

## 830A NETWORK INSTALLATION AND PRESCRIPTION SETTINGS

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### 1. GENERAL

**1.01** This section gives the installation procedure and prescription settings for the 830A network, which is used in either a terminal or intermediate repeater, to build out the input impedance of high-capacitance, H88 loaded, 19-, 22-, and 24-gauge cable to the impedance of the E6 repeater gain unit. These settings are also found in Section 851-300-101.

**1.02** The description of the 830A network is found in Section 332-206-121.

### 2. INSTALLATION

**2.01** The 830A network is mounted on the line side of the E6 repeater chassis and is secured by four screws on the chassis connector block. These screws also make the required electrical connections between the network and repeater.

### 3. PRESCRIPTION SETTINGS

**3.01** Tables A and B show the building-out capacitance (BOC) for equivalent end-section

length (in feet and miles respectively) for H88 high-capacitance cable of 19-, 22-, and 24-gauge. Table C shows the building-out resistor (BOR) adjustment versus resistance of endsection for H88 high-capacitance cable of 19-, 22-, and 24-gauge.

**3.02** For mixed gauges on loaded 2-wire facilities, the prescription settings are based on the controlling gauge in the adjacent endsection. The prescription settings are determined as follows:

- (1) Determine the length of each segment of continuous gauge. (Start at the network, ignoring all segments of 500 feet or less.)
- (2) The controlling gauge is the gauge of the segment having at least 1-dB attenuation at 1 kHz.
- (3) **GA Screws:** Use the controlling gauge setting determined in (1) and (2). For 26-gauge cable, use 24-gauge settings on the 830A network if no 26-gauge LBO is available.
- (4) **BOC Screws:** Use BOC settings for gauge selected in (3).
- (5) **BOR Screws:** Use BOR settings for gauge selected in (3).

**3.03** Where plant records are accurate, prescription settings of the 830A network should provide the required performance. If plant records are inaccurate, or where there is a complicated mixture of gauges, the network should be touched up as explained in the lineup section.

**TABLE A**  
**830A NETWORK**  
**BUILDING-OUT CAPACITOR ADJUSTMENT**  
**VERSUS EQUIVALENT END-SECTION LENGTH IN FEET**  
**OF H88 HIGH-CAPACITANCE CABLE**

EQUIVALENT* END SECTION LENGTH (FEET)	19 GA		22 GA		24 GA	
	BOC ( $\mu$ F)	SCREWS DOWN	BOC ( $\mu$ F)	SCREWS DOWN	BOC ( $\mu$ F)	SCREWS DOWN
0	.092	ACEFG	.088	AEFG	.081	DFG
200	.089	BEFG	.084	ABDFG	.079	ACFG
400	.086	ACDFG	.081	DFG	.077	ABFG
600	.083	BDFG	.078	CFG	.074	FG
800	.080	BCFG	.075	AFG	.072	ABDEG
1000	.076	BFG	.072	ABDEG	.069	DEG
1200	.073	CDEG	.069	DEG	.066	CEG
1400	.070	ADEG	.066	CEG	.063	AEG
1600	.066	CEG	.063	AEG	.060	CDG
1800	.063	AEG	.060	CDG	.057	ADG
2000	.060	CDG	.057	ADG	.054	ACG
2200	.057	ADG	.054	ACG	.051	BG
2400	.054	ACG	.051	BG	.048	ABDEF
2600	.051	BG	.048	ABDEF	.046	ADEF
2800	.048	ABDEF	.045	DEF	.043	ACEF
3000	.045	DEF	.042	CEF	.040	BEF
3200	.042	CEF	.040	BEF	.037	ACDF
3400	.038	EF	.037	ACDF	.034	BDF
3600	.035	ABDF	.034	BDF	.032	DF
3800	.032	DF	.031	BCF	.029	CF
4000	.028	ABF	.028	ABF	.026	AF
4200	.025	F	.025	F	.023	ABDE
4400	.022	BDE	.022	BDE	.020	DE
4600	.019	BCE	.018	ACE	.017	CE
4800	.016	ABE	.015	BE	.014	AE
5000	.013	E	.012	ACD	.011	CD
5200	.010	ABD	.009	BD	.008	AD
5400	.007	D	.006	BC	.006	BC
5600	.003	AB	.003	AB	.003	AB
5800-up	0.000	—	0.000	—	0.000	—

\* 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.) For mixed gauges, use the rules given in paragraph 3.02.

**TABLE B**  
**830A NETWORK**  
**BUILDING-OUT CAPACITOR ADJUSTMENT**  
**VERSUS EQUIVALENT END-SECTION LENGTH IN MILES**  
**OF H88 HIGH-CAPACITANCE CABLE**

EQUIVALENT* END SECTION LENGTH (MILES)	19 GA		22 GA		24 GA	
	BOC ( $\mu$ F)	SCREWS DOWN	BOC ( $\mu$ F)	SCREWS DOWN	BOC ( $\mu$ F)	SCREWS DOWN
0.00	.092	ACEFG	.088	AEFG	.081	DFG
.05	.088	AEFG	.083	BDFG	.077	ABFG
.10	.084	ABDFG	.079	ACFG	.073	CDEG
.15	.079	ACFG	.075	AFG	.070	ADEG
.20	.075	AFG	.071	BDEG	.066	CEG
.25	.071	BDEG	.067	ACEG	.062	EG
.30	.067	ACEG	.063	AEG	.058	BDG
.35	.062	EG	.059	ABDG	.054	ACG
.40	.058	BDG	.055	BCG	.050	AG
.45	.054	ACG	.051	BG	.047	BDEF
.50	.050	AG	.047	BDEF	.043	ACEF
.55	.046	ADEF	.043	ACEF	.039	AEF
.60	.041	ABEF	.039	AEF	.035	ABDF
.65	.037	ACDF	.036	CDF	.031	BCF
.70	.033	ADF	.032	DF	.027	BF
.75	.029	CF	.028	ABF	.024	CDE
.80	.024	CDE	.024	CDE	.020	DE
.85	.020	DE	.020	DE	.016	ABE
.90	.016	ABE	.016	ABE	.012	ACD
.95	.012	ACD	.012	ACD	.009	BD
1.00	.008	AD	.008	AD	.007	D
1.05	.004	C	.004	C	.003	AB
1.10	0.000	—	0.000	—	0.000	—

\* 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.) For mixed gauges, use the rules given in paragraph 3.02.

**TABLE C**  
**830A NETWORK**  
**BUILDING-OUT RESISTOR ADJUSTMENT**  
**VERSUS RESISTANCE OF END SECTION**  
**FOR H88 HIGH-CAPACITANCE CABLE**

H88HI

RESISTANCE OF OUTSIDE END SECTION PLUS OFFICE CABLING (OHMS)	BOR (OHMS)	SCREWS DOWN	LBO LOSS (DB)
<b>GA SCREWS SET FOR 19 GA</b>			
0-42	28	1, 2 & 1, 2	0.5
43-97	0	All	0.3
<b>GA SCREWS SET FOR 22 GA</b>			
0-40	84	1 & 1	0.9
41-88	56	1, 3 & 1, 3	0.7
89-127	28	1, 2 & 1, 2	0.6
128-195	0	All	0.5
<b>GA SCREWS SET FOR 24 GA</b>			
0-15	196	---	1.3
16-46	168	3 & 3	1.2
47-78	140	2 & 2	1.1
79-109	112	2, 3 & 2, 3	1.0
110-155	84	1 & 1	0.8
156-187	56	1, 3 & 1, 3	0.7
188-233	28	1, 2 & 1, 2	0.6
234-311	0	All	0.5

**Notes:**

1. For mixed gauges, use category for which the GA screws were chosen. See paragraph 3.02.
2. Resistor screws must always be adjusted in pairs, viz. 1 & 1, 2 & 2, 3 & 3, never singly.