837E AND J99380AB
IMPEDANCE COMPENSATOR NETWORKS
INSTALLATION AND PRESCRIPTION SETTINGS

CONTENTS PAGE

1. INTRODUCTION

1.01 This section contains the installation procedures and prescription settings for the 837E and J99380AB (600 ohm) impedance compensator networks. These networks are normally placed at a customer premise location on 2-wire circuits requiring terminal balance. The networks are used on 19-, 22-, or 24-gauge D88 or H88 loaded cable to improve the impedance match between the cable and customer equipment. These networks, which do not contain drop build-out capacitors, have a loss of approximately 0.5 dB at 1000 Hz. Prescription settings are also in Section 851-300-101.

1.02 This section is being reissued to include the new J99380AB network which is part of the Customer Premises Facility Terminal (CPFT) family. Due to extensive changes in this section, arrows ordinarily used to denote changes have been omitted.

1.03 The 837E and J99380AB networks are described in Section 332-206-155.

2. INSTALLATION

A. 837E Network

2.01 The 837E network is stud mounted on a shelf or other suitable mounting such as the J99380B mounting panel near the point where the cable pairs are brought out to the cross-connect field. Terminals 1 and 2 of the 837E network connect to the cable pair and terminals 3 and 4 connect to the 600-ohm PBX trunk equipment via cross connections.

B. J99380AB Network

2.02 The J99380AB network is a plug-in circuit pack and contains two impedance compensator circuits (A and B), each of which is electrically equivalent to one 837E network.

2.03 This network is inserted in the J99380C mounting shelf which is part of the CPFT family.

2.04 Terminals 14A and 9A (circuit A) and terminals 14B and 9B (circuit B) connect to the cable pairs. Terminals 12A and 13A (circuit A) and terminals 12B and 13B (circuit B) connect to the 600-ohm PBX trunk equipment via cross connections.

3. PRESCRIPTION SETTINGS

3.01 Adjustment of the 837E and J99380AB networks consists of building out the capacitance of a fractional end section of loaded cable to the capacitance of a full end section. This is done by adjusting the build-out capacitor (BOC). Seven screw switches on the 837E network and each half of the J99380AB network are turned in (tightened) to add the designated value and turned out (loosened) to remove the value.

3.02 The seven screw switches designated .001, .002, .004, .007, .013, .025, and .049 have been assigned letters A through G to simplify the prescription setting tables.

3.03 Table A shows the BOC settings for equivalent end section lengths of H88 high capacitance 19-, 22-, and 24-gauge cable.

3.04 Table B shows the BOC settings for equivalent end section lengths of the H88 low capacitance 19- and 24-gauge cable.

3.05 Table C gives the BOC settings for equivalent end section lengths of any gauge D88 high capacitance cable.

3.06 Table D shows the BOC screw switch settings by capacitance value.

3.07 The prescription settings will usually be adequate if the structural return loss of the cable is high. The adjustments of the 837E and J99380AB networks will need to be touched up for maximum return loss only if the terminal balance requirement is not met. Touch up adjustment procedures are covered in Section 332-205-500. PBX terminal balance requirements are contained in Section 311-350-100.

TABLE A

837E AND J99380AB NETWORKS (600-OHM)
BUILDING-OUT CAPACITOR ADJUSTMENT
VERSUS EQUIVALENT END-SECTION LENGTH FOR
H88 HIGH-CAPACITANCE CABLE

EQUIVALENT END SECTION LENGTH (FEET)	19, 22, 24 GA		EQUIVALENT END SECTION LENGTH (MILES)	19, 22, 24 GA	
	BOC (μF)	SCREWS DOWN†		BOC (μF)	SCREWS DOWN†
0	.080	BCFG	0.00	.080	BCFG
200	.077	ABFG	.05	.076	BFG
400	.074	FG	.10	.071	BDEG
600	.070	ADEG	.15	.067	ACEG
800	.067	ACEG	.20	.062	EG
1000	.064	BEG	.25	.058	BDG
1200	.060	CDG	.30	.054	ACG
1400	.057	ADG	.35	.049	G
1600	.054	ACG	.40	.045	DEF
1800	.050	AG	.45	.040	BEF
2000	.047	BDEF	.50	.036	CDF
2200	.044	BCEF	.55	.032	DF
2400	.040	BEF	.60	.027	BF
2600	.037	ACDF	.65	.023	ABDE
2800	.034	BDF	.70	.018	ACE
3000	.031	BCF	.75	.014	AE
3200	.028	ABF	.80	.010	ABD
3400	.025	F	.85	.007	D
3600	.022	BDE	.90	.004	C
3800	.019	BCE	.95	.001	A
4000	.016	ABE	1.00	0.000	—
4200	.013	E			
4400	.010	ABD			
4600	.007	D			
4800	.004	C			
5000	.001	A			
5200	.000	—			
5400	.000	—			
5600	.000	—			
5800	.000	—			
6000	0.000	—			

Notes:

* 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.).

† See Table D for screw combinations for networks giving capacitance values rather than letters.

TABLE B

837D AND J99380AB NETWORKS (600-OHM)
BUILDING-OUT CAPACITOR ADJUSTMENT
VERSUS EQUIVALENT END-SECTION LENGTH FOR
H88 LOW-CAPACITANCE CABLE

EQUIVALENT END SECTION LENGTH (FEET)	19, 24 GA		EQUIVALENT END SECTION LENGTH (MILES)	19, 24 GA	
	BOC (μF)	SCREWS DOWN†		BOC (μF)	SCREWS DOWN†
0	.069	DEG	0.00	.069	DEG
200	.067	ACEG	.05	.066	CEG
400	.064	BEG	.10	.062	EG
600	.062	EG	.15	.059	ABDG
800	.060	CDG	.20	.056	DG
1000	.057	ADG	.25	.052	ABG
1200	.055	BCG	.30	.049	G
1400	.052	ABG	.35	.046	ADEF
1600	.050	AG	.40	.043	ACEF
1800	.047	BDEF	.45	.039	AEF
2000	.045	DEF	.50	.036	CDF
2200	.042	CEF	.55	.033	ADF
2400	.040	BEF	.60	.029	CF
2600	.038	EF	.65	.026	AF
2800	.035	ABDF	.70	.023	ABDE
3000	.033	ADF	.75	.020	DE
3200	.030	ACF	.80	.016	ABE
3400	.028	ABF	.85	.013	E
3600	.025	F	.90	.010	ABD
3800	.023	ABDE	.95	.007	D
4000	.020	DE	1.00	.004	C
4200	.018	ACE	1.05	.001	A
4400	.015	BE	1.10	0.000	—
4600	.013	E			
4800	.010	ABD			
5000	.008	AD			
5200	.006	BC			
5400	.003	AB			
5600	.000	—			
5800	.000	—			
6000	0.000	—			

Notes:

* 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.).

† See Table D for screw combinations for networks giving capacitance values rather than letters.

TABLE C

837E AND J99380AB NETWORKS (600-OHM)
BUILDING-OUT CAPACITOR ADJUSTMENT
VERSUS EQUIVALENT END-SECTION LENGTH FOR
ANY GAUGE D88 HIGH-CAPACITANCE CABLE

EQUIVALENT* END SECTION LENGTH (FEET)	ANY GAUGE		EQUIVALENT* END SECTION LENGTH (MILES)	ANY GAUGE	
	BOC (μF)	SCREWS DOWN†		BOC (μF)	SCREWS DOWN†
0	.069	DEG	0.00	.069	DEG
200	.066	CEG	.05	.065	ABEG
400	.063	AEG	.10	.060	CDG
600	.060	CDG	.15	.056	DG
800	.056	DG	.20	.052	ABG
1000	.053	CG	.25	.048	ABDEF
1200	.050	AG	.30	.043	ACEF
1400	.047	BDEF	.35	.039	AEF
1600	.044	BCEF	.40	.035	ABDF
1800	.041	ABEF	.45	.030	ACF
2000	.038	EF	.50	.026	AF
2200	.034	BDF	.55	.022	BDE
2400	.031	BCF	.60	.018	ACE
2600	.028	ABF	.65	.013	E
2800	.025	F	.70	.009	BD
3000	.022	BDE	.75	.005	AC
3200	.019	BCE	.80	.000	—
3400	.016	ABE	.85	.000	—
3600	.012	ACD	.90	.000	—
3800	.009	BD	.95	.000	—
4000	.006	BC	1.00	0.000	—
4200	.003	AB			
4400	0.000	—			

Notes:

* 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.).

† See Table D for screw combinations for networks giving capacitance values rather than letters.

TABLE D

837E AND J99380AB NETWORKS
BOC-SCREW CAPACITANCE SETTINGS

DESIRED VALUE OF BOC (μF)	BOC-SECTION CAPACITANCE CLOSE SCREWS INDICATED BY ●						
	A .001	B .002	C .004	D .007	E .013	F .025	G .049
.001	●						
.002		●					
.003	●	●					
.004			●				
.005	●		●				
.006		●	●				
.007				●			
.008	●			●			
.009		●		●			
.010	●	●		●			
.011			●	●			
.012	●		●	●			
.013					●		
.014	●				●		
.015		●			●		
.016	●	●			●		
.017			●		●		
.018	●		●		●		
.019		●	●		●		
.020				●	●		
.021	●			●	●		
.022		●		●	●		
.023	●	●		●	●		
.024			●	●	●		
.025						●	
.026	●					●	
.027		●				●	
.028	●	●				●	
.029			●			●	
.030	●		●			●	
.031		●	●			●	
.032				●		●	
.033	●			●		●	
.034		●		●		●	
.035	●	●		●		●	
.036			●	●		●	
.037	●		●	●		●	
.038					●	●	
.039	●				●	●	
.040		●			●	●	
.041	●	●			●	●	
.042			●		●	●	
.043	●		●		●	●	
.044		●	●		●	●	
.045				●	●	●	
.046	●			●	●	●	
.047		●		●	●	●	
.048	●	●		●	●	●	
.049							●
.050	●						●

DESIRED VALUE OF BOC (μF)	BOC-SECTION CAPACITANCE CLOSE SCREWS INDICATED BY ●						
	A .001	B .002	C .004	D .007	E .013	F .025	G .049
.051		●					●
.052	●	●					●
.053			●				●
.054	●		●				●
.055		●	●				●
.056				●			●
.057	●			●			●
.058		●		●			●
.059	●	●		●			●
.060			●	●			●
.061	●		●	●			●
.062					●		●
.063	●				●		●
.064		●			●		●
.065	●	●			●		●
.066			●		●		●
.067	●		●		●		●
.068		●	●		●		●
.069				●	●		●
.070	●			●	●		●
.071		●		●	●		●
.072	●	●		●	●		●
.073			●	●	●		●
.074						●	●
.075	●					●	●
.076		●				●	●
.077	●	●				●	●
.078			●			●	●
.079	●		●			●	●
.080		●	●			●	●
.081				●		●	●
.082	●			●		●	●
.083		●		●		●	●
.084	●	●		●		●	●
.085			●	●		●	●
.086	●		●	●		●	●
.087					●	●	●
.088	●				●	●	●
.089		●			●	●	●
.090	●	●			●	●	●
.091			●		●	●	●
.092	●		●		●	●	●
.093		●	●		●	●	●
.094				●	●	●	●
.095	●			●	●	●	●
.096		●		●	●	●	●
.097	●	●		●	●	●	●
.098			●	●	●	●	●
.099	●		●	●	●	●	●
.100		●	●	●	●	●	●