

TYPE 780 TERMINATING SET AND MOUNTING SHELF INSTALLER INSTRUCTIONS

CONTENTS	PAGE
1. GENERAL	1
2. INSTALLATION	2
3. OPTIONS	2
4. SETTING PAD VALUES	3
5. STRAPPING	3
6. 4W BYPASS PLUG	4
7. REFERENCES	5

1. GENERAL

1.01 The 785 and 786 series of terminating sets are complete plug-in units assembled on a printed circuit card with a face plate, measuring 2.80 inches wide, 1.64 inches high and 12.02 inches deep. Up to six plug-in units can be mounted on a 1 3/4 in by 19 inch mounting shelf type 781, and seven plug-in units on a 1 3/4 inch by 23 inch mounting shelf type 782.

1.02 The 785-1D, 785-1G, 786-1DV and 786-1GV 4-wire terminating sets are designed for general system applications for terminating 4-wire intertoll, toll connecting or any trunk requiring high grade coil type terminating sets.

1.03 The 785-1D and 785-1G units are designed to include XMIT and RCV sockets for plugging in 89 type pads (See Figs. 1A and Fig. 3). The 786-1DV and 786-1GV are designed with two individual three section adjustable T-pads (See Fig. 1B). Both the plug-in and adjustable pads set the 4-wire levels.

1.04 Also included as part of the circuit board are network building out capacitors (NBOC) for improving office and terminal balance as well as a compromise network to match the impedance of the 2-wire line.

1.05 To change values of the 89-type pads in the 785 series or to make strapping changes on the printed circuit board on both the 785 or 786 series requires removing the terminating set from the mounting shelf. The screw driver adjustment for the variable T pad in the 786 series is made on the face of the unit.

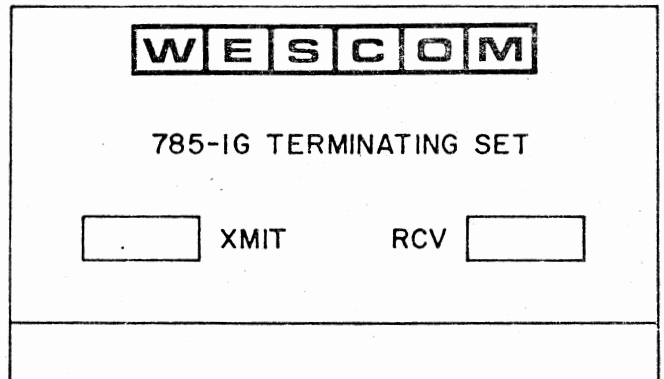


Fig. 1A Front View

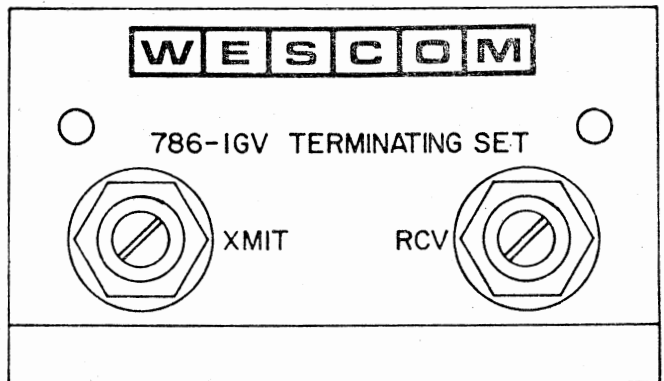


Fig. 1B Front View

1.06 For signaling purposes the A, B, F, D and G leads are derived from the terminating set transformers. In addition wiring options are provided at the socket connector for cross connecting the simplex leads from the 4-wire transmitting and re-

ceiving lines to the 2-wire trunk for developing various arrangements for signalling. See Fig. 2.

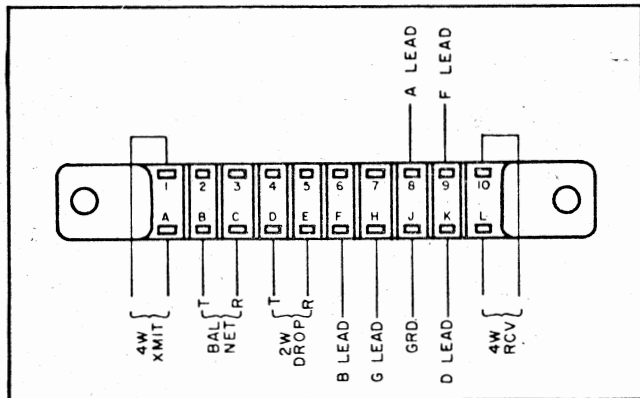


Fig. 2

TERMINAL ASSIGNMENT	
4 W RCV	(T) L, (R) I O
4 W XMIT	(T) I, (R) A
2 W DROP	(T) D, (R) E
"A" LEAD	B
"B" LEAD	F
"D" LEAD	K
"F" LEAD	9
"G" LEAD	H
BAL NET	(T) B, (R) C
GROUND	J

TABLE A

2. INSTALLATION

2.01 Basic erecting, mounting, cabling, and wiring for the 781 and 782 mounting shelf does not differ from standard telephone central office installation methods. See Fig. 10A for mounting dimensions on the 781 shelf and 10B for the 782 shelf.

2.02 Both the case or carton in which the equipment is shipped, as well as the equipment itself, should be checked for signs of damage that could be caused during shipping. If any damage is detected, then an immediate claim should be made to the transportation company involved.

2.03 Cabling between the wire wrap connectors on the 781 or 782 mounting shelf and the drop equipment can be accomplished by referring to Fig. 2 and Table A. See paragraph 6 regarding connector wiring when 4-wire bypass units are required.

2.04 All connections to the wire wrap terminals on the mounting shelf should be checked for grounds, open leads or shorts after the completion of the cabling operation so as to eliminate this type of trouble shooting during the line-up procedure.

3. OPTIONS

3.01 The 780 type term sets are available in four configurations

TYPE	2W DROP IMPEDANCE	4W LINE IMPEDANCE
785-1G*	900 ohm	600 ohm
786-1GV**	900 ohm	600 ohm
785-1D*	600 ohm	600 ohm
786-1DV**	600 ohm	600 ohm

* Require type 89 plug-in pads

** Include adjustable pads

3.02 Plug-in and adjustable pads are discussed in Part 4.

3.03 The following strapping options are covered in Part 5.

- (a) Compromise network (COMP NET)
- (b) Network build out capacitors (NBOC)
- (c) S1 access (C15)

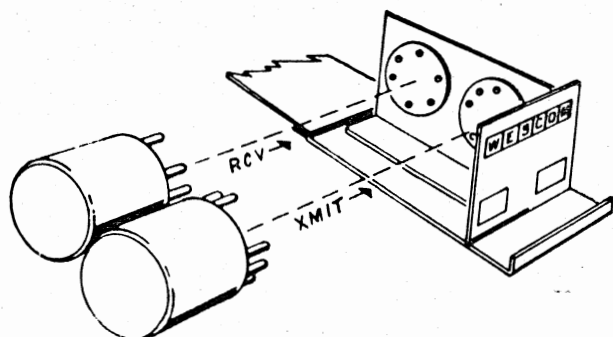


Fig. 3

4. SETTING PAD VALUES

4.01 The 785-IG and 785-ID use type 89 plug-in pads and in order to change values it requires removal of the terminating set from the mounting shelf. The pads are removed or inserted from the left side of the card as observed from the front (See Fig. 3). The transmit pad is located nearest the front plate and the receive pad is nearest the printed circuit card (See Fig. 3). After the proper value pads have been inserted into the XMIT and RCV sockets, indicate the pad values by using a grease pencil or marking tape in the appropriate boxes on the front of the unit. If strapping is not required, replace the terminating set into its proper connector on the terminating shelf.

4.02 The 786-1GV and 786-1DV are adjustable from the front of the unit. To set the pad

- (a) insert a 1/8 blade screwdriver into either the XMIT or RCV slot as required.
- (b) rotation in the clockwise direction reduces the pad value (i.e., full clockwise rotation is equivalent to zero pad).
- (c) rotation in the counter-clockwise direction adds pad value (i.e., full counter-clockwise rotation puts in the full 30DB).
- (d) after setting the pad value tighten the lock nuts.

5. STRAPPING

5.01 Remove the terminating set from the mounting shelf and examine the printed wiring side of the Board (See Fig. 4).

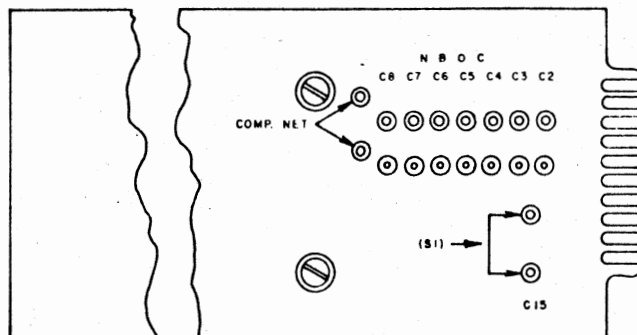


Fig. 4

5.02 **Balancing Network:** unless an external balancing network is specified on the job order and has been separately provided, the internal compromise network should be strapped in.

5.03 If the NET strap is not in place, using insulated wire, solder this strap in place.

5.04 If a precision network is specified on the job order, the "COMP NET" strap should be removed. Cabling from the external precision network to the term set is made on the rear wire wrap terminal strip of the term set plug-in connector. These terminals are designated BAL NET in Table A, Fig. 2.

5.05 **S1 Access:** unless specified on the job order, the S1 is not normally required and therefore should be strapped out.

5.06 If the S1 strap is not in place, using insulated wire, solder this strap in place.

5.07 **NBOC:** Network building out capacitors should not normally be strapped in and therefore should be removed, unless they are specified on the job order.

5.08 If building out capacitors are required, refer to Fig. 5 to determine the proper value and then solder required straps in place using insulated wire.

NETWORK BUILDING OUT CAPACITORS

Designation	Capacity
C2	.001
C3	.002
C4	.004
C5	.007
C6	.012
C7	.027
C8	.047

Combinations of these capacitors allow for strapping in values of Capacity from .001 microfarads to .100 microfarads. One hundred combinations between .001 and .100 microfarads are possible. Since parallel connection of capacitors is additive in value, strapping in additional capacitors will yield any value in .001 microfarad steps.

Example:

- .001 strap in C2
- .009 strap in C3 and C5
- .025 strap in C6, C5, C4 and C3

Fig. 5

5.09 This completes the strapping. Replace the terminating set card into the proper connector on the terminating shelf.

6. 4W BYPASS UNITS

6.01 In the event the terminating set mounting shelf connectors are hard wired to associated carrier or signaling equipment and it is desired to bring out some or all of these circuits on a 4-wire basis, then one of the following 4W BYPASS plugs are required.

A. 788A: This is a straight forward 4-wire by-pass card which when inserted into a connector on the terminating shelf loops the 4W RCV LINE to the 2W DROP, now making it the 4W RCV DROP; and the 4W XMIT LINE to the terminals 4 and 5, now making it the 4W XMIT DROP. See FIG. 6A and TABLE B for wiring information and FIG. 9A (schematic drawing).

B. 788B: This is the same as the 788A except that it includes plug in 89 type pads for setting the 4-wire levels. See FIG. 6A and TABLE B for wiring information and FIG. 9B (schematic drawing). Also refer to paragraph 4.01 regarding procedure for inserting 89 type pads.

C. 788C: This is the same as the 788A except that it includes adjustable T pads for setting the 4-wire levels. See FIG. 6A and TABLE B for wiring information and FIG. 9C (schematic drawing). Also refer to paragraph 4.02 for setting the pad values.

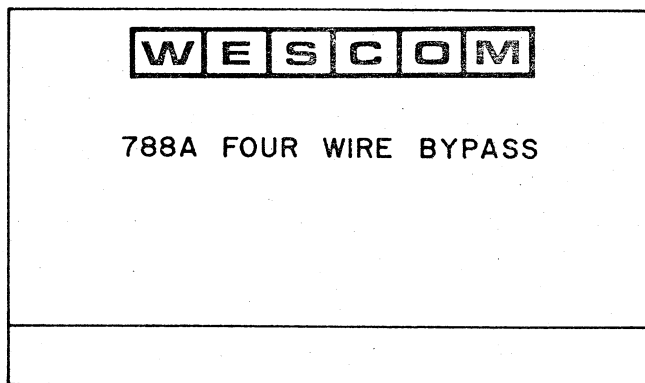


Fig. 6 Front View

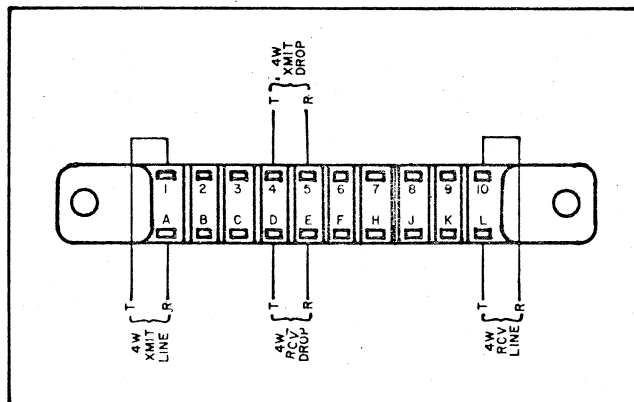


Fig. 6A

TERMINAL ASSIGNMENT	
4W RCV LINE	(T)L,(R)10
4W RCV DROP	(T)D,(R)E
4W XMIT LINE	(T)1,(R)A
4W XMIT DROP	(T)4,(R)5

TABLE B

D. 787A: This is used in applications that where in addition to extending circuits through the terminating shelf on a 4-wire basis; plug in 89 type pads for setting the 4-wire levels and 600/900 ohm impedance matching transformers with balanced SX leads are required. See FIG. 7A and TABLE C for wiring information and FIG. 9D (schematic drawing). Also refer to paragraph 4.01 regarding procedure for inserting 89 type pads.

E. 787AV: This unit is the same as the 787A except that it includes adjustable T pads for setting the 4-wire levels. See FIG. 7A and TABLE C for wiring information and FIG. 9E (schematic drawing). Also refer to paragraph 4.02 for setting pad values.

F. 787B: This unit like the 787A includes pads and 600/900 ohm impedance matching transformers, however, instead of balance SX leads, this transformer has a split winding configuration to accommodate COMPOSITE or similar type signaling. See FIG. 8 and TABLE D for wiring information and FIG. 9F (schematic drawing). Also refer to 4.01 regarding procedure for inserting 89 type pads.

G. 787BV: This unit is the same as the 787B except that it includes adjustable T pads for setting the 4-wire levels. See FIG. 8 and TABLE D for wiring information and FIG. 9G (schematic drawing). Also refer to paragraph 4.02 for setting pad values.

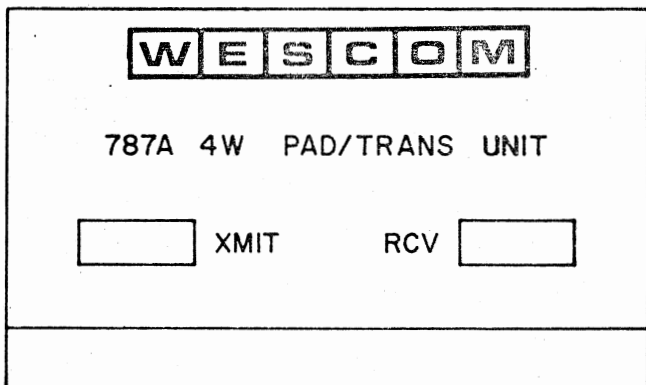


Fig. 7

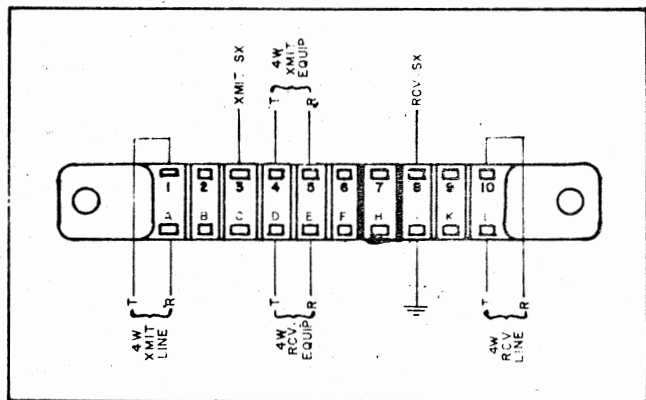


Fig. 7A

TERMINAL ASSIGNMENT	
4W RCV LINE	(T)L,(R) 10
4W RCV EQUIP	(T)D,(R) E
RCV SX	H
4W XMIT LINE	(T) 1,(R)A
4W XMIT EQUIP	(T) 4,(R) 5
XMIT SX	3
GRD	J

TABLE C

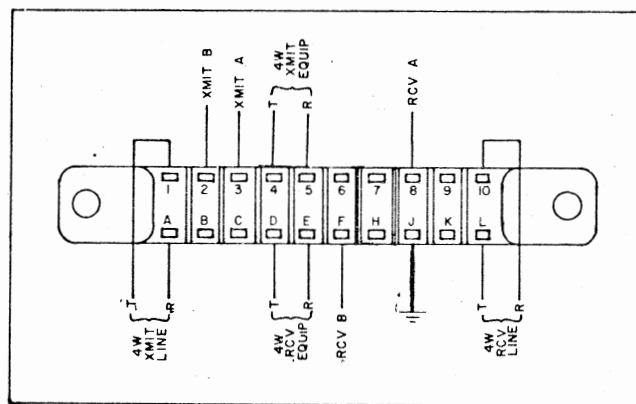


Fig. 8

TERMINAL ASSIGNMENT	
4W RCV LINE	(T)L,(R) 10
4W RCV EQUIP	(T)D,(R) E
RCV A	8
RCV B	F
4W XMIT LINE	(T) 1,(R)A
4W XMIT EQUIP	(T) 4,(R) 5
XMIT A	3
XMIT B	2
GRD	J

TABLE D

7. REFERENCES

- 7.01 Schematic Diagrams
 - SD-191000007 7851G & 1D
 - SD-191000008 7861GV & 1DV
- 7.02 Circuit Description
 - Section 785/786-101

Section 785/786-103

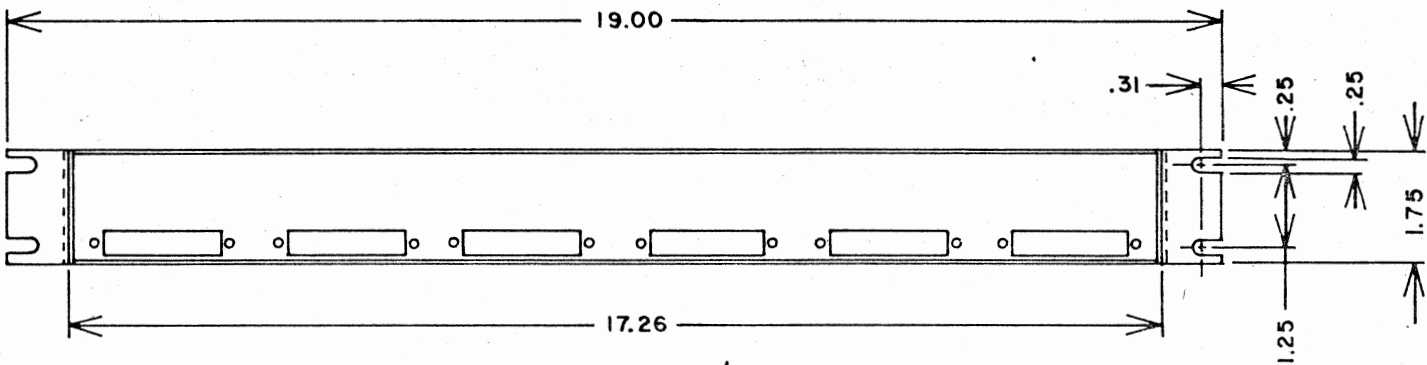


Fig. 10A Type 781 19 inch Mounting Shelf

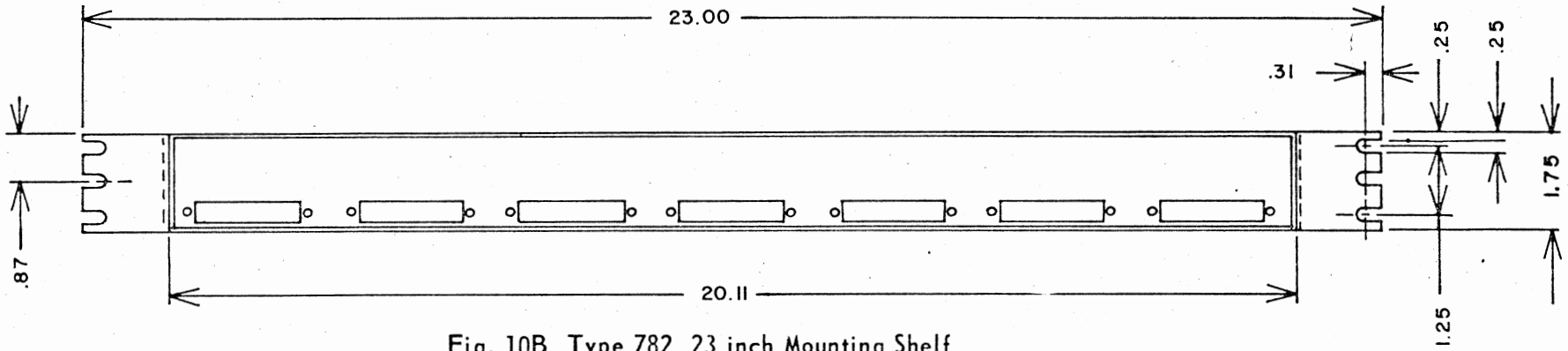


Fig. 10B Type 782 23 inch Mounting Shelf

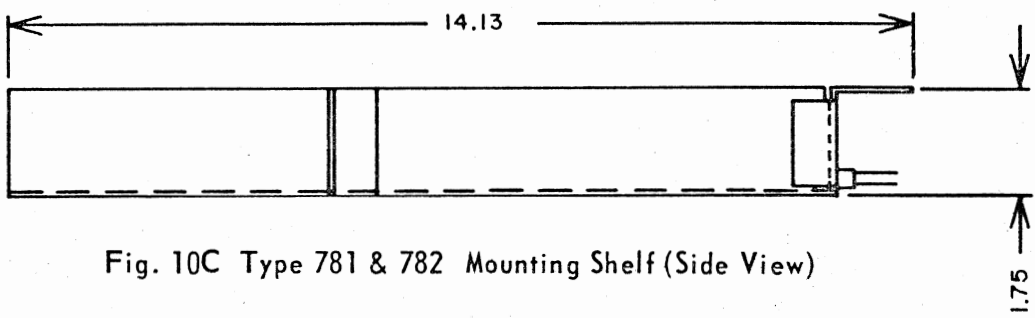


Fig. 10C Type 781 & 782 Mounting Shelf (Side View)

Section 785/786-103

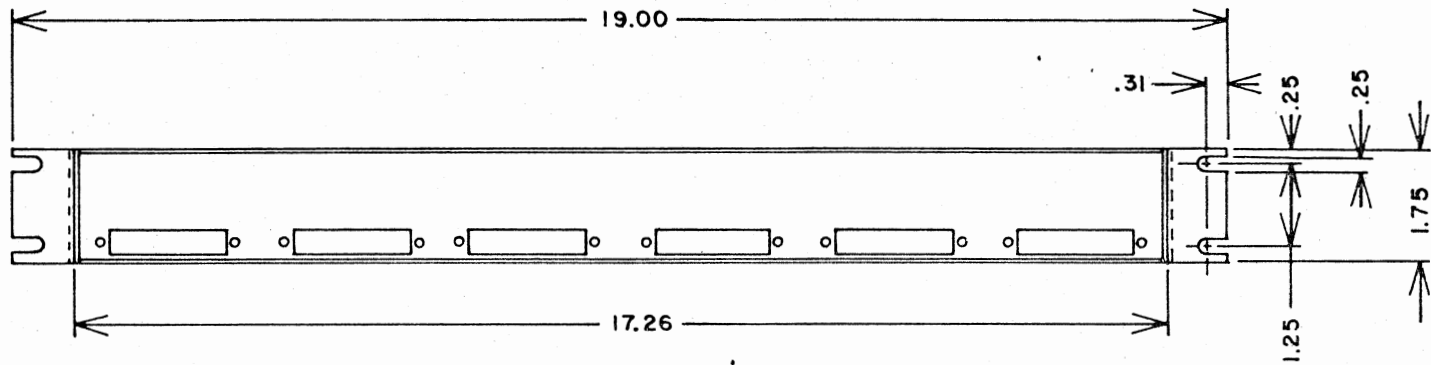


Fig. 10A Type 781 19 inch Mounting Shelf

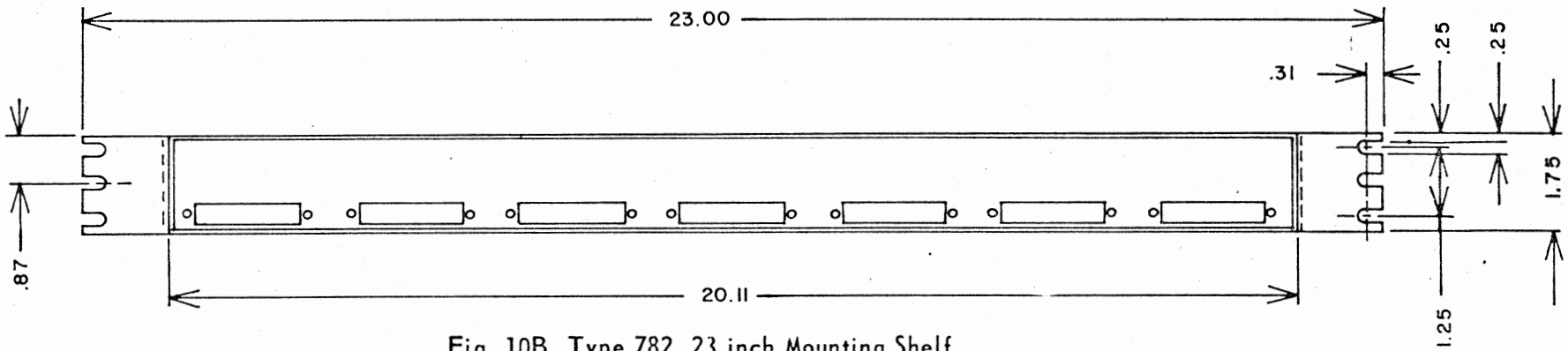


Fig. 10B Type 782 23 inch Mounting Shelf

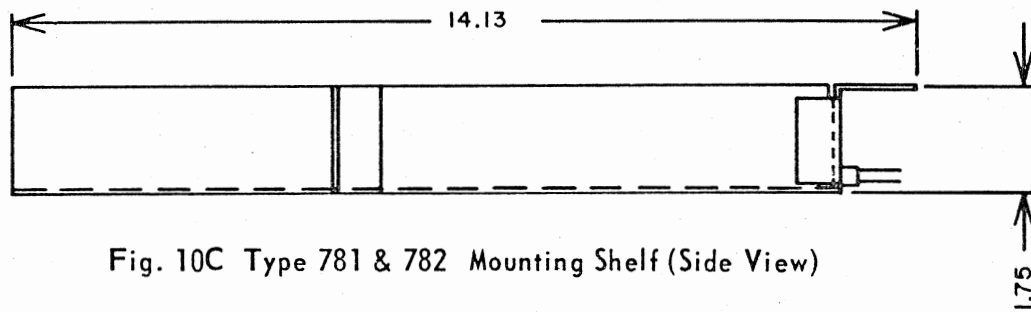


Fig. 10C Type 781 & 782 Mounting Shelf (Side View)

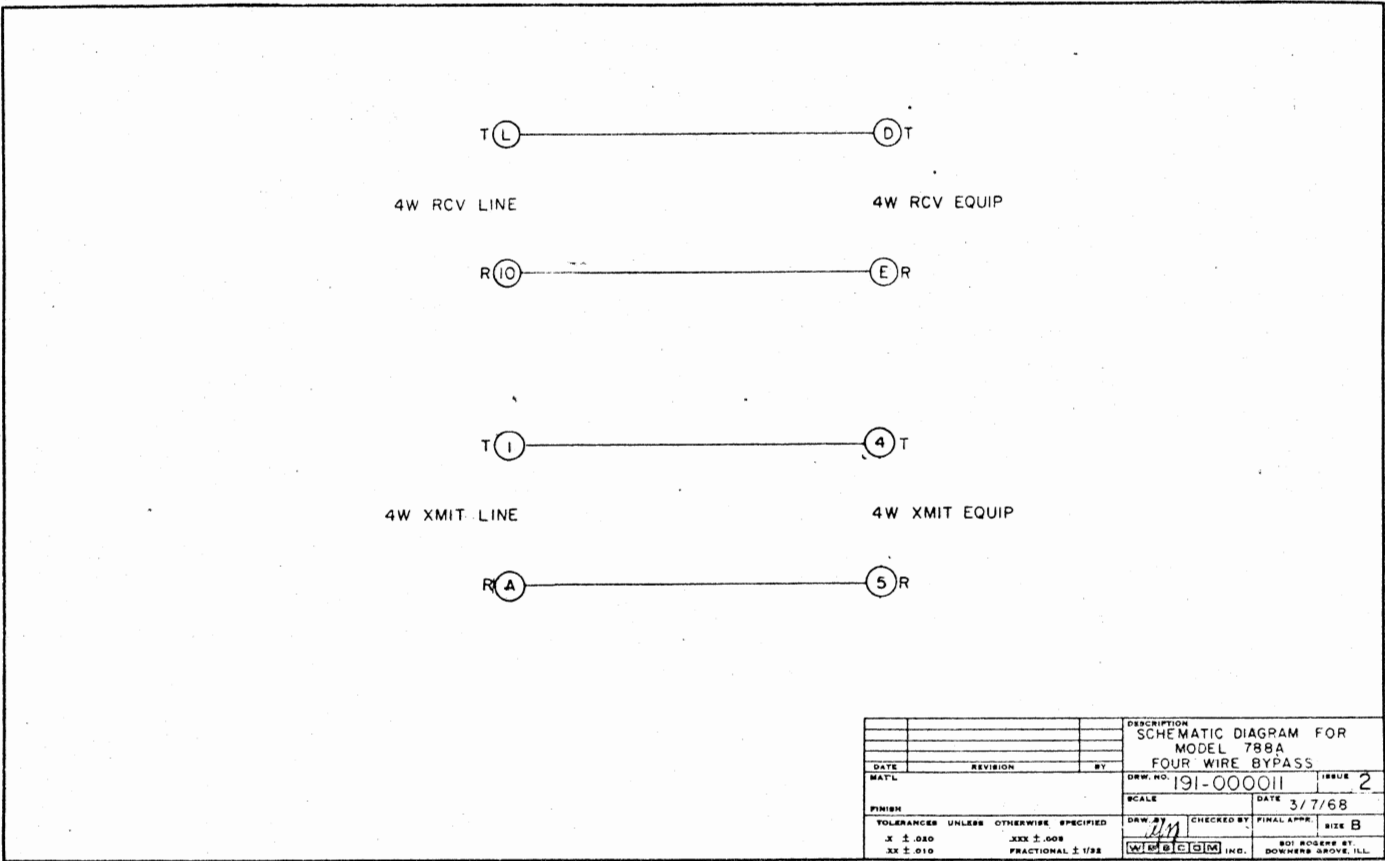


Fig. 9A

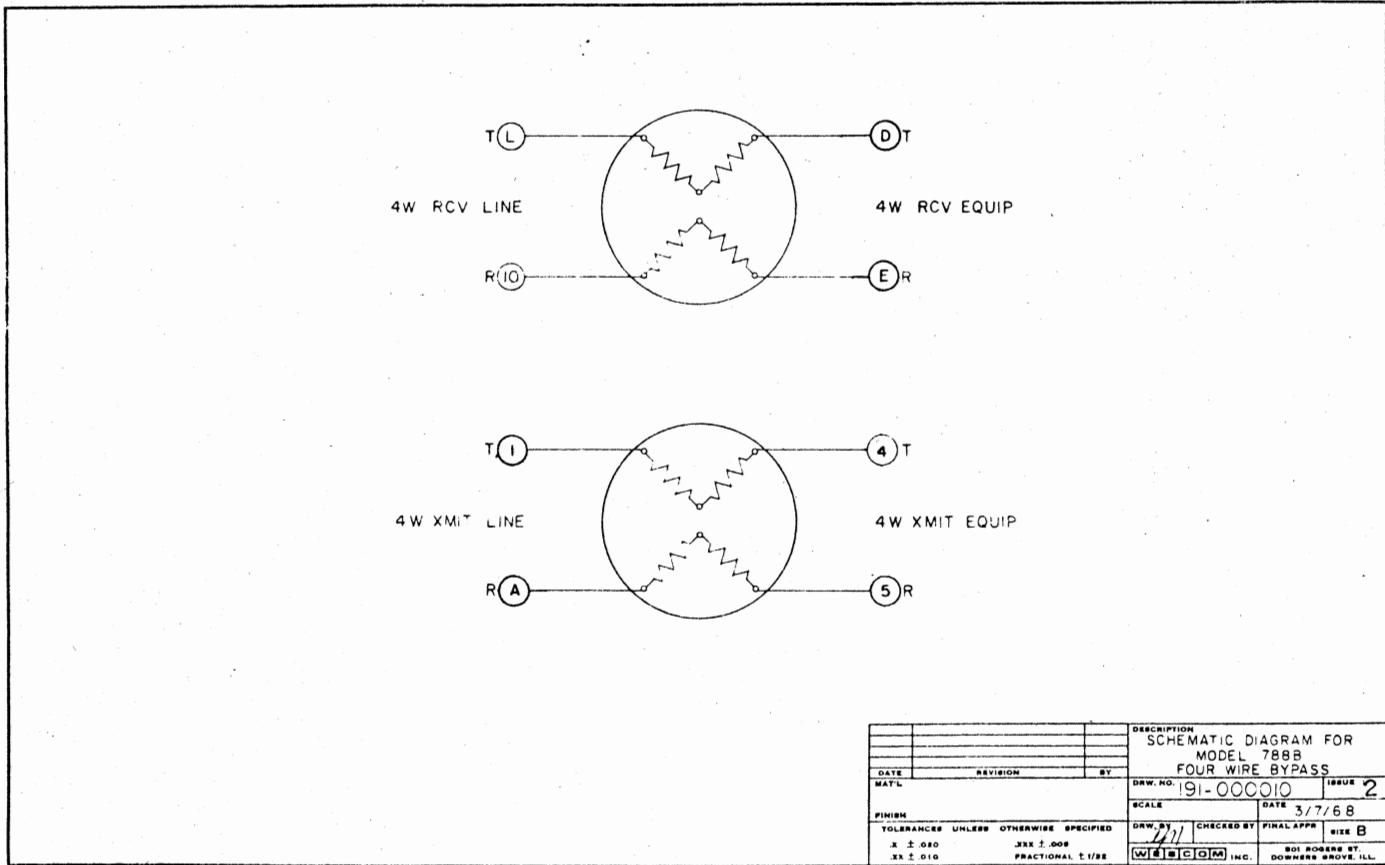
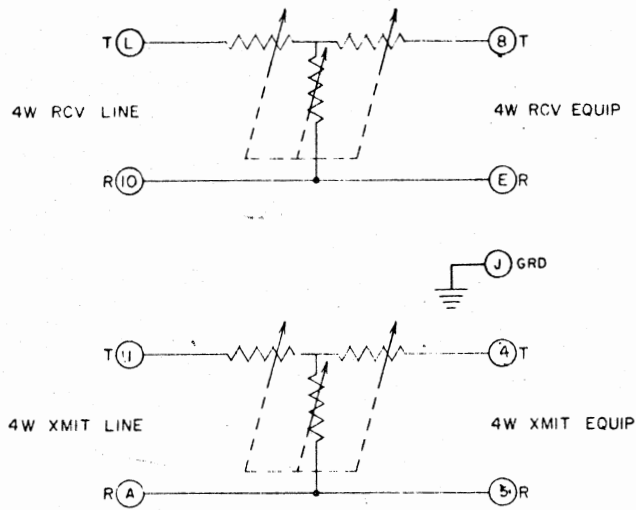
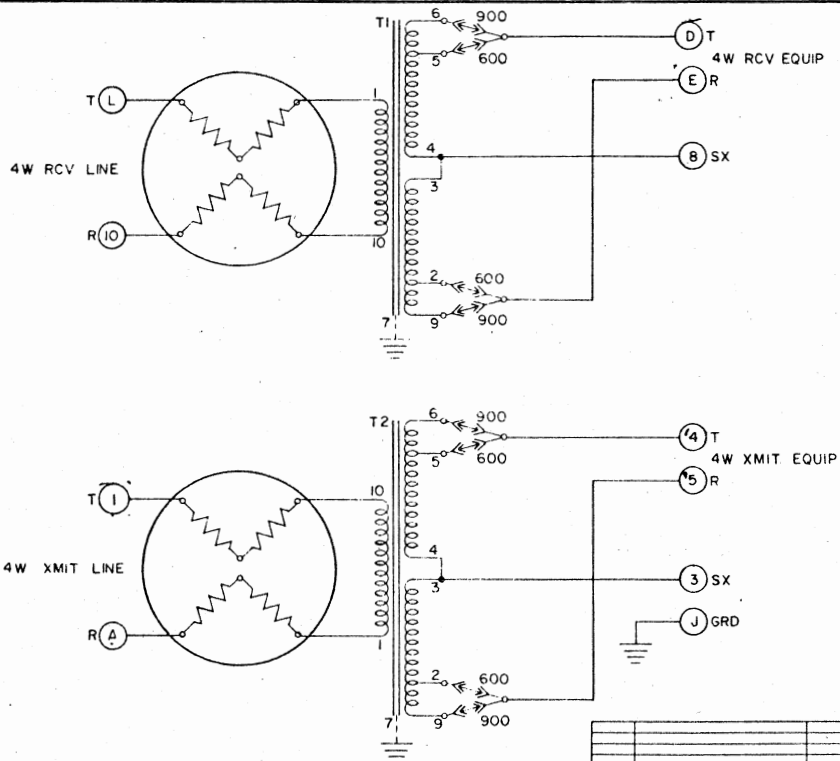


Fig. 9B



DESCRIPTION		
SCHEMATIC DIAGRAM FOR MODEL 788C		
FOUR WIRE BYPASS		
DATE	REVISION	BY
MATERIAL		DRW. NO. 191-000009
FINISH		DATE 3/7/68
TOLERANCES UNLESS OTHERWISE SPECIFIED		DRW. BY
.X ± .020	.XXX ± .008	CHECKED BY
.XX ± .010	FRACTIONAL ± 1/32	FINAL APPR.
		SIZE B
		WELTECOM INC. 501 ROBERTS ST. DOWNS GROVE, ILL.

Fig. 9C



DESCRIPTION		
SCHEMATIC DIAGRAM FOR MODEL 787A		
PAD/TRANSFORMER UNIT		
DATE	REVISION	BY
MATERIAL		DRW. NO. 191-000004
FINISH		DATE 3/6/68
TOLERANCES UNLESS OTHERWISE SPECIFIED		DRW. BY
.X ± .020	.XXX ± .008	CHECKED BY
.XX ± .010	FRACTIONAL ± 1/32	FINAL APPR.
		SIZE B
		WELTECOM INC. 501 ROBERTS ST. DOWNS GROVE, ILL.

Fig. 9D

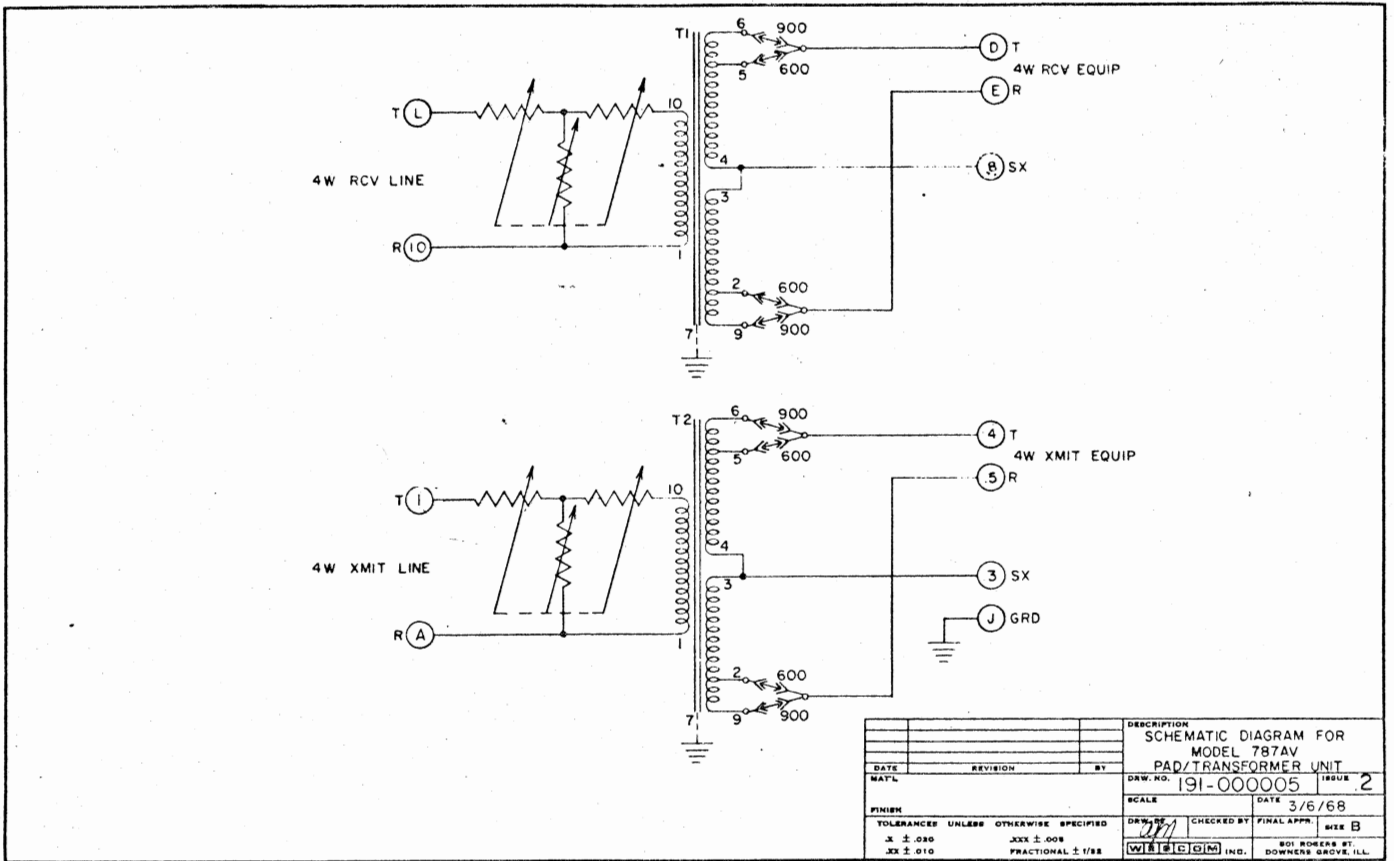


Fig. 9E

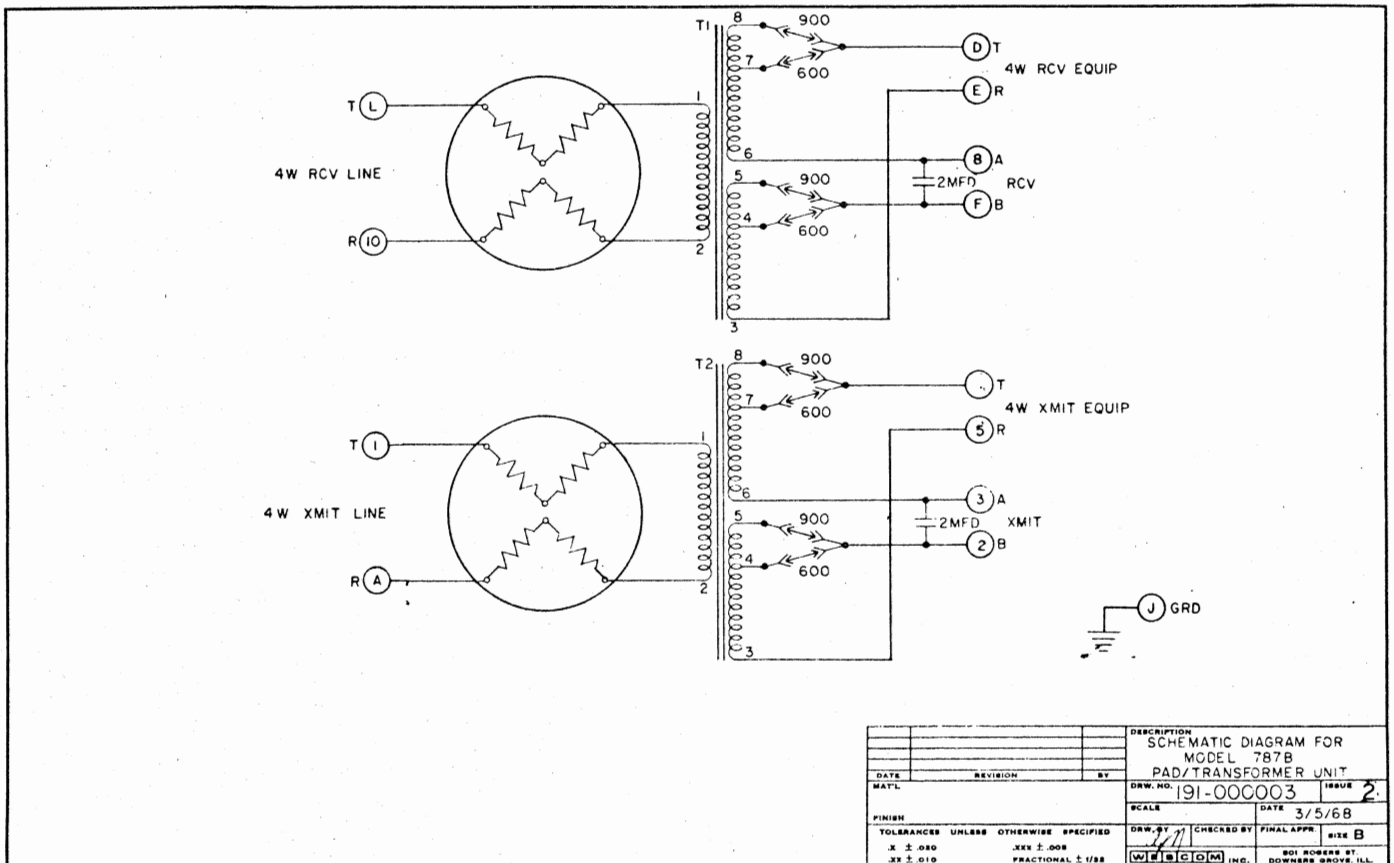
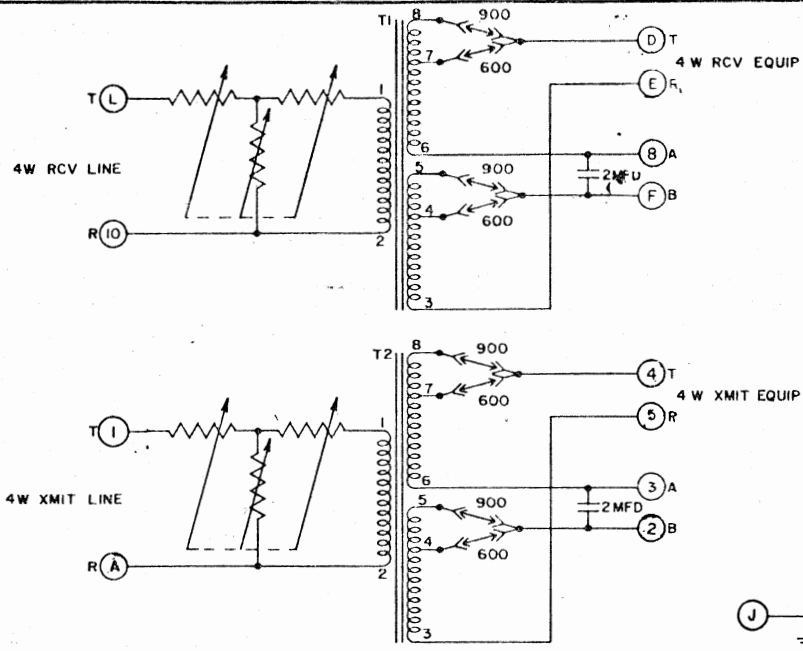
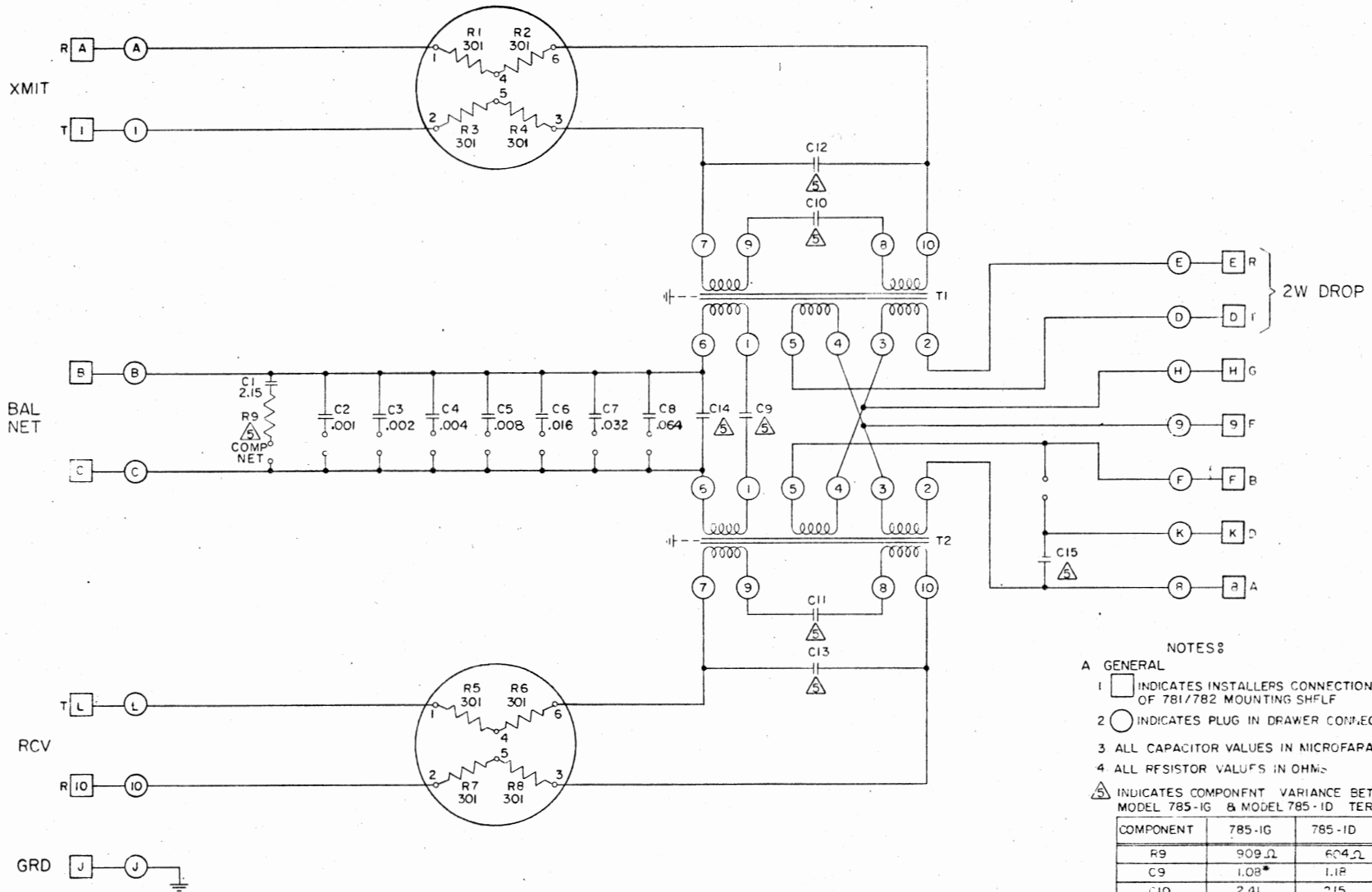


Fig. 9F



DESCRIPTION			SCALE	
SCHEMATIC DIAGRAM FOR			191-000006	
MODEL 787BV			DATE 3/5/68	
PAD/TRANSFORMER UNIT			SIZE B	
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FINISH			DRW. BY	CHECKED BY
TOLERANCES UNLESS OTHERWISE SPECIFIED				
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XX ± .010				
FRACTIONAL ± 1/32				

Fig. 9G



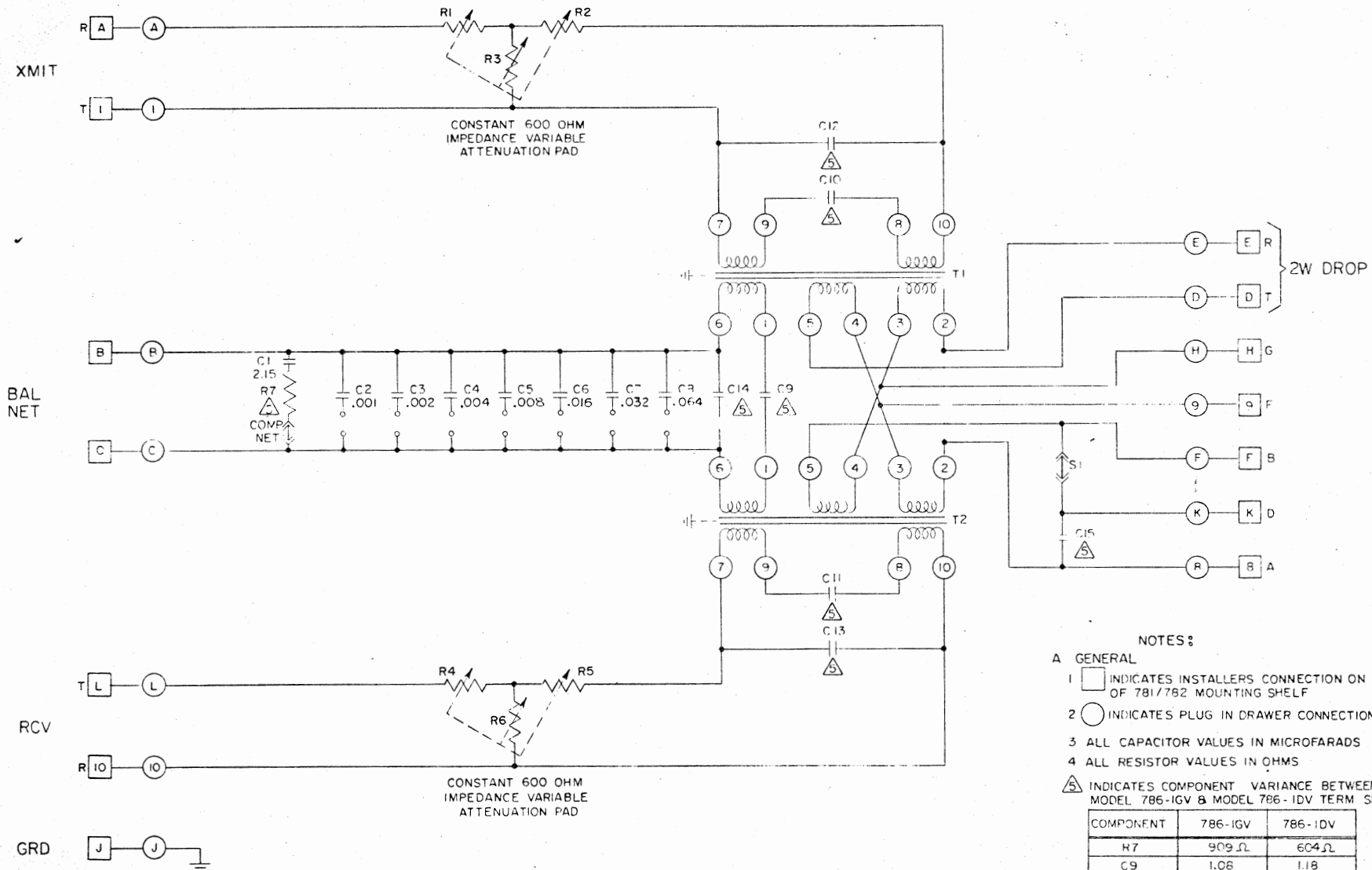
NOTES:

- A GENERAL
- 1 INDICATES INSTALLERS CONNECTION ON REAR OF 781/782 MOUNTING SHFLF
 - 2 INDICATES PLUG IN DRAWER CONNECTION
 - 3 ALL CAPACITOR VALUES IN MICROFAPADS
 - 4 ALL RESISTOR VALUES IN OHMS
 - 5 INDICATES COMPONENT VARIANCE BETWEEN THE MODEL 785-IG & MODEL 785-ID TERM SET

COMPONENT	785-IG	785-ID
R9	909Ω	604Ω
C9	1.08*	1.18
C10	2.41	2.15
C11	2.41	2.15
C12	3300PF	4400PF
C13	3300PF	4400PF
C14	.001	.001
C15	1.08	1.18
T1, T2	14-200001	14-200002

* NOTE 3 4.00MF AVAILABLE ON SPECIAL ORDER

DESCRIPTION		SCHEMATIC DIAGRAM FOR	
MODEL 785-IG & ID TERM SET		DATE	
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DRAW. NO.		SCALE	
191-0785YX		DATE	
		3/11/58	
FINISH	TOLERANCES UNLESS OTHERWISE SPECIFIED	DRW. BY	CHECKED BY
	X ± .080		
	XX ± .010		
	XXX ± .008		
	FRACTIONAL ± 1/32		
WILCOX INC.		801 ROBERTS ST. DOWNERS GROVE, ILL.	



- NOTES:
- A GENERAL
 - 1 INDICATES INSTALLER'S CONNECTION ON REAR OF 781/782 MOUNTING SHELF
 - 2 INDICATES PLUG IN DRAWER CONNECTION
 - 3 ALL CAPACITOR VALUES IN MICROFARADS
 - 4 ALL RESISTOR VALUES IN OHMS
 - INDICATES COMPONENT VARIANCE BETWEEN THE MODEL 786-IGV & MODEL 786-IDV TERM SET

COMPONENT	786-IGV	786-IDV
R7	909 Ω	604 Ω
C9	1.08	1.18
C10	2.41	2.15
C11	2.41	2.15
C12	3300PF	4400 PF
C13	3300PF	4400 PF
C14	.001	.001
C15	1.08	1.18
T1, T2	14-200001	14-200002

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