

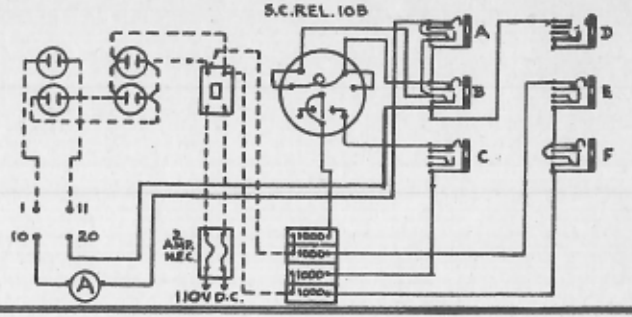
" 'C' Notes revised. 8-31-37. 3-15-41 Push Button added. Resistor added across receptacle.

L-28-D.

Teleprinter Wiring Cab. 2D
Dwg. 48205

JACKS:
A - KBD.
B - PTR. (To work without relay)
C - " RELAY LOCAL
D - HOME RECORD CUTOUT.
E - PTR. } TEST
F - KBD. }

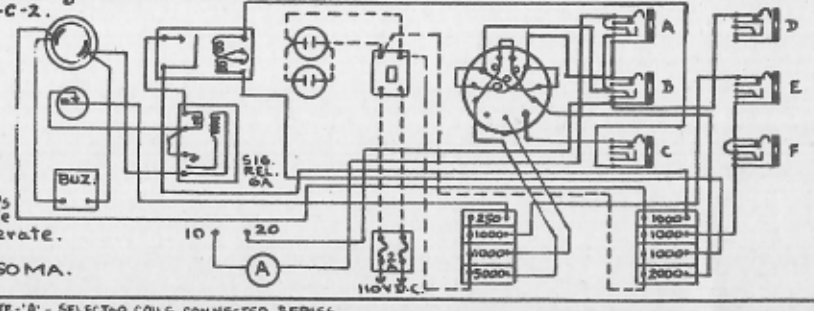
15A BLOCK CONNECTIONS
1 - TIME
11 - " GROUND
10 - BAT AT MAIN. LINE AT BRANCH
20 - LINE " " GND " "



Teleprinter Wiring Cab. 2D. with Selector.
Dwg. 48206-C-2.

JACKS:
A - - KBD.
B PTR (WITHOUT RELAY)
C - PTR. RELAY LOCAL
D - HOME RECORD CUTOUT.
E - PTR. } TEST
F - KBD. }

Note: TO work without relay put ptr. & Kbd. plugs in jacks A-B. in this case selector does not operate.
Relay: Polar or 10 B
Resis. A - TO GIVE 50 - 60 MA.



SPEC. 3065 A

NOTE - 'A' - SELECTOR COILS CONNECTED SERIES INSTEAD MULTIPLE - APDX. 81
"B" 9-23-36 Changed for Home Record Cutout.
"C" 1-7-38 Notes revised.

L29C

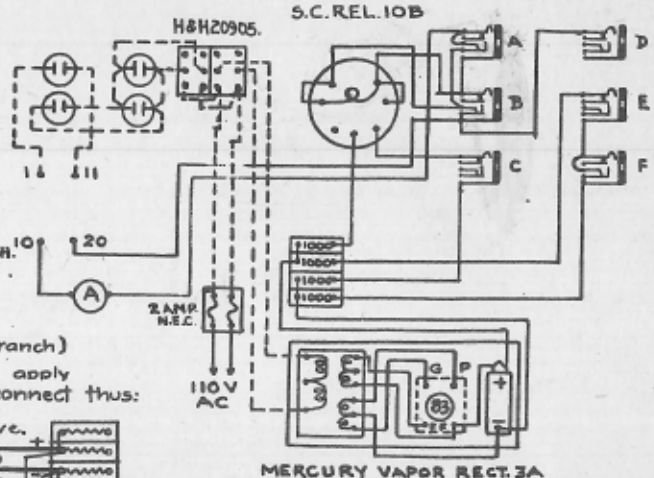
57

Teleprinter Wiring Cab. 2R.
Dwg 48207

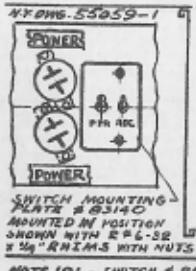
SPEC. 3065 A

JACKS
A - KBD.
B - PTR. (To work without relay)
C - PTR. RELAY LOCAL
D - HOME RECORD CUTOUT.
E - PTR. } TEST
F - KBD. }

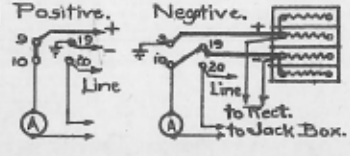
15A BLOCK CONNECTIONS
1 TIME
11 " GROUND
10 BAT AT MAIN. LINE AT BRANCH.
20 LINE " " . GND " " .



RESIS. A
TO GIVE 50-60 MA (Most at Branch)



When necessary to apply Main Line battery connect thus:



If rectifier feeds −, condenser must be protected by fibre sleeve unless it has two insulated terminals.

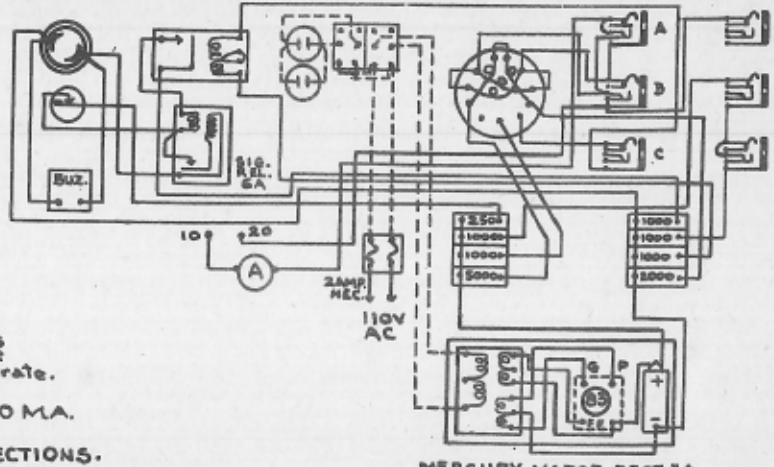
NOTE 'A' - SWITCH # 860R REPLACED PER SPEC 3540A - '82' TUBE CHANGED TO '83'
- B Changed for Home Record Cutout 9-23-36.
- C Added data on M.L. Battery · 1-7-38.

L-30.C

59

Teleprinter Wiring Cab. 2R with Selector.

Dwg. 48208.



JACKS:
A · KBD.
B · PTR (without Relay)
C · PTR. RELAY LOCAL
D · HOME RECORD CUTOUT.
E · PTR. } TEST
F · KBD. }

Note: To work without relay put ptr. & kbd. plugs in jacks A-B. In this case selector does not operate.
Relay: Polar or 10B
Resis. A to give .50-60 MA.

15A BLOCK CONNECTIONS.

10 BAT. AT MAIN, LINE AT Bcm
20 LINE " " GND " " "

If Main Line Battery necessary, connect per L 30.

SPEC. 3065A

9-25-36 · Changed for Home Record Cutout.

1-10-38 Title & notes revised.

NOTE 'A' · SELECTOR COILS CONNECTED IN SERIES INSTEAD MULTIPLE. - APDX #1

NOTE 'B' · SWITCH 8602 REPLACED PER SPEC. 3642-A - TUBES CHANGED TO READ "83"

L-31-D

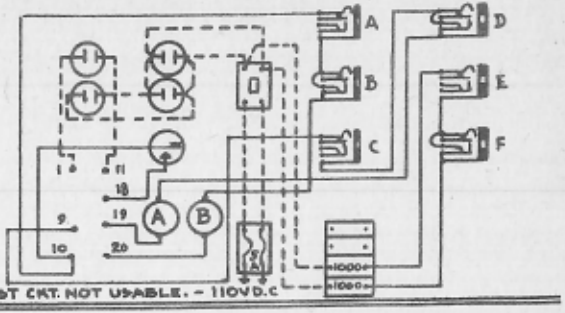
61

63

Teleprinter Wiring Cab. 9D
Dwg. 48209

JACKS
A - KBD.
B - PTR. - XTR., CALLING KEY, OR SEND. PTR.
C - RECEIVING PRINTER
D - " LEG
E - KBD. } TEST
F - PTR. }

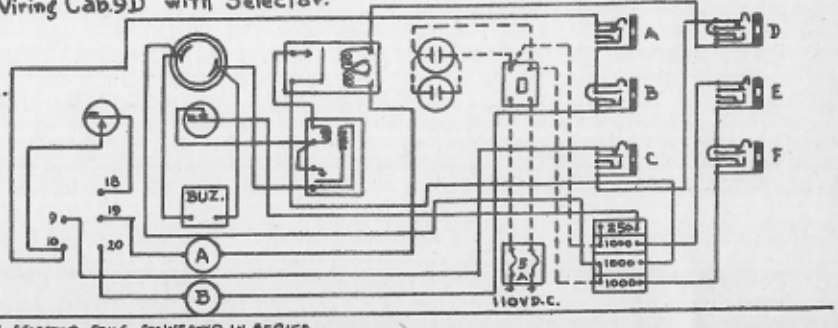
15A BLOCK CONNECTIONS
1 - TIME
11 - " GROUND
9 - RECEIVING LEG
10 - SENDING "
18 - PUSH BUTTON GROUND
19 - GND. FOR RECEIVING LEG
20 - " " SENDING "



IF 110V A.C. USED, TEST CKT. NOT USABLE. - 110V D.C

Teleprinter Wiring Cab. 9D with Selector.
Dwg. 48210

RESIS. A & B LIMIT CURRENT 50 MA.
RESIS. A - REC. LEG
" B - SEND "



SPEC. 3065 A

NOTE 'A' - SELECTOR COILS CONNECTED IN SERIES INSTEAD MULTIPLE. APDX # 1
B Title revised 1-10-38.

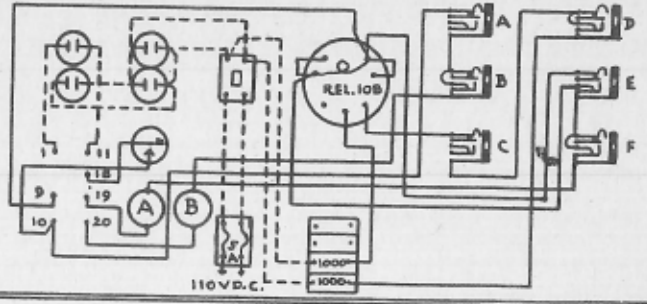
L 32 B

Wiring Cab. 9D with Relay.

Dwg. 48211-A2.

JACKS
A- KEYBOARD
B- DXTR.-XTR., CALLING KEY, OR SEND. PTR.
C- REC. PTR. } May also be
D- " LOCAL } use for test.
E- " PTR. TO WORK WITHOUT RELAY.
F- REC. LEG

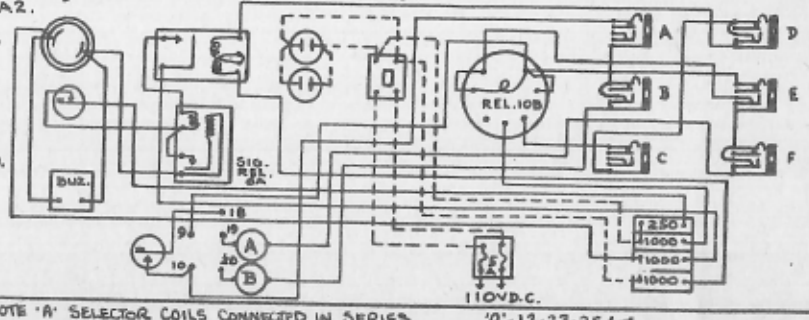
RESIS. A REC. LEG & RESIS. B SEND. LEG. 1000™ 2A TO LIMIT CURRENT TO 50 MA.



Wiring Cab. 9D. with Selector & Relay

Dwg. 48212-A2.

15A BLK. CONNECTIONS
1 - TIME
11 - " GROUND
9 - REC. LEG
19 - " " GND.
10 - SEND. "
20 - " " GND.
18 - PUSH BUTTON GND.

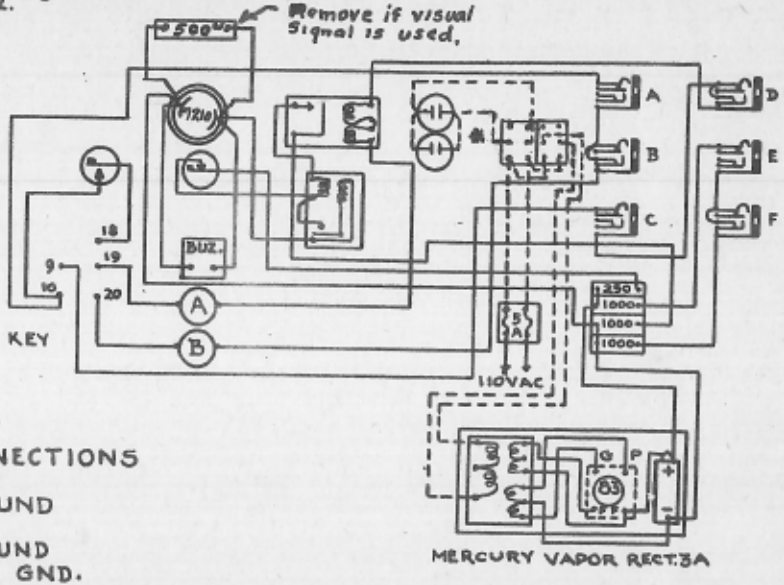


SPEC. 3065-A NOTE 'A' SELECTOR COILS CONNECTED IN SERIES INSTEAD MULTIPLE - APDX #1 'A'-12-23-35 [illegible]

L33A

Wiring Cab. 9R with Selector.

Dwg 48213-E-2.



* SWITCH C-H 8375

JACKS
A- KBD.
B- DXTR.-XTR. CALLING KEY OR SEND. PTR.
C- REC. PTR.
D- " LEG
E- KBD. } TEST
F- PTR. }

15A BLOCK CONNECTIONS
9- REC. LEG
19- " " GROUND
10- SEND. "
20- " " GROUND
18- PUSH BUTTON GND.

RESIS. A- REC. LEG, B- SEND. LEG 1000Ω 2A TO LIMIT CURRENT TO 50 MA.

SPEC. 3065-A NOTE 'A'- SELECTOR COILS CONNECTED IN SERIES INSTEAD MULTIPLE - APDX #1 'B'- 5-11-36 Lund

NOTE 'B' SWITCH 8602 REPLACED PER SPEC. 3542-A

" 'C' SWITCH ADDED. Resistor added across 7210. 3-14-41.

L-34 C

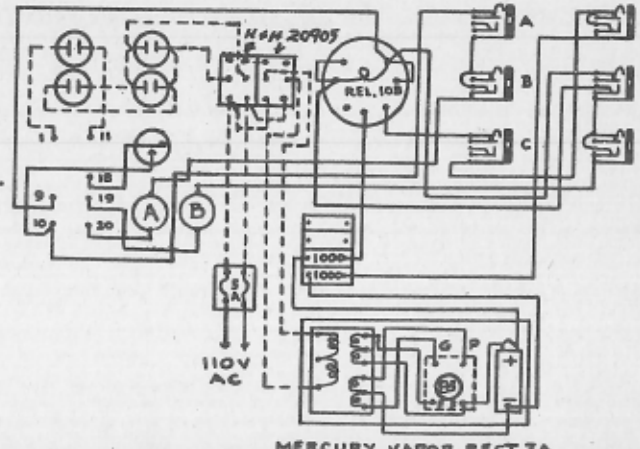
67

Wiring Cab 9R with Relay.

Dwg. 48214-B.2.

JACKS
A- KEYBOARD
B- DXTR.- XTR., CALLING KEY, OR SEND. PTR.
C- REC. PTR. } May also be
D- " LOCAL } use for test.
E- " PTR. TO WORK WITHOUT RELAY.
F- REC. LEG

RESIS. A- REC. LEG & RESIS. B SEND. LEG. 1000 Ω 2A TO LIMIT CURRENT TO 50 MA.



15A BLK. CONNECTIONS
1- TIME
11- " GROUND
9- REC. LEG
19- " " GND.
10- SEND. "
20- " " GND.
18- PUSH BUTTON GND.

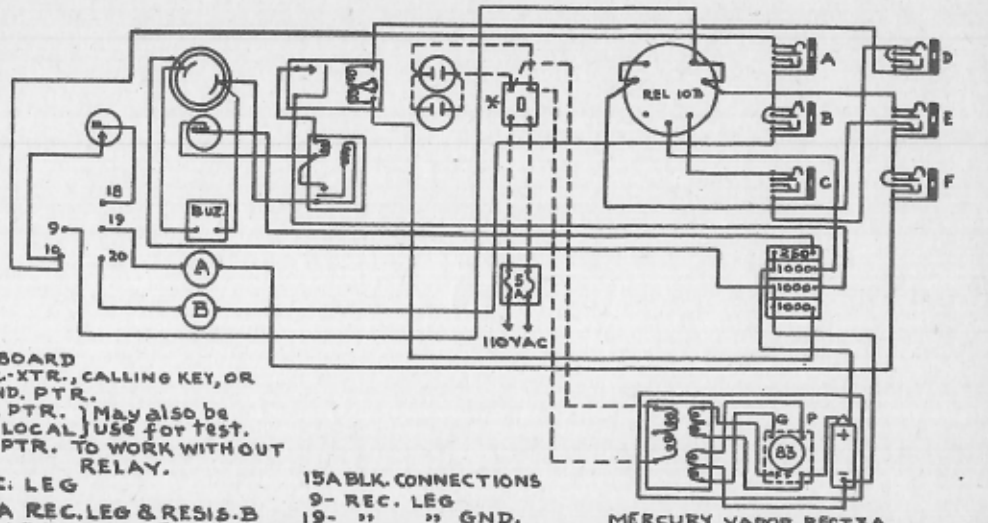
69

SPEC. 3065-A NOTE 'A' SWITCH B&GR REPLACED PER SPEC. 3642-A 'A' 5-11-36 Lwn
TUBE CHANGED '82' TO '83'
3-17-41 NOTE 'B' TRANSFORMER CONNECTIONS CORRECTED FOR 83 TUBE. SECOND SWITCH ADDED. WIRING TO RECEPTACLES A and B corrected.

L-35-B

Wiring Cab 9R with Selector and Relay.

Dwg. 48215-A2.



JACKS
A- KEYBOARD
B- DXTR.-XTR., CALLING KEY, OR SEND. PTR.
C- REC. PTR. } May also be
D- " LOCAL } use for test.
E- " PTR. TO WORK WITHOUT RELAY.
F- REC. LEG

RESIS. A REC. LEG & RESIS. B SEND. LEG. 1000Ω 2A TO LIMIT CURRENT TO 50 MA.

15A BLK. CONNECTIONS
9- REC. LEG
19- " " GND.
10- SEND. "
20- " " GND.
18- PUSH BUTTON GND.

MERCURY VAPOR RECT. 3A

*SWITCH H&H 8602 REPLACED WITH 2 SWITCHES H&H 6090S TO PROVIDE SEPARATE POWER CONTROL TO OUTLETS AND RECTIFIER PER SPEC. 3542-A .. FOR DETAIL SEE L-30-C

SPEC. 3065-A

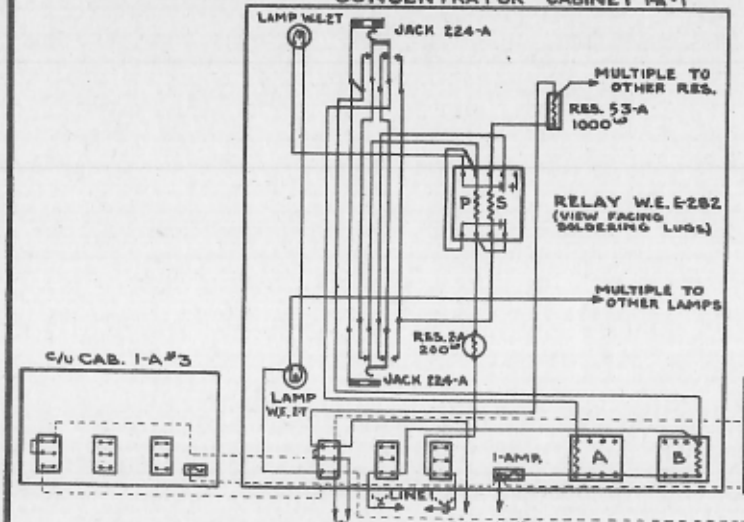
NOTE 'A'- SELECTOR COILS CONNECTED IN SERIES INSTEAD MULTIPLE- APPX #1

NOTE 'B'- SWITCH REPLACED PER SPEC. 3542-A 'B'- 5-11-36 Lewis

L-36-B

71

PRINTER CONCENTRATOR
PLAN 3 SPEC. 3174-A



NOTE:
IF LINE IS BATTERIED AT C/U CABINET, THE LINE SHALL BE TERMINATED AT "y".

IF LINE IS LOOPED IN THE C/U CABINET, THE TWO LINE CONDUCTORS SHALL BE TERMINATED AT "x" AND "y" AND THE 250Ω RES. B-B FOR THAT CIRCUIT SHALL BE REMOVED.

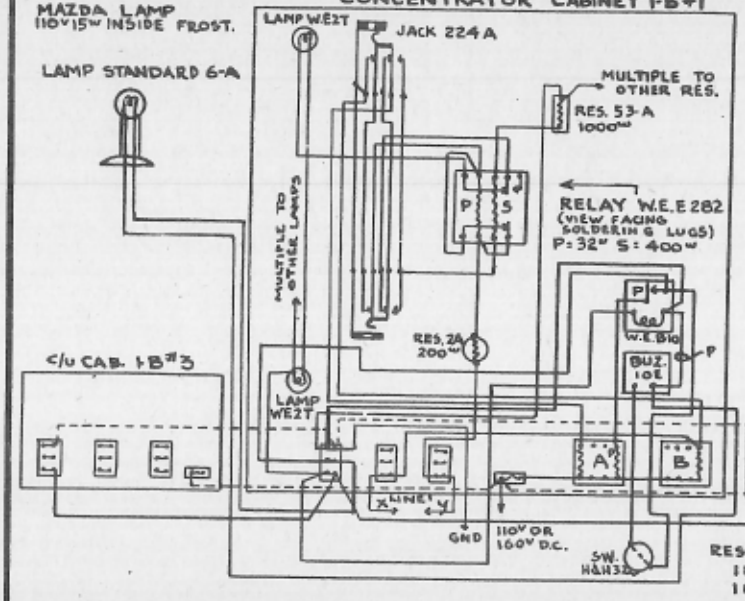
RESISTANCES	A	B
110V	1500Ω-A-B	250Ω B-B
160V	2500Ω-T-A	250Ω B-B

HAJ. 8-1-34

L-37

PRINTER CONCENTRATOR

PLAN 3 SPEC. 3174 A
APP. 2



NOTE:
IF LINE IS BATTERIED AT C/U CABINET, THE LINE SHALL BE TERMINATED AT "y".

IF LINE IS LOOPED IN THE C/U CABINET, THE TWO LINE CONDUCTORS SHALL BE TERMINATED AT "x" AND "y" AND THE 250W RES. 8-B FOR THAT CIRCUIT SHALL BE REMOVED.

WHEN LOCAL POWER SUPPLY IS 110V A.C. PILOT BUZZER & LAMP MAY BE OPERATED THEREFROM BY OMITTING RESIS. 'P', CONNECTION 'P' AT RELAY ARMATURE & CONDUCTOR 'P' INSTALL RESIS. AS SHOWN ON L-38A

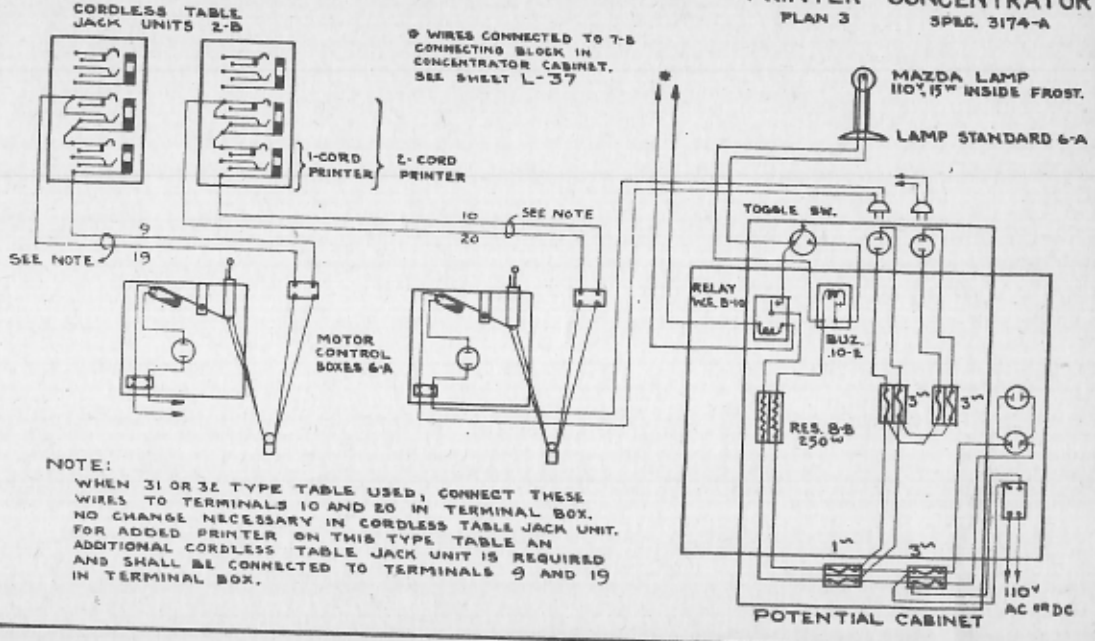
NOTE 'A' Below RESISTANCE VALUES OF P AND S RELAY W.E. E-282 SHOWN

'A' 2-18-38

L37.1A

PRINTER CONCENTRATOR

PLAN 3 SPEC. 3174-A



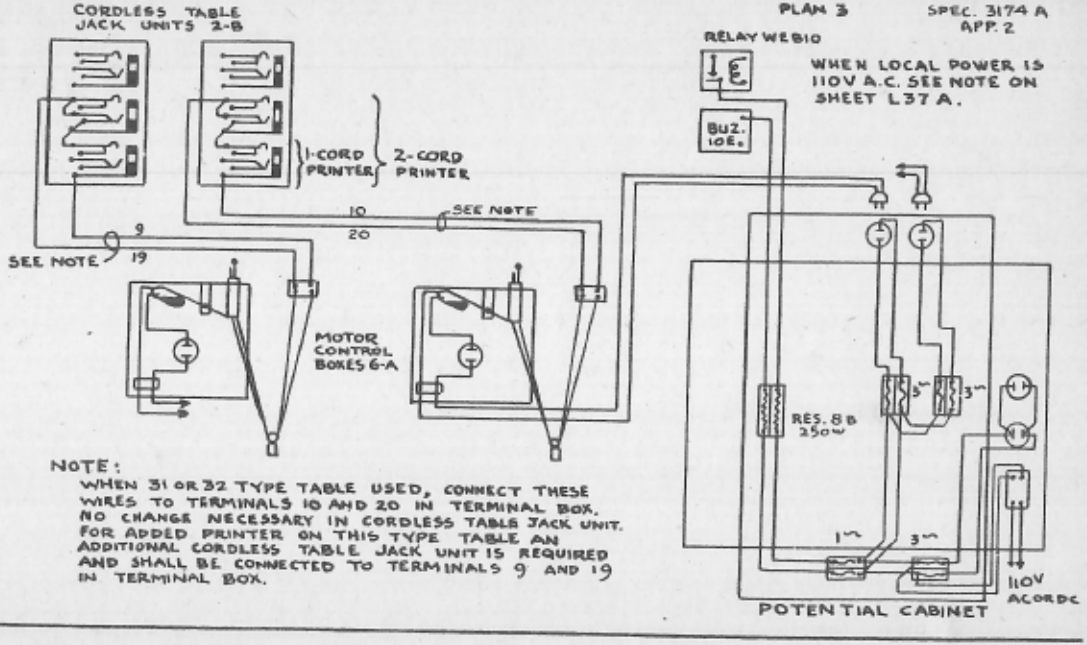
NOTE:

WHEN 31 OR 32 TYPE TABLE USED, CONNECT THESE WIRES TO TERMINALS 10 AND 20 IN TERMINAL BOX. NO CHANGE NECESSARY IN CORDLESS TABLE JACK UNIT. FOR ADDED PRINTER ON THIS TYPE TABLE AN ADDITIONAL CORDLESS TABLE JACK UNIT IS REQUIRED AND SHALL BE CONNECTED TO TERMINALS 9 AND 19 IN TERMINAL BOX.

H.A.J. 8-1-34

PRINTER CONCENTRATOR

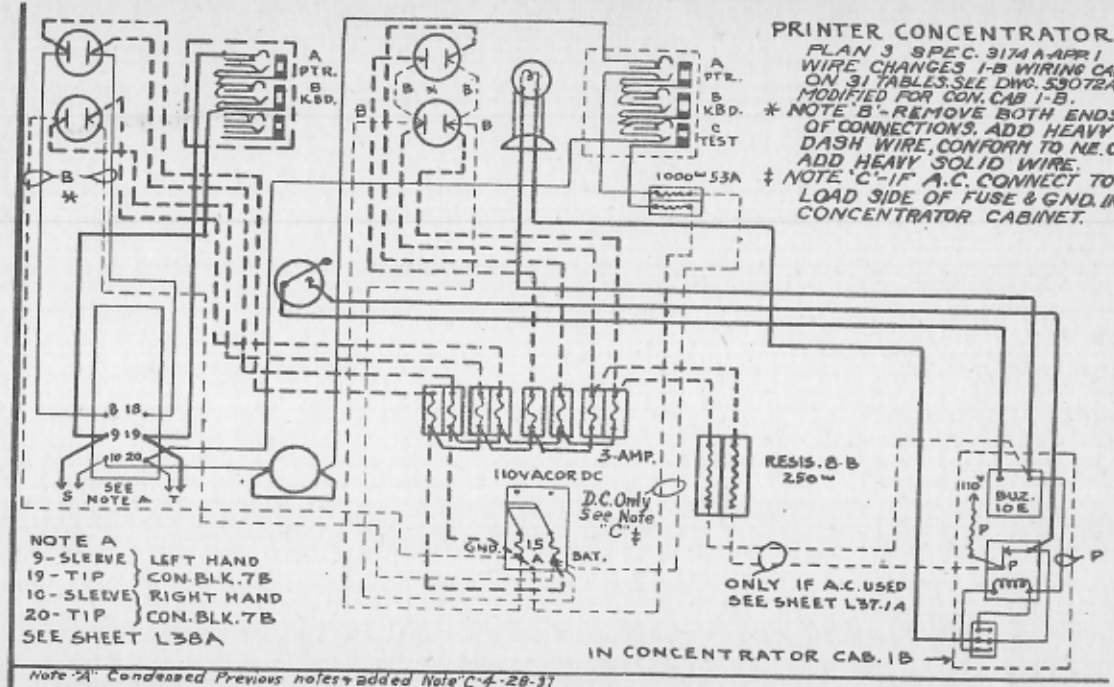
PLAN 3 SPEC. 3174 A APP. 2



NOTE:
WHEN 31 OR 32 TYPE TABLE USED, CONNECT THESE WIRES TO TERMINALS 10 AND 20 IN TERMINAL BOX. NO CHANGE NECESSARY IN CORDLESS TABLE JACK UNIT. FOR ADDED PRINTER ON THIS TYPE TABLE AN ADDITIONAL CORDLESS TABLE JACK UNIT IS REQUIRED AND SHALL BE CONNECTED TO TERMINALS 9 AND 19 IN TERMINAL BOX.

F.P.S. 11-12-34.

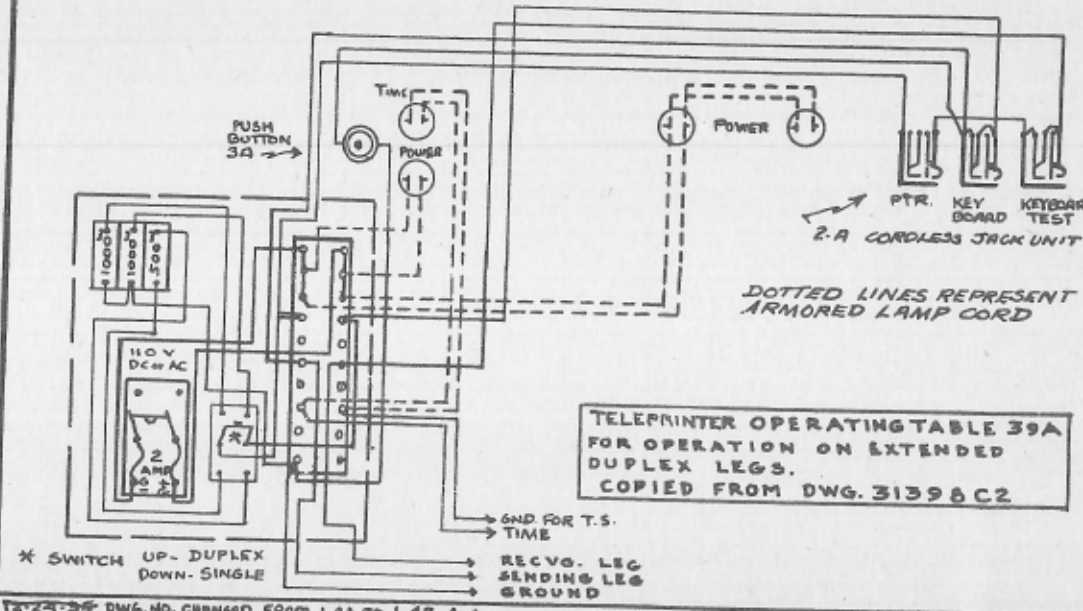
L-38.1



Note "A" Condensed Previous notes + added Note "C" 4-28-37

4-28-37

L-46-A



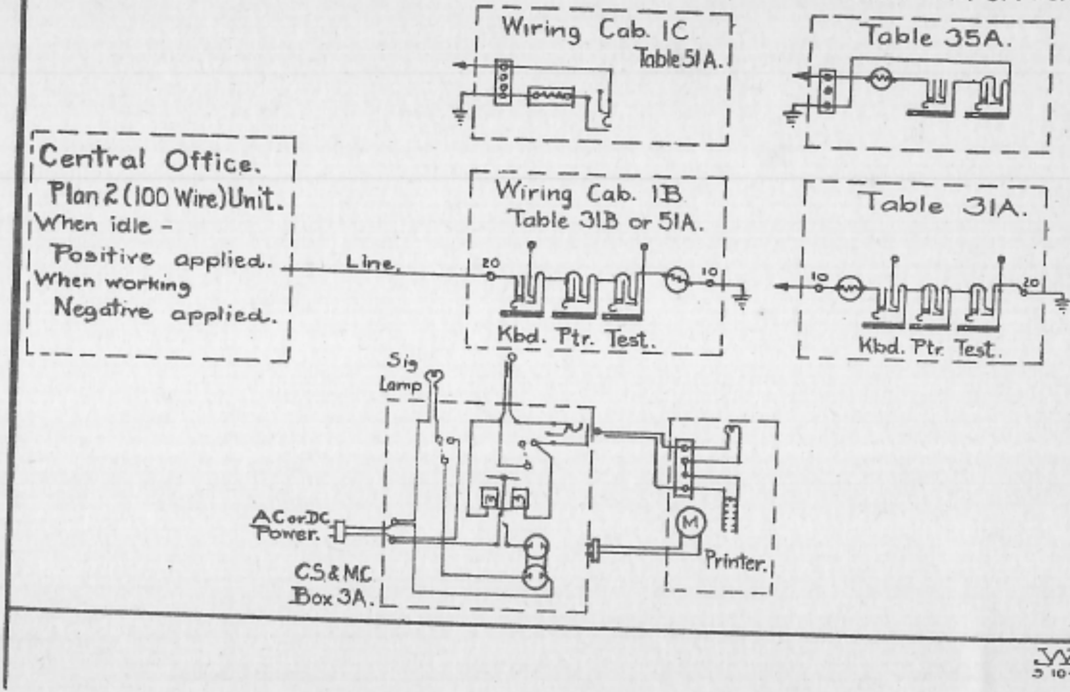
TELEPRINTER OPERATING TABLE 39A
FOR OPERATION ON EXTENDED DUPLEX LEGS.
COPIED FROM DWG. 31398C2

12-24-35 DWG. NO. CHANGED FROM L4A TO L47 [illegible]
4-24-36 MISC. CORRECTIONS "A" [illegible]

L 47-A

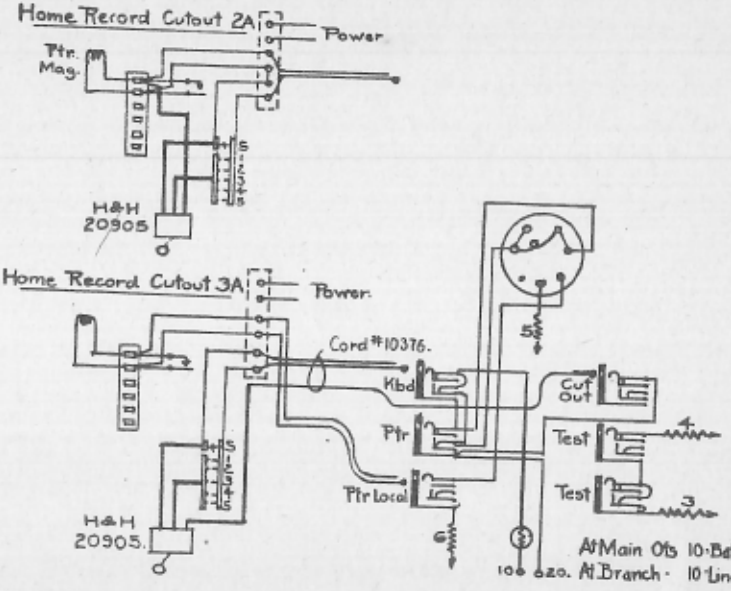
85

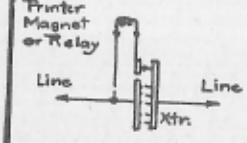
Teleprinter Circuit with 3A C.S.&M.C.



5·10·36

Teleprinter - Home Record Cutout.





Schematic.

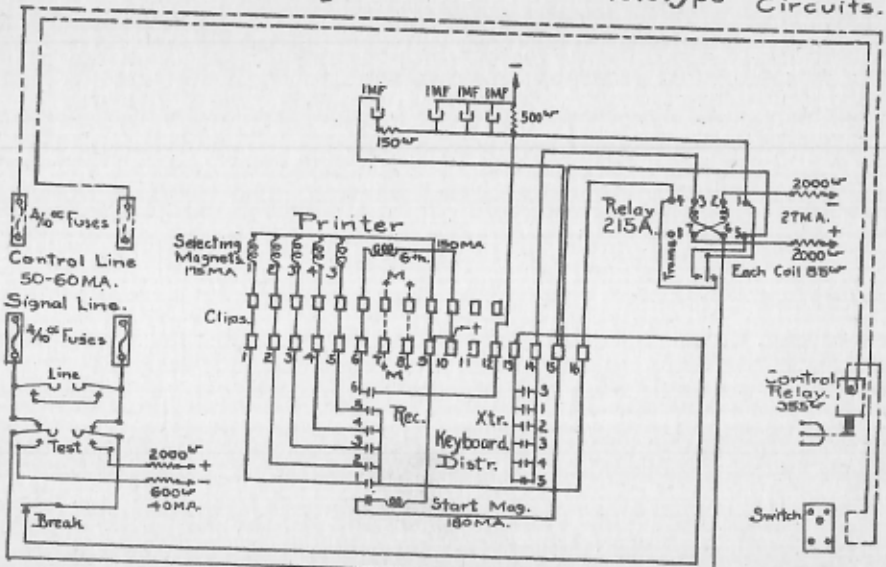
87

L50

89

Model 12 Page Printer.

Teletype Signal & Control Circuits.

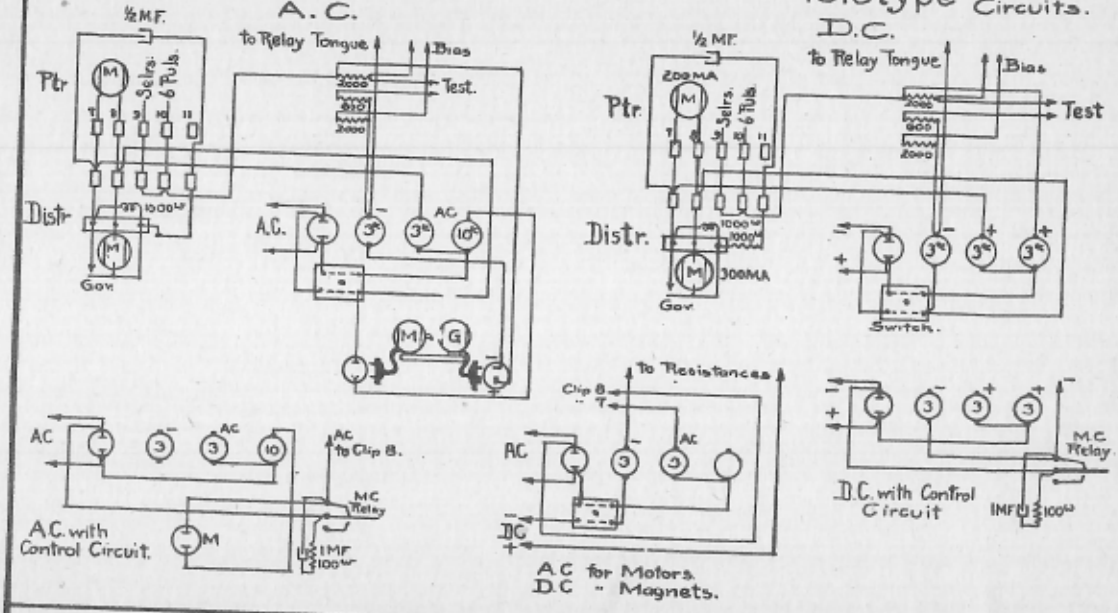


JWD 11-10-31

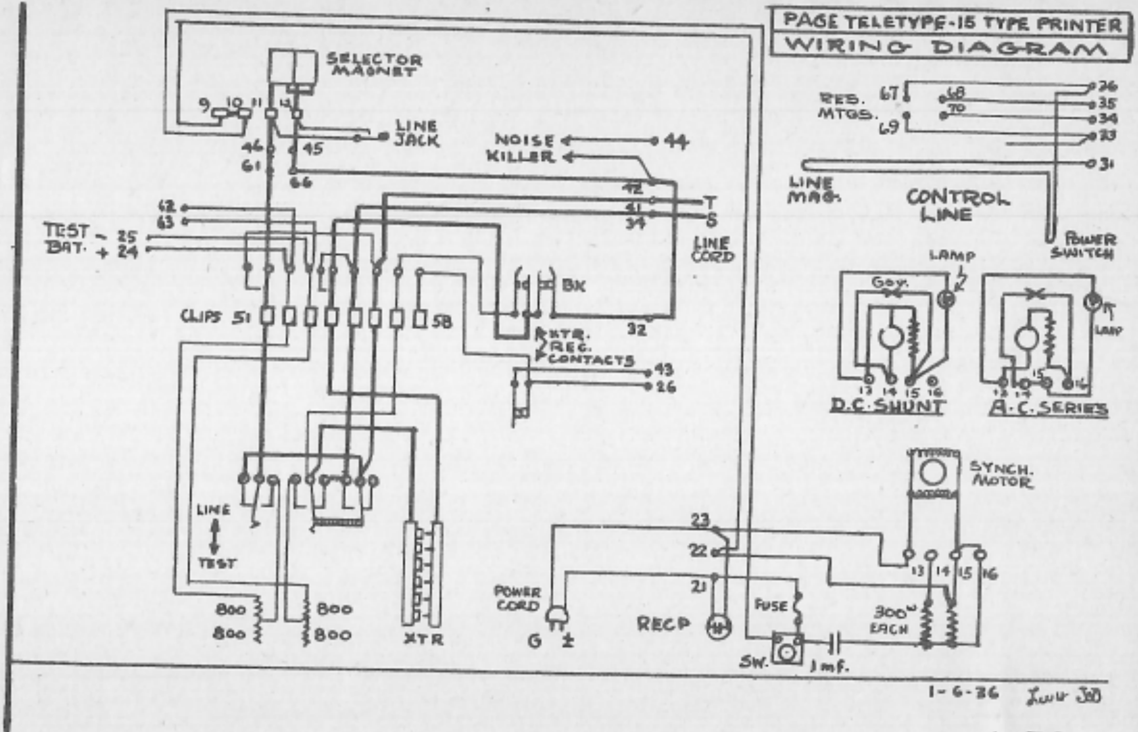
151

Model 12 Page Printer.

Teletype Power Circuits.



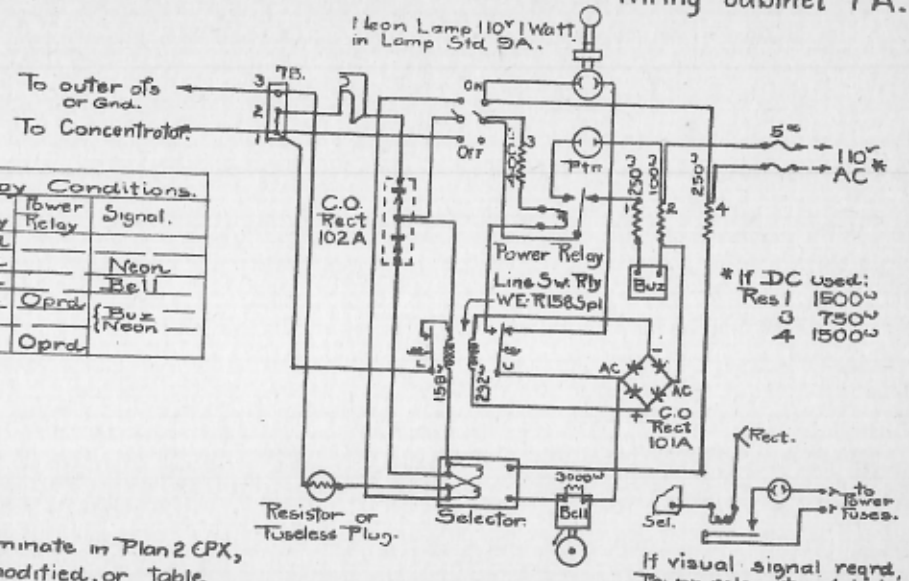
PAGE TELETYPE-15 TYPE PRINTER
WIRING DIAGRAM



1-6-36

L56

Wiring Cabinet 7A.



Line & Relay Conditions.				
Switch	Line	L.S Relay	Tower Relay	Signal.
Off	Idle(+)	Oprd.		
"	Busy(-)	Rlsd.		Neon
"	Called	Oprd.		Bell
On	Idle(+)	Held.	Oprd.	{Buz. Neon
"	Busy(-)	Rlsd.		
"	Oprg(-)	Held.	Oprd.	

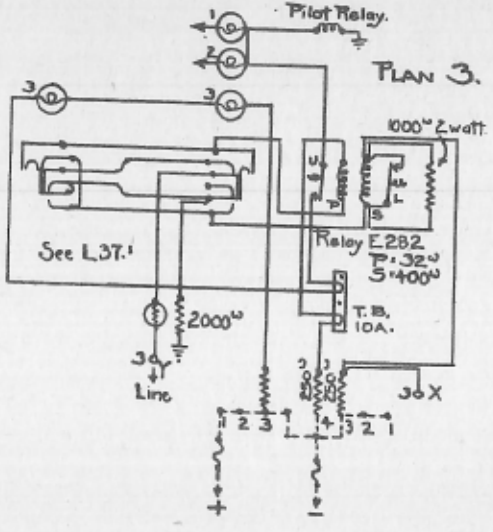
Spec 3617
Dwg 58528.

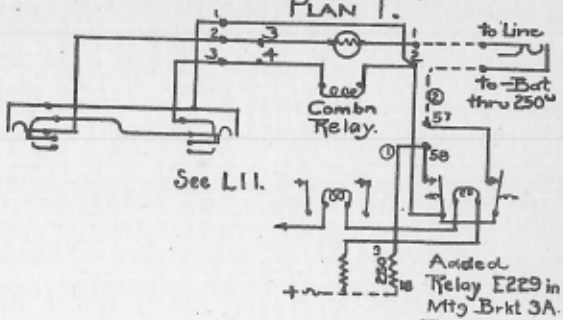
Circuit must terminate in Plan 2 CPX, Plan 1 or 3 CPX modified, or Table with Wrg Cab 23A.

If visual signal reqrd, Tower relay, Twist lock & 120V 15W Lamp in Lamp Std 9A replaces bell.

JWD
3-7-39

Teleprinter Concentrator
Reverse Battery Operation





If CPX local is −, transpose wires ① & ② & apply + at swbd.

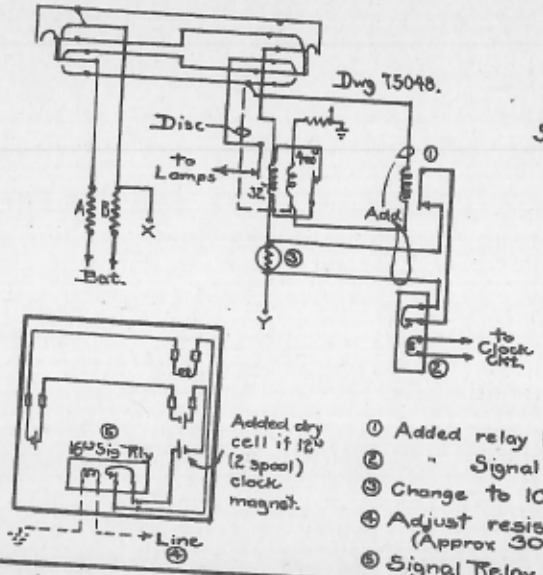
See Spec 4385 for detail of changes
Dwg 81054 Plan 1 - 110 Volt
78716 " 1 - 160 "
62768 " 3.

JWD
3-7-39

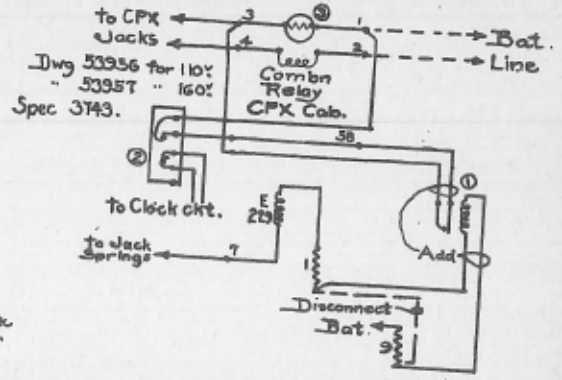
62

Teleprinter. Clock Synchronizing over Tpr Circuits.

CPX Plan 3



CPX Plan 1.

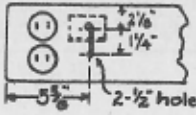


① Added relay E229 in Mtg. Brkt 3A with cover E1.
② " Signal Relay 4ω 3C or 5ω 3D at Time Svc. swbd.
③ Change to 1000ω for 110v; 1500ω for 160v.
④ Adjust resistance at outer Tpr to give 55MA (Approx 300ω for 110v: 700ω for 160v.
⑤ Signal Relay 16ω 3C or 3D added to each clock.

JWD 11-29-39

101

Wiring Cabinet 2B.2D or 2R.



Dwg 76228.

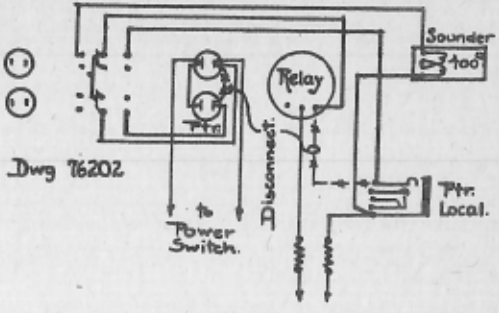
2 Switches C.H.8375 modified per 76201.
1 Separator #10784.
1 Handle 10785.

Table 32A or 32K.

Dwg 76227.

Switch Unit 10790,
consisting of:
2 Switch C.H.8375 mod. per 76201.
1 Separator 10784.
1 Handle 10785.
1 Plate, blank, brass.
1 Outlet box. Gem 3"×2"×2½" deep.

Teleprinter. Sounder Calling 32 Type Tables.



Dwg 76202

Sounder located at right rear corner as shown on L.5 & L10. Remove toggle switch for time, if installed. (See L10)

RELAY ADJUSTMENTS FOR 8-A WIRING CABINET

The Selector Relay W.E. B-33 shall be adjusted as follows: The upper left relay set screw, as viewed from the front of the relay shall be adjusted until the armature has an even air-gap in its drawn up position (when projecting boss on armature rests against the core) Adjust the black tip set screw, upper right, as viewed from the front of relay, for an armature travel of .004 in. Adjust the spring tension set screw, lower left as seen from the front of relay, to a point where the armature will not be drawn to the core when the relay coil draws less than 28 M.A.

103

To inspect Selector Relay W.E. B-33 for proper operation, insert the test set between the lower terminal of the rectifier and the selector relay. Place the operating switch in the OFF position. Apply 110 volts negative through a variable resistor to the Line In terminal and connect ground to the Line Out terminal of the Connecting Block 7-B. Adjust the variable resistor for 48 M.A. line current when the Morse key is in the closed position. The relay W.E. B-33 should now be capable of following signals of the Morse key. Note this visually. Remove test equipment after inspection.

65-X

Relay W.E. R-158 Special

Vertical Position

Operate On	21 Mils
Release On	11 Mils

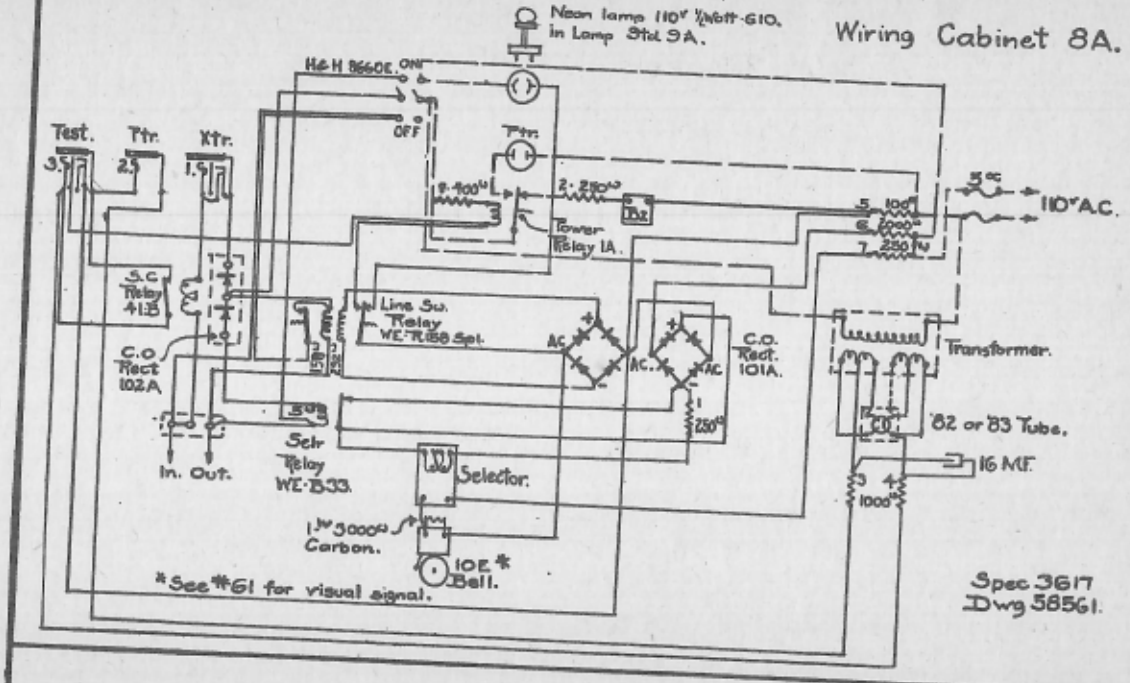
Horizontal Position (Lifting Full Weight of Armature)

Operate On	24 Mils
Release On	14 Mils

Horizontal Position (Weight of Armature Aiding)

Operate On	14 Mils
Release On	9 Mils

Wiring Cabinet 8A.



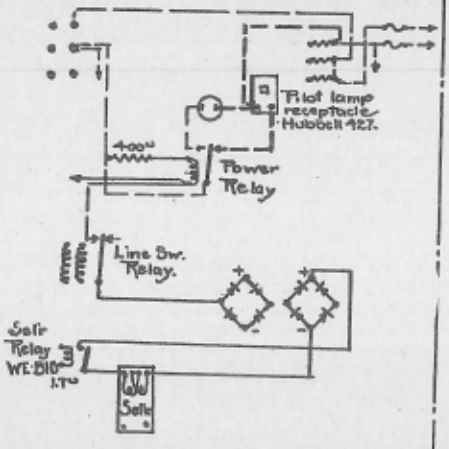
JVA 8-20-40.

107

Wiring Cabinet 8A.

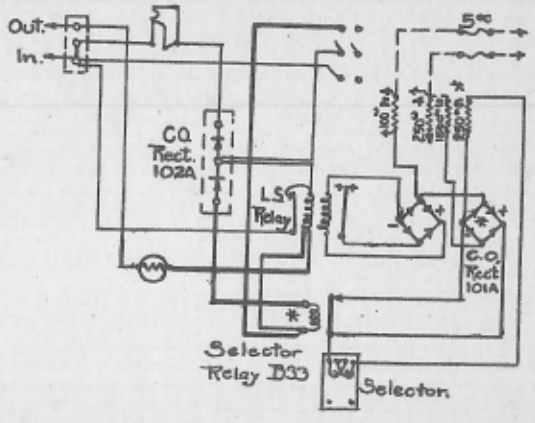
Per 58561 A 2.

Have Pilot light & Selector circuits wired as below.



Wiring Cabinet 7B.

* Has Selector Relay & added C.O. Rectifier 101A



If visual signal required, install per 8-61 but use 6A Lamp 5Ω instead of 3A & Twistlock.

JWD 5-20-40

SPEC. 5004-C
31-C N.Y. DWG. 89142-C-1
32-C N.Y. DWG. 92359-C-1
41-C N.Y. DWG. 89143-C-1

RELAY SUB BASE ADAPTERS 31-C, 32-C, 41-C

32-C

31-C

BOTTOM VIEW

41-C

SPEC. 5004-C
42-C N.Y. DWG. 89144-C-1
51-C N.Y. DWG. 89145-C-1

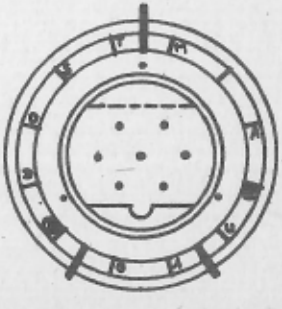
RELAY SUB BASE ADAPTERS 42-C 51-C

111

51-C

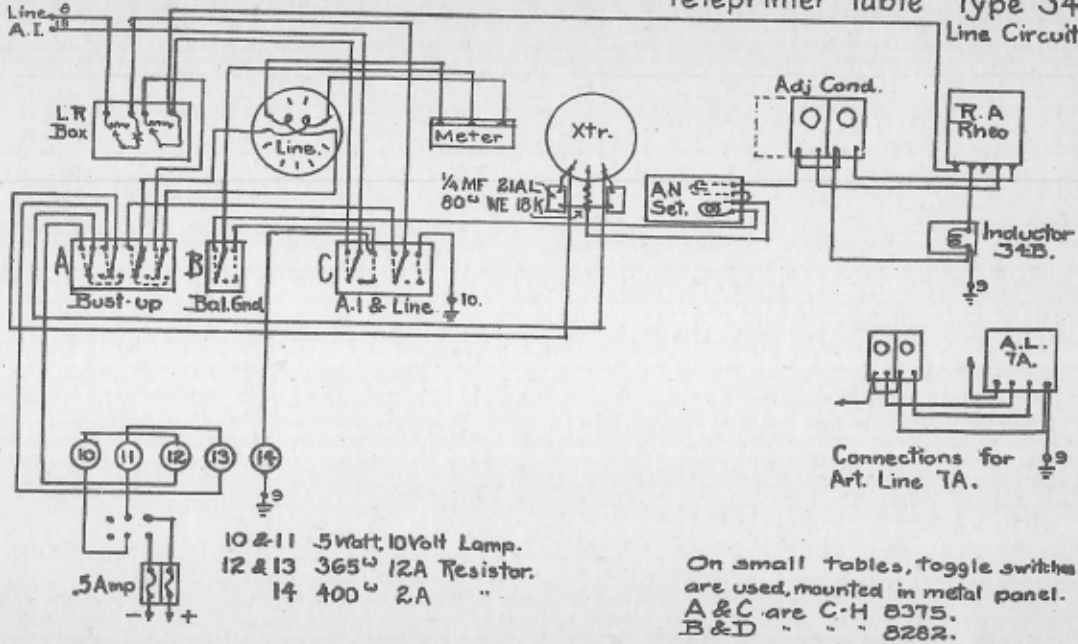
BOTTOM VIEW

42-C
FOR 41 RELAY ON 34 TABLE



CER
9-8-41
68

Teleprinter Table Type 34
Line Circuits

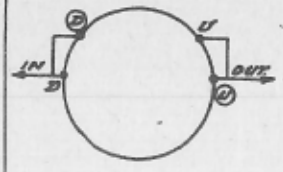


On small tables, toggle switches are used, mounted in metal panel.
A & C are C-H 8375.
B & D " " " 8282.

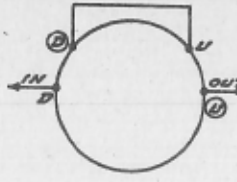
JWA
2-25-43

WIRING OF RELAY SUB-BASE

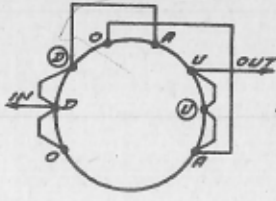
LINE COILS IN MULTIPLE



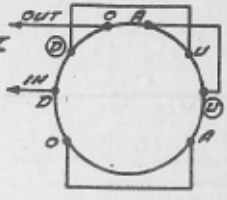
LINE COILS IN SERIES



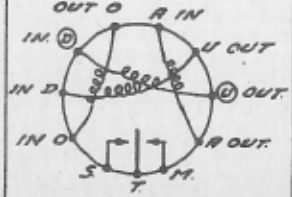
ALL COILS IN MULTIPLE



ALL COILS IN SERIES



WIRING OF RELAY COILS.



NOTE: CONNECTIONS SHOWN IN BASE ARE IN RELAY.

WHEATSTONE RELAY TYPE	NO. OF TURNS: LINE	AUX.	RESISTANCE LINE	AUX.
1-A	4600	2380	300	200
1-B	4000	—	110	—
1-C	4760	2380	300	200
1-D	4760	2380	300	200
1-E	3000	1500	120	80
1-F	3000	1500	120	80
1-G	4160	2080	225	160
POLAR 17-B.	4000	2000	275	225

Positive battery applied to "IN." side of any winding will actuate armature to left hand (spacing) side.
D-U and ⓓ-ⓤ main line windings
O-O opposing windings.
A-A accelerating windings.
The main line coils D-U & ⓓ-ⓤ are identical in the number of turns and resistance.
The auxiliary coils O-O & A-A are identical in the number of turns and resistance.

WHEATSTONE & 178 RELAYS
CONNECTIONS & COIL DATA
B-1-7-44. L-604-1.

Teleprinter Table Type 34
Local Circuits.

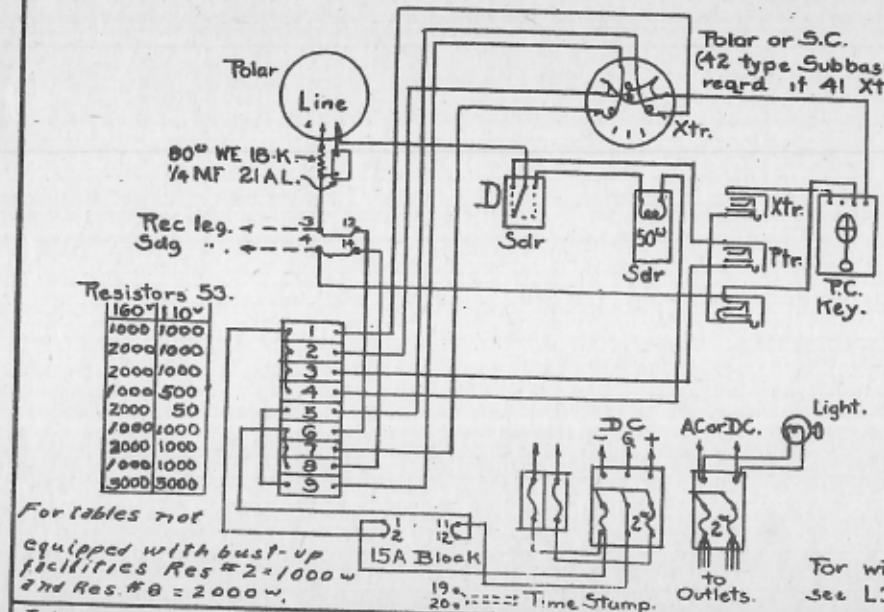
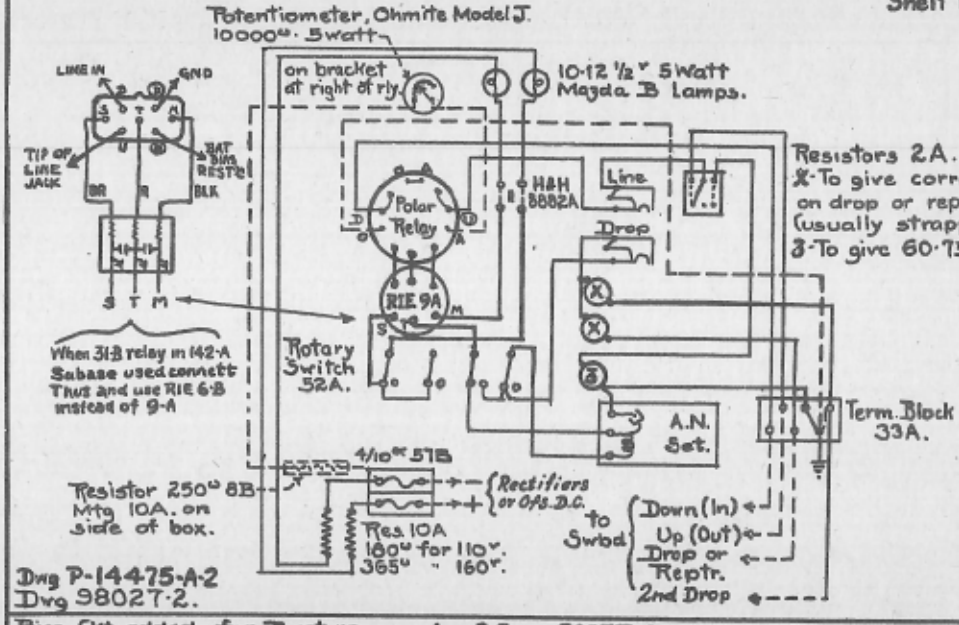


Table of resistors revised per Dwg 94673-0 5-10-43.

JWA
2-25 43

117

PPBU Set. Shelf Mounted.



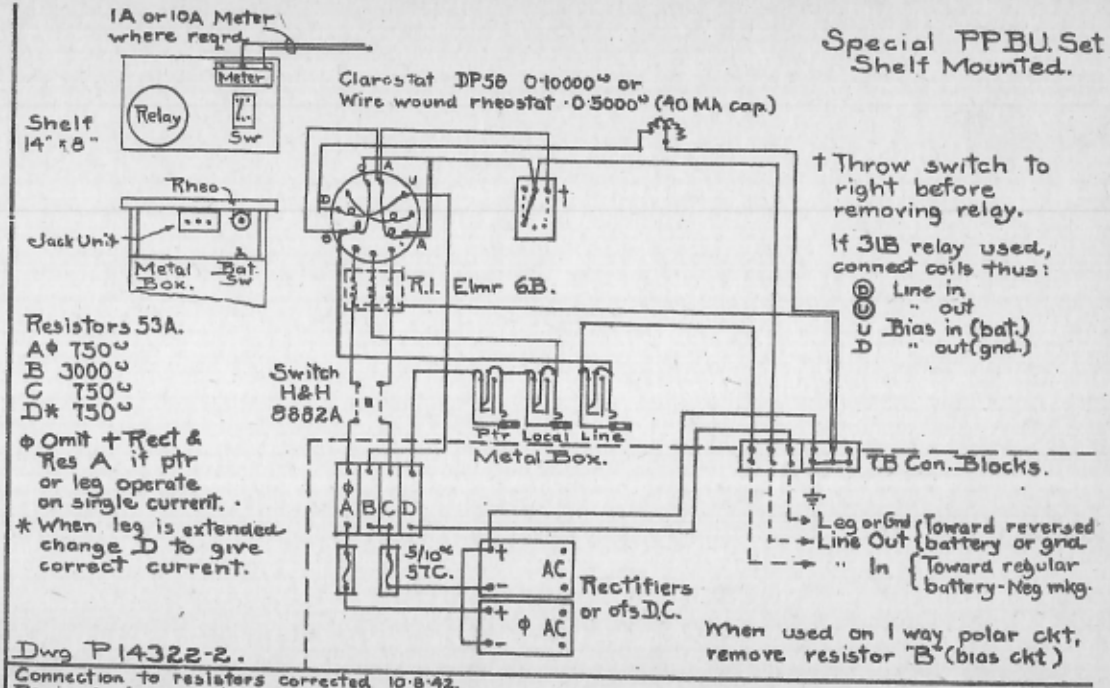
Dwg P-14475-A-2
Dwg 98027-2.

Bias Ckt added for Bust-up opn. Apx 2 Spec 2667B-6-1-43.
Provision for Second Drop added per Dwg 102472 " " " " 3-10-44 CEW
RIE added per Dwg 98029-A-2 Apx-1 Spec. 2667-B. 3-10-44. CEW.

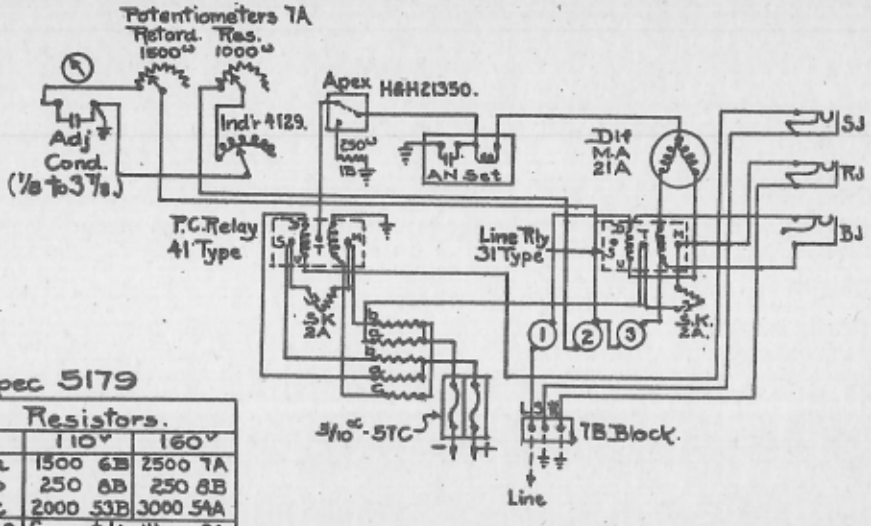
JWD 8-10-42

71B

Special PPBU. Set Shelf Mounted.



Duplex 11-B



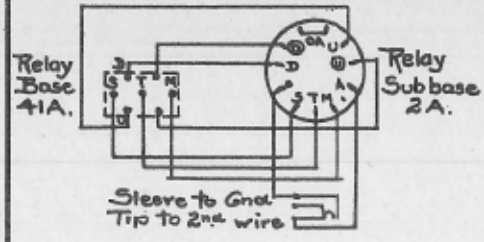
Spec 5179

Resistors.		
	110V	160V
a	1500 6B	2500 7A
b	250 6B	250 6B
c	2000 53B	3000 54A
1&3	Current Limiting 2A	
2	Artificial Line 2A	

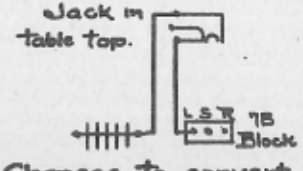
JWD 5-25-43

125

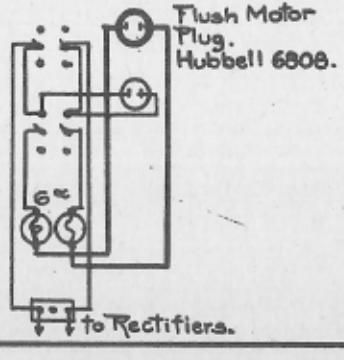
Adapter for 2 wire E.C. Neutralization.



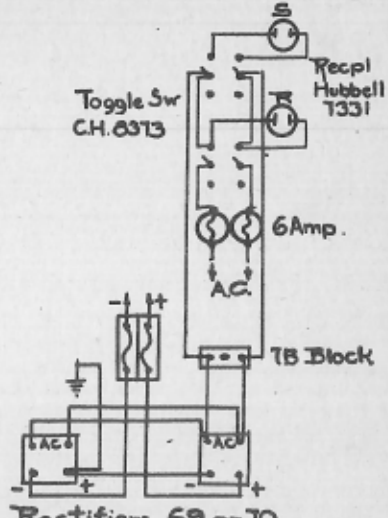
Spec 5179 & 6052.



Changes to convert W.C. 11B or 13A to " 12A " 14A for use in Mobile Tgh Ofs.



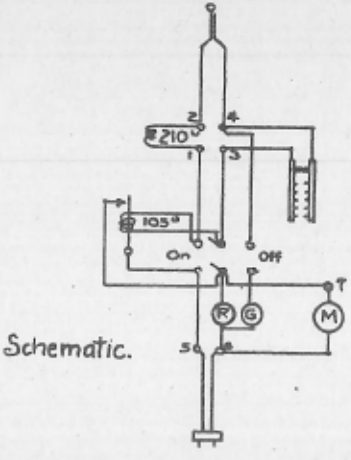
Wiring Cabinets 11B & 13A Rectifier Connections



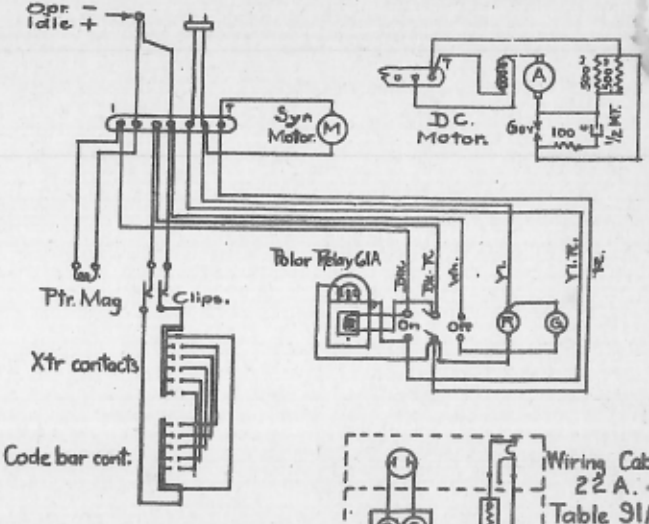
JAD 5-25-43

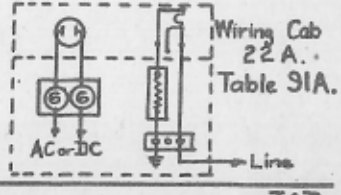
74

Teleprinter 101
61A Control.



Schematic.



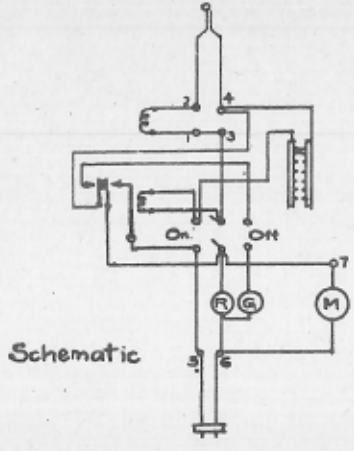


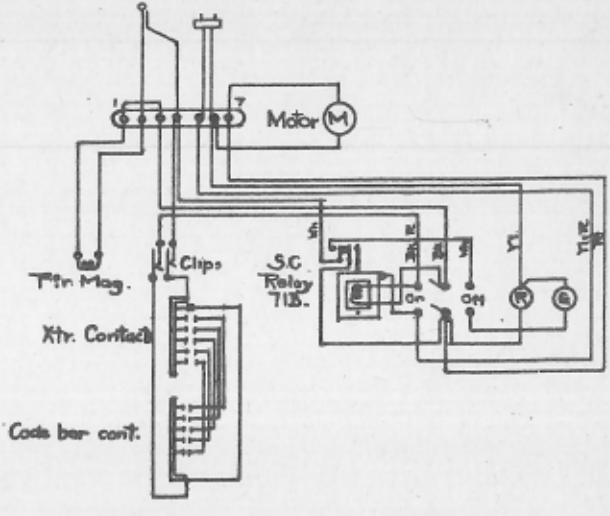
from dwg 57794 A.C.
" 57795 D.C.

10-11-37

101

Teleprinter 101
71A Control.





from dwg 57796 D.C.
" " 57797 A.C.

JVA 10-12-37

Teleprinter 102

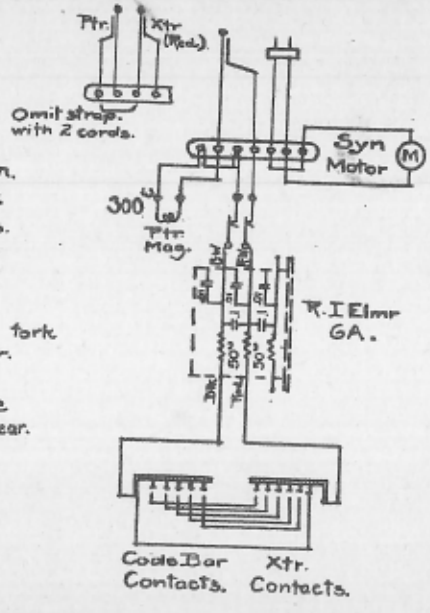
131

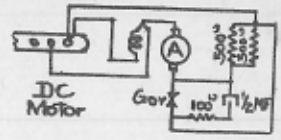
Speeds:

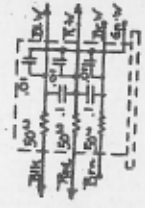
Motor (DC or 60~)	1800 - 7 tooth pinion.	
Main Shaft	420-30 -	gear.
Xtr -	420-24-24	gears.
Pilot -	390-26-28	"

To check speed, use 168 VPS fork on 24 tooth Main shaft gear.

With 50~ Motor, (1500 R.P.M) use 7 tooth pinion & 25 tooth gear.







* Ends taped.

R.I. Elmr 6B.

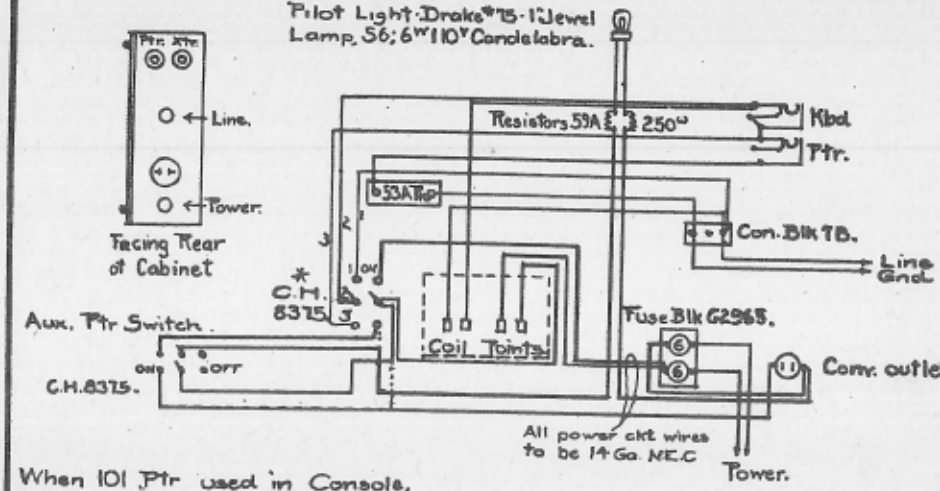
12-18-39 Note changed. Speed data added.
10-17-40 6B Elmr Added.

N.Y dwg 57848-AC.
57847-DC.

3-17-39

103B

Teleprinter 102.
Console 1A-Wiring Cab 30A



When 101 Ptr used in Console, remove Motor Control 61 or 71, & wire ptr as 102. with 2 cords.

*When 1.5 motor control used, reverse wires 1 & 2, disconnect & tape 3, and connect flexible lead to post 3.

N.Y. dwg 76144.

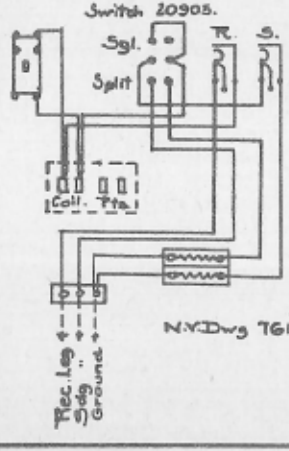
11-30-39 Changed to short Kbd when idle.
10-17-40 " for 15 Unit & Aux Sw. added.
6 8 42 - per 76144 J 2

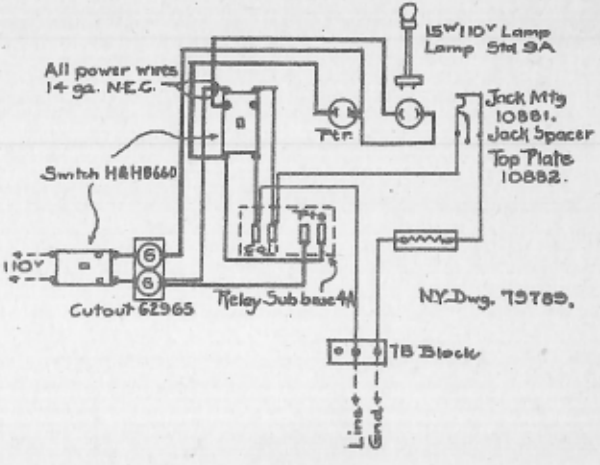
JWD 3-17-39

Teleprinter 102. Wiring Cals 29A (Table 101.)

135

Changes for Split Ptr. Operation.





JWD
12-18-29

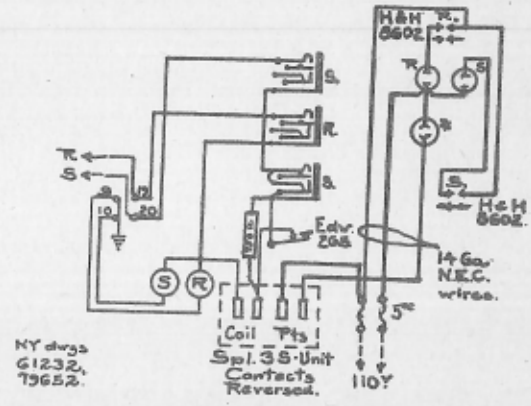
Telemeter Service.

Wiring Cabinet 27A & 37A.

Wiring Cab. 27A (Right-hand) used on:
Table T200 (2 Tape ptrs) various colors.
" T201 (2 " " Tobacco brown.
† " P200 (2 Page ") various colors.

Wiring Cab. 37A (Left-hand) used on:
Table P201 (2 Page ptrs) Tobacco brown.

† First P200 tables had wrg Cab 25A for 101 Ptrs with modified 61A motor control.



* Twist lock for 3A Lamp Std. & red light.
S & R resistors to give 65 MA.

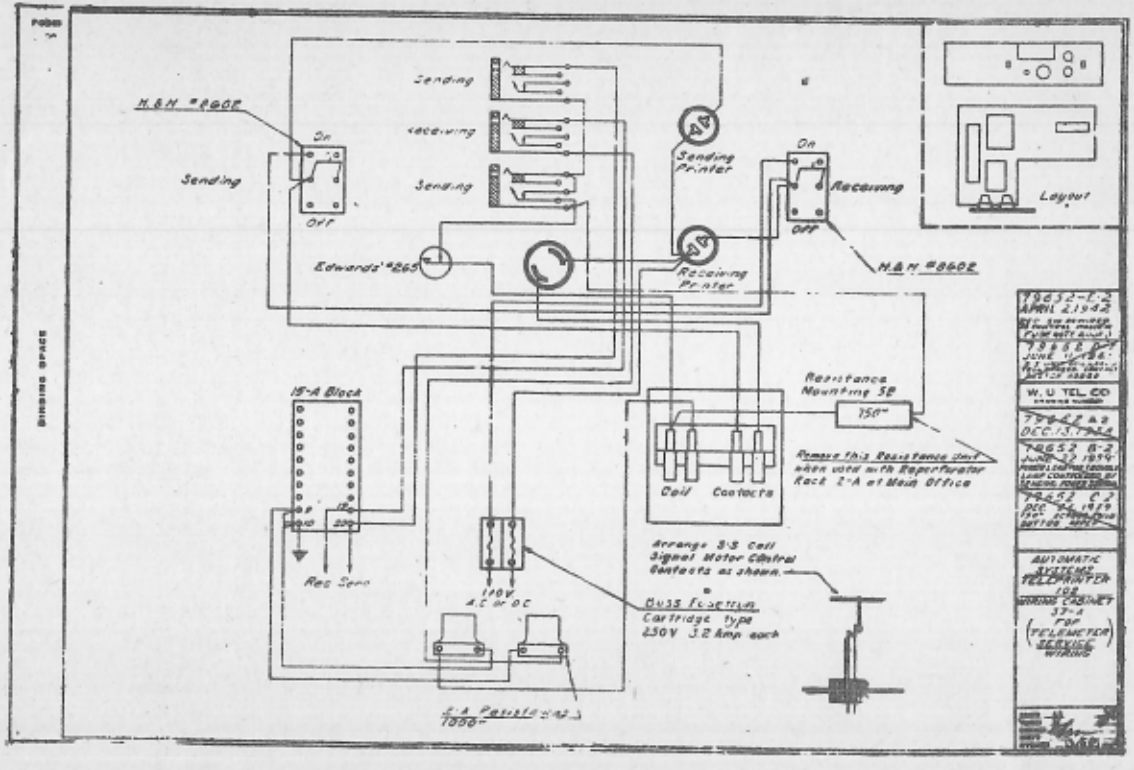
Sheets 201 & 202 now obsolescent.

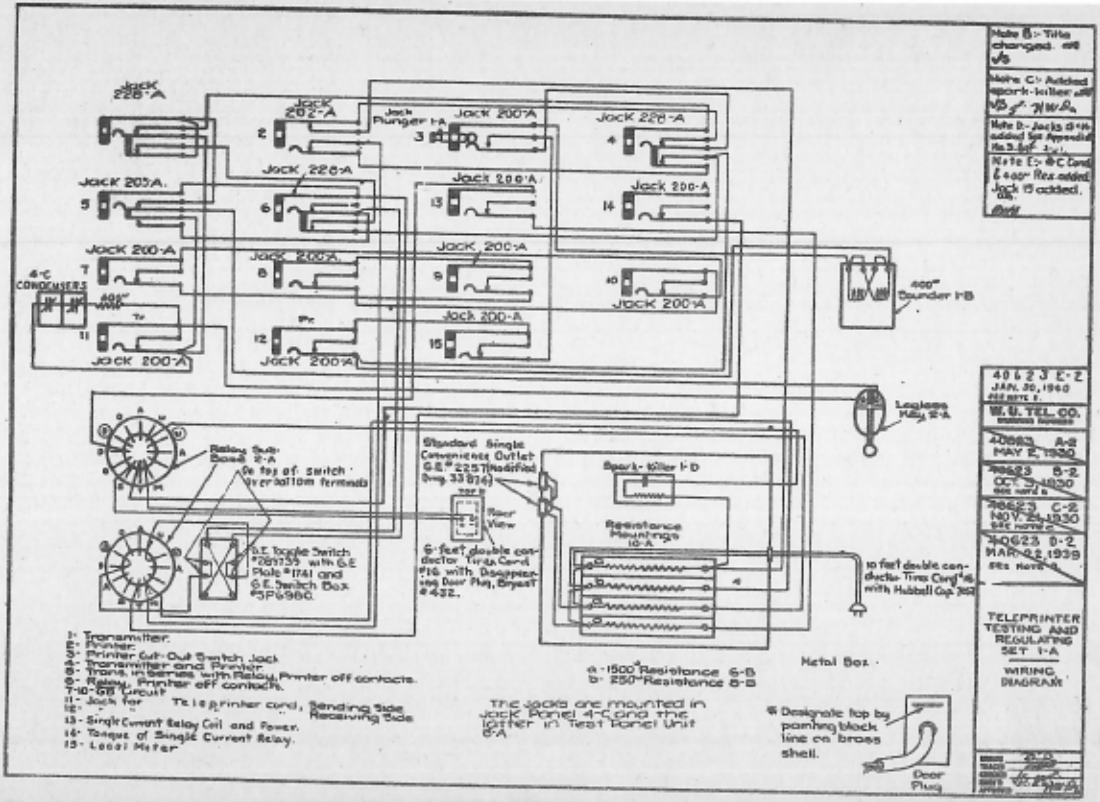
3-13-41. 750Ω shunt added across push button.

JWD 12-18-39

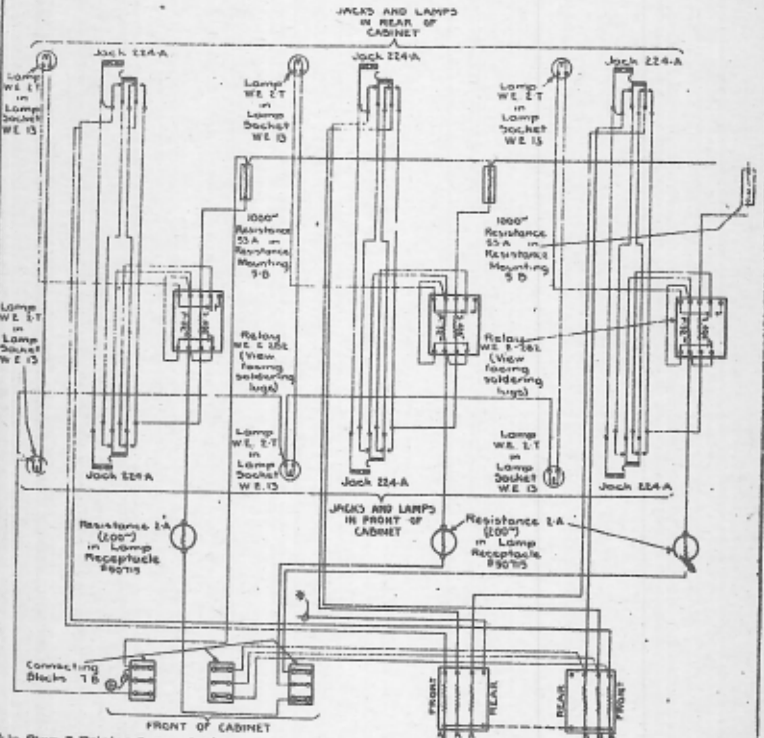
106A

137


H & H #800F
On
Sending
Off
Sending
receiving
Sending
Sending Printer
On
Receiving
Off
H & H #860E
Edwards' #265
Receiving Printer
Layout
15-A Block
Rec Send
Resistance Mounting SB
750Ω
Remove this Resistance unit when used with Reperforator Rack 2-A at Main Office
Coil
Contacts
Arrange 3-S Coil Signal Motor Control Contacts as shown.
Buss Fuse Co.
Cartridge type
250V 3.2 Amp each
120V A.C. or D.C.
AUTOMATIC SYSTEMS TELEPRINTER
37-A
TYP
(TELEMETER)
SERVICE WIRING
W. U. TEL. CO.


Note B:- Title changed.
Note C:- Added spark-killer
Note D:- Jacks 13 & 14 added See Appendix No. 3
Note E:- 4-C Cond. & 400 ohm Res. added. Jack 15 added.
Jack 228-A
Jack 202-A
Jack Plunger 1-A
Jack 200-A
Jack 228-A
Jack 205-A
Jack 228-A
Jack 200-A
Jack 200-A
Jack 200-A
Jack 200-A
Jack 200-A
Jack 200-A
Jack 200-A
Jack 200-A
Jack 200-A
4-C Condensers
400 ohm
400 ohm Sounder 1-B
Legless Key 2-A
Relay Sub-Base 2-A
On top of switch over bottom terminals
G.E. Toggle Switch #281739 with G.E. Plate #1741 and G.E. Switch Box #5P6980.
Standard Single Convenience Outlet G.E. #2257 (Modified Dwg. 33874)
Rear View
6-feet double conductor Tirex Cord #16 with Disappearing Door Plug, Bryant #432.
Spark-killer 1-D
Resistance Mountings 10-A
10 feet double conductor Tirex Cord #16 with Hubbell Cap 7057
Metal Box
1- Transmitter.
2- Printer.
3- Printer Cut-Out Switch Jack
4- Transmitter and Printer.
5- Trans. in series with Relay, Printer off contacts.
6- Relay, Printer off contacts.
7-10- GB Circuit
11- Jack for Tr. & Printer cord, Sending Side
12- " " " " Receiving Side
13- Single Current Relay Coil and Power.
14- Tongue of Single Current Relay.
15- Local Meter
a- 1500 ohm Resistance 6-B
b- 250 ohm Resistance 8-B
The jacks are mounted in Jack Panel 4-C and the latter in Test Panel Unit 8-A
Designate top by painting black line on brass shell.
Door Plug
40623 E-2 JAN. 30, 1940 SEE NOTE E.
W. U. TEL. CO.
40623 A-2 MAY 2, 1930
40623 B-2 OCT. 3, 1930 SEE NOTE B
40623 C-2 NOV. 21, 1930 SEE NOTE C
40623 D-2 MAR. 22, 1939 SEE NOTE D
TELEPRINTER TESTING AND REGULATING SET 1-A
WIRING DIAGRAM

143



* In Plan 3 Printer Concentrator Cabinets 1-B and 1-C, this wire is included in hand form to bakelite block on Pilot Relay mounting. Pass wire through one hole and back through other and tie.

⊕ This strap connection used in Printer Condencentrator Cabinet 1-A only.

Resistances 6-B, 7-A and 8-B in Resistance Mounting 6-A

VOLTAGE	110"		160"	
A	1500"	6-B	2500"	7-A
B	150"	8-B	250"	8-B

Heavy dotted lines indicate wiring to be in accordance with N.E. Code Rules for low potential systems. Use Stranded Instrument wire for all other wiring.

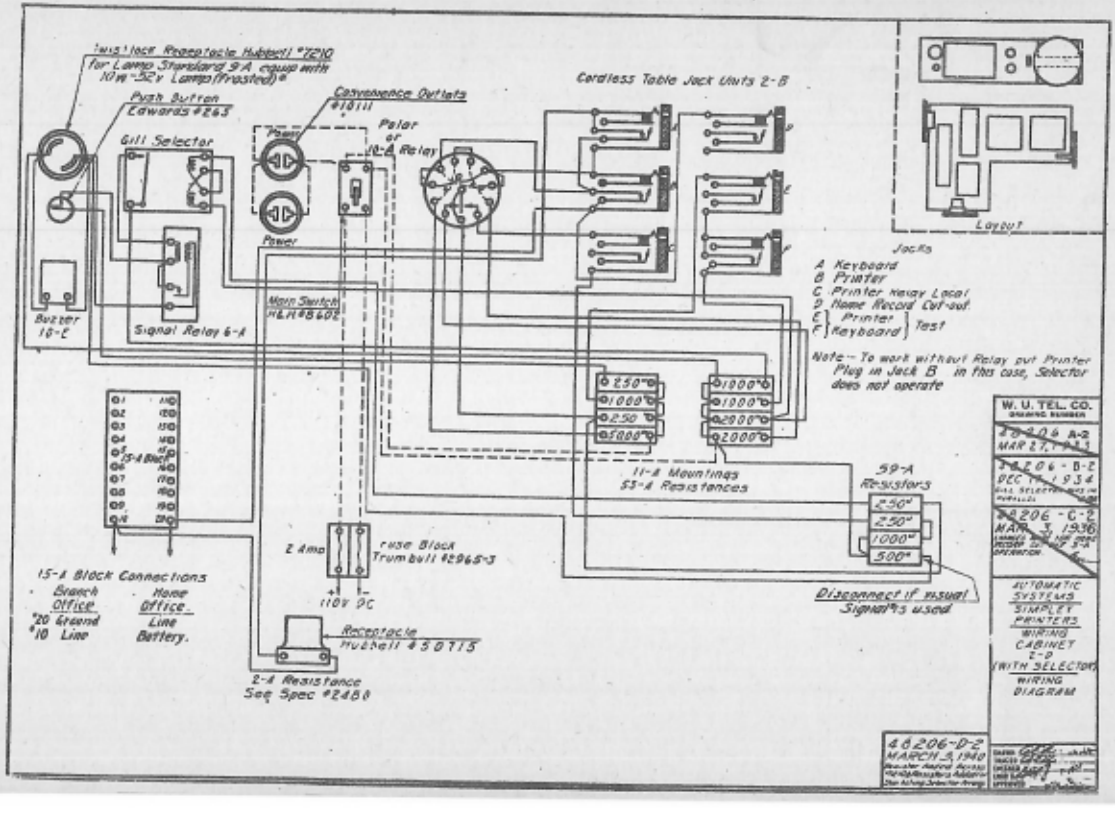
Note B
* ⊕ Notes added. Title changed. Lead was on right hand end of fuse.
EAD

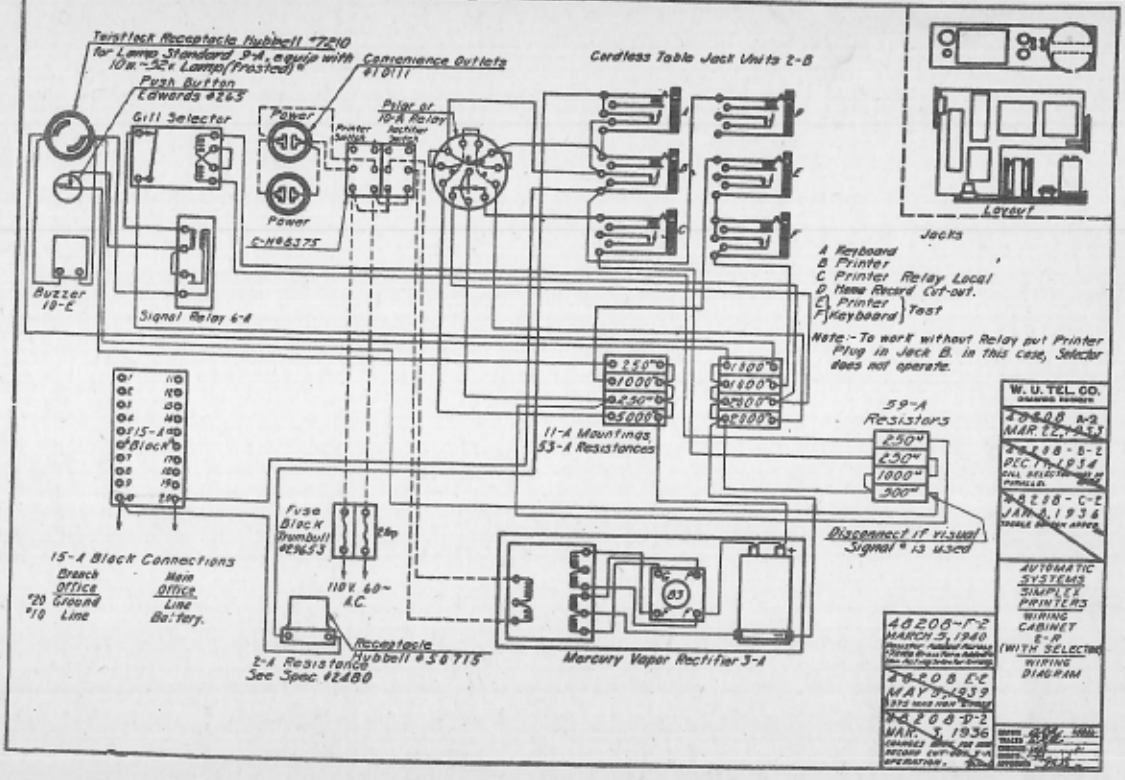
Note C :- 1-C added in title and * note.
EAD

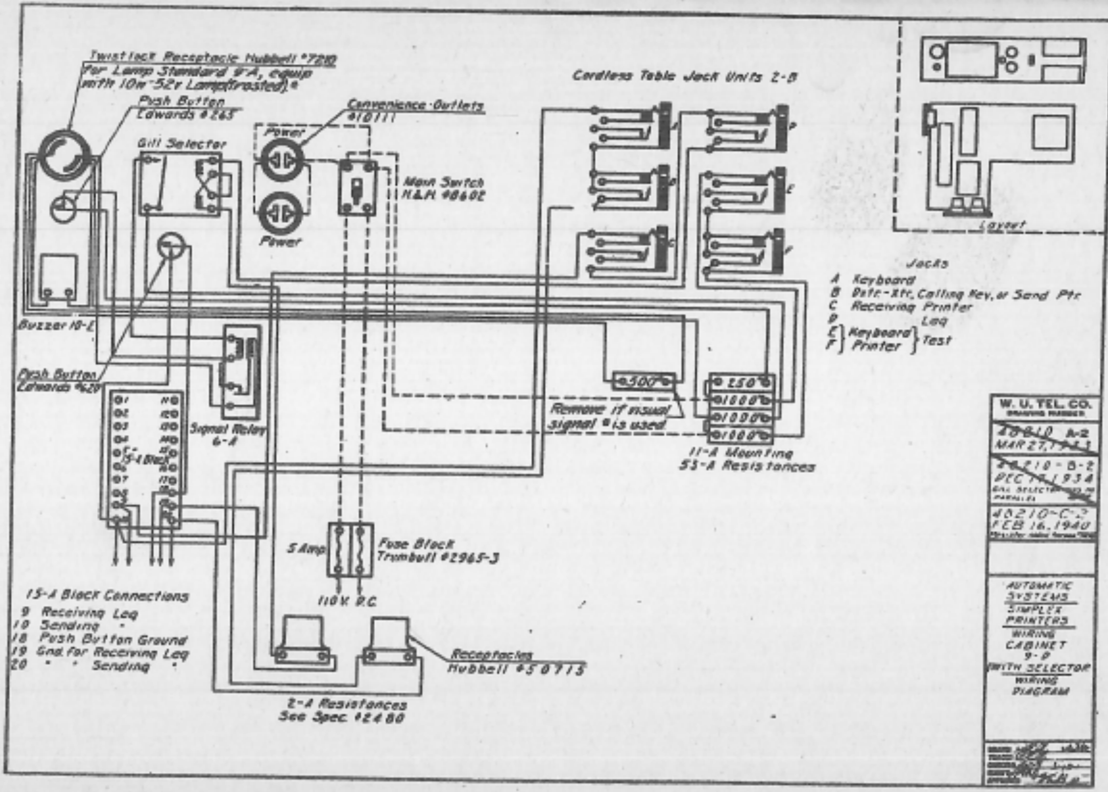
W. U. TEL. CO.
DRAWING NUMBER
51069 — A-2 OCT. 23, 1933
51069 — B-2 JUNE 28, 1934 SEE NOTE "B"
51069 — C-2 MAY 17, 1937. SEE NOTE C.

PLAN 3
CONCENTRATOR CABINET
1-A, 1-B & 1-C
WIRING

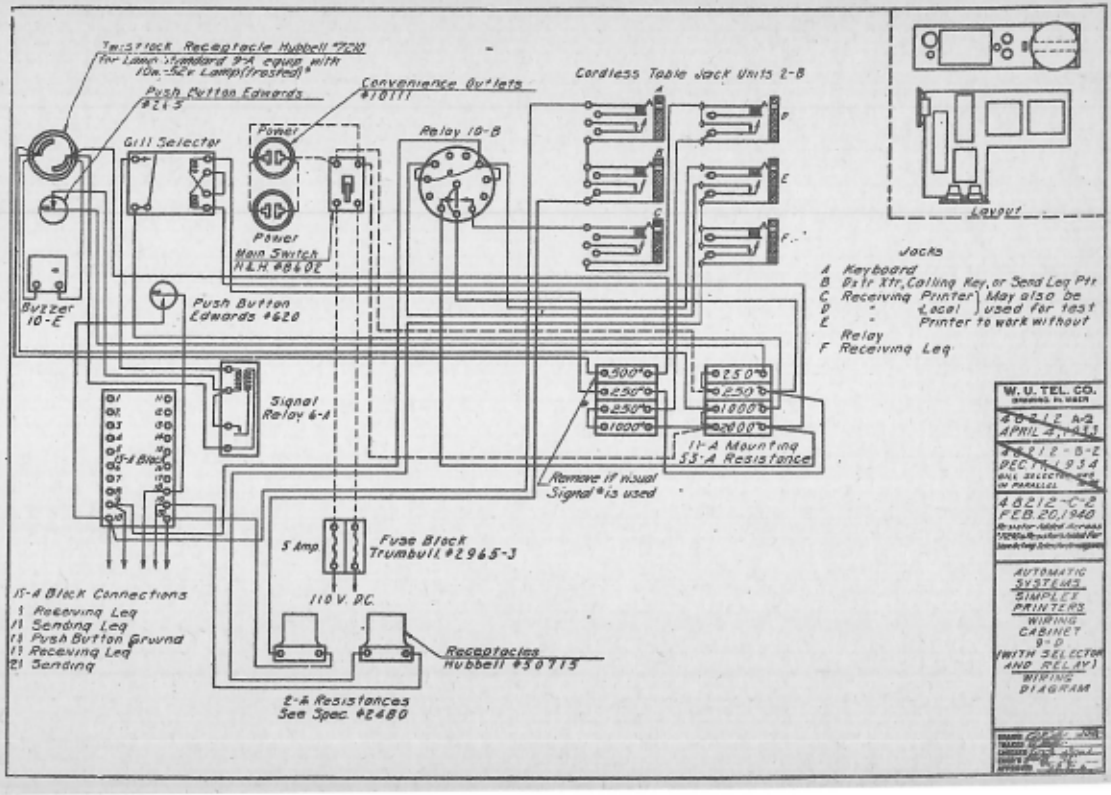
DRAWN
TRACED
CHECKED
DRAFT
APPROVED

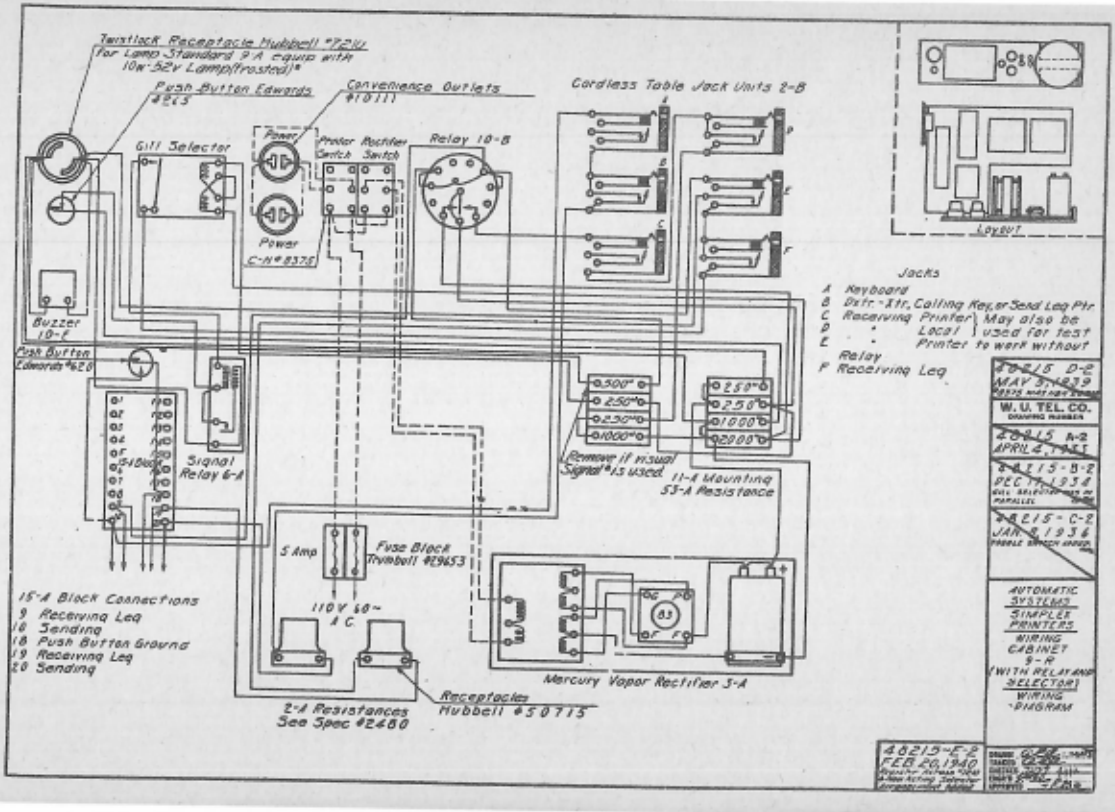

Twist lock Receptacle Hubbell #7210
for Lamp Standard 9A equip with
10w-32v Lamp (frosted)
Push Button
Edwards #263
Gill Selector
Buzzer
16-E
Signal Relay 6-A
Convenience Outlets
#10111
Polar
Power
Polar
of
16-A Relay
Main Switch
HLH #8602
Cordless Table Jack Units 2-B
Jacks
A Keyboard
B Printer
C Printer Relay Local
D Home Record Cut-out
E Printer
F Keyboard
Test
Note -- To work without Relay put Printer
Plug in Jack B in this case, Selector
does not operate
Layout
.250"
1000"
250
5000"
1000"
1000"
2000"
2000"
11-A Mountings
55-A Resistances
59-A
Resistors
2.50"
2.50"
1000"
500"
15-A Block
01 A10
02 B10
03 C10
04 D10
05 A20
06 B20
07 C20
08 D20
09 A30
10 D30
15-A Block Connections
Branch Office
#20 Ground
#10 Line
Home Office
Line
Battery.
2 Amp
Fuse Block
Trumbull #2965-3
110V DC
Receptacle
Hubbell #30715
2-A Resistance
See Spec #2468
Disconnect if visual
Signal is used
W. U. TEL. CO.
DRAWING NUMBER
46206 A-2
MAR 27, 1933
46206 - B-2
DEC 14, 1934
46206 - C-2
MAR 3, 1936
AUTOMATIC
SYSTEMS
SIMPLEX
PRINTERS
WIRING
CABINET
2-D
(WITH SELECTOR)
WIRING
DIAGRAM
46206-D-2
MARCH 3, 1940


Twistlock Receptacle Hubbell #7210
for Lamp Standard 9-A, equip with
10w-32v Lamp (Frosted)
Push Button
Edwards #263
Grill Selector
Convenience Outlets
#1 0111
Cordless Table Jack Units E-B
Power
Printer Switch
Rectifier Switch
Prior or
10-A Relay
Power
C-H66375
Buzzer
10-E
Signal Relay 6-A
Layout
Jacks
A Keyboard
B Printer
C Printer Relay Local
D Home Record Cut-out.
E Printer
F Keyboard
Test
Note:- To work without Relay put Printer
Plug in Jack B. In this case, Selector
does not operate.
15-A
Block
11-A Mountings
53-A Resistances
59-A
Resistors
250w
250w
1000w
500w
Disconnect if Visual
Signal is used
15-A Block Connections
Branch
Office
#20 Ground
#10 Line
Main
Office
Line
Battery.
Fuse
Block
Trumbull
#2653
25 Amp
110V 60~
A.C.
Receptacle
Hubbell #5815
2-A Resistance
See Spec #2480
Mercury Vapor Rectifier 3-A
W. U. TEL. CO.
48208 A-2
MAR. 22, 1933
48208-B-2
DEC. 1, 1934
48208-C-2
JAN. 2, 1936
AUTOMATIC
SYSTEMS
SIMPLEX
PRINTERS
WIRING
CABINET
E-B
(WITH SELECTOR)
WIRING
DIAGRAM
48208-F-2
MARCH 5, 1940
48208 E-2
MAY 9, 1939
48208-D-2
MAR. 5, 1936

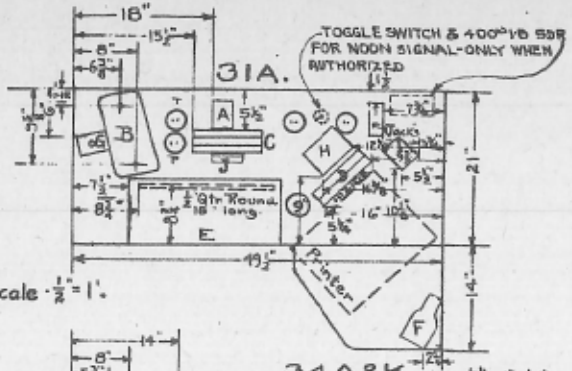


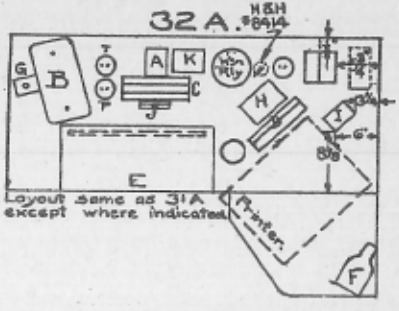
Twistlock Receptacle Hubbell #7210
For Lamp Standard 9-A, equip with 10w-52v Lamp (frosted).*
Push Button Edwards #265
Gill Selector
Power
Convenience Outlets #10111
Power
Main Switch H.&H. #8602
Cordless Table Jack Units 2-B
Layout
Jacks
A Keyboard
B Dstr.-Xtr, Calling Key, or Send Ptr
C Receiving Printer
D Leg
E Keyboard
F Printer
Test
Buzzer 10-E
Push Button Edwards #620
Signal Relay 6-A
15-A Block
500
250
1000
1000
1000
Remove if visual signal * is used
11-A Mounting
53-A Resistances
5 Amp
Fuse Block Trumbull #2965-3
110 V. D.C.
15-A Block Connections
9 Receiving Leg
10 Sending "
18 Push Button Ground
19 Gnd. for Receiving Leg
20 " " Sending "
Receptacles Hubbell #50713
2-A Resistances
See Spec. #2480
W. U. TEL. CO.
DRAWING NUMBER
40210 A-2
MAR 27, 1931
40210-B-2
DEC 1, 1934
40210-C-2
FEB 16, 1940
AUTOMATIC SYSTEMS
SIMPLEX PRINTERS
WIRING CABINET 9-D
WITH SELECTOR
WIRING DIAGRAM

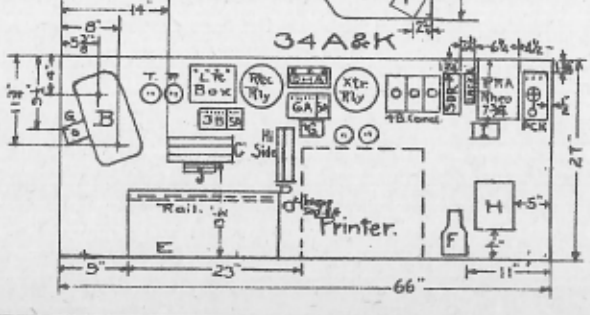

Twist lock Receptacle Hubbell #7210
for Lamp Standard 9-A equip with
10w-32v Lamp (frosted)
Push Button Edwards
#214-S
Convenience Outlets
#10111
Cordless Table Jack Units 2-B
Grill Selector
Power
Power
Main Switch
N.L.H. #8602
Relay 10-B
Buzzer
10-E
Push Button
Edwards #620
Signal
Relay 6-A
15-A Block
11-A Mounting
55-A Resistance
Remove if usual
Signal is used
5 Amp
Fuse Block
Trumbull #2965-3
110 V. D.C.
Receptacles
Hubbell #30715
2-A Resistances
See Spec. #2480
15-A Block Connections
1 Receiving Leg
11 Sending Leg
13 Push Button Ground
19 Receiving Leg
21 Sending
Layout
Jacks
A Keyboard
B Extr Attr, Calling Key, or Send Leg Ptr
C Receiving Printer } May also be
D " Local } used for test
E " Printer to work without
Relay
F Receiving Leg
W. U. TEL. CO.
48212-A-2
APRIL 4, 1939
48212-B-E
DEC. 7, 1939
48212-C-2
FEB. 20, 1940
AUTOMATIC
SYSTEMS
SIMPLEX
PRINTERS
WIRING
CABINET
9-D
(WITH SELECTOR
AND RELAY)
WIRING
DIAGRAM


Twistlock Receptacle Hubbell #721U
For Lamp Standard 9-A equip with
10w 52v Lamp (Frosted)
Push Button Edwards #2C5
Convenience Outlets #10111
Cordless Table Jack Units 2-B
Gill Selector
Power
Printer Rectifier Switch Switch
Relay 10-B
Power C-H #8375
Buzzer 10-F
Push Button Edwards #2C5
Signal Relay 6-A
Remove if visual Signal #13 used.
11-A Mounting 53-A Resistance
5 Amp
Fuse Block Trumbull #29653
110V 60~ A.C.
Mercury Vapor Rectifier 5-A
2-A Resistances See Spec #2460
Receptacles Hubbell #50715
Layout
Jacks
A Keyboard
B Distr.-Xtr. Calling Key or Send Leg Ptr
C Receiving Printer
D " Local
E " Printer to work without
F Receiving Leg
Relay
15-A Block Connections
9 Receiving Leg
16 Sending
18 Push Button Ground
19 Receiving Leg
20 Sending
48215-D-2 MAY 31-1939
W. U. TEL. CO.
48215-N-2 APRIL 4, 1941
48215-B-2 DEC. 1934
48215-C-2 JAN. 21936
AUTOMATIC SYSTEMS
SIMPLEX PRINTERS
WIRING CABINET B-F (WITH RELAY AND SELECTOR)
WIRING DIAGRAM
48215-E-2 FEB 20, 1940

Teleprinter Layout of Tables.







A Supvr Hook in non 'V' belted offices.
B Block for Mounting Time Stamp.
C Box, Tape Printer File 1A.
D " Sent Message " 1A.
E Gumming Desk
F Stamp, Bates Numbering.
G Stand, Message Clip 2C (non belt ofs.)
H Call Sig. & Motor Control Box 1-A
I Msge. Retr. 5-A. Non 'V' belted offices
J Card holder 40-A Non-belted offices
K Rheostat 18-A
L Sent Message File Box
† 'V' Belt ofs only.

SPEC. 1822-D. SUPP. #10

REVISED
A- 34 Table changed for Single printer - 3-3-37
31 " E rail dimension changed to 83/4" 3-13-41.
34 " Lamp Standard 8-A added. 3-13-41.

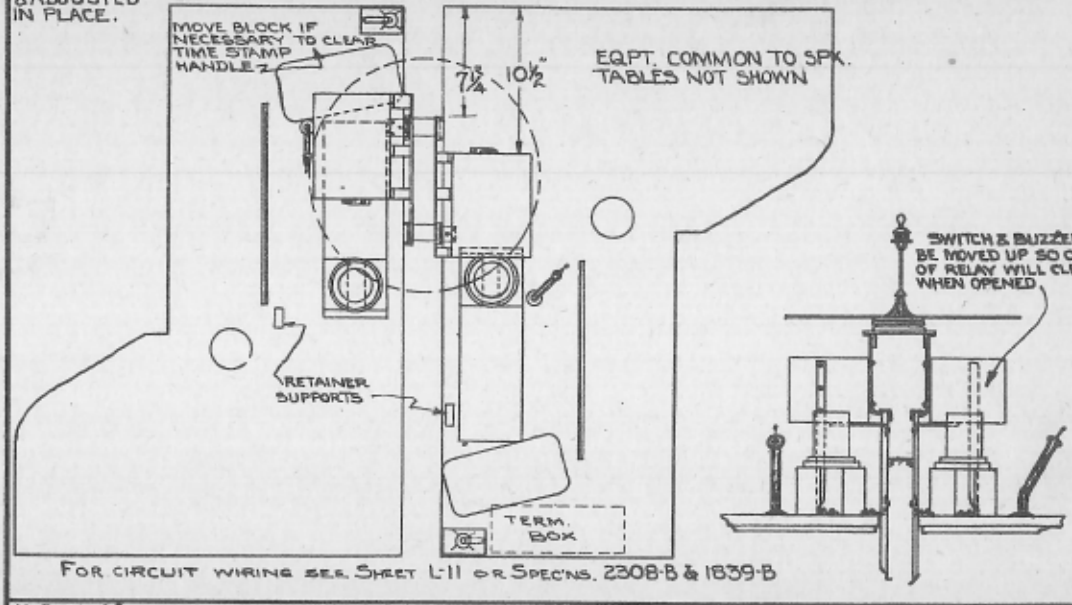
JWD

L58

155

NOTE:-MAKE CERTAIN THAT LOCATION OF TEST PANEL UNITS IS SUCH THAT REL.COVERS MAY BE OPENED, RELAYS CLEANED & ADJUSTED IN PLACE.

8 WIRE 2 POS. CPX.
USING 32-B TYPE TABLES



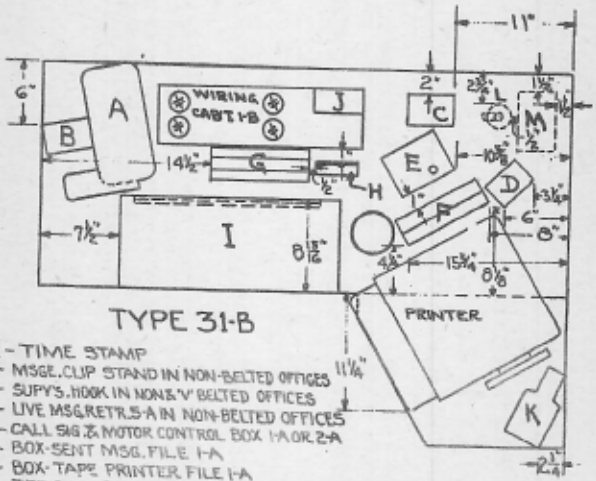
FOR CIRCUIT WIRING SEE SHEET L-11 OR SPEC'NS. 2308-B & 1839-B

157

11-7-31. G.S

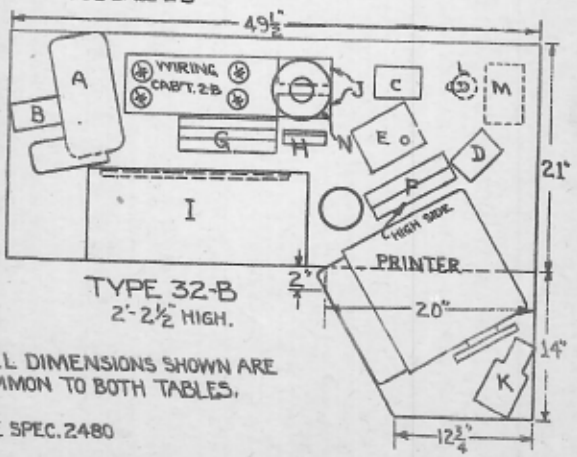
G.S

L-12



TYPE 31-B

A - TIME STAMP
B - MSGE. CUP STAND IN NON-BELTED OFFICES
C - SUPV'S. HOOK IN NON & 'V' BELTED OFFICES
D - LIVE MSG. RET'R. S-A IN NON-BELTED OFFICES
E - CALL SIG. & MOTOR CONTROL BOX 1-A OR 2-A
F - BOX-SENT MSG. FILE 1-A
G - BOX-TAPE PRINTER FILE 1-A
H - TFR. INST. CARD HOLDER 40-A - NON-BELTED OFC.
I - GUMMING DESK
J - JACK BOX
K - STAMP-BATES NUMBERING
L - H&H TOGGLE #8414 } FOR NOON TIME SIGNAL
M - SOUNDER 1-B-400 } ONLY WHEN AUTHORIZED
N - RELAY SUB-BASE 2-B



TYPE 32-B
2'-2½" HIGH.

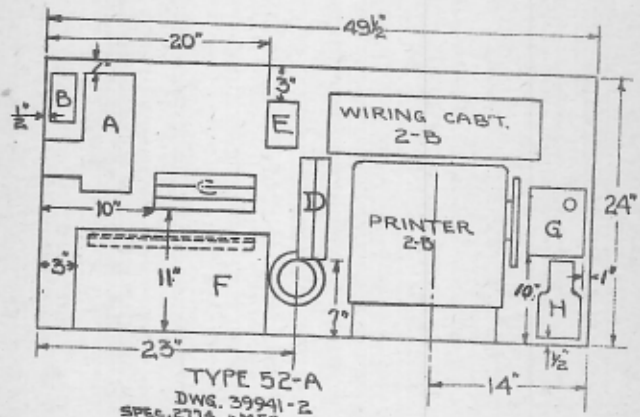
ALL DIMENSIONS SHOWN ARE COMMON TO BOTH TABLES.

SEE SPEC. 2480

8-8-31 GB

L-13

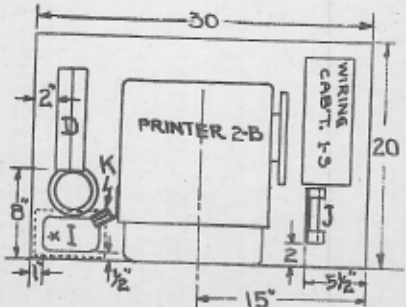
52 Table. Dimensions corrected, 3-13-41.



TYPE 52-A
DWG. 39941-2
SPEC. 2774 - MFG.
" 2775 - ASSEMBLY

A- Nº 7 TIME STAMP
B- MSG. CLIP STAND
C- BOX-TAPE PRINTER FILE 1-A
D- BOX-SENT MSG. FILE 1-A
E- LIVE MSG. FILE BOX 1-C
F- GUMMING DESK 4-A
G- CALL SIG. & MOTOR CONTROL BOX
H- STAMP-BATES NUMBERING
*- I- BLOTTER HOLDER
J- GUMMER RACK
K- TABLE TAPE MOISTENER 3-A

* NOTE: IF CARD HOLDER 40A or B, FURNISHED, MOUNT ¼" FROM LEFT EDGE & 1⅛" FROM FRONT EDGE, SHOWN DOTTED.

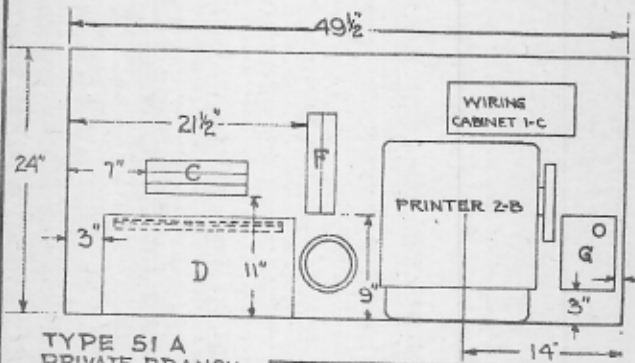


TYPE 41-A
DWG. 39235-2

SPEC. 2684 - MFG.
" 2755 - ASSEMBLY

L-14A

NOTE 'A' - DATA ON 51B ADDED 12-27-35 and 51-A Public. Dimensions on H corrected 3-13-41.



TYPE 51 A PRIVATE BRANCH

DWG. 39242-2
SPEC. 2758 MFG. - 2762-ASSMB.

A MESSAGE CLIP STAND
B WU 7 TIME STAMP
C 3 COMPT. FILE BOX
D GUMMING DESK 4A
E LIVE MSG. FILE BOX 1-C
F 2 COMPT. FILE BOX
G CALL SIGNAL AND MOTOR CONTROL BOX
H BATES NUMBER STAMP

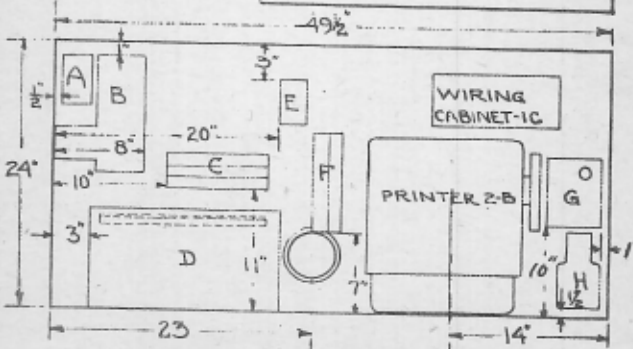
51B TABLES

PRIVATE BRANCH
PUBLIC BRANCH

EQUIPMENT LAYOUT SAME AS CORRESPONDING 51A TABLES WITH FOLLOWING EXCEPTIONS:

WIRING CAB. 1-S USED IN PLACE OF 1-C AND LOCATED AS SHOWN ON PARTIAL VIEW AT LEFT.

CALL SIG. AND MOTOR CONTROL BOX 'G' NOT REQUIRED AS THIS EQUIPMENT INCORPORATED IN 1-S WIRING CAB.

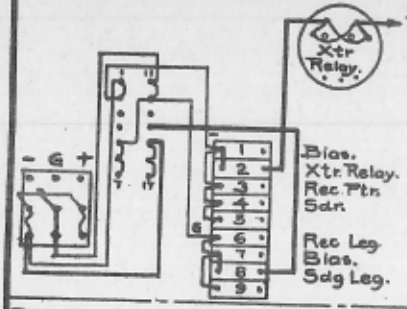


TYPE 51-A - PUBLIC BRANCH

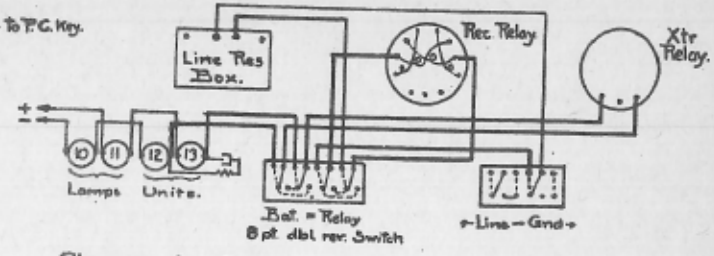
DWG. 39243-2
SPEC. 2758 MFG. SPEC. 2762 - ASSEMBLY

Teleprinter-Duplex.

Connections for Operation with Single Polarity.

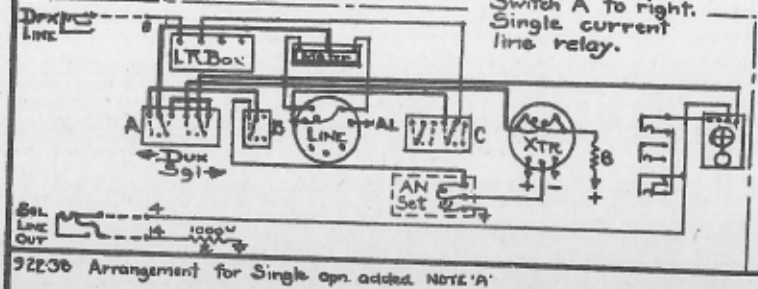


Wiring of Bust-up Switches.



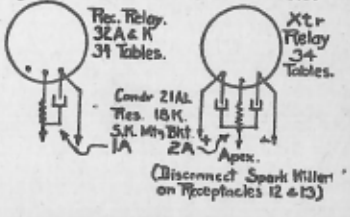
Changes for Single (32 type) operation.

Switch A to right.
Single current line relay.



92E36 Arrangement for Single opn. added. NOTE 'A'

Relay Spark Killer Connections.



New tables have Spark Killers as above.

JAD

PRINTER CONCENTRATOR

PLAN 3 SPEC. 3174-A

TYPICAL TABLE LAYOUT

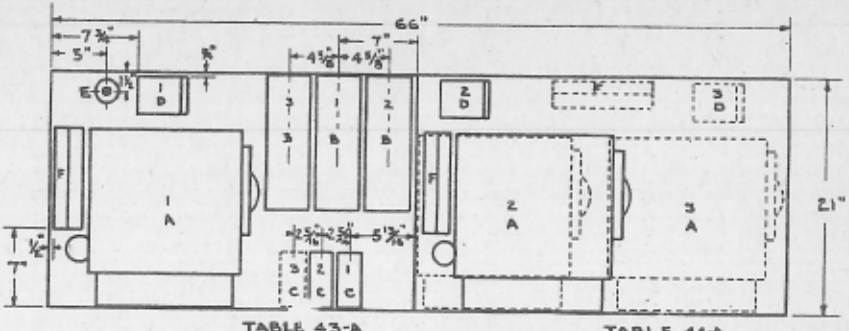


TABLE 43-A

TABLE 44-A

DOTTED LAYOUT SHOWS TWO PRINTERS ON TABLE.

A- PRINTER 2-B (WITH 3-A GUMMING DESK, AS REQ'D)
B- PLAN 3 CONCENTRATOR CABINET 1-A
C- MOTOR CONTROL BOX 6-A
D- CORDLESS TABLE JACK UNIT 2-B
E- PILOT LAMP IN LAMP STANDARD 6-A
F- SENT MESSAGE FILE BOX 2-A

NOTE: NUMBERS ON UNITS SHOW SEQUENCE OF INSTALLATION. AFTER INITIAL INSTALLATION MOTOR CONTROL BOXES SHALL BE ASSOCIATED WITH PRINTERS ACCORDING TO TABLE POSITION.

H.A.J. 8-1-34

L-40

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PRINTER CONCENTRATOR

PLAN 3 SPEC. 3174-A
TYPICAL TABLE LAYOUT

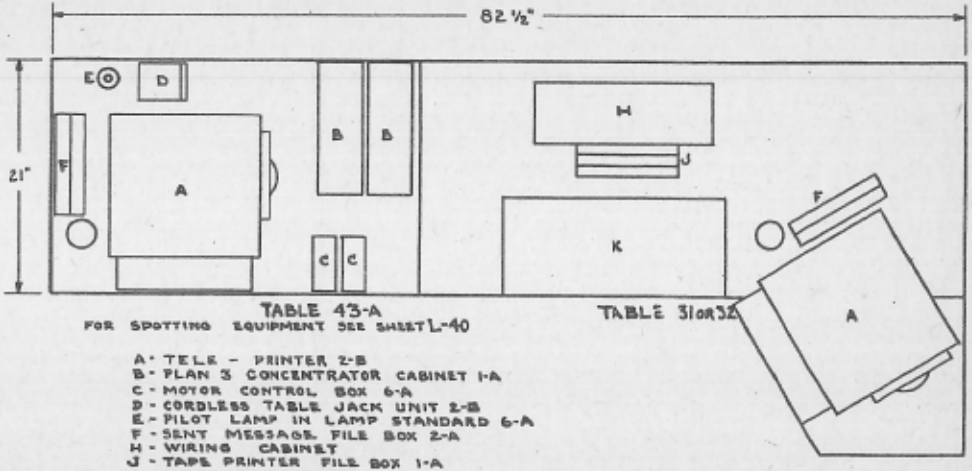

TABLE 43-A
FOR SPOTTING EQUIPMENT SEE SHEET L-40

TABLE 31 OR 32

A - TELE - PRINTER 2-B
B - PLAN 3 CONCENTRATOR CABINET 1-A
C - MOTOR CONTROL BOX 6-A
D - CORDLESS TABLE JACK UNIT 2-B
E - PILOT LAMP IN LAMP STANDARD 6-A
F - SENT MESSAGE FILE BOX 2-A
H - WIRING CABINET
J - TAPE PRINTER FILE BOX 1-A
K - GUMMING DESK 2-A

H.A.J. 8-6-34

L-41

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PRINTER CONCENTRATOR

PLAN 3 SPEC. 3174-A
TYPICAL TABLE - LAYOUT

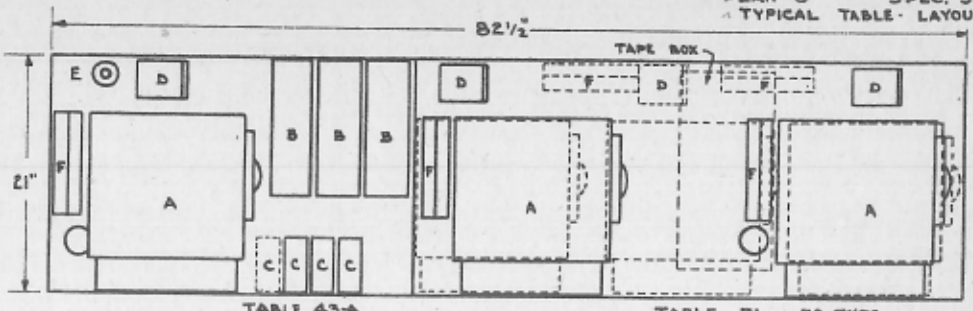


TABLE 43-A
FOR SPOTTING EQUIPMENT SEE SHEET L-40

TABLE 31 OR 32 TYPE
THREE PRINTER LAYOUT SHOWN DOTTED.

NOTE: FOR TWO PRINTER LAYOUT REMOVE WIRING CABINET AND COVER HOLE WITH PIECE OF SHEET METAL. IF SHELF IS NOT REMOVED, RIGHT HAND PRINTER MAY BE LOCATED ON SHELF. IF SHELF REMOVED, RELOCATE TAPE BOX AS SHOWN.

FOR THREE PRINTER LAYOUT, TWO SENT MESSAGE FILE BOXES AND THREE CORDLESS JACK UNITS ONLY OTHER EQUIPMENT ON TABLE. REMOVE SHELF, TAPE BOX AND WIRING CABINET, AND COVER WIRING CABINET HOLE WITH SHEET METAL.

A - TELE-PRINTER 2-B (WITH 3-A GUMMING DESK, AS REQ'D)
B - PLAN 3 CONCENTRATOR CABINET 1-A
C - MOTOR CONTROL BOX 6-A
D - CORDLESS TABLE JACK UNIT 2-B
E - PILOT LAMP IN LAMP STANDARD 6-A
F - SENT MESSAGE FILE BOX 2-A

H.A.J. 8-6-34

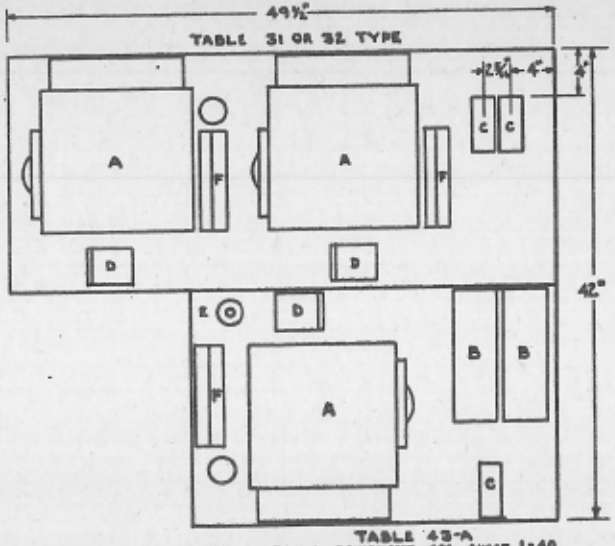
L-42

171

PRINTER CONCENTRATOR

PLAN 3 SPEC. 3174-A

TYPICAL TABLE LAYOUT



A - PRINTER 2-B (WITH 3-A GUMMING DESK AS REQ'D.)
B - PLAN 3 CONCENTRATOR CABINET 1-A
C - MOTOR CONTROL BOX 6-A
D - CORDLESS TABLE JACK UNIT 2-B
E - PILOT LAMP IN LAMP STANDARD 6-A
F - SENT MESSAGE FILE BOX 2-A

173

H.A.J. 8-8-'34

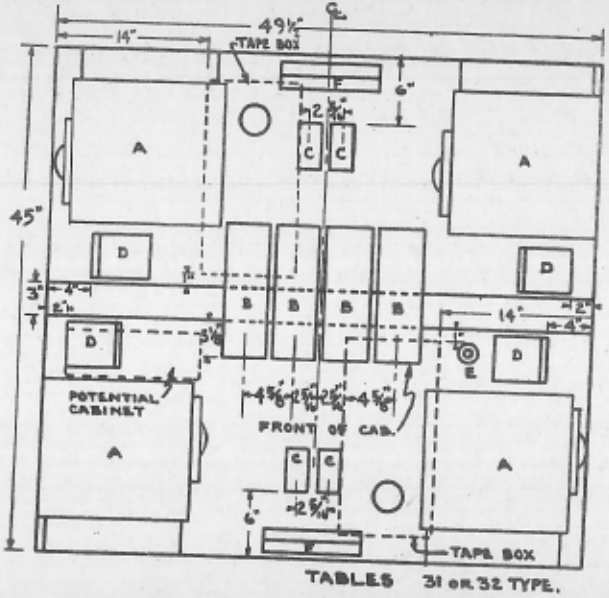
L-43

175

PRINTER CONCENTRATOR

PLAN 3 SPEC. 3174-A

TYPICAL TABLE LAYOUT



TABLES 31 OR 32 TYPE.

NOTE:
WIRING CABINET REMOVED AND HOLE COVERED WITH SHEET METAL. IF PRINTER SHELF IS REMOVED, RELOCATE TAPE BOX AS SHOWN.

A - PRINTER 2-B
(WITH 2-A GUMMING DESK AS REQ'D.)
B - PLAN 3 CONCENTRATOR CABINET 1-A
C - MOTOR CONTROL BOX 6-A
D - CORDLESS TABLE JACK UNIT 2-B
E - PILOT LAMP IN LAMP STANDARD 6-A
F - SENT MESSAGE FILE BOX 2-A

H.A.J. 8-6-34

L-44

FILE BOX 'F' ADDED 12-14-34 FPS

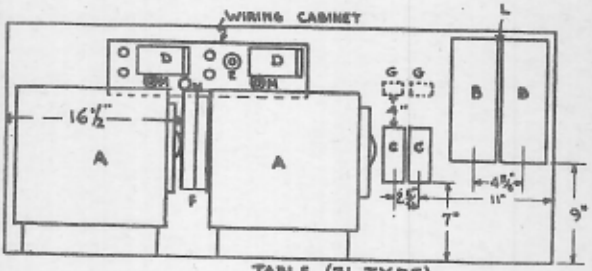


TABLE (31 TYPE)

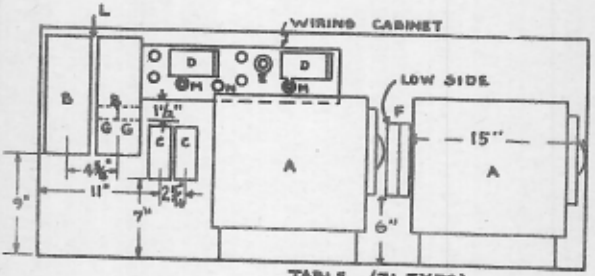


TABLE (31 TYPE)

A - TELEPRINTER 2-B (WITH 3-A GUMMING DESK AS REQ'D.
B - PLAN 3 CONCENTRATOR CABINET 1-B
C - MOTOR CONTROL BOX 6-A
D - CORDLESS TABLE JACK UNIT 2-B
E - PILOT LAMP IN LAMP STANDARD 6-A
H - INSULATING BUSHING DWG. 33872 OR COMMERCIAL RUBBER OR COMPOSITION BUSHING WITH NUT.
N - H&H TOGGLE SWITCH # 20994 WITH OFF-ON PLATE.
G - CONNECTING BLOCK 7B
J - MESSAGE GUARD 3A
F - BOX FILE SENT MSG. 2A

PRINTER CONCENTRATOR
PLAN 3
SPEC. 3174-A-APP. 1
TYPICAL TABLE LAYOUT APP. 5
DWG. 53071-A2.

H.A.J.

L-45

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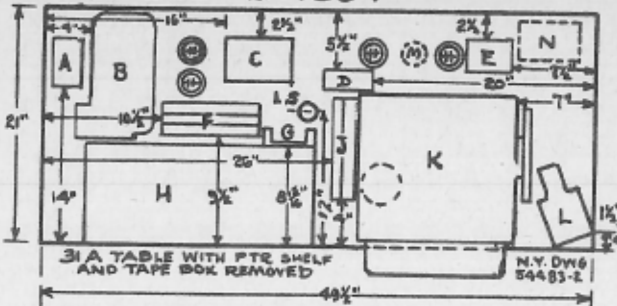
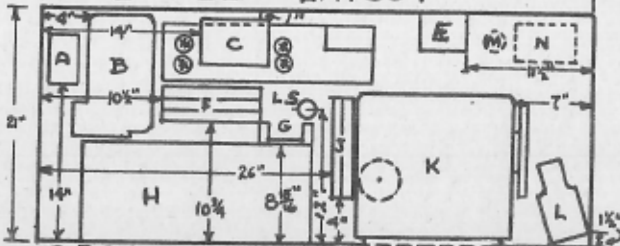
81-A TABLE - LAYOUT



31 A TABLE WITH PTR SHELF AND TAPE BOX REMOVED

81-B TABLE - LAYOUT

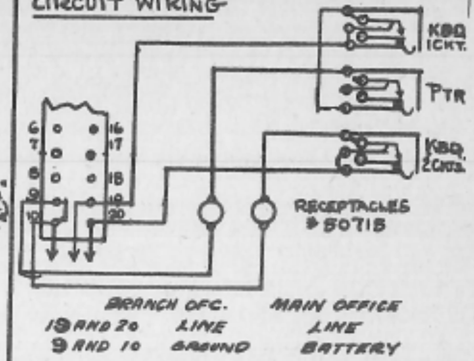


31 B TABLE WITH PTR SHELF AND TAPE BOX REMOVED

* HIGH SIDE OF 2 COMPARTMENT BOX MOUNTED NEXT TO PTR.

TELEPTROPERATING TABLES 81A-81B

CIRCUIT WIRING



KEY TO SYMBOLS

A MESSAGE CLIP STAND
B TIME STAMP
C CALL SIGNAL AND MOTOR CONTROL BOX
D CORDLESS TABLE JACK UNIT 2A
E LIVE MESSAGE RETAINER 5A
F 3 COMPARTMENT BOX
G GUMMER RACK
H GUMMING DESK
* J 2 COMPARTMENT BOX
K TELEPRINTER 2-B - 2 CORD [WITH OPEN LINE INDICATOR]
L NUMBER STAMP
M SWITCH } NOON TIME SIGNAL EQ.
N 400" BDR. 1B } ONLY WHERE AUTHORIZED
LS LAMP STD.

WIRING CHANGE PER N.Y. DWG. 56086 B-1 & C1.

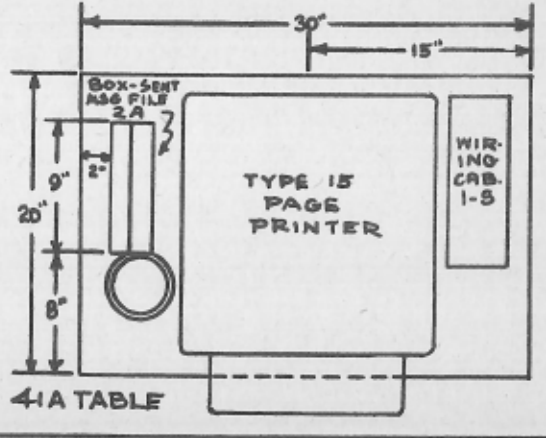
9-23-36

3-13-41. LAMP STANDARDS 6A ADDED. E RELOCATED ON 81-B

L 48-C

PAGE TELETYPE - 15 TYPE PRINTER
LAYOUT OF EQUIP ON TPR TABLES

181

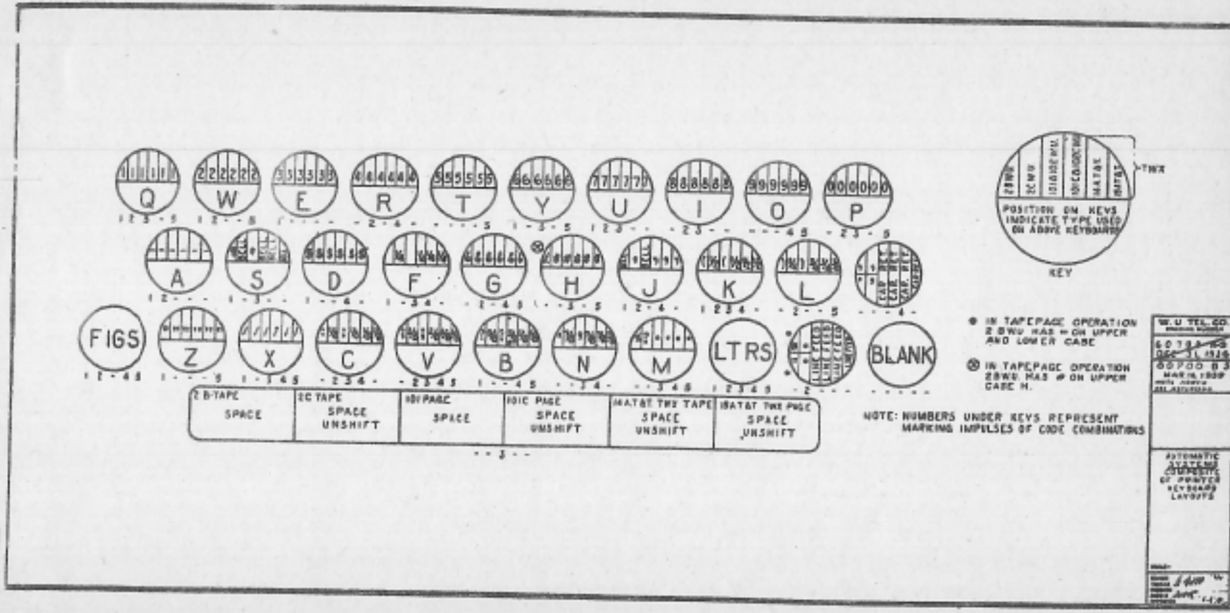


41A TABLE

12-27-35 JWW

L 55

183


Q
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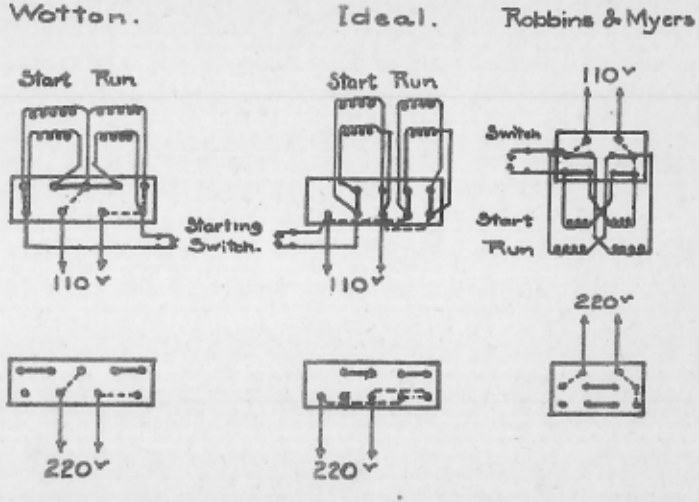
FIGS
Z
X
C
V
B
N
M
LTRS
BLANK
2 B-TAPE SPACE
2C TAPE SPACE UNSHIFT
101 PAGE SPACE
101C PAGE SPACE UNSHIFT
POSITION ON KEYS INDICATE TYPE USED ON ABOVE KEYBOARDS
KEY
TWX
* IN TAPEPAGE OPERATION 2 BWU HAS = ON UPPER AND LOWER CASE
⊗ IN TAPEPAGE OPERATION 2BWU HAS # ON UPPER CASE H.
NOTE: NUMBERS UNDER KEYS REPRESENT MARKING IMPULSES OF CODE COMBINATIONS
W. U TEL. CO.
60700 B3
AUTOMATIC SYSTEMS
OF PRINTER KEYBOARD LAYOUTS

Single Phase Induction Motor Connections.

185



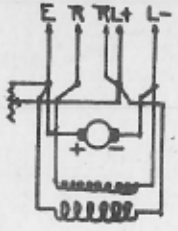
Supercedes G1, 2, 13, 17.

5-18-38

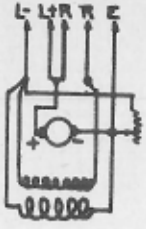
G1A.

Typical Generator Connections

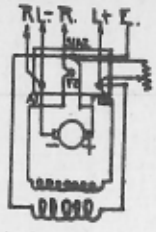
Roth.



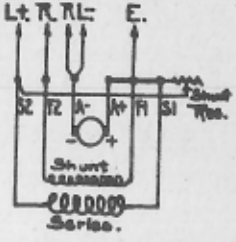
Robbins & Myers.



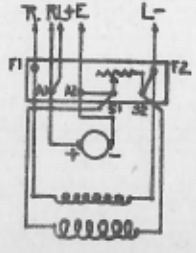
Ideal.



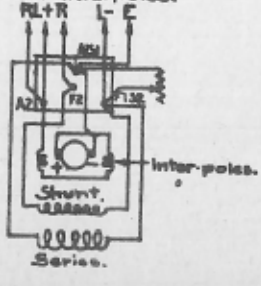
Spec. 1720C.



Wotton.



Ideal. With Interpoles.



L Line
R Rheostat
E Equalizer
A Armature
F Shunt Field
S Series Field.

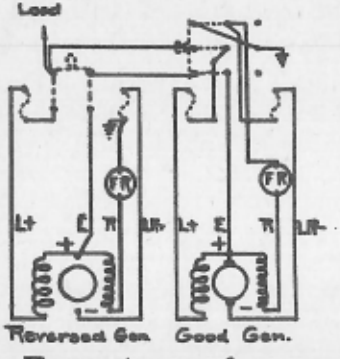
Supercedes G3, 4, 13, 15, 15A.

3-2-38

G2A

1937

Generators. Correcting Reversed Magnetism.



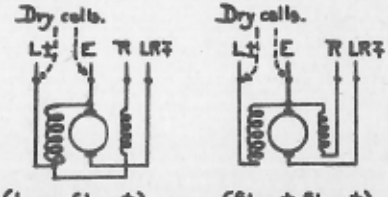
1- Remove brushes from reversed machine
2- Close its switch for few seconds
Current from good machine will flow thru shunt field in same direction as when normally generating.

Supercedes G8.

If machine not available for remagnetizing as at left, use 1 or 2 dry cells across Series field (machine running) as below.

Voltmeter will show when cells are correctly poled and when machine is remagnetized.

CAUTION- Do not get dry cells across anything but series field. Load switch should be open.



(Long Shunt) (Short Shunt)

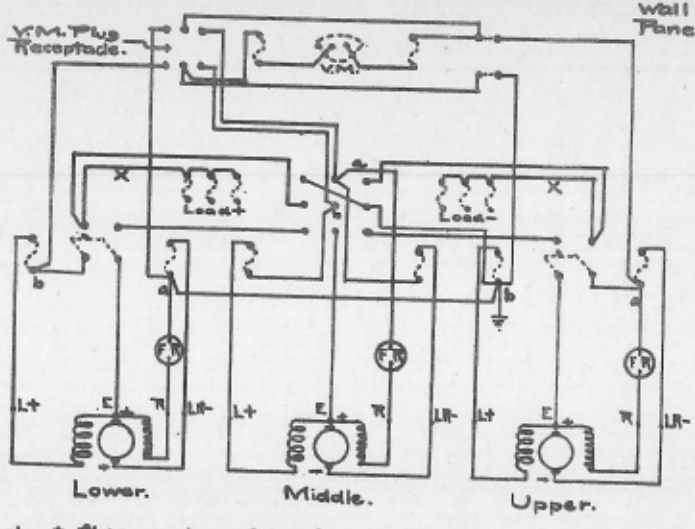
Exact connections of any machine can be readily determined with Telephone receiver (remove brushes)

4-5-36

G3A

Generator Connections

Wall Type Bench & Panel 2A.



In special cases, Ammeters may be connected at "x".

Panel Viewed from Rear.

If Machines have shunt field on - brush (L-), connect wire from field rheo to "b" instead of "a"

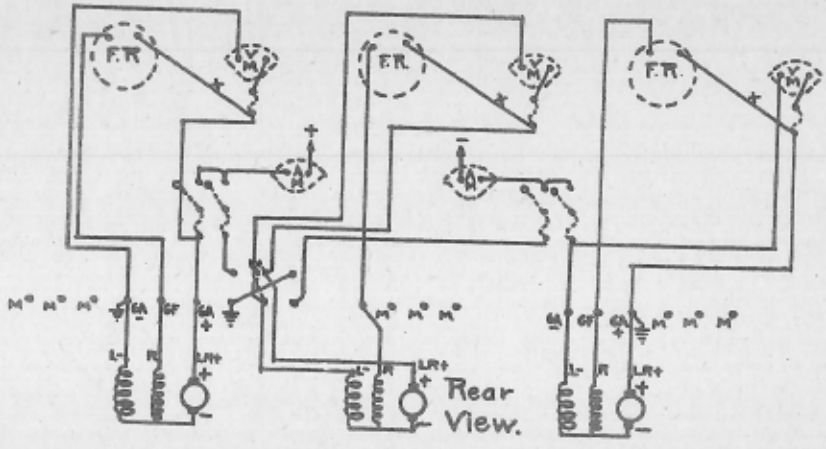
Supercedes G18.

191

4-3-38

G4A

Generator Connections. Without Equalizer.



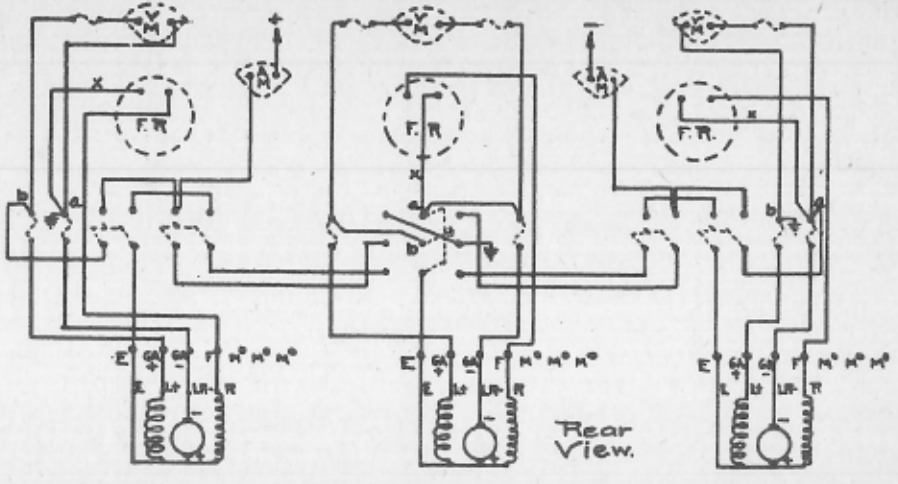
If Machine has shunt field on + (LR-, L+) connect wire "X" to GA- instead of V.M. fuse.

Supercedes G5.

S-30-38

G5A

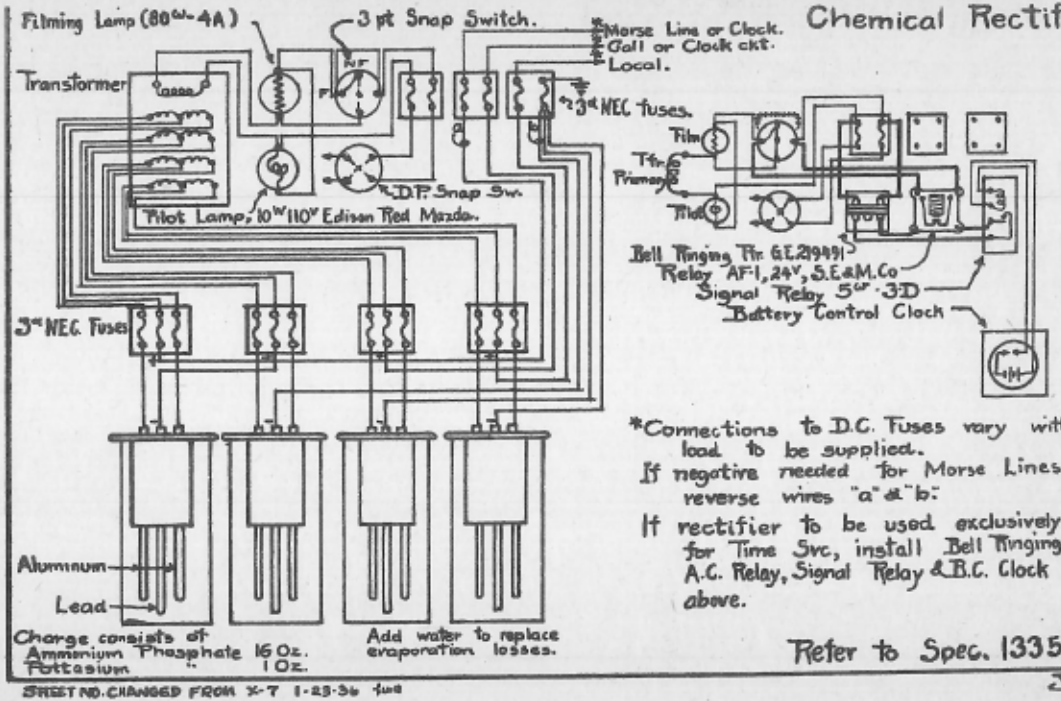
Generator Connections With Equalizer.



If Machines have shunt field on – brush (LRt. L-) connect wire "x" from field rheo. to "b" instead of "a".
Minor variations in wiring will be found on older boards.

Supercedes G9

Chemical Rectifier.



*Connections to D.C. Fuses vary with load to be supplied.

If negative needed for Morse Lines, reverse wires "a" & "b".

If rectifier to be used exclusively for Time Svc, install Bell Ringing Tfr, A.C. Relay, Signal Relay & B.C. Clock as above.

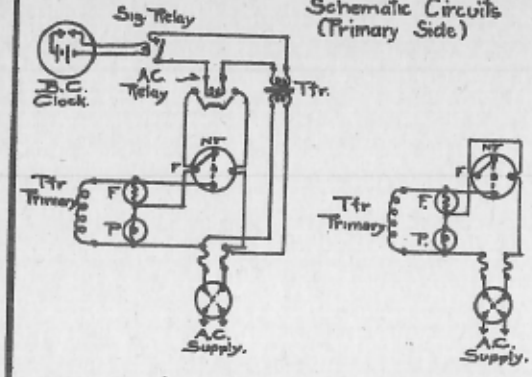
Refer to Spec. 1335A.

JMD

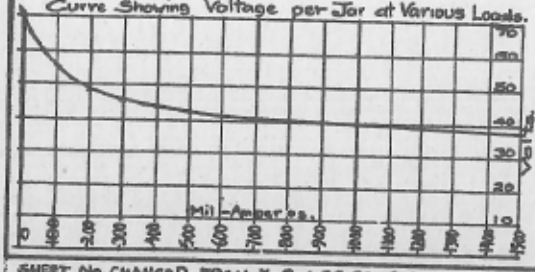
SHEET NO. CHANGED FROM X-7 1-23-36 JMD

R1

199



Schematic Circuits (Primary Side)



SHEET No. CHANGED FROM X-8 1-23-36 Swt

Chemical Rectifier.

Maximum load connected to any jar, except Time Src, 200 M.A.

Both Main Line & Local load must not be connected to same jar.

For Single Morse Lines, use 2 Jars in series for Maximum of 4 okts,

Maximum allowable resistance of lines

Bat. at Dist. end.	Ties. Allowable
160 V.	5600
120 V	5000
80 V	4000
Gnd.	2000

Connect maximum of 7 Morse locals to one Jar. Wire for 52 V - 30 M.A.

Maximum Resistance of Clock Circuits.

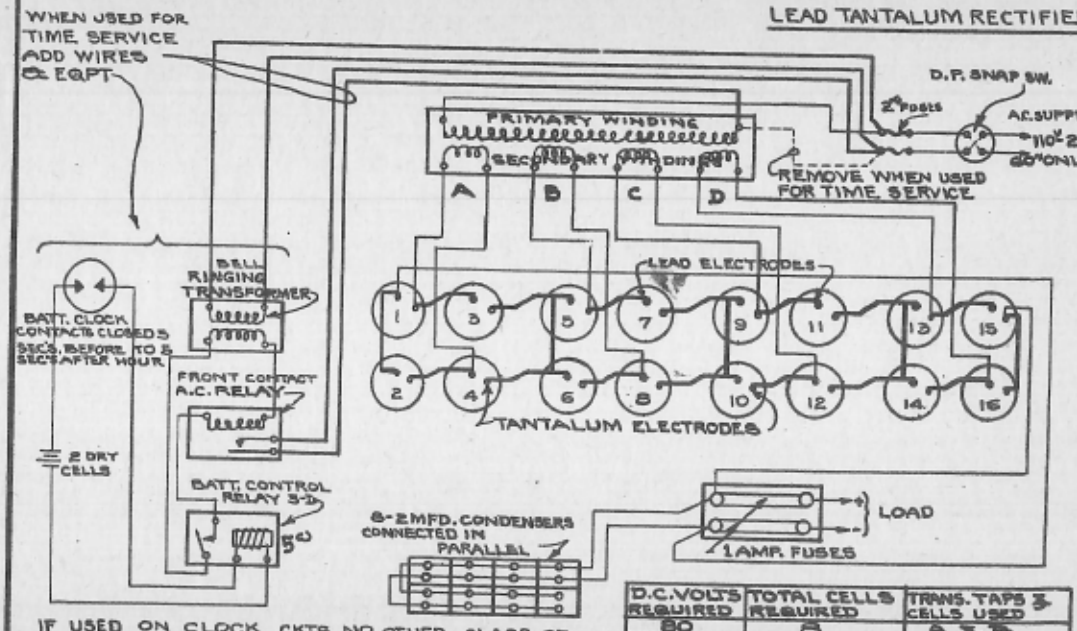
No. Jars in Series	No. of Circuits 1	2	3	4
1	170	130	120	110
2	340	260	240	220
3	510	390	360	330
4	680	520	480	440

Current on A.C Side 1 to 1½ Amps.

JWD

R2

LEAD TANTALUM RECTIFIER



D.C. VOLTS REQUIRED	TOTAL CELLS REQUIRED	TRANS. TAPS & CELLS USED
80	8	A & B
120	12	A-B & C
160	16	A-B-C & D

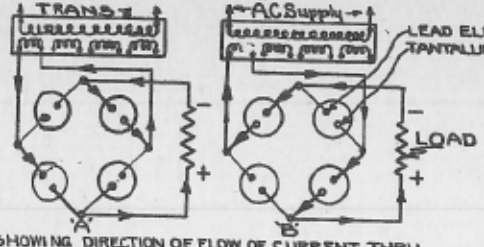
IF USED ON CLOCK CKTS. NO OTHER CLASS OF CKTS. SHALL BE CONNECTED TO RECTIFIER, MAX. LOAD IS 0.25 AMPS. PER CLOCK CKT. & MAX. NO. OF CLOCK CKTS. IS 3 . TOTAL MAX. LOAD .75 AMPS.

SEE SPEC. 1927-B

SHEET NO. CHANGED FROM X-9 1-23-36 Lent

NOTE - FUSE CAPACITY CORRECTED

R3

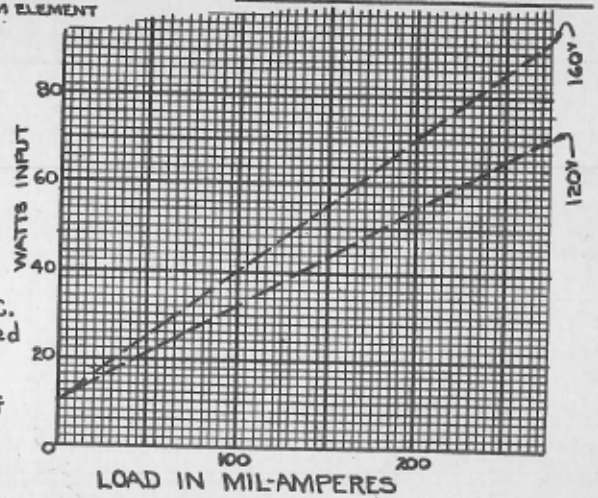


SHOWING DIRECTION OF FLOW OF CURRENT THRU CELLS DURING EACH HALF OF A.C. CYCLE

THEORY OF OPERATION

Designed to furnish 80, 120 or 160 volt D.C. pot'l. at either neg. or pos. polarity. Mainly used to feed main line & local battery to duplex, single morse, simplex circuits & call circuits. Max. load on rectifier for the above types of service shall not exceed .25 amperes.

In special cases may be used for synchronizing time svc. clocks. See sheet X-9.



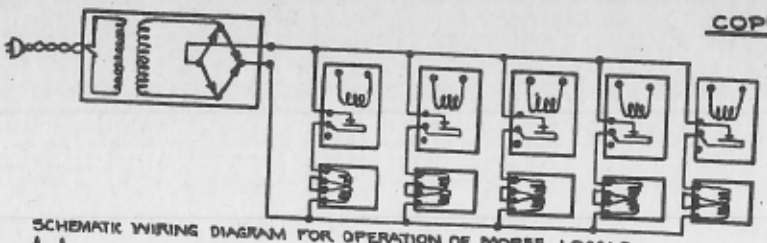
CURRENT USED BY LEAD TANTALUM RECTIFIER 1-A

203

SHEET No. CHANGED FROM X-10 JUNE 1-13-36

R 4

COPPER OXIDE RECTIFIER.



SCHEMATIC WIRING DIAGRAM FOR OPERATION OF MORSE LOCALS

TO 110V 60 CYCLE CURRENT SUPPLY IN N.E. CODE WIRING

5⅛"x5⅛"x 5⅛" HIGH

COPPER OXIDE RECTIFIER 1-A

SPARTAN RECEP. & SW. #117 IN SW. BOX GEM TYPE B OR KONDU FSE-12, MOUNTED ON WALL OR OTHER CONVENIENT LOCATION NEAR RECTIFIERS.

TO MORSE WIRE VIA PROTECTOR APPARATUS

CONN. BLOCK 7-B

KEY

MORSE RELAY 4B, 4C OR 4D

400 OHM SDR. 1-B

UNIT MORSE SET

POWER SOURCE
110 VOLT 60 CYCLE A.C. ONLY

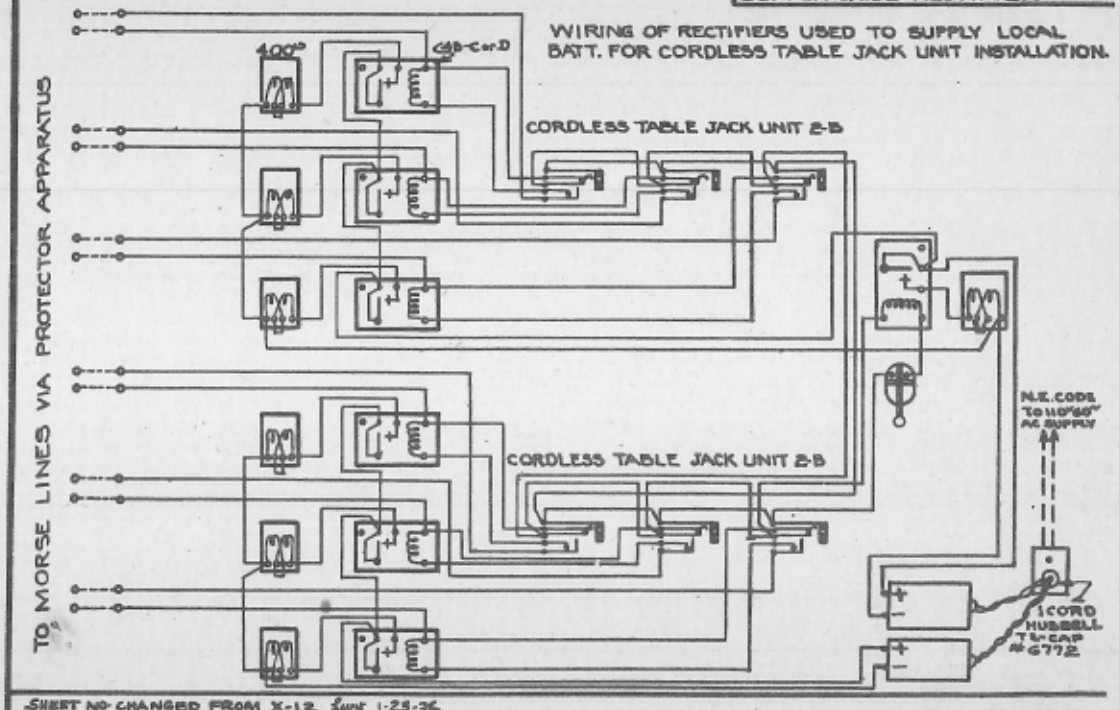
NOT MORE THAN FIVE 400 OHM SDRS. SHALL BE CONNECTED TO ANY ONE RECTIFIER.
NO OTHER RESISTANCE NEEDED.

SHEET NO. CHANGED FROM X-11 Issue 1-23-36

REFER. SPECN. 2569-A

COPPER OXIDE RECTIFIER

WIRING OF RECTIFIERS USED TO SUPPLY LOCAL BATT. FOR CORDLESS TABLE JACK UNIT INSTALLATION.

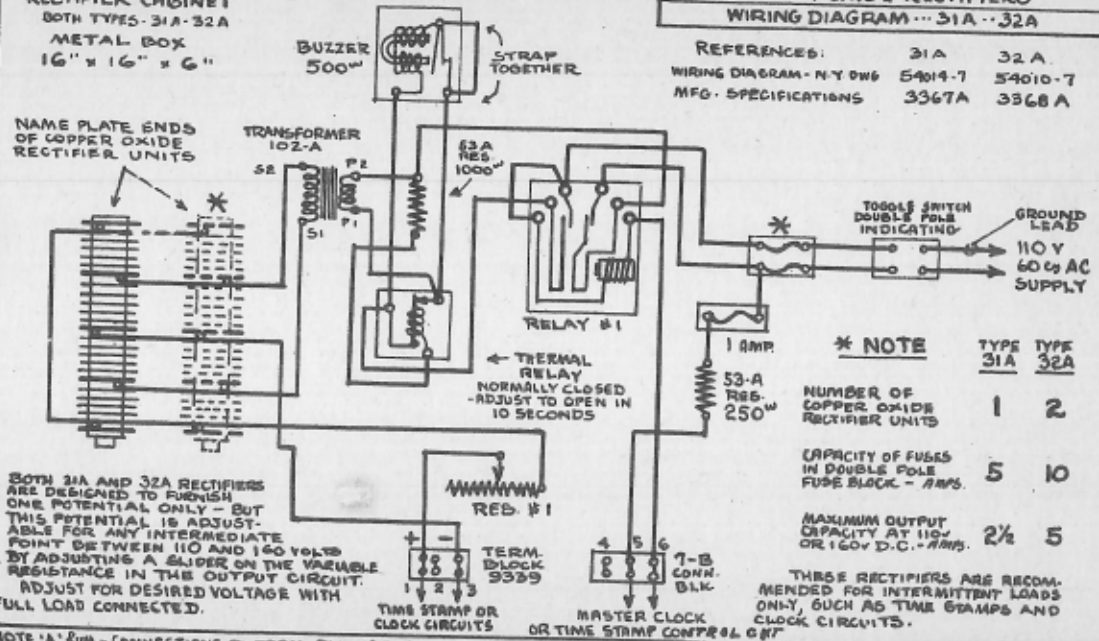


SHEET NO CHANGED FROM X-12 June 1-25-36

R 6

COPPER OXIDE RECTIFIERS
WIRING DIAGRAM ··· 31A ··· 32A

RECTIFIER CABINET
BOTH TYPES - 31A - 32A
METAL BOX
16" x 16" x 6"



REFERENCES:	31A	32A
WIRING DIAGRAM - N.Y. DWG	54014-7	54010-7
MFG. SPECIFICATIONS	3367A	3368A

BOTH 31A AND 32A RECTIFIERS ARE DESIGNED TO FURNISH ONE POTENTIAL ONLY – BUT THIS POTENTIAL IS ADJUSTABLE FOR ANY INTERMEDIATE POINT BETWEEN 110 AND 140 VOLTS BY ADJUSTING A SLIDER ON THE VARIABLE RESISTANCE IN THE OUTPUT CIRCUIT. ADJUST FOR DESIRED VOLTAGE WITH FULL LOAD CONNECTED.

* NOTE	TYPE 31A	TYPE 32A
NUMBER OF COPPER OXIDE RECTIFIER UNITS	1	2
CAPACITY OF FUSES IN DOUBLE POLE FUSE BLOCK - AMPS.	5	10
MAXIMUM OUTPUT CAPACITY AT 110V OR 160V D.C. - AMPS.	2½	5

THESE RECTIFIERS ARE RECOMMENDED FOR INTERMITTENT LOADS ONLY, SUCH AS TIME STAMPS AND CLOCK CIRCUITS.

NOTE 'A' Bum - CONNECTIONS TO TERM. BLOCKS AND VARIOUS RELAY DATA ADDED.

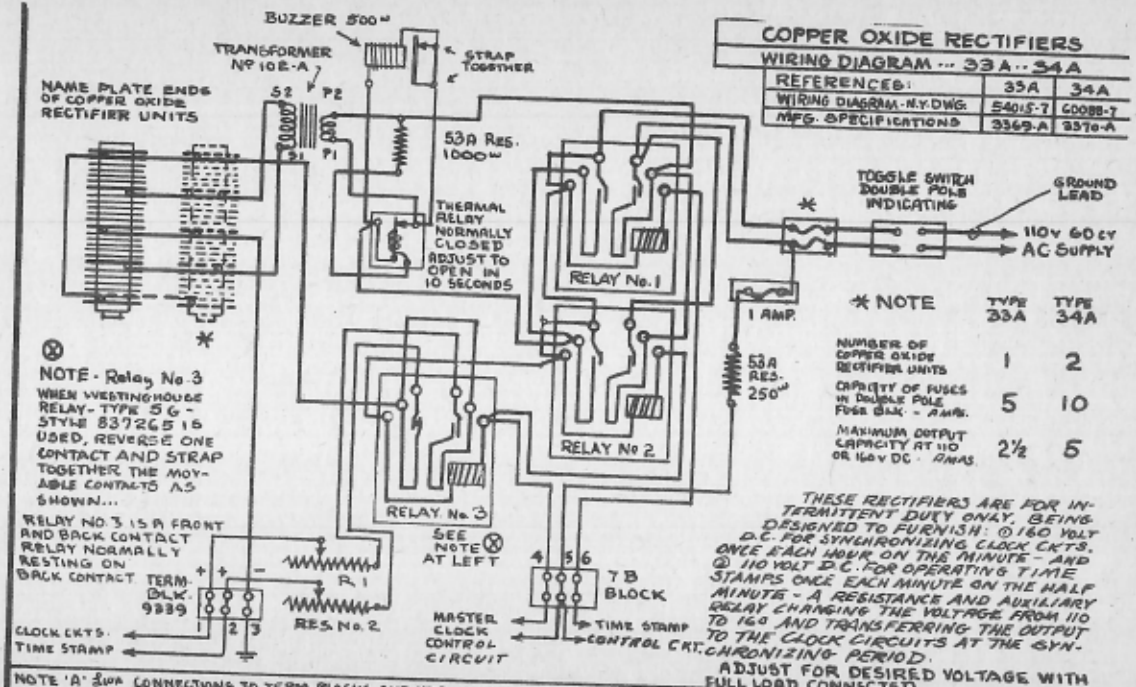
2-15-38

R-7-A

COPPER OXIDE RECTIFIERS

WIRING DIAGRAM ... 33A ... 34A

REFERENCES:	33A	34A
WIRING DIAGRAM - N.Y. DWG.	540I5-7	60088-7
MFG. SPECIFICATIONS	3369-A	3370-A



* NOTE

	TYPE 33A	TYPE 34A
NUMBER OF COPPER OXIDE RECTIFIER UNITS	1	2
CAPACITY OF FUSES IN DOUBLE POLE FUSE BLK. - AMPS.	5	10
MAXIMUM OUTPUT CAPACITY AT 110 OR 160 v DC - AMPS.	2½	5

THESE RECTIFIERS ARE FOR INTERMITTENT DUTY ONLY, BEING DESIGNED TO FURNISH: ① 160 VOLT D.C. FOR SYNCHRONIZING CLOCK CKTS. ONCE EACH HOUR ON THE MINUTE - AND ② 110 VOLT D.C. FOR OPERATING TIME STAMPS ONCE EACH MINUTE ON THE HALF MINUTE - A RESISTANCE AND AUXILIARY RELAY CHANGING THE VOLTAGE FROM 110 TO 160 AND TRANSFERRING THE OUTPUT TO THE CLOCK CIRCUITS AT THE SYNCHRONIZING PERIOD.

ADJUST FOR DESIRED VOLTAGE WITH FULL LOAD CONNECTED.

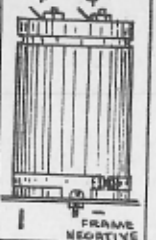
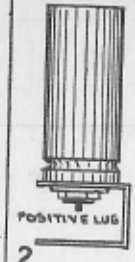
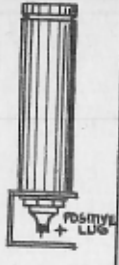
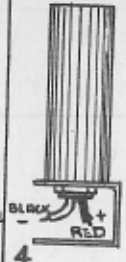
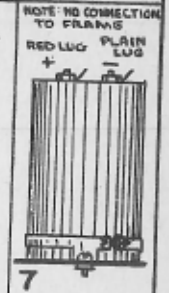
NOTE 'A' 2wa CONNECTIONS TO TERM. BLOCKS AND VARIOUS RELAY DATA ADDED

2-15-38

R-8-A

MERCURY VAPOR RECTIFIER CONDENSER INFORMATION

213

	3A and 5A				2A and 5B		2B-8A-10B-63B
NOTE: DRY ELECTROLYTIC CONDENSERS AS USED IN M.V. RECTIFIERS MUST HAVE POSITIVE AND NEGATIVE TERMINALS CONNECTED AS PER RECTIFIER WIRING DIAGRAMS NOTE: IN CASE TYPES 1-2-3 IN FIBRE IF RECTIFIER IS USED FOR PROVIDING NEGATIVE BATTERY	BOTH LUGS POSITIVE  1 FRAME NEGATIVE	FRAME NEGATIVE  POSITIVE LUG 2	FRAME NEGATIVE  POSITIVE LUG 3	 BLACK RED 4	RED BLACK  5	RED  6	NOTE: NO CONNECTION TO FRAME  RED LUG PLAIN LUG 7
TRADE NAME AND TYPE	AEROVOX OR MERSHON DOUBLE B UPRIGHT	MALLORY-ELKON INVERTED TYPE	MERSHON INVERTED TYPE	CORNELL DUBILIER TYPE EB 9160 OR MALLORY TYPE SPOX 12085 OR AEROVOX GL-5 WITH FLEXIBLE 8" LEADS.		DUBILIER TYPE PL 4779	DUBILIER 'EA' OR MALLORY UPRIGHT INSULATED CAN TYPE
M.F.D.	16	16	16	16	16	16	75
VOLTS	430	450	450	450	450	500	SEE BELOW
MOUNTING	RING	BRACKET	BRACKET	BRACKET	RING	STRAP	RING
POS. CONN.	BOTH LUGS	LUG	LUG	RED BRAID LEAD	RED BRAID LEAD	RED BRAID LEAD	RED LUG
NEG. CONN.	FRAME	FRAME	FRAME	BLACK " " "	BLACK " "	OTHER LEAD	PLAIN LUG
REMARKS	DO NOT CONFUSE WITH FIG. 7 WHICH HAS BOTH POSITIVE AND NEGATIVE LUGS AND NO FRAME CONNECTION	MAKE SURE THAT LOCK WASHER IS ON 'NUT' SIDE OF BRACKET AND NOT BETWEEN BRACKET AND CONDENSER	USED ON EARLY INSTALLATIONS. WHEN REPLACED IT IS NECESSARY TO ENLARGE HOLE IN BRACKET	ORDER THIS TYPE FOR REPLACEMENTS SPEC. 3053-A APX. 2	ORDER THIS TYPE FOR REPLACEMENTS	USED ON EARLY INSTALLATIONS	RECT. COND. VOLT 8A-25-4 300 8A-REG & 2B 250 10B-63B-66A 450 64A-62A 350

NOTE 'A' REDRAWN-REVISED
NOTE 'B' ERA COND DATA ADDED 9/1/46. NOTE:- 7B RECT USES 10 MFD CORNELL DUBILIER TYPE TS10100

RWMM 2.15-48

R-9B

MERCURY VAPOR RECTIFIER TUBE INFORMATION

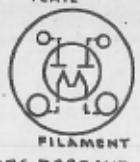
RECTIFIER	2A-3A-5A-5B 7B-11B-61A-12A 63B-64A-67A		8A-9A VOS & D 601	66A	5I6B	
TUBE	82*	83	GE 16x897	GE 45x674	OZ 4G	
SOCKET	EBY #12 OR BENJAMIN 4 PRONG ‡		GE # M-5556072-0-1		EBY OCTAL 8-B	
CATHODE VOLTS (FILAMENT)	2.5	5.0	2.5	2.5	NONE	
CATHODE AMPS (FILAMENT)	3.0	3.0	9.5 to 10.5	24 to 26	NONE	
NORMAL HEATING TIME	-	-	5 min.	5 min	NONE	
MAXIMUM AVG. CONTINUOUS ANODE (PLATE) CURRENT PER TUBE	.125 AMP.	.250 AMP.	2 AMPS.	6 AMPS.	NOT Cont. 250 MA. for 2Sec. Only	

NOTES IN CONNECTION WITH ABOVE CHART:

* 83 TUBES NOW USED IN ALL INSTALLATIONS EXCEPT 11-B CHECK TRANSFORMER CONNECTIONS BEFORE INSERTING TUBE.

‡ WHEN ORDERING SOCKETS FOR REPLACEMENTS SPECIFY EBY #12.

DKI 664 TUBE REPLACED BY GE 16x897



TUBE BASE AND SOCKET CONNECTION DIAGRAM - ALL TYPES OF TUBES. EXCEPT OZ-4G

TO REPLACE GE TUBE IN RECTIFIER 8A & 10B

A. TURN OFF A.C. TOGGLE SWITCH
B. REMOVE D.C. OUTPUT FUSES
C. REMOVE OLD TUBE INSERT NEW TUBE
D. WITH D.C. FUSES STILL REMOVED TURN ON A.C. FOR 5 MINUTES.
E. TURN OFF A.C.; REPLACE D.C. FUSES; TURN ON A.C. AGAIN AND RECTIFIER IS READY FOR USE

IMPORTANT: ALWAYS DISCONNECT A.C. POWER BEFORE REMOVING TUBES FROM OR INSTALLING IN SOCKETS

NOTES ON THERMAL UNIT: 8A-9A & 10-B

THE PURPOSE OF THE THERMAL UNIT OR RELAY IN RECTIFIERS USING THE GE TUBE IS TO KEEP THE SECONDARY LOAD OFF THE TUBE FOR TWO MINUTES - AND IT MUST BE ADJUSTED FOR THIS TIME LIMIT. WHEN REMOVING A TUBE FOR REPLACEMENT THE THERMAL UNIT MUST BE ALLOWED TO COOL AND OPEN BEFORE INSERTING NEW TUBE.

THE THERMAL RELAY WILL HEAT WITH OR WITHOUT A TUBE BEING IN THE SOCKET.

NOTE 'A' - REDRAWN - REVISED
NOTE 'B' ERR REVISED 9-10-40
NOTE 'C' TYPE 8-A RECTIFIER DELETED FROM "66-A" HEADING

3-18-41

R-10-C

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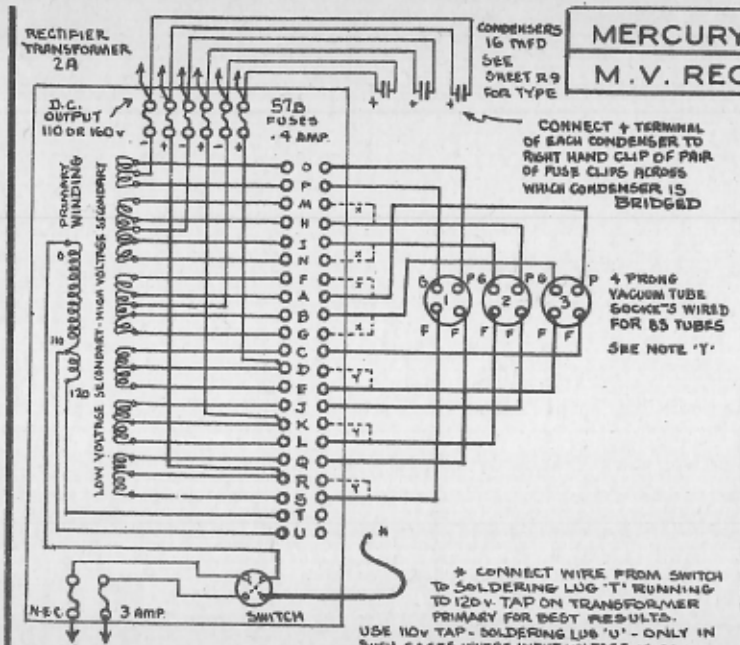
MERCURY VAPOR RECTIFIERS

M.V. RECTIFIER 2A - Wiring

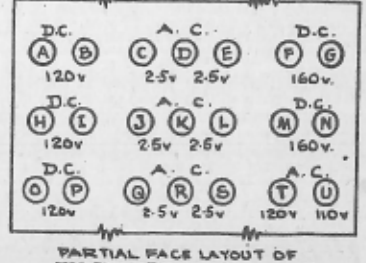


INST. & OPERATION SPECIFICATIONS 3051
MANUFACTURING SPECIFICATIONS 3080
RECTIFIER WIRING - N.Y. DWG. 49030-2
TRANSFORMER WIRING - N.Y. DWG. 49031-2

NOTES: 'X' DOTTED LINE SHOWS CONNECTIONS FOR 160 v. OUTPUT

'Y' DOTTED LINE INDICATES CONNECTIONS FOR 82 TYPE TUBES.

EQUIPMENT MOUNTED IN METAL CAB. 18" x 14" x 8"



PARTIAL FACE LAYOUT OF REC. TRANSFORMER 2A SHOWING POSITIONS OF CONNECTING LUGS.

NOTE 'A' 5mm CONDENSER DATA ADDED PER SPEC. 3083 B AFX-1
MFG. SPEC. NO. CORRECTED

'A' 2-15-38

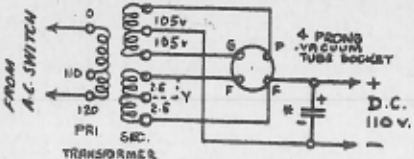
R-11-A

217

MERCURY VAPOR RECTIFIERS

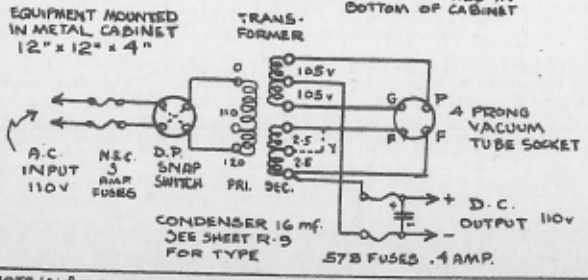
M.V. Rectifiers 3A-5A-5B-Wiring

3A-RECTIFIER - WIRING DWG 47264-1 SPEC. 3053A (MFG)
THIS RECTIFIER IS INTENDED PRIMARILY FOR INSTALLATION IN 'R' TYPE WIRING CABINETS ON SIMPLEX OPERATING TABLES PER SPEC. 3065.



5A-RECTIFIER WIRING - DWG P-11647-1
TRANSFORMER, TUBE SOCKET AND CONDENSER SAME AS IN 3A RECTIFIER - THE BAKELITE BASE CONTAINING THIS EQUIPMENT BEING MOUNTED IN BOTTOM OF CABINET

EQUIPMENT MOUNTED IN METAL CABINET 12" x 12" x 4"



NOTE 'A' 5μm CONDENSER DATA REVISED PER SPEC. 3053-A - APX 2 AND SPEC. 3093-B-APX 1.. TRANSFORMER AND TUBE CONNECTIONS ON 5A CHANGED

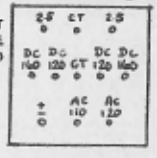
'A'- 2-15-38

GENERAL NOTES: DRAWINGS SHOW SOCKETS WIRED FOR 83 TYPE TUBES GIVING 250 MILS. IF 82 TYPE TUBES (125 MILS) ARE USED CONNECT AS SHOWN BY DOTTED LINE 'Y'

NOTE- 5B RECTIFIER- DRAWING SHOWS CONNECTIONS FOR 110v OUTPUT - FOR 160 v OUTPUT CONNECT AS SHOWN AT 'X'

5-B RECTIFIER- WIRING - N.Y. DWG. 49734-1
SPEC. 3083-B (MFG)
SIMILAR TO 5A BUT HAS 160v. TAP IN ADDITION.

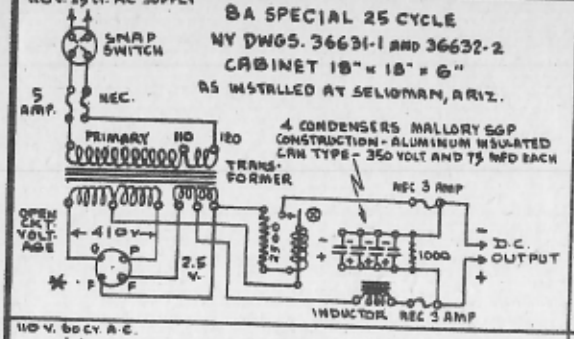
FRONT VIEW REC. TRANSF. 5-B

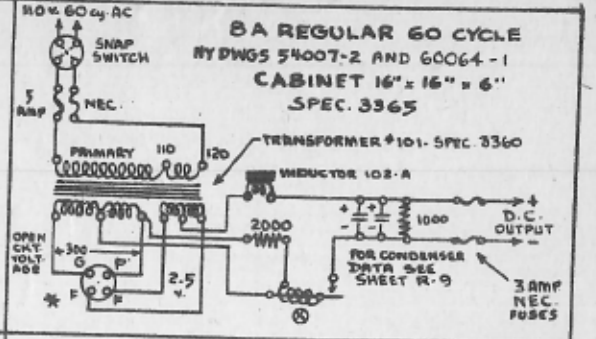


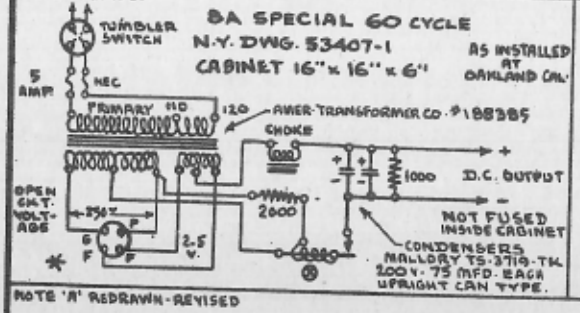
NOTE- CONNECT + TERM. OF CONDENSER TO RIGHT CLIP OF TOP FUSE WHOSE LEFT CLIP IS CONNECTED TO CENTER TAP OF THE 2.5v. TRANSFORMER WINDING

219

MERCURY VAPOR RECTIFIERS – 8A TYPES







NOTES:

* TUBE G.E. #16 x 897 IN SOCKET G.E. #5556072-G-1

⊗ THERMAL RELAY (NORMALLY OPEN) - ADJUST CONTACT FOR 2 MINUTE DELAY.

CONDENSERS ARE POLARIZED AND MUST BE CONNECTED AS SHOWN.

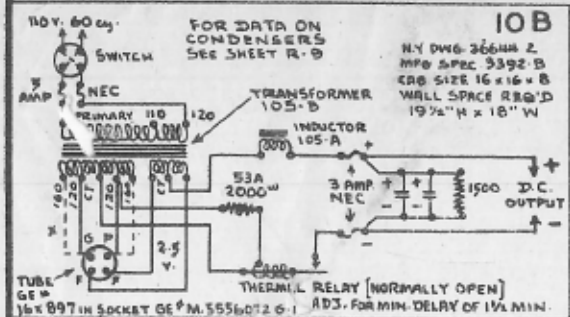
NOTE 'A' REDRAWN - REVISED

2-16-38

221

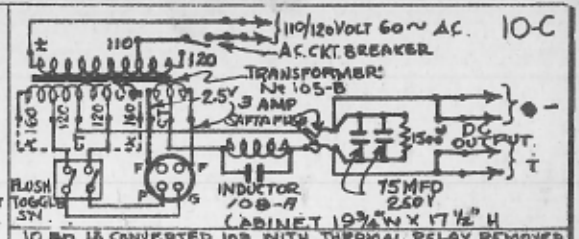
R-13-A

MERCURY VAPOR RECTIFIERS – 10B-63B

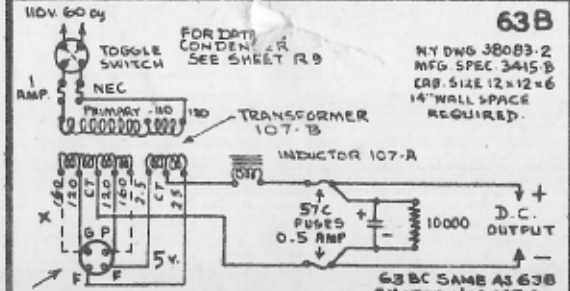


10B

N.Y. DWG 366HH 2
MFG SPEC 3392-B
CAB SIZE 16 x 16 x 8
WALL SPACE REQ'D 19½" H x 18" W

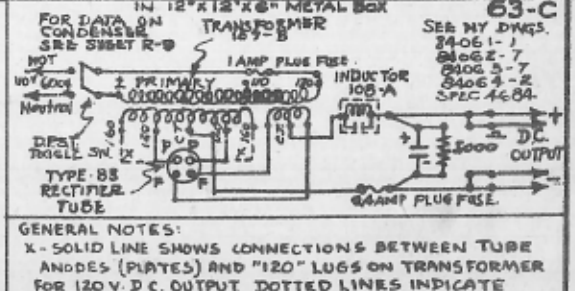


10 BD IS CONVERTED 10B WITH THERMAL RELAY REMOVED AND PLATE SWITCH AND CIRCUIT BREAKER ADDED. AND 10B AC SW USED AS PLATE SWITCH. 10 CD IS 10C WITH 105-A INDUCTOR REPLACED WITH 109-A 10 D IS SAME AS 10C BUT MADE WITH 109-A IND.



63B

N.Y. DWG 38083-2
MFG SPEC. 3415-B
CAB. SIZE 12 x 12 x 6
14" WALL SPACE REQUIRED.



GENERAL NOTES:
X - SOLID LINE SHOWS CONNECTIONS BETWEEN TUBE ANODES (PLATES) AND "120" LUGS ON TRANSFORMER FOR 120 V. D.C. OUTPUT. DOTTED LINES INDICATE CONNECTION TO "160" LUGS FOR 160 V. D.C. OUTPUT

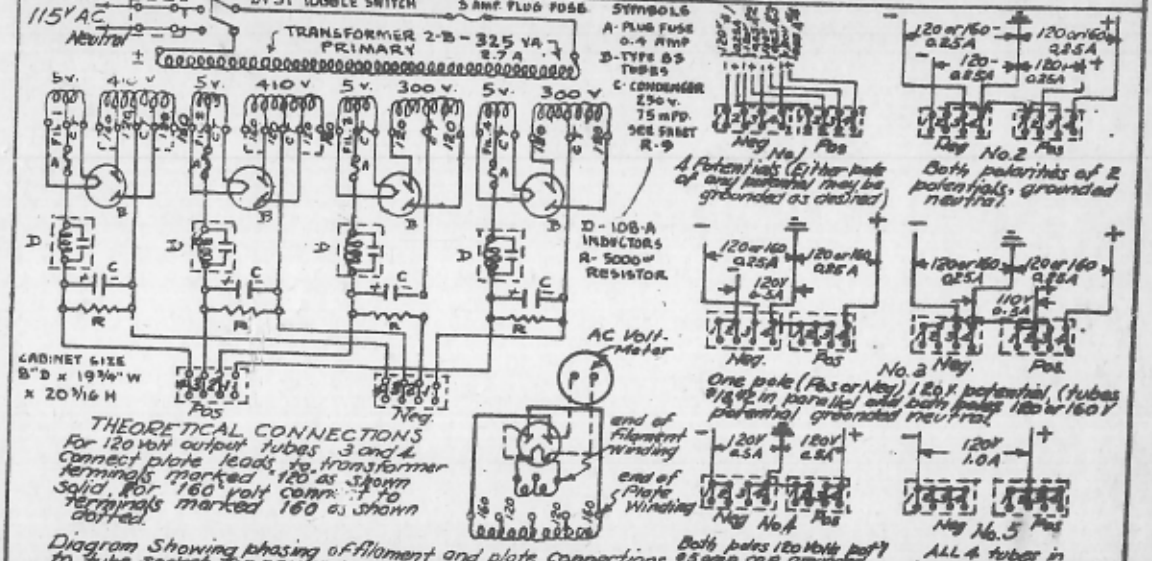
NOTE "B" REDRAWN-REVISED
NOTE "C" 63-C ADDED-MCK 11-21-39
NOTE "D" 10-C PART & NOTES ADDED ERH 9-A-40
NOTE "E" INDUCTOR TYPE CHANGED ON 10-C AND 63-B TYPES

3-18-41

R-14-E

223

MERCURY VAPOR RECTIFIER 2-B SPEC. 4760



THEORETICAL CONNECTIONS
For 120 volt output tubes 3 and 4 connect plate leads to transformer terminals marked "120 as shown solid. For 160 volt connections to terminals marked 160 as shown dotted.

Diagram Showing phasing of filament and plate connections to tube socket for proper parallel operation of tubes. When temporary connections are made as shown by dotted lines, AC voltmeter should read sum of plate voltage (300 or 410 volts) and filament voltage (5 volts) or total of approximately 305 or 415 volts depending on which plate taps are connected.

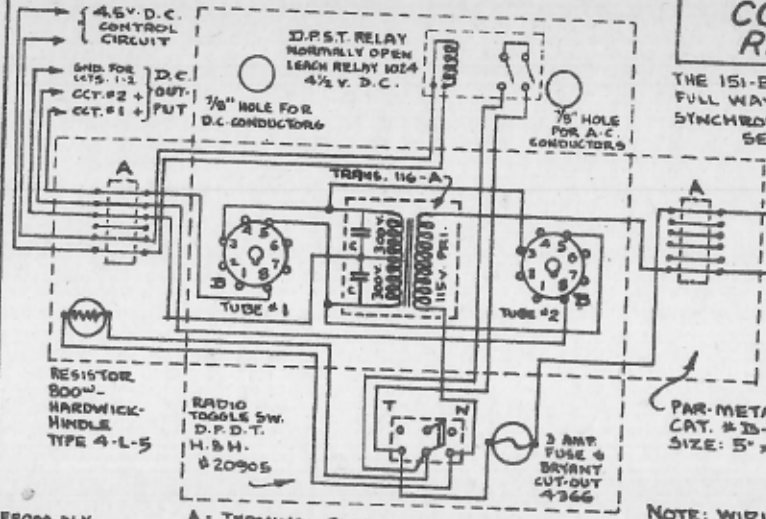
TYPICAL TERMINAL BLOCK CONNECTIONS FOR VARIOUS OUTPUT VOLTAGE COMBINATIONS

EBK 11-18-39

R-15

225

COLD CATHODE RECTIFIER 151-B



THE 151-B RECTIFIER IS A SINGLE PHASE FULL WAVE TYPE AND IS USED FOR SYNCHRONIZING CLOCK CIRCUITS -- SEE SPEC. 4745 FOR USES.

THIS RECTIFIER IS NOT DESIGNED TO BE CONNECTED TO THE A.C. SUPPLY CONTINUOUSLY EXCEPT WHEN THE TOGGLE SWITCH IS IN THE TEST POSITION.

FROM N.Y. DWG. 84367-A-7 SPEC. 4744-A

A = TERMINAL BLOCK 10-A 6 CONDUCTOR WITH SPACER EX-3729

B = TUBE SOCKET EBY OCTAL 8-8 TUBE OZ 4-G

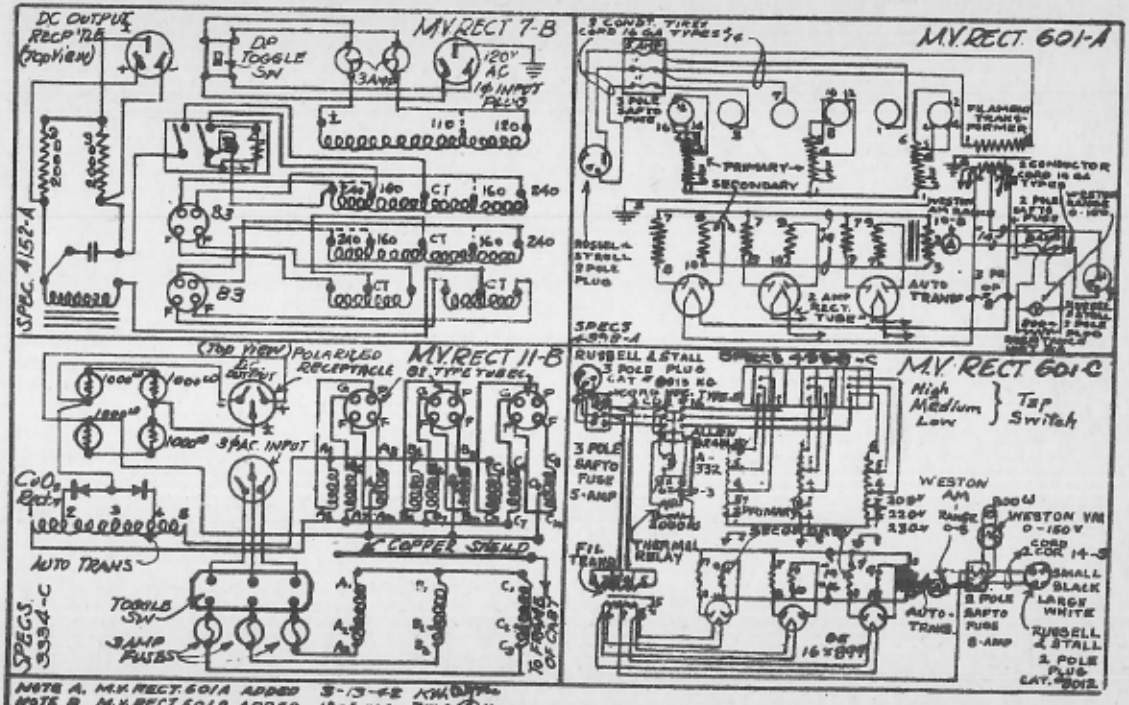
C = CONDENSER .1 MFD. 2000 V.

T = TEST POS'N. N = NORMAL POS'N.

NOTE: WIRING AND EQUIPMENT AS SEEN LOOKING INTO BOTTOM OF RECTIFIER.

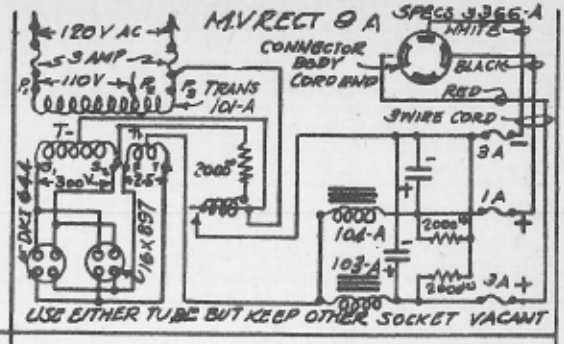
CAPACITY OF EACH TUBE OR CIRCUIT 250 M.A. AT 175 V. IF 2 TUBES USED OR 205 V. IF ONE TUBE USED - FOR DUTY OF 2 SECONDS OR LESS AT NOT LESS THAN 2 MINUTE INTERVELS.

Lunn 6-3-40


M.V. RECT 7-B
DC OUTPUT RECEPTACLE (TOP VIEW)
DP TOGGLE SW
3 AMP
120V AC
SPEC. 4152-A
M.V. RECT. 601-A
PRIMARY
SECONDARY
AUTO TRANS
M.V. RECT 11-B
(TOP VIEW) POLARIZED RECEPTACLE
3 PHASE INPUT
COPPER SHIELD
AUTO TRANS
TOGGLE SW
3 AMP FUSES
SPECS 3334-C
M.V. RECT 601-C
High Medium Low
Tap Switch
3 POLE SAFTO FUSE 5-AMP
WESTON AM
WESTON VM 0-150 V
THERMAL RELAY
AUTO-TRANS.
NOTE A. M.V. RECT. 601A ADDED 3-13-42 KWA
NOTE B M.V. RECT. 601C ADDED 12-4-42 JMS

R-17B

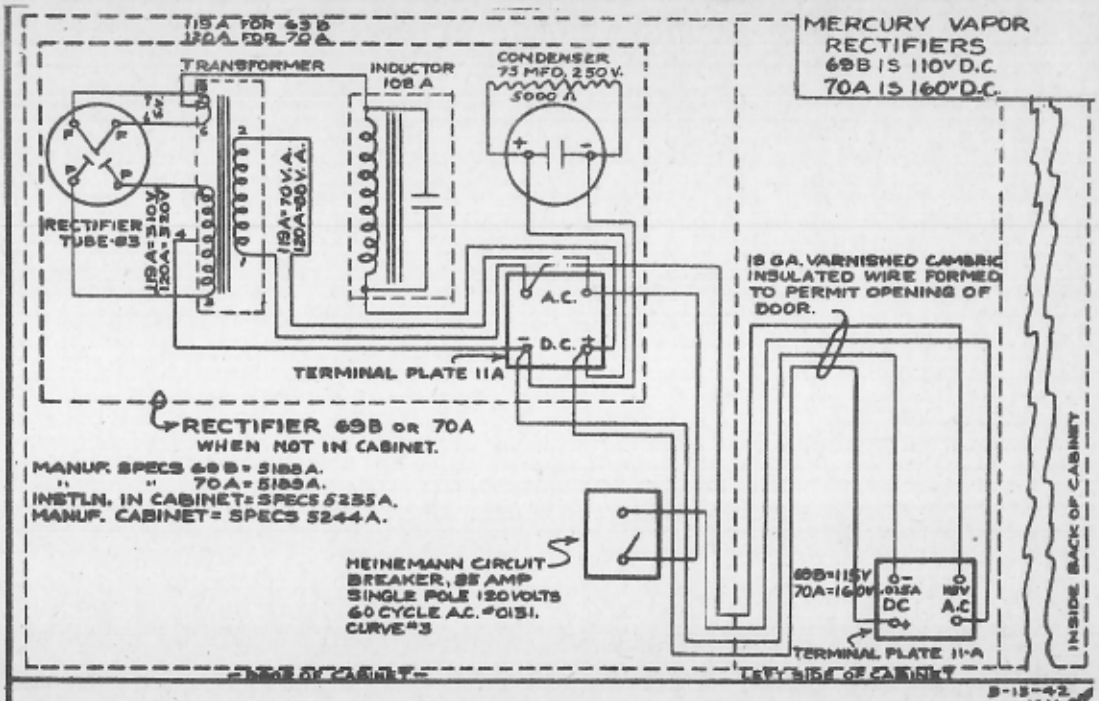
231



9-11-40 ERA

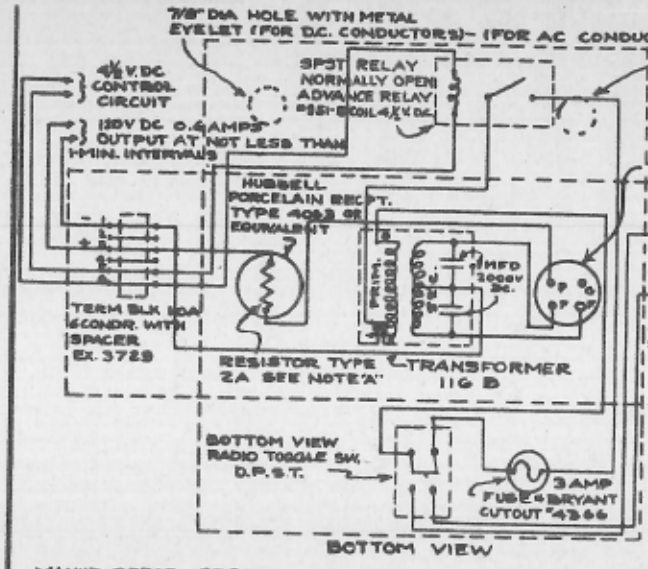
R-18

233


115A FOR 69B
120A FOR 70A
TRANSFORMER
INDUCTOR 108A
CONDENSER 75 MFD. 250 V. 5000Δ
MERCURY VAPOR RECTIFIERS
69B IS 110V D.C.
70A IS 160V D.C.
RECTIFIER TUBE-83
115A=310V
120A=320V
115A=70 V.A.
120A=80 V.A.
18 GA. VARNISHED CAMBRIC INSULATED WIRE FORMED TO PERMIT OPENING OF DOOR.
A.C.
D.C.
TERMINAL PLATE 11A
RECTIFIER 69B OR 70A WHEN NOT IN CABINET.
MANUF. SPECS 69B = 5188A.
" " 70A = 5189A.
INSTLN. IN CABINET = SPECS 5235A.
MANUF. CABINET = SPECS 5244A.
HEINEMANN CIRCUIT BREAKER, 25 AMP SINGLE POLE 120 VOLTS 60 CYCLE A.C. #0131. CURVE #3
69B=115V
70A=160V .015A
DC
115V A.C.
TERMINAL PLATE 11-A
INSIDE BACK OF CABINET
LEFT SIDE OF CABINET
9-13-42 K.M.

R-20

COLD CATHODE RECTIFIER 153 A



TO OPERATE A MAX OF 4-110V T. S. CAP 600 MA DC. INTERMITENT, DUTY ONLY AC. NOT TO BE ON OVER 10 SEC. EACH MIN.

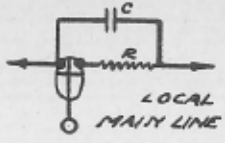
NOTE "A"

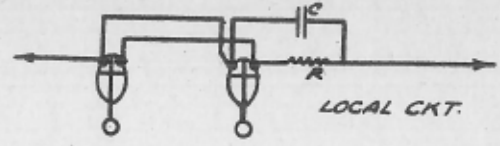
SIZE OF RESISTOR 2A DEPENDS ON NUMBER OF TIME STAMPS ACROSS RECTIFIER. SEE CHART BELOW

NO. OF TIME STAMPS TYPE 110V- MODEL 1-7	SIZE OF 2A RESISTOR 500 OHMS
1	
2	150 "
3	30 "
4	10 "

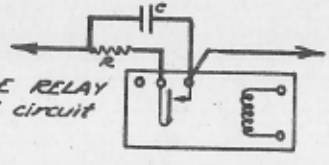
MANUF. SPECS 5720 A
BOX 5" x 10" x 9"
OVERALL HT. 7½"
" WIDTH 6"

5-21-42 KM
afmc





Polar relay, Neutral relay and Repeating sounder equipped same as Morse relay



WHEATSTONE RELAY
Local circuit.

All spark killer leads should be as short and direct as possible.

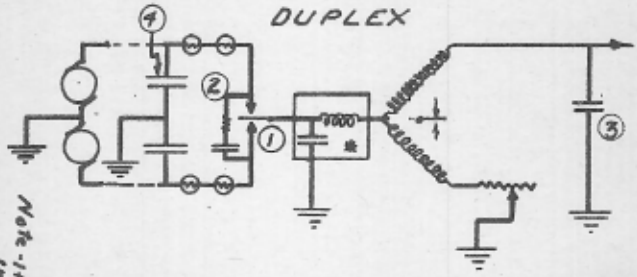
CKT. VOLTAGE	R RESISTANCE UNIT 2-A IN RECEPTACLE 1-A	C CONDENSER W.E. -21-Y.
Local 52-80 Volts	20 Ohms	¼ Mfd.
Local 110-160 Volts	50 "	¼ "
All Main Lines	20 "	¼ "

Elimination of interference to radio receiving sets from single Morse sets and local circuits. See drawing #24710-B1 specifications 1847-A.

D-1

11-14-24

DUPLEX



Note-If these measures are inadequate install Radio Inter-ference Eliminator G-4 per Specs. 1847.

① Disconnect 1 M.F. condenser from pole-changer.

② Make sure spark-killer accross pole-changer is functioning properly. (If single pole duplex be sure spark-killer is connected between tongue and batteried contact)

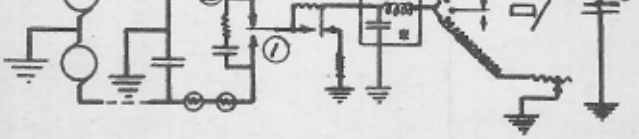
③ Install ¼ M.F. condenser (W.E.-21-Y) from line to ground at point where line wire leaves apparatus table.

④ When neccessary install ¼ M.F. (W.E. 21-Y) condensers from each side of battery to ground. Install at resistance lamp rack.

⑤ Equip all local contacts as shown on dwg. D-1 (When neccessary)

* Anti-noise set not neccessary but if installed it should not be removed.

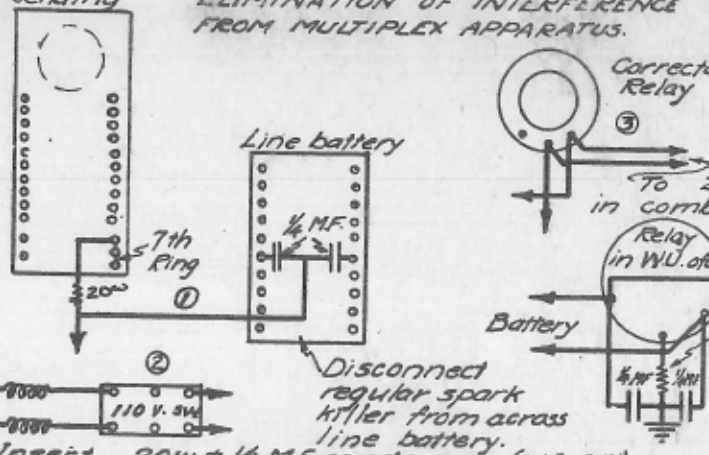
QUADRUPLEX



D-2-A
3-17-41

241

ELIMINATION OF INTERFERENCE FROM MULTIPLEX APPARATUS.



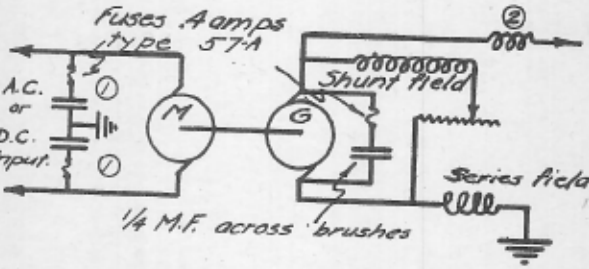
*NOTE: By Special choke coils is meant Radio Frequency Choke Coil 3-B-Spec. 2420-A.

ELIMINATION OF INTERFERENCE CAUSED BY NEWSPAPER PRINTER LOOPS— POLAR PRESS CKTS.

① Insert 20w + ¼ M.F. condenser (W.E.-211) in 7th ring circuit.
② Install special choke* coils in local battery leads at switch.
③ Connect spark killer across corrector relay contacts.
If interference is from 3-B printer, shunt 6TH pulse contact by ½ M.F. + 200w. Insert special* choke in ground lead of anti-noise set. See dwgs. 24713-A-1 & 24724-B-1, Spec. 1847-A.

D-3 J.R.P.
1-19-31 GB

ELIMINATION OF INTERFERENCE CAUSED BY MOTOR GENERATOR SETS.



① Connect one 1/4 M.F. condenser (W.E. 21-Y) from each power lead to ground.

② Insert choke coil 1-B in D.C. output lead. Choke coils 1-B should not be installed on generators rated higher than 2 amperes.

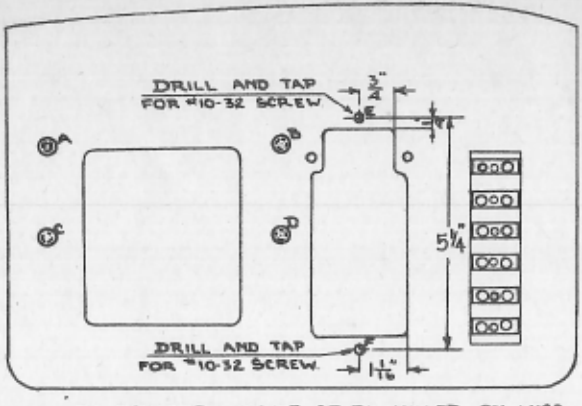
Choke coil 2-A should be used where maximum load is from two to five amperes. When load is from five to ten amperes, use two choke coils 2-A in parallel. Use of more than two coils in parallel is not recommended.

When frames of machines are grounded, it may be necessary to remove it. Where frame ground is required by N.E. Code, it should not be removed but coil 1-B may be inserted in series with same. When frames are not grounded, it may be necessary to ground them.

See dwg. 24711-B-1, Spec. 1847-A.

D-4 1-19-3165

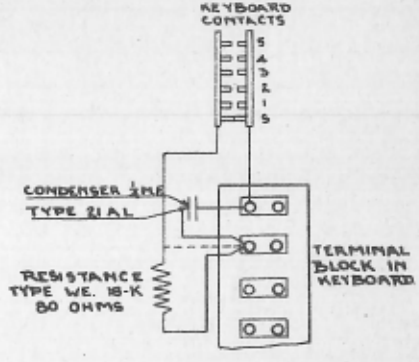
FOR NEW WORK USE
R.I. ELMR 6A.



D.C. PRINTERS.- MOUNT SPARK KILLER ON LUGS "A" & "B" SAME AS PRESENT UNIT ON LUGS "C" & "D".
SERIES A.C. PTRS.-DRILL & TAP HOLES "E" & "F" AS SHOWN & MOUNT SPARK KILLER SAME AS PRESENT UNIT ON LUGS "A" & "B".- PLACE FIBRE INSULATOR 5" x 2" x 1/16" THICK BETWEEN E & F BEFORE INSTALLING CONDENSER & RESISTANCE.
SYNCHRONOUS MOTOR PTR. SPARK KILLER MOUNTS ON VACANT LUGS A&B OR C&D AS CASE MAY BE.

LOCATION FOR MOUNTING SPARK KILLER FOR TELEPTR. 2-B TO ELIMINATE RADIO INTERFERENCE.

DRAWING # 32040-1 SPEC. 1940 B.



REMOVE DOTTED WIRE

WIRING DIAGRAM SPARK KILLER FOR TELEPRINTER 2-B

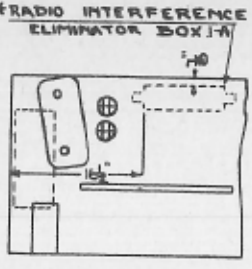
DRAWING # 32041-1

D-7

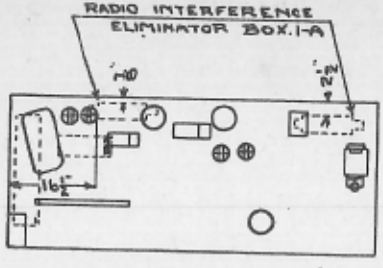
SPEC. 1940-A
ADC

6-25-33 F.P.B.

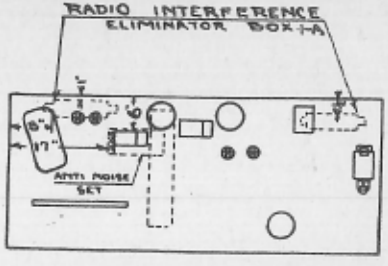
215



31-A, 33-A, 37-A, 32-A, AND 32-K TABLES.
DRAWING # 32042
*THIS BOX IS NOT REQUIRED ON TABLE 31-A WHEN A.C. POWER IS USED.



34-A & 34-K TABLES WITH TERMINAL BOX AT LEFT.
DRAWING # 32043



RELOCATE ANTI NOISE SET AS SHOWN. WIRES TO ANTI NOISE SET MUST BE REPLACED.

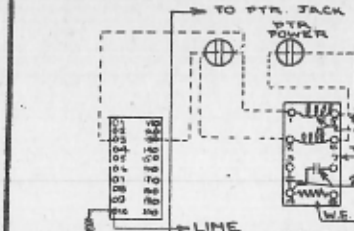
34-A & 34-K TABLES - TERMINAL BOX IN CENTER.
DRAWING # 32044.

LOCATION OF RADIO INTERFERENCE ELIMINATOR BOXES FOR DIFFERENT TYPES OF TELEPRINTER TABLES.

D-8

3-14-41 9" dimension corrected to 6" 34A & 34K. Dwg 32044.

SPEC. 1940-A
A.B.C
1-21-31 G-8

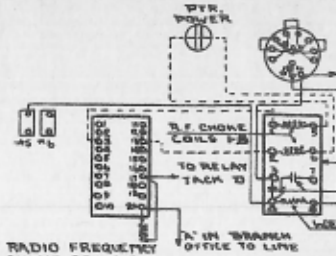


RADIO FREQUENCY CHOKE COIL 1-B MOUNT IN TERM. BOX ACCORDING TO DWG. #32051 BEFORE APPLYING CHOKE DISCONNECT BOTH ENDS OF WIRE FROM LINE RES. RECEPTACLE TO #10 LUG ON TERM. BLOCK.

DOTTED LINES INDICATE ARMORED LAMP CORD SOLID LINES INDICATE #18 FIXTURE WIRE.

INSTALL SPARK KILLERS ON PTR. KEY B'D. ACCORDING TO DRAWINGS #32040 & 32041.

FOR 31-A, 33-A, & 37-A TABLES.
DRAWING #32045



RADIO FREQUENCY CHOKE COIL 1-B MOUNT IN TERM. BOX ACCORDING TO DRWG. #32052 OR #32053 BEFORE APPLYING CHOKE DISCONNECT BOTH ENDS OF WIRE FROM #20 LUG ON TERM. BLOCK TO RELAY JACK D.

INSTALL SPARK KILLERS ON PTR. KEY B'D ACCORDING TO DRWGS. #32040 & #32041.

DOTTED LINES INDICATE ARMORED LAMP CORD. SOLID LINES INDICATE #18 FIXTURE WIRE

BEFORE WIRING FILTER BOX DISCONNECT WIRE ON PTR. RELAY TONGUE CONNECT THIS WIRE TO #4 LUG ON ELIMINATOR TERM. BLOCK.

FOR 32-A & 32-K TABLES.
DRAWING #32046.

WIRING DIAGRAM OF RADIO INTERFERENCE ON TELE-PRINTER CIRCUITS.

D-9

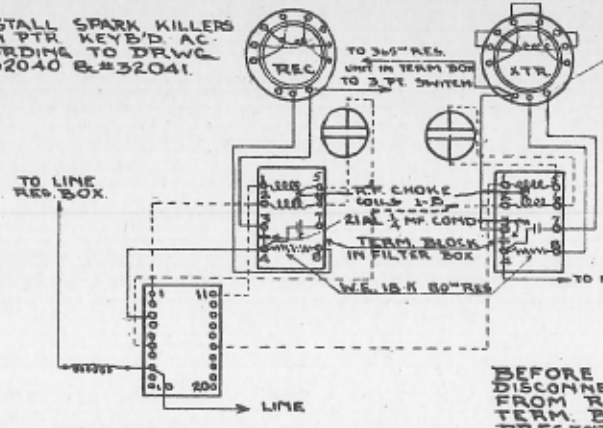
SPEC 1940-A
ABC.

1-27-31 Gr6

619

251

INSTALL SPARK KILLERS ON PTR. KEYB'D. ACCORDING TO DRWG. #32040 & #32041.



DOTTED LINES INDICATE ARMORED LAMP CORD.
SOLID LINES INDICATE #18 FIXTURE WIRE

BEFORE APPLYING FILTER BOXES— DISCONNECT BOTH ENDS OF PRESENT WIRE FROM REC. RELAY TONGUE TO #3 LUG ON TERM. BLOCK. DISCONNECT BOTH ENDS OF PRESENT WIRE FROM XTR. RELAY TONGUE TO MIDDLE CONNECTION OF ANTI-NOISE SET.

RADIO FREQUENCY CHOKE COIL 1-B MOUNT IN TERM. BOX ACCORDING TO DRWG. #32054 OR #32056.

34-A TABLE.

DRAWING #32047

WIRING DIAGRAM OF RADIO INTERFERENCE ON TELE-PRINTER CIRCUITS.

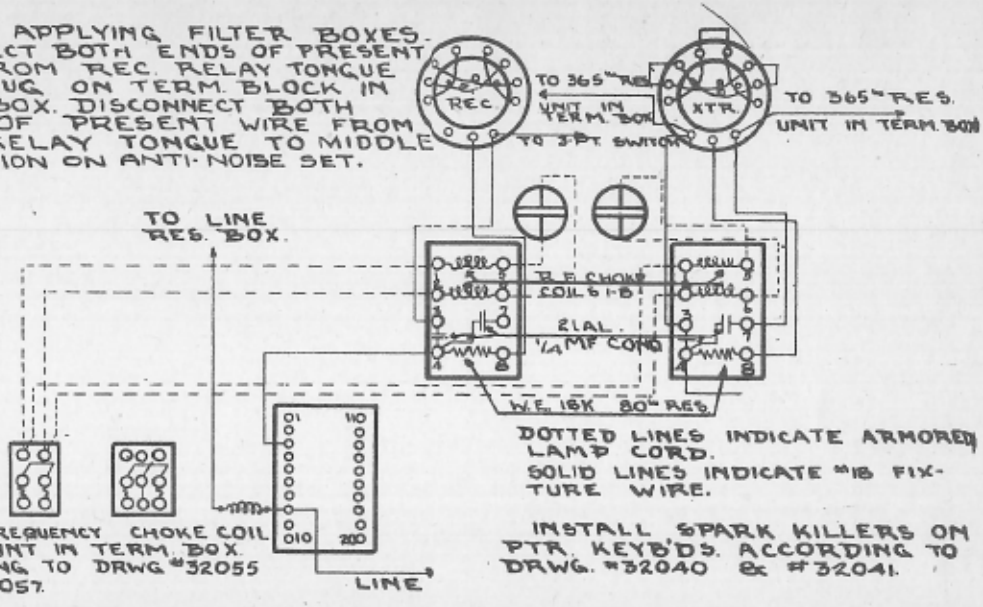
D-10

SPEC 1940A
A.D.C.

1-27-31 GS

253

BEFORE APPLYING FILTER BOXES. DISCONNECT BOTH ENDS OF PRESENT WIRE FROM REC. RELAY TONGUE TO #3 LUG ON TERM. BLOCK IN TERM BOX. DISCONNECT BOTH ENDS OF PRESENT WIRE FROM XTR RELAY TONGUE TO MIDDLE CONNECTION ON ANTI-NOISE SET.



DOTTED LINES INDICATE ARMORED LAMP CORD.
SOLID LINES INDICATE #18 FIXTURE WIRE.

RADIO FREQUENCY CHOKE COIL 1-B MOUNT IN TERM. BOX. ACCORDING TO DRWG #32055 OR #32057.

INSTALL SPARK KILLERS ON PTR. KEYB'DS. ACCORDING TO DRWG. #32040 & #32041.

WIRING DIAGRAM OF RADIO INTERFERENCE ELIMINATORS FOR TPR OPRG TABLE 34K

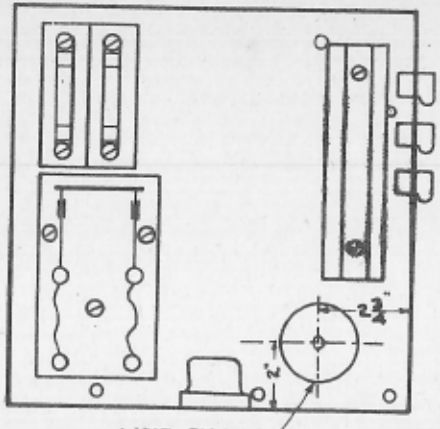
D-11

DRAWING Nº 32048

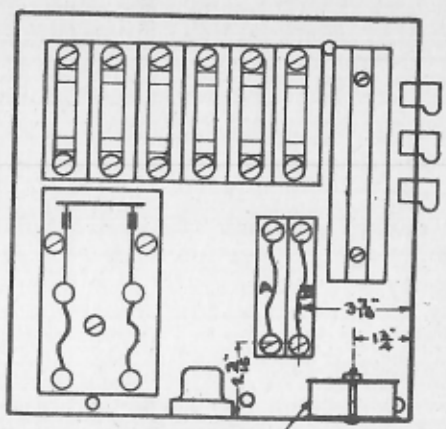
SPEC. 1940
A B C.

1-27-31 G.W.S.

255



FOR TPR OPRG TABLES
31-A, 33-A, AND 37-A.
DRAWING # 32091



FOR TPR OPRG TABLE 32A.
DRAWING # 32052

RELOCATE TWO FUSE BLOCKS A AND B TO POSITION SHOWN ON 32-A TABLES ONLY TO BE EQUIPPED WITH RADIO INTERFERENCE ELIMINATOR EQUIPMENT.

LOCATION OF LINE CHOKE COIL IN TERMINAL BOX.

D-14

SPEC. 1940-A
1-27-3168 A.B.C.

257

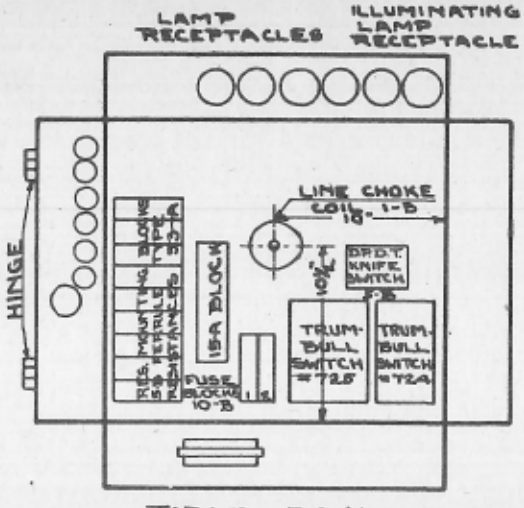


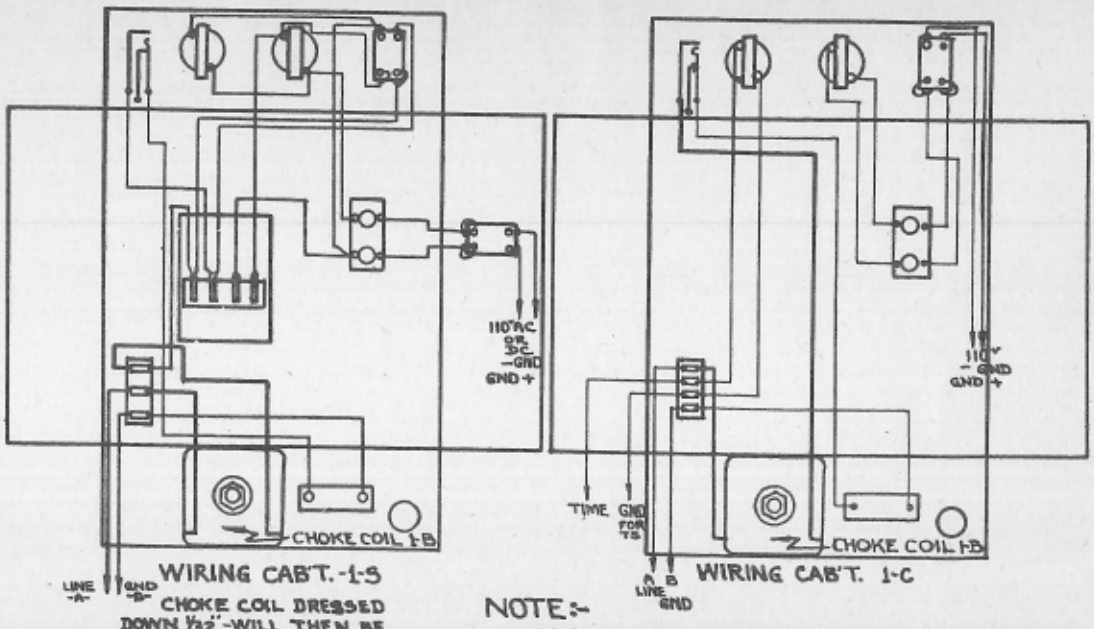
TABLE 34-K.

DRAWING # 32057

LOCATION OF LINE CHOKE COIL IN TERMINAL BOX.

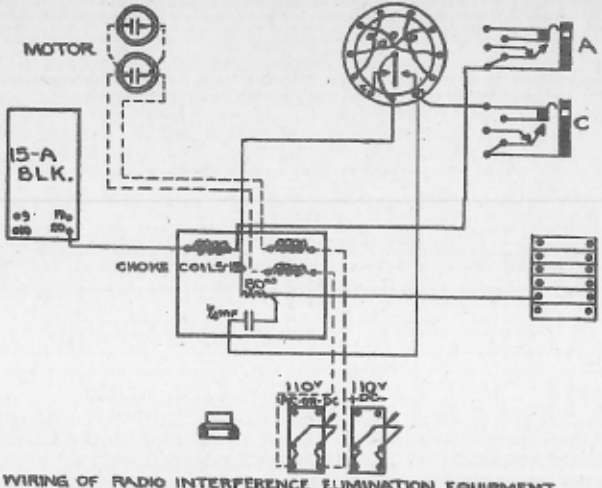
D-17

SPEC. 1940-A
1-27-31 GS A.B.C.

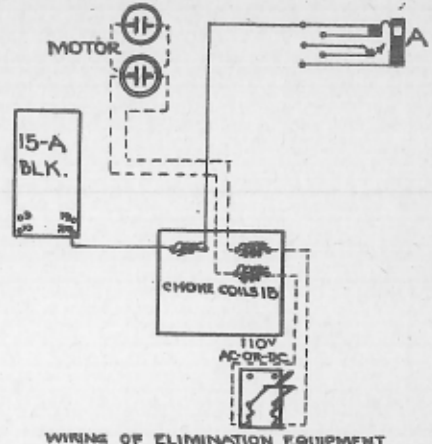


LOCATION OF LINE CHOKE COIL 1-B IN WIRING CAB'TS. 1-S & 1-C USED ON 41-A & 51-A TPR. TABLES RESPECTIVELY.

G.S D-18
11-24-31

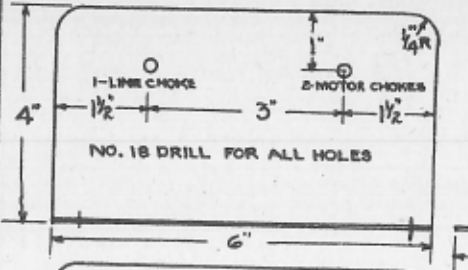


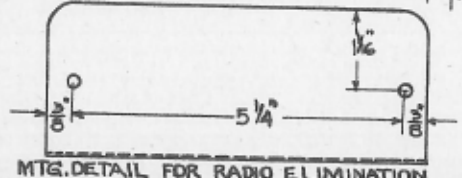
WIRING OF RADIO INTERFERENCE ELIMINATION EQUIPMENT
IN WIRING CABINET 2-B
DWG. 39732 B-2
IF SYNCHRONOUS MOTOR USED, OMIT THE 2 CHOKES ON
LEAD TO MOTOR RECEPTACLES.



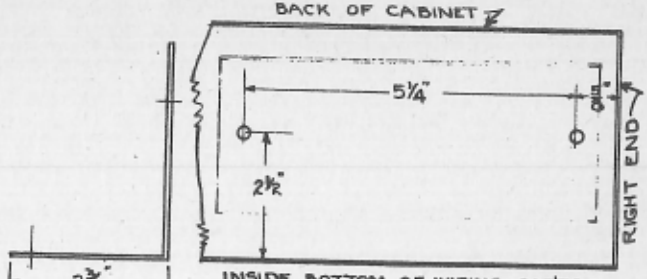
WIRING OF ELIMINATION EQUIPMENT
IN WIRING CABINET 1-B
DWG. 39732 B-2
IF SYNCHRONOUS MOTOR USED, OMIT
2 CHOKES ON LEAD TO MOTOR RECEPTACLES.

263

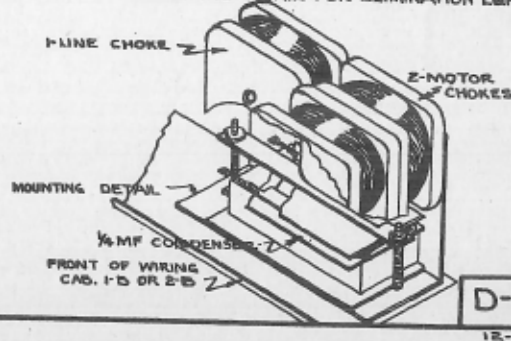




MTG. DETAIL FOR RADIO ELIMINATION EQUIPMENT
MATERIAL-1/16" COLD ROLLED STEEL
FINISH- STD. OLIVE GREEN DUCO



INSIDE BOTTOM OF WIRING CABTS. 1-B & 2-B SHOWING LOCATION OF MOUNTING DETAIL FOR ELIMINATION EQPT.

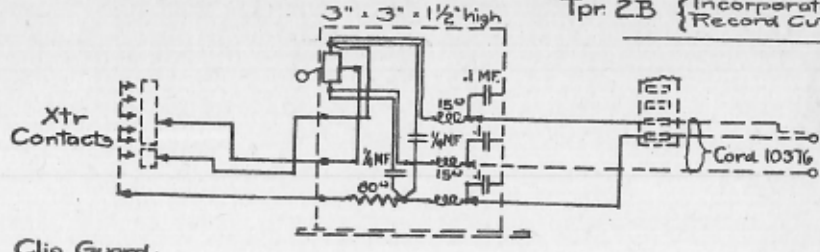


D-20

12-10-56
G.B

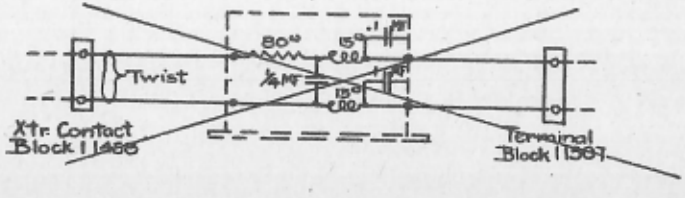
Radio Intfc Elimr 4A.

Tpr 2B {Incorporates Home Record Cutout 3A}



Mounted on Clip Guard

NOTE:
Do not use 3A. or 4A eliminators for new work unless 6A prove inadequate or are not obtainable.



Mounted on top of Kbd base.

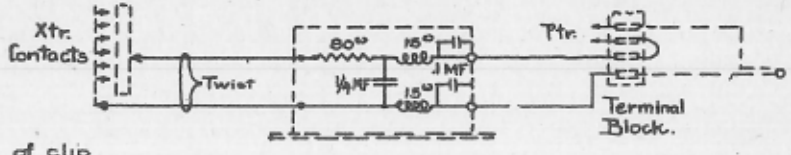
3-14-41. 5-A Eliminator deleted. Never stocked.

JWD 1-17-38

D218

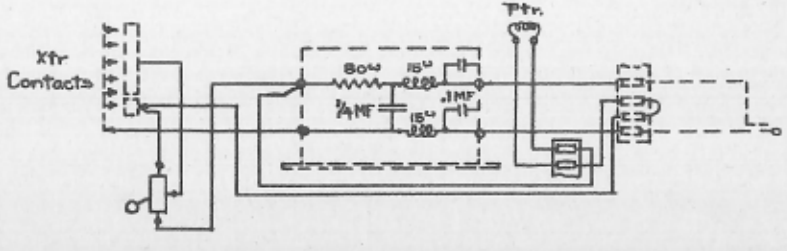
265

Radio Intf'c Elim'r 3A
with Tpr 2B.



Mount on top of clip guard 7257
Do not use for new work unless 6A proves inadequate.

Tpr 2B. with Home Record Cutout 2A.



492

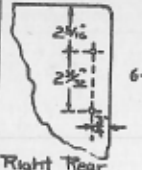
JWD
1-1830

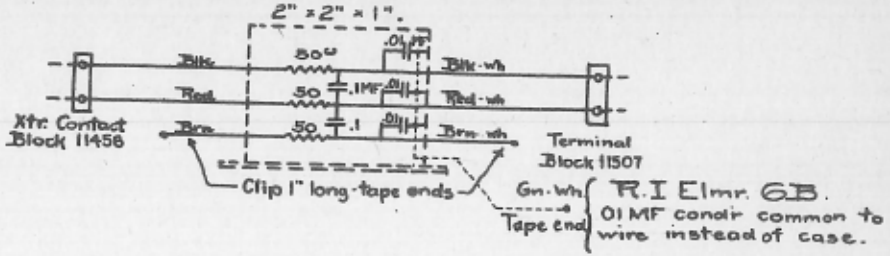
D22A

269

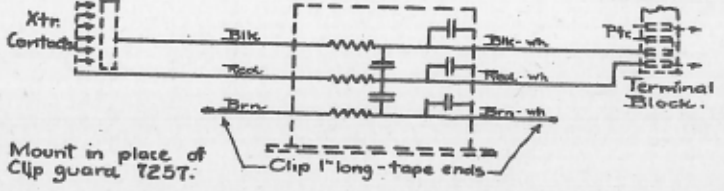
Radio Int'fc Elim'r 6A.

with Tpr. 101.





with Tpr. 2B.



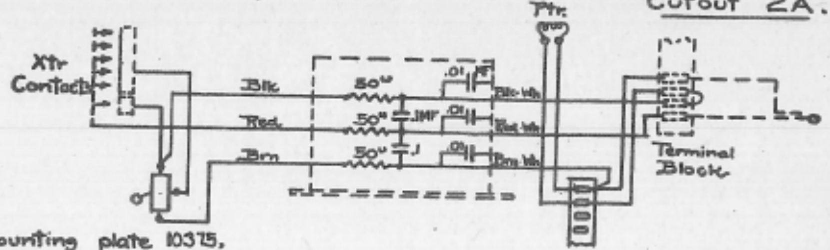
12-5-40 GB note added.

JWD 1-13-38

D23B

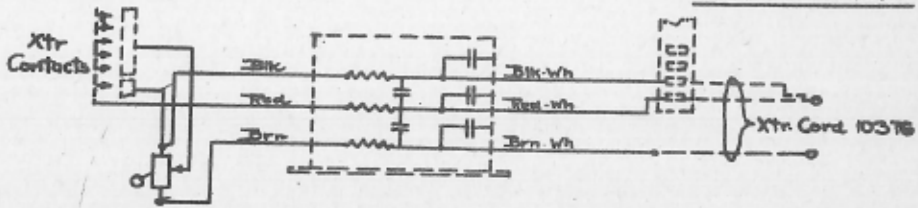
271

Radio Int'f'c Elim'r 6A
Tpr. 2B with Home Record Cutout 2A.



If Tpr has mounting plate 10375, it must be replaced with 10695. Make leads from elim'r to Kbd contacts as short as possible.

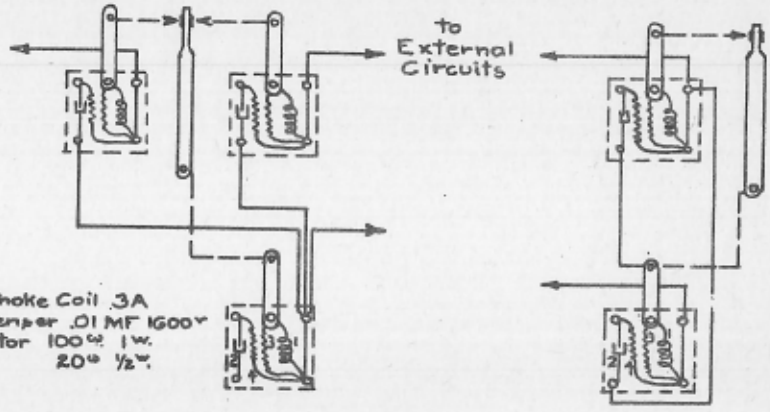
Tpr. 2B with Home Record Cutout 3A.



JAD
1-13-38

D24

R.I. Eliminator 7A
For Ticker Panels.



1. R.F Choke Coil .3A
2. Condenser .01 MF 1600v
3. Resistor 100Ω 1w.
4. " 20Ω ½w.

For complete wiring see
Dwg 79790. Branch Panel 5A
" 79791 " " 12A
" 79792 " " 7B

Spec 4143A Apx 1.

JAD
12-5-40

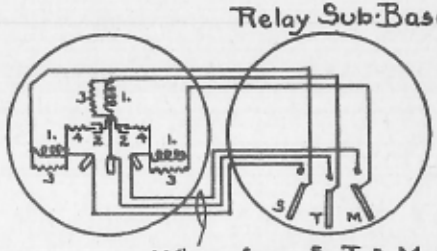
D25

273

R.I. Eliminator 9A.

2215

Raise Sub-Base, place Elmr under it. Sub-Base supported by metal collar & held by long wood screws.



1. R.T. Choke Coil 3A
2. Condenser .01 MF (Aerovox 1600V. Type 1684.)
3. Resistor. 100Ω. 1W.
4. " 20Ω. ½ W.

Spec 4696.

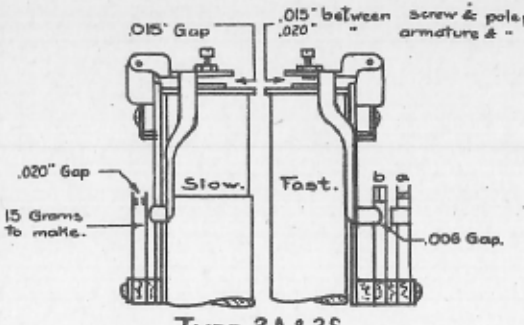
JAD
12-5-40

D26

Teleprinter. Call Signal Relay Adjustments.

Type 1A & 1S.

Armature travel .015"
Back off small stop nut to obtain this adjm.
Each set of contacts should open when armature is .010" from core.
Adjust springs by bending so relay will operate on 30MA, not on 20MA.



Type 2A & 2S.

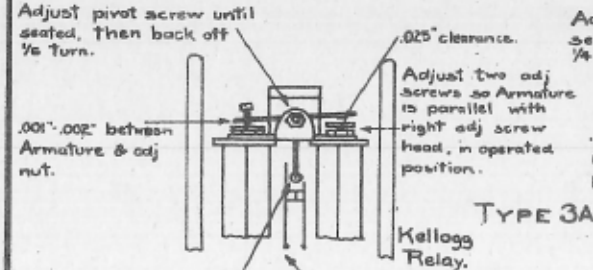
Contact a to open .010" min.
" b to open .020" min. (⅛" Tungsten)
" a & b require 30 grams to break.
Fast Relay shall operate on 25 MA, not on 20MA.
Slow " " " " 20 " " " 15 " .
Complete Unit to function on "Letters" signal (.022 Sec.) on 30–100 MA.
Slow Relay shall not release on one "Blank" signal (.132 Sec.) on 30MA.

JWD
3-31-33

L21

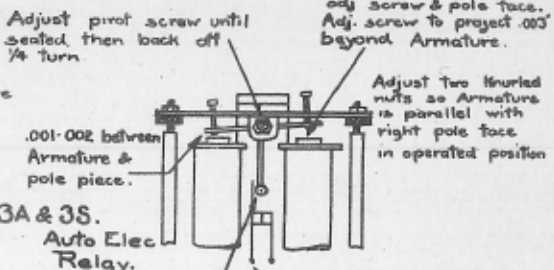
279

Teleprinter. Call Signal Relay Adjustments.



TYPE 3A & 3S.

Kellogg Relay.



Auto Elec Relay.

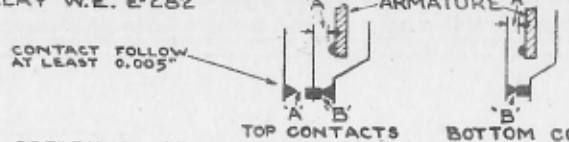
JWD
3-31-33

L22

RELAY ADJUSTMENT DATA

PRINTER CONCENTRATOR
PLAN-3 SPEC. 3174-A

RELAY W.E. E-282



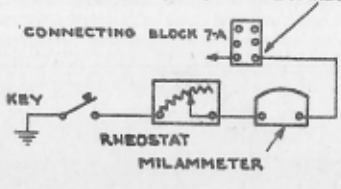
TOP CONTACTS BOTTOM CONTACTS

'A' - SEPARATION OF AT LEAST 0.005" WHEN RELAY DEENERGIZED.
'B' - SEPARATION AT LEAST 0.005" WHEN RELAY IS OPERATED.
ARMATURE TRAVEL - 0.020"
OPERATING CURRENT (P-COIL 32ᵐᵐ) 0.045 AMP. MAX.
RELEASE CURRENT (P-COIL 32ᵐᵐ) 0.025 AMP. MAX.

RELAY W.E. B-10
ARMATURE TRAVEL - 0.015"
OPERATING CURRENT - 0.020 AMP.
NON-OPERATING CURRENT - 0.015 AMP.

METHOD OF CONNECTION TO RELAY FOR TESTING.

REMOVE LINE WIRE FROM BLOCK OR OPEN LINE CIRCUIT AT SWITCHBOARD.



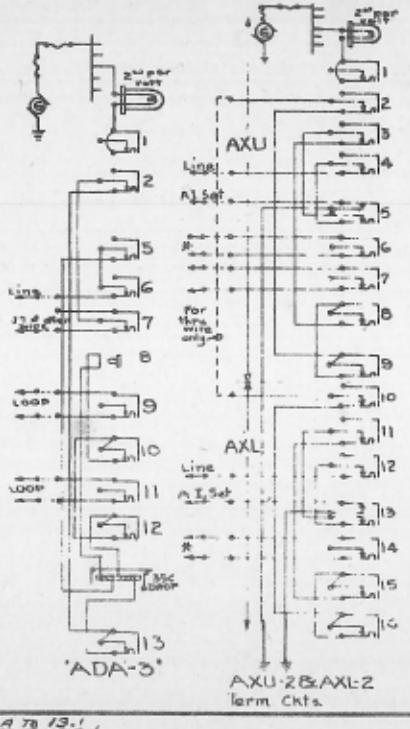
NOTE:
WHEN ADJUSTING RELAY W.E. E-282 FOR OPERATING CURRENT, INSERT THIN PIECE OF PAPER BETWEEN BOTTOM CONTACTS OF RELAY.

281

H.A.J. 8-2-34

L-39

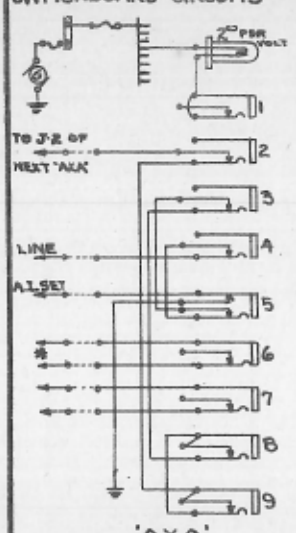
SWITCHBOARD CIRCUITS



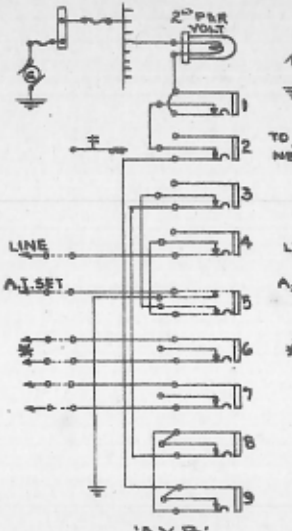
1-14-36 SHEET 13 CHANGED 13A TO 13-1
NOTE A - 5/6/40 A1 RESISTANCE REMOVED

13-1A

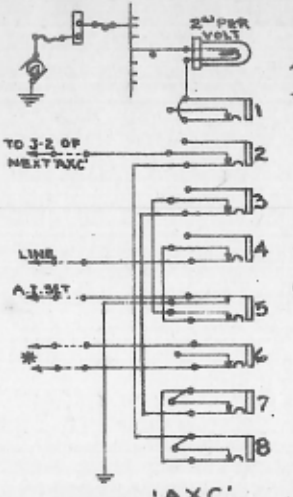
SWITCHBOARD CIRCUITS



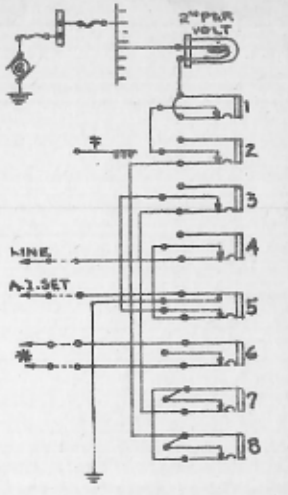
'AXA'
9 JACK THRU
SUPERCEDES 'AXU'



'AXB'
9 JACK BATT.



'AXC'
8 JACK THRU
SUPERCEDES 'AXL'



'AXD'
8 JACK BATTERY

NOTE:-
CABLING IN ALL CASES TO BE FOR 'AXA' OR 'AXC' TYPE CIRCUITS.

*:-ON DUX OR QUAD SETS, CONNECT LINE TO TIP & ARTIFICIAL LINE TO SLEEVE OF JACK

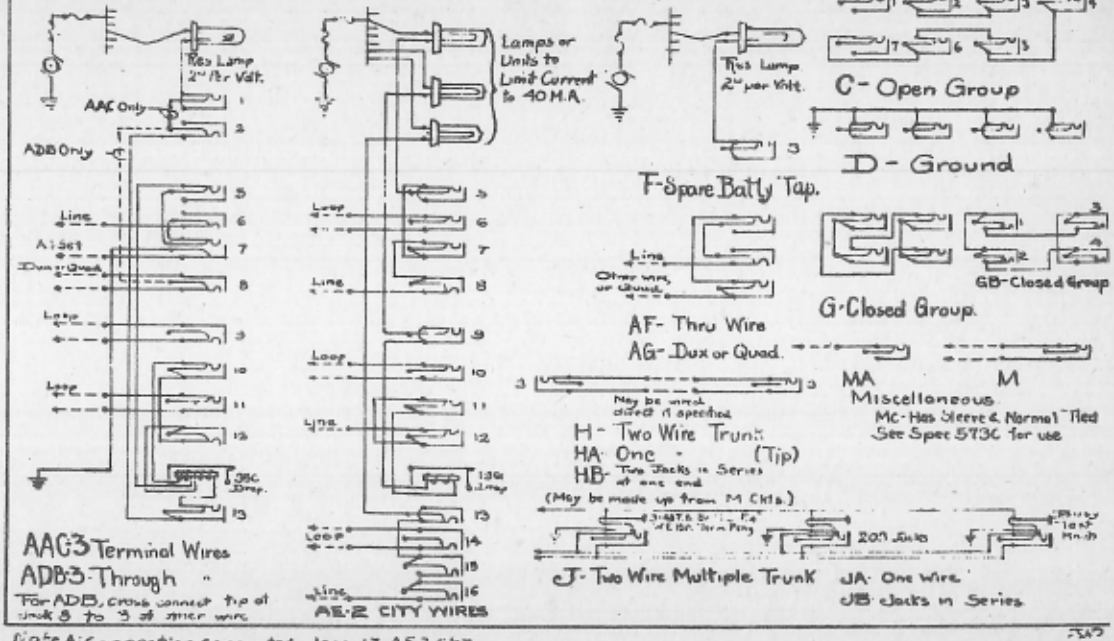
†FOR THRU WIRE, REMOVE STRAP BETWEEN JACKS 1 & 2. CONNECT CABLE CONDUCTOR TO TIP OF J-2 & CROSS CON. AT D.F. TO J-2 OF SIMILAR LINE CKT.

13-2A-

C.S 10-7-30

1-16-36 SHEET # CHANGED 13B TO 13.2
NOTE A CSR 5/6/36 AT RESISTANCE REMOVED

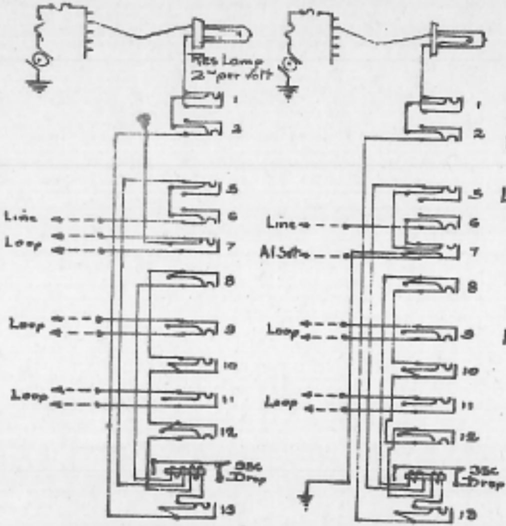
Switchboard Circuits



Note A: Connection corrected, Jack 13 AE-2 Ckt.
Note B Extra 3/0 A1 Resistance removed.

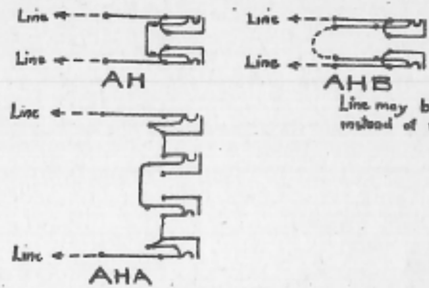
68 MM 5-18-37

Switchboard Circuits (Obsolescent)



A3 Term Wires - 3 Loops
* AB " " 2 "
* AC " " Dux or Quad
* AD-Thru "

AAD-Term. Wires
ADC-Thru "



Line may be run direct instead of via Dist Frame.

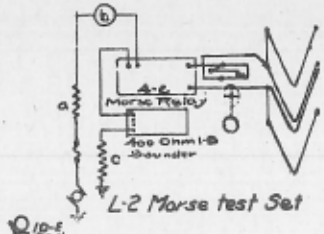
* AB-Omit Jacks 11 & 12.
* AC- " " 9 to 12 & Sleeve connection Jk 7.
* AD { " " 11 & 12 " " " "
  " Tie from Normal 1 to Nor 2
  Tie Nor 2 to Nor 7
  Bring other wire to tip 7.

AAD & ADC to be used only for modifying existing boards. Use AAC & ADB for all new work.

Note "A" ... AI Resistance removed.

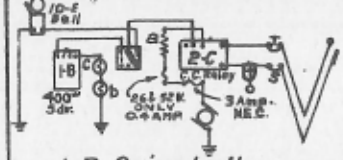
JWD
6-3 4-26-30

Switchboard Test Sets.



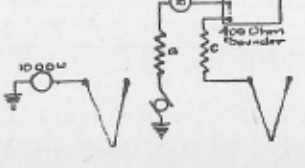
L-2 Morse test Set

Resistances			
Voltage	a	b	c
26		500	
52		1500	
80	1500		800
110	1500		1500
160	1500	2000	1500



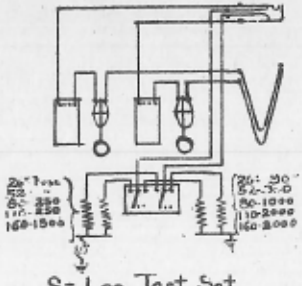
LB Swing bell

26		500	—
52		1500	—
80	1500	800	600 ONLY
110	1500	1500	
160	1500	1500	2000

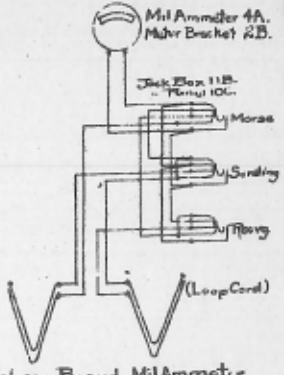


LD K-Busy Test.

26		500	
52		1500	
80	250	2000	
110	1500		1500
160	1500	2000	1500



S-Leg Test Set.



T-Loop Board Mil Ammeter.

291

Note:- Swing bell Ckt. Cor. 4-28-37 E

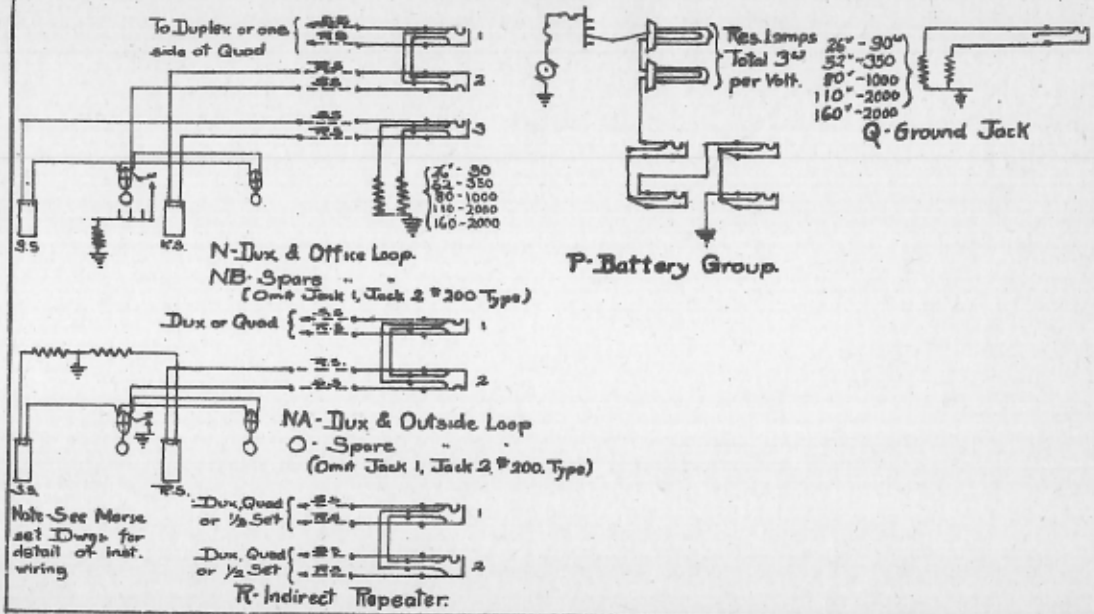
3D

LAP 4-28-3

15-A

293

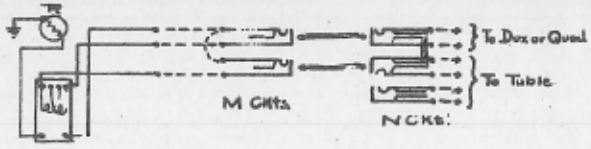
Loop Switchboard Circuits.



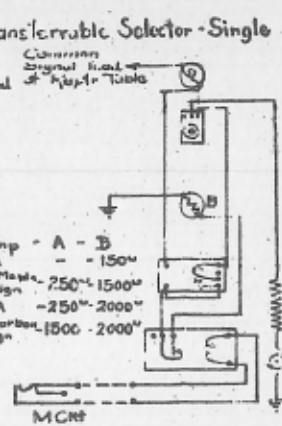
JWP
7-14-20

Selectors

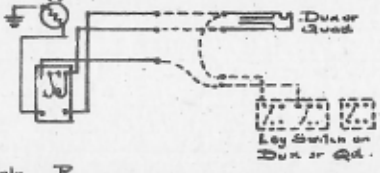
Transferrable Selector - Duplex or Quad



Transferrable Selector - Single



Regularly Assigned Selector - Dux or Quad.

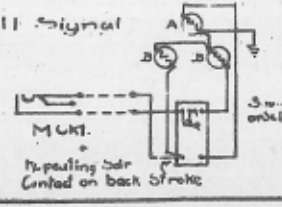


Volts	Selr	R
26	D	50
80	T	250
110	T	500
160	T	500

Volts	Selr	Sig Lamp	A	B
26	D	26v 2A	-	150w
80	T	12v 2½w Mazda S-14 Sign	250w	1500w
110	T	52v 2A	250w	2000w
160	T	125v 20w Carbon S-14 Sign	1500	2000w

Attendants Call Signal

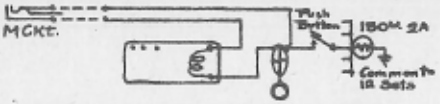
Volts	Selr	A	B
26	4D	50	90
80	400w	250	1500
110	400w	500	2000
160	400w	500	2000



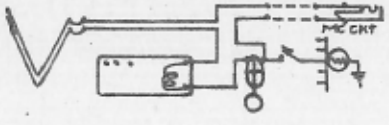
S-2-12

Single Morse Sets.

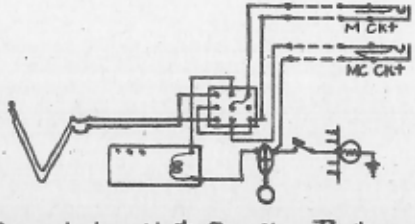
Main Line Wiring.



Regular Single Morse Set



Concentration Unit Position



Concentration Unit Overflow Position

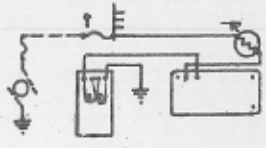
from Dwg 9184BT

10-20-27 - Changed per Spec 1803A.

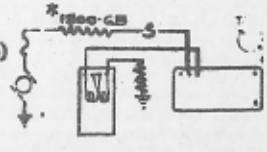
Local Wiring

Voltage ℸ

23-30	500Ω
45-60	1000Ω



80	250
110	1500
160	1500+1500(3)

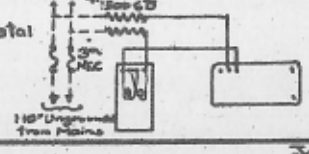


† Fuse block 10A, 1/16" fuse 5TA, common to 10 Sets

* 6B Units mounted in Metal box.

Dotted lines, N.E.C. wiring

Standard Voltages are 80, 110 and 160.



Jad

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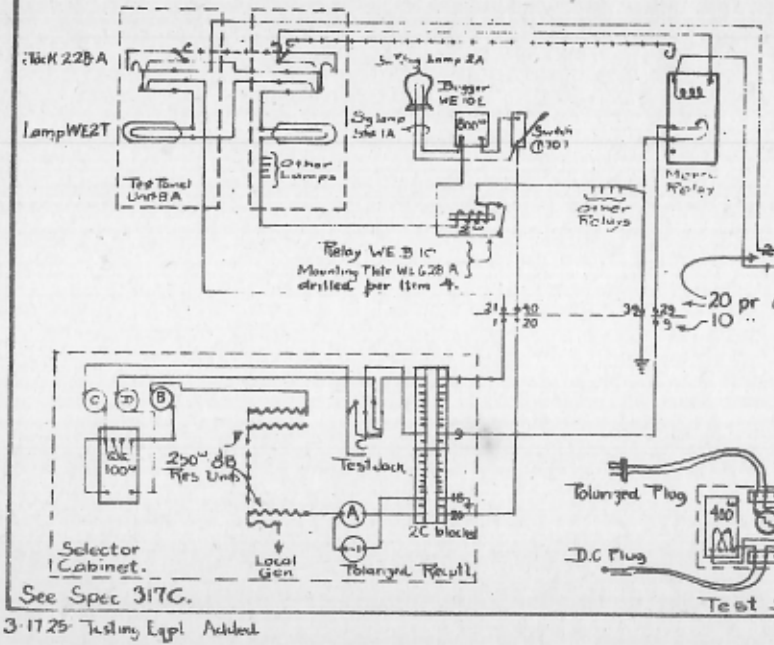
Selector Concentration Unit



Resistances					
Volts	A	B	C	D	
80	—	—	2000	—	
110		500	2000	500	
160	250	250	2000 2000	2000	

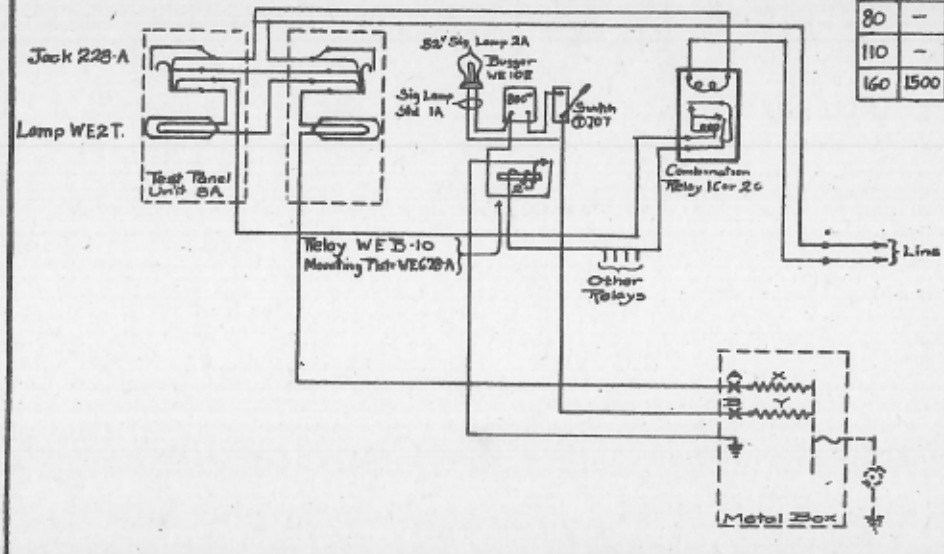
For 26V use Mod. D Selector, B9 Pilot relay, 2F lamp. 26V Sig. Lamp. Res. "C" 250Ω; omit res A B & D & 8B units.

See Spec 317C.

3-17-25 Testing Eqpt Added

City Concentration Unit

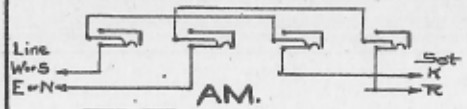
Resistances.					
Volts	A	B	X	Y	
80	—	—	250	250	
110	—	—	1500	250	
160	1500	250	1500	250	



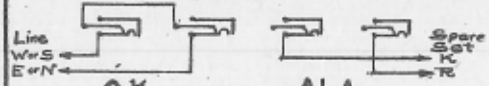
from Dwg 10085A2

303

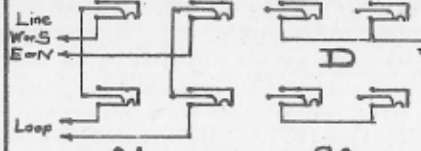
Single Conductor Switchboard Circuits.



AM.

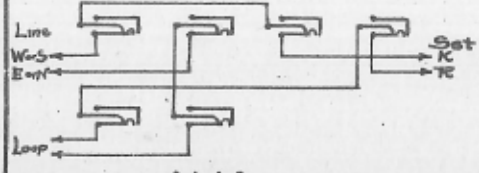


AK ALA

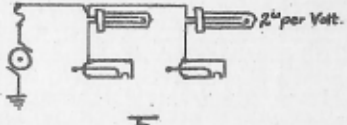


D

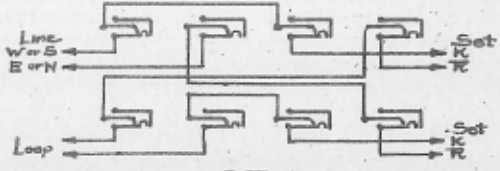
AL GA



ALM



F

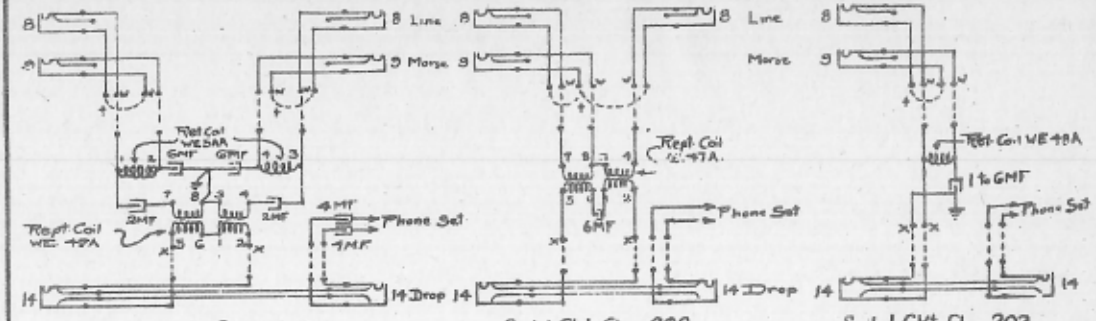


8 Jack.

AMA CHANGED TO ALA 12-4-34 FFS.

JAD

Switchboard Circuit Combinations.



Swbd Circuit Combn 201
Composite Set

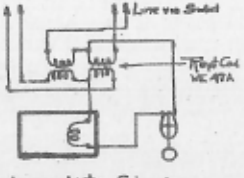
Swbd Ckt Cbn 202
Simplex Set

Swbd CKt Cbn 203
Grounded Composite

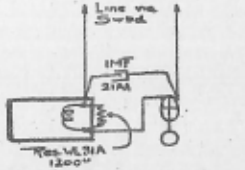
Dotted lines show cross-connections at Dist. Frame. Those marked † required only where Anti-Induction sets are in use.

With Spring Jack board, connect wedges at points marked "w" and phone set at "x".

Phone set and 202 Jacks may be omitted at Distand end of circuit if desired.



Intermediate Simplex



Intermediate Morse on Grounded Composite.

See Spec 706A.

JAD

10-20-27 Sw. Ckt. changed.

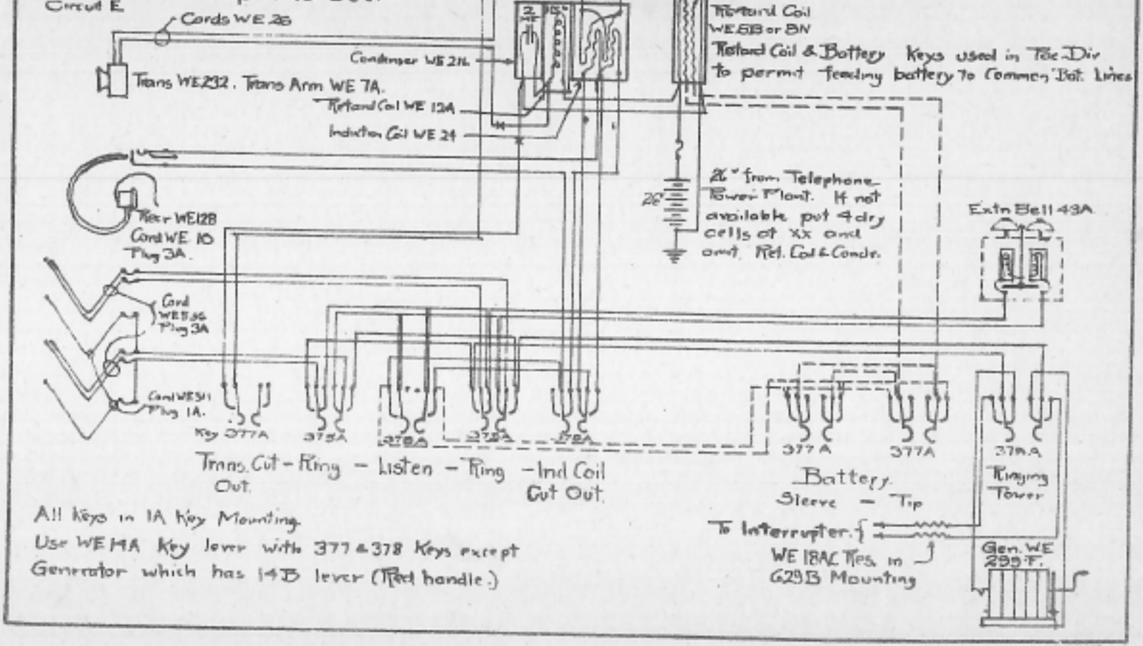
305

22

307

Switchboard Telephone Set.

Circuit E



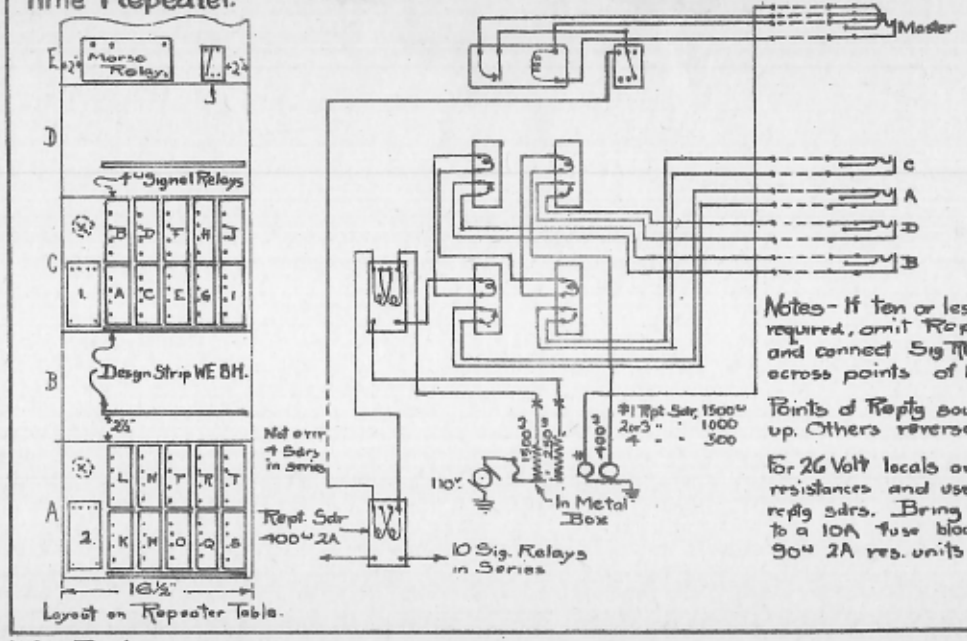
All keys in 1A Key Mounting

Use WE 14A Key lever with 377 & 378 Keys except Generator which has 14B lever (Red handle.)

JSD
11-27-20

309

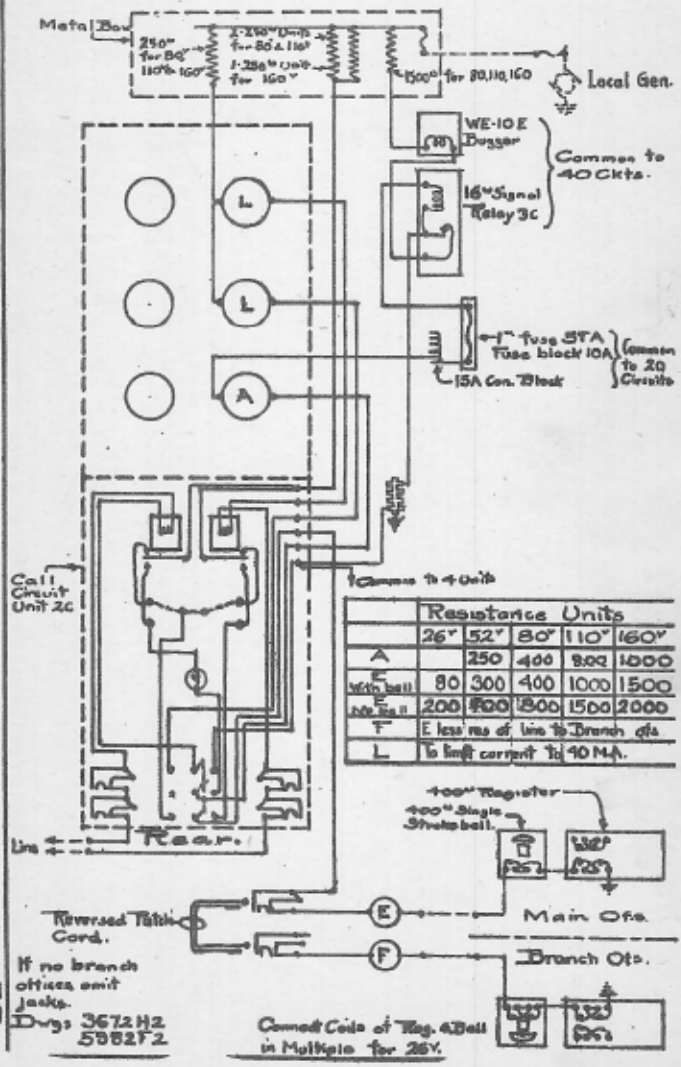
Time Repeater.



10-20 27 Resistances changed

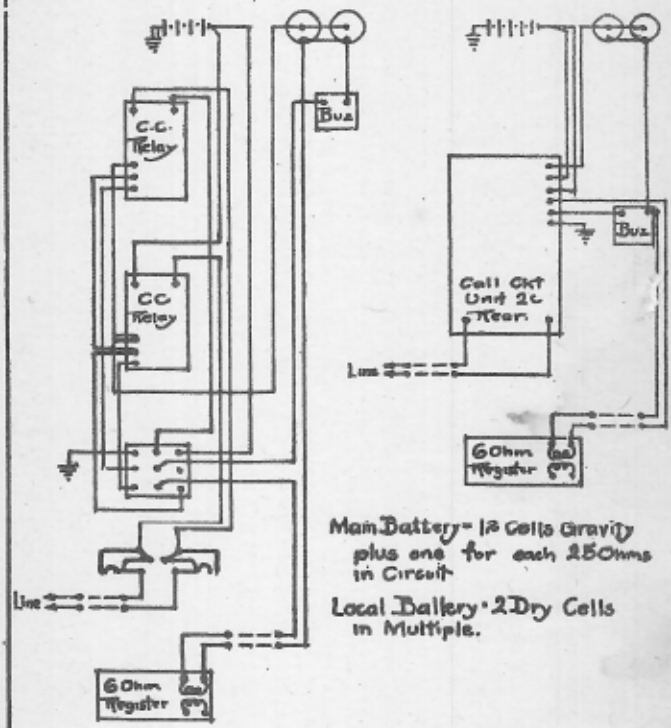
JW

Call Circuit - Class B.



	Resistance Units				
	26V	52V	80V	110V	160V
A		250	400	800	1000
E With Bell	80	300	400	1000	1500
E No Bell	200	400	800	1500	2000
F	E less res. of line to Branch ofs				
L	To limit current to 40 MA.				

Call Circuit - Gravity Battery.



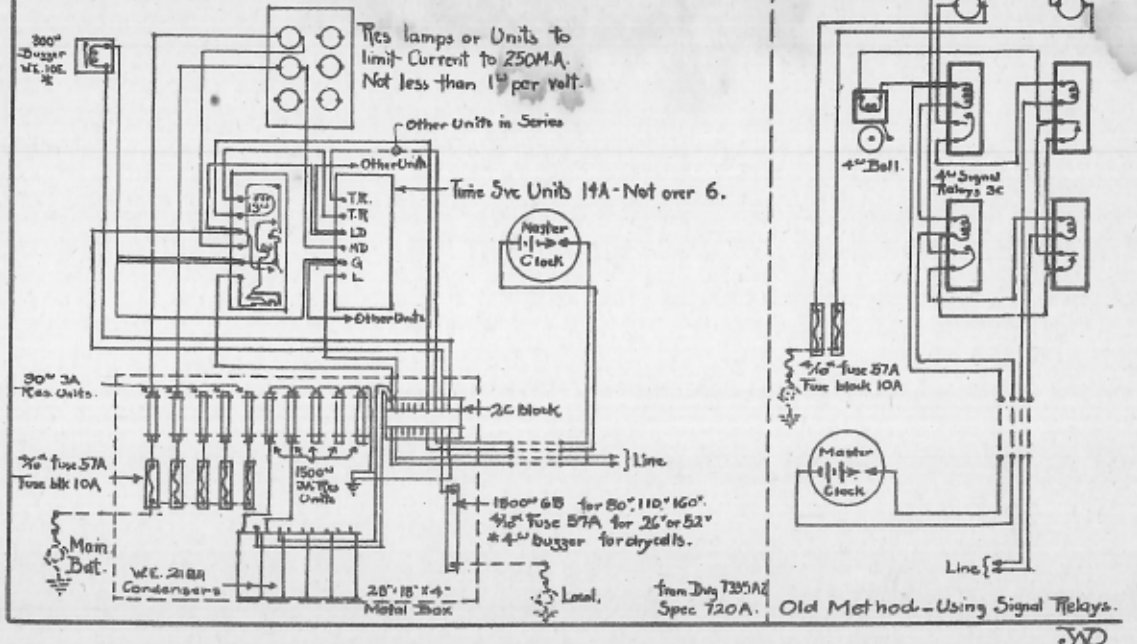
Main Battery - 12 Cells Gravity plus one for each 250hms in Circuit

Local Battery - 2 Dry Cells in Multiple.

C3 E-1-2 OSC

315

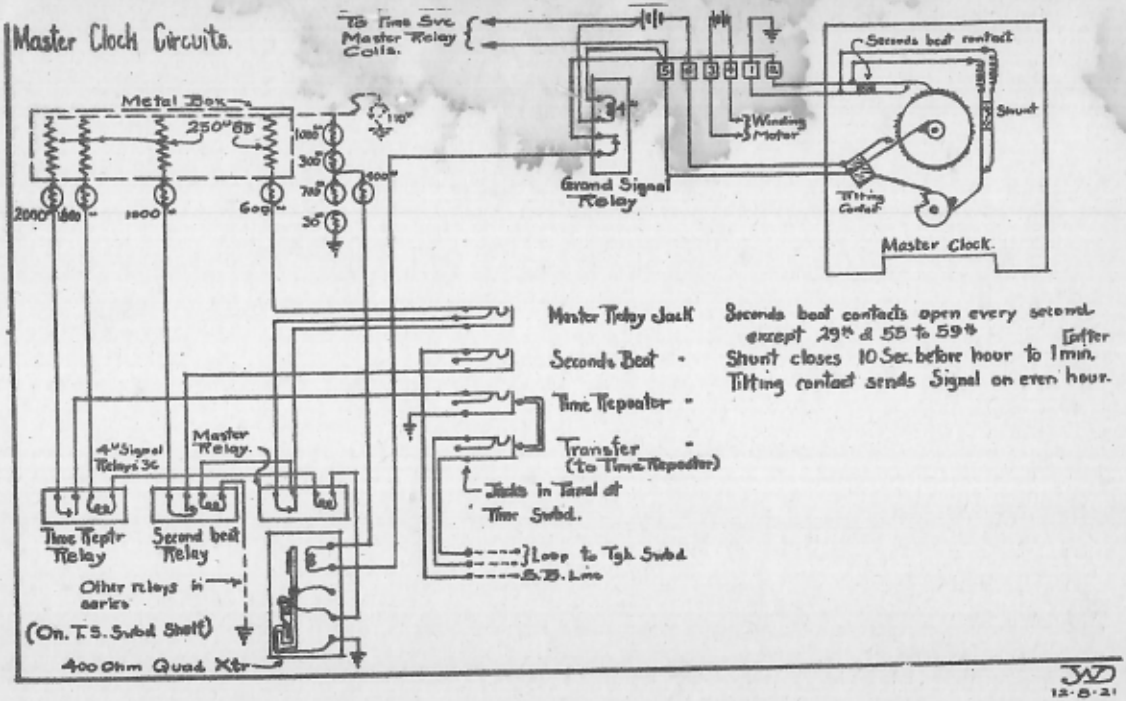
Time Service Equipment - Small Offices



JWD
12-6-21

C5

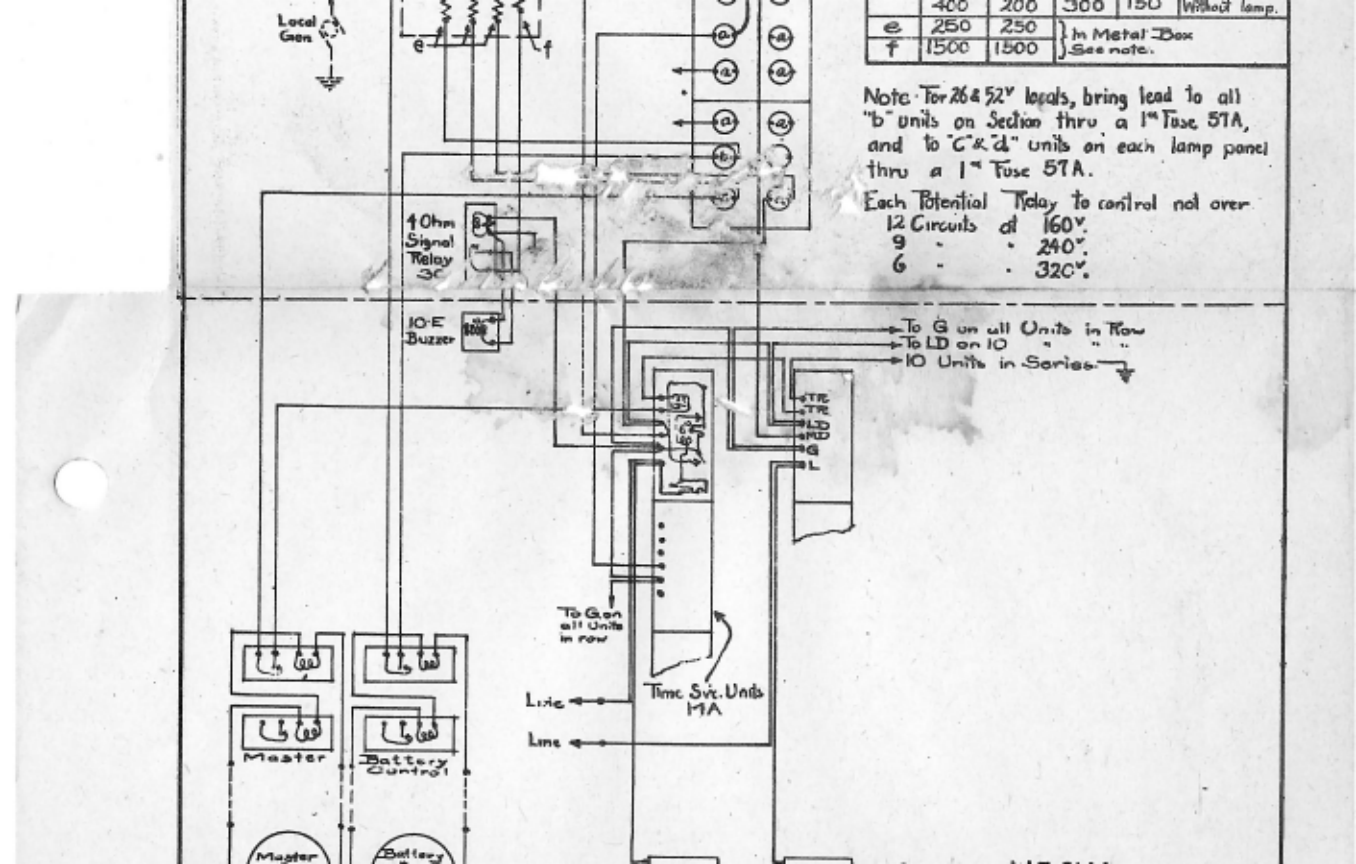
Master Clock Circuits.



Seconds beat contacts open every second except 29th & 55 to 59th
Shunt closes 10 Sec. before hour to 1 min. Tilting contact sends Signal on even hour.

JWD
12-8-21

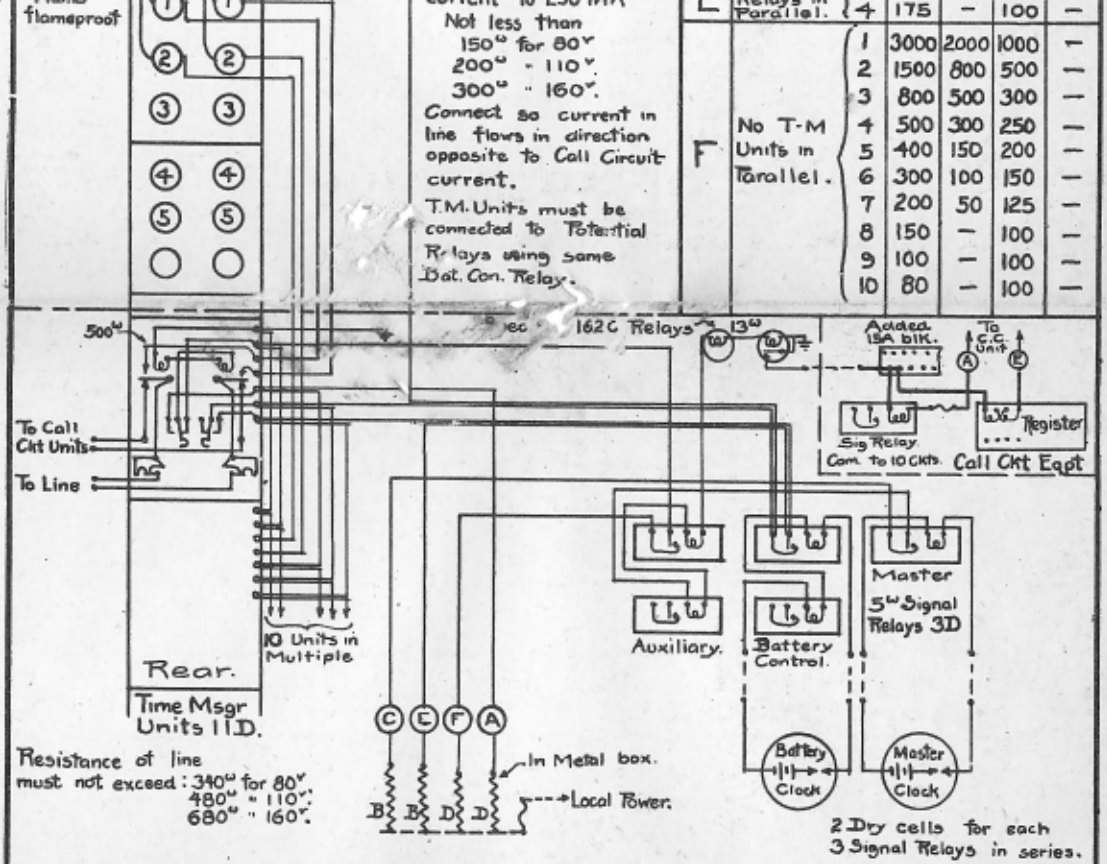
C6



	400	200	300	150	Without lamp.
e	250	250	In Metal Box See note.		
f	1500	1500			

Note: For 26 & 52 V locals, bring lead to all "b" units on Section thru a 1 Amp Fuse 57A, and to "c" & "d" units on each lamp panel thru a 1 Amp Fuse 57A.

Each Potential Relay to control not over
12 Circuits at 160 V.
9 " " 240 V.
6 " " 320 V.


flameproof
Not less than
150ω for 80v
200ω " 110v.
300ω " 160v.
Connect so current in line flows in direction opposite to Call Circuit current.
T.M. Units must be connected to Potential Relays using same Bat. Con. Relay.
Parallel. 4 175 — 100 —
F
No T-M Units in Parallel.
1 3000 2000 1000 —
2 1500 800 500 —
3 800 500 300 —
4 500 300 250 —
5 400 150 200 —
6 300 100 150 —
7 200 50 125 —
8 150 — 100 —
9 100 — 100 —
10 80 — 100 —
500ω
162C Relays
13ω
Added 15A blk.
To C.C. Unit
To Call Ckt Units
To Line
Sig Relay Com. to 10 Ckts.
Register
Call Ckt Eqpt
10 Units in Multiple
Rear.
Time Msgr Units 11D.
Auxiliary.
Battery Control.
Master 5ω Signal Relays 3D
C E F A
B B D D
In Metal box.
Local Power.
Battery Clock
Master Clock
Resistance of line must not exceed: 340ω for 80v.
480ω " 110v.
680ω " 160v.
2 Dry cells for each 3 Signal Relays in series.

TIME & DATE STAMP . DATA SPEC. E194G & STENCIL 1846A

W.U. Models 1-2-3-4-5 are obsolete.

MODEL	USE	GUIDES	CORD	PLUG	REMARKS
W.U. 6	Small offices	all except 1A	6 ft.	Edison	controlled by time element clock ic.
W.U. 7	General	All	3 ft.	"	year wheel may be omited and prefix added.
W.U. 8	Cable Dept.	spec'l. for width of tape	2-6 ft.	"	For automatically stamping time every minute on tape.
W.U. 9	Telephone Cable Dept.	none	6 ft.	"	Special fractional minute only when authorized by Vice President charge Traffic.
WU 10	Automatic	Spl. hinged to operate print magnets	19" Black Time Ckt 19" Red Power ckt	Hubbell 5420 Brass Covered	Special Electrically Operated Stamp.
W.U. 11	Small offices	all except 1A			AC Stamp 110 or 220 V. - 25, 50 or 60 ~. Timing mechanism is trip gear operated by Syn. Motor.
W.U. 13	" "	" " "			AC Stamp 110 or 220 V. - 25, 50 or 60 ~ commutator and rectifier.

W.U. 6 Stamp 10 Volt (8 Drycells) Resis. 120 ohms Operating Current .08 Amps.
W.U. 7 " 110 " " 825 " " " .13 "
W.U. 7 " 160 " " 1600 " " " .10 "

Model	Voltage	Time Magnets.	Print Magnets.
W.U. 8	110	Resis. 625 ohms Oper. Current .13 Amp.	Resis. 500 ohms Oper. Current .22 Amp.
W.U. 9	110	1600 " " " .06 "	—
W.U. 10	110	825 " " " .13 "	" 170 " " " .6 "

1-16-36 No. changed 7A1 to 7.1
6-7-44 WU 13 added.

FPS

7.1

323

TIME & DATE STAMP - GUIDE & RELAY DATA.

GUIDE	STAMPS	USE
W.U.1A	W.U. 7	Time Cards Form 3134
" 2A	" 6-7	Sent Messages Forms 1206-1207
" 3A	" 6-7	" " " 1228 Use restricted to large offices where this form is in general use.
" 4A	" 6-7	Automatic Receiving Positions
" 5A	" 6-7	Obsolete
" 6A	" 6-7	Received Messages. Use restricted to New York and Chicago only, except authorization rec'd. from Vice President in Charge Commercial Dept.

RELAYS

Stromberg Electric Co. Obsolete see Hand Book Sheet 7

S.E.&M Type DFH-1 Capacity 60 Stamps, used for remote control of Stamps in branch offices. Volts 110-160 Resis 4100$^{\omega}$ Oper. Current .025-.036 Amps

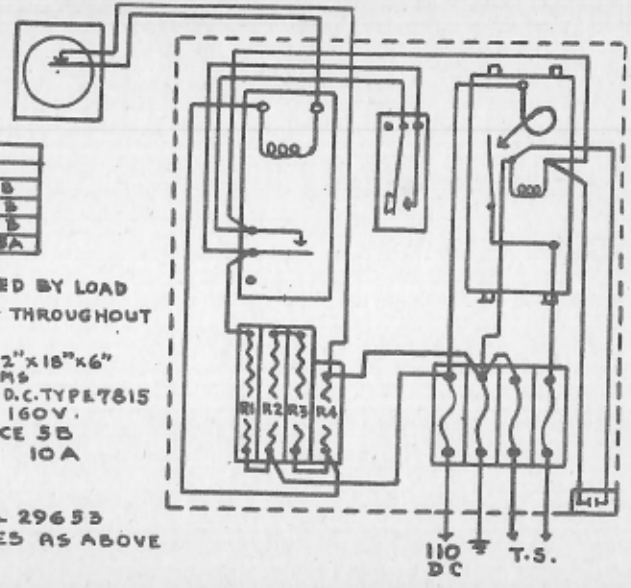
D.C. Magnetic Contactor Type 7815 W.U. 40 Amp. 110 or 160 Volt. Capacity 300, 110 Volt Stamps, used for control of stamps in main & branch offices.

Volts	110 (Industrial Cont.)	Resis.	375$^{\omega}$	Oper. Current	.17	Amps.
"	160 (" ")	"	850$^{\omega}$	" "	.14	"
"	110 (Cutler Hammer)	"	225$^{\omega}$	" "	.23	"
"	160 (" ")	"	1110$^{\omega}$	" "	.11	"

1-11-36 NO. CHANGED 7A2 TO 7.2

FPS

TIME STAMP CONTROL CABINET, SMALL INSTALLATIONS.



RESISTANCES		
	110V	160V
R1	250W 5B	250W 5B
R2	250W 5B	1500W 6B
R3	1500W 6B	1500W 6B
R4	50W 3BA	100W 3BA

SIZE OF FUSES GOVERNED BY LOAD

N.E. CODE 14 GA. WIRING THROUGHOUT

MATERIAL REQUIRED

1 BOX METAL LIFT COVER 12"X18"X6"
1 RELAY MORSE 4C 250HMS
1 CONTACTOR MAGNETIC D.C. TYPE 7815 W.U. 40AMP. 110V OR 160V.
1 MOUNTING RESISTANCE 5B
3 " " 10A
1 KEY STRAP 3B
1 CONDENSER 21AA
2 CUTOUTS TRUMBULL 29653
RESISTANCES & FUSES AS ABOVE

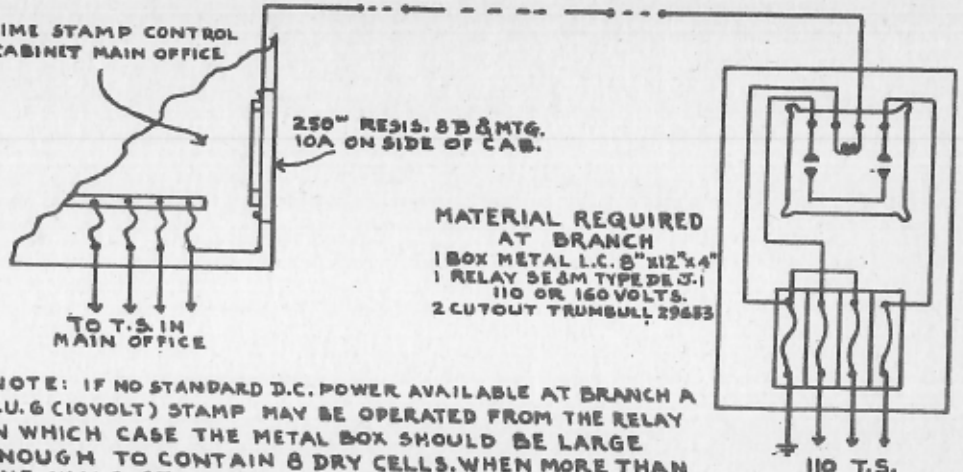
1-16-36 No CHANGED 7A3 To 7.3

FPB

7.3

327

TIME STAMP REMOTE CONTROL, BRANCHES HAVING D.C. POWER.



NOTE: IF NO STANDARD D.C. POWER AVAILABLE AT BRANCH A W.U. 6 (10VOLT) STAMP MAY BE OPERATED FROM THE RELAY IN WHICH CASE THE METAL BOX SHOULD BE LARGE ENOUGH TO CONTAIN 8 DRY CELLS. WHEN MORE THAN ONE W.U. 6 STAMP REQUIRED THE MATTER BE REFERRED TO V. P. CHARGE OF PLANT.

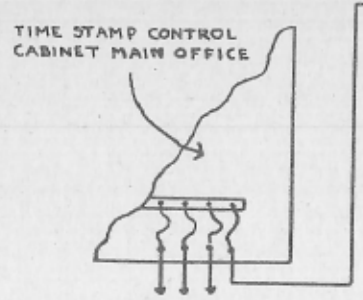
329

1-16-36 No. CHANGED 7A4 TO 7.4

FPS

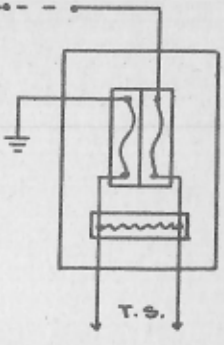
7.4

TIME STAMP BRANCH OFFICE, OPERATION FROM MAIN OFFICE POWER



NOTE: ALL FEATURES TO CONFORM WITH REQUIREMENTS OF SPEC. 222 FOR BATTERY FEED WIRES HAVING NO PROTECTIVE RESISTANCE.

CIRCUIT MAY BE RETURNED TO GROUND IN MAIN OFFICE IF DESIRED.



MATERIAL REQUIRED AT BRANCH

1 BOX METAL L.C. 6"X9"X3"
1 CUTOUT TRUMBULL 29653
1 RESISTANCE 2000Ω 53A
1 MOUNTING RESIS. 5B
2 FUSES CARTRIDGE. SIZE TO BE GOVERNED BY LOAD.

331

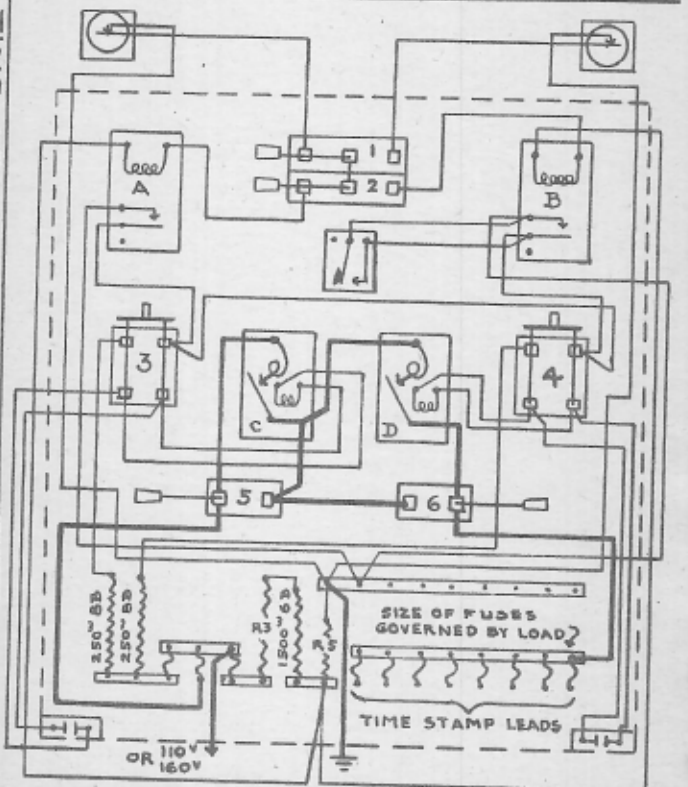
1-16-36 NO. CHANGED 7A5 TO 7.5

F.P.S.

7.5

TIME STAMP CONTROL CABINET FOR DUPLICATE INSTALLATION. CAPACITY 300 - 110V. & 400-160V. STAMPS.

1-14-36 No. CHANGED 7A6 TO 7.6

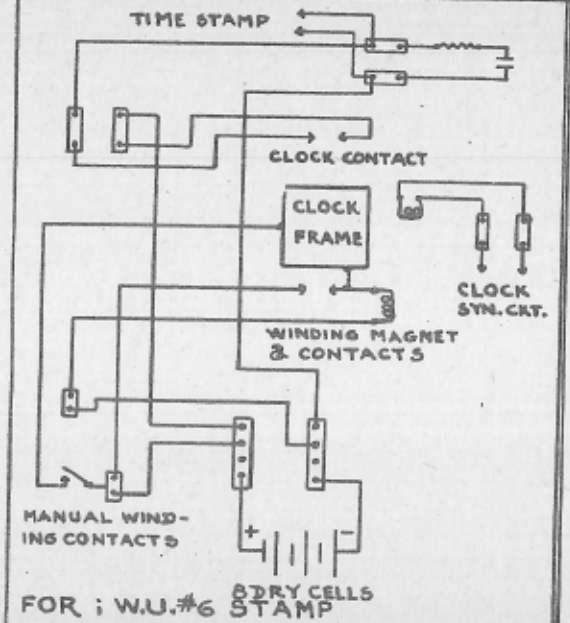


Sw. 1&2 control relays A&B making possible to operate either relay with either clock. Sw's. kept in closed position. Sw. 3&5 & 4&6 control contactors C&D respectively. For normal operation Sw. 3&4 be closed & 5&6 be open. Closing Sw. 5 & opening Sw. 3 releases contactor 'C' places entire load on contactor 'D'. Closing Sw. 6 & opening Sw. 4 releases contactor 'D' places load on contactor 'C'. Sw. 5&6 shall not be closed at the same time. Sw. 3&4 " " " opened " " " " .
T.S. circuit may be returned to Ground Strap in cab. or nearest zone cab., term. box or Sw b'd, where gnd. side of power is accessible. In no case shall CKts. be returned to ground not part of power CKT.
Resistance R3 250™ 8B - 110V & 1500™ 6B - 160V local.
" R5 50™ 53A " " 100™ 53A " "
Heavy lines #6 RCDB other wires #14 RCSB. N.E. code wiring.

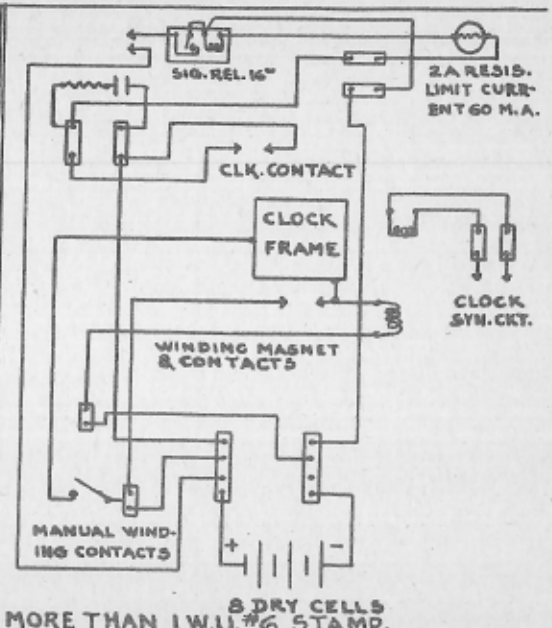
7.6 FPS

335

WIRING TIME ELEMENT CONTROL CLOCK 1C



FOR ; W.U.#6 STAMP



MORE THAN 1 W.U.#6 STAMP.

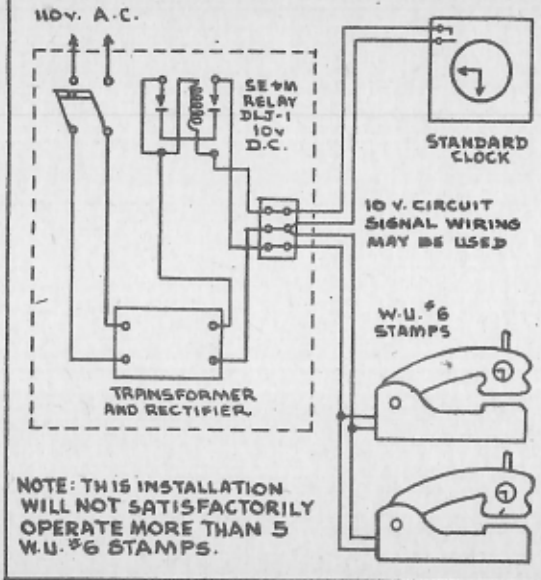
1-16-36 - No. CHANGED 7A7 TO 7.7

FPS

7.7

337

OPERATION OF W.U.#6 STAMPS FROM A.C. SUPPLY - Dwg. 38356-1



NOTE: THIS INSTALLATION WILL NOT SATISFACTORILY OPERATE MORE THAN 5 W.U.#6 STAMPS.

2-18-38 Saw

Teleprinter. Motor & Shaft Speeds & Gearing.

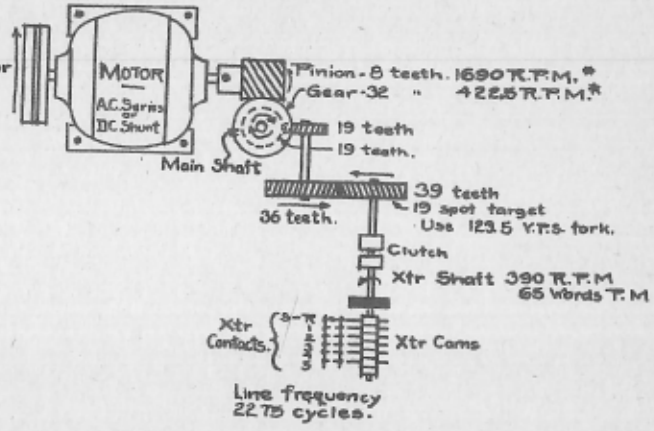
*With 60 cycle Synchronous Motor use 7 tooth Pinion & 30 " Gear.

With Syn. Motor on 50 cycle, use 7 tooth pinion & 25 " gear.

Above motor have no Governor.

A.C. Series motors may be used on 50 or 60 cycle power. When used on 25 cycle power, a 50 ohm series resistance consisting of 5 - 10 ohm, 2A units in ventilated metal box must be connected in one side of power supply.

If power supply is 220 Volts, a Service transformer G.E. 9TM815-A is necessary



SERIES A.C. MOTOR
Starting Load Current 1.8 Amp.
Running " " 0.6 "

SYNCHRONOUS MOTOR
Starting Load Current 10. Amp.
Running " " 2.3 "

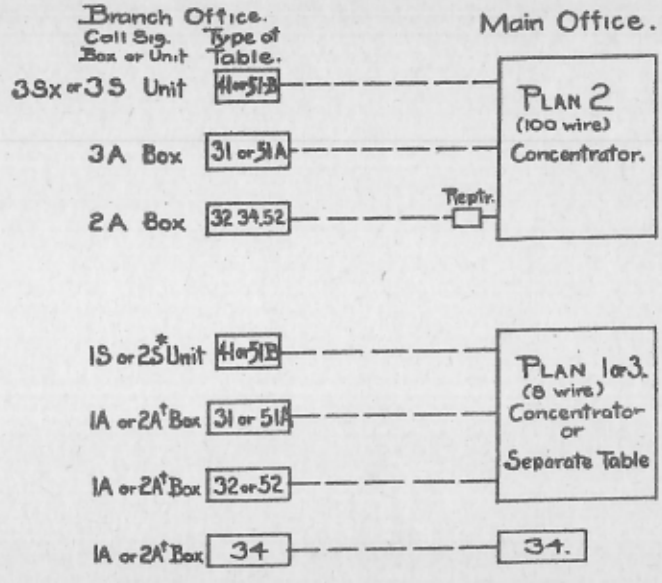
339

F.P.S.
FPS.
1-23-35 50~ Syn. added.
4-21-39 Type of Transformer Changed - E&K
5-18-41 Data on 50~ Ind. Motor removed.

JWA 10-15-31

L18 B

Teleprinter - Use of Call Signal & M.C. Eqpt.



*2S Unit no longer furnished.
†Use 1A Box if available.

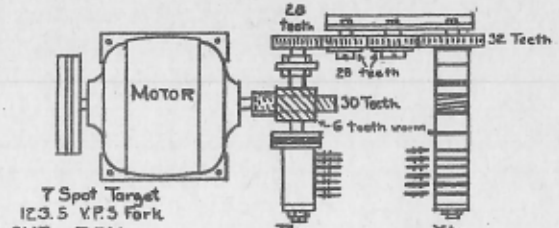
8-31 33- Unit 3Sx added.

JAD

L20

341

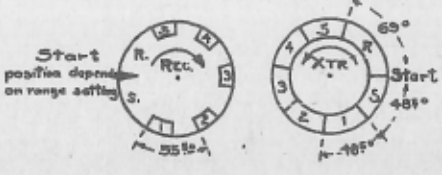
Model 12 Page Teletype Speeds & Gearing. (W.U. Circuits)



343

Printer Gears:

	Pinion	Bevel Gear
D.C.	12	54
AC Series	12	54
50 Cyc. incl.	15	53
60 " "	12	52



1-24-34: Schematic segments added.

JWD

L 53.

345

Teletype. Speed Combinations.

Fork V.P.S.	Target Spots.	Motor R.P.M	Motor Worm Teeth	Gear Teeth	Recvg Shaft R.P.M	Xtr. Shaft R.P.M.	Words per Minute	Line Frequency	
123.5	14 (or 7)	2117	6	30	423	370	61.8	23.°	Used on W.U. Ckts. Pacific Divn.
87.6	10 (or 5)	2102	6	30	420	368	61.4	22.8	
"	11	1911	6	30	382	334	55.8	20.7	
"	12 (or 6)	1752	6	30	350	307	51.1	19.°	
"	19	1660	6	30	332	290	48.4	18.°	
"	10 (or 5)	2102	6	42	300	263	43.8	16.3	
"	11	1911	6	42	273	239	39.8	14.8	
"	19	1660	6	42	237	208	34.6	12.9	
"	14 (or 7)	1502	6	42	215	188	31.3	11.6	

On Xtr. cam, Start & Selecting pulses are 48.5°
Rest pulse is 69°.

Line frequency $= \frac{\text{Xtr Cam R.P.M}}{60} \times \frac{360}{48.5} = \frac{\text{R.P.M}}{60} \times 3.72$

Above applies to Type 12 & 15 Printers.

Note: On type 15 Printers:
Series Motor: 2117 R.P.M; 7 tooth worm; 35 tooth Gear; Rec Shaft 423; Xtr Shaft 370; 14 or 7 spot targe
Synchr. " 1800 " 7 " " 30 " " " " 420; " " 368 [123.5 fork.
Printer uses same Recg. Cam as Tpr. 2B; same Xtr cam as type 12.

1-21-31: Frequencies corrected.
12-18-35 Notes on Type 15 added.

JWD

L 54 A

Polar & Single Current Relays

Type	Spec	Turns M.L.	Turns Aux.	Resistance. M.L.	Resistance. Aux	
1A	1164C	4760	2380	300	200	
1B	221D	4000		110		
1C		4760	2380	300	200	Upper Jewel.
1D	1164D	4760	2380	300	200	Full Jewelled. Alum. Armature.
1E		3000	1500	120	80	Lighter Arm.
1F	2232A	3000	1500	120	80	Full Jld. Slotted cores. Light Arm.
1G	2853A	4160	2080	225	160	Mechanically identical to 1F.
32A	4711	150	4000	2.5	540	Same application as 21A.
61B	3630	2200		110		
Sub PC.1A.	1751	2800		50		Sub-Pole-Chgr. Full Jld.
62B	3903	2500		150		
4A	2357	2630 5260	1750	175 350	160	Superposed Ckts.
63B	4526	2500	2500	270	360	
64B	4443	2500	2500	270	360	
10A	2418	3600		275		Single Current.
10B	2571	3600	10000	275	850	Locking Coil D·O Line " D·U
41B	3815			90 90		Single Current.
51A	3991			180	500	Locking Coil Ⓓ·Ⓤ Line " D·U
17B	1836	4000	2000	275	225	
18A	2714	2250 4500	1500	160 320	170	Superposed Ckts.
19A	2881	8120	4060	1045	760	Low current.
21A	3291	276 10,000		5 745		D·U Ⓓ Ⓤ (Spl. leak on ROTR.)
31A	4487	1000 1000		85 85		Polar. When repaired by S.S. or will have windings of 31-B and designated 31-A-B.
19B	4012	1050	38	4	200	
Leak 1A.				3500	-	WE. 206 FE Relay Radio Tube base Opr. on 2 M.X.
31B	4487	1900 1900		175 175		
S.C. 1A	2907	1800 1800		137 137		Ticker Ckts.

Spec. Nos. changed. 10B, 32A & 21A added. 6-21-37

Leak Rly 1A added. 12-4-40

Relays 31, 41, 51 added.

3-18

4A Relays added.

Spec 573 : Adjustment & Mtc. Polarized Type Relays.
" 2519 : " " " Single Current " " Type 10,
" 2294 : Relay Test Set. 1A
" 4703 : " " " 41A

590

Jacks.

Singly Mounted.

Strip Mounted.

200A

201A Obsolete

500B

202A

602A

504B

203A

603A

503B

228A

604A

528B

224A

605A Jack

J5A { 500B + Jack Spring Assby 1A.

202A Spl.

606A.

Jack Strips.

504
504
503
Lamp
503

5B

7B All 504.
5B " 500.
11A " 503.

1B All 503.

504
500

8B

Used on Type 3 Call Ckt Equ

500 500 504 504 504 504 504 504

15A.

Used on Distr Tables.

Used in Cab. Swivels, Polar Press Aux. 3B & Plan 2 Trn C.U.

Can be mounted in Jack Box 12A for use on Reptr Tables.

Extra Cont. Sleeve Tip Sleeve

Extra Contact
" Normal
" Spring

Unit 2A same as 2B except has screw connections.
" 1A " " 2A " sleeves all in one piece.

Cordless Jack Unit 2B.

Jacks 224 & 504 added.
8-20-36: Strip 1B added.
12-4-40 Jacks 602, 605, 606 added.

JAD

60R

200 SERIES


200
Spec. 729


202
Spec. 729


203
Spec. 729


224
Spec. 3049


226
Spec. 729

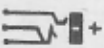
800 SERIES

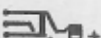

802
Spec. 4203

300 SERIES.

Lamp Socket

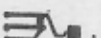

500
Spec. 4310

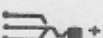

500 +
Spec. 4115


503 +
Spec. 4206


504 +
Spec. 4119


505 +
Spec. 4309


528 +
Spec. 4207


539 + *
Spec. 4308

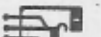
600 SERIES


602
Spec. 2643


603
Spec. 2643


604
Spec. 2643


605
Spec. 2643


606
Spec. 2643


607
Spec. 2643


608
Spec. 2643


609
Spec. 2643


610
Spec. 2643


611
Spec. 2643

OTHER TYPES

6 Pin Jack 1-A
Spec. 2996

6 Pin Jack 101-A
Spec. 3952

9 Cond. Jack 4-A
Spec. 3647

14 Cond Jack 11-A
Spec. 3842

JACK SPRING ASSEMBLIES


1-A
Spec. 2680


2-A
Spec. 4883

Indicates springs equipped with Ag-Zn contacts.

* Requires Jack Plunger 2-A, Spec. 5400 or 3-A, Spec. 5401.

+ Jack Spring Assembly 1-A, Spec. 2680 or 2-A, Spec. 4883 can be added to these Jacks.

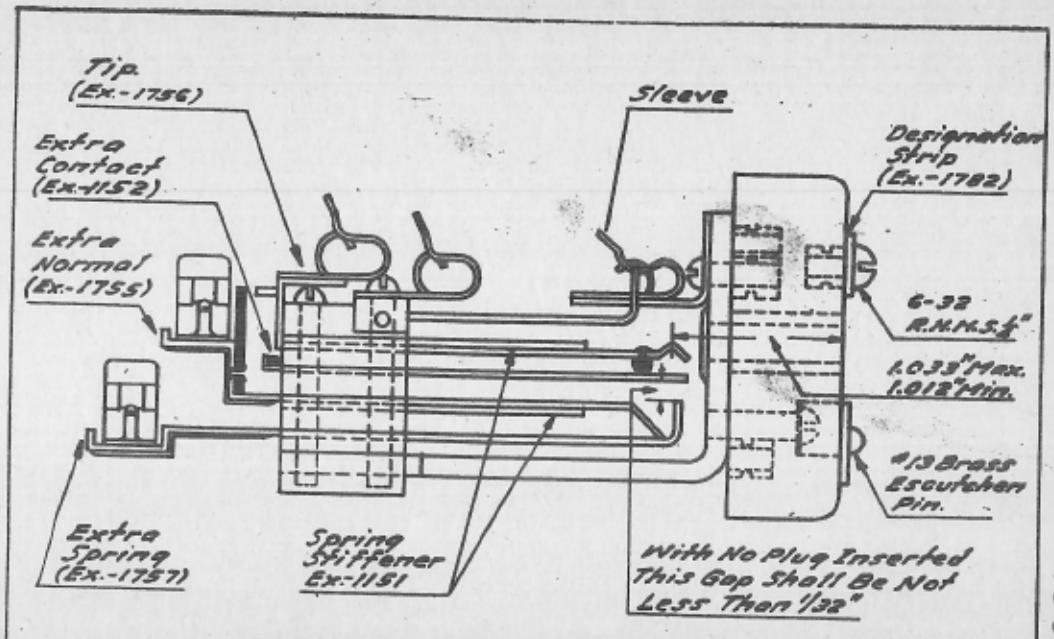
Jacks of 200 and 600 Series mount individually.

Jacks of 300 and 800 Series mount in Jack Strips.

W. U. TEL. CO.
DRAWING NUMBER
97500 -1
June 2, 1941 A

STANDARD JACK TYPES

DRAWN
CHECKED
ENGR'G SUP.
APPROVED



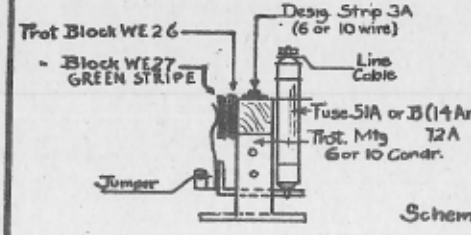
CORDLESS JACK UNIT TYPE 2.
Partial Assembly (From Dwg. 14994-2 Spec. 1808-C.)

L-428-A-1
2-15-43 L

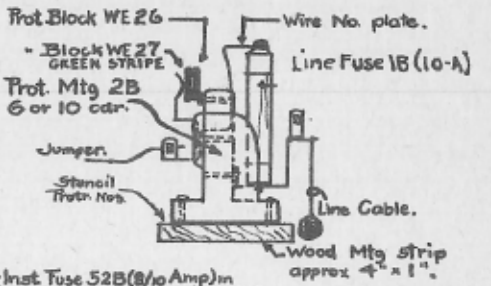
Office Protection

Single Condr Swbd.

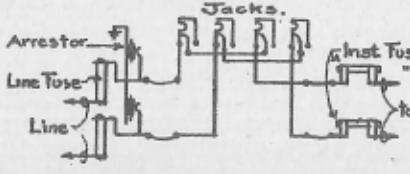
#93 Office. (Old type.)



#2 Office.



Schematic Circuit.



No Working Strands.	No Protectors Furnished.
1-6	6
7-10	10 or 12
11-14	16
15-18	20
19-24	26
25-28	30
29-30	36
Over 30	Fully eqp.

NOTE - SEE SHEET 4.1 FOR ADDITIONAL DATA ON BATTERY FEED WIRES

Mount Protectors in a Metal Cabinet at least 8" deep.

On Battery feed wires, at Supply end install fuse 51B (2 Amp) in fuse block 11A. At dist end use same eqpt unless current is low enough to permit use of 52B fuse in fuse block 8B.

CORD TIP WE 74 & MICA WE 10 REMOVED.
PROT. BLK. WE 25 & 20 CHANGED TO WE 26 & 27 G.S. F.P.S.
NOTE A - MINOR CORRECTIONS AND NOTE ADDED ERK.

JWD

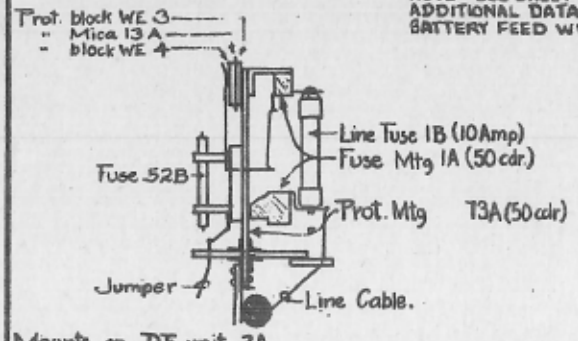
11-24-39

3-A

355

Office Protection — Double Condr. Swbd.

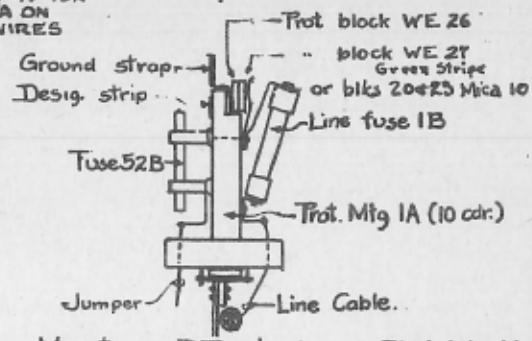
#96 with Line Fuses.



Mounts on DF unit 2A.
Used for additions to 96A installations.
Use Fuse Mtg. Cover 3A (50 cdr.)
Stencil every 10th Prot. No on Fuse Mtg.
On battery feed wires, install Prot. Adapter 2A and use Prot. Blocks 26 & 27 Green Stripe
Use fuse 54B (2Amp.) only when max current exceeds 750 MA.

NOTE - SEE SHEET 4.1 FOR ADDITIONAL DATA ON BATTERY FEED WIRES

#1



Mounts on DF unit 1A or Block Mtg 1A or 2A (in Cabinet Swbds)

Stencil every 10th prot. no. near bottom of each mounting.
Stencil Vertical No. & Cable No. near bottom of upper cover.
On battery feed wires use Prot. Adapter 3A & 54B fuse where 52B inadequate.

MICA WE 10 REMOVED. PROT. BLKS. WE 20 & 25 CHANGED TO WE 26 & 27 G.S.
NOTE A'- MINOR CORRECTIONS AND NOTE ADDED
F.P.S. EWK.

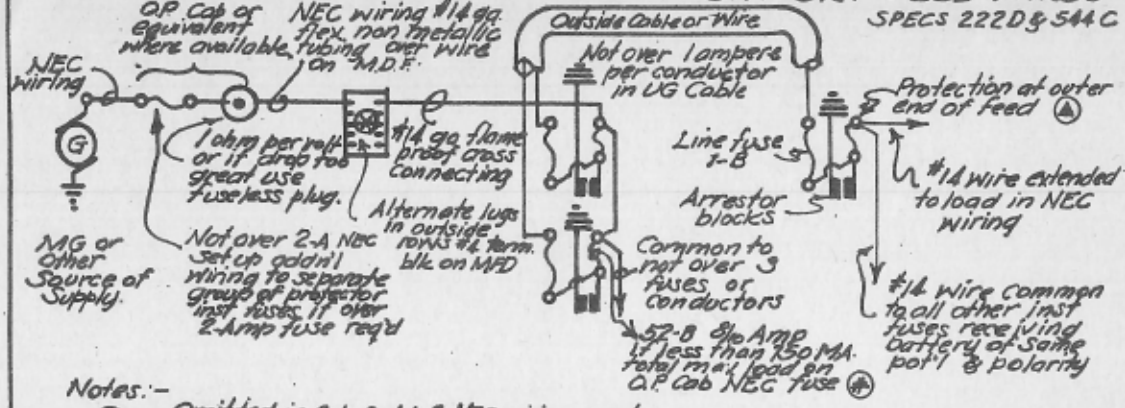
JWD
11-24-39

4-A

357

BATTERY FEED WIRES

SPECS 222D & 544C



Notes:-

(*) Omitted in Cab. Switchs & NEC wiring run to inst. fuses as enclosed in flex non-metallic tubing inside switchs

(**) If protector is #1 (Dbl cdr) for over 750 MA use protector adapter 3-A with 51-B 2A fuse. If #96 (DC) use 2-A adapter with 26 B green blocks in place of 3 & 4 blocks & 4 mica and fuse per load. If #2 or #93 (Sgl cdr) add fuse blk 11-A & 51-B 2amp fuse.

(▲) At outer end if protection is #2 or #93 use 8-B fuse block & 52-B. 8/10 amp fuse unless load requires 51-B 2amp. Fuse in 11-A fuse block.

Note:- Do Not Use 51-A fuses in Battery feed wires

11-24-39 SAVE

BINDING SPACE

SELFWINDING AND UNIVERSAL TICKERS
TYPEWHEEL AND MAGNET DATA

TYPE OF TICKER	MAGNET & TAG	CAT. NO.	SIZE OF WIRE	TURNS PER COIL	OHMS PER COIL	TOTAL OHMS	DWG. NO.	TYPEWHEELS LETS	TYPEWHEELS FIGS	DWG NO	REMARKS.
Universal 3-A	Escapement	21703	26	1200	11	22	22728	21709	21708	60906	Quotation Service
	Press	21704	26	1200	11	22	22728				
Universal 23-A	Escapement	21703	26	1200	11	22	22728	21727	21728	60861	Sports Service
	Press	21704	26	1200	11	22	22728				
	Tag	21936					61283				
Universal 33-A	Escapement	21594	29	2400	44	88	[illegible]	21727	21728	60861	Sports Service
	Press	21595	29	2400	44	88					High wound 23-A
	Tag	21597					61283				
Self-Winding 1-C	Wind-Press	21341	24	1100	5.8	11.6	24213	21373	21374	60905	Quotation Service
	Escapement	21342	26	1500	15.5	15.5	24213				
	Shift	21344	26	1400	9.3	9.3	24214				
Self-Winding 21-C	Wind-Press	21341	24	1100	5.8	11.6	24213	21247	21248	60860	Sports Service. Same as 1-C with different typewheels.
	Escapement	21342	26	1500	15.5	15.5	24213				
	Shift	21344	26	1400	9.3	9.3	24214				
	Tag	21937					60774				
Self-Winding 22-A	Wind-Press	21341	24	1100	5.8	11.6	79246	21247	21248	60860	Sports Service. Same applying as Universal 23-A
	□ Escapement	23650	28	825	7.2	14.4	82346				
	* Shift	21344	26	1400	9.3	9.3	24214				
	Tag	21936					60774				
Self-Winding 24-A											Under development. Low wound 34-A.
Self-Winding 30-A	Wind-Press	21591	27	2000	21.5	43	79246	21373	21374	60905	Quotation Service High Wound 1-C.
	Escapement	21592	29	2800	53	53	79247				
	Shift	21593	29	2800	36	36	79221				
	Tag	21939					60774				
Self-Winding 31-A	Wind-Press	21591	27	2000	21.5	43	79246	21247	21248	60860	Sports Service. High Wound 21-C
	Escapement	21592	29	2800	53	53	79247				
	Shift	21593	29	2800	36	36	79221				
	Tag	21940					60774				
Self-Winding 32-A	Wind-Press	21599	30	3500	70	140	79246	21247	21248	60860	Sports Service. High Wound 22-A
	□ Escapement	21600	33	2400	70	140	82346				
	* Shift	21344	26	1400	9.3	9.3	24214				
	Tag	21941					60774				
Self-Winding 34-A	Press	21599	30	3500	70	140	79246	21247	21248	60860	Sports Service. One wire operation.
	□ Escapement	21600	33	2400	70	140	82346				
	* Shift	21344	26	1400	9.3	9.3	24214				
	Tag	21999					60774				

* Shift magnet used only to hold shift positioned after being operated mechanically. Coil not electrically connected.

□ Catalogue number covers single coil. 2-Cat.# 23650 required for 22-A, 2-Cat.# 21600 required for 32-A, and 4-Cat.# 21600 for 34-A.

W. U. TEL. CO.

10592-A4

AUTOMATIC SYSTEMS

TICKERS

SELF-WINDING AND UNIVERSAL TYPEWHEEL AND MAGNET DATA.

100 TYPE PRINTERS - SPRING TENSIONS
LOWER UNIT - PRINTING

Spring	Tension	Scale or Weight Applied At
(1) Signal Bell Bar	9 to 10 oz.	Right end of bell bar
(2) Clearance Lever	1/2 oz.	Push just above stop screw (Sel. fingers held away from lever)
(3) Clutch Detent Lever	26 to 30 oz.	Detent Lever Spring Hole
(4) Clutch Trip	4 to 5 oz.	Clutch Trip Spring Hole
(5) Code Bar	5 to 7 oz.	End of code bar (to move from marking to spacing position)
(6) Code Bar Latch	2 to 3 oz.	Push in line with end of #1 latch
(7) Drop in Bail Arm	3 to 4 oz.	Top and rear of cam roller arm (Pull parallel with spring) Cam roller on low part of cam)
(8) Drop in Bar	1½ to 2 oz.	Drop in bar just above spring bar (Cam roller on low part of cam)
(9) Driven Clutch	20 to 25 oz.	Cam on driven Clutch (Pull in line with shaft)

#2	Spring	Tension	Scale or Weight Applied At
(10)	Knife	3 to 4 oz.	Knife Spring Hole (Follower on low part of cam)
(11)	Range Unit Stop Lever	3 to 4 oz.	Spring Eye Pull to position length (Roller on low part of cam)
(12)	Receiving Pilot Clutch	2-3/4 to 3¼ oz	End of Cam Sleeve Stop Arm
(13)	Reset Lever (Code Bar)	4 to 5 oz.	Lever Spring Hole (lever on low part of cam)
(14)	Retaining Pawl (Spacing)	4 to 4½ oz.	Pawl Spring Post (Swinging Plate Latched)
(15)	Selector Cam Clutch	25 to 30 oz.	End of cam sleeve stop arm
(16)	Selector Finger	1/2 to 1 oz.	Push on fingers at point aligning with spring hole of #2 & #4 fingers
(17)	Selector Lever	3 to 4 oz.	End of selector lever, parallel with spring. (Selector unit out of printer)
(18)	Selector Magnet Armature	3¼ to 3⅜ oz.	Armature Spring Post (To start Armature from spacing.

Spring	Tension	Scale or Weight Applied At #3
(19) Spacing Latch	3/4 to 1 oz.	Latch spring Post (Swinging Plate Unlatched)
(20) Spacing Pawl	1½ to 2 oz.	Pawl spring post (spacing latch held away from pawl)
(21) Spacing Swinging Plate	11 to 12 oz.	Plate spring Post (Pull from unlatched to latched position)
(22) Transm. Cam Clutch	18 to 22 oz.	End of Stop arm on cam assembly
(23) Transmitting Pilot Clutch	2-3/4 to 3¼ oz.	End of clutch stop arm (long leg)

LOWER UNIT - KEYBOARD

(1) Keylever	)20 gms (start))15 gms (not)	Key Cap
(2) Keylever Spacer Bar	)35 gms (start))20 gms (not)	Spacer Bar
(3) Lock Loop Bell Crank	1-1/2 to 2 oz.	Top of lock loop bell crank (Hold sel. bar cranks to ri
(4) Pilot Stop Lever	6 to 8 oz.	Spring eye (Pull to hol bracket)
(5) Selector Bar Contact	1¼ to 1⅜ oz.	Upper ends of spr bar bell cran

#4

	LOWER UNIT - KEYBOARD	
(6) Sel. Bar Bell Crank	1/2 to 1 oz.	Just above spring holes(")
(7) Stop Arm Bell Crank	14 to 16 oz.	Bell crank spring hole (in line with spring)
(8) Transmitter Contact	2 to 2½ oz.	Upper ends of springs (contacts open)
	UPPER UNIT - TYPING	
(1) Carriage Return Bail (right & left)	12 to 14 oz.	Lower end of spring
(2) Draw Band	2 to 2½ lbs.	Left end of carriage (carriage at extreme left)
(3) Feed Roll Operating Lever	1 to 1½ lbs.	Push at end of operating lever
(4) Hold Fast	2½ to 3 lbs.	Push at top of hold fast roll carrier
(5) Key Lever Hook	1/2 oz.	Push against hook opposite key lever spring hole
(6) Key Lever	1⅛ to 2⅛ oz.	End of key lever hook (typing unit removed and inverted)
(7) Line Space Pawl	3 to 4 oz.	Pawl end of line space arm

UPPER UNIT - TYPING

#5

(8) Print Bail	3 to 5 turns	
(9) Shift Bar	1¼ to 1½ lbs.	End of shift key lever (Shift carriage to upper case)
(10) Shift Lever Latch	1½ to 2 oz.	Spring hole in latch (carriage held free)
(11) Unshift Bail	2 to 3 oz.	Top of unshift bail
(12) Dash Pot Striker	5 to 7 ozs.	Crimp in each spring (springs on high part of piston rod)

INDEX - TELEPRINTER 2-B ADJUSTMENTS

KEYBOARD BASE ADJUSTMENTS

ADJUSTMENTS - TELEPRINTERS 2-B AND 2-C

GENERAL -

The following adjustments and instructions shall apply, in the order in which they appear, for general overhaul and re-assembly of Teleprinters 2-B and 2-C.

The same sequence shall be followed for complete readjustment of assembled machines. For this purpose proper notation is made for removal of such parts as required to make the adjustment.

When making adjustments of individual parts or units always check related adjustments and rectify if incorrect.

The illustrations referred to (Fig. 1, Fig. 2, etc.) appear in Teletype Bulletin 127, Issue 2 and Teletype Letter EE-251.

Unless otherwise directed by the adjustment, new springs should be used to replace those where the tension does not fall within the prescribed limits.

1. RIBBON SPOOL CUP ADJUSTMENT - Fig. 35. Rotate and fasten the ribbon spool cups so that the center of the ribbon spool cup rollers are 4 11/16" to 4-13/16" from the typing unit base.
2. RIGHT AND LEFT RIBBON SPOOL SHAFT GEARS - Fig. 36. Position the bevel gear on the end of each shaft for .001" to .004" end play.
3. RIBBON SPOOL SHAFTS SPRING COMPRESSION - Fig. 36. Move the ribbon feed shaft to disengage the bevel gears. Set the spring adjusting collar so that 3-1/2 to 5 ozs. pull is required to start rotation of the shaft. (Pin at front end of ribbon spool shaft at its highest position with the scale hooked over the pin and held in a horizontal position.
4. RIBBON REVERSE SHAFTS - Fig. 37. Hold the ribbon reverse arm against the bracket. Position the ribbon reverse shaft to clear the back of the ribbon spool cup by .010" to .020". Then lock set screw in the ribbon reverse arm.
5. RIBBON REVERSE SHAFT COLLAR - Fig. 37. Position the collar at the rear end of each shaft for .001" to .004" end play. (INSERT THE PLUNGER AND MAIN BAIL ASSEMBLY)
6. RIBBON REVERSE PAWL LINK - Fig. 38. Position the main bail so that the vertical portion of the ribbon reverse bail is opposite

the ribbon reverse pawl tooth. Clearance between these members should be .015" to .025" when the ribbon reverse arms are up against the ribbon spool cups. To alter the adjustment loosen the ribbon reverse arm set screw and rotate the ribbon reverse shafts. If any bind of the ribbon reverse pawl link on its shoulder screw exists correct by repositioning its attachment at the rear end of the ribbon reverse shaft.

7. RIBBON FEED SHAFT SAFETY SPRING COMPRESSION - Fig. 39. Place the main bail in the extreme upward position and hold the ribbon feed shaft to the left. Push vertically with 12 lb. scale on upper end of the right ribbon reverse pawl. Reading should be 3 to 5 lbs. to start movement of the spring collar. Slide the ribbon feed shaft to the right and check the ribbon feed shaft left safety spring in a similar manner.

8. RIBBON FEED SHAFT DETENT PLUNGER SPRING COMPRESSION - Fig. 40. Remove the ribbon feed and check pawls. Place the ribbon feed shaft to its left hand position. Apply 12 lb. scale to the left end of the shaft. Pressure of 1-1/2 to 3-1/2 lbs. in line with the shaft should move it to the right hand position. (Feed shaft must not bind in bearings and detent and plunger should be in good condition)

9. RIBBON CHECK PAWL - Fig. 41. Mount the check pawl so that its upper end is 3/64" to 5/64" below the top surface of the casting on which the pull bar guide is mounted.

10. RIBBON CHECK PAWL SPRING TENSION - Fig. 41. Attach scale at the bottom end of the pawl and pull at right angles to the pawl spring. If the spring is bent correctly a pull of 6 to 8 ozs. will just lift the pawl away from the ratchet. (The pawl must not bind against the adjacent ratchet tooth) (REPLACE THE MAIN BAIL LEVER ASSEMBLY. SEE THAT THE MAIN BAIL LEVER DOES NOT RUB ON SIDE OF SLOT IN THE PLUNGER SLEEVE.)

11. SELECTOR SEPARATOR PLATES - Fig. 12. Remove the separator plates from the assembly and bend the leaf springs at the narrow portion so that the ends will be .045" to .055" below the under surface of the straight portions. (Approximately thickness of a sword) Replace separators in assembly. (REPLACE THE CLUTCH THROW-OUT LEVER AND SELECTOR LEVER ASSY)

12. MAIN SHAFT CLUTCH SPRING TENSION - Fig. 2. Place the clutch members so that the teeth of the driven member rest on the teeth of the driving member. With the scale hooked on the driven member throw-out cam and pulled downward as nearly vertical as possible the teeth should separate on 24 to 30 ozs. If

incorrect, remove the main shaft and replace the spring. (To check this tension with the main shaft in the printer, the intermediate gear assembly and guard must be removed) (REPLACE THE MAIN SHAFT AND THE CLUTCH THROW-OUT LEVER SPRING) (The numbers on the end of the bearing caps must correspond to the numbers on the casting)

13. MAIN SHAFT ADJUSTMENT - Remove the range finder assembly. Loosen bearing cap screws and regulate the position of the shaft so that as the shaft is rotated the selector cam peaks will align with their respective selector levers. (ATTACH LOWER END OF THE MAIN BAIL SPRING)
(REPLACE MOTOR ASSEMBLY AND CABLE. - Adjust governor and motor according to paragraphs 76 and 77 before replacing on typing unit)
(REPLACE THE MOTOR PINION GEAR)

14. MOTOR POSITION ADJUSTMENT - Locate the motor on its mounting plate for fullest possible mesh of pinion with the main shaft gear without binding. Check for one complete revolution of the main shaft.
(MOUNT THE TERMINAL BLOCK AND GUARD)

15. RIBBON FEED LEVER SPRING TENSION - Fig. 22. (The type basket must be removed to make this adjustment) Remove ribbon feed

pawl or move it away from the ratchet. Place the main bail plunger so the ribbon feed lever roller is in the plunger indent. Hook scale over top of the feed lever and pull horizontally. 12 to 18 ozs. pull should start the lever moving.

TO REMOVE THE TYPE BASKET FROM TYPING UNIT -

METHOD #1 - Unhook springs from the following: code bar locking lever, signal bell hammer, letters pull bar and space release pull bar. Remove the three type basket mounting screws. Remove the front mounting screw from the right ribbon spool bracket, loosen the rear mounting screw and swing the bracket so that the ribbon spool cup will not interfere with the basket. Place a piece of wire or string around and in back of the pull bars and pull forward to disengage them from the guide. Lift the type basket, at the same time turning it sufficient to free the toes of the function pull bars.

METHOD #2 - Unhook all springs connecting the type basket with the base mechanism. Loosen and turn the bell hammer away from the pull bar toes. Remove the code bar assembly. Remove the type basket, rotating it sufficiently to clear the other pull bar toes.

(REPLACE THE RIBBON FEED PAWL)

16. RIBBON FEED PAWL - Fig. 41. Position the feed pawl to provide two teeth advancement of the ratchet for each revolution of the main shaft. (Readjustment of the check pawl may be necessary)
17. RIBBON FEED PAWL SPRING TENSION - Fig. 41. Attach scale to the extreme front edge of the pawl and pull vertically. 6 to 8 ozs. pull required to start feed pawl away from the ratchet. (Pawl must not bind against adjacent tooth) Bend the spring to regulate the tension.
18. RIBBON REVERSE PAWLS SPRING TENSION - Fig. 39. Place the ribbon feed shaft to the left. With scale hooked over the left hand ribbon reverse lever spring post and pulled in line with the spring, it should require 2-1/2 to 3-1/2 ozs. to start the lever moving. Move the ribbon feed shaft to the right and check the right hand lever spring in the same manner.
19. SPACER DETENT ADJUSTMENT - Figs. 20 and 21. (The type basket must be removed to make this adjustment) When the spacer operating lever roller is at the bottom of the main bail plunger indent and the spacer detent roller rests between two teeth there should be .002" to .012" clearance between the face of the spacer feed pawl and the face of each tooth on the spacer ratchet wheel. Adjust by moving the detent lever plate.

(It is possible to acquire this adjustment with the spacer detent position one full tooth off which will affect the detent spring tension considerably. Always check this spring tension when making the above adjustment)

20. SPACER DETENT LEVER SPRING TENSION - Fig. 20 (The type basket must be removed when making this adjustment) Allow detent roller to rest between two teeth of the ratchet. Hook scale in the lever spring hole and pull in line with the spring. 3-1/4 to 3-3/4 lbs. pull should start the lever moving.
21. SPACER FEED PAWL SPRING TENSION - Fig. 20. (The type basket must be removed when making this adjustment) Attach the scale near the upper end of the pawl, holding it at right angles to the pawl. 1 to 2 ozs. pull should start the pawl moving.
22. SPACER OPERATING LEVER SPRING TENSION - Fig. 21. (The type basket must be removed when making this adjustment) With the operating lever roller at the bottom of the main bail plunger indent, hook scale over the lever just below the roller and pull horizontally. The lever should start moving at 5 lbs. (Where printers are still equipped with old style spring 35-27 vertically mounted, this tension shall be 4 lbs.)
23. SPACER LOCKING BAIL SPRING TENSION - Fig. 23. (The type basket

must be removed when making this adjustment) Hold the spacer locking pawl away from the bail. Hook scale in the spring hole of the bail and pull vertically. 1-1/2 to 2 ozs. pull required to start movement of the bail.

24. SPACER LOCKING PAWL BRACKET POSITION - Fig. 23. Place the spacer operating lever roller on the high part of the main bail plunger. Lift the spacer locking bail allowing the locking pawl to engage the operating lever. Position the spacer locking pawl bracket so that the distance between the locking pawl shoulder and the notched part of the operating lever is .040" to .050".

25. SPACER LOCKING BAIL FINGER ADJUSTMENT - Fig. 27. Hold the spacer locking bail down and position the main bail plunger so that the spacer operating lever is held with its latching edge in line with the latching edge of the spacer locking pawl. The clearance between the latching edges should be .015" to .025". To adjust use holding tool #72574 inserted from the front of the typing unit under the type bar segment and bend the locking bail finger with bending tool #72575 which can be inserted from the left side of the typing unit.

26. SPACER LOCKING PAWL SPRING TENSION - Fig. 23. Place the spacer operating lever roller on the high part of the main bail plunger. Turn the typing unit on its side, and while holding the spacer locking bail operated, hook the scale through the hole in the typing unit base onto the locking pawl and pull in line with the spring. 1-1/2 to 2-1/2 ozs. pull required to start the pawl moving.
27. FUNCTION BAR BRACKET PLATE ADJUSTMENT - Fig. 24. Adjust both the right and left bracket plates by rotating them on their mounting screws so that the pull bars supported by them have equal amount of play in the segment.
28. PULL BAR SPRING TENSION - Fig. 25. (The type basket must be removed when making this adjustment) Unhook the spring from each pull bar. While holding the pull bar vertical attach scale to the eye of the spring and pull vertically until the eye is opposite the spring hole in the pull bar. The character pull bar springs should weigh 3 to 4 ozs. and those for the function bars 5-1/2 to 6-3/4 ozs.

(REPLACE THE TYPE BASKET IN THE TYPING UNIT)

CODE BAR ASSEMBLY - LOCK WASHER POSITION AND TIGHTENING OF NUTS - Excessive tightening of the code bar post nuts may

cause the separator collars to become embedded in the german silver separator washers and bind the code bars. Remove the lock washers if under the lower nuts and place between the upper and lower nuts. Tighten the lower nuts enough to hold the pileup of collars and separators without excessive pressure. Then hold the lower nut with a wrench and tighten the upper nut against the lock washer.

CODE BAR ASSEMBLY - MOVEMENT OF BARS - The code bars must operate freely. If the assembly is held in a vertical position and the bars raised to the extent of their travel and then released they should return quickly to their other limit.

(REPLACE THE CODE BAR ASSEMBLY)

29. CODE BAR ASSEMBLY- HEIGHT OF CODE BARS - Each code bar must align horizontally with its respective "T" lever without overlapping an adjacent lever. This condition may be acquired by adding or removing shims between the pull bar guide and the casting to which it is fastened.

30. PULL BAR GUIDE ADJUSTMENT - Fig. 26. Set up the "blank" combination and position the main bail opposite the pull bar humps. The clearance between all pull bar humps and the main bail should be .008" to .020" while the bail is held in a direction to make

this clearance a minimum. Adjust the position of the pull bar guide for the above clearance. Check the clearance also with the "letters" combination set up. The foregoing adjustment should provide .004" to .080" clearance between the end of #1 "T" lever and the bottom of its slot in #1 code bar.

31. MAIN BAIL ADJUSTING SCREW - Fig. 1. Set up the "blank" combination and place the main bail roller on the high part of its cam. Adjust the main bail screw for clearance of .010" to .050" between the back surface of the pull bar tops and the front of the code bars while holding the bail to give minimum clearance. Check this adjustment with all code bars in the marking position. (The bail at its lowest position must not strike the bottom of the guide post) (If the play between the main bail slot and guide post exceeds .004" the post may be turned one quarter turn and fastened. If those surfaces have already been worn a new post must be installed)

32. MAIN SHAFT CLUTCH THROW-OUT LEVER - Fig. 1. With the clutch throw-out lever resting on the high part of the clutch cam adjust the pivot screws so that the clutch teeth are separated .010" to .020". The end play of the throw-out lever must be

at a minimum without binding the lever.

33. MAIN SHAFT CLUTCH THROW-OUT LEVER SPRING TENSION - Fig. 1 Place the clutch throw-out lever on the low part of the driven clutch member. 2-1/2 to 4 ozs. pull on scale attached at the spring hole should start the lever moving.

34. SELECTOR LEVER SPRING TENSION - Fig. 11. Position all code bars "spacing" and rotate the selector cam sleeve to its stop position. Hold the lock bar and the figures shift pull bar away from the code bars. Hook scale at right end of the code bar. 5 to 7 ozs. pull toward the right should move each bar to its extreme right position. It should start back at no less than 1-1/2 ozs.

35. SELECTOR ARMATURE HEIGHT - Fig. 13. Place the #1 selector lever on the peak of its cam. Hold #1 sword lightly against the upper separator plate. Under these conditions the lower surface of the locking wedge should clear #1 sword by .002" to .008". Adjust the armature pivot screws to obtain, at the same time limiting the armature end play to a minimum.

36. SELECTOR ARMATURE BRACKET LINK - Fig. 14. Remove the range finder, unhook the locking lever spring, loosen the bracket mounting screws and the link screw. Move the bracket eccentric

out of the way and back off the armature stops. Place #1 selector lever on the peak of #1 cam. Insert gauge pins #72581 between the stop posts and the sides of the swords. Place locating gauge #73370 so that its legs are over the ends of the two arms of #1 sword. Hold the bracket with the armature extension arms against the flat surface between the legs of the gauge andtighten the link screw. Remove the locating gauge and gauge pins.

37. SELECTOR ARMATURE BRACKET - Figs. 14 and 15. With the #1 selector on the peak of #1 cam and the selector armature in the unoperated or spacing position move the spacing arm of #1 sword against the armature extension. Then rotate the armature toward marking until the extension arm just leaves the spacing arm of the sword. The sword at this position should be .004" to .040" from the spacing stop post. Locate the armature bracket to obtain this clearance. Unhook the armature spring and place the armature to the marking position with the marking arm of the sword against the extension arm. Move the armature toward spacing until the extension arm just leaves the sword arm. This should produce .004" to .040" clearance between the sword and the marking stop post. Position

the bracket to obtain, after which re-check the clearance at the spacing side. These should be equal. Tighten the bracket mounting screws. Make a similar check of the other swords, repositioning the bracket if necessary to bring them within the above limits of clearance. Place the eccentric against the bracket and tighten its screw.

38. ARMATURE STOPS ADJUSTMENT - Place the selector armature in the spacing position and #1 selector lever on the peak of #1 cam. Move the left arm of #1 sword against the armature extension and adjust the armature stop screw so that the sword arm is engaged by 5/8 to 7/8 of the width of the extension arm. Energize the magnet or hold the armature marking and make identical adjustment at the right arm by setting the operated stop nut. Check all swords.

39. ARMATURE LOCKING WEDGE - Fig. 11. Set the locking lever on the long high part of the locking cam. Position the locking wedge in its slot to obtain .008" to .012" clearance between it and the locking lever point when the points of each are in line.

40. ARMATURE LOCKING LEVER SPRING TENSION - Fig. 11. With the lever on the long high part of the locking cam, hook scale in

the lever spring hole. Pull of 10 ozs. in line with the spring should start the lever moving.

41. STOP LEVER ECCENTRIC SCREW - Fig. 17. (The range finder assembly must be removed when making this adjustment) Adjust the eccentric screw for .004" to .006" clearance between the eccentric and the back edge of the stop lever when this lever is resting against the latching surface of the trip latch.

42. STOP LEVER SPRING TENSION - Fig. 18. (The range finder assembly must be removed when making this adjustment) Hold the trip latch plunger operated. Attach scale at the end of the stop lever. 3/4 to 1-1/4 ozs. required to start the lever moving.

43. TRIP LATCH SPRING COMPRESSION - Fig. 17. (The range finder assembly must be removed when making this adjustment) Hold the range finder in a horizontal position. Apply scale vertically at the step of the trip latch. An upward push of 1 to 1-1/2 ozs. should start the trip latch moving.
(REPLACE THE RANGE FINDER)

44. ARMATURE TRIP-OFF ECCENTRIC SCREW - Figs. 17 and 19. Place the selector armature spacing. Turn the trip-off eccentric until the trip latch engages the stop lever preventing it

from releasing the selector cam. Now adjust the eccentric to raise the latch sufficiently to just clear the stop lever; not to exceed .002". Hold the armature marking with the latching surfaces of the latch and stop lever engaged. The clearance between the end of the trip latch plunger and the trip-off eccentric should be at least .002". If this condition does not prevail both armature stops may be backed off slightly.

45. MAGNET COILS POSITION - Fasten the coils on the magnet bracket so that the top edge of the upper core aligns within 1/64" of the top edge of the armature.

46. MAGNET BRACKET POSITION - Fig. 15. Energize the magnet causing the selector armature to rest against the operated stop nut. Adjust the position of the bracket for .002" to .007" clearance between the magnet cores and the armature. (usually one thickness of printer tape) The cores must align with the armature and their faces must be parallel with the face of the armature. (REPLACE THE CARRIAGE ASSEMBLY).

47. CARRIAGE BRACKETS AND LOCATING PLATE - Position both brackets so that the gears of the platen and spacer shafts mesh with minimum backlash and without binding rotating or lateral movement of the platen shaft. Fasten the locating plate with its

three projections resting against the base of the front bracket.

48. TAPE FEED ROLL SPRING TENSION - Fig. 30. Hook scale over the feed roll bearing screw. 6 to 8 ozs. pull at right angles to the feed roll lever should start the lever from the surface of the platen.

49. LEFT TAPE GUIDE - Fig. 30. Adjust this guide to clear the platen roll by .004" to .010" throughout one complete revolution of the roll.

50. RIGHT TAPE GUIDE - Fig. 30. Thread tape through both tape guides. Position the right guide so that the tape aligns with the platen roll. Bend the guide to provide .010" to .020" clearance between its end and the platen roll throughout one complete revolution.

51. RIBBON GUIDE - Set height of the ribbon guide so that both sides are .040" to .050" above the printing surface of the platen. Bend the guide to obtain 3/16" to 7/32" clearance between its tongue and the side of the platen roll.

52. FIGURES STOP SCREW - Fig. 28. Place the carriage in the figures position and print "figure 2" directly on the platen. Regulate the stop screw so the printing occurs in the middle of the platen roll.

53. CARRIAGE LOCKING PAWL POST - Position this post for full engagement of the locking pawl with the carriage locking toe.
54. CARRIAGE LOCKING TOE - Fig. 29. Place the carriage in the letters position and print "W" directly on the platen roll. Position the locking toe to cause printing in the middle of the platen roll.
55. SHIFT ROCKER POST - Fig. 31. The sides of this post should be parallel to the platen shaft.
56. CARRIAGE RETURN SPRING TENSION - Fig. 28. Place the carriage in the letters position. Unhook the spring from the spring post. With scale attached to the spring eye, pull the spring to its normal position length. Reading should be 6-1/2 to 7-1/2 ozs.
57. CARRIAGE LOCKING PAWL SPRING TENSION - Fig. 29. Hold Carriage in the letters position. Hook scale just below the spring hole in the pawl. An upward pull of 1-1/2 to 2-1/2 ozs in line with the spring should start the pawl moving.
58. SHIFT ROCKER LEVER POST - Fig. 32. The front surface of this post should be parallel to the front edge of the base plate.
59. CARRIAGE EXTENSION - Fig. 31. Adjust the carriage extension so that it travels equal distances from each side of the shift rocker post when the carriage is moved from the figures to the letters position.

60. SHIFT ROCKER ADJUSTMENT - Fig. 32. Back off the carriage capstan nuts. Place the carriage in the figures position. Set up the "letters" combination and rotate the main shaft until the main bail roller is on the low part of its cam. Lift the main bail by hand to its highest position. This should cause the carriage locking toe to just engage the notch of the carriage locking pawl. (overtravel must not exceed .020") If the printer incorporates "unshift on space" and this function gives the carriage less travel than "letters" then it should be used in making the adjustment.

61. CARRIAGE CAPSTAN NUTS - Fig. 29. With the carriage held in the letters position by the locking pawl and toe adjust the capstan nuts for .020" to .025" clearance between the rear nut and the front of the bearing bracket.

62. PULL BAR LOCKOUT LEVER - Figs. 33 and 34. Place the platen in the figures position and select the bell pull bar, positioning the main bail approximately .010" below the bell pull bar notch (Fig. 33-A) Adjust the pull bar lockout lever so that its right hand roller clears the bell pull bar .010" to .040" (Fig. 33-B) and at the same time cams

the top of the adjacent "J" or "S" pull bar out of the code bar slot by .004" to .020" (Fig. 33-C) Move the carriage to the letters position. The left hand roller of the lockout lever should clear the "J" or "S" pull bar .010" to .040" and the top of the "bell" pull bar should be cammed out of the code bar slot by .004" to .020" (Fig. 34-A, B, C.)

63. LEFT FUNCTION PULL BAR SPRING BRACKET - Fig. 42. With the main bail in its lowest position and with scale attached to the letters pull bar just below the hump, pull horizontally. Adjust the spring bracket to obtain reading of 1 to 1-1/2 ozs. when the pull bar starts to move.

64. RIGHT FUNCTION PULL BAR SPRING BRACKET - Fig. 43. Place the main bail in its lowest position. Hook scale over the code bar locking lever in line with #1 code bar and pull horizontally. Adjust the spring bracket so that 5 to 6 ozs. pull will start the lever moving.

65. BELL HAMMER ECCENTRIC SCREW - Fig. 44. Set up the bell selection and run the bail to its highest position. Adjust the eccentric screw for .045" to .075" clearance between the bell hammer lip and the bell hammer post. Also position the post for alignment of the end of the pull bar toe with the outer edge of the

eccentric screw.

66 BELL HAMMER SPRING TENSION - With the bell hammer lip resting against the post, attach scale to the threaded end of the bell hammer eccentric screw and pull upward. 2 to 2-1/2 ozs. should start the hammer moving.

67. BELL ADJUSTMENT - Position the bell so that its lower edge clears the bell bracket .010" to .020". There should also be at least .004" clearance between the side of the bell and the tape chute.

(MOUNT THE INTERMEDIATE GEAR ASSEMBLY)

(PLACE THE ASSEMBLED TYPING UNIT ON THE KEYBOARD)

68. MOTOR SPEED - For printer motors equipped with governors check the speed with tuning fork. If the target spots appear to move in the direction of rotation of the transmitting shaft, the motor is fast and should be decreased by pressing the governor adjusting bracket against the governor adjusting wheel. If the spots appear to move in the opposite direction the motor speed is slow and should be increased by operating the adjusting lever which is fastened to the top of the motor frame next to the governor.

69. MAIN BAIL CAM CLUTCH TORQUE - Fig. 45. Remove the intermediate gear guard and the tape container. Run the motor at

least 10 minutes with the main shaft held stationary. Press the main bail down in order to move the main bail roller away from its cam and hook scale into screw hole on the top of the cam. Pulling at right angles to the radius should require 18 to 24 ozs. to start the cam moving opposite to its normal direction of rotation.

70. SELECTOR CLUTCH TORQUE - Fig. 46. Run the motor at least 10 minutes with the main shaft held stationary. Hook scale to the selector cam sleeve stop arm and release the main shaft. 16 to 18 ozs. pull required to hold the cam sleeve stationary. (REPLACE THE RIBBON)

71. MAIN BAIL SPRING TENSION - Decrease the main bail spring tension until printing fails then increase the tension until a good copy is obtained without embossing the paper. (some embossing will occur when "period" is printed)
(REPLACE THE GEAR GUARD)

72. TAPE CHUTE ADJUSTMENT - Position the tape chute bracket so that the chute aligns with the left tape guide.

73. ORIENTATION - Adjust the selector armature spring for 6 to 6½ ozs. tension. While "RY" is being received move the range finder to the lowest point toward zero at which no errors occur.

Note this point. Then shift the range finder to the highest position on the scale at which printing is correct. Set the finder midway between these two limits. Now range the armature spring, finding the two limits of tension at which printing is correct and set the tension in the center of this range. Then recheck the orientation range.

Printers with range finders scaled from zero to one hundred must develop at least sixty five points range when checked on a local test circuit with current of approximately fifty five mils flowing in the circuit. The lower limit of range should be at 20 on the scale and the high limit at 85 or above. The following table gives the equivalent values of the new and old type range finders:

NEW	OLD	NEW	OLD
0	65.0	50	36.5
10	59.3	60	30.8
20	53.6	70	25.1
30	47.9	80	19.4
40	42.2	90	13.7
		100	8.0

74. COPY - Check tape container, tape tension spring and roller and tape guide tube, adjusting them to prevent any drag on the tape. Depress the letter "N" key. Hold keyboard clutch throw out lever operated allowing "N" to print continuously for several revolutions of the platen. Observe the spacing between characters and if not uniform refine the spacing mechanism adjustments. Print all letter characters several times separated by "N" thus, "NANANANANBNBNBNBNCNCNCNCNDNDNDNDN etc." Bend the "N" type bar near the segment to obtain uniform spacing with the majority of the characters. (use pliers or bender to hold and another plier or bender to bend the pull bar.) Then bend the type bars of those characters that do not space properly. Check spacing of figure characters separated by letter "N". To correct these hold the type bar near the slug or pallet and bend only the upper portion of type bar so as not to change the position of the letter character. If a character prints heavier on one side than the other or if it leans toward one side, hold the type bar near the pallet and bend upper end of the bar in the proper direction to correct. Should either the top or bottom of a character print too heavily it will be necessary to unsolder and reposition the pallet. Align the characters horizontally by

unsoldering the pallets where necessary and moving them on the type bar so that printing is in the center of the tape with the bottom of the letters in line.

75. TYPE BARS - MOVEMENT - Check freeness of each type bar by pulling it down until the pallet touches the platen. When released it should return quickly to the unoperated position against the leather back stop. When a new type bar is installed it may be necessary to grind down and polish that portion fitting in the segment slot to prevent binding. (To remove a type bar take the carriage front bracket off and remove the carriage assembly. Rotate the type bar forward and lift the pull bar until the teeth of these members are disengaged. Then unhook the type bar from the fulcrum rod and remove from the segment. To replace, lift the pull bar a short distance and hook type bar over fulcrum rod. If the teeth mesh properly the top of the pull bar will line up with the other pull bar tops and the type bar will rest against the leather back stop)

76. GOVERNOR ADJUSTMENTS -

a. SPEED ADJUSTING WHEEL FRICTION WASHER SPRING PRESSURE - FIGS. 3 and 5. - Remove the governor guard and the

governor cover. Attach scale to the contact spring next to the contact and while pulling parallel to the speed adjusting spring regulate the speed adjusting wheel for 13 to 14 ozs. contact pressure. Then place a bank pin radially in the leather of the adjusting wheel and hook the scale over this. Pull of 8 to 16 ozs. should start the wheel moving. To correct, remove the friction washer and bend its projections.

b. GOVERNOR BRUSH SPRING TENSION - Fig. 4. (The brush holder bracket must be removed to check this adjustment) Press the scale against the end of and in line with the brush. 3 to 4 ozs. pressure should permit the brush to protrude .015" to .050" from the brush holder.

c. GOVERNOR BRUSH POSITION - Fig. 4. Locate the brush holder bracket on the base so that the brushes project from the brush holder .015" to .050" and ride in the center of the collector rings.

77. MOTOR ADJUSTMENTS -

AC SERIES AND DC MOTORS - Keep the commutator free of oil and grease. Do not remove the brownish discoloration, however, if there is any appreciable sparking the commutator may be sanded with a very light grade of sandpaper. Remove and clean the brushes and brush holders. Replace each brush in the holder from

which it was withdrawn and in its original position. When installing a new brush the end that bears against the commutator must be sanded to the curvature of the commutator. To install Fibre Guard Washers, Cat. #83129, take out the motor brushes and remove the motor armature. Loosen set screw and remove brush holder rings. Place a guard washer with its long end up on each brush holder. Replace the brush holder rings, clamping the guard washers against the fibre bushings in the frame and tighten the set screws. Replace the armature and brushes.

SYNCHRONOUS MOTORS HAVING A SINGLE STARTING CONTACT - (The following adjustments should be checked when it is believed that the starting switch is out of order and when the motor is dismantled for complete overhauling. The starting switch failing to close fully may prevent the motor starting or it may run backward. If the switch fails to open, the starting winding will burn out)

a. CENTRIFUGAL WEIGHT SPRING TENSION - Fig. 1, EE 251 - Remove the motor pinion and handwheel. Take out the switch end shield screws and pull the shield out about half an inch. Remove the two switch mounting screws noting the number and

thickness of the shims at each end of the switch bracket. Remove the end shield. Remove the centrifugal weight springs. Hold one end of spring stationary, hook scale in other end and pull until spring measures 1-3/4" over all. Reading should be 3-3/4 to 4-1/4 ozs. Check the centrifugal push collar and weights for freeness.

b. STARTING SWITCH CONTACT SPRING TENSION - Fig. 1. With this contact resting against the backstop hold the bracket so that the contact spring clears the rotor shaft and the centrifugal push collar. Hook scale over the contact spring just below the backstop and pull at right angles to the spring. 1/2 to 1 oz. pull should start the spring moving away from the backstop. Bend the contact spring to meet this requirement.

Replace the centrifugal weight springs, also replace the switch end shield on the shaft. Assemble the starting switch on the end shield. See that the shim pile-up is equal on both sides of the switch bracket. Then tighten the two switch mounting screws, each a little at a time until both are tight. Check for fibre washer between rotor and the pinion and shield. Replace the switch end shield mounting screws and tighten in the same manner as used in tightening the switch mounting screws.

c. STARTING SWITCH CONTACT BRACKET ADJUSTMENT - Fig. 2, EE-251. To make this adjustment the motor must be supplied with 110 volts DC and connected through 800 ohm resistances as shown by figure 2, and with a milliammeter across the starting contacts. Also required is a collar which can be placed on the switch end of the rotor and fastened with set screws. Collar #82862 may be used or a similar tool may be constructed locally.

(1) Fasten the collar on the switch end of the rotor shaft so that it clears the motor end shield 1/32". Hold the shaft with the collar against the end shield and slowly rotate the rotor one complete revolution while watching the test set meter. If the start contacts remain closed the meter reading will be zero. Should the contacts open, shims must be added between the starting switch bracket and the motor and shield.

(2) Relocate the adjusting collar so that it clears the motor end shield by 1/16". Again press against the end of the rotor shaft until the collar is against the end shield and rotate the shaft one revolution. The contacts should remain open, giving a meter reading of not less than 100 mils.

An interruption of the current flow indicates closing of the contacts and necessitates removal of shims from between the starting switch bracket and the motor end shield. Recheck adjustment #1. NOTE - The shim pile-up should be equal at both ends of the switch bracket. Shims may be obtained in 1/64", 1/32" and 3/64" thicknesses.

Remove the adjusting collar from the shaft.

d. ROTOR THRUST SPRING TENSION - Apply the scale to the switch end of the rotor shaft, and push in line with the shaft. It should require at least 7 lbs. pressure to start the shaft moving. Replace the motor pinion and fan or handwheel.

e. TO REMOVE THE STARTING SWITCH OR CENTRIFUGAL MECHANISM WHEN REQUIRED - Fig. 1. Remove the motor pinion and handwheel. Remove the switch end shield mounting screws. Pull the end shield out a short distance and remove the switch mounting screws, noting the number and thickness of the shims at each end of the switch bracket. Unsolder the stator leads connected to the switch. Carefully remove the ball bearing using bearing tools #21550. Remove the starting switch. The starting mechanism may now be removed by removing its two mounting screws.

f. TO ASSEMBLE THE STARTING SWITCH OR CENTRIFUGAL MECHANISM -

Fig. 1. Replace the centrifugal mechanism and mounting screws making sure the insulator is in place. Place the push collar fibre washer on the shaft in front of the push collar. Place the rotor partly in the stator with the switch end projecting out of the frame. Replace the starting switch on the shaft and against the push collar fibre washer with the contact spring toward the rotor. With the starting switch contact points in the upward position solder the two wires that are tied together to the upper terminal of the starting switch. After applying grease to the bearing replace it, using bearing tools #21550. Place a felt washer, then a retaining washer in the switch end shield. Slide the switch end shield over the rotor shaft inserting the ball bearing into its recess in the shield. Tighten the mounting screws each a little at a time until fully tightened. Check shaft rotation for binds. Also check the preceding starting switch adjustments.

g. TO REMOVE AND REPLACE THE BALL BEARING AT THE PINION END OF THE ROTOR - Remove the handwheel or fan. Remove the motor pinion and the end shield at that end of the motor. Using bearing tools #21550 remove the bearing. After greasing,

replace the bearing using the above bearing tools. Assemble in the pinion end shield recess the following in this order, felt washer, cup washer, thrust spring and thrust spring washer. Slide the end shield into position and tighten the mounting screws as described in paragraph (f) above.

SYNCHRONOUS MOTORS HAVING A THREE BRUSH STARTING SWITCH - (Check these adjustments when the motor is being overhauled or when trouble with the starting switch has developed) Remove the handwheel, motor pinion, switch commutator mounting screws and the switch end shield. Pull out the rotor until the brush holder spring is accessible and remove the spring.

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h. BRUSH HOLDER SPRING TENSION - Hold one end of the spring stationary and hook scale in the eye at the other end and pull the spring to an over-all length of 5 inches. For 60 cycle motors the scale should read 3 to 3-3/4 ozs. For 50 cycle motors the reading should be 1-1/2 to 2-1/2 ozs. See that the brush holders are mounted by means of the center set of mounting holes and are free. Also see that the brush holder stop pins are safely within the holes of the fibre disc when the brush holders are held so that engagement of the pins with the disc is a minimum.

Replace the brush holder spring. Replace the switch commutator screws and the switch end shield screws and tighten as described in paragraph (f).

i. ROTOR THRUST SPRING TENSION - This adjustment is same as given in paragraph (f)
Replace the motor fan or handwheel and the pinion.

j. SYNCHRONOUS MOTORS-WIRING REPAIRS - When the insulation of the internal leads between the stator and starting switch become defective unsolder the wires at the switch and strip off the insulation. Place "Isolantite beads #1116" over the entire length of the bare wire and re-solder to the switch. Replace the external lead from the switch with "#18 gauge art silk covered single conductor Deltabeston stranded fixture wire, type AF"
Repair the external lead from the stator by removing all of the insulation and covering the entire lead with "#11 black flexible, impregnated, varnished tubing." A more permanent repair can be made by cutting off the stator wire about 3" from the stator winding, stripping the insulation from this section, then covering the bare wire with five isolantite beads. After this, splice and solder a piece of the above deltabeston wire

to the short section, covering the splice with one layer of rubber tape and two layers of friction tape.

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KEYBOARD BASE ADJUSTMENTS

78. CLUTCH SPRING COMPRESSION - Fig. 68. Hold the transmitter shaft so that the clutch teeth are almost fully engaged with their faces just separated. Hook scale over the projection of the driven clutch member and pull in line with the shaft. 9 to 12 ozs. pull should start movement of the driven member. (9 ozs. adjustment preferred)

REPLACE THE TRANSMITTING SHAFT AND BRACKET

79. TRANSMITTING SHAFT REAR BEARING ADJUSTMENT - The rear bracket must be positioned to allow the shaft to revolve freely. Adjust the rear bearing nuts for .002" end play of shaft.

ATTACH THE TRANSMITTING SHAFT GEAR.

MOUNT THE TRANSMITTING CONTACT ASSEMBLY ON THE BRACKETS AND SOLDER WIRE CONNECTIONS. - Do this after contacts have been cleaned, kinks removed from the contact springs and backers and a slight bow made in them to provide sufficient pressure

right post nuts checking after each operation for free movement of the spacer bar. Replace the key lever spring.

REPLACE THE INTERMEDIATE PAWL

REPLACE THE TRIP-OFF PAWL AND SPRING.

81. LOCKING LEVER SHAFT ADJUSTMENT - Fig. 65. Place the contact levers on the high part of their cams and the locking levers to the spacing position. The clearance between the bottom surface of the locking lever toes and the top of the contact levers shall be .002" to .008". Adjust height of the locking lever shaft to meet this requirement.

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82. LOCKING LEVER TRAVEL - Fig. 65. With the lock loop roller resting on the low part of its cam, check the clearance between the side of the lock loop blade and all locking lever fingers. Clearance should be at least .010", when the locking levers are held in the marking and spacing positions by the "letters" and "blank" key levers. Loosen the main bracket mounting screws and shift the bracket to correct.

83. LOCK LOOP ROLLER ADJUSTMENT - Fig. 65. (This applies only to keyboards having an elongated hole for the lock loop roller pivot screw) Place the transmitting cam assembly at the stop position with the clutch teeth disengaged. Press the roller against the

cam to insure the cam being at the stop position. Move the locking lever fingers directly under the lock loop blade. The blade should clear the tops of the fingers .008" to .015". Adjust by positioning the roller pivot screw in the elongated mounting hole.

84. LOCK LOOP SPRING TENSION - Fig. 65. Place the lock loop roller on the low part of its cam. Hook the scale in the lock loop spring hole and pull in line with the spring. A pull of 4 to 5 ozs. should start the lock loop moving.

85. CLUTCH THROW-OUT LEVER ADJUSTMENT - Fig. 60. Move the transmitting cam assembly to the stop position (make certain that the clutch is fully disengaged) Place the required number of shims between the clutch throw-out lever post and the bracket to obtain .005" to .015" separation of the teeth of the clutch members. This adjustment may be refined by shifting the position of the driving clutch member on the shaft.

86. CLUTCH THROW-OUT LEVER SPRING TENSION - Rotate the transmitting cam assembly beyond the stop position allowing the clutch throw-out lever to rest against the low part of the driven clutch member. Attach scale at the throw-out lever spring hole. While holding the intermediate pawl against its eccen-

tric a pull of 1-1/2 to 2-1/2 ozs. in line with the spring should start the throw-out lever moving. (1-1/2 ozs. preferred)

87. TRANSMITTING CONTACT GAP AND SPRING PRESSURE - Figs. 65 & 67 Place the locking levers in the spacing position. Rotate the transmitting cam assembly until the low part of #1 cam is opposite the hump of #1 contact lever. Bend #1 front contact spring to obtain contact gap of .015" to .020" (gap will permit .015" gauge to pass through freely, .020" gauge will not) Adjust gap of #2, 3, 4 and 5 contacts in a similar manner, rotating the cam assembly so that the low part of each cam is opposite the hump of the corresponding contact lever. Adjust the "rest" or "start-stop" contact gap to .015" to .020" with the contact lever hump on the high part of the cam when the cam assembly is at its starting position. Place all locking levers to the marking position (to the right) Rotate the cam assembly until the "rest" or "start-stop" contact lever is operated with hump in the low part of the cam. Hook scale at the extreme top end of the contact spring above the insulator. Pulling at right angles to the contact spring observe reading when the contacts just break connection. This should be 4 to 4-1/2 ozs. Bend the back contact spring to adjust. Adjust the remainder of the contact springs in a like

manner. Recheck and adjust the contact gaps. See Paragraph 105 for additional adjustment of the start-stop contact gap.

88. TYPING UNIT SLIP CONNECTIONS SPRING TENSION - Bend the slip connections spring at each end of the slip connections block so that the crimped part of the spring is 7/16" to 15/32" from the block mounting post. Place a straight edge lightly against the high part of the crimp in these two springs and adjust the others so their crimped portions are within .015" of the straight edge.
REPLACE THE SLIP CONNECTIONS GUARD.

89. LINE JACK SPRING TENSION - Apply the scale to the curved part of the jack spring. 1-1/2 to 3 lbs. pressure should open the jack .030".
REPLACE THE GEAR GUARD AND BELL HAMMER SPRING.

90. GEAR GUARD ADJUSTMENT - Fig. 62. Position the gear guard for .002" to .004" clearance between the bell hammer and the bell operating post, when the bell hammer is held in its locked position by the locking pawl.

91. BELL ADJUSTMENT - Fig. 63. Adjust the position of the bell so that there is .001" to .004" clearance between the bell and bell hammer when the latter is in the unlocked position.

92. BELL HAMMER EXTENSION STOP ADJUSTMENT - Fig. 62. (The tape reel container should be removed to check this adjustment) Position the bell hammer extension stop to obtain .020" to .040" clearance between the lower side of the bell hammer extension and the bell hammer extension stop. (With the locking pawl engaging the bell hammer extension)

93. BELL HAMMER SPRING TENSION - Fig. 62. (The tape reel container should be removed to check this adjustment) With the bell hammer resting against the gear guard, hook scale in the spring hole and pull in line with the spring. 3 to 5 ozs. pull should start the hammer moving.

94. TAPE LEVER SPRING TENSION - (The tape reel container should be removed to check this adjustment) Remove the locking pawl spring. With the front edge of the locking pawl against the casting, hook scale in the pawl spring hole and pull at right angles to the front edge of the pawl. Scale should read 3-1/4 to 4-1/4 ozs. when the pawl and tape lever start to move.

95. LOCKING PAWL SPRING TENSION - Fig. 64. Allow the locking pawl to rest against the face of the bell hammer extension and hold the tape lever down. Attach scale in the spring hole. 1/4 to 3/4 ozs. pull in line with the spring toward the front should

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start the pawl moving.

96. SELECTOR BAR HEIGHT - Height of the selector bar assembly shall be set so that the selector bars will start to move immediately after any key lever has been started downward, and there must be sufficient clearance between tops of the selector bar combs and bottoms of key levers that the latter will not obstruct movement of the selector bars. To adjust, place shims between the selector bar brackets and the keyboard casting. To check clearance, depress various keys at each side of the keyboard and while holding each down try all other keys. It will be impossible to move keys where there is no clearance. Adequate clearance is indicated if it is possible to move every key a short distance before the key levers strike the selector bar combs.

REPLACE THE TAPE GUIDE TUBE

REPLACE THE TAPE CONTAINER.

97. TAPE LEVER ADJUSTING CLAMP - Fig. 61. (The keyboard base cover should be removed to check this adjustment) Position the adjusting clamp so that there is a clearance of 1/4" plus or minus 1/32", between the tape lever roller and the

tape roller, with the locking pawl touching the front of the bell hammer extension and the play of the bell hammer taken up in a direction away from the bell. (Make sure that the locking pawl bushing has no end play on shaft after clamping screw is tightened)

PLACE TYPING UNIT ON THE KEYBOARD BASE.

98. CLUTCH THROW-OUT LEVER ECCENTRIC ADJUSTMENT - Fig. 60. Run motor and depress key levers slowly. Adjust the clutch throw-out eccentric so that the clutch trip off occurs and the cam assembly starts rotation when the locking lever fingers have just passed the knife edge of the lock loop. The trip off must take place before the key lever stroke is finished. Try all keys. If the trip off occurs too early the lock loop will obstruct movement of the locking levers or the knife edge will strike the tops of the locking lever fingers. If too late the keyboard action will be slow. When adjustment of the eccentric will not permit proper positioning of the locking levers at the time of trip off, shims should be added or removed as required between the universal bar brackets and the selector bar brackets.

99. INTERMEDIATE PAWL ECCENTRIC ADJUSTMENT - Fig. 60. With the

clutch throw-out lever resting on the low part of the driven clutch member cam, adjust the intermediate pawl eccentric screw to lift the throw-out lever .002" from the surface of the driven member.

100. TRIP-OFF PAWL ECCENTRIC ADJUSTMENT - Fig. 60. Turn the trip-off pawl eccentric screw to its highest position. The screw in this position should prevent the trip-off pawl from passing the intermediate pawl toe when any key is depressed which will result in repeated printing of that character. Then turn the eccentric screw clockwise until the trip-off pawl will just pass the toe of the intermediate pawl upon operation of the key lever. Depress each key very slowly and if repeated characters result due to the slow key action turn the trip-off eccentric further in a clockwise direction to eliminate. TRY ALL KEYS.

101. TRIP-OFF PAWL STOP PLATE - Fig. 60. Position the stop plate to obtain .050" to .060" clearance between the toes of the intermediate and trip-off pawls, with the trip-off pawl against the stop plate and the front arm of the intermediate pawl against its eccentric screw.

102. TRIP-OFF PAWL SPRING TENSION - Fig. 69. The trip-off pawl

spring shall have the minimum amount of tension that will return the trip-off pawl quickly to the unoperated position.

103. KEY LEVER SPRING TENSION - Unhook the trip-off pawl spring and depress each key to position the selector bars before checking. Bend the key lever springs so that the levers will not operate when a 15 gram weight is placed on the key top but will start to move downward with a 20 gram weight on the key top. The spacer bar should start to operate on 35 grams and not operate on 20 grams.

104. TAPE GUIDE TUBE ADJUSTMENT - Position the right hand end of the tube 1/32" from the outside edge of the keyboard and fasten with the clamping screws so that it aligns with the right tape guide.

105. REST OR START-STOP CONTACT GAP - The printer range limits may be shifted to some extent to new positions on the orientation scale by increasing or decreasing the start-stop contact gap. In no case should the gap be made less than .005" or more than .040". The purpose of this adjustment is to match the range limits of all keyboards. (If possible, check the keyboard being adjusted against a keyboard known to produce normal range.)

THE WESTERN UNION TELEGRAPH COMPANY

TELEPRINTER EQUIPMENT

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February 1, 1945

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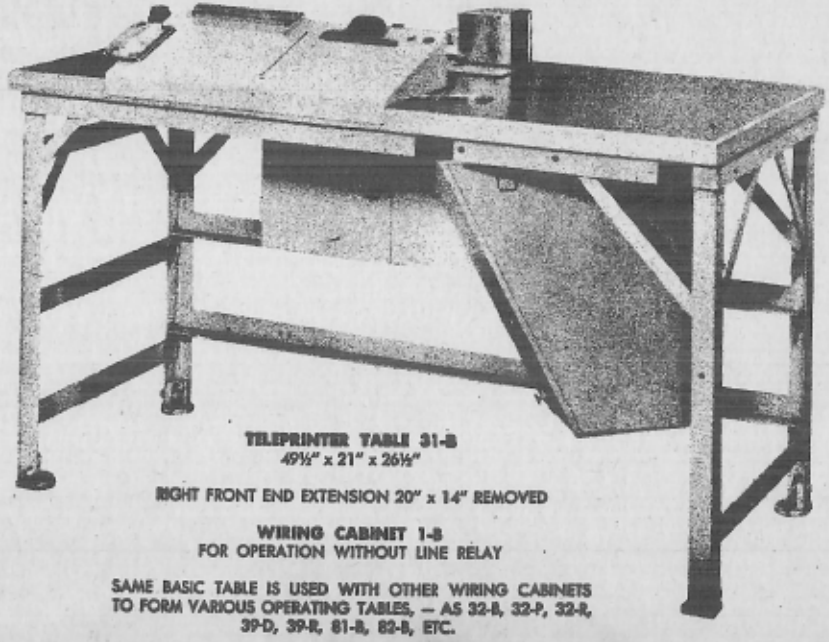

TELEPRINTER TABLE 31-B
49½" x 21" x 26½"

RIGHT FRONT END EXTENSION 20" x 14" REMOVED

WIRING CABINET 1-B
FOR OPERATION WITHOUT LINE RELAY

SAME BASIC TABLE IS USED WITH OTHER WIRING CABINETS TO FORM VARIOUS OPERATING TABLES, – AS 32-B, 32-P, 32-R, 39-D, 39-R, 81-B, 83-B, ETC.

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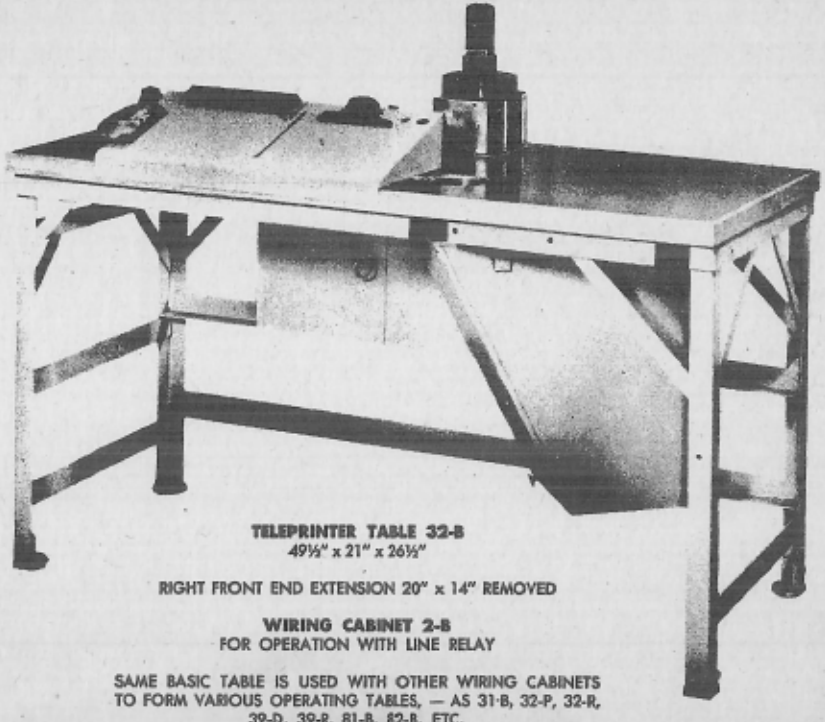


TELEPRINTER TABLE 32-B
49½" x 21" x 26½"

RIGHT FRONT END EXTENSION 20" x 14" REMOVED

WIRING CABINET 2-B
FOR OPERATION WITH LINE RELAY

SAME BASIC TABLE IS USED WITH OTHER WIRING CABINETS TO FORM VARIOUS OPERATING TABLES, — AS 31-B, 32-P, 32-R, 39-D, 39-R, 81-B, 82-B, ETC.

429

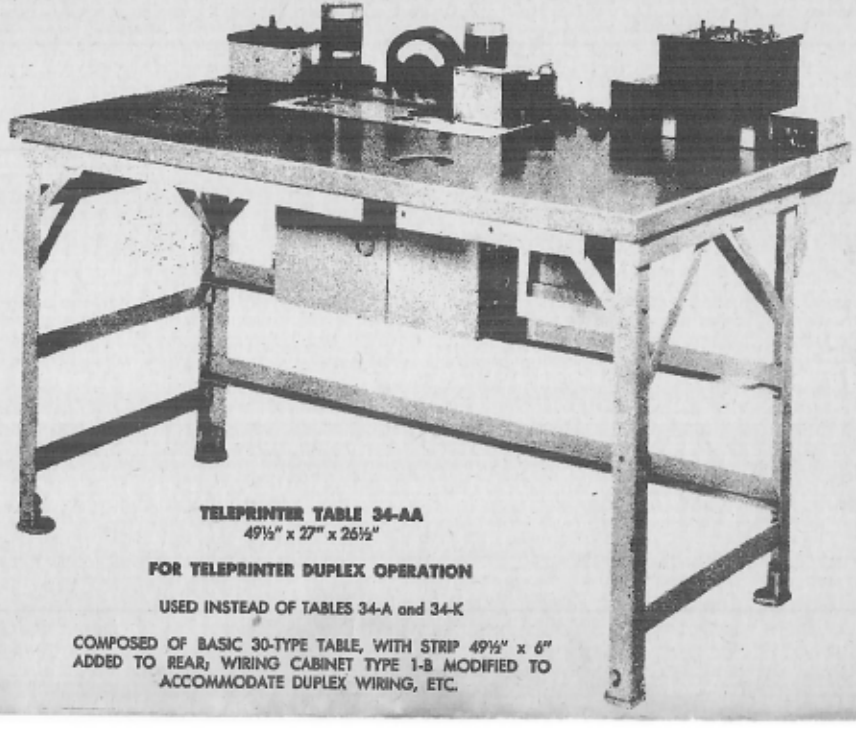
TELEPRINTER TABLE 32-P
49½" x 21" x 26½"

RIGHT FRONT END EXTENSION 20" x 14" REMOVED

WIRING CABINET 2-P
(FOR OPERATION WITH LINE RELAY AND SENDING RELAY FOR BI-POLAR SIGNALS)

SAME BASIC TABLE IS USED WITH OTHER WIRING CABINETS TO FORM VARIOUS OPERATING TABLES, — AS 31-B, 32-B, 32-R, 39-D, 39-R, 81-B, 82-B, ETC.

431



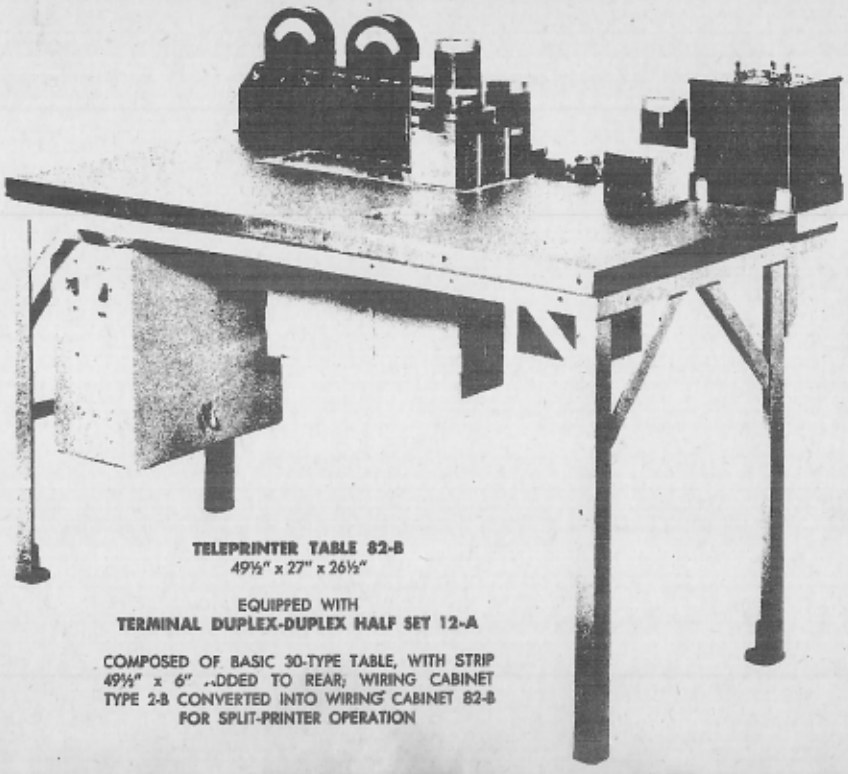
TELEPRINTER TABLE 34-AA
49½" x 27" x 26½"

FOR TELEPRINTER DUPLEX OPERATION

USED INSTEAD OF TABLES 34-A and 34-K

COMPOSED OF BASIC 30-TYPE TABLE, WITH STRIP 49½" x 6" ADDED TO REAR; WIRING CABINET TYPE 1-B MODIFIED TO ACCOMMODATE DUPLEX WIRING, ETC.

433

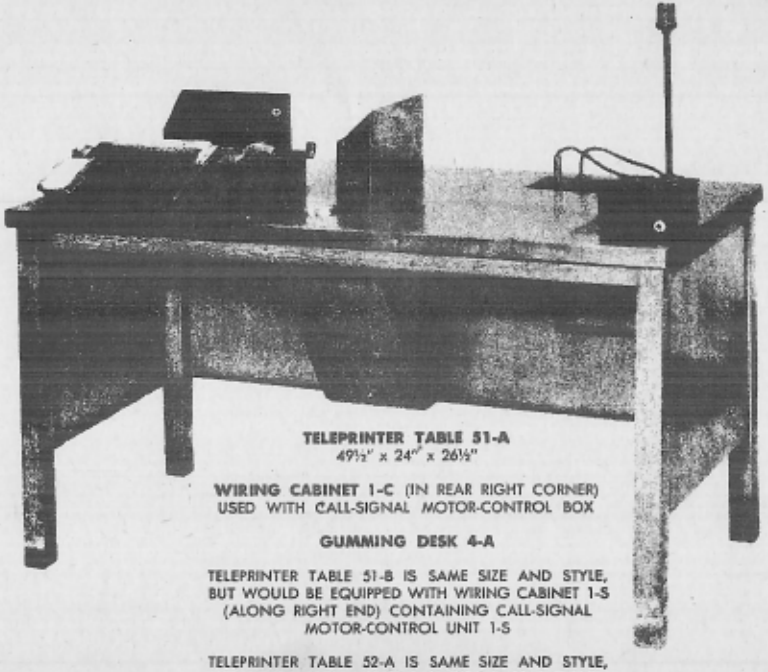


TELEPRINTER TABLE 82-B
49½" x 27" x 26½"

EQUIPPED WITH
TERMINAL DUPLEX-DUPLEX HALF SET 12-A

COMPOSED OF BASIC 30-TYPE TABLE, WITH STRIP 49½" x 6" ADDED TO REAR; WIRING CABINET TYPE 2-B CONVERTED INTO WIRING CABINET 82-B FOR SPLIT-PRINTER OPERATION

435



TELEPRINTER TABLE 51-A
49½" x 24" x 26½"

WIRING CABINET 1-C (IN REAR RIGHT CORNER)
USED WITH CALL-SIGNAL MOTOR-CONTROL BOX

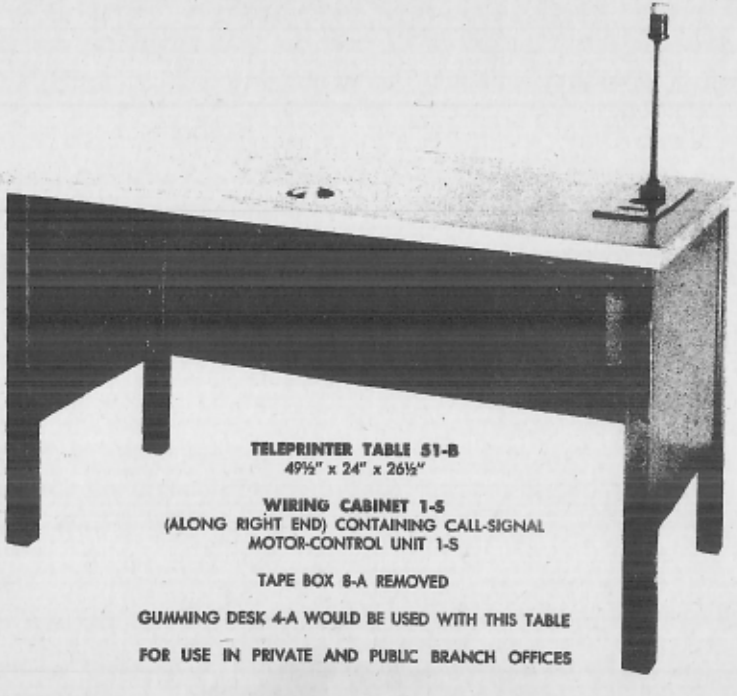
GUMMING DESK 4-A

TELEPRINTER TABLE 51-B IS SAME SIZE AND STYLE, BUT WOULD BE EQUIPPED WITH WIRING CABINET 1-S (ALONG RIGHT END) CONTAINING CALL-SIGNAL MOTOR-CONTROL UNIT 1-S

TELEPRINTER TABLE 52-A IS SAME SIZE AND STYLE, BUT WOULD USE WIRING CABINET 2-B (REAR RIGHT); TABLE 52-R WOULD USE WIRING CABINET 2-R

FOR USE IN PRIVATE AND PUBLIC BRANCH OFFICES

437



TELEPRINTER TABLE 51-B
49½" x 24" x 26½"

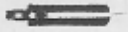
WIRING CABINET 1-S
(ALONG RIGHT END) CONTAINING CALL-SIGNAL
MOTOR-CONTROL UNIT 1-S

TAPE BOX 8-A REMOVED

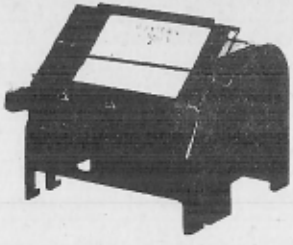
GUMMING DESK 4-A WOULD BE USED WITH THIS TABLE

FOR USE IN PRIVATE AND PUBLIC BRANCH OFFICES

HAND TAPE MOISTENER 1-B



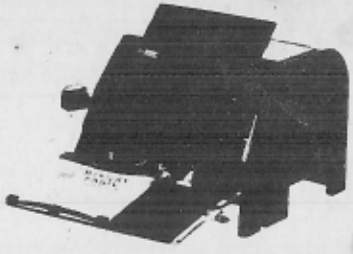
CROSS-FEED TYPE (PZ) HAND TAPE MOISTENER



GUMMING DESK 3-A
ATTACHED TO TELEPRINTER COVER

TURNED UP - - NORMAL POSITION

(TABLE TAPE MOISTENER 3-A AT LEFT SIDE)



GUMMING DESK 3-A

ATTACHED TO TELEPRINTER COVER

TURNED DOWN - - FOR GUMMING TELEGRAMS

(TABLE TAPE MOISTENER 3-A AT LEFT SIDE)

GUMMING DESK (PZ) 1-C
10½" x 9¼"

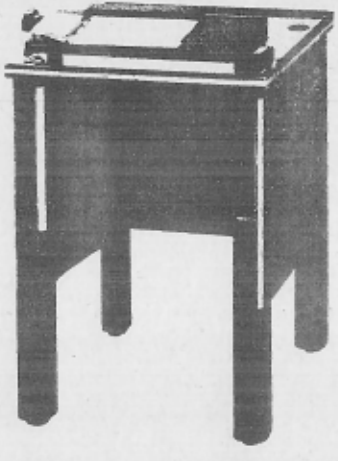
TABLE TAPE MOISTENER 2-C

GUMMING DESK 4-A
17" x 9"
LESS TABLE TAPE MOISTENER 2-C

GUMMING DESK 2-A
20½" x 9"

TABLE TAPE MOISTENER 2-C

441

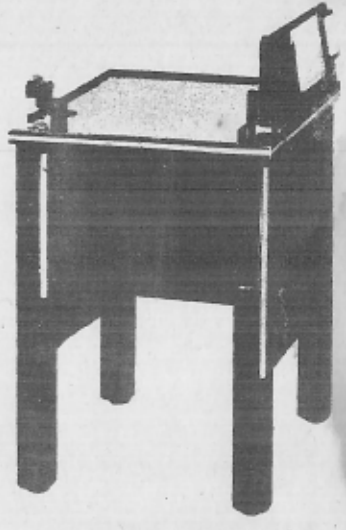


TELEPRINTER TABLE (PZ) 302-A
20" x 20" x 26"

WIRING PANEL 281-A

GUMMING DESK (PZ) 311-A
(16½" x 6⅞")

IN POSITION FOR GUMMING TELEGRAMS



TELEPRINTER TABLE (PZ) 302-A
20" x 20" x 26"

WIRING PANEL 281-A

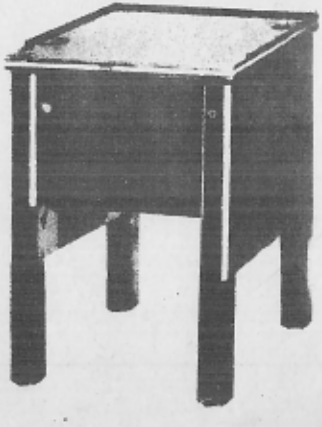
GUMMING DESK (PZ) 311-A
(16½" x 6⅞")

NORMAL POSITION

443

TELEPRINTER TABLE (PZ) 302-A
20" x 20" x 26"

WIRING PANEL 281-A
LESS GUMMING DESK (PZ) 311-A
AS USED WITH PAGE TELEPRINTERS

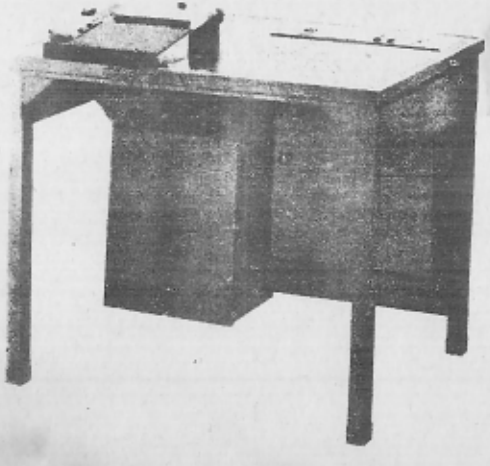


TELEPRINTER TABLE (PZ) 610-A
34" x 23" x 27"

GUMMING DESK (PZ) 1-C

(TABLE 610-C IS 20½" x 23" x 27"; DERIVED FROM TABLE 610-A BEING REDUCED IN LENGTH TO 20½")

WHEN OPERATION WITH LINE RELAY IS REQUIRED, COVER PLATE 705-A IS REMOVED TO PROVIDE FOR MOUNTING PLATE 823-B, CONNECTING BLOCK 18-B, AND POLAR RELAY 215-A

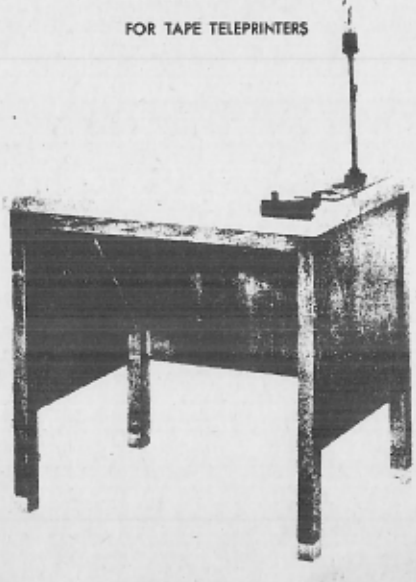


TELEPRINTER TABLE 41-A
30" x 20" x 26½"

WIRING CABINET 1-S

FRAMEWORK SMOOTH FURNITURE STEEL
TOP LINOLEUM COVERED

FOR TAPE TELEPRINTERS

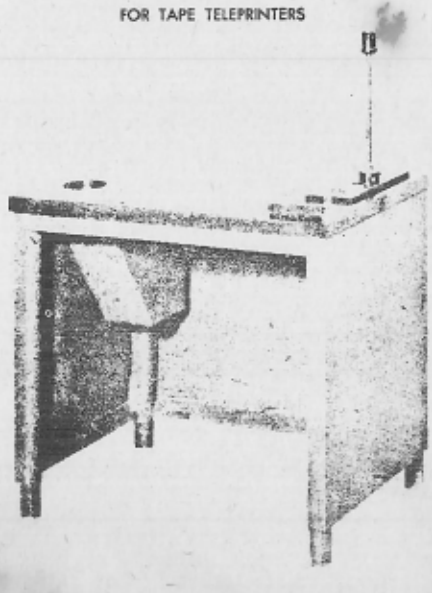


TELEPRINTER TABLE 141-A
30" x 20" x 26½"

WIRING CABINET 1-S

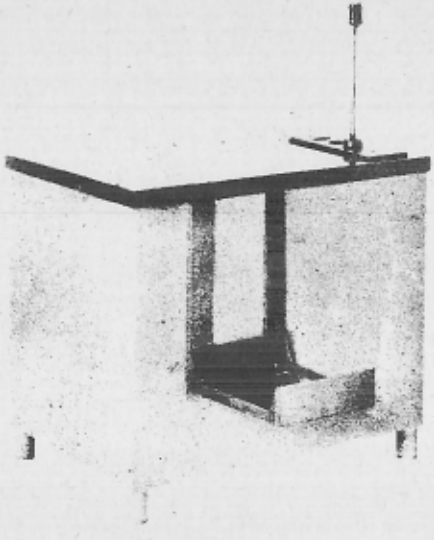
CRINKLED FINISH FRAMEWORK
TOP COVERED WITH BLACK PHENOLIC FIBER

FOR TAPE TELEPRINTERS



445

447

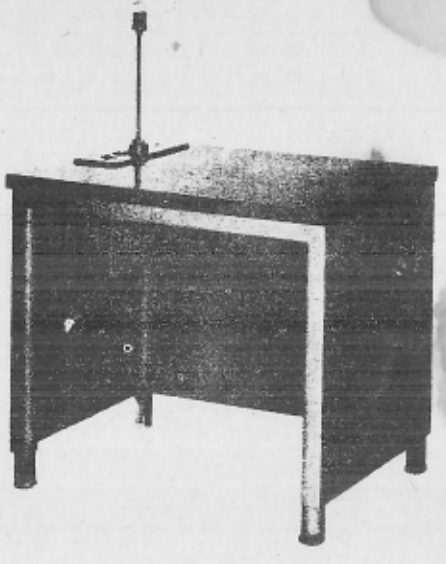


TELEPRINTER TABLE 101-A
30" x 20" x 26½"
(REAR VIEW)

WIRING CABINET 29-A

CRINKLED FINISHED FRAMEWORK
TOP COVERED WITH BLACK PHENOLIC FIBER

EQUIPPED WITH #11698 SPROCKET FEED PAPER HOLDER ASSEMBLY, FOR SPROCKET FEED PAGE TELEPRINTERS (NOT REQUIRED FOR FRICTION FEED TELEPRINTERS)



TELEPRINTER TABLE 101-A
30" x 20" x 26½"

WIRING CABINET 29-A

CRINKLED FINISH FRAMEWORK
TOP COVERED WITH BLACK PHENOLIC FIBER

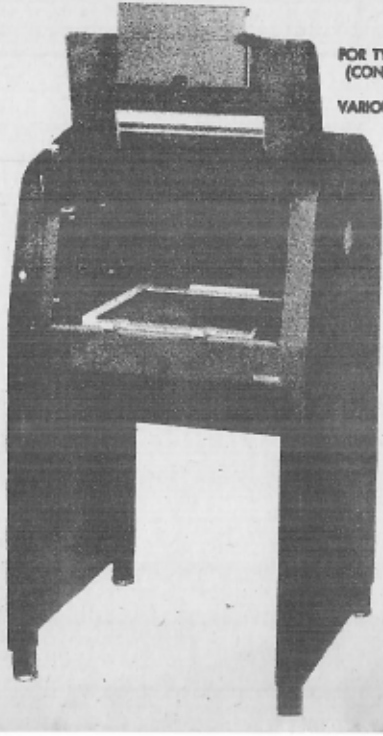
FOR PAGE TELEPRINTERS

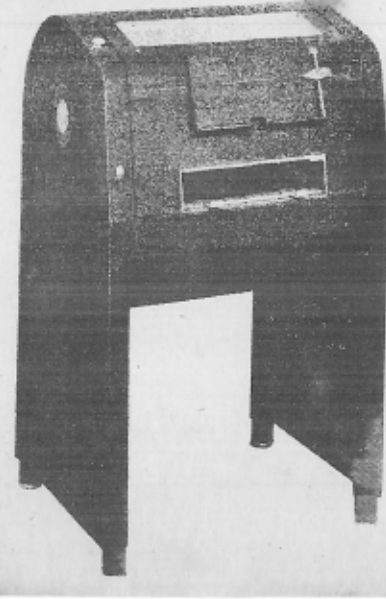
TELEPRINTER CONSOLE 1-C
24" x 21½" x 40"

WIRING CABINET 30-A (LEFT HAND)
FOR REGULAR TIE-LINE OPERATION

FOR TYPE-100 PAGE TELEPRINTERS, FRICTION-FEED OPERATION.
(CONSOLE 2-A REQUIRED FOR SPROCKET-FEED OPERATION.)

VARIOUS WIRINGS OF LEFT HAND AND RIGHT HAND CABINETS
FOR SPECIAL REQUIREMENTS



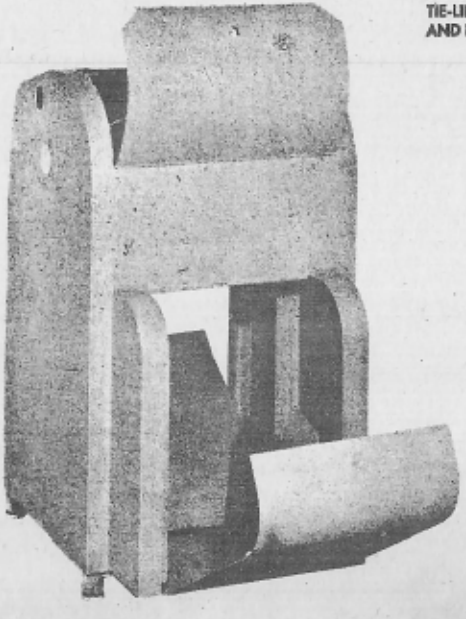


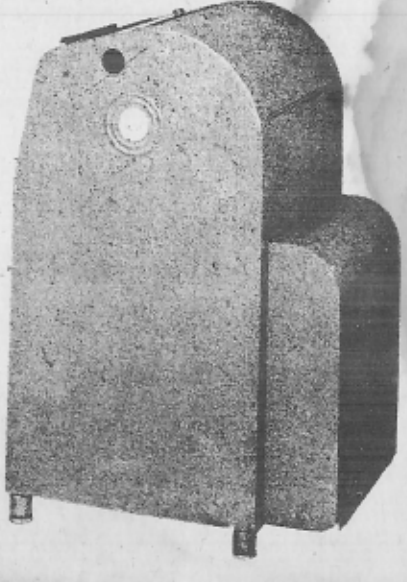
TELEPRINTER CONSOLE 2-A
24" x 21½" x 40"

EXTENSION AT REAR 20" x 6" x 21½"

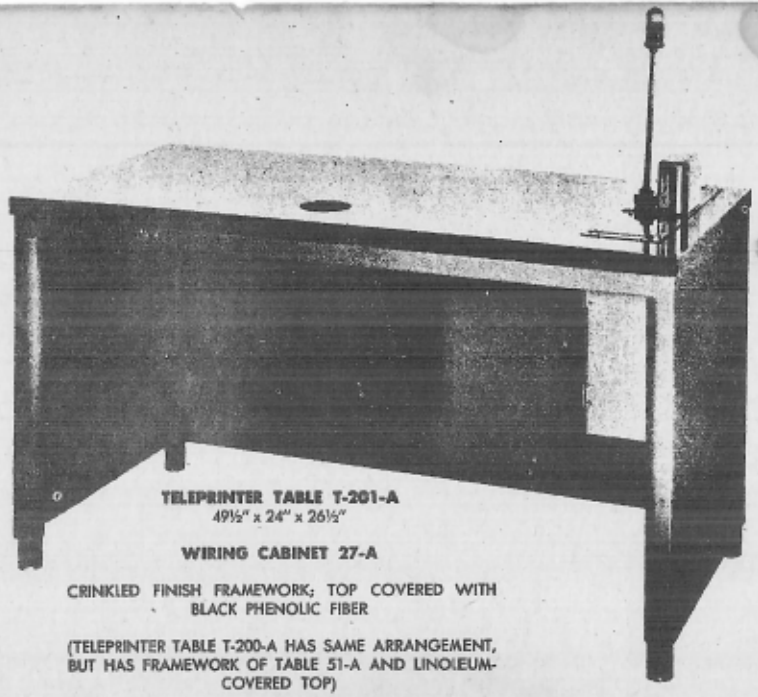
FOR SPROCKET-FEED TYPE-100 PAGE TELEPRINTERS
(CONSOLES TYPE-1 USED FOR FRICTION-FEED OPERATION)

WIRING CABINET 30-A (LEFT HAND) FOR REGULAR TIE-LINE OPERATION; VARIOUS WIRINGS OF LEFT HAND AND RIGHT HAND CABINETS FOR SPECIAL REQUIREMENTS





451



TELEPRINTER TABLE T-201-A
49½" x 24" x 26½"

WIRING CABINET 27-A

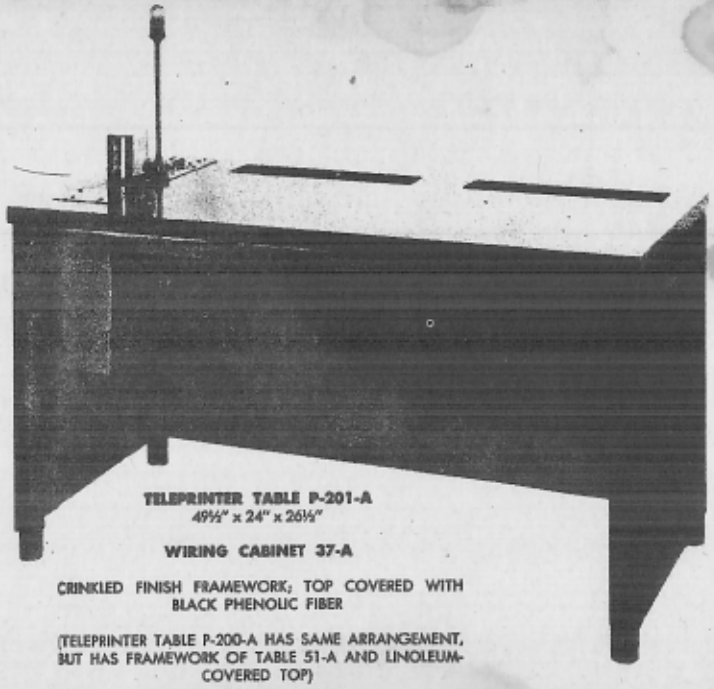
CRINKLED FINISH FRAMEWORK; TOP COVERED WITH BLACK PHENOLIC FIBER

(TELEPRINTER TABLE T-200-A HAS SAME ARRANGEMENT, BUT HAS FRAMEWORK OF TABLE 51-A AND LINOLEUM-COVERED TOP)

(WIRING CABINET 43-A IS REQUIRED WITH CERTAIN TYPES OF VARIOPLEX EQUIPMENT AND WOULD BE USED WITH TELEPRINTER TABLE 202-T)

FOR TELEMETER SERVICE USING TAPE TELEPRINTERS

455



TELEPRINTER TABLE P-201-A
49½" x 24" x 26½"

WIRING CABINET 37-A

CRINKLED FINISH FRAMEWORK; TOP COVERED WITH BLACK PHENOLIC FIBER

(TELEPRINTER TABLE P-200-A HAS SAME ARRANGEMENT, BUT HAS FRAMEWORK OF TABLE 51-A AND LINOLEUM-COVERED TOP)

(WIRING CABINET 44-A IS REQUIRED WITH CERTAIN TYPES OF VARIOPLEX EQUIPMENT AND WOULD BE USED WITH TELEPRINTER TABLE 202-P)

FOR TELEMETER SERVICE USING PAGE TELEPRINTERS

31-A 21" DEEP X 49½" LONG, WITHOUT SHELF. IF SHELF IS USED, IT BECOMES 35" DEEP AT A PORTION OF THE RIGHT HAND END OF THE TABLE. IT CONSISTS OF ANGLE IRON FRAMEWORK WITH TOP OF SOLID WOOD OR BROWN LINOLEUM ON WOOD BASE. TIME STAMP AND POWER RECEPTACLES MOUNTED IN TOP OF THE TABLE. THE TERMINAL BOX IS MOUNTED UNDER THE TOP BETWEEN THE LEFT-HAND END LEGS AND IS WIRED PER SPEC. 1822-D. THIS TABLE IS FOR TAPE PRINTER USE. CALL-SIGNAL MOTOR-CONTROL BOXES 1-A, 2-A, 3-A, OR 7-A MAY BE USED WITH THIS TABLE.

31-B SAME DIMENSIONS AND FRAME AS TYPE 31-A, BUT HAVING A BROWN LINOLEUM TOP ON WOOD BASE. A WIRING CABINET TYPE 1-B IS CUT INTO THE REAR CENTER OF THE TABLE. THIS CABINET HAS A 2-B JACK BOX, TIME STAMP OUTLET AND THREE POWER OUTLETS IN ITS TOP AND WIRED PER SPEC. 2480-A. THIS TABLE IS FOR TAPE PRINTER USE.

31-D SAME AS 31-B, EXCEPT POWER SWITCH RELOCATED TO TOP OF CABINET.

31-R SAME AS 31-B WITH RECTIFIER ADDED FOR USE ON CIRCUITS WHERE SELECTORS ARE USED.

32-A SAME DIMENSIONS AND CONSTRUCTION AS 31-A,
32-K BUT WIRED FOR OPERATION OF PRINTER COILS FROM LOCALS OF A LINE RELAY FOR USE ON LINE TOO LONG TO BE OPERATED WITH PRINTER COILS DIRECTLY IN LINE CIRCUIT. THE DIFFERENCE BETWEEN THE A AND K TYPE IS THAT THE A IS USED WHERE THE POWER IS DC, AND THE K WHERE THE POWER IS AC, NECESSITATING THE GENERATION OF DC LOCALLY, EITHER BY MOTOR GENERATOR OR RECTIFIER. COVERED IN SPECIFICATIONS 1822-D.

32-B SAME DIMENSIONS AND CONSTRUCTION AS 31-B TABLE, USING 2-B WIRING CABINET, AND SERVING SAME PURPOSES AS 32-A, AND COVERED IN SPECIFICATIONS 2480-A.

32-D SAME TABLE AS 31-B, BUT USING 2-D WIRING CABINET WHICH DIFFERS FROM 2-B ONLY IN THE LOCATION OF POWER SWITCH, WHICH IS IN TOP OF CABINET 2-D.

32-P SAME DIMENSION AND CONSTRUCTION AS 31-B TABLE, BUT USING 2-P WIRING CABINET, WIRED PER DRAWING 87918. HAS LINE RELAY AND SENDING RELAY TO TRANSMIT BI-POLAR SIGNALS, FOR USE ON SINGLE CIRCUITS WHERE SATISFACTORY OPERATION MIGHT NOT BE OBTAINED FROM ORDINARY MAKE-AND-BREAK SIGNALS.

32-R SAME AS 31-B, BUT USING 2-R WIRING CABINET, WHICH IS A 2-D CABINET WITH A RECTIFIER.

NOTE: ANY OF THESE WIRING CABINETS, 1-D, 1-R, 2-D, AND 2-R MAY BE WIRED WITH A SELECTOR.

34-A 34-K 66" X 27" DEEP. MADE UP WITH ANGLE IRON FRAME WITH SOLID OR VENEER TOP WITH OR WITHOUT LINOLEUM SURFACE. HAS TWO RELAYS, MISCELLANEOUS SWITCHES, POWER AND TIME STAMP OUTLETS, METER, RESISTANCE BOX, SOUNDER, POLE CHANGER KEY, AND CORDLESS TABLE JACK BOX ON TOP OF TABLE. A TERMINAL BOX CONTAINING RESISTANCES, FUSES, AND TERMINAL BLOCK IS MOUNTED EITHER ON END OF TABLE OR BETWEEN CENTER LEGS. THIS TABLE USED WHERE AMOUNT OF TRAFFIC WARRANTS DUPLEX OPERATION. TABLES ARE WIRED ACCORDING TO SPEC. 1822-D. THE A TYPE IS USED WHERE DC POWER IS AVAILABLE FOR OPERATION OF TELEPRINTER MOTORS, AND THE K TYPE WHERE ONLY AC POWER IS AVAILABLE FOR MOTORS, AND DC IS FURNISHED BY EITHER MOTOR GENERATORS OR RECTIFIERS.

34-AA COMPOSED OF BASIC 30-TYPE TABLE, WITH STRIP 49½" X 6" ADDED ALONG REAR FOR MOUNTING VARIOUS ITEMS OF DUPLEX CIRCUIT EQUIPMENT. WIRING CABINET OF I-B TYPE USED TO ACCOMMODATE DUPLEX CIRCUIT WIRING. FREQUENTLY USED INSTEAD OF TABLES 34-A AND 34-K; IS WIRED PER DWG. 45,001.

41-A 20" DEEP X 30" LONG. IT HAS A BROWN LINOLEUM TOP ON WOOD BASE, AND METAL BANDED EDGES, METAL FRAMEWORK OF FURNITURE TYPE CONSTRUCTION WITH IMITATION WOOD GRAIN FINISH IN OAK, WALNUT, MAHOGANY, OR PLAIN GREEN. THIS TABLE HAS A I-S WIRING CABINET, CONSISTING OF JACK, RELAY MOUNTING, SIGNAL LIGHT RECEPTACLE, PRINTER OUTLET, AND TWO SWITCHES. THE SWITCH ON THE SIDE OF CABINET CONTROLS THE POWER ONLY, AND THE OTHER SWITCH IN TOP OF CABINET CONTROLS SIGNAL AND OPERATING SET-UP. THIS TABLE IS FOR TAPE PRINTER USE. THE CABINET I-S IS WIRED PER DWG. #39209. EITHER I-S, 2-S, OR 3-S RELAY UNIT MAY BE USED.

141-A 20" DEEP X 30" LONG. HAS A BLACK COMPOSITION TOP AND COMPOSITION BANDS ON A WOOD BASE. (IN A FEW CASES, A TYPE 41-A TOP HAS BEEN USED ON THIS TABLE.) THIS TABLE IS SIMILAR IN CONSTRUCTION TO 41-A, EXCEPT THAT THE LEGS ARE ROUND, AND THE TABLE HAS A TOBACCO BROWN CRINKLE FINISH. HOLES MUST BE DRILLED IN THE COMPOSITION TOP FOR CLEARANCE OF EQUIPMENT MOUNTING SCREWS. THE TYPE I-S WIRING CABINET IS USED. THIS TABLE IS FOR TAPE PRINTER USE.

51-A 24" DEEP BY 49½" LONG. THIS TABLE IS OF SAME CONSTRUCTION AND FINISH AS THE TYPE 41-A TABLES. THIS TABLE MAY BE EQUIPPED WITH I-B OR I-C WIRING CABINET, - THE LATTER BEING A SMALL CABINET THE SIZE OF TYPE I-S AND IS WIRED PER DWG. #39942. THE I-C WIRING CABINET HAS TIME STAMP OUTLET, PRINTER OUTLET, ONE JACK AND ONE POWER SWITCH. THIS TABLE IS FOR TAPE PRINTER USE WITH CALL-SIGNAL MOTOR-CONTROL BOXES OF ANY OF THE TYPES USED WITH 31-A TABLES.

51-B 24" DEEP X 49½" LONG. OF SAME CONSTRUCTION AND FINISH AS THE TYPE 41-A AND 51-A TABLE, BUT USES I-S WIRING CABINET. THIS TABLE IS FOR TAPE PRINTER USE.

81-B THESE TABLES HAVE SAME DIMENSIONS AND CON-
82-B STRUCTION AS 31-B TABLES, BUT ARE FOR USE IN "SPLIT PRINTER OPERATION" WHERE ONE LINE CIRCUIT IS USED ONLY FOR SENDING, AND ANOTHER LINE CIRCUIT IS USED ONLY FOR RECEIVING, BUT UTILIZING ONE TELEPRINTER FOR OPERATION OF THE TWO LINE CIRCUITS. THE 81-B TABLE, WIRED PER DWG. 56086, IS USED WITH LINE CIRCUITS THAT DO NOT REQUIRE A LINE RELAY; THE 82-B TABLE, WIRED PER DWG. 79069, IS FOR LONGER CIRCUITS REQUIRING A RELAY.

91-A 20" DEEP X 30" LONG. IT IS THE SAME CONSTRUCTION AND FINISH AS THE 41-A TABLE. THIS TABLE USES A 22-A WIRING CABINET ON THE LEFT END OF THE TABLE. THE WIRING CABINET HAS ONE JACK, ONE PRINTER OUTLET AND ONE POWER SWITCH. THIS TABLE IS FOR USE WITH 101-A TYPE PAGE PRINTER WHICH HAS CONTROL SWITCH AND RELAY MOUNTED IN IT, OR FOR OTHER TYPE PAGE PRINTER USING CALL-SIGNAL MOTOR-CONTROL BOXES. CABINET 22-A PER DWG. #56767.

101-A 20" DEEP X 30" LONG. THIS IS OF THE SAME CONSTRUCTION AND FINISH AS 141-A TYPE TABLE. IT USES A 29-A WIRING CABINET ON LEFT HAND END OF THE TABLE WIRED PER DWG. #79789, HAVING THE SAME CIRCUIT ARRANGEMENT AS CABINET 1-S. THIS TABLE IS FOR USE WITH TYPE 100 PAGE PRINTERS.

T-200 24" X 49½" LONG. THIS TABLE IS OF SAME, CONSTRUCTION AND FINISH AS THE 51-A TYPE TABLE. IT USES A TYPE 27-A WIRING CABINET PER DRAWING #61232 WHICH IS DESIGNED TO MOUNT IN THE RIGHT HAND END OF THE TABLE. THIS CABINET IS EQUIPPED WITH POWER OUTLET, SIGNAL LIGHT OUTLET, POWER SWITCH, RELAY MOUNTING AND A PUSH BUTTON FOR THE SENDING SIDE. ALSO A POWER OUTLET AND POWER SWITCH ON THE RECEIVING SIDE, AND A CORDLESS TABLE JACK BOX FOR THE LINE CORDS OF BOTH PRINTERS. THIS TABLE IS FOR USE WITH TAPE PRINTERS ONLY ON OTHER THAN TYPE E VARIOPLEX CIRCUITS FOR TELEMETER.

P-200 24" X 49½" LONG. SAME CONSTRUCTION AND FINISH AS TYPE 51-A TABLE. TWO HOLES ARE CUT IN THE TOP FOR PAPER LOOP. THIS TABLE USES A 37-A WIRING CABINET, PER DWG. 79652, WHICH IS WIRED AND EQUIPPED THE SAME AS A 27-A, BUT IS MADE UP FOR MOUNTING IN THE LEFT HAND END OF THE TABLE. THIS TABLE IS FOR USE WITH PAGE PRINTERS ON OTHER THAN TYPE E VARIOPLEX CIRCUITS FOR TELEMETER SERVICE.

T-201 THIS TABLE IS OF SAME DIMENSIONS AS TABLE T-200, BUT OF SAME CONSTRUCTION AS THE TYPE 141-A TABLE, AND HAS THE SAME WIRING CABINET FOR THE SAME USES AS TYPE T-200 TABLES.

P-201 THESE TABLES ARE OF THE SAME DIMENSIONS AS TABLE P-200, BUT OF THE SAME CONSTRUCTION AS THE TYPE 141-A TABLES, AND USE THE SAME WIRING CABINET FOR THE SAME PURPOSES AS THE P-200 TABLE.

T-202 THIS TABLE IS OF THE SAME DIMENSIONS AND FINISH AS T-201, BUT USES WIRING CABINET 43-A, PER DRAWING #85166 FOR USE WITH TYPE E VARIOPLEX ONLY. WIRING CABINET 43-A HAS TWO SIGNAL CIRCUITS ON EACH LEG USING RED AND GREEN LIGHTS WITH TWO RECTOX RECTIFIERS IN PLACE OF SINGLE SIGNAL CIRCUIT OF WIRING CABINET 27-A. THE CABINET IS MOUNTED IN RIGHT END OF TABLE, FOR USE WITH TAPE PRINTERS.

P-202 THIS TABLE IS OF THE SAME DIMENSIONS AND FINISH AS T-201, BUT USES WIRING CABINET 44-A, PER DRAWING #85167, IN CONJUNCTION WITH TYPE E VARIOPLEX. WIRING CABINET 44-A, WIRED THE SAME AS 43-A, IS DESIGNED FOR MOUNTING IN LEFT END OF TABLE FOR USE WITH PAGE TELEPRINTERS.

302-A ALL METAL TABLE, 20" X 20" X 26" HIGH; HAS SMALL METAL COMPARTMENT IN LEFT SIDE FOR WASTE TELEPRINTER TAPE; ANOTHER COMPARTMENT IN REAR RIGHT FOR MOUNTING PANELS FOR APPARATUS AND WIRING. STANDARD FINISH BLACK, WITH NARROW ALUMINUM BAND AROUND TOP AND DOWN FRONT LEGS. FOR USE WITH PAGE PRINTERS, OR WITH TAPE TELEPRINTERS EQUIPPED WITH GUMMING DESK 3-A, OR USING 311-A DESK; HAND TAPE MOISTENER 1-B WOULD BE USED.

510-A METAL FRAME AND TOP, COVERED WITH GREEN LINOLEUM; STANDARD FINISH "OLIVE F"; 34" LONG, 23" WIDE, 27" HIGH. DESIGNED FOR TAPE PRINTERS; USES GUMMING DESK 1-C; CROSS-FEED AND TAPE MOISTENER SHOULD BE FURNISHED WITH THIS TABLE. WHEN OPERATION WITH LINE RELAY IS REQUIRED COVER PLATE 705-A IS REMOVED TO PROVIDE FOR MOUNTING PLATE 823-B, CONNECTING BLOCK 18-B, AND POLAR RELAY 215-A. (610-C TABLE IS 610-A TABLE REDUCED IN LENGTH TO 20½".)

CONSOLE 1-A or 1-B 24" X 21½" DEEP X 40" HIGH, OVERALL; THE COVER OF THE PRINTER AND THE TARLE ARE IN ONE UNIT; ALL OF A TOBACCO BROWN CRINKLED FINISH. THIS UNIT WHEN USED FOR TIE LINE SERVICE IS EQUIPPED WITH A 30-A WIRING CABINET, WIRED PER DRAWING #76144, WHICH IS SIMILAR TO THE 1-S WIRING CABINET, BUT HAS AN EXTRA JACK. THIS UNIT IS FOR PAGE PRINTER USE ONLY; THE 1-A CONSOLE ACCOMMODATING THE 101 OR 102 TYPE; THE 1-B CONSOLE PRIMARILY FOR 103 TELEPRINTER BUT MAY BE USED WITH 101 AND 102 TYPES WITH MINOR ADJUSTMENT OF RAILS IN CONSOLE.

CONSOLE 2-A 24" X 21½" DEEP X 40" HIGH, BUT WITH AN EXTENSION AT REAR 20" X 6" X 21½". SAME FINISH AND CONSTRUCTION AS 1-A AND 1-B CONSOLES, BUT WITH THE BUILT-IN COMPARTMENT AT REAR FOR SPROCKET-FEED FANFOLD PAPER. USES SAME WIRING CABINET AS 1-A OR 1-B FOR TIE LINE SERVICE. CAN BE ADAPTED TO 101, 102, OR 103 TELEPRINTERS IN SAME MANNER AS 1-B CONSOLE.

NOTE: FOR SPECIAL SERVICES THESE CONSOLES MAY BE FINISHED IN DIFFERENT COLORS, AND MAY USE COMBINATIONS OF SEVERAL DIFFERENT KINDS OF WIRING CABINETS.

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