

DUAL 2-WIRE IMPEDANCE COMPENSATION NETWORKS
J99343BL, BM, AND BN
INSTALLATION AND PRESCRIPTION SETTINGS
METALLIC FACILITY TERMINAL

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1. GENERAL

1.01 This section contains the installation information, tests and adjustments for impedance balancing, and the prescription settings for the dual 2-wire impedance compensation networks. The section provides physical installation data and prescription settings for different types and lengths of facilities for each of the three networks.

1.02 Whenever this section is reissued, the reason(s) for reissue will be given in this paragraph.

1.03 The dual 2-wire impedance compensation networks are the J99343BL, BM, and BN. The J99343BL is used with 22-, 24-, or 26-gauge nonloaded cable. The J99343BM is used with 19-, 22-, or 24-gauge H88 or D88 loaded cable. The J99343BN is used with 26-gauge H88 loaded cable.

2. INSTALLATION

A. J99343BL

2.01 Initial settings may be found on the circuit layout record (CLR) for existing circuits. Prescription settings are provided in Part 4 for new circuits or existing circuits where settings are not available. For the J99343BL, the controls that must be adjusted are the build-out resistor (BOR) switches, the R potentiometer dial, and the 600/900 switch. The BOR switches, the R potentiometer, and the 600/900 switch are shown in Fig. 1.

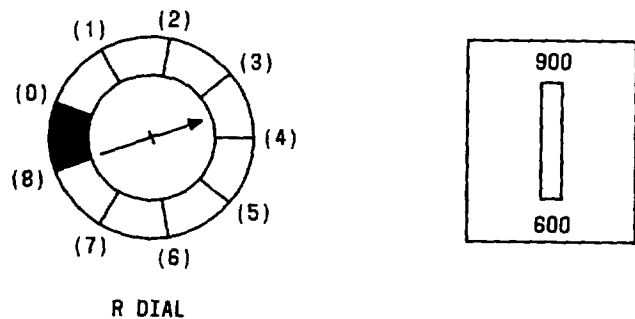
2.02 The R potentiometer numerical graduations shown in Fig. 1 are not marked on the unit. The settings (1-7) must be estimated. The setting 0 is the maximum counterclockwise position, and the setting 8 is the maximum clockwise position.

B. J99343BM

2.03 Initial settings may be found on the CLR for existing circuits. Prescription settings are provided in Part 4 for new circuits or existing circuits where settings are not available. For the J99343BM, the control that must be adjusted is the build-out capacitance (BOC) switch. Figure 2 shows the BOC switch.

NOTICE

Not for use or disclosure outside the
Bell System except under written agreement



NOTE:
THE POSITION NUMBERS (0-8)
ARE NOT VISIBLE

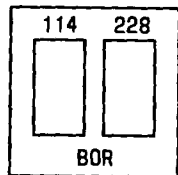


Fig. 1—J99343BL Switches

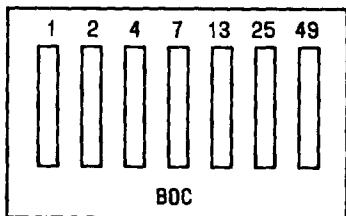


Fig. 2—J99343BM Switches

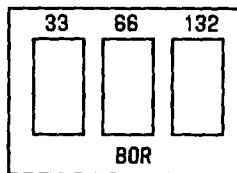
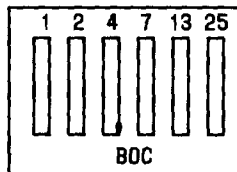
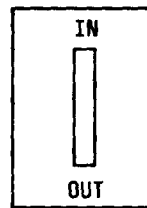


Fig. 3—J99343BN Switches

C. J99343BN

2.04 Initial settings may be found on the CLR for existing circuits. Prescription settings are provided in Part 4 for new circuits or existing circuits where settings are not available. For the J99343BN, the controls that must be adjusted are the lattice (IN/OUT) switch, the BOC switch, and the BOR switch. The IN/OUT, BOC, and BOR switches are shown in Fig. 3.

3. TESTS AND ADJUSTMENTS

3.01 For terminal balance, impedance compensation networks must be adjusted for optimum return loss. If trouble conditions occur, return loss measurements and touch-up adjustments will be nec-

essary to ensure that the circuit meets the requirements shown on the CLR.

3.02 The adjustments to the impedance compensation networks are made with the rocker switches associated with the BOR and/or the BOC (and the potentiometer on the J99343BL and the lattice switch on the J99343BM). Initial settings should be made from the prescription settings on the CLR. In most cases the CLR prescription settings are satisfactory and the requirements of measured return loss will be met.

3.03 The adjustment of the impedance compensation networks is performed only when the circuit is out of service. Chart 1 gives the impedance adjustment for the J99343BL and Chart 2 for the J99343BM and BN. Figure 4 shows the test arrangement used for the impedance adjustment test. The tests require the following equipment or equivalent:

- KS-20501 Return Loss Measuring Set (RLMS)
- Test Extender (J99343TB, J99380TB, or J99400TA)

- Appropriate Test Cords
- CLR.

Note: Proper adjustment of repeater at far end should be performed first for both Charts 1 and 2. (See settings for 2-2 NL repeaters in Section 332-912-212.)

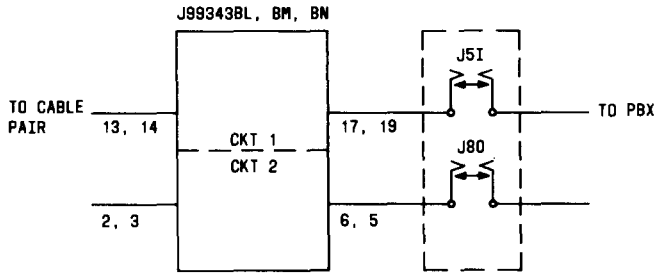


Fig. 4—Test Arrangement for J99343BL, BM, BN

CHART 1

IMPEDANCE ADJUSTMENT, J99343BL

STEP	PROCEDURE
------	-----------

- 1 Set the BOR switches to settings given on the CLR. If BOR settings are not provided on the CLR, Table A should be used to determine initial settings.

TABLE A

BUILD-OUT RESISTANCE

RESISTANCE OF CABLE PAIR	BOR (OHMS)
<258 Ohms	342
258-371 Ohms	228
>371* Ohms	114

*When necessary for gaining signaling range, the BOR may be reduced to zero if the following conditions are met: Resistance of cable pair itself is at least 800 ohms and underground cable of at least 2-dB attenuation is adjacent to the network.

CHART 1 (Contd)

STEP	PROCEDURE		
2	Set the R potentiometer to the setting given on the CLR. If the setting is not provided on the CLR, set the potentiometer to 4.		
3	Set the 600/900 switch to the setting given on the CLR. If the setting is not provided on the CLR, set the switch to 600 if at the PBX end or to 900 if at the CO end.		
4	Set the test extender switches as follows:		
	J99343TB*	J99380TB	J99400TA
	2W/4W to 2W	TEST/NORM to NORM	Switches are bypassed in jack J5I or jack J80
	600/900 same as J99343BL		
	COMP NET to OUT		
	*Use A-Side jacks		
5	Insert test extender card into the proper slot of the mounting shelf.		
6	Insert the J99343BL into the mounting of the test extender.		
7	Connect TRMT jack (2-wire) of RLMS to test extender jack:		
	J99343TB	J99380TB	J99400TA
	A-Side 2W EQUIP	J5I	J5I — CKT 1
	or	or	
	A-Side 4W TRMT	J80	J80 — CKT 2
8	Set RLMS switches as follows (See Note.):		
	900 Ohm +2.15 μ F	600 Ohm +2.15 μ F	
	TEST TYPE to ERL	TEST TYPE to ERL	
	TEST LOCATION to 900-2W	TEST LOCATION to 600-2W	
	NETWORK to INT	NETWORK to EXT	
	THL to 0 dB	THL to 0 dB	
	Insert a 600 ohm +2.15 μ F plug into EXT NET jack.		

CHART 1 (Contd)

STEP

PROCEDURE

Note: See Section 103-106-115 for operation of KS-20501 RLMS.

Caution: *Do not obtain 22 dB by rotating the R dial counterclockwise because this would result in an objectionable increase in the transmission loss of the line.*

- 9 Adjust the R dial on the J99343BL for a maximum return loss reading. If the J99343BL is at a PBX, a return loss of 22 dB is optimum, but 18 to 22 dB is acceptable. If return loss readings are in limits go to Step 11. If more than 22 dB is obtained, rotate R dial clockwise until RLMS indicates 22 dB.
- 10 If the requirement in Step 9 cannot be met, check the cable connections between the test extender and the RLMS. Then make the following checks:
 - Ensure that the J99343BL is firmly in place in the test extender.
 - Ensure that connections are made to the correct network (CKT 1 or CKT 2) in the impedance compensation network.
 - Ensure that the MFT repeater at the far end is firmly in place on the shelf and that dc power has been applied.
 - Install a new J99343BL and repeat Steps 1-9.
- 11 If satisfactory return loss was obtained in Step 9, disconnect the RLMS from the test extender.
- 12 Repeat Steps 1-11 for CKT 2.
- 13 Remove J99343BL from the test extender.
- 14 Remove test extender card from mounting shelf slot.
- 15 Insert J99343BL into proper mounting shelf slot.

CHART 2

IMPEDANCE ADJUSTMENT, J99343BM AND BN

STEP	PROCEDURE
1	Set the switches to the settings given on the CLR (BOC on both units, BOR and lattice IN/OUT on J99343BN only). If settings are not provided on the CLR, Table B should be used to determine initial settings.

TABLE B

SETTINGS FOR J99343BM, BN

UNIT	BOC	BOR	IN/OUT
J99343BM	0.031 μ F	—	—
J99343BN	0.0 μ F	0 Ω	IN

- 2 Set the test extender switches as follows:

J99343TB*	J99380TB	J99400TA
2W/4W to 2W	TEST/NORM to NORM	Switches are bypassed in jack J5I or jack J80
600/900 to 600		
COMP NET to OUT		

*Use A-Side jacks

- 3 Insert test extender card into the proper slot of the mounting shelf.
- 4 Insert the J99343BM or BN into the mounting of the test extender.
- 5 Connect TRMT jack (2-wire) of the RLMS to test extender jack:

J99343TB	J99380TB	J99400TA
A-Side 2W EQUIP	J5I	J5I — CKT 1
or	or	
A-Side 4W TRMT	J80	J80 — CKT 2

CHART 2 (Contd)

STEP	PROCEDURE
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6 Set RLMS switches as follows (See Note.):

TEST TYPE to SRL HI

TEST LOCATION to 600-2W

NETWORK to EXT

THL to 0 dB_s

INSERT A 600 ohm + 2.15 μ F plug into EXT NET jack.

Note: See Section 103-106-115 for operation of KS-20501 RLMS.

BOC ADJUSTMENT (J99343BM, BN)

7 Increase BOC of the J99343BM or BN in 0.004 μ F increments. If this causes return loss to rise, increase BOC until a maximum return loss is obtained. If the return loss does not rise, decrease BOC in 0.004 μ F increments until a maximum return loss is obtained. (See Note.)

Note: For J99343BN the total BOC should not exceed 0.039 μ F when the IN/OUT switch is OUT. If the optimization procedure indicates more capacitance is needed, switch IN/OUT to IN, and set BOR switch to 0 ohm and repeat Step 7.

LATTICE OUT	LATTICE IN	LENGTH (feet)	BOR (switches)	END SECTION
3200 3400 3600 3800 4000 4200 4400 4600 4800 5000 5200 5400 5600 5800 6000	3000 2800 2600 2400 2200 2000 1800 1600 1400 1200 1000 800 600 400 200 000		0	
66,132	0	.048 .044 .040 .036 .032 .028 .025 .022 .020 .017 .014 .011 .008 .006 .003 .000		

←
DECREASE

↑
START
HERE

→
INCREASE

CHART 2 (Contd)

STEP	PROCEDURE
8	When maximum return loss is obtained, repeat Step 7 with increases (or decreases) in 0.002 μ F increments.
9	If two settings give the same average RLMS reading, choose the setting for which the meter needle wavers less.
10	For J99343BM, go to Step 14.
	BOR ADJUSTMENT (J99343BN only)
11	Set the switches on the RLMS as follows: TEST TYPE to ERL TEST LOCATION to 600-2W NETWORK to EXT THL to 0 dB Insert a 600 ohm + 2.15 μ F plug into EXT NET jack.
12	Reduce the BOR value on the J99343BN to the next lower increment. If return loss did not increase, increase the BOR. Decrease (or increase) BOR value until maximum return loss is obtained.
13	If the same results are obtained for two different BOR values, use the lower BOR value.
14	Disconnect the RLMS from the test extender.
15	Repeat Steps 1-14 for CKT 2.
16	Remove the J99343BM or BN from the test extender.
17	Remove the test extender card from the mounting shelf slot.
18	Insert the J99343BM or BN into the proper mounting shelf slot.

4. PRESCRIPTION SETTINGS

4.01 The prescription settings are provided in order to build out an end section by the addition of resistance and/or capacitance.

A. J99343BL

4.02 The J99343BL is adjusted by means of two BOR rocker switches and the R potentiometer dial. These switches are shown in Fig. 1. Table C shows the BOR and R settings for 22-gauge nonloaded cable with bridged taps (BT). Table D shows the settings for 24-gauge nonloaded cable with BT. Table E shows the settings for 26-gauge nonloaded cable with BT. The tables are in terms of working length (WL) which is the distance from the J99343BL to the CO, total length of BT and the distance of BT from the CO. Bridged taps and mixed gauge facilities are discussed in paragraphs 4.05 and 4.08. Table F shows the settings for 22-, 24-, and 26-gauge cable without BT.

Note: If WL is less than 4 kft without a BT, an external build-out capacitor of 0.05 μ F must be added. For this the R potentiometer should be set to 8.

B. J99343BM

4.03 The J99343BM is adjusted by means of the BOC switches (7 rocker switches) shown in Fig. 2. Table G shows the BOC settings for H88 high capacitance 19-, 22-, and 24-gauge cable. Table H shows the BOC settings for H88 low capacitance 19- and 24-gauge cable. Table I shows the BOC settings for any gauge of D88 high capacitance cable.

C. J99343BN

4.04 The J99343BN is adjusted by means of BOR, BOC, and lattice IN/OUT switches. The switches are shown in Fig. 3. Table J shows the switch settings for 26-gauge H88 loaded cable. Bridged taps and mixed gauge cable are discussed in paragraphs 4.07, 4.08, 4.09, 4.10, and 4.11.

D. Bridged Tap

J99343BL

4.05 Two or more BTs may be reduced to a single equivalent BT. The rule for determining the length and location of a single BT are shown in Fig. 5, 6, and 7.

J99343BM

4.06 The BOC on the J99343BM should be set for the WL plus the BT.

J99343BN

4.07 The J99343BN may be used on end sections that have BTs. Rules for determining BOR, BOC, and lattice IN/OUT switch settings are shown in Table K.

E. Mixed-Gauge Facility

J99343BL

4.08 For mixed gauges on 2-wire nonloaded facilities, determine the predominate gauge for selection of prescription settings as follows:

- (1) Determine the length of each segment of continuous gauge. Start at the J99343BL network, ignoring all segments of 500 feet or less.
- (2) The predominate gauge is the gauge of the segment nearest the network that has at least 1 dB attenuation at 1 kHz. (See Table L for cable attenuation.) If no segment has as much as 1 dB attenuation, go to Step 3.
- (3) Divide the resistance (see Table L) of all the cable in the link by the length of the link in kft, including lengths ignored in Step 1. Choose predominate gauge based on the calculated ohms per kft as follows:

GUAGE	OHMS PER KFT
22	Less than 42.3
24	42.4 to 67.6
26	Greater than 67.6

J99343BM

4.09 Since 19-, 22-, and 24-gauge facilities have the same capacitance per mile, adjust the BOC for the WL (or WL plus BT).

J99343BN

4.10 Cable coarser than 26-gauge may be used on an end section adjacent to the J99343BN network as long as the facility is predominately 26-gauge. When mixed-gauge is used, calculate the total resistance of the end section. (Refer to Table L.) In Table J, locate the total resistance in the END SECTION RESISTANCE column and read across the line to find the BOR setting. Using the actual total length (WL + BT) of the end section find the adjustments for the BOC and lattice IN/OUT.

4.11 In those cases where the actual length of the end section is greater than 3000 ft, but the resistance is less than 268 ohms, adjust the BOC and lattice IN/OUT for a 3200 ft end section. Adjust the BOR for 231 ohms (all 3 switches operated).

5. REFERENCES

5.01 The following is a list of references which provides additional information concerning MFT

impedance compensation networks and the procedures and tables in this section.

SECTION	TITLE
332-610-101	General Description—PMFTA
332-910-100	General Description—MFT
332-910-101	Shelf, Frame, Power Panel, and Distributing Frame Arrangements—Description
332-910-102	Test Extender (J99343TB)—Description and Operation
332-910-180	General Applications—MFT
332-912-106	2-Wire Dual Impedance Compensation Networks (J99343BL, BM, BN)—Description

CIRCUIT DESCRIPTION	TITLE
CD-7C100-01	Circuit Description—Customer Premises Facility Terminal

SCHEMATIC DRAWING	TITLE
SD-7C100-01	Schematic Drawing—Customer Premises Facility Terminal

The appropriate numerical index section should be consulted to find the current issue to the sections listed and any addendum that may have been issued. The pertinent Numerical Index for the sections listed here is Section 332-000-000.

TABLE C
IMPEDANCE SETTINGS, J99343BL
22-GAUGE FACILITY WITH BT

22GA WL (NOTE) (KFT)	BOR (OHMS)	R SETTINGS FOR VARIOUS BT LENGTHS					
		0 TO 1 KFT	1.1-2.0 KFT	2.1-3.0 KFT	3.1-4.0 KFT	4.1-5.0 KFT	5.1-6.0 KFT
BT LOCATED FROM 0 TO 2.0 KFT FROM CO							
3	342	8.0	8.0	8.0	8.0	8.0	7.5
4-8	342	8.0	8.0	8.0	8.0	8.0	8.0
8	228	7.5	6.8	6.0	5.0	4.4	4.1
9	228	8.0	8.0	8.0	8.0	7.3	6.5
10	228	8.0	8.0	8.0	8.0	7.5	6.7
11	228	8.0	8.0	8.0	8.0	7.7	7.2
11	114	4.5	4.0	3.3	2.8	—	—
12	114	4.3	3.8	3.2	2.6	—	—
14	114	3.8	3.3	2.9	2.4	—	—
16	114	3.6	3.0	2.6	—	—	—
18	114	3.4	2.8	2.5	—	—	—
18	0	0.9	0.9	0.8	—	—	—
BT LOCATED FROM 2.1 TO 3.0 KFT FROM CO							
3	342	8.0	8.0	8.0	8.0	8.0	6.0
4	342	8.0	8.0	8.0	8.0	8.0	7.0
5-8	342	8.0	8.0	8.0	8.0	8.0	8.0
8	228	7.5	6.5	5.5	4.4	3.9	3.7
9	228	8.0	8.0	7.5	7.2	6.5	5.0
10	228	8.0	8.0	7.7	7.2	6.5	5.5
11	228	8.0	8.0	7.8	7.2	6.5	5.5
11	114	4.5	3.8	3.0	2.4	2.3	2.2
12	114	4.3	3.5	2.8	2.4	2.3	2.2
14	114	4.0	3.4	2.7	2.3	—	—
16	114	3.6	3.3	2.7	2.3	—	—
18	114	3.2	3.0	2.7	—	—	—
18	0	0.8	0.8	0.8	—	—	—

Note: WL denotes working length

TABLE C (Contd)
IMPEDANCE SETTINGS, J99343BL
22-GAUGE FACILITY WITH BT

22GA WL (NOTE) (KFT)	BOR (OHMS)	R SETTINGS FOR VARIOUS BT LENGTHS					
		0 TO 1 KFT	1.1-2.0 KFT	2.1-3.0 KFT	3.1-4.0 KFT	4.1-5.0 KFT	5.1-6.0 KFT
BT LOCATED FROM 3.1 TO 4.5 KFT FROM CO							
3	342	8.0	8.0	8.0	8.0	8.0	6.5
4	342	8.0	8.0	8.0	8.0	7.7	6.7
5	342	8.0	8.0	8.0	8.0	7.8	7.0
6	342	8.0	8.0	8.0	8.0	8.0	7.5
8	342	8.0	8.0	8.0	8.0	8.0	8.0
8	228	7.5	6.5	4.8	3.7	3.5	3.3
9	228	8.0	7.5	6.8	5.7	4.5	3.5
10	228	8.0	7.7	7.0	7.0	5.5	4.5
11	228	8.0	7.5	7.0	6.5	6.0	5.0
11	114	4.5	3.5	2.5	2.0	2.0	—
12	114	4.3	3.5	2.4	2.0	1.7	1.5
14	114	4.0	3.3	2.5	2.2	2.0	1.5
16	114	3.6	3.0	2.3	2.1	—	—
18	114	3.2	2.8	2.2	2.0	—	—
18	0	1.0	1.0	0.5	—	—	—
BT LOCATED FROM 4.6 TO 6.0 KFT FROM CO							
5	342	8.0	8.0	8.0	7.7	7.3	6.5
6	342	8.0	8.0	8.0	7.7	7.2	6.5
7	342	8.0	8.0	8.0	7.9	7.6	6.8
8	342	8.0	8.0	8.0	8.0	8.0	7.2
8	228	7.5	6.5	5.0	3.8	3.5	3.3
9	228	8.0	7.7	6.8	5.7	4.6	3.7
10	228	8.0	7.5	6.7	6.0	4.7	3.7
11	228	7.8	7.2	6.7	6.0	5.0	3.7
11	114	4.5	3.3	2.0	1.9	1.8	1.4
12	114	4.2	3.3	2.5	2.2	1.8	1.4
14	114	3.8	3.2	2.5	2.2	1.8	1.4
16	114	3.6	3.0	2.4	2.1	—	—
18	114	3.3	2.7	2.1	2.0	—	—
18	0	0.5	0.5	0.8	—	—	—

Note: WL denotes working length.

TABLE C (Contd)
IMPEDANCE SETTINGS, J99343BL
22-GAUGE FACILITY WITH BT

22GA WL (NOTE) (KFT)	BOR (OHMS)	R SETTINGS FOR VARIOUS BT LENGTHS					
		0 TO 1 KFT	1.1-2.0 KFT	2.1-3.0 KFT	3.1-4.0 KFT	4.1-5.0 KFT	5.1-6.0 KFT
BT LOCATED FROM 6.1 TO 9.0 KFT FROM CO							
6	342	8.0	8.0	8.0	7.8	7.8	7.8
7	342	8.0	8.0	8.0	7.8	7.0	5.8
8	342	8.0	8.0	8.0	7.7	6.8	5.5
8	228	7.5	6.0	4.5	3.5	2.6	2.4
9	228	8.0	7.5	6.2	5.0	3.5	2.8
10	228	7.8	7.3	6.0	4.9	3.5	2.8
11	228	7.7	7.0	6.0	4.4	3.7	3.1
11	114	4.5	3.0	1.8	1.3	1.2	1.0
12	114	4.0	3.0	2.0	1.5	1.3	1.3
14	114	3.8	2.8	2.0	1.8	1.7	1.6
16	114	3.5	2.6	2.1	2.0	2.0	1.8
18	114	3.2	2.6	2.1	2.0	2.0	1.9
18	0	0.8	0.8	0.5	0.5	—	—
BT LOCATED FROM 9.1 TO 15.0 KFT FROM CO							
9	228	7.8	7.4	6.2	5.0	3.5	2.6
10	228	7.8	7.3	6.0	4.8	3.6	2.7
11	228	7.6	7.0	6.0	4.8	3.6	3.1
11	114	4.2	2.8	2.0	1.8	1.4	1.2
12	114	4.0	3.0	1.8	1.6	1.4	1.2
14	114	3.7	2.7	1.8	1.6	1.4	1.2
16	114	3.5	2.7	1.8	1.6	1.4	1.2
18	114	3.2	2.8	2.0	2.0	1.5	1.4
18	0	0.5	0.5	0.0	0.0	—	—
BT LOCATED FROM 15.1 TO 18.0 KFT FROM CO							
15	114	3.6	2.6	1.8	1.6	1.2	0.5
16	114	3.5	2.5	1.8	1.7	1.2	0.6
17	114	3.3	2.4	1.8	1.6	1.2	0.7
18	114	3.1	2.2	1.6	1.5	1.1	0.9
18	0	0.0	0.0	0.0	0.0	—	—

Note: WL denotes working length.

TABLE D

**IMPEDANCE SETTINGS, J99343BL
24-GAUGE FACILITY WITH BT**

24GA WL (NOTE) (KFT)	BOR (OHMS)	R SETTINGS FOR VARIOUS BT LENGTHS					
		0 TO 1 KFT	1.1-2.0 KFT	2.1-3.0 KFT	3.1-4.0 KFT	4.1-5.0 KFT	5.1-6.0 KFT
BT LOCATED FROM 0 TO 2.0 KFT FROM CO							
2	342	8.0	8.0	8.0	8.0	8.0	8.0
5	342	8.0	8.0	8.0	8.0	8.0	8.0
5	228	8.0	8.0	8.0	7.8	7.0	5.8
6	228	8.0	8.0	7.8	7.4	6.8	6.2
7	228	8.0	8.0	7.5	7.0	7.0	6.8
7	114	7.5	7.0	6.5	5.5	5.0	4.2
8	114	7.5	7.2	6.8	6.5	6.0	5.5
9	114	7.6	7.3	7.1	5.9	6.8	6.3
10	114	7.5	7.2	7.0	6.9	6.8	6.3
12	114	6.8	6.8	6.8	6.8	6.8	6.8
14	114	6.5	6.5	6.5	6.5	6.7	6.8
16	114	6.2	6.2	6.2	6.3	6.3	—
18	114	6.1	6.1	6.1	6.1	—	—
10	0	4.2	4.0	3.5	3.1	2.9	2.4
12	0	4.1	3.9	3.8	3.6	3.4	3.2
14	0	4.0	3.9	3.8	3.6	3.5	3.4
16	0	3.8	3.7	3.6	3.6	3.5	—
18	0	3.5	3.6	3.6	3.6	—	—
BT LOCATED FROM 2.1 TO 4.0 KFT FROM CO							
2	342	8.0	8.0	8.0	8.0	8.0	7.4
3	342	8.0	8.0	8.0	8.0	8.0	7.5
4	342	8.0	8.0	8.0	8.0	8.0	7.5
5	342	8.0	8.0	8.0	8.0	8.0	8.0
5	228	8.0	8.0	7.5	6.5	5.0	3.7
6	228	8.0	7.9	7.5	6.5	5.5	4.5
7	228	8.0	7.8	7.5	6.4	5.9	5.5
7	114	7.7	7.0	6.4	5.5	4.5	3.5
8	114	7.7	7.0	6.4	5.6	4.8	4.0
9	114	7.5	7.0	6.4	5.7	5.2	4.8
10	114	7.2	6.8	6.5	6.2	6.0	5.6
12	114	6.8	6.8	6.6	6.5	6.3	6.2
14	114	6.4	6.4	6.4	6.4	6.4	6.4
16	114	6.2	6.2	6.2	6.2	6.2	6.2
18	114	6.1	6.1	6.1	6.1	—	—
10	0	4.2	3.7	3.1	2.8	2.1	1.3
12	0	4.1	3.8	3.5	3.1	2.8	2.6
14	0	4.0	3.6	3.5	3.3	3.1	3.0
16	0	3.8	3.6	3.6	3.5	3.3	3.2
18	0	3.5	3.6	3.6	3.5	—	—

Note: WL denotes working length.

TABLE D (Contd)

**IMPEDANCE SETTINGS, J99343BL
24-GAUGE FACILITY WITH BT**

24GA WL (NOTE) (KFT)	BOR (OHMS)	R SETTINGS FOR VARIOUS BT LENGTHS					
		0 TO 1 KFT	1.1-2.0 KFT	2.1-3.0 KFT	3.1-4.0 KFT	4.1-5.0 KFT	5.1-6.0 KFT
BT LOCATED FROM 4.1 TO 5.0 KFT FROM CO							
4	342	8.0	8.0	8.0	8.0	8.0	6.0
5	342	8.0	8.0	8.0	8.0	7.8	7.5
5	228	7.8	7.5	6.8	6.0	4.5	3.5
6	228	7.8	7.7	7.3	6.5	5.5	4.0
7	228	7.8	7.8	7.6	7.2	6.5	5.3
7	114	7.6	6.5	5.5	4.5	3.7	2.7
8	114	7.6	6.6	6.0	5.0	4.3	3.4
9	114	7.6	6.6	6.2	5.4	4.6	3.8
10	114	7.2	6.8	6.3	5.8	5.3	4.7
12	114	6.8	6.8	6.6	6.1	5.8	5.5
14	114	6.3	6.3	6.2	6.1	6.0	5.9
16	114	6.1	6.1	6.1	6.1	6.1	6.1
18	114	6.1	6.1	6.1	6.1	6.1	—
10	0	4.2	3.4	2.8	2.1	1.2	1.2
12	0	4.1	3.6	3.1	2.8	2.3	1.9
14	0	4.0	3.5	3.3	3.1	2.8	2.6
16	0	3.8	3.5	3.3	3.2	3.1	3.0
18	0	3.5	3.6	3.4	3.4	3.3	—
BT LOCATED FROM 5.1 TO 7.0 KFT FROM CO							
5	228	8.0	7.8	7.0	5.6	4.7	3.5
6	228	8.0	7.3	6.4	5.4	4.3	3.5
7	228	8.0	7.8	7.0	6.3	5.3	4.5
7	114	7.5	6.5	5.2	4.0	3.0	2.0
8	114	7.5	6.5	5.5	4.5	3.6	2.5
9	114	7.4	6.4	5.5	4.7	4.0	3.1
10	114	7.2	6.4	5.7	5.2	4.5	3.6
12	114	6.7	6.5	6.0	5.6	5.2	4.7
14	114	6.4	6.4	6.3	5.8	5.6	5.3
16	114	6.2	6.1	6.0	5.9	5.8	5.8
18	114	6.0	6.0	6.0	6.0	6.0	6.1
10	0	4.2	3.1	2.7	2.0	1.2	0.8
12	0	4.1	3.4	3.0	2.3	2.0	1.1
14	0	4.0	3.4	3.0	2.8	2.5	2.0
16	0	3.8	3.4	3.1	3.0	2.9	2.6
18	0	3.5	3.4	3.2	3.2	3.1	3.1

Note: WL denotes working length.

TABLE D (Contd)
IMPEDANCE SETTINGS, J99343BL
24-GAUGE FACILITY WITH BT

24GA WL (NOTE) (KFT)	BOR (OHMS)	R SETTINGS FOR VARIOUS BT LENGTHS					
		0 TO 1 KFT	1.1-2.0 KFT	2.1-3.0 KFT	3.1-4.0 KFT	4.1-5.0 KFT	5.1-6.0 KFT
BT LOCATED FROM 7.1 TO 8.0 KFT FROM CO							
8	114	7.5	6.4	5.0	4.0	3.0	2.0
9	114	7.5	6.4	5.3	4.4	3.4	2.5
10	114	7.0	6.4	5.3	4.5	3.8	3.0
12	114	6.7	6.4	5.6	5.0	4.6	3.8
14	114	6.3	6.2	5.8	5.5	5.1	4.7
16	114	6.2	6.1	5.9	5.7	5.5	5.2
18	114	5.9	5.8	5.8	5.7	5.7	5.6
10	0	4.2	3.0	2.4	1.8	0.8	0.8
12	0	4.1	3.2	2.7	2.0	1.0	0.9
14	0	4.0	3.3	2.8	2.4	2.0	1.3
16	0	3.8	3.3	3.0	2.7	2.4	2.1
18	0	3.5	3.3	3.1	3.1	3.0	2.9
BT LOCATED FROM 8.1 TO 10.0 KFT FROM CO							
8	114	7.5	5.6	4.5	3.6	2.6	1.6
9	114	7.0	5.6	4.6	3.7	2.7	1.7
10	114	6.6	5.6	4.6	4.0	3.0	2.0
12	114	6.4	5.7	5.2	4.5	3.7	2.8
14	114	6.2	5.8	5.4	4.8	4.4	4.0
16	114	6.1	5.8	5.6	5.3	5.0	4.8
18	114	6.0	5.8	5.7	5.5	5.2	5.1
10	0	4.2	3.0	2.1	1.4	0.5	0.0
12	0	4.1	3.0	2.4	1.8	0.7	0.5
14	0	4.0	3.1	2.5	2.0	1.2	1.0
16	0	3.8	3.2	2.9	2.4	2.0	1.2
18	0	3.5	3.2	3.1	2.9	2.6	2.3
BT LOCATED FROM 10.1 TO 14.0 KFT FROM CO							
10	114	6.7	5.5	4.6	3.7	2.5	1.7
12	114	6.5	5.5	4.6	3.5	2.6	1.7
14	114	6.1	5.5	4.6	3.8	3.1	2.2
16	114	6.0	5.4	4.7	4.3	3.7	3.0
18	111	5.7	5.4	5.1	4.8	4.3	3.9
12	0	4.1	3.0	2.2	0.8	0.0	0.0
14	0	4.0	2.8	2.0	1.0	0.0	0.0
16	0	3.8	3.0	2.3	1.8	1.1	1.0
18	0	3.5	3.0	2.5	2.0	1.8	1.2
BT LOCATED FROM 14.1 TO 18.0 KFT FROM CO							
14	114	6.0	5.0	4.0	3.3	2.5	1.7
16	114	5.5	4.6	4.0	3.4	2.6	1.7
18	114	5.5	4.7	4.1	3.6	2.8	2.0
16	0	3.8	2.4	1.9	0.5	0.5	0.0
18	0	3.5	2.5	2.0	1.2	0.8	0.0

Note: WL denotes working length.

TABLE E
IMPEDANCE SETTINGS, J99343BL
26-GAUGE FACILITY WITH BT

26GA WL (NOTE) (KFT)	BOR (OHMS)	R SETTINGS FOR VARIOUS BT LENGTHS					
		0 TO 1 KFT	1.1-2.0 KFT	2.1-3.0 KFT	3.1-4.0 KFT	4.1-5.0 KFT	5.1-6.0 KFT
BT LOCATED FROM 0 TO 1.5 KFT FROM CO							
2	342	8.0	8.0	8.0	8.0	8.0	8.0
3	342	8.0	8.0	8.0	8.0	8.0	8.0
3	228	8.0	8.0	8.0	8.0	7.6	7.0
4	228	8.0	8.0	8.0	8.0	7.8	7.6
4.5	228	8.0	8.0	8.0	8.0	8.0	8.0
4.5	114	8.0	8.0	7.5	7.0	6.5	5.5
5	114	8.0	8.0	7.5	7.2	6.7	6.0
6	114	8.0	8.0	7.7	7.5	7.3	7.2
8	114	7.8	7.7	7.8	7.5	7.4	7.5
10	114	7.5	7.5	7.6	7.5	7.5	7.6
12	114	7.0	7.2	7.3	7.5	7.6	7.7
6	0	7.7	6.4	6.0	5.8	5.4	5.2
8	0	6.5	6.4	6.3	6.2	6.1	6.1
10	0	6.0	6.0	6.0	6.0	6.0	6.0
12	0	5.7	5.6	5.7	5.8	5.9	5.9
BT LOCATED FROM 1.6 TO 2.5 KFT FROM CO							
2	342	8.0	8.0	8.0	8.0	8.0	8.0
3	342	8.0	8.0	8.0	8.0	8.0	8.0
3	228	8.0	8.0	8.0	7.6	6.8	5.6
4	228	8.0	8.0	8.0	8.0	7.8	7.3
4.5	228	8.0	8.0	8.0	8.0	7.9	7.6
4.5	114	8.0	7.5	6.6	6.2	5.4	4.4
5	114	8.0	7.5	7.0	6.4	5.8	5.0
6	114	8.0	7.8	7.6	7.4	7.1	7.0
8	114	7.8	7.7	7.8	7.5	7.4	7.5
10	114	7.5	7.5	7.6	7.5	7.5	7.6
12	114	7.0	7.2	7.3	7.5	7.6	7.7
6	0	7.7	6.2	5.6	5.0	4.4	3.8
8	0	6.5	6.3	6.0	5.8	5.6	5.3
10	0	6.0	6.0	6.0	6.0	6.0	6.0
12	0	5.7	5.7	5.7	5.7	5.8	5.9

Note: WL denotes working length.

TABLE E (Contd)

**IMPEDANCE SETTINGS, J99343BL
26-GAUGE FACILITY WITH BT**

26GA WL (NOTE) (KFT)	BOR (OHMS)	R SETTINGS FOR VARIOUS BT LENGTHS					
		0 TO 1 KFT	1.1-2.0 KFT	2.1-3.0 KFT	3.1-4.0 KFT	4.1-5.0 KFT	5.1-6.0 KFT
BT LOCATED FROM 2.6 TO 4.0 KFT FROM CO							
2.6	342	8.0	8.0	8.0	8.0	8.0	7.5
3	342	8.0	8.0	8.0	8.0	8.0	8.0
3	228	8.0	8.0	7.7	7.0	6.0	4.0
4	228	8.0	8.0	7.8	7.6	7.0	6.0
4.5	228	8.0	8.0	8.0	7.7	7.2	6.3
4.5	114	7.7	7.5	6.0	4.8	4.0	3.0
5	114	7.7	7.4	6.4	5.3	4.6	3.6
6	114	7.7	7.4	6.9	6.6	6.3	6.0
7	114	8.0	8.0	8.0	8.0	8.0	8.0
9	114	7.6	7.8	7.9	8.0	8.0	8.0
10	114	7.4	7.5	7.7	8.0	8.0	8.0
12	114	7.0	7.2	7.3	7.5	7.6	7.8
6	0	7.0	6.0	5.2	4.6	3.7	3.0
8	0	6.5	6.0	5.8	5.5	5.1	4.7
10	0	6.0	5.9	5.8	5.7	5.7	5.7
12	0	5.7	5.6	5.6	5.7	5.7	5.8
BT LOCATED FROM 4.1 TO 5.0 KFT FROM CO							
4	228	8.0	7.8	7.4	6.5	5.5	4.7
4.5	228	8.0	7.5	7.0	6.4	5.4	4.4
4.5	114	7.0	6.5	5.3	4.6	3.6	2.6
5	114	7.2	6.5	5.4	4.7	4.0	3.0
6	114	8.0	7.5	6.8	6.0	5.3	4.6
7	114	8.0	7.8	7.5	7.0	6.5	6.0
8	114	7.8	7.8	7.7	7.5	7.3	7.0
9	114	7.6	7.6	7.6	7.6	7.6	7.6
10	114	7.3	7.4	7.5	7.6	7.8	8.0
12	114	7.0	7.1	7.2	7.3	7.5	8.0
6	0	7.0	5.5	4.6	3.7	2.8	2.0
8	0	6.5	5.8	5.2	4.6	4.2	3.7
10	0	6.0	5.0	5.4	5.2	5.0	4.9
12	0	5.7	5.5	5.4	5.3	5.3	5.3

Note: WL denotes working length.

TABLE E (Contd)

**IMPEDANCE SETTINGS, J99343BL
26-GAUGE FACILITY WITH BT**

26GA WL (NOTE) (KFT)	BOR (OHMS)	R SETTINGS FOR VARIOUS BT LENGTHS					
		0 TO 1 KFT	1.1-2.0 KFT	2.1-3.0 KFT	3.1-4.0 KFT	4.1-5.0 KFT	5.1-6.0 KFT
BT LOCATED FROM 5.1 TO 7.0 KFT FROM CO							
5	114	7.5	6.2	4.5	3.8	3.3	2.5
6	114	8.0	7.0	6.3	5.2	4.4	3.5
7	114	7.7	7.3	6.7	6.2	5.3	4.5
8	114	7.7	7.3	6.8	6.5	6.0	5.5
9	114	7.4	7.2	6.8	6.6	6.4	6.2
10	114	7.3	7.1	6.9	6.8	6.7	6.6
12	114	7.0	7.0	7.0	7.0	7.2	7.5
6	0	6.0	5.0	3.9	3.0	2.4	1.8
8	0	6.5	5.4	4.7	4.0	3.1	2.7
10	0	6.0	5.3	5.0	4.7	4.3	4.0
12	0	5.7	6.3	5.3	5.1	5.0	4.9
BT LOCATED FROM 7.1 TO 8.0 KFT FROM CO							
7	114	7.5	6.7	5.7	4.8	4.0	3.4
8	114	7.5	6.7	6.0	5.5	4.6	4.0
9	114	7.3	7.2	6.2	5.7	5.2	4.8
10	114	7.2	6.8	6.5	6.2	6.0	5.7
11	114	7.2	6.9	6.8	6.8	6.7	6.6
12	114	7.0	7.0	7.0	6.9	6.9	6.8
8	0	6.5	5.0	4.0	3.1	2.4	1.8
10	0	6.0	5.1	4.6	4.1	3.4	2.9
12	0	5.4	5.1	4.8	4.7	4.3	4.0
BT LOCATED FROM 8.1 to 10.0 KFT FROM CO							
8	114	7.0	5.8	5.2	4.2	3.4	2.7
9	114	7.0	6.3	5.5	4.8	4.0	3.5
10	114	7.0	6.5	6.0	5.2	4.7	4.3
11	114	6.8	6.6	6.3	5.7	5.2	4.7
12	114	6.8	6.6	6.3	5.8	5.5	5.2
10	0	6.0	4.8	4.0	3.1	2.6	2.0
12	0	5.7	4.8	4.4	4.0	3.5	3.0
BT LOCATED FROM 10.1 TO 12.0 FROM CO							
10	114	7.0	6.0	5.0	4.3	3.5	3.0
11	114	6.7	6.2	5.3	4.8	4.2	3.6
12	114	6.7	6.2	5.5	5.0	4.5	4.0
12	0	5.0	4.3	3.7	3.0	2.3	1.9

Note: WL denotes working length.

TABLE F

IMPEDANCE SETTINGS, J99343BL
22-, 24-, 26-GAUGE FACILITY — NO BT

WL* (NOTE) (KFT)	22 GA.		24 GA.		26 GA.	
	BOR (OHMS)	R	BOR (OHMS)	R	BOR (OHMS)	R
0-2*	342	8.0	342	8.0	342	8.0
3*	342	8.0	342	8.0	342	8.0
3*					228	8.0
4*	342	8.0	342	8.0	228	8.0
4.5	342	8.0			228	8.0
4.5					114	8.0
5	342	8.0	342	8.0	114	8.0
5			228	8.0		
6	342	8.0	228	8.0	114	8.0
6					0	7.7
7	342	8.0	228	8.0		
7			114	7.5		
8	342	8.0	114	7.5	114	7.8
8	228	7.5			0	6.5
9	228	8.0	114	7.6		
10	228	8.0	114	7.5	114	7.5
10			0	4.2	0	6.0
11	228	8.0				
11	114	4.5				
12	114	4.3	114	6.8	114	7.0
12			0	4.1	0	5.7
14	114	3.8	114	6.5		
14			0	4.0		
16	114	3.6	114	6.2		
16			0	3.8		
18	114	3.4	114	6.1		
18	0	0.9	0	3.5		

Note: WL denotes working length.

* Where working length of a link is less than 4 kft without a bridged tap, an external BOC of $0.05 \mu F$ must be added.

TABLE G
IMPEDANCE SETTINGS, J99343BM
H88 HI-CAP 19-, 22-, 24-GAUGE FACILITY

EQUIVALENT END SECTION LENGTH (NOTE) (FEET)	19, 22, 24 GA	EQUIVALENT END SECTION LENGTH (NOTE) (MILES)	19, 22, 24, GA
	BOC (μ F)		BOC (μ F)
0	.080	0.00	.080
200	.077	.05	.076
400	.074	.10	.071
600	.070	.15	.067
800	0.67	.20	.062
1000	.064	.25	.058
1200	.060	.30	.054
1400	.057	.35	.049
1600	.054	.40	.045
1800	.050	.45	.040
2000	.047	.50	.036
2200	.044	.55	.032
2400	.040	.60	.027
2600	.037	.65	.023
2800	.034	.70	.018
3000	.031	.75	.014
3200	.028	.80	.010
3400	.025	.85	.007
3600	.022	.90	.004
3800	.019	.95	.001
4000	.016	1.00	0.000
4200	.013		
4400	.010		
4600	.007		
4800	.004		
5000	.001		
5200	.000		
5400	.000		
5600	.000		
5800	.000		
6000	0.000		

Note: The equivalent end-section length is made up of the actual length of outside cable in the end section (including bridged taps) plus a fictitious length that would have the same capacitance as the rest of the wiring to the network (tip cable, cross-connections, office wiring, etc.).

TABLE H

**IMPEDANCE SETTINGS, J99343BM
H88 LO-CAP 19-, 24-GAUGE FACILITY**

EQUIVALENT END SECTION LENGTH (NOTE) (FEET)	19, 24 GA	EQUIVALENT END SECTION LENGTH (NOTE) (MILES)	19, 24, GA
	BOC (μ F)		BOC (μ F)
0	.069	0.00	.069
200	.067	.05	.066
400	.064	.10	.062
600	.062	.15	.059
800	.060	.20	.056
1000	.057	.25	.052
1200	.055	.30	.049
1400	.052	.35	.046
1600	.050	.40	.043
1800	.047	.45	.039
2000	.045	.50	.036
2200	.042	.55	.033
2400	.040	.60	.029
2600	.038	.65	.026
2800	.035	.70	.023
3000	.033	.75	.020
3200	.030	.80	.016
3400	.028	.85	.013
3600	.025	.90	.010
3800	.023	.95	.007
4000	.020	1.00	.004
4200	.018	1.05	.001
4400	.015	1.10	0.000
4600	.013		
4800	.010		
5000	.008		
5200	.006		
5400	.003		
5600	.000		
5800	.000		
6000	0.000		

Note: The equivalent end-section length is made up of the actual length of outside cable in the end section (including bridged taps) plus a fictitious length that would have the same capacitance as the rest of the wiring to the network (tip cable, cross-connections, office wiring, etc.).

TABLE I

**IMPEDANCE SETTINGS, J99343BM
D88 HI-CAP ANY GAUGE FACILITY**

EQUIVALENT END SECTION LENGTH (NOTE) (FEET)	ANY GAUGE	EQUIVALENT END SECTION LENGTH (NOTE) (MILES)	ANY GAUGE
	BOC (μ F)		BOC (μ F)
0	.069	0.00	.069
200	.066	.05	.065
400	.063	.10	.060
600	.060	.15	.056
800	.056	.20	.052
1000	.053	.25	.048
1200	.050	.30	.043
1400	.047	.35	.039
1600	.044	.40	.035
1800	.041	.45	.030
2000	.038	.50	.026
2200	.034	.55	.022
2400	.031	.60	.018
2600	.028	.65	.013
2800	.025	.70	.009
3000	.022	.75	.005
3200	.019	.80	.000
3400	.016	.85	.000
3600	.012	.90	.000
3800	.009	.95	.000
4000	.006	1.00	0.000
4200	.003		
4400	0.000		

Note: The equivalent end-section length is made up of the actual length of outside cable in the end section (including bridged taps) plus a fictitious length that would have the same capacitance as the rest of the wiring to the network (tip cable, cross-connections, office wiring, etc.).

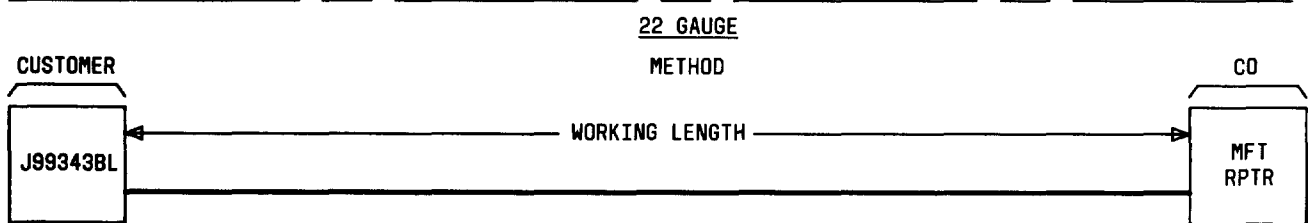
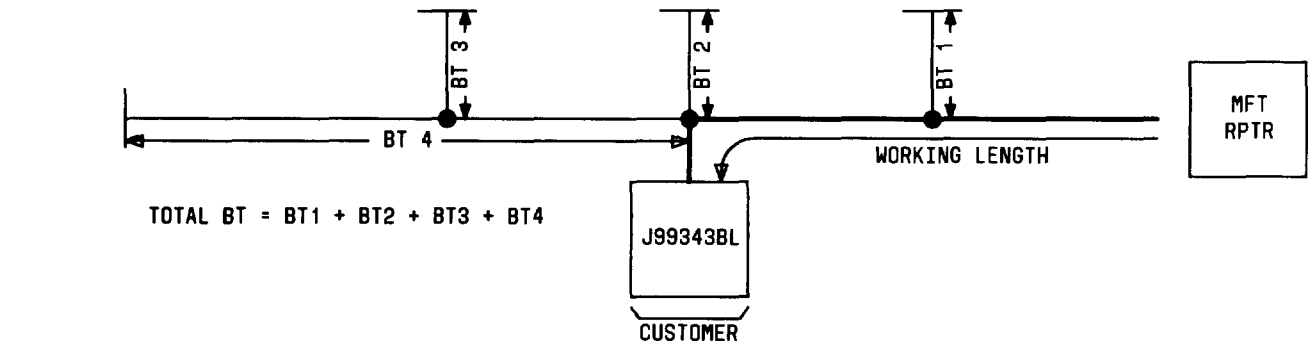
TABLE J

**IMPEDANCE SETTINGS, J99343BN
H88 26-GAUGE FACILITY**

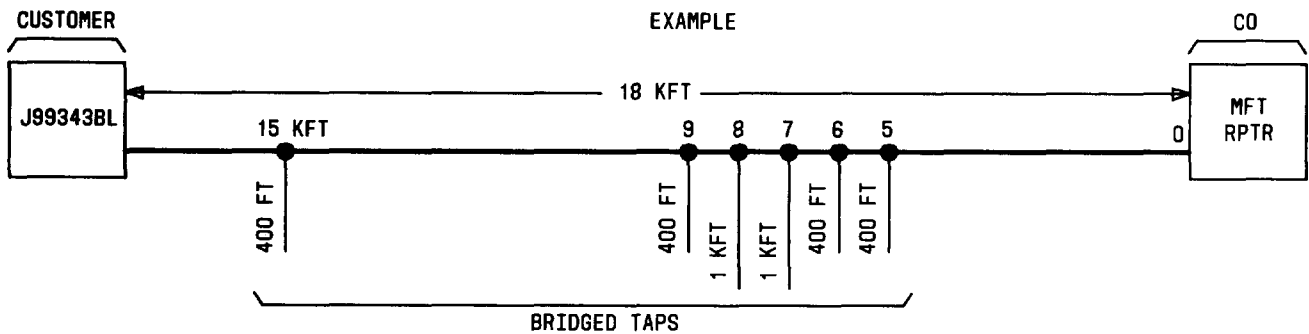
END SECTION		BOC							BOR				J99343BN		
LENGTH (FEET)	(OHMS)	(μ F)	SWITCHES OPERATED							OHMS	SWITCHES OPERATED			(OHMS)	LOSS (dB)
LATTICE IN/OUT TO IN															
000	0	.048	.001	.002	—	.007	.013	.025	231	33	66	132	549	3.8	
200	18	.044	—	.002	.004	—	.013	.025	198	—	66	132	515	3.7	
400	34	.040	—	.002	—	—	.013	.025	198	—	66	132	515	3.6	
600	51	.036	—	—	.004	.007	—	.025	165	33	—	132	482	3.6	
800	68	.032	—	—	—	.007	—	.025	165	33	—	132	482	3.5	
1000	84	.028	.001	.002	—	—	—	.025	132	—	—	132	449	3.4	
1200	101	.025	—	—	—	—	—	.025	132	—	—	132	449	3.4	
1400	118	.022	—	.002	—	.007	.013	—	99	33	66	—	416	3.2	
1600	134	.020	—	—	—	.007	.013	—	99	33	66	—	416	3.1	
1800	151	.017	—	—	.004	—	.013	—	66	—	66	—	382	3.1	
2000	168	.014	.001	—	—	—	.013	—	66	—	66	—	382	3.0	
2200	184	.011	—	—	.004	.007	—	—	66	—	66	—	382	2.9	
2400	201	.008	.001	—	—	.007	—	—	33	33	—	—	349	2.8	
2600	218	.006	—	.002	.004	—	—	—	33	33	—	—	349	2.8	
2800	234	.003	.001	.002	—	—	—	—	0	—	—	—	316	2.7	
3000	251	.000	—	—	—	—	—	—	0	—	—	—	316	2.6	
LATTICE IN/OUT TO OUT															
3200	268	.037	.001	—	.004	.007	—	.025	198	—	66	132	263	2.2	
3400	284	.034	—	.002	—	.007	—	.025	165	33	—	132	230	2.1	
3600	301	.032	—	—	—	.007	—	.025	165	33	—	132	230	2.1	
3800	318	.029	—	—	.004	—	—	.025	132	—	—	132	197	2.0	
4000	334	.027	—	.002	—	—	—	.025	132	—	—	132	197	2.0	
4200	351	.024	—	—	.004	.007	.013	—	132	—	—	132	197	2.0	
4400	368	.021	.001	—	—	.007	.013	—	99	33	66	—	164	2.0	
4600	384	.019	—	.002	.004	—	.013	—	99	33	66	—	164	2.0	
4800	401	.016	.001	.002	—	—	.013	—	66	—	66	—	130	1.9	
5000	418	.013	—	—	—	—	.013	—	66	—	66	—	130	1.9	
5200	434	.010	.001	.002	—	.007	—	—	66	—	66	—	130	1.9	
5400	451	.007	—	—	—	.007	—	—	33	33	—	—	97	1.7	
5600	468	.005	.001	—	.004	—	—	—	33	33	—	—	97	1.7	
5800	484	.002	—	.002	—	—	—	—	0	—	—	—	64	1.6	
6000	501	.000	—	—	—	—	—	—	0	—	—	—	64	1.6	

DEFINITIONS
WORKING LENGTH AND BRIDGED TAP

THE TOTAL LENGTH OF BRIDGED TAP IN AN INDIVIDUAL SEGMENT IS THE SUM OF ALL BRIDGED TAPS CONNECTING TO THAT SEGMENT. THE WORKING LENGTH IS THE DISTANCE FROM CO TO CUSTOMER. THE TOTAL AMOUNT OF BRIDGED TAP INCLUDES NOT ONLY THE BT BETWEEN THE CO AND THE STATION BUT THE BT BEYOND THE STATION, AS WELL, AS INDICATED IN THE EXAMPLE BELOW.



- RULES
1. ADD ALL BT LENGTHS (SEE DEFINITIONS)
 2. AVERAGE THEIR DISTANCES FROM CO
 3. TREAT TOTAL LENGTH AS IF LOCATED AT AVERAGE DISTANCE AND SET R ACCORDING TO TABLE C



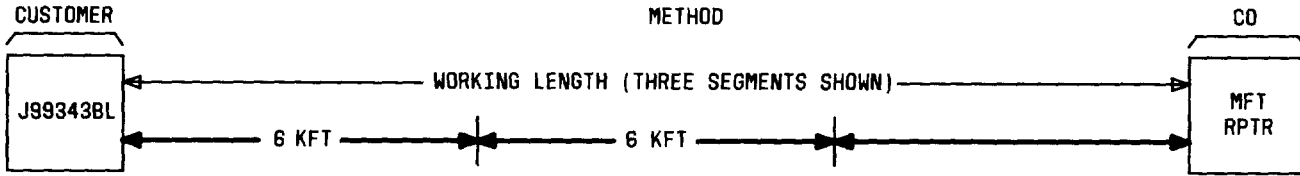
COMPUTATION OF INITIAL R SETTING

TOTAL BT LENGTH	SUMMARY
TOTAL BT = 0.4+0.4+1+0.4+0.4 = 3.6 KFT	3.6 KFT BT LOCATED 8.3 KFT FROM CO WITH WL = 18 KFT
AVERAGE DISTANCE	BOR R
FROM CO = $\frac{5+6+7+8+9+15}{6} = 8.3$ KFT	$\frac{114}{0} \quad \frac{2.0}{0.5}$

Fig. 5—Rules to Determine Length and Location of BT for 22-Gauge Facility

24 GAUGE

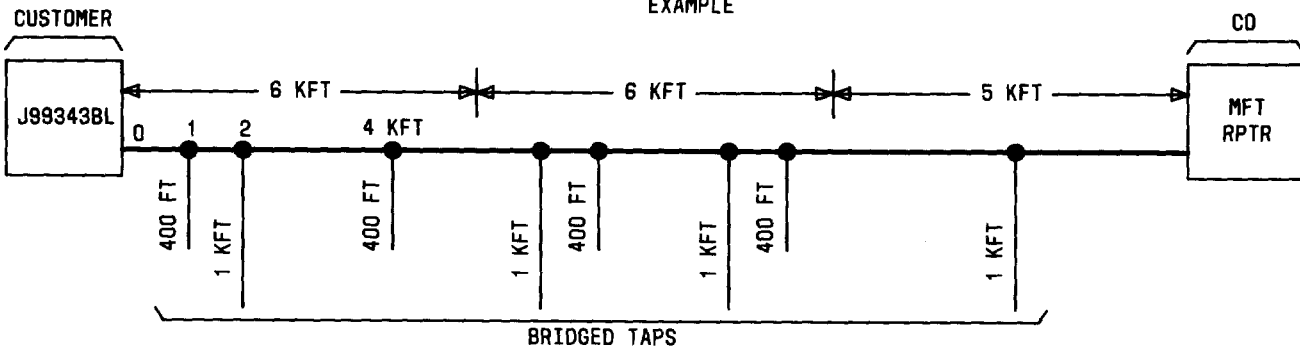
METHOD



RULES

4. ADD ALL BT LENGTHS INCLUDING THE EQUIVALENT LENGTH FOR OTHER SEGMENTS.
5. AVERAGE THEIR DISTANCES FROM CO.
6. TREAT TOTAL LENGTH AS IF LOCATED AT THE AVERAGE DISTANCE.
7. SET R ACCORDING TO TABLE D.
2. MULTIPLY TOTAL LENGTH OF BT IN THIS SEGMENT BY 0.5.
3. TREAT AS IF LOCATED 6 KFT FROM J99343BL.
1. DISREGARD ANY BT MORE THAN 12 KFT FROM J99343BL.

EXAMPLE

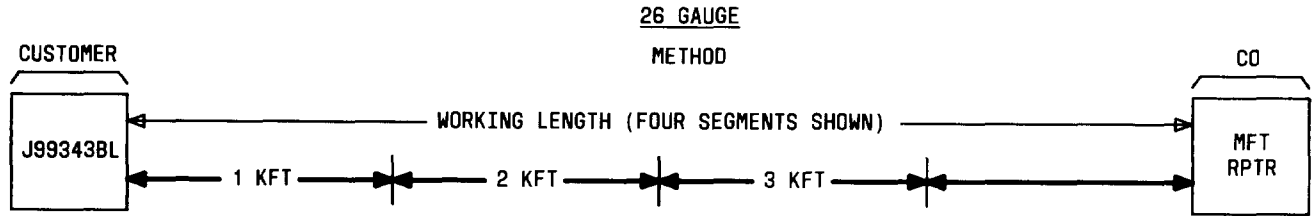


COMPUTATION OF INITIAL R SETTING

TOTAL BT LENGTH	SUMMARY								
1. SEGMENT MORE THAN 12 KFT FROM J99343BL: DISREGARD 1-KFT BTS.	3.2 KFT BT LOCATED 13.7 KFT FROM CO WITH WL = 17 KFT								
2. MIDDLE SEGMENT: 2.8 KFT X 0.5 = 1.4 KFT (EQUIVALENT TO 6 KFT FROM J99343BL)									
3. SEGMENT ADJACENT TO J99343BL: 0.4 + 1 + 0.4 = 1.8 KFT									
4. TOTAL BT: 1.8 + 1.4 = 3.2 KFT									
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"> AVERAGE DISTANCE FROM J99343BL = $\frac{1 + 2 + 4 + 6}{4} = 3.3$ KFT FROM CO = 17 - 3.3 = 13.7 KFT </td> <td style="width: 50%; border: none; text-align: center;"> <table border="1" style="border-collapse: collapse; margin: auto;"> <tr> <td style="padding: 2px;">BOR</td> <td style="padding: 2px;">R</td> </tr> <tr> <td style="padding: 2px;">114</td> <td style="padding: 2px;">4.5</td> </tr> <tr> <td style="padding: 2px;">0</td> <td style="padding: 2px;">1.9</td> </tr> </table> </td> </tr> </table>		AVERAGE DISTANCE FROM J99343BL = $\frac{1 + 2 + 4 + 6}{4} = 3.3$ KFT FROM CO = 17 - 3.3 = 13.7 KFT	<table border="1" style="border-collapse: collapse; margin: auto;"> <tr> <td style="padding: 2px;">BOR</td> <td style="padding: 2px;">R</td> </tr> <tr> <td style="padding: 2px;">114</td> <td style="padding: 2px;">4.5</td> </tr> <tr> <td style="padding: 2px;">0</td> <td style="padding: 2px;">1.9</td> </tr> </table>	BOR	R	114	4.5	0	1.9
AVERAGE DISTANCE FROM J99343BL = $\frac{1 + 2 + 4 + 6}{4} = 3.3$ KFT FROM CO = 17 - 3.3 = 13.7 KFT	<table border="1" style="border-collapse: collapse; margin: auto;"> <tr> <td style="padding: 2px;">BOR</td> <td style="padding: 2px;">R</td> </tr> <tr> <td style="padding: 2px;">114</td> <td style="padding: 2px;">4.5</td> </tr> <tr> <td style="padding: 2px;">0</td> <td style="padding: 2px;">1.9</td> </tr> </table>	BOR	R	114	4.5	0	1.9		
BOR	R								
114	4.5								
0	1.9								

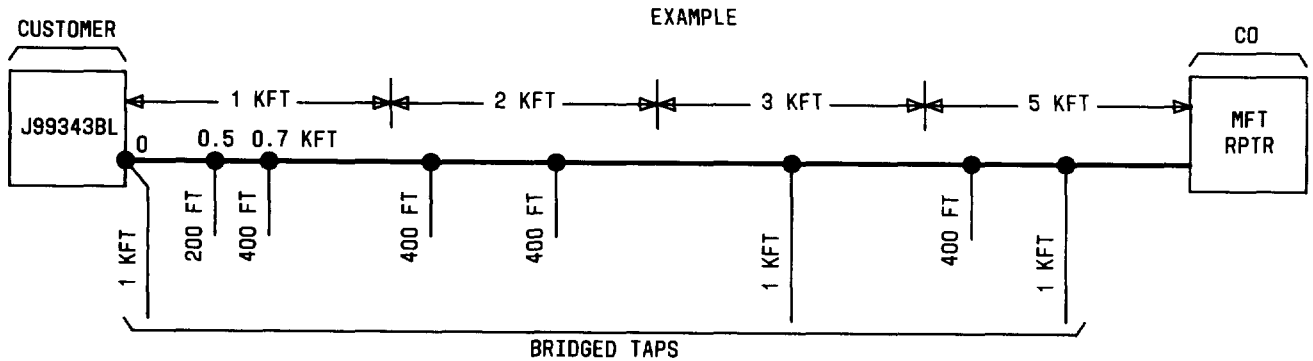
* SEE DEFINITION OF TOTAL BT LENGTH ON FIG. 5

Fig. 6—Rules to Determine Length and Location of BT for 24-Gauge Facility



RULES

5. ADD ALL BT LENGTHS INCLUDING THE EQUIVALENT LENGTH FOR OTHER SEGMENTS.
 6. AVERAGE THEIR DISTANCES FROM THE CO, INCLUDING IN THE AVERAGE ONE 1 KFT DISTANCE FOR ALL TAPS BETWEEN 1 AND 6 KFT FROM J99343BL.
 7. SET R ACCORDING TO TABLE E.
3. MULTIPLY TOTAL LENGTH OF BT IN THIS SEGMENT BY 0.5 TO OBTAIN EQUIVALENT LENGTH.
 4. FOR FINDING AVERAGE DISTANCE OF BRIDGED TAPS FROM CO, CONSIDER ALL BRIDGED TAPS IN THESE SEGMENTS CONCENTRATED IN ONE BT 1 KFT FROM THE J99343BL.
2. MULTIPLY TOTAL LENGTH* OF BT IN THIS SEGMENT BY 0.3 TO OBTAIN EQUIVALENT LENGTH.
 1. DISREGARD ANY BT MORE THAN 6 KFT FROM J99343BL.



COMPUTATION OF INITIAL R SETTING

TOTAL BT LENGTH	SUMMARY
1. SEGMENT MORE THAN 6 KFT FROM J99343BL: DISREGARD 400-FT AND 1-KFT BTS. 2. 3-KFT SEGMENT: 1 KFT X 0.3 = 0.3 KFT 3. 2-KFT SEGMENT: 800 FT X 0.5 = 0.4 KFT 4. 1-KFT SEGMENT: 1 + 0.2 + 0.4 = 1.6 KFT 5. TOTAL BT = 1.6 + 0.4 + 0.3 = 2.3 KFT	2.3 KFT BT LOCATED 10.45 KFT FROM CO WITH WL = 11 KFT BOR R 114 5.3
AVERAGE DISTANCE FROM J99343BL = $\frac{0 + 0.5 + 0.7 + 1}{4} = 0.55$ KFT FROM CO = 11 - 0.55 = 10.45 KFT	

* SEE DEFINITION OF TOTAL BT LENGTH ON FIG. 5

Fig. 7—Rules to Determine Length and Location of BT for 26-Gauge Facility

TABLE K

J99343BN
 PRESCRIPTION SETTING RULES FOR CIRCUITS
 WITH BRIDGED TAP

LOOP DESCRIPTION	ADJUST BOC FOR	ADJUST BOR FOR	LATTICE
Working length (WL) of end section up to 3 kft			
(a) WL+BT up to 3 kft	WL+BT	WL	IN
(b) WL+BT > 3 kft	WL+BT	231 Ω	OUT
Working length of end section > 3 kft	WL+BT	WL	OUT

TABLE L
FACILITY RESISTANCE, LOSS,
AND TEMPERATURE CORRECTION

TYPE OF FACILITY	RESISTANCE AT 68°F		1-kHz ATTENUATION AT 68°F		TEMPERATURE CORRECTION	
	OHMS PER KFT	OHMS PER MILE	DB PER KFT	DB PER MILE	DB PER °F PER KFT	DB PER °F PER MILE
19 NL (High-Cap.)	16.3	86	.24	1.270	.000322	.0017
19 NL (Low-Cap.)	16.3	86	.21	1.121	.000204	.0011
22 NL (High-Cap.)	32.8	173	.34	1.808	.000436	.0023
24 NL (High-Cap.)	51.9	274	.44	2.313	.000568	.0030
24 NL (Low-Cap.)	51.9	274	.41	2.160	.000510	.0027
26 NL (High-Cap.)	83.3	440	.54	2.853	.000682	.0036
26 NL (Low-Cap.)	83.3	440	.51	2.690	.000650	.0034
Office and PBX Cabling	40.0*	211*	.40*	2.110	—	—
Bridged Tap on NL	—	—	.22	1.160	—	—
19 H88 (High-Cap.)	17.6	95	.080	.423	.000170	.0009
22 H88 (High-Cap.)	33.9	179	.149	.789	.000341	.0018
24 H88 (High-Cap.)	53.4	282	.230	1.215	.000492	.0026
26 H88 (High-Cap.)	84.8	448	.339	1.791	.000682	.0036
19 H88 (Low-Cap.)	17.6	95	.071	.375	.000152	.0008
24 H88 (Low-Cap.)	53.4	282	.218	1.151	.000450	.0024
19 D88 (High-Cap.)	18.1	96	.072	.380	.000152	.0008
22 D88 (High-Cap.)	34.4	181	.133	.702	.000303	.0016
24 D88 (High-Cap.)	53.9	284	.205	1.083	.000455	.0024
Drop Wire	43.0	227	.68 (wet)	3.590 (wet)	—	—
Buried Service Wire			.40 (dry)	2.110 (dry)	—	—

*This figure is a compromise for several types of office cabling.