MACH TYPE	M C	SERIAL NUMBER	SYST TYPE	SYSTEM NUMBER	F/E B/O	W/T CTY	CUST NUMBER	MD CD	MICRO TPC-CD	BOX SHIP	MACHINE SHIP	PLT MFG	PLT CTL	MACHINE STATUS SWM	W/EC
4956		0020806	4956	0002WRY	0510		0250125				85-11-08	RAL.	RAL.		

BASIC ECA.EC	FACTORY EC	SALES MOD	PLANT ORDER	HARD CARD
000.	012345	K00	14VBJT	003

MACHINE DEVICE/RPQ CONFIGURATION

DEVICE/RPQ	QTY	STATUS
2095	1	FACTORY INST
2096	2	FACTORY INST
3595	1	FACTORY INST
5655	1	FACTORY INST
6331	1	FACTORY INST
6331	1	FIELD INST
9001	1	FACTORY INST
9031	1	FACTORY INST
9164	1	FACTORY INST
9182	1	FACTORY INST
9241	1	FACTORY INST
9902	1	FACTORY INST

STANDARD FEATURE SECTION

ECA	FIELD	FACTORY	FEATURE BM	FTR-ASN	FEATURE NAME	STATUS	MES-NO	STAT	DATE
000	869532		0000001		UNITED STATES	FIELD INST	Q22446	INST	86-12-11
000	111111		0008010		JUMPER FEATURE	FACT INST			
000	869532		0009001		3RD. PARTY PARTICIPNT	FACT INST			
000	869532		0009031		FRT. END PROC=DPD SYS	FACT INST			
000	467030		0009164		PRI IPL FIRST DRIVE	FACT INST			
000	467030		0009182		1OR2 DRIVES ATTACHED	FACT INST			
000	467030		0009241		SUBSYSTEM NUMBER	FACT INST			
000	578267		1111119		208V 60HZ 1PH	FACT INST			
000	578478B	755143	4411315		6FT CD 208/230V 60HZ	FACT INST			
000	467030	334649	4772195		BASIC DUMMY FEA	FACT INST			
000	A33055	A40707B	58X8141		ELEC/MECH FINAL ASM.	TO BE INST	M04581	WRIT	88-03-11
000	323151B	323151B	6031004		VOLTAGE GRP HI	FACT INST			
000	337376	A08044	6042239		4967 ATTACH	FACT INST			
000	A32988	A40707B	6104400		ELEC/MECH FINAL ASM	TO BE REM	M04581	WRIT	88-03-11
000	A32988	A40707B	6104400		ELEC/MECH FINAL ASM	FACT INST			
000	A32988	A32987	6523502		CPU CARD	TO BE REM	M04581	WRIT	88-03-11
000	A32988	A32987	6523502		CPU CARD	FACT INST			
000	A32957	A40869	6523804		J0X/K0X CPU CARD	TO BE INST	M04581	WRIT	88-03-11
000	869490	A32988	6826816		PROGRM CNSL ENGLISH	FACT INST			
000	A23096	876942	6837366		PMLC 8 LN CONTROLLER	FACT INST			
000	864591	A08037	6837367		PMLC 4 LINE ADAPTER	FACT INST			
000	864591	A08037	6837367		PMLC 4 LINE ADAPTER	FACT INST			
000	012345	A32987	6838156		WARNING LABEL-ENG	FACT INST			
000	375438	375438	6840832		DATA SET EIA WRAP	FACT INST			
000	375438	375438	6840833		DIRECT CONNECT WRAP	FACT INST			
000	869490		6844356		BASIC CONSOLE	FACT INST			
000	335527	335527	8568610		FEATURE B/M	FACT INST			
000	337340	A10910	8693020		512K STORAGE ADD	TO BE REM	M04581	WRIT	88-03-11
000	337340	A10910	8693020		512K STORAGE ADD	TO BE REM	M04581	WRIT	88-03-11
000	337340	A10910	8693020		512K STORAGE ADD	FIELD INST	Q22446	INST	86-12-11
000	337340	A10910	8693020		512K STORAGE ADD	MES-CANCEL	F26138	INST	86-10-01
000	337340	A10910	8693020		512K STORAGE ADD	MES-CANCEL	F26138	INST	86-10-01
000	337340	A10910	8693020		512K STORAGE ADD	FACT INST			

CABLE AND SHIP GROUP SECTION

ECA	FIELD	FACTORY	B/M #	LENGTH	DESCRIPTION	STATUS	MES-NO	STAT	DATE
000	A40773	A41059	58X7704		SHIP GRP	TO BE INST	M04581	WRIT	88-03-11

MACH TYPE	M C	SERIAL NUMBER	SYST TYPE	SYSTEM NUMBER	F/E B/O	W/T CTY	CUST NUMBER	MD CD	MICRO TPC-CD	BOX SHIP	MACHINE SHIP	PLT MFG	PLT CTL	MACHINE STATUS
4956		0020806	4956	0002WRY	0510		0250125				85-11-08	RAL.	RAL.	SWM W/EC

CABLE AND SHIP GROUP SECTION

ECA	FIELD	FACTORY	B/M #	LENGTH	DESCRIPTION	STATUS	MES-NO	STAT	DATE
000	A32915	A41059	6104401		SHIP GROUP 4956	TO BE REM	M04581	WRIT	88-03-11
000	A32915	A41059	6104401		SHIP GROUP 4956	FACT INST			
000	A32915	336758	6844227		PROGRAM 8-LINE COMM	FACT INST			

ECA HISTORY SECTION N/A = ECA NOT ASSIGNED EC PROD PRAC LEVEL = 0355 (MRS)

ECA	EC NO	ECA STATUS	FLD	B/M	EIT	QTY	FCSI	DATE
003	998313	NOT REQUIRED						
008	331660	NOT REQUIRED						
010	A03092	NOT REQUIRED						
012	A08038	NOT REQUIRED						
015	A08027	NOT REQUIRED						
017	A10914	NOT REQUIRED						
020	A08043C	NOT REQUIRED						
021	A10851	NOT REQUIRED						
022	A23089	NOT REQUIRED						
023	A11031	NOT REQUIRED						
024	331737A	NOT REQUIRED						
028	A10984	NOT REQUIRED						
029 *	A11030	NOT REQUIRED						
031	A23241	NOT REQUIRED						
036	A23087	NOT REQUIRED						
038	A32916	NOT REQUIRED						
043	A33065	NOT REQUIRED						
044	A33015	NOT REQUIRED						
045	A33070	NOT REQUIRED						
046	A08063	NOT REQUIRED						
051	A33003	NOT REQUIRED						
052	A40857	NOT REQUIRED						
053	A40614A	NOT REQUIRED						
056	A40874	NOT REQUIRED						
060	A71542	NOT REQUIRED						
061	A71517	OPTIONAL CHG NOT INST						
N/A	A00048	INSTALLED						
N/A	A03065	NOT REQUIRED						
N/A	A03137	NOT REQUIRED						
N/A	A03143	NOT REQUIRED						
N/A	A03182A	NOT REQUIRED						
N/A	A07945	NOT REQUIRED						
N/A	A07998	NOT REQUIRED						
N/A	A08003	NOT REQUIRED						
N/A	A08023	NOT REQUIRED						
N/A	A10900	NOT REQUIRED						
N/A	A10909	NOT REQUIRED						
N/A	A10911	NOT REQUIRED						
N/A	A10916A	NOT REQUIRED						
N/A	A10936	NOT REQUIRED						

MACH TYPE	M C	SERIAL NUMBER	SYST TYPE	SYSTEM NUMBER	F/E B/O	W/T CTY	CUST NUMBER	MD CD	MICRO TPC-CD	BOX SHIP	MACHINE SHIP	PLT MFG	PLT CTL	MACHINE STATUS SWM	W/EC
4956		0020806	4956	0002WRY	0510		0250125				85-11-08	RAL.	RAL.		

ECA HISTORY SECTION N/A = ECA NOT ASSIGNED EC PROD PRAC LEVEL = 0355 (MRS)

ECA	EC NO	ECA STATUS	FLD	B/M	EIT	QTY	FCSI	DATE
N/A	A23063	NOT REQUIRED						
N/A	A23079	NOT REQUIRED						
N/A	A23096	INSTALLED						
N/A	A23101	NOT REQUIRED						
N/A	A23161	NOT REQUIRED						
N/A	A23164	NOT REQUIRED						
N/A	A23173	NOT REQUIRED						
N/A	A23198	NOT REQUIRED						
N/A	A23242	NOT REQUIRED						
N/A	A32915	INSTALLED						
N/A	A33066	OPTIONAL CHG NOT INST						
N/A	A33077	NOT REQUIRED						
N/A	A40740	OPTIONAL CHG NOT INST						
N/A	A40862	NOT REQUIRED						
N/A	A40866	NOT REQUIRED						
N/A	A40867	OPTIONAL CHG NOT INST						
N/A	A41061	OPTIONAL CHG NOT INST						
N/A	A71494	OPTIONAL CHG NOT INST						
N/A	323259	NOT REQUIRED						
N/A	323266	NOT REQUIRED						
N/A	323396	NOT REQUIRED						
N/A	326761	NOT REQUIRED						
N/A	326765	INSTALLED						
N/A	326769	NOT REQUIRED						
N/A	326794	NOT REQUIRED						
N/A	326888	INSTALLED						
N/A	327619	NOT REQUIRED						
N/A	327620	NOT REQUIRED						
N/A	329779	NOT REQUIRED						
N/A	329789	NOT REQUIRED						
N/A	331641	NOT REQUIRED						
N/A	331653	NOT REQUIRED						
N/A	334596D	NOT REQUIRED						
N/A	334603	NOT REQUIRED						
N/A	336618	NOT REQUIRED						
N/A	336647	NOT REQUIRED						
N/A	336673	NOT REQUIRED						
N/A	336711	NOT REQUIRED						
N/A	337313	NOT REQUIRED						
N/A	337369	NOT REQUIRED						
N/A	337376	INSTALLED						
N/A	375094	INSTALLED						
N/A	375147	NOT REQUIRED						
N/A	375158	NOT REQUIRED						
N/A	375200	NOT REQUIRED						

MACH TYPE	M C	SERIAL NUMBER	SYST TYPE	SYSTEM NUMBER	F/E B/O	W/T CTY	CUST NUMBER	MD CD	MICRO TPC-CD	BOX SHIP	MACHINE SHIP	PLT MFG	PLT CTL	MACHINE STATUS SWM	W/EC
4956		0020806	4956	0002WRY	0510		0250125				85-11-08	RAL.	RAL.		

ECA HISTORY SECTION

N/A = ECA NOT ASSIGNED EC PROD PRAC LEVEL = 0355 (MRS)

ECA	EC NO	ECA STATUS	FLD B/M	EIT	QTY	FCSI	DATE
N/A	375201	NOT REQUIRED					
N/A	375244	NOT REQUIRED					
N/A	375321	NOT REQUIRED					
N/A	375322	NOT REQUIRED					
N/A	375352	NOT REQUIRED					
N/A	375357	NOT REQUIRED					
N/A	375357H	NOT REQUIRED					
N/A	375376	NOT REQUIRED					
N/A	375384	NOT REQUIRED					
N/A	375393	NOT REQUIRED					
N/A	375397	NOT REQUIRED					
N/A	375401	NOT REQUIRED					
N/A	375420	NOT REQUIRED					
N/A	375427	NOT REQUIRED					
N/A	375428	NOT REQUIRED					
N/A	375465	INSTALLED					
N/A	375469	NOT REQUIRED					
N/A	375474	NOT REQUIRED					
N/A	375475	NOT REQUIRED					
N/A	375482	NOT REQUIRED					
N/A	375511	NOT REQUIRED					
N/A	375515	NOT REQUIRED					
N/A	375542	NOT REQUIRED					
N/A	375603	NOT REQUIRED					
N/A	375609	NOT REQUIRED					
N/A	375613	NOT REQUIRED					
N/A	375654	NOT REQUIRED					
N/A	375655	NOT REQUIRED					
N/A	375656	NOT REQUIRED					
N/A	375662	NOT REQUIRED					
N/A	375664	NOT REQUIRED					
N/A	375666	NOT REQUIRED					
N/A	375694	NOT REQUIRED					
N/A	375700	INSTALLED					
N/A	375704	NOT REQUIRED					
N/A	375809	NOT REQUIRED					
N/A	375823	NOT REQUIRED					
N/A	386846	NOT REQUIRED					
N/A	466759B	NOT REQUIRED					
N/A	466805	NOT REQUIRED					
N/A	466830	NOT REQUIRED					
N/A	466880	NOT REQUIRED					
N/A	466907	NOT REQUIRED					
N/A	466924	NOT REQUIRED					
N/A	466957	NOT REQUIRED					

MACH TYPE	M C	SERIAL NUMBER	SYST TYPE	SYSTEM NUMBER	F/E B/O	W/T CTY	CUST NUMBER	MD CD	MICRO TPC-CD	BOX SHIP	MACHINE SHIP	PLT MFG	PLT CTL	MACHINE STATUS SWM	W/EC
4956		0020806	4956	0002WRY	0510		0250125				85-11-08	RAL.	RAL.		

ECA HISTORY SECTION

N/A = ECA NOT ASSIGNED EC PROD PRAC LEVEL = 0355 (MRS)

ECA	EC NO	ECA STATUS	FLD B/M	EIT	QTY	FCSI	DATE
N/A	466980	NOT REQUIRED					
N/A	467013	NOT REQUIRED					
N/A	467032	NOT REQUIRED					
N/A	467043	NOT REQUIRED					
N/A	467105	NOT REQUIRED					
N/A	755393	NOT REQUIRED					
N/A	864314	NOT REQUIRED					
N/A	864399	NOT REQUIRED					
N/A	864529	NOT REQUIRED					
N/A	864534	NOT REQUIRED					
N/A	864591	INSTALLED					
N/A	864647	NOT REQUIRED					
N/A	864724	NOT REQUIRED					
N/A	864728	NOT REQUIRED					
N/A	864770	NOT REQUIRED					
N/A	869314	NOT REQUIRED					
N/A	869321	NOT REQUIRED					
N/A	869416	NOT REQUIRED					
N/A	869417	NOT REQUIRED					
N/A	869448	NOT REQUIRED					
N/A	869519	NOT REQUIRED					
N/A	869536	NOT REQUIRED					
N/A	869549	NOT REQUIRED					
N/A	869592	NOT REQUIRED					
N/A	869618	NOT REQUIRED					
N/A	869712	NOT REQUIRED					
N/A	869713	INSTALLED					
N/A	869719	NOT REQUIRED					
N/A	876741	NOT REQUIRED					
N/A	876784	NOT REQUIRED					
N/A	876814	NOT REQUIRED					
N/A	876817	NOT REQUIRED					
N/A	876876	NOT REQUIRED					
N/A	876895	INSTALLED					
N/A	876907	NOT REQUIRED					
N/A	876916	NOT REQUIRED					
N/A	876920	NOT REQUIRED					
N/A	876993	NOT REQUIRED					
N/A	877036	NOT REQUIRED					
N/A	877041	NOT REQUIRED					
N/A	877048	NOT REQUIRED					
N/A	877049	NOT REQUIRED					
N/A	877170	NOT REQUIRED					
N/A	881274	NOT REQUIRED					
N/A	987681	NOT REQUIRED					

MACH TYPE	M C	SERIAL NUMBER	SYST TYPE	SYSTEM NUMBER	F/E B/O	W/T CTY	CUST NUMBER	MD CD	MICRO TPC-CD	BOX SHIP	MACHINE SHIP	PLT MFG	PLT CTL	MACHINE STATUS SWM	W/EC
4956		0020806	4956	0002WRY	0510		0250125				85-11-08	RAL.	RAL.		

ECA HISTORY SECTION N/A = ECA NOT ASSIGNED EC PROD PRAC LEVEL = 0355 (MRS)

ECA	EC NO	ECA STATUS	FLD B/M	EIT	QTY	FCSI	DATE
N/A	987700	NOT REQUIRED					
N/A	987853	NOT REQUIRED					
N/A	987928	NOT REQUIRED					
N/A	987965	INSTALLED					
N/A	987967	NOT REQUIRED					
N/A	988042	INSTALLED					
N/A	988060	NOT REQUIRED					
N/A	988093	NOT REQUIRED					
N/A	994359	NOT REQUIRED					
N/A	994399	NOT REQUIRED					
N/A	994400	NOT REQUIRED					
N/A	994418	NOT REQUIRED					
N/A	997238	NOT REQUIRED					
N/A	998314	INSTALLED					

INSTALLED REA'S

ECA	EC NO	REA#	AFFECTS BASIC	AFFECTS BM NO
		2712899	YES	
N/A	A32924	2722954	NO	6042239
		2723032	NO	6104401
		2723184	NO	6523804
N/A	A41061	2723190	NO	58X7704
N/A	A41061	2723190	NO	6104401
N/A	A41061	2350830	NO	58X7704
N/A	A41061	2350830	NO	6104401
N/A	A41061	2350699	NO	58X7704
N/A	A41061	2350699	NO	6104401
N/A	A41061	2350700	NO	58X7704
N/A	A41061	2350700	NO	6104401
N/A	A41061	2350719	NO	58X7704
N/A	A41061	2350719	NO	6104401
N/A	A41061	2350729	NO	58X7704
N/A	A41061	2350729	NO	6104401
N/A	A41061	2350810	NO	58X7704
N/A	A41061	2350810	NO	6104401
N/A	A41061	2350687	NO	58X7704
N/A	A41061	2350687	NO	6104401
N/A	A41061	2350829	NO	58X7704
N/A	A41061	2350829	NO	6104401
N/A	A41061	2350684	NO	58X7704
N/A	A41061	2350684	NO	6104401
N/A	A71494	2723217	NO	58X7704
N/A	A71494	2723217	NO	6104401
N/A	A71494	2350930	NO	58X7704
N/A	A71494	2350930	NO	6104401
N/A	A71494	2351071	NO	58X7704

MACH TYPE	M C	SERIAL NUMBER	SYST TYPE	SYSTEM NUMBER	F/E B/O	W/T CTY	CUST NUMBER	MD CD	MICRO TPC-CD	BOX SHIP	MACHINE SHIP	PLT MFG	PLT CTL	MACHINE STATUS SWM	W/EC
4956		0020806	4956	0002WRY	0510		0250125				85-11-08	RAL.	RAL.		

INSTALLED REA'S

ECA	EC NO	REA#	AFFECTS BASIC	AFFECTS BM NO
N/A	A71494	2351071	NO	6104401
061	A71517	2351113	NO	58X7704
061	A71517	2351113	NO	6104401
061	A71517	2351144	NO	58X7704
061	A71517	2351144	NO	6104401
061	A71517	2351145	NO	58X7704
061	A71517	2351145	NO	6104401
061	A71517	2351170	NO	58X7704
061	A71517	2351170	NO	6104401
		2723253	NO	58X7704
		2723253	NO	6104401

MACH TYPE	M C	SERIAL NUMBER	SYST TYPE	SYSTEM NUMBER	F/E B/O	W/T CTY	CUST NUMBER	MD CD	MICRO TPC-CD	BOX SHIP	MACHINE SHIP	PLT MFG	PLT CTL	MACHINE STATUS
4956		0020806	4956	0002WRY	0406		0278800			85/11/08		BOCA	BOCA	FACTORY

BASIC ECA.EC	FACTORY EC	SALES MOD	PLANT ORDER	HARD CARD
000.	012345	E00	14VBJT	002

MACHINE DEVICE/RPQ CONFIGURATION

DEVICE/RPQ	DEVICE NAME	QTY	STATUS
2095		1	FACTORY INST
2096		2	FACTORY INST
3595		1	FACTORY INST
5655		1	FACTORY INST
6331		1	FACTORY INST
9001		1	FACTORY INST
9031		1	FACTORY INST
9164		1	FACTORY INST
9182		1	FACTORY INST
9241		1	FACTORY INST
9902		1	FACTORY INST

STANDARD FEATURE SECTION

ECA	FIELD	FACTORY FEATURE BM	FTR-ASN	FEATURE NAME	STATUS	MES-NO STAT	DATE
000	869532	0000001		UNITED STATES	FACT INST		
000	111111	0008010		JUMPER FEATURE	FACT INST		
000	869532	0009001		3RD.PARTY PARTICIPNT	FACT INST		
000	869532	0009031		FRT.END PROC=DPD SYS	FACT INST		
000	467030	0009164		PRI IPL FIRST DRIVE	FACT INST		
000	467030	0009182		10R2 DRIVES ATTACHED	FACT INST		
000	467030	0009241		SUBSYSTEM NUMBER	FACT INST		
000	578267	1111119		208V 60HZ 1PH	FACT INST		
000	578478B 755143	4411315		6FT CD 208/230V 60HZ	FACT INST		
000	467030 334649	4772195		BASIC DUMMY FEA	FACT INST		
000	3231518 3231518	6031004		VOLTAGE GRP HI	FACT INST		
019	337376 A08044	6042239		4967 ATTACH	FACT INST		
000	A32988	6104400		ELEC/MECH FINAL ASM	FACT INST		
000	A23019 A23019	6407925		512K STORAGE CD. FAC	FACT INST		
000	869490 467083	6826816		PROGRM CNSL ENGLISH	FACT INST		
040	A23096 876942	6837366		PMLC 8 LN CONTROLLER	FACT INST		
000	864591 A08037	6837367		PMLC 4 LINE ADAPTER	FACT INST		
000	864591 A08037	6837367		PMLC 4 LINE ADAPTER	FACT INST		
000	012345 467083	6838156		WARNING LABEL-ENG	FACT INST		
000	375438 375438	6840832		DATA SET EIA WRAP	FACT INST		
000	375438 375438	6840833		DIRECT CONNECT WRAP	FACT INST		
000	869490	6844356		BASIC CONSOLE	FACT INST		
000	335527 335527	8568610		FEATURE B/M	FACT INST		
000	337340 A10910	8693020		512K STORAGE ADD	FACT INST		

CABLE AND SHIP GROUP SECTION

ECA	FIELD	FACTORY	B/M #	LENGTH	DESCRIPTION	STATUS	MES-NO STAT	DATE
042	A32915	A23163	6104401		SHIP GROUP 4956-E00	FACT INST		
042	A32915	336758	6844227		PROGRAM 8-LINE COMM	FACT INST		

FACTORY EC SECTION

EC NO	STATUS
A03075	INSTALLED
A08037	INSTALLED
A08044	INSTALLED
A10910	INSTALLED
A10916B	INSTALLED
A10982	INSTALLED
A10990	INSTALLED
A11022	INSTALLED
A23019	INSTALLED
A23163	INSTALLED
A23166	INSTALLED
A32988	NOT INST
3231518	INSTALLED
329853	INSTALLED
329912	INSTALLED
329912B	INSTALLED
334649	INSTALLED
334663	INSTALLED
334663B	INSTALLED
335432	INSTALLED
335527	INSTALLED
336691	INSTALLED
336758	INSTALLED
337418	INSTALLED
337443	INSTALLED
3748438	INSTALLED
375438	INSTALLED
375489	INSTALLED

MACH TYPE	M C*	SERIAL NUMBER	SYST TYPE	SYSTEM NUMBER	F/E B/O	W/T CTY	CUST NUMBER	MD CD	MICRO TPC-CD	BOX SHIP	MACHINE SHIP	PLT MFG	PLT CTL	MACHINE STATUS
4956		0020806	4956	0002WRY	0406		0278800			85/11/08		BOCA	BOCA	FACTORY

FACTORY EC SECTION

EC NO	STATUS
375589	INSTALLED
375673	INSTALLED
375702	INSTALLED
375743	INSTALLED
375810	INSTALLED
467083	INSTALLED
755422	INSTALLED
755485	INSTALLED
869577	INSTALLED
876942	INSTALLED
9877118	INSTALLED
994266	INSTALLED

ECA HISTORY SECTION N/A = ECA NOT ASSIGNED EC PROD PRAC LEVEL = 0355 (MRS)

ECA	EC NO	ECA STATUS	FLD B/M	EIT	QTY	FCSI	DATE
003	998313	NOT REQUIRED					
008	331660	NOT REQUIRED					
010	A03092	NOT REQUIRED					
012	A08038	NOT REQUIRED					
015	A08027	NOT REQUIRED					
017	A10914	NOT REQUIRED					
019	337376	INSTALLED					
020	A08043C	NOT REQUIRED					
021	A10851	NOT REQUIRED					
022	A23089	NOT REQUIRED					
024	331737A	NOT REQUIRED					
025	A23101	INSTALLED					
026	A23161	INSTALLED					
027	A23198	NOT REQUIRED					
028	A10984	NOT REQUIRED					
029	A11030	NOT REQUIRED					
031	A23241	INSTALLED					
036	A23087	NOT REQUIRED					
037	A10916A	INSTALLED					
038	A32916	NOT REQUIRED					
040	A23096	INSTALLED					
042	A32915	INSTALLED					
N/A	A00048	INSTALLED					
N/A	A03065	NOT REQUIRED					
N/A	A03137	NOT REQUIRED					
N/A	A03143	NOT REQUIRED					
N/A	A03182A	NOT REQUIRED					
N/A	A07945	NOT REQUIRED					
N/A	A07998	NOT REQUIRED					
N/A	A08003	NOT REQUIRED					
N/A	A08023	NOT REQUIRED					
N/A	A08063	NOT REQUIRED					
N/A	A10900	NOT REQUIRED					
N/A	A10909	NOT REQUIRED					
N/A	A10911	NOT REQUIRED					
N/A	A10936	NOT REQUIRED					
N/A	A11031	NOT REQUIRED					
N/A	A23063	NOT REQUIRED					
N/A	A23079	NOT REQUIRED					
N/A	A23164	NOT REQUIRED					
N/A	A23173	INSTALLED					
N/A	A23242	NOT REQUIRED					
N/A	A33015	NOT REQUIRED					
N/A	A33065	NOT REQUIRED					
N/A	A33070	NOT REQUIRED					
N/A	323259	NOT REQUIRED					
N/A	323266	NOT REQUIRED					
N/A	323396	NOT REQUIRED					
N/A	326761	NOT REQUIRED					
N/A	326765	INSTALLED					
N/A	326769	NOT REQUIRED					
N/A	326794	NOT REQUIRED					
N/A	326888	INSTALLED					
N/A	327619	NOT REQUIRED					
N/A	327620	NOT REQUIRED					
N/A	329779	NOT REQUIRED					
N/A	329789	NOT REQUIRED					
N/A	331641	NOT REQUIRED					
N/A	331653	NOT REQUIRED					
N/A	334596D	NOT REQUIRED					
N/A	334603	NOT REQUIRED					

MACH TYPE	M C	SERIAL NUMBER	SYST TYPE	SYSTEM NUMBER	F/E B/O	W/T CTY	CUST NUMBER	MD CD	MICRO TPC-CD	BOX SHIP	MACHINE SHIP	PLT MFG	PLT CTL	MACHINE STATUS
4956		0020806	4956	0002WRY	0406		0278800			85/11/08		BOCA	BOCA	FACTORY

ECA HISTORY SECTION N/A = ECA NOT ASSIGNED EC PROD PRAC LEVEL = 0355 (MRS)

ECA	EC NO	ECA STATUS	FLD B/M	EIT	QTY	FCSI	DATE
N/A	336618	NOT REQUIRED					
N/A	336647	NOT REQUIRED					
N/A	336673	NOT REQUIRED					
N/A	336711	NOT REQUIRED					
N/A	337313	NOT REQUIRED					
N/A	337369	NOT REQUIRED					
N/A	375040	NOT REQUIRED					
N/A	375094	INSTALLED					
N/A	375147	NOT REQUIRED					
N/A	375158	NOT REQUIRED					
N/A	375200	NOT REQUIRED					
N/A	375201	NOT REQUIRED					
N/A	375244	NOT REQUIRED					
N/A	375321	NOT REQUIRED					
N/A	375322	NOT REQUIRED					
N/A	375333	NOT REQUIRED					
N/A	375352	NOT REQUIRED					
N/A	375357	NOT REQUIRED					
N/A	375357H	NOT REQUIRED					
N/A	375376	NOT REQUIRED					
N/A	375384	NOT REQUIRED					
N/A	375393	NOT REQUIRED					
N/A	375397	NOT REQUIRED					
N/A	375401	NOT REQUIRED					
N/A	375420	NOT REQUIRED					
N/A	375427	NOT REQUIRED					
N/A	375428	NOT REQUIRED					
N/A	375465	INSTALLED					
N/A	375469	NOT REQUIRED					
N/A	375474	NOT REQUIRED					
N/A	375475	NOT REQUIRED					
N/A	375482	NOT REQUIRED					
N/A	375511	NOT REQUIRED					
N/A	375515	NOT REQUIRED					
N/A	375542	NOT REQUIRED					
N/A	375603	NOT REQUIRED					
N/A	375609	NOT REQUIRED					
N/A	375613	NOT REQUIRED					
N/A	375654	NOT REQUIRED					
N/A	375655	NOT REQUIRED					
N/A	375656	NOT REQUIRED					
N/A	375662	NOT REQUIRED					
N/A	375664	NOT REQUIRED					
N/A	375666	NOT REQUIRED					
N/A	375694	NOT REQUIRED					
N/A	375700	INSTALLED					
N/A	375704	NOT REQUIRED					
N/A	375809	NOT REQUIRED					
N/A	375823	NOT REQUIRED					
N/A	386846	NOT REQUIRED					
N/A	466759B	NOT REQUIRED					
N/A	466805	NOT REQUIRED					
N/A	466830	NOT REQUIRED					
N/A	466880	NOT REQUIRED					
N/A	466907	NOT REQUIRED					
N/A	466924	NOT REQUIRED					
N/A	466957	NOT REQUIRED					
N/A	466980	NOT REQUIRED					
N/A	467013	NOT REQUIRED					
N/A	467032	NOT REQUIRED					
N/A	467043	NOT REQUIRED					
N/A	467105	NOT REQUIRED					
N/A	755393	NOT REQUIRED					
N/A	864314	NOT REQUIRED					
N/A	864399	NOT REQUIRED					
N/A	864529	NOT REQUIRED					
N/A	864534	NOT REQUIRED					
N/A	864591	INSTALLED					
N/A	864647	NOT REQUIRED					
N/A	864660	NOT REQUIRED					
N/A	864724	NOT REQUIRED					
N/A	864728	NOT REQUIRED					
N/A	864770	NOT REQUIRED					
N/A	869314	NOT REQUIRED					
N/A	869321	NOT REQUIRED					
N/A	869378	NOT REQUIRED					
N/A	869416	NOT REQUIRED					

MACH TYPE	M C	SERIAL NUMBER	SYST TYPE	SYSTEM NUMBER	F/E B/D	W/T CTY	CUST NUMBER	MD CD	MICRO TPC-CD	BOX SHIP	MACHINE SHIP	PLT MFG	PLT CTL	MACHINE STATUS
4956		0020806	4956	0002WRY	0406		0278800			85/11/08		BOCA	BOCA	FACTORY

ECA HISTORY SECTION N/A = ECA NOT ASSIGNED EC PROD PRAC LEVEL = 0355 (MRS)

ECA	EC NO	ECA STATUS	FLD B/M	EIT	QTY	FCSI	DATE
N/A	869417	NOT REQUIRED					
N/A	869448	NOT REQUIRED					
N/A	869519	NOT REQUIRED					
N/A	869536	NOT REQUIRED					
N/A	869549	NOT REQUIRED					
N/A	869592	NOT REQUIRED					
N/A	869618	NOT REQUIRED					
N/A	869712	NOT REQUIRED					
N/A	869713	INSTALLED					
N/A	869719	NOT REQUIRED					
N/A	876741	NOT REQUIRED					
N/A	876784	NOT REQUIRED					
N/A	876814	NOT REQUIRED					
N/A	876817	NOT REQUIRED					
N/A	876876	NOT REQUIRED					
N/A	876895	INSTALLED					
N/A	876907	NOT REQUIRED					
N/A	876916	NOT REQUIRED					
N/A	876920	NOT REQUIRED					
N/A	876993	NOT REQUIRED					
N/A	877036	NOT REQUIRED					
N/A	877041	NOT REQUIRED					
N/A	877048	NOT REQUIRED					
N/A	877049	NOT REQUIRED					
N/A	877170	NOT REQUIRED					
N/A	881274	NOT REQUIRED					
N/A	987681	NOT REQUIRED					
N/A	987700	NOT REQUIRED					
N/A	987853	NOT REQUIRED					
N/A	987928	NOT REQUIRED					
N/A	987965	INSTALLED					
N/A	987967	NOT REQUIRED					
N/A	988042	INSTALLED					
N/A	988060	NOT REQUIRED					
N/A	988093	NOT REQUIRED					
N/A	994359	NOT REQUIRED					
N/A	994399	NOT REQUIRED					
N/A	994400	NOT REQUIRED					
N/A	994418	NOT REQUIRED					
N/A	997238	NOT REQUIRED					
N/A	998314	INSTALLED					

INSTALLED REA'S

ECA	EC NO	REA#	AFFECTS BASIC	AFFECTS BM NO
		2712899	YES	
		2722954	NO	6042239
		2723032	NO	6104401

MACH TYPE	M C	SERIAL NUMBER	SYST TYPE	SYSTEM NUMBER	F/E B/O	W/T CTY	CUST NUMBER	MD CD	MICRO TPC-CD	BOX SHIP	MACHINE SHIP	PLT MFG	PLT CTL	MACHINE STATUS
4967		0023579	4956	0002WRY	0406		0278800			85/11/08		BOCA	BOCA	FACTORY

BASIC ECA.EC	FACTORY EC	SALES MOD	PLANT ORDER	HARD CARD
000.	012345	2CA	14VBJV	002

MACHINE DEVICE/RPQ CONFIGURATION

DEVICE/RPQ	DEVICE NAME	QTY	STATUS
9241		1	FACTORY INST
9902		1	FACTORY INST

STANDARD FEATURE SECTION

ECA	FIELD	FACTORY	FEATURE BM	FTR-ASN	FEATURE NAME	STATUS	MES-NO	STAT	DATE
000	467017		0000001		CNTRY UNITED STATES	FACT INST			
000	467017		0009241		SUBSYSTEM ATTACH	FACT INST			
000	467017		1111119		208V 60HZ 1PH	FACT INST			
001	337376	A23163	4750155		MAINTENANCE PACKAGE	FACT INST			
000	467017	466844	6042192		LABEL WARN ENGLISH	FACT INST			
000	467017	998351	6042206		BASIC UNIT	FACT INST			
000	467017	466844H	6042219		6FT PWR CD H/VT 60HZ	FACT INST			
000	467017	335494	6042287		60HZ HIGH/VOLT	FACT INST			
000	467017	337318	6195363		B/U HI VOLT 60HZ 1PH	FACT INST			
000	467017	337318	6195379		ELEC/MECH FINAL ASM	FACT INST			
000	467017	336703	6195381		LANGUAGE GRP ENGLISH	FACT INST			

CABLE AND SHIP GROUP SECTION

ECA	FIELD	FACTORY	B/M #	LENGTH	DESCRIPTION	STATUS	MES-NO	STAT	DATE
001	337376	A23163	6195380		SHIP GROUP	FACT INST			

FACTORY EC SECTION

EC NO	STATUS
A03075	INSTALLED
A03140	INSTALLED
A08066	INSTALLED
A11022	INSTALLED
A23163	INSTALLED
329384	INSTALLED
329889	INSTALLED
329889C	INSTALLED
331643	INSTALLED
331646	INSTALLED
334572	INSTALLED
335411	INSTALLED
335494	INSTALLED
336620	INSTALLED
336629	INSTALLED
336630	INSTALLED
336650	INSTALLED
336672	INSTALLED
336687	INSTALLED
336688	INSTALLED
336703	INSTALLED
336725	INSTALLED
337318	INSTALLED
337363	INSTALLED
337418	INSTALLED
466844	INSTALLED
881256B	INSTALLED
998351	INSTALLED
998421	INSTALLED

ECA HISTORY SECTION N/A = ECA NOT ASSIGNED EC PROD PRAC LEVEL = 0017 (MRS)

ECA	EC NO	ECA STATUS	FLD B/M	EIT	QTY	FCSI	DATE
001	337376	INSTALLED					
N/A	337369	INSTALLED					

INSTALLED REA'S

ECA	EC NO	REA#	AFFECTS BASIC	AFFECTS BM NO
		2715354	NO	6042287

LOGIC TYPE -0- SYSTEMS DIAGRAMS

PAGE NUM	SH	TITLE	PART NUM	EC NUM	FEATURE B/M OR B/MS
TAB		BINDER TAB	0001635447	326765	.W. 0006104401
AA100		INSTALLATION INSTR	0001633743	A11022	.W. 0006104401
A1100		I/O CABLE CHART	0008326721	329851	.W. 0006104401
A1101		I/O CABLE CHART	0004745798	337376	.W. 0006104401
A1200		3101 TO S/1 INTERFAC	0006840609	329851	.W. 0006104401
A1201		3101 TO S/1 INTERFAC	0006840610	329851	.W. 0006104401
A1202		3101 TO S/1 INTERFAC	0006840611	329851	.W. 0006104401
A4511		DPC WRITE	0006407889	A23166	.W. 0006104401
A4520		CYCLE STEAL	0006060754	A23166	.W. 0006104401
A4522		A4520 NOTES	0006407890	A10990	.W. 0006104401
A4525		H.S. CYCLE STEAL	0004760698	A23166	.W. 0006104401
A4527		A4525 NOTES	0006407891	A10990	.W. 0006104401
A4531		DPC READ	0006407892	A23166	.W. 0006104401
A6300		PROCESSOR BOARD	0006104426	A32915	.W. 0006104401
A6306		PROCESSOR JUMPERS	0006104427	A23101	.W. 0006104401
A6315		STORAGE JUMPERS	0006407888	A10990	.W. 0006104401
PA110		BASIC CNSL	0004414121	A23101	.W. 0006104401
PA200		FULL FUNC CNSL	0006042411	337369	.W. 0006104401
PA205		FULL FUNC CNSL	0006840369	A10990	.W. 0006104401
SC450		LOGIC	0006839764	375094	.W. 0006844227
SC455		LOGIC	0006839765	326765	.W. 0006844227
SC460		LOGIC	0006839766	375589	.W. 0006844227
SC465		LOGIC	0006839767	987965	.W. 0006844227
SC470		FPMLC CURRENT LOOP	0006841485	987965	.W. 0006844227
SF700		4967 ATTACH CARD	0004750107	A03075	.W. 0006042239
SF701		4967 ATTACH CBL	0004750108	A03075	.W. 0006042239
SF702		4967 CARD JUMP	0004750109	A03075	.W. 0006042239
SF703		4967 CBLS	0004750110	A03075	.W. 0004750155
SF704		4967 CBLS	0004750111	A03075	.W. 0004750155
SF705		4967 CBLS	0004750112	A03075	.W. 0004750155
SF706		4967 DUC BOARD	0004750113	A03075	.W. 0004750155
SF707		4967 DUC BOARD	0004750114	A03075	.W. 0004750155
SF708		4967 DUC BOARD	0004750115	A03075	.W. 0004750155
SF709		PWR,DVC	0004750116	329889	.W. 0004750155
SF710		4967 SERVICE INFO	0006091824	A03075	.W. 0004750155
SF711		4967 SERVICE INFO	0006091825	A03075	.W. 0004750155
SF712		4967 DISK FILE CNTL	0004750117	A03075	.W. 0004750155
SF713		4967 DISK FILE CNTL	0004750118	A03075	.W. 0004750155
SF714		4967 S/1 INTERFACE	0004750119	A03075	.W. 0004750155
SF740		SIG CABLES	0004750130	329889	.W. 0004750155
SF741		AC SCHEM	0004750131	336688	.W. 0004750155
SF742		DC SCHEM	0004750132	336688	.W. 0004750155
SF743		GND DIAGR	0004750133	329889	.W. 0004750155
SF750		4967 CBL INTERFACE	0004750122	A03075	.W. 0004750155
SF751		4967 CBL INTERFACE	0004750123	A03075	.W. 0004750155
SF752		4967 CBL CONTINUITY	0004750124	A03075	.W. 0004750155
SF753		4967 STAR FILE 0	0004750125	A03075	.W. 0004750155
SF754		4967 STAR FILE 1	0004750126	A03075	.W. 0004750155
SF755		4967 STAR FILE 2	0004750127	A03075	.W. 0004750155
SF756		4967 STAR FILE 3	0004750128	A03075	.W. 0004750155
SF757		4967 TAG CBLS	0004750140	329889	.W. 0004750155
SF758		4967 TAG CONN	0004750141	329889	.W. 0004750155
SF759		4967 ACCESS CNTL	0004750142	329889	.W. 0004750155
SF760		4967 ACCESS CNTL	0004750143	329889	.W. 0004750155
SF761		4967 DATA CONVERT	0004750144	329889	.W. 0004750155
SF762		4967 DATA CONVERT	0004750145	329889	.W. 0004750155
SF763		4967 SERVO	0004750146	329889	.W. 0004750155
SF764		4967 CONN TEST PTS	0004750147	329889	.W. 0004750155
SF765		4967 DATA SERVO CBLS	0004750148	329889	.W. 0004750155
SF766		4967 DATA SERVO CONN	0004750149	329889	.W. 0004750155
SF767		4967 DATA CHAN	0004750150	329889	.W. 0004750155
SF768		4967 VCM DRIVE	0004750151	329889	.W. 0004750155
SF769		4967 MTR CNTL	0004750152	336688	.W. 0004750155
SF770		4967 COMPONENTS	0004750153	329889	.W. 0004750155
YA450		AC DIST 415W	0006844420	994400	.W. 0006104401
YA455		PS DETAIL 415W	0006844421	994400	.W. 0006104401
YA460		415W LAYOUT	0006844422	869341C	.W. 0006104401
YA465		PS SCHEM 415W	0006844423	869341C	.W. 0006104401
YA470		415W GROUNDING	0006030962	987893	.W. 0006104401

TOTAL PART NUMBERS THIS VOLUME 69

LOGIC TYPE -0- SYSTEMS DIAGRAMS

PAGE NUM	SH	TITLE	PART NUM	EC NUM	FEATURE B/M OR B/MS
TAB		BINDER TAB	0001635450	326765	.W. 0006104401
00000C		MAP	0006160782	A23101	.W. 0006104401
000001		MAP	0006091758	337376	.W. 0006104401
000016		MAP	0004414042	A32915	.W. 0006104401
000018		MAP	0004414389	337369	.W. 0006104401
000019		MAP	0006069308	A23101	.W. 0006104401
0337E0		MAP	0004745799	337313	.W. 0006104401
043DE0		MAP	0004414329	337313	.W. 0006104401
043EE0		MAP	0006839517	337313	.W. 0006104401
043FE0		MAP	0006299836	337376	.W. 0006104401
0440E0		MAP	0001635452	337313	.W. 0006104401
0441E0		MAP	0008529474	336711	.W. 0006104401
0644E0		MAP	0001635457	337313	.W. 0006104401
0645E0		MAP	0004414330	337313	.W. 0006104401
0848E0		MAP	0001635460	337313	.W. 0006104401
094AE0		MAP	0006839518	337313	.W. 0006104401
094BE0		MAP	0008529471	337313	.W. 0006104401
094DE0		MAP	0006094220	336711	.W. 0006104401
1050E0		MAP	0001635463	336711	.W. 0006104401
1058E0		MAP	0006843284	337313	.W. 0006104401
1059E0		MAP	0006094213	337369	.W. 0006104401
1164E0		MAP	0001635466	337313	.W. 0006104401
1168E0		MAP	0004414112	337313	.W. 0006104401
126AE0		MAP	0006094221	337376	.W. 0006104401
1278E0		MAP	0001635469	336711	.W. 0006104401
137AE0		MAP	0006839519	336711	.W. 0006104401
1378E0		MAP	0006094214	336711	.W. 0006104401
137CE0		MAP	0006094222	336711	.W. 0006104401
16A0E0		MAP	0001635475	336711	.W. 0006104401
16A3E0		MAP	0004414113	336711	.W. 0006104401
16A4E0		MAP	0004414114	336711	.W. 0006104401
19D9E0		MAP	0006160791	A32915	.W. 0006104401
20E0E0		MAP	0004412887	337313	.W. 0006104401
20E4E0		MAP	0006839516	A08003	.W. 0006104401
20E6E0		MAP	0008529468	337313	.W. 0006104401
20E8E0		MAP	0004414115	337313	.W. 0006104401
20E9E0		MAP	0004414116	337313	.W. 0006104401
21EAE0		MAP	0006839515	337313	.W. 0006104401
21EBE0		MAP	0006023557	337313	.W. 0006104401
21EDE0		MAP	0006160785	A23241	.W. 0006104401
21F0E0		MAP	0004414117	337313	.W. 0006104401
21F1E0		MAP	0004414118	337313	.W. 0006104401
21F8E0		MAP	0004414119	337313	.W. 0006104401
21F9E0		MAP	0006094224	337376	.W. 0006104401
22FCE0		MAP	0006023560	337313	.W. 0006104401
22FDE0		MAP	0006160789	A23241	.W. 0006104401

TOTAL PART NUMBERS THIS VOLUME 46

LOGIC TYPE -0- SYSTEMS DIAGRAMS

PAGE NUM	SH	TITLE	PART NUM	EC NUM	FEATURE	B/M OR B/MS
TAB		BINDER TAB	0001635451	326765	.W.	0006104401
SY34-0059		FORM	0002222222	323316	.W.	0006844227
SY34-0091		FORM	0002222222	998287A	.W.	0006104401

TOTAL PART NUMBERS THIS VOLUME 3

LOGIC TYPE -0- SYSTEMS DIAGRAMS

PAGE NUM	SH	TITLE	PART NUM	EC NUM	FEATURE	B/M OR B/MS
TAB		BINDER TAB	0006060797	337376	.W.	0006104401
Z150-0103		PRNTEFORM	0002222222	337376	.W.	0006104401
G150-0334		PRNTEFORM	0002222222	337376	.W.	0006104401
GA34-0152		PRNTEFORM	0002222222	337376	.W.	0006104401
GA34-0160		PRNTEFORM	0002222222	337376	.W.	0006104401
GA34-0227		PRNTEFORM	0002222222	337376	.W.	0004750155
SY34-0230		PRNTEFORM	0002222222	337376	.W.	0006104401
GA34-0246		PRNTEFORM	0002222222	337376	.W.	0006844227
GA34-0289		PRNTEFORM	0002222222	A10990	.W.	0006104401
Z229-8157		PRNTEFORM	0002222222	337376	.W.	0006104401

TOTAL PART NUMBERS THIS VOLUME 10

LOGIC TYPE -0- SYSTEMS DIAGRAMS

PAGE NUM	SH	TITLE	PART NUM	EC NUM	FEATURE	B/M OR B/MS
TAB		BINDER TAB	0006060803	337376	.W.	0006104401
S134-0088		PRNTEFORM	0002222222	337376	.W.	0004750155
S134-0110		PRNTEFORM	0002222222	A10990	.W.	0006104401

TOTAL PART NUMBERS THIS VOLUME 3

LOGIC TYPE -0- SYSTEMS DIAGRAMS

PAGE NUM	SH	TITLE	PART NUM	EC NUM	FEATURE B/M OR B/MS	
01000A		MAP	0006160780	A23101	.W.	0006104401
02002A		SYS ENTRY	0006826693	374831	.W.	0006104401
020020	1	MAP	0001635011	A32915	.W.	0006104401
020021	1	MAP	0006060915	A23101	.W.	0006104401
020022		MAP CONSOLE OUT	0006060916	337369	.W.	0006104401
020023		MAP CONSOLE ALT	0006060917	A32915	.W.	0006104401
020024		MAP IPL ENTER	0006060918	337369	.W.	0006104401
020027		MAP BASIC CNSL	0006060919	A23101	.W.	0006104401
020028		MAP NO DISKT	0006060920	337369	.W.	0006104401
020029		MAP 4993/370	0006060921	337369	.W.	0006104401
020030		MAP CNSL 4978	0006060922	337369	.W.	0006104401
020031		MAP CNSL 3101	0006060923	A32915	.W.	0006104401
02007A		CHANNEL	0006826694	374831	.W.	0006104401
020070		MAP	0001635008	A23101	.W.	0006104401
020071		MAP	0006299840	A32915	.W.	0006104401
020072		MAP	0001635083	A23101	.W.	0006104401
0201AA		IPL	0006826695	374831	.W.	0006104401
020170		MAP	0001635094	A23101	.W.	0006104401
0410AA			0006826696	374831	.W.	0006104401
041071		MAP	0001635176	337369	.W.	0006104401
041072		MAP CNSL TEST	0006060924	A23101	.W.	0006104401
0414AA		POWER	0006826697	374831	.W.	0006104401
041470	1	MAP	0001635214	A23101	.W.	0006104401
041477		415W POWER MAP	0006030932	A23101	.W.	0006104401
041481		MAP PWR MAP	0006042208	337376	.W.	0004750155
0420AA			0006841447	375475	.W.	0006104401
042000		MAP	0006837819	A10990	.W.	0006104401
042070		MAP	0006299841	A32915	.W.	0006104401
042071		MAP	0006060925	A23101	.W.	0006104401
042072		MAP	0006060926	337369	.W.	0006104401
0438AA		TAB	0006826700	374831B	.W.	0006104401
043871		MAP	0001635022	A10990	.W.	0006104401
043881		MAP	0001635006	A23101	.W.	0006104401
043882		MAP	0004412860	A23101	.W.	0006104401
167B70		MAP	0008692892	A03075	.W.	0006042239
167B75		MAP	0008692893	A03075	.W.	0006042239
167B80		MAP	0008692818	A03075	.W.	0006042239
167B90		MAP	0008692897	A03075	.W.	0006042239
28EA00		MAP	0006838095	336758	.W.	0006844227
28EA01		MAP	0006838098	326765	.W.	0006844227
28EA02		MAP	0006838101	326765	.W.	0006844227
28EA03		MAP	0006838104	336758	.W.	0006844227
28EA04		MAP	0006838107	336758	.W.	0006844227
28EA05		MAP	0006838110	336758	.W.	0006844227
28EA10		MAP	0006838113	A32915	.W.	0006844227
28EA12		MAP	0006838116	337376	.W.	0006844227
28EA14		MAP	0006838119	326765	.W.	0006844227
28EA15		MAP	0006838122	336758	.W.	0006844227
28EA20		MAP	0006838125	336758	.W.	0006844227
28EA21		MAP	0006838128	326765	.W.	0006844227
28EA40		MAP	0006838131	998314	.W.	0006844227
28EA41		MAP	0006838134	326765	.W.	0006844227
28EA42		MAP	0006838148	337376	.W.	0006844227
28EA44		MAP	0008692927	337376	.W.	0006844227
408AAA		TAB	0006826720	374831B	.W.	0006104401

TOTAL PART NUMBERS THIS VOLUME 55

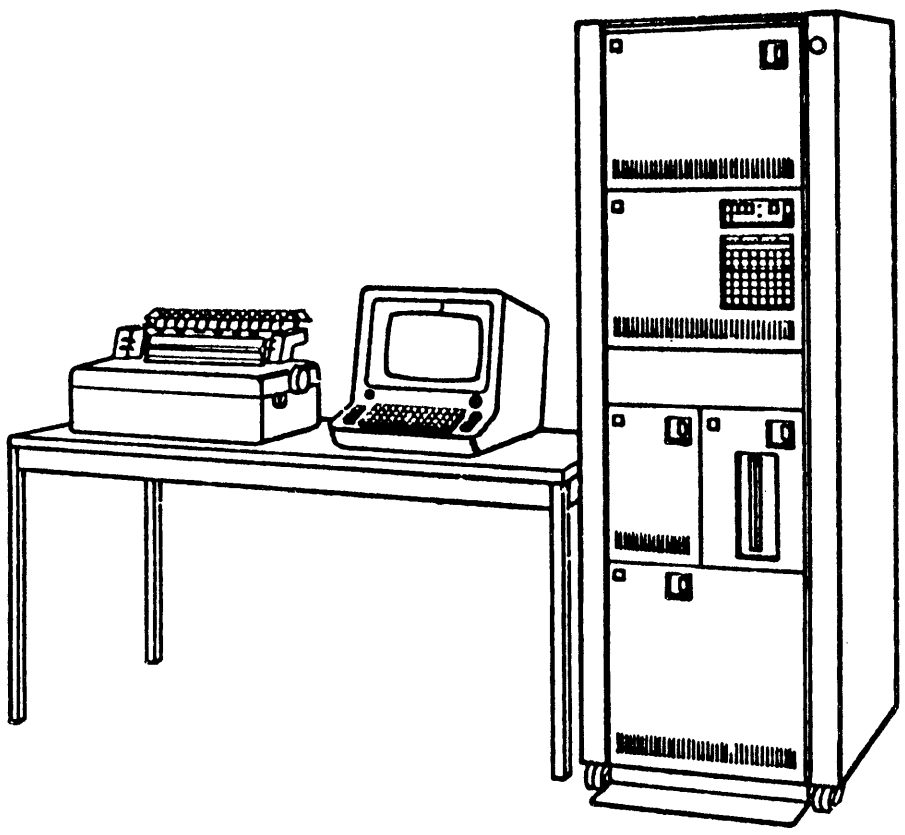
LOGIC TYPE -0- SYSTEMS DIAGRAMS

PAGE NUM	SH	TITLE	PART NUM	EC NUM	FEATURE B/M OR B/MS
SA56E		C.E. SAFETY	0006104407	A10990	.W. 0006104401
AA0008		MAP	0006160781	A32915	.W. 0006104401
A000AA		TAB	0006826722	374831B	.W. 0006104401
A00000		MAP	0008692716	A32915	.W. 0006104401
A10005		MAP	0006846614	A32915	.W. 0006104401
A10010		MAP	0001635010	A23101	.W. 0006104401
A10011		MAP	0006837821	337369	.W. 0006104401
A10012		MAP	0006837822	A23166	.W. 0006104401
A10013		MAP	0006837823	337376	.W. 0006104401
A10014		MAP	0006837824	337369	.W. 0006104401
A10025		MAP	0006842601	881278B	.W. 0006104401
A10026		MAP	0006847171	336711	.W. 0006104401
B03880		MAP	0001635007	A32915	.W. 0006104401
C0009A		TAB	0006826723	374831B	.W. 0006104401
C02000		MAP	0008327116	A32915	.W. 0006104401
C04FAA		TAB	0006826724	374831B	.W. 0006104401
F07B00		MAP PROLOG	0008692891	337376	.W. 0006042239
F08AAA		TAB	0006826727	374831B	.W. 0006104401
J0AAAA		TAB	0006826725	374831B	.W. 0006104401
J0EAAA		TAB	0006826726	374831B	.W. 0006104401
N0EA00		MAP	0006838137	337376	.W. 0006844227
SA00XX		C.E. SAFETY	0006042242	337418	.W. 0004750155
STAAAA		TAB	0006826692	374831B	.W. 0006104401
SY34-0249		PRNTEFORM	0002222222	337376	.W. 0004750155
SY34-0343		PRNTEFORM	0002222222	A10990	.W. 0006104401

TOTAL PART NUMBERS THIS VOLUME 25
TOTAL PART NUMBERS THIS SYSTEM 211

ENG. CHANGE NO. 323200 327517 327517B A03140 A08066 A11022 A40740 A40870 A41059
DATE OF CHANGE 23NOV81 08JAN82 12MAR82 23MAY83 18AUG83 01AUG84 20MAR86 06MAY86 10OCT86

WRITER: R. QUINN CHECKER: F. KIRALY APPROVER: C. J. PARSONS



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ENG. CHANGE NO. 323200 327517 327517B A03140 A08066 A11022 A40740 A40870 A41059
DATE OF CHANGE 23NOV81 08JAN82 12MAR82 23MAY83 18AUG83 01AUG84 20MAR86 06MAY86 10OCT86

PREFACE

THIS MANUAL CONTAINS INFORMATION WHICH IS NECESSARY FOR THE INSTALLATION OF I.B.M. MACHINES OF THE SERIES/1 GROUP AND PUBLICATIONS. THE SECTIONS AND THE STEPS WITHIN THE SECTIONS ARE ARRANGED SO THAT THE INSTALLER CAN PROCEED LOGICALLY THROUGH THE ENTIRE INSTALLATION SEQUENCE REGARDLESS OF THE CONFIGURATION INVOLVED.

IF A PROCEDURE IS NOT SUITABLE FOR YOUR CONFIGURATION, CONTINUE TO THE NEXT PROCEDURE. IF YOU HAVE MORE THAN ONE UNIT OF A GIVEN TYPE, REPEAT THE PROCEDURES UNTIL YOU HAVE COMPLETED THE INSTALLATION OF THOSE UNITS.

FOR PROPER PERFORMANCE OF THE IBM MACHINES, IT IS RECOMMENDED THAT THE OEM ENCLOSURE BE METALLIC AND MEET U.L. 478 (OR EQUIVALENT) MECHANICAL REQUIREMENTS WITH THE RECOMMENDED SYSTEM GROUNDING AND SHIELDING TECHNIQUES.

EACH UNIT THAT IS SPECIFICALLY DESIGNED TO BE SUPPORTED AND/OR ENCLOSED BY A SUITABLE RACK STRUCTURE SHOULD BE OF A TYPE WHICH MEETS THE E.I.A. STANDARD. THIS STRUCTURE MUST INCLUDE PROVISION FOR INTERNAL ROUTING OF ANY INTERCONNECTING CABLING BETWEEN TWO OR MORE UNITS. CONFIGURATIONS OF THESE MACHINES WHICH ARE NOT SO ENCLOSED MAY NOT PERFORM ACCORDING TO FUNCTIONAL SPECIFICATION AND MAY NOT COMPLY WITH LOCAL CODES. REQUIREMENTS FOR OEM RACK ENCLOSURE ARE LOCATED IN THE CUSTOMER SITE PREP. MANUAL (GA34-0050).

RACK MOUNTABLE UNITS ARE TO BE INSTALLED ACCORDING TO THE UNIT INSTALLATION INSTRUCTIONS ACCOMPANYING EACH UNIT. (IF NOT PREVIOUSLY IBM PLANT INSTALLED).

NON-RACK MOUNTED I/O UNITS ARE TO BE INSTALLED ACCORDING TO THE UNIT INSTALLATION INSTRUCTIONS ACCOMPANYING EACH UNIT. THE INSTALLER SHOULD READ THESE INSTALLATION INSTRUCTIONS BEFORE BEGINNING THE ACTUAL INSTALLATION.

CHECK WITH THE USER'S SITE PLANNER TO ENSURE THAT SITE PREPARATION (SERVICE OUTLETS, VOLTAGE, PHASE, ROTATION, GROUNDING, AND SIMILAR CONDITIONS) HAVE BEEN DONE AS NEEDED.

SAFETY

GENERAL

PERSONAL SAFETY CANNOT BE OVEREMPHASIZED. SERVICE PERSONNEL MUST NOT WORK ALONE WHEN PERFORMING ANY MAINTENANCE OR REPAIR WITH POWER ON. AT LEAST TWO PERSONS SHOULD BE PRESENT WHENEVER ANY WORK IS DONE ON A MACHINE WITH POWER ON. SERVICE PERSONNEL SHOULD WEAR SAFETY GLASSES DURING ANY MAINTENANCE REPAIR OPERATION

FIRE EXTINGUISHERS SHOULD BE AVAILABLE IN EACH ROOM WHERE THERE ARE SYSTEM COMPONENTS. EXTINGUISHERS SHOULD BE OF THE CO2 TYPE, WHICH ARE RECOMMENDED FOR ELECTRICAL FIRES.

REPLACE ANY SAFETY COVERS THAT HAVE BEEN REMOVED BEFORE GOING ON TO ANOTHER OPERATION. HAZARDOUS VOLTAGES ARE PRESENT IN THIS EQUIPMENT; FORGETFULNESS COULD BE FATAL. DON'T USE UNGROUNDED TOOLS OR TEST EQUIPMENT. THEY CAN KILL!

PERSONAL SAFETY

EXPOSURE TO ENVIRONMENTAL HAZARDS

THE INSTALLER SHOULD GIVE SPECIAL ATTENTION TO THE USER'S I/O LINES FOR THEY MAY CONTAIN VOLTAGES. THE SYSTEM CAN BE LINKED DIRECTLY TO THE USERS PROCESS, AND VOLTAGES CAN BE INTRODUCED INTO THE SYSTEM FROM A NUMBER OF SOURCES. WITH POWER REMOVED FROM THE SYSTEM, VOLTAGES CAN STILL BE PRESENT IN THE USERS TERMINATION AREA. ALL LINES ARE POTENTIALLY DANGEROUS AND SHOULD BE REGARDED AS LIVE CIRCUITS. WHEN ENTERING ANY PART OF THE PROCESS AREA, OBSERVE ALL SAFETY PRECAUTIONS AND REGULATIONS. CHECK THE FOLLOWING ITEMS WITH PRINCIPAL CUSTOMER PERSONNEL:

1. THE NEED FOR SAFETY GLASSES, HARD HATS, OR SPECIAL CLOTHING.
2. PARTICULAR ROUTE THAT MUST BE TAKEN TO AND FROM INSTALLATION. ESCORT REQUIRED?
3. SMOKING RESTRICTIONS.
4. RESTRICTIONS ON USE OF ELECTRICAL OR OTHER SPARK-PRODUCING TOOLS.
5. EXPOSURE TO HIGH VOLTAGES.
6. EXPOSURE TO HEAVY MACHINERY OR OTHER EQUIPMENT.
7. EXPOSURE TO SPLASHING ACIDS, MOLTEN METAL, HOT LIQUIDS, ETC.
8. EXPOSURE TO TOXIC GASES AND VAPORS.
9. WARNING ALARMS AND EMERGENCY EXITS.

MACHINE WARNING LABELS

HEED THE WARNING LABELS PLACED IN HAZARDOUS AREAS OF THE MACHINE. THEY ARE PLACED THERE FOR YOUR PROTECTION.

POWER SUPPLIES

BEFORE WORKING ON ANY POWER SUPPLY, REMOVE POWER FROM THE UNIT AND ALLOW AT LEAST ONE MINUTE (5 MINUTES FOR PROCESSOR OR EXPANSION UNIT MODELS CONTAINING A DISK DRIVE) FOR CAPACITORS TO DISCHARGE TO A SAFE VOLTAGE LEVEL.

POWER CORDS

CHECK POWER CORDS FOR SAFE CONDITION AND PROPER THIRD-WIRE GROUND CONNECTION. CHECK WITH A METER FROM GROUND ON THE PLUG TO FRAME AND INSURE THAT THERE IS A ZERO OHM READING. IF NOT, REFER TO THE MAPS.

LINE-POWERED EQUIPMENT

OSCILLOSCOPES AND OTHER LINE-POWERED EQUIPMENT MUST ALWAYS BE GROUNDED THROUGH THE THIRD-WIRE GROUNDING CONDUCTOR IN THE POWER CORD.

EQUIPMENT PRECAUTIONS

USERS INTERFACE

THE SYSTEM MAY BECOME (DEPENDING UPON PRODUCT MIX) AN INTEGRAL PART OF THE USERS OPERATION. DO NOT, UNDER ANY CIRCUMSTANCES, WORK ON ANY PART OF THE SYSTEM WITHOUT THE PRIOR KNOWLEDGE AND CONSENT OF THE PRINCIPAL USER.

PRODUCT HARDWARE

USE CAUTION WHEN WORKING AROUND HARDWARE. DO NOT LEAVE FRONT COVERS OFF WHEN POWER IS ON. INSURE THE TILT STABILIZER ON THE RACK IS FASTENED TO FRAME IN DOWN POSITION.

LOGIC COMPONENTS

ELECTRICAL OVERLOADS FOR PERIODS AS SHORT AS A FEW MICROSECONDS CAN SERIOUSLY DAMAGE COMPONENT MODULES. CARE MUST BE EXERCISED WHEN GROUNDING SIGNAL LINES, BECAUSE APPLYING A VOLTAGE INSTEAD OF A GROUND OR GROUNDING THE OUTPUT OF DRIVERS, EMITTER FOLLOWERS, ETC., WILL DESTROY LOGIC MODULES.

I/O CARDS

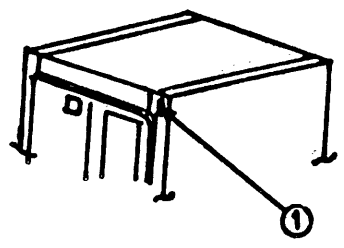
USE CARE WHEN REMOVING AND INSERTING I/O CARDS. FINGERPRINTS, PENCIL MARKS, AND OTHER CONTAMINANTS DECREASE THE LEAKAGE RESISTANCE OF THESE CARDS. DO NOT USE CLEANING SOLVENTS OR CARD LUBRICANTS, AND DO NOT PERMIT THE PLASTIC COATING ON THE CARD TO BECOME DAMAGED. INSERTING OR REMOVING CARDS WHILE THE MACHINE IS POWERED ON MAY DAMAGE THE CARDS. DO NOT INSERT OR REMOVE LOGIC CARDS FROM MACHINE CIRCUITRY WHILE MACHINE POWER IS SWITCHED ON.

SECTION 1.0 SERIES/1 INSTALLATION FACTORY CONFIGURATION SYSTEM.

1.1 4997 ENCLOSURE

( ) 1. OPEN REAR UNIT IF THIS ENCLOSURE IS NOT PART OF A MULTIPLE ENCLOSURE CONFIGURATION, INSTALL THE EMERGENCY PULL KNOB (1), FIGURE 1.1.1.0 AND THE ENCLOSURE STABILIZER. IF IT IS PART OF A MULTIPLE ENCLOSURE CONFIGURATION, DO NOT INSTALL THE KNOB OR STABILIZER UNTIL INSTRUCTED IN A LATER STEP.

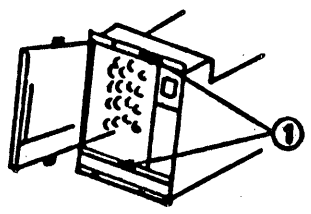
FIGURE 1.1.1.0



( ) 2. REMOVE ALL TAPE HOLDING CABLES AT REAR OF UNIT.

1.2 PROCESSORS AND EXPANSION UNIT (CONSOLE GATE COVERING I/O SLOTS).

FIG. 1.2.1.0



( ) 1. REMOVE FRONT COVER BY PULLING STRAIGHT OUT FROM UNIT. OPEN CONSOLE FRAME BY LOOSENING TWO SCREWS (1).

( ) 2. REMOVE FOAM SHIPPING PADS.

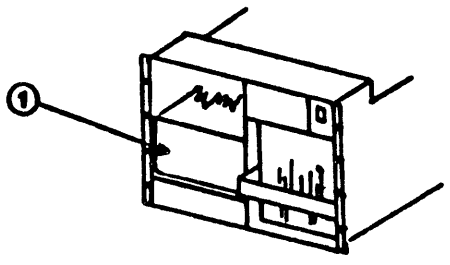
( ) 3. REMOVE CARD GUIDE LOCKS (TOP & BOTTOM) FROM CARD GUIDES. LEAVE WITH CUSTOMER TO BE RE-INSTALLED IF MACHINE IS MOVED.

( ) 4. CHECK ALL LOGIC CARDS AND CONNECTORS FOR CORRECT SEATING.

( ) 5. CLOSE CONSOLE, TIGHTEN SCREWS.

1.3 PROCESSORS AND EXPANSION UNIT (CONSOLE GATE NOT COVERING I/O SLOTS)

FIG. 1.3.1.0



( ) 1. REMOVE FRONT COVER BY PULLING STRAIGHT OUT FROM UNIT.

( ) 2. REMOVE WTC SHIELD (IF INSTALLED).

( ) 3. REMOVE CARD GUIDE LOCKS (TOP & BOTTOM) FROM CARD GUIDES. LEAVE WITH CUSTOMER TO BE RE-INSTALLED IF MACHINE IS MOVED.

( ) 4. REMOVE PADS (1).

( ) 5. CHECK ALL LOGIC CARDS AND CONNECTORS FOR CORRECT SEATING.

1.3.1 PROCESSOR AND EXPANSION UNITS (MODELS CONTAINING DISK DRIVES).

( ) 1. POSITION DISKETTE DRIVE LATCH TO CLOSED POSITION (IF INSTALLED) AND REMOVE FRONT COVER BY PULLING STRAIGHT OUT FROM UNIT.

( ) 2. CHECK ALL LOGIC CARDS AND CONNECTORS FOR CORRECT SEATING.

1.4 4962 DISK STORAGE UNIT

( ) 1. REMOVE FRONT COVER BY INSERTING SCREWDRIVER OR SIMILAR DEVICE IN OPENING (1), FIGURE 1.4.1.0 AND PULLING OUT AT TOP OF COVER.

( ) 2. REMOVE UNIT MOUNTING SCREWS (2), FIGURE 1.4.2.0, SLIDE UNIT FORWARD UNTIL IT LOCKS IN PLACE.

( ) 3. LOOSEN FOUR WASHER NUTS (3), FIGURE 1.4.3.0.

( ) 4. LOOSEN SIX SCREWS HOLDING THE SIDE COVERS (4), FIGURE 1.4.3.0. REMOVE LEFT COVER, RIGHT FRONT COVER, AND RIGHT REAR COVER IN THAT ORDER.

( ) 5. REMOVE ONE LOCKING BOLT (5), FIGURE 1.4.4.0.

( ) 6. REMOVE PLASTIC SHIMS FROM 3 SHOCK MOUNTINGS (6), FIGURE 1.4.4.0.

( ) 7. OPEN GATE (7), FIGURE 1.4.5.0, BY LOOSENING SCREW (8), FIGURE 1.4.5.0. CAREFULLY SEPARATE AND OPEN GATES OUT. NOTE: MODELS WITHOUT DISKETTE UNITS, ONLY THE LOWER GATE NEED BE OPENED BY LOOSENING SCREW (8), FIGURE 1.4.5.0.

( ) 8. IF INSTALLED, REMOVE FOAM BLOCKS (10), FIGURE 1.4.5.0, PROTECTING THE DISKETTE UNIT (MODELS 002, 02F ONLY). REMOVE FOAM BLOCK (11), FIGURE 1.4.5.0 AND TWO WOODEN BLOCKS (12), FIGURE 1.4.5.0.

( ) 9. LOCATE THE ACTUATOR LOCKING ARM (13), FIGURE 1.4.6.0, UNLOCK THE ACTUATOR AS SHOWN.

( ) 10. NEXT, LOCATE THE SPINDLE LOCK (14), FIGURE 1.4.6.0 MOVE TO THE UNLOCKED POSITION AS SHOWN. ENSURE THE SPINDLE LOCKING ARM'S LONG FINGER IS IN ITS CORRECT POSITION AS IT IS NOW THE SPINDLE GROUND.

( ) 11. CHECK TO ENSURE DRIVE BELT (15), FIGURE 1.4.7.0, IS CORRECTLY LOCATED ON THE DISK DRIVE.

( ) 12. CHECK ALL LOGIC CARDS AND CONNECTORS FOR CORRECT SEATING.

( ) 13. CLOSE GATE (OR GATES) AND REINSTALL/TIGHTEN SCREWS.

( ) 14. REMOVE CONTAINER HELD BY TAPE ON THE FOOT.

( ) 15. REINSTALL THREE OUTSIDE COVERS IN REVERSE ORDER OF REMOVAL. ENSURE THE TABS (16), FIGURE 1.4.8.0 ARE TIGHT AGAINST THE FRAME BEFORE FASTENING SCREWS.

( ) 16. RELEASE LOCKING BUTTONS. SLIDE UNIT BACK INTO RACK AND REINSTALL MOUNTING SCREWS.

( ) 17. TO REINSTALL FRONT COVER, HOLD THE UNIT'S STABILIZER UP, PUT THE BOTTOM OF COVER IN POSITION FIRST AND PUSH IN AT TOP TO ENGAGE THE LATCH.

( ) 18. DISKETTE UNIT IS INCLUDED IN MOD 2 AND 2F. REMOVE CARDBOARD INSERT FROM DISKETTE UNIT.

( ) 19. REPEAT STEPS FOR MORE THAN ONE UNIT.

FIG. 1.4.1.0

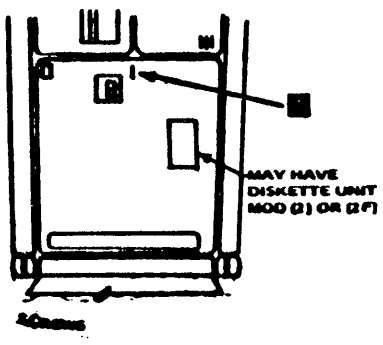


FIG. 1.4.2.0

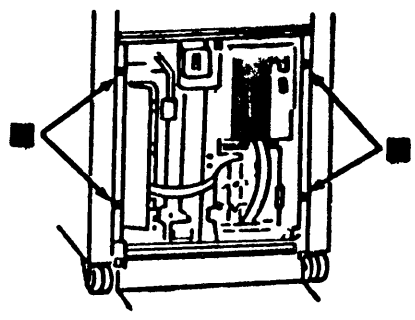
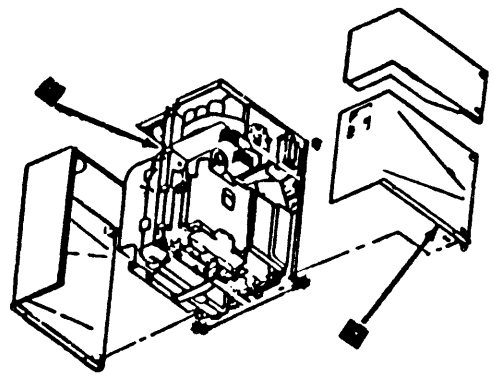


FIG. 1.4.3.0



1.4.4.0

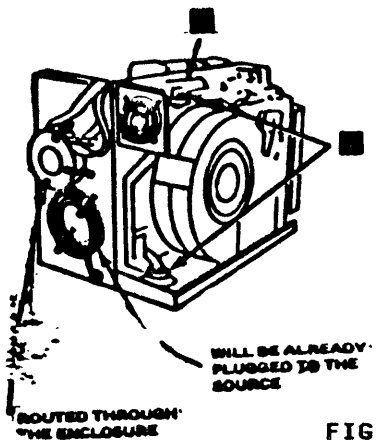


FIG. 1 4.5.0

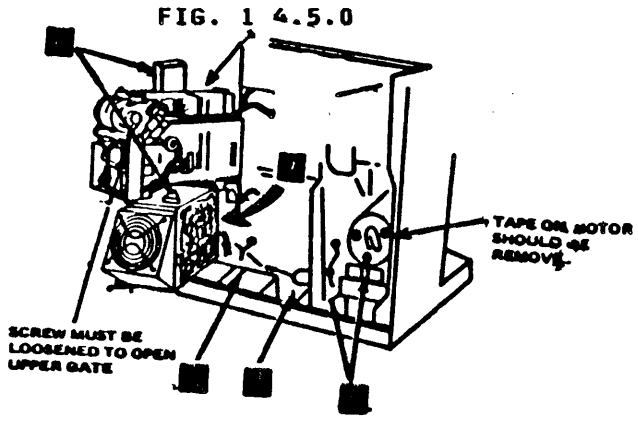
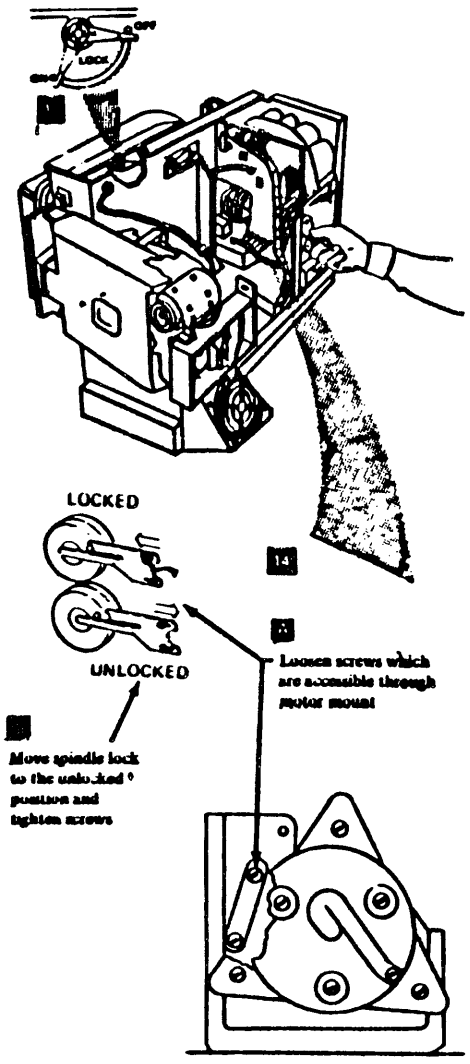


FIG. 1.4.6.0



1.4.7.0

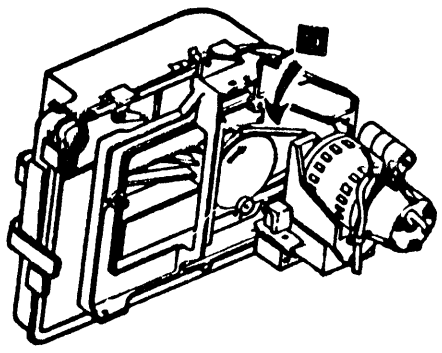
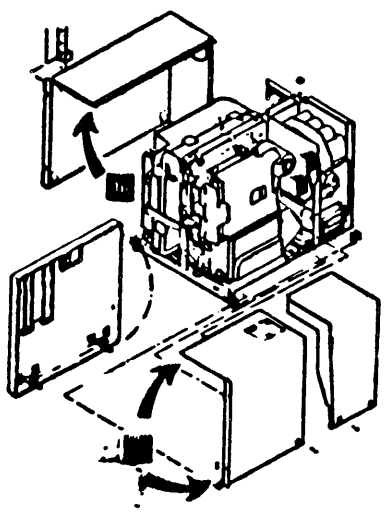


FIG. 1.4.8.0



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1.5 4963 DISK SUBSYSTEM

( ) 1. REMOVE FRONT COVER AND SLIDE DISK INTO SERVICE POSITION.

( ) 2. REMOVE TOP COVER BY REMOVING TWO REAR THUMB SCREWS AND TWO SIDE SCREWS. LOOSEN FRONT SCREW. RETAIN SCREWS FOR ASSEMBLY.

( ) 3. LOCATE THE FILE LOCKOUT SCREW (7), FIGURE 1.5.1.0. REMOVE SCREW, WASHER AND SPACER AND STORE IN CHASSIS (8), FIGURE 1.5.1.0.

( ) 4. OPEN FILE CARD GATE (10), FIGURE 1.5.2.0 FOR ACCESS TO ACTUATOR LOCK KNOB (11), FIGURE 1.5.2.0.

( ) 5. LOCATE THE ACTUATOR ARM LOCK KNOB (9), FIGURE 1.5.2.0.

( ) 6. UNLOCK THE ACTUATOR ARM, TURN THE ACTUATOR LOCK KNOB (11), FIGURE 1.5.2.0 COUNTER-CLOCKWISE THROUGH 120 DEGREES.

( ) 7. CLOSE AND LOCK FILE CARD GATE (10), FIGURE 1.5.2.0.

( ) 8. CHECK FILE DRIVE BELT FOR PROPER ALIGNMENT. ENGAGE DRIVE BELT TENSIONER.

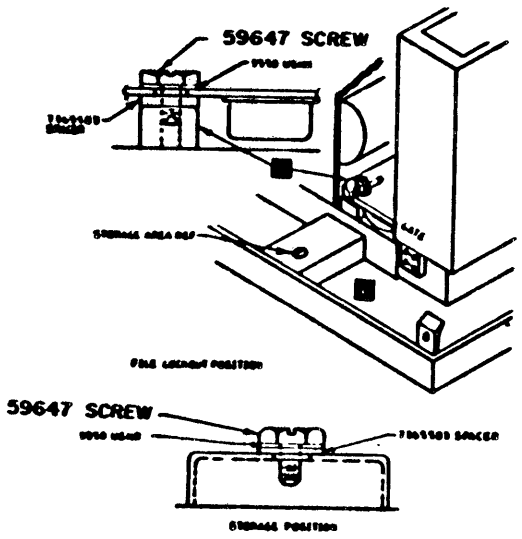
( ) 9. CHECK FOR DAMAGED PARTS.

( ) 10. INSTALL TOP COVER REMOVED IN STEP 2.

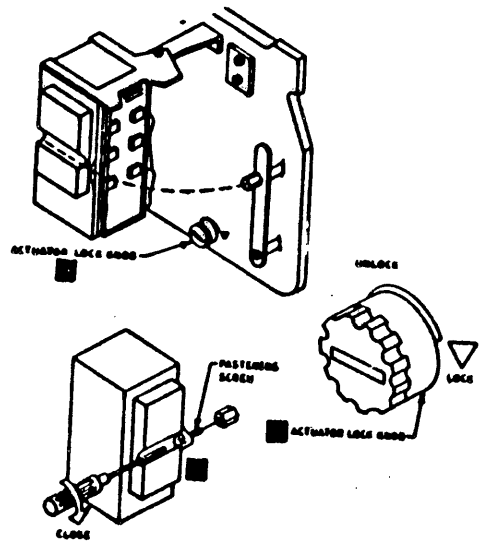
( ) 11. INSTALL THE FRONT 4963 COVER BY POSITIONING THE TWO COVER STUDS IN THE BASE. PUSH THE COVER IN AT THE TOP AND BOTTOM UNTIL CATCHES ARE ENGAGED.

( ) 12. REPEAT STEPS FOR MORE THAN ONE UNIT.

FIG. 1.5.1.0



1.5.2.0



1.6 4964 DISKETTE UNIT

( ) 1. REMOVE PACKING MATERIALS INCLUDING PAPER (2), FIGURE 1.6.1.0 INSIDE DISKETTE UNIT.

( ) 2. OPEN DISKETTE. REMOVE FRONT COVER BY PULLING OUT AT TOP.

( ) 3. REMOVE RACK MOUNTING SCREWS (1), FIGURE 1.6.1.0 AND SLIDE UNIT FORWARD UNTIL YOU CAN REMOVE THE CABLES.

( ) 4. SLIDE UNIT OUT FAR ENOUGH TO REMOVE SIDE COVER.

CAUTION -- DO NOT PULL THE UNIT ALL THE WAY OUT OF THE RACK; IT WILL FALL TO THE FLOOR.

( ) 5. REMOVE SIDE COVER AND THREE (3) METAL BRACKETS.

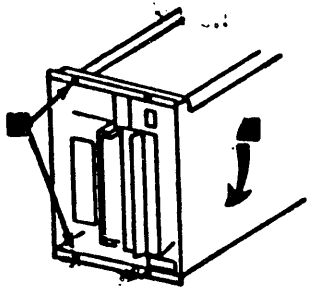
( ) 6. REINSTALL SIDE COVER, SLIDE UNIT BACK INTO RACK. REINSTALL MOUNTING SCREWS.

( ) 7. REMOVE THE SHIP GROUP.

( ) 8. TO REINSTALL FRONT COVER, ENSURE THAT THE DISKETTE MECHANISM IS OPEN, PUT THE BOTTOM IN POSITION FIRST, AND PUSH IN AT THE TOP TO ENGAGE THE COVER.

( ) 9. REPEAT STEPS FOR MORE THAN ONE UNIT.

FIG. 1.6.1.0



1.7 4966 DISKETTE MAGAZINE UNIT

( ) 1. OPEN DISKETTE UNIT. REMOVE FRONT COVER BY PULLING OUT AT TOP. REMOVE MACHINE SIDE COVERS. (FIG. 1.7.1.0)

( ) 2. REMOVE CARDBOARD INSERT FROM DISKETTE SLOT (2), FIGURE 1.7.2.0. REMOVE FOAM BLOCKS (3), FIGURE 1.7.2.0 FROM MAGAZINE TRAY. CHECK TO MAKE SURE THERE IS NO PHYSICAL DAMAGE TO THE UNIT. (SHIPPING BLOCKS MAY NOT BE PRESENT-DEPENDING UPON METHOD OF SHIPMENT).

( ) 3. CHECK THE LINE CORD AND MAKE SURE IT IS NOT PLUGGED IN. THEN, CHECK THE DRIVE MOTOR FOR FREE OPERATION BY MANUALLY ROTATING IT.

( ) 4. SLIDE MACHINE ALL THE WAY OUT OF FRAME.

( ) 5. REMOVE TWO SHIPPING SCREWS FROM PICKER/CAM CASTING (4), FIGURE 1.7.3.0.

( ) 6. REMOVE NUT AND BRACKET (5), FIGURE 1.7.4.0.

( ) 7. REMOVE TWO SCREWS HOLDING THE DEVICE TO FRONT AND REAR SHOCK MOUNTS (6), FIGURE 1.7.4.0.

( ) 8. PRY UP THE DEVICE AND REMOVE THE SCREW HOLDING THE SHIPPING BRACKET.

( ) 9. REINSTALL THE TWO SCREWS INTO SHOCK MOUNTS (6), FIGURE 1.7.4.0.

( ) 10. REPLACE SIDE COVERS AND FRONT COVERS.

( ) 11. REPEAT STEPS FOR MORE THAN ONE UNIT.

FIG. 1.7.1.0

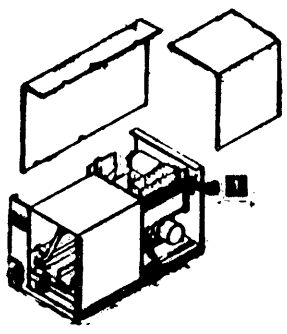
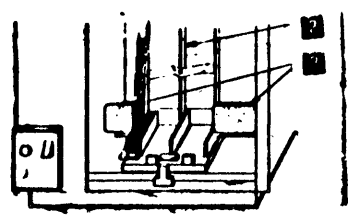
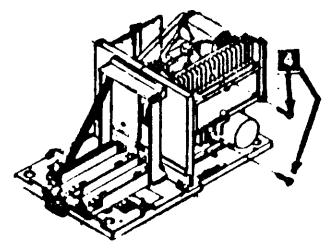


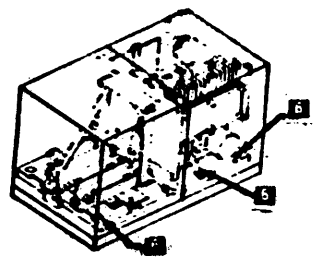
FIG. 1.7.2.0



1.7.3.0



1.7.4.0



1.8 4967 DISK SUBSYSTEM

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**********************************************************
* CAUTION:  RACK STABILIZER FOOT MUST BE LOCKED DOWN INTO *
* POSITION ON ALL RACKS BEFORE INSTALLING A 4967.        *
**********************************************************
```

1.8.1 UNPACKING INSTRUCTIONS.

1.8.1.1 REMOVE THE FRONT COVER BY TAKING A QUARTER TURN COUNTERCLOCKWISE WITH A SCREWDRIVER ON SLOTTED SCREW TO UNLOCK THE LATCH AT THE TOP OF THE FRONT PANEL AS SHOWN IN FIGURE 1.8.1.0.

1.8.1.2 FRONT COVER CAN NOW BE REMOVED BY PULLING STRAIGHT OUT FROM UNIT.

1.8.1.3 INSPECT UNIT FOR SHIPPING DAMAGE. (THERE IS NO INTERNAL PACKING MATERIAL TO BE REMOVED).

1.8.1.4 REMOVE THE FOUR (4) SCREWS THAT SECURE UNIT IN THE RACK. (SEE FIGURE 1.8.1.0).

CAUTION: DO NOT PULL MORE THAN ONE (1) UNIT OUT TO ITS FULLY EXTENDED POSITION AT ONE (1) TIME AS THE 4997 RACK COULD TIP FORWARD. ALSO MAKE SURE STABILIZER FOOT IS SECURED.

1.8.1.5 REMOVE ANY FRONT PANEL OR COVER MOUNTED JUST BENEATH THE 4967. THIS WILL PREVENT DAMAGE TO THE PANEL OR COVER.

1.8.1.6 PLACE UNIT IN THE FULLY EXTENDED POSITION BY PULLING UNIT OUT WITH HANDLE.

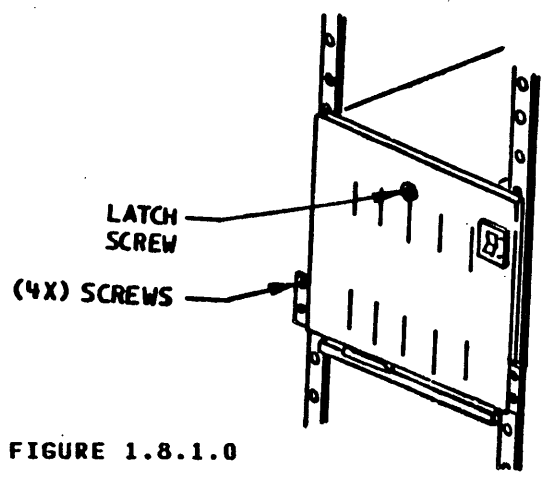


FIGURE 1.8.1.0

1.8.2 LOCKOUT INSTRUCTIONS

1.8.2.1 TILT UNIT TO THE 90 DEGREE SERVICE POSITION. LOCATE THE THREE (3) LOCKOUT SCREWS ON THE BOTTOM OF THE UNIT, TWO (2) AT THE REAR; ONE (1) UPPER RIGHT CENTER. (SEE FIGURE 1.8.2.1)

1.8.2.2 WITH A PROPER SIZE SCREW-DRIVER, LOOSEN EACH LOCKOUT SCREW ONE COMPLETE TURN. THE UNIT SHOULD NOW BE PLACED IN THE HORIZONTAL (OPERATING) POSITION TO FINISH UNLOCKING THE SCREWS BY USING A STUBBY SCREWDRIVER.

CAUTION: DO NOT TILT UNIT IN THE 30 DEGREE OR 90 DEGREE POSITIONS WHILE UNLOCKING SCREWS TO THE FULL OPEN POSITION, AS THIS WILL DAMAGE LOCKOUT SCREWS.

1.8.2.3 TO UNLOCK THE THREE (3) SCREWS TO THE FULL OPEN POSITION WITH A STUBBY SCREW DRIVER, TURN SCREWS COUNTER CLOCKWISE UNTIL THEY DROP OUT OF THEIR HOLES. TO PREVENT THE FILE FROM BINDING IN ONE (1) DIRECTION, THE TWO (2) SCREWS CLOSEST TO THE REAR OF THE MACHINE SHOULD BE UNLOCKED TOGETHER BY ALTERNATING FIRST ONE SCREW, THEN THE OTHER, UNTIL BOTH ARE IN THE UNLOCK POSITION.

1.8.2.4 THE LOCKOUT SCREWS WILL BE APPROXIMATELY FLUSH WITH THE SURFACE OF THE CHASSIS WHEN IN THE FULLY UNLOCKED POSITION.

1.8.2.5 AFTER THE FRONT LOCKOUT SCREW IS IN THE UNLOCK POSITION, THE FRONT SHIP BRACKET MUST BE PUT IN ITS HIGHEST RAISED POSITION. THIS IS DONE BY LOOSENING THE BOLT THAT HOLDS THE BRACKET TO THE FILE CASTING. PUSH THE BRACKET UPWARD TILL IT CANNOT GO ANY FURTHER, THEN TIGHTEN DOWN THE BOLT. THE UNIT IS NOW ADJUSTED FOR OPERATION (SEE FIG. 1.8.2.0.

1.8.2.6 REVERSE STEPS 1.8.2.1 THRU 1.8.2.5 TO PUT UNIT IN THE LOCKOUT POSITION FOR SHIPMENT.

FIGURE 1.8.2.0

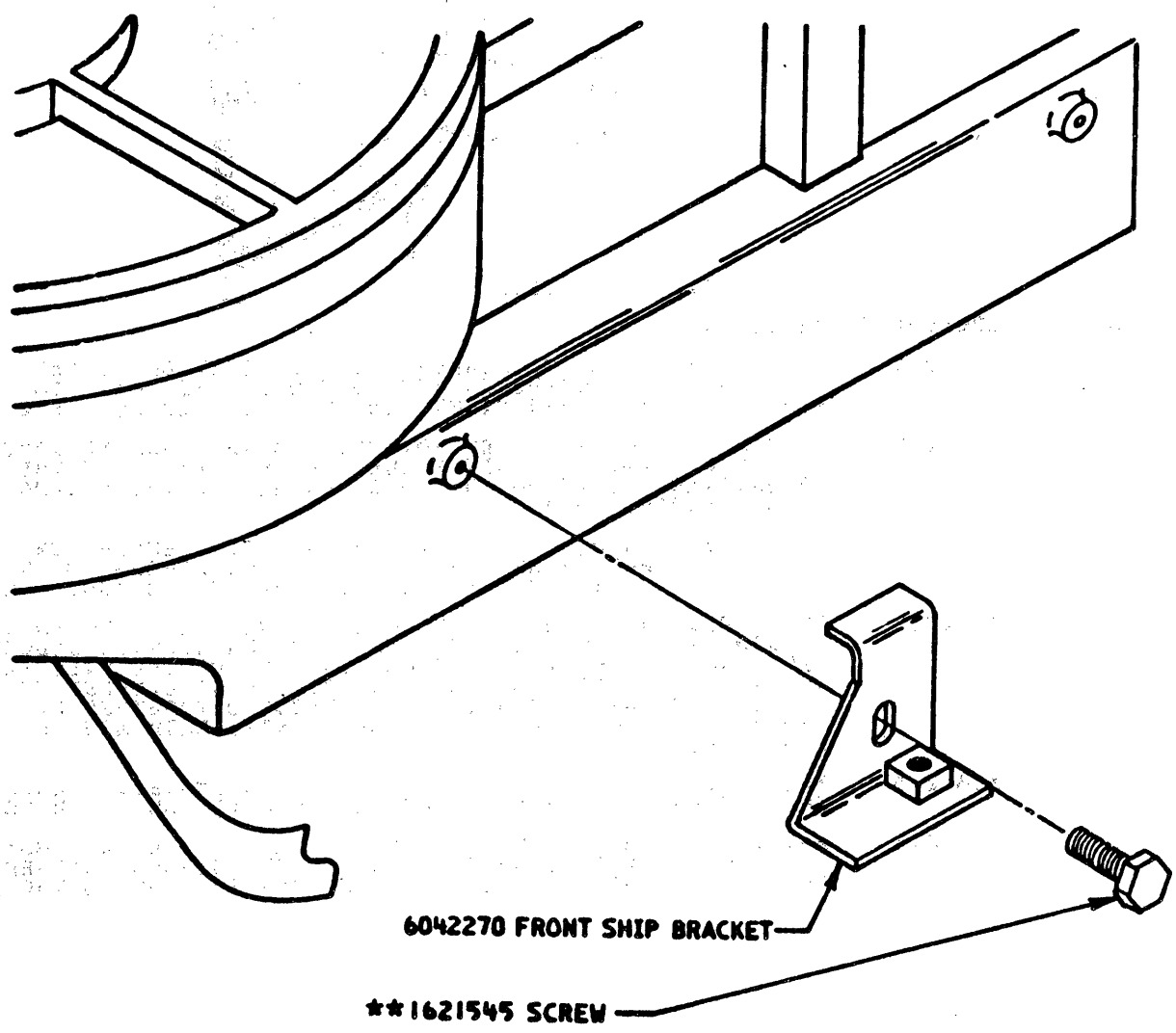
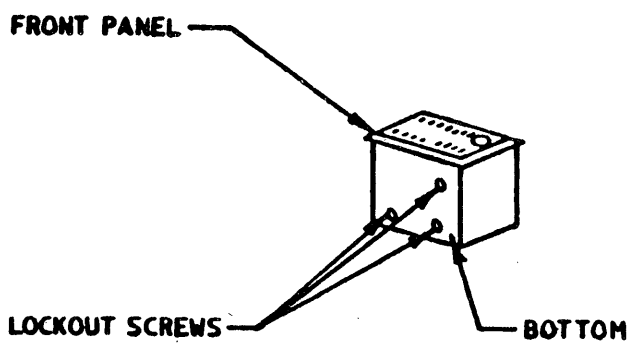


FIGURE 1.8.2.1



1.8.3 FLAT CABLE INSTALLATION.

NOTE: SYSTEM IS SHIPPED WITH CABLES PRE-FOLDED AND EXTENDERS ATTACHED TO CONNECTORS TO AID IN FIELD INSTALLATION.

1.8.3.1 IF SYSTEM CONSISTS OF BASE UNIT "0" ONLY OR BASE UNIT "0" PLUS EXPANSION UNIT "1", SKIP TO STEP 1.8.4

1.8.3.2 IF SYSTEM CONSISTS OF A BASE UNIT "0" PLUS EXPANSION UNIT "1" IN THE FIRST 4997 RACK, AND A SECOND 4997 RACK CONTAINING EXPANSION UNIT "2" OR EXPANSION UNIT "2" AND "3", SEE THE FOLLOWING STEPS.

1.8.3.3 WHERE ACCESS IS NECESSARY, PREPARE THE UNITS FOR CABLING BY REMOVING LEFT TOP COVER, BLACK PLASTIC CABLE CLAMP COVER AT REAR, CLEAR PLASTIC TOP GATE COVER, AND METAL GATE COVER ASM. WHEN REMOVING LEFT TOP METAL COVER; LOOSEN THE TWO SCREWS, PULL COVER FORWARD, THEN LIFT UP. RAISE GATE FOR MORE ACCESS WHILE INSTALLING.

1.8.3.4 SIDE COVERS MAY BE REMOVED FROM 4997 RACKS TO PROVIDE GREATER ACCESS.

1.8.3.5 TERMINATOR CARD IS LOCATED IN THE A5 SOCKET OF THE A1 BOARD IN THE LAST UNIT ON LINE. SEE FIG. 1.8.3.5.

1.8.3.6 FOR CONNECTING EXPANSION UNIT "2" FLAT CABLES P/N 6031211 (E) AND P/N 6031212 (F), OR EXPANSION UNIT "3" FLAT CABLES P/N 6031213 (G) AND P/N 6031214 (H) REFER TO FIGURES 1.8.3.0, 1.8.3.6, 1.8.3.7, 1.8.3.8. DISREGARD CABLES SHOWN THAT ARE NOT TO BE INSTALLED AND CONNECTED OR THAT ARE ALREADY INSTALLED AND CONNECTED.

1.8.3.7 ANY CABLE ROUTED FROM 2ND RACK TO 1ST RACK MUST PASS OVER SLIDE ASM AND REST ON TOP OF LINE CORD OF UNIT THAT CABLE IS BEING ROUTED TO. DO NOT PUT UNNECESSARY TWIST IN CABLE. REFER TO FIGURE 1.8.3.0. ALSO DO NOT LAY ONE CABLE INSIDE ANOTHER AT A FOLD.

1.8.3.8 PAY CLOSE ATTENTION TO SPECIAL ROUTING IN GATE OF BASE UNIT "0", FOR P/N 6031211 (E) COMING FROM EXPANSION UNIT "2" P/N 6031213 (G) COMING FROM EXPANSION UNIT "3". SEE FIGURES 1.8.3.8 AND 1.8.3.6.

1.8.3.9 GATE SHOULD BE IN DOWN POSITION WHILE REPLACING CLAMP AT REAR OF UNIT AND CLEAR PLASTIC TOP GATE COVER. IT SHOULD BE IN RAISED POSITION WHILE REPLACING METAL GATE COVER ASM. REPLACE CLEAR PLASTIC TOP COVER BEFORE REPLACING METAL GATE COVER ASM. BE SURE FLAT CABLES ARE IN CLIP ATTACHED TO UNDERSIDE OF CLEAR PLASTIC COVER OR IN CLIP WELDED TO END OF GATE, WHICHEVER IS PRESENT. ALSO MAKE SURE EDGE OF CLEAR COVER, OPPOSITE SCREW HOLES, IS UNDER THE THREE METAL TABS. TIGHTEN CLAMP AND REPLACE BLACK PLASTIC COVER AT REAR OF UNIT.

1.8.3.10 SEE FIG. 1.8.3.9 FOR CABLE CLAMPING ORDER AS SHIPPED IN SECOND RACK.

NOTE: REFER TO UNIT INSTALLATION INSTRUCTIONS P/N 6042236 IF ADDITIONAL INFORMATION IS NEEDED.

1.8.4 DISK CHECKOUT

1.8.4.1 RUN AUTOMATIC DIAGNOSTIC AGAINST THE 4967 DISK SUBSYSTEM.

1.8.4.2 IF DIAGNOSTICS RUN ERROR FREE, SLIDE AND SECURE UNIT INTO RACK WITH FOUR (4) UNIT MOUNTING SCREWS.

1.8.4.3 INSTALL FRONT COVER BY SECURING THE LATCH WITH A QUARTER TURN CLOCKWISE ON THE SCREW.

1.8.4.4 REINSTALL FRONT PANEL OR COVER THAT WAS REMOVED IN STEP 1.8.1.5.

FIGURE 1.8.3.0

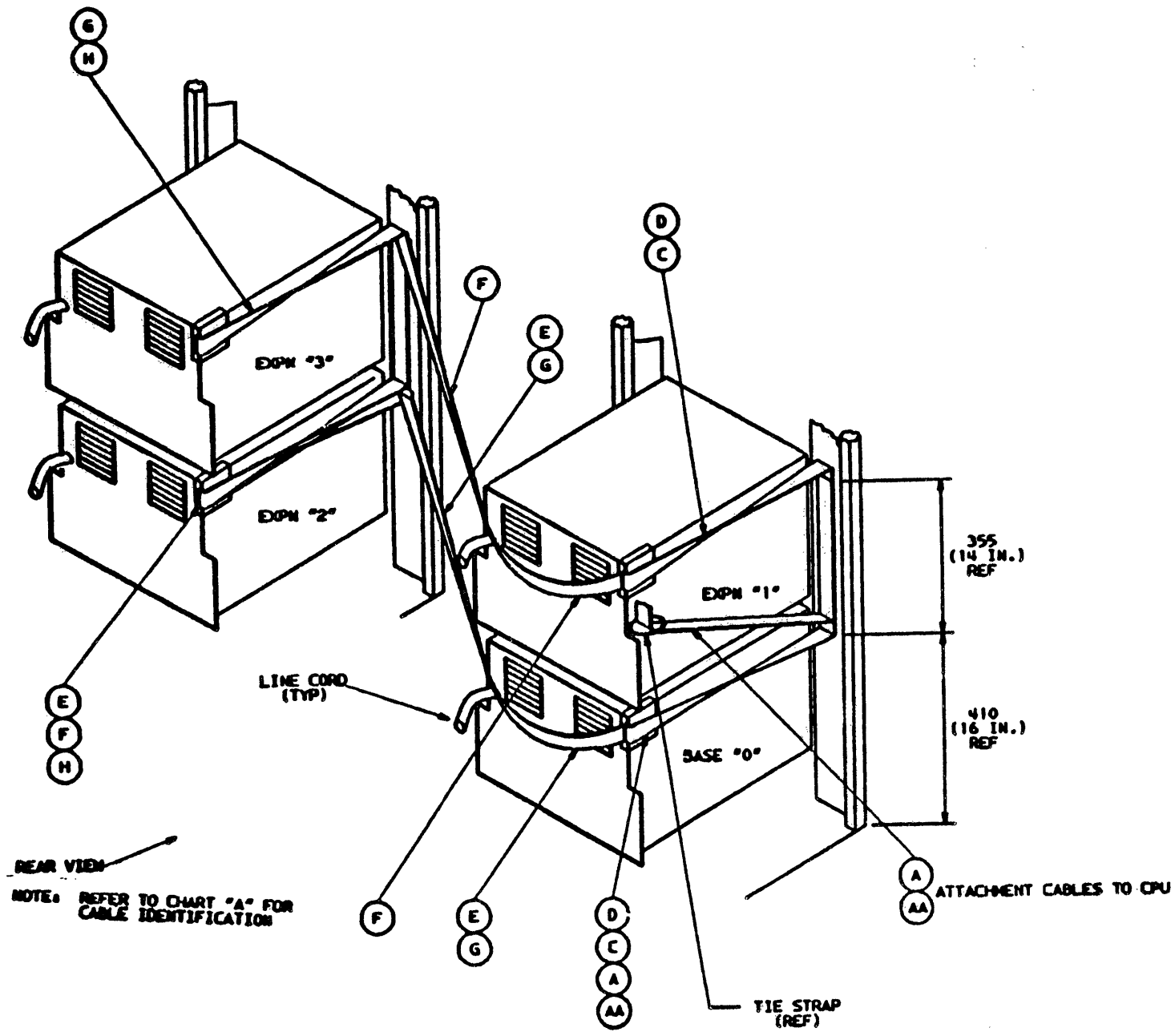

G
H
EXPN "3"
EXPN "2"
F
E
G
D
C
EXPN "1"
355
(14 IN.)
REF
410
(16 IN.)
REF
BASE "0"
LINE CORD
(TYP)
E
F
H
REAR VIEW
NOTE: REFER TO CHART "A" FOR
CABLE IDENTIFICATION
F
E
G
D
C
A
AA
TIE STRAP
(REF)
A
AA
ATTACHMENT CABLES TO CPU

FIGURE 1.8.3.5

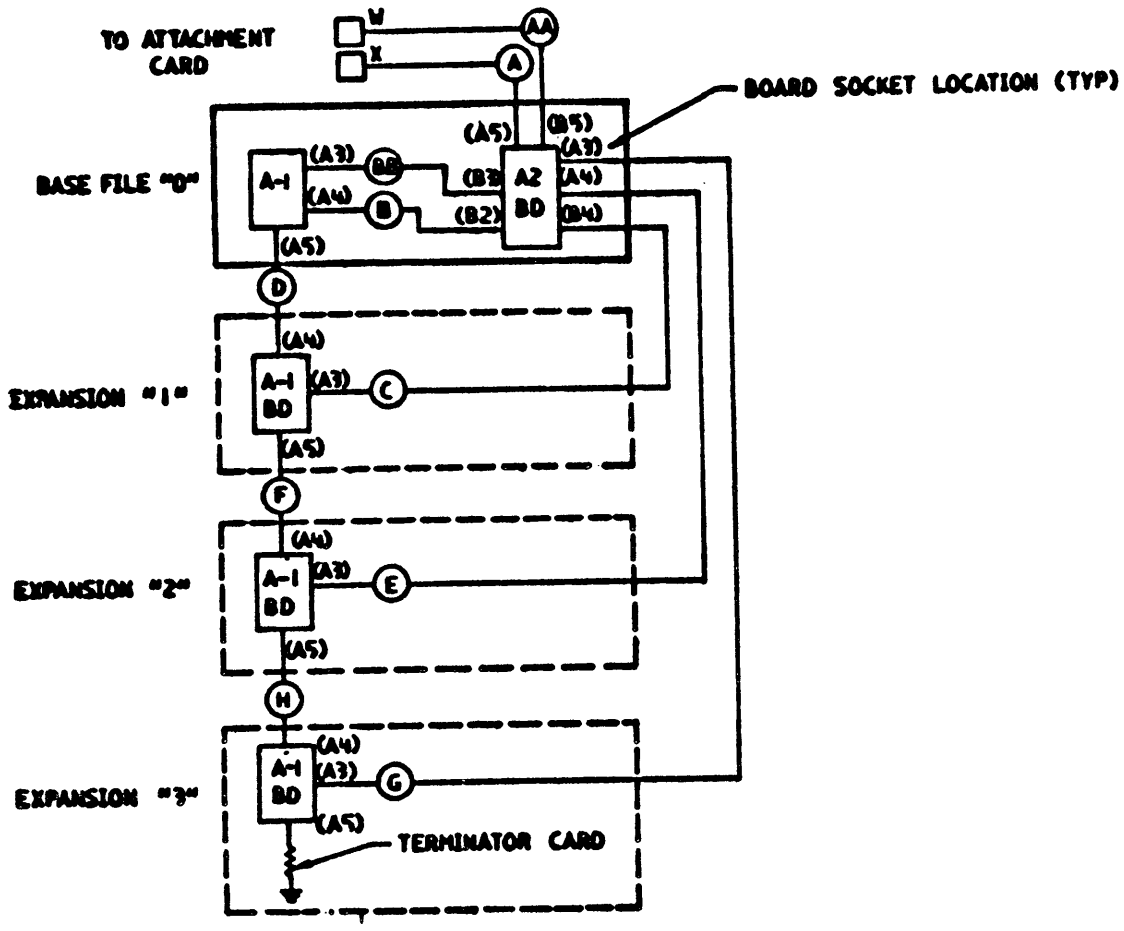


CHART A

LOCATOR BUBBLE	FLAT CABLE P/N	MADE WITH ASM. NO.	USED ON B/M
(A)	6031207 (SEQ 1)	5802425	6042206
(AA)	6031207 (SEQ 2)	5802425	6042206
(B)	6031208 (SEQ 1)	5802225	6042206
(BB)	6031208 (SEQ 2)	5802425	6042206
(C)	6031209	5802425	6105386
(D)	6031210	5802225	6105386
(E)	6031211	5802425	6105387
(F)	6031212	5802225	6105387
(G)	6031213	5802425	6105388
(H)	6031214	5802225	6105388

5802425-20 SIG (4 GND-D8,D2,B7,B13)
5802225-20 SIG (1 GND-D8)

FIGURE 1.8.3.6

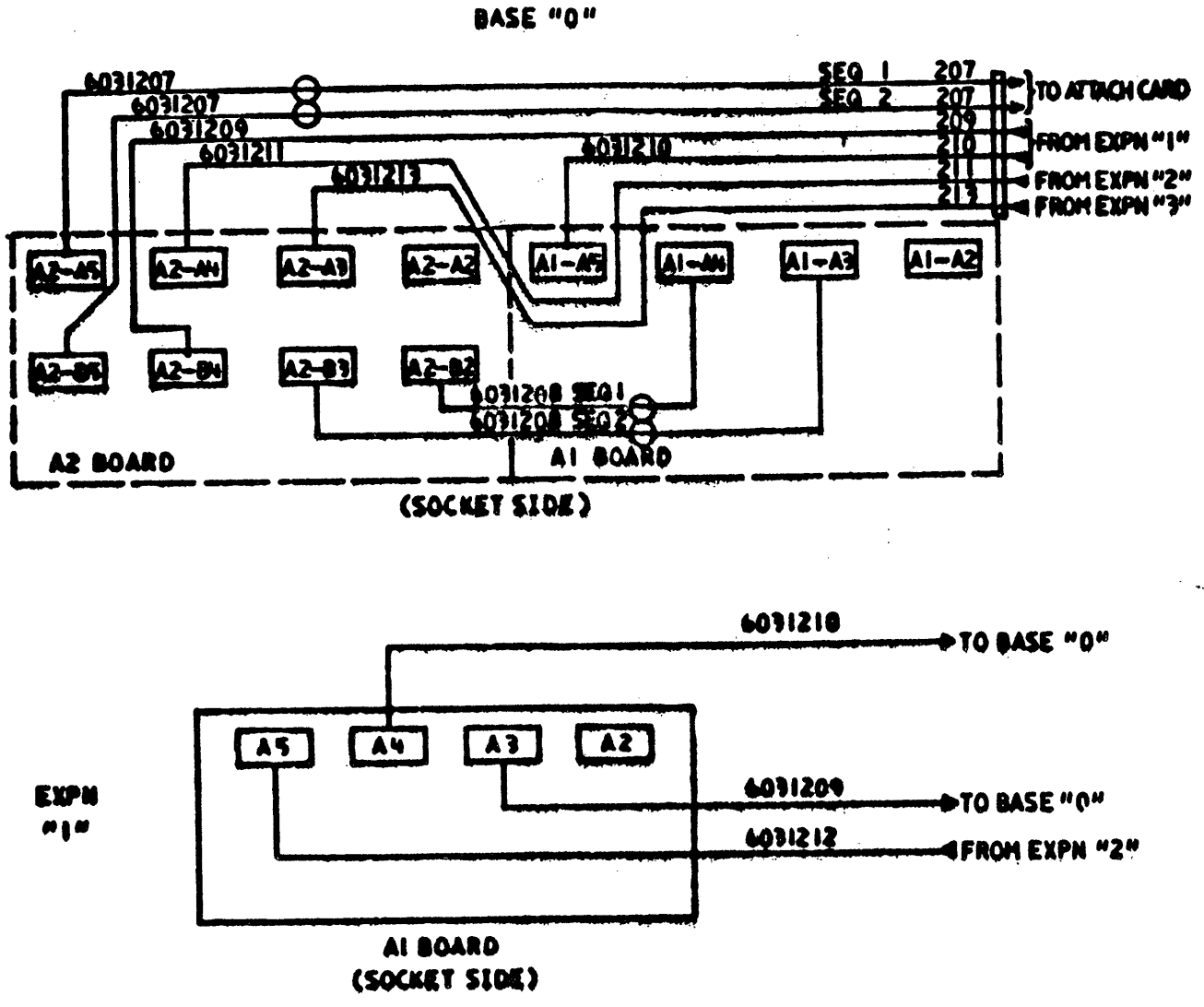
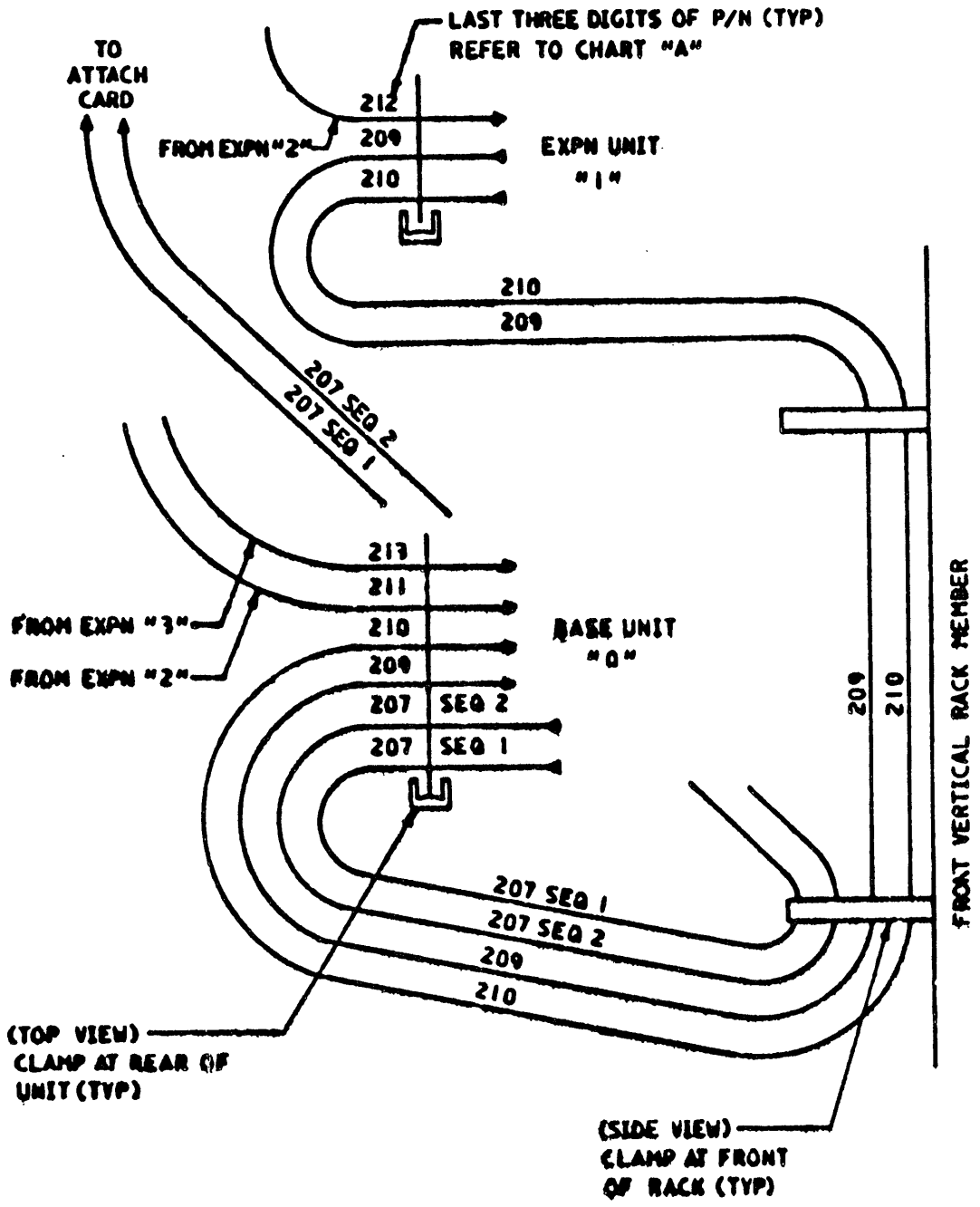

BASE "0"
6031207
6031207
6031209
6031211
6031213
6031210
SEQ 1 207
SEQ 2 207
209
210
211
213
TO ATTACH CARD
FROM EXPN "1"
FROM EXPN "2"
FROM EXPN "3"
A2-A5
A2-A4
A2-A3
A2-A2
A1-A5
A1-A4
A1-A3
A1-A2
A2-B5
A2-B4
A2-B3
A2-B2
6031208 SEQ 1
6031208 SEQ 2
A2 BOARD
A1 BOARD
(SOCKET SIDE)
EXPN "1"
6031218
TO BASE "0"
A5
A4
A3
A2
6031209
TO BASE "0"
6031212
FROM EXPN "2"
A1 BOARD
(SOCKET SIDE)
EXPN "2"
A5
A4
A3
A2
6031211
TO BASE "0"
6031212
TO EXPN "1"
6031214
FROM EXPN "3"
A1 BOARD
(SOCKET SIDE)
EXPN "3"
A5
A4
A3
A2
6031213
TO BASE "0"
6031214
TO EXPN "2"
A1 BOARD
(SOCKET SIDE)

FIGURE 1.8.3.7



NOTE 1. ARROWS INDICATE "FROM" AND "TO" DIRECTION

NOTE 2. THIS DIAGRAM ILLUSTRATES FLAT CABLE CONFIGURATION WITH UNITS PUSHED IN

FIGURE 1.8.3.8

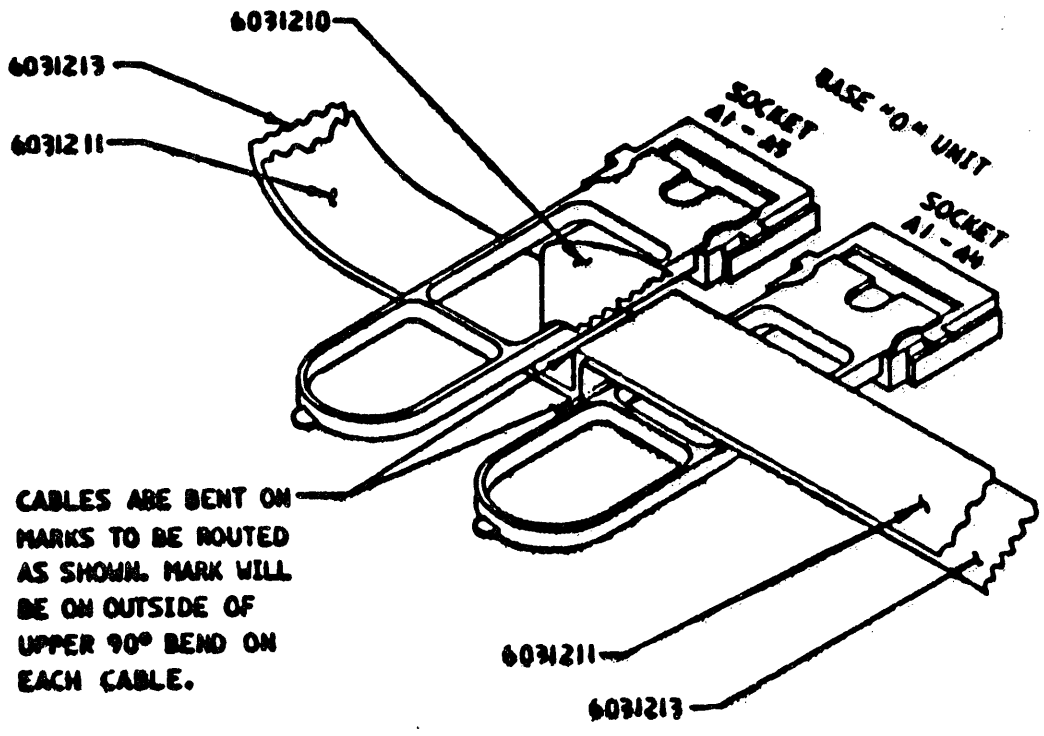
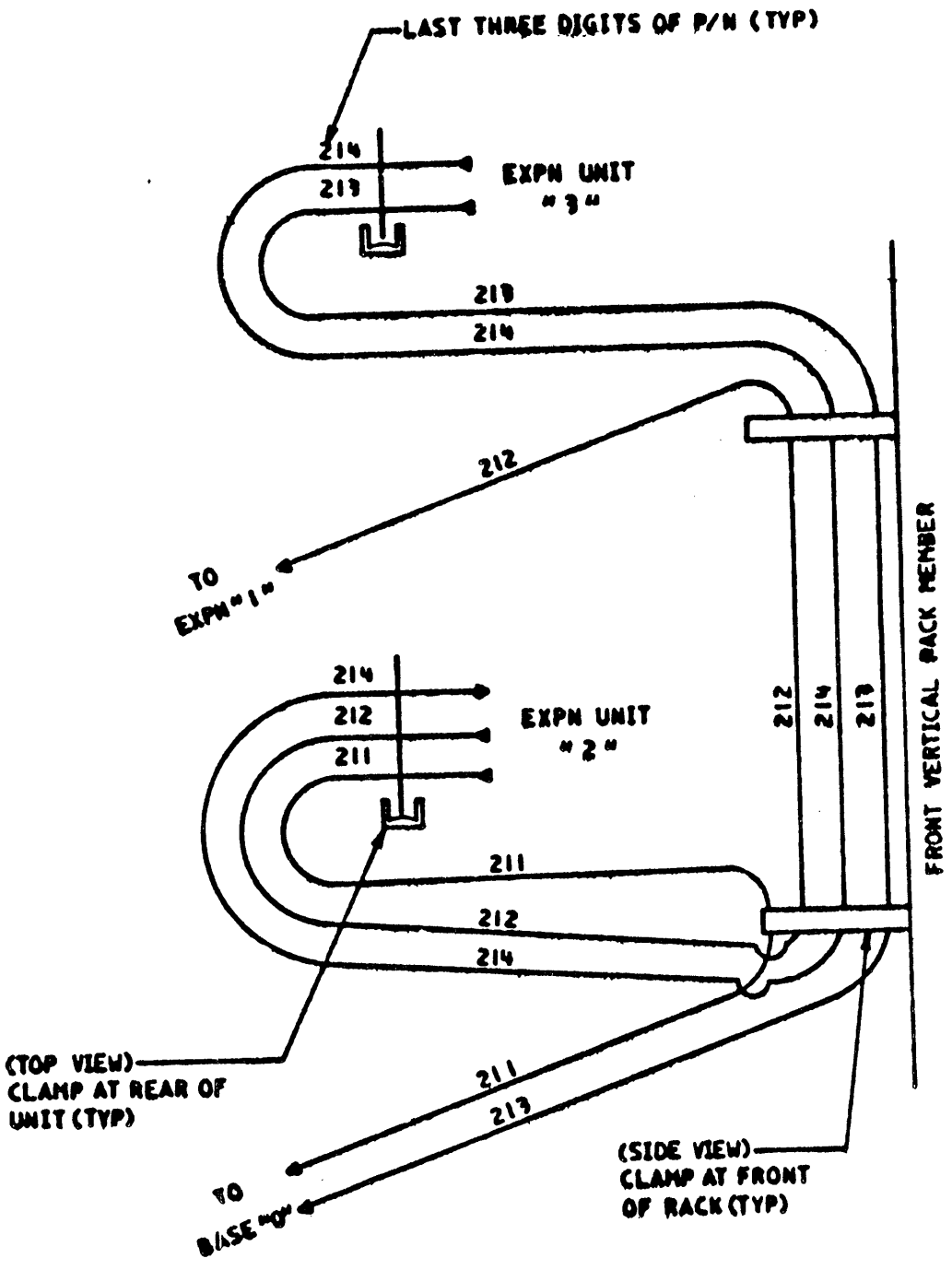

6031210
6031213
6031211
SOCKET A1 - A4
BASE "0" UNIT
SOCKET A1 - A4
CABLES ARE BENT ON MARKS TO BE ROUTED AS SHOWN. MARK WILL BE ON OUTSIDE OF UPPER 90° BEND ON EACH CABLE.
6031211
6031213

FIGURE 1.8.3.9



NOTE 1. ARROWS INDICATE "FROM" AND "TO" DIRECTION

NOTE 2. THIS DIAGRAM ILLUSTRATES FLAT CABLE CONFIGURATION WITH UNITS PUSHED IN.

1.9 4968.

( ) 1. UNPACKING INSTRUCTIONS.

1.1 PEEL PAPER OFF DOOR ASSEMBLY. INSPECT FOR DAMAGE.

1.2 INSPECT THE COVER FOR DAMAGE.

1.3 CUT CABLE TIES AT REAR OF SLIDES. PULL UNIT OUT UNTIL THE STOPS ENGAGE.

1.4 OPEN TOP COVER AND SECURE IT WITH THE STAY ARM PROVIDED. INSPECT TACHOMETER AND COMPLIANCE ARM FOR DAMAGE.

1.5 REMOVE PROTECTIVE STYRAFOAM SQUARE FROM THE TAKE-UP HUB (PROTECTS TACHOMETER).

CAUTION: DO NOT ALLOW TACHOMETER TO SLAM AGAINST TAKE-UP HUB.

1.6 LOOSEN SPRING LOADED SCREWS (2) WITH SCREW DRIVER.

1.7 LOWER TOP COVER.

1.8 LIFT DRIVE INTO SERVICE POSITION. DANGER: INSERT THE LOCKING PIN INTO THE SUPPORT ARM.

1.9 REMOVE STYRAFOAM BLOCK FROM THE HEAT SINK (RIGHT SIDE AT REAR OF PRINTED CIRCUIT BOARD).

1.10 REMOVE STYROFOAM PAD ON PRINTED CIRCUIT BOARD.

1.11 REMOVE STYROFOAM STRIP AT LEFT OF PRINTED CIRCUIT BOARD. INSPECT THE CABLE CONNECTIONS FOR DAMAGE.

1.12 REMOVE THE 2 SCREWS THAT HOLD ON THE POWER SUPPLY COVER. REMOVE COVER.

1.13 ENSURE THAT THE VOLTAGE SELECTION CARD IS INSTALLED TO MATCH THE INPUT AC VOLTAGE RANGE.

1.14 REPLACE COVER.

1.15 REMOVE FUSE.

1.16 ENSURE THAT A 3.0 AMP SLO BLO FUSE IS INSTALLED FOR 100 - 120 VOLT MACHINES OR THAT A 1.5 AMP SLO BLO FUSE IS INSTALLED FOR 200 - 240V MACHINE.

1.17 REPLACE FUSE.

1.18 PLUG POWER CORD.

1.19 LOCATE TP95, CHASSIS GND. INSURE THAT THE GND WIRE IS ATTACHED TO TP95.

1.20 REMOVE THE LOCKING PIN FROM THE SUPPORT ARM.

1.21 LOWER DRIVE FROM SERVICE POSITION.

1.22 TIGHTEN SPRING LOADED SCREWS (2) WITH SCREW DRIVER.

1.23 DEPRESS SLIDE STOPS (ONE ON EACH SIDE) AND PUSH DRIVE INTO 4997 FRAME.

( ) 2. POWER UP.

2.1 DEPRESS POWER-ON SWITCH. POWER-ON LIGHT SHOULD COME ON IMMEDIATELY.

2.2 ALL LED INDICATORS LIGHT UP AT POWER-ON FOR APPROXIMATELY ONE SECOND THEN TURN OFF. THE UNLOADED LED INDICATOR LIGHTS UP AFTER APPROXIMATELY THREE SECONDS AND STAYS ON AFTER POWER-ON.

( ) 3. TAPE CHECKOUT

3.1 GO TO MAP PROLOGUE 5900.

1.10 4969 TAPE SUBSYSTEM

( ) 1. OPEN FRONT DOOR.

( ) 2. INSPECT UNIT FOR SHIPPING DAMAGE. (THERE IS NO INTERNAL PACKING MATERIAL TO BE REMOVED).

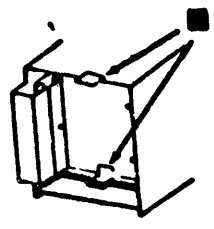
( ) 3. CLOSE FRONT DOOR.

1.11 4982 SENSOR INPUT/OUTPUT UNIT

( ) 1. REMOVE TAPE HOLDING REAR GATE (1), FIGURE 1.11.1.0.

( ) 2. INSPECT UNIT FOR SHIPPING DAMAGE. (THERE IS NO INTERNAL PACKING MATERIAL TO BE REMOVED).

FIG. 1.11.1.0



1.12 4987 PROGRAMMABLE COMMUNICATIONS SUBSYSTEM AND 4993 TERMINATION ENCLOSURE

( ) 1. REMOVE FRONT COVER BY PULLING STRAIGHT OUT FROM UNIT.

( ) 2. INSPECT UNIT FOR SHIPPING DAMAGE. (THERE IS NO INTERNAL PACKING MATERIAL TO BE REMOVED).

( ) 3. REPLACE FRONT COVER.

ENG. CHANGE NO. 323200 327517 327517B A03140 A08066 A11022 A40740 A40870 A41059
DATE OF CHANGE 23NOV81 08JAN82 12MAR82 23MAY83 18AUG83 01AUG84 20MAR86 06MAY86 10OCT86

SECTION 2.0 MULTIPLE RACK ASSEMBLY

2.1 MULTIPLE 1.8 METER RACK ENCLOSURE INSTALLATION

MULTIPLE (MORE THAN ONE) RACK CONFIGURATION WILL BE SHIPPED AS SINGLE ENCLOSURES BECAUSE OF THE FIXED WHEELS AT THE FRONT. ALL ENCLOSURES WITH A SPECIFY CODE #9197 (PRIMARY RACK ENCLOSURE) WILL BE SHIPPED WITH A FULL SET OF COVERS. ALL ENCLOSURES WITH A SPECIFY CODE #9198 SUBSEQUENT RACK ENCLOSURE WILL BE SHIPPED WITH NO SIDE COVERS, BUT WITH THE NEEDED ATTACHMENT HARDWARE INCLUDED. THESE ENCLOSURES ARE "ADD ON" ENCLOSURES.

( ) 1. INSTALLATION IN THE CUSTOMER AREA WILL START WITH REMOVAL OF THE SIDE COVER OF THE PRIMARY RACK ENCLOSURE ON THE SIDE THAT WILL BECOME THE INTERFACE FOR THE MULTIPLE RACK CONFIGURATION. THE REMOVED COVER WILL BE REINSTALLED ON THE FAR SIDE OF THE LAST ADD ON ENCLOSURE.

( ) 2. LIFT THE RACK STABILIZERS AND MOVE THE ENCLOSURES TO BE ATTACHED TOGETHER AND ALIGN WITH THE REAR LEVELING PADS, THEN CONNECT AT THE TOP (1), FIGURE 2.1.1.0 AND BOTTOM (2), FIGURE 2.1.1.0 WITH THE BOLTS, WASHERS, AND NUTS SUPPLIED.

( ) 3. INSTALL FOUR SPRINGS (7), FIGURE 2.1.2.0 (P/N 4410811) AT THE FRONT AND REAR WITH HARDWARE SUPPLIED.

( ) 4. INSTALL THE "L" SHAPED FRONT AND REAR FILLER COVERS; THE FRONT COVER (4), FIGURE 2.1.2.0 IS P/N 4410808 WHILE THE REAR COVER (6), FIGURE 2.1.2.0 IS P/N 4410810. THESE PARTS CAN BE IDENTIFIED EASILY BECAUSE THE FRONT FILLER COVER HAS A HOLE FOR THE EMERGENCY PULL KNOB (3), FIGURE 2.1.2.0. BOTH COVERS ARE INSTALLED BY HOLDING AGAINST THE VERTICAL SURFACE OF THE SPRING, PRESSING DOWNWARD UNTIL SEATED, AND FASTENING WITH TWO SCREWS AT THE TOP.

( ) 5. THE TOP FILLER COVER, P/N 4410809, (5), FIGURE 2.1.2.0 IS INSTALLED WITH TWO SCREWS SUPPLIED.

( ) 6. EACH RACK OF A MULTIPLE RACK SYSTEM HAS A PRIMARY POWER LINK CABLE. UNITS MUST BE POWERED FROM THE POWER DISTRIBUTION PANEL IN THE RACK IN WHICH THEY ARE INSTALLED. NO PRIMARY POWER CABLES MAY GO ACROSS A TWO RACK INTERFACE. TO DO SO WOULD CAUSE A SAFETY HAZARD.

( ) 7. EACH RACK IN A MULTIPLE RACK SYSTEM HAS AN EMERGENCY PULL KNOB (INSTANT POWER OFF) ON THE FRONT SIDE OF THE ENCLOSURE. THE EMERGENCY PULL KNOB CONTROLS THE PRIMARY POWER ONLY FOR THAT RACK. INSTALL THE KNOBS.

( ) 8. AFTER LOCATING EACH ENCLOSURE IN ITS FINAL POSITION, YOU MUST PUSH THE ENCLOSURE STABILIZER DOWN AND TO THE REAR, AND FASTEN ON BOTH ENDS.

FIG. 2.1.1.0

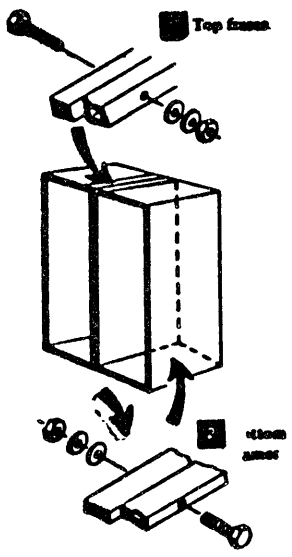
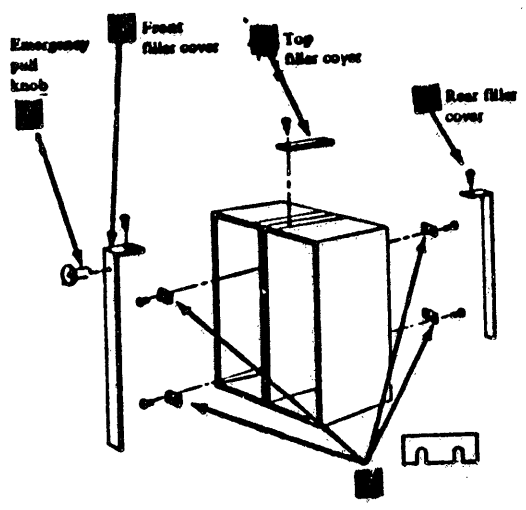


FIG. 2.1.2.0



2.2 MULTIPLE 1 METER RACK ENCLOSURE INSTALLATION

MULTIPLE (MORE THAN ONE) RACK CONFIGURATIONS WILL BE SHIPPED AS SINGLE ENCLOSURES BECAUSE OF THE FIXED WHEELS AT THE FRONT. ALL ENCLOSURES WITH A SPECIFY CODE #9197 (PRIMARY RACK ENCLOSURE) WILL BE SHIPPED WITH A FULL SET OF COVERS. ALL ENCLOSURES WITH A SPECIFIC CODE #9178 (SUBSEQUENT RACK ENCLOSURE) WILL BE SHIPPED WITH NO SIDE COVERS, BUT WITH THE NEEDED ATTACHMENT HARDWARE INCLUDED. THESE ENCLOSURES ARE "ADD ON" ENCLOSURES.

( ) 1. INSTALLATION IN THE CUSTOMER AREA WILL START WITH REMOVAL OF THE SIDE COVER OF THE FIRST ENCLOSURE ON THE SIDE THAT WILL BECOME THE INTERFACE FOR THE MULTIPLE RACK CONFIGURATION. REMOVE THE EMERGENCY PULL KNOB (3), FIGURE 2.2.2.0 BEFORE ATTEMPTING TO REMOVE THE RIGHT SIDE COVER. THE REMOVED COVER WILL BE REINSTALLED ON THE FAR SIDE OF THE LAST ADD ON ENCLOSURE.

( ) 2. MOVE THE ENCLOSURES TO BE ATTACHED TOGETHER AND ALIGN WITH THE REAR LEVELING PADS, THEN CONNECT AT THE TOP (1), FIGURE 2.2.1.0 AND BOTTOM (2), FIGURE 2.2.1.0 WITH THE BOLTS, WASHERS, AND SCREWS SUPPLIED.

( ) 3. INSTALL THE COUPLING (7), FIGURE 2.2.2.0 P/N 4410821 AT THE LOWER FRONT WITH HARDWARE SUPPLIED.

( ) 4. MACHINE TYPES INSTALLED IN THE UPPER POSITION OF EITHER ENCLOSURE MUST BE PULLED OUT TO GIVE ACCESS TO THE TWO SCREWS (4), FIGURE 2.2.2.0 AT THE TOP OF THE ENCLOSURE THAT HOLDS THE FRONT FILTER COVER (6), FIGURE 2.2.2.0 P/N 4410820. THE FRONT COVER IS INSTALLED BY PLACING THE BOTTOM END IN THE COUPLING THEN PUSHING THE TOP IN WHILE PRESSING DOWNWARD AND FASTENING WITH THE SCREWS SUPPLIED.

( ) 5. THE REAR FILLER COVER (5), FIGURE 2.2.2.0 P/N 4410820 IS HELD IN PLACE AND FASTENED WITH FOUR SCREWS SUPPLIED.

NOTE: COMPLETE THE ASSEMBLY OF MULTIPLE RACKS BEFORE INSTALLING EXTERNAL CABLES.

( ) 6. EACH RACK OF A MULTIPLE RACK SYSTEM HAS A PRIMARY POWER LINE CABLE. UNITS MUST BE POWERED FROM THE POWER DISTRIBUTION PANEL IN THE RACK IN WHICH THEY ARE INSTALLED. NO PRIMARY POWER CABLES MAY GO ACROSS A TWO-RACK INTERFACE. TO DO SO WOULD CAUSE A SAFETY HAZARD.

( ) 7. EACH RACK IN A MULTIPLE RACK SYSTEM HAS AN EMERGENCY PULL KNOB (INSTANT POWER OFF) ON THE FRONT SIDE OF THE ENCLOSURE. THE EMERGENCY PULL KNOB CONTROLS THE PRIMARY POWER ONLY FOR THAT RACK. INSTALL THE KNOBS.

( ) 8. AFTER LOCATING EACH ENCLOSURE IN ITS FINAL POSITION, YOU MUST PUSH THE ENCLOSURE STABILIZER DOWN AND TO THE REAR, AND FASTEN ON BOTH ENDS.

FIG. 2.2.1.0

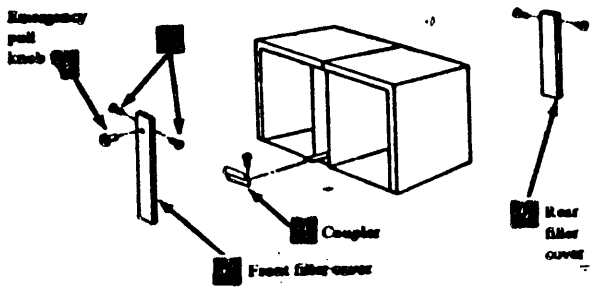
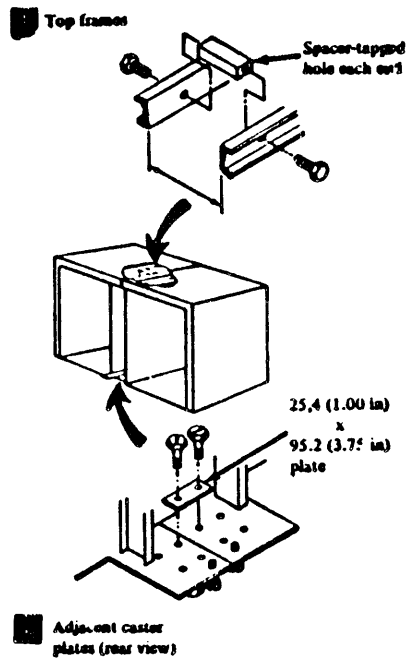


FIG. 2.2.2.0



2.3 RACK TO RACK CABLE INSTALLATION (MULTIPLE RACK ENCLOSURES)

AFTER TWO OR MORE RACKS HAVE BEEN CONNECTED TOGETHER, SOME CABLES FROM I/O UNITS IN ONE ENCLOSURE MUST BE CONNECTED TO ATTACHMENT CARDS IN ANOTHER ENCLOSURE. SIGNAL CABLES BETWEEN ENCLOSURES MAY BE NORMAL INTERNAL SYSTEM CABLES. I/O CHANNEL SIGNAL CABLES TO AND FROM AN EXPANSION UNIT MAY GO BETWEEN RACKS THAT ARE NEXT TO ONE ANOTHER.

( ) 1. DETERMINE THE LOCATION OF THE ATTACHMENT CARD BY REVIEWING THE CARD PLUG CHARTS (PACKED WITH THE DIAGNOSTIC DISKETTES) FOR THE PROCESSOR AND/OR I/O EXPANSION UNITS THAT ARE IN YOUR SYSTEM.

( ) 2. REMOVE THE SCREWS THAT HOLD THE AFFECTED CARD FILE TO THE RACK.

( ) 3. PULL THE UNIT OUT OF THE RACK APPROXIMATELY 150 MILLIMETERS (6 INCHES). IF CABLES PREVENT THIS MOVEMENT, DISCONNECT THEM.

WARNING: BE CAREFUL TO PREVENT DAMAGE TO CONNECTING CABLES.

( ) 4. REMOVE THE CABLE CLAMP BRACKET (7), FIGURE 2.3.1.0.

( ) 5. ROUTE THE CABLES (4), FIGURE 2.3.1.0 (FLAT OR CIRCULAR) FROM THE MACHINE REAR TO FRONT.

( ) 6. ROUTE THE CABLES INTO THE CARD FILE THROUGH THE LARGE OPENING (3), FIGURE 2.3.1.0 ON TOP OF THE CARD FILE. INSERT CONNECTORS (6), FIGURE 2.3.1.0 ON THE CORRECT CARD.

IF I/O UNITS OR DEVICES WHICH ARE INSTALLED OUTSIDE THE RACKS ARE TO CONNECT TO ATTACHMENT CARDS IN THIS CARD FILE, DO NOT PERFORM STEPS 7, 8, 9 AND 10. CHECK THEM OFF AND GO TO STEP 11.

( ) 7. INSTALL AND TIGHTEN THE CABLE CLAMP BRACKET (7), FIGURE 2.3.1.0.

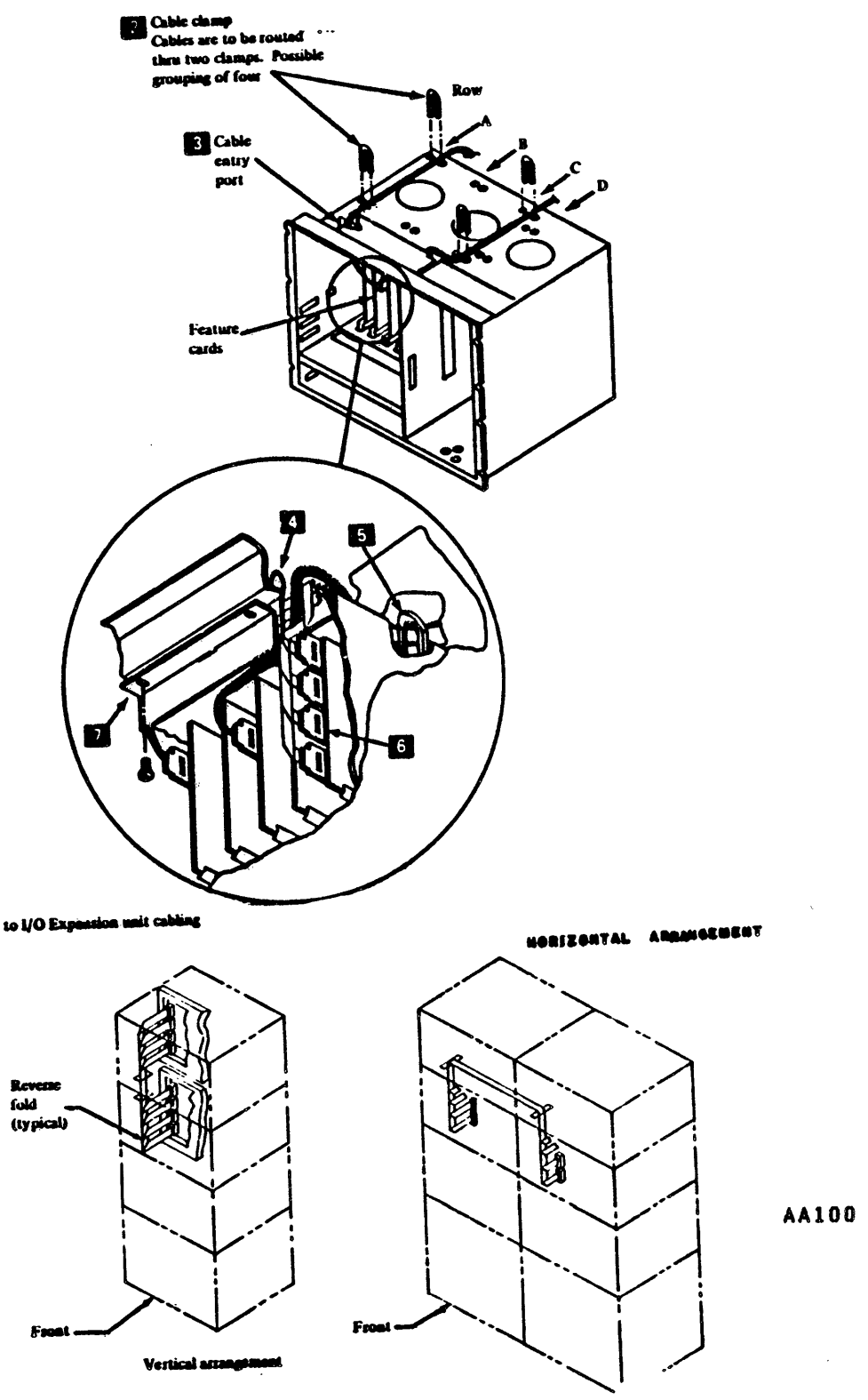
( ) 8. GROUP CABLES TOGETHER AND INSERT CABLE CLAMPS (2) (5), FIGURE 2.3.1.0 P/N 1634983 INTO THE CARD FILE TO HOLD THE CABLES.

( ) 9. PUSH THE CARD FILE INTO THE RACK AND FASTEN WITH EIGHT #10-32 SCREWS.

( ) 10. GROUP CABLES AT THE REAR OF THE CARD FILE AND INSERT THE REAR CABLE CLAMP (2), FIGURE 2.3.1.0.

( ) 11. USE CABLE TIES TO HOLD EACH CABLE TO VERTICAL BARS OF THE RACKS. IF THE UNITS ARE INSTALLED HORIZONTALLY NEXT TO ONE ANOTHER IN A MULTIPLE RACK CONFIGURATION, CABLES ENTER AND LEAVE THE CARD FILE THE SAME AS IF THE UNITS WERE VERTICAL TO ONE ANOTHER. TYPICAL I/O CONFIGURATIONS ARE SHOWN IN FIGURE 2.3.1.0.

FIGURE 2.3.1.0



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SECTION 3.0 INSTALLING EXTERNAL/STAND ALONE UNITS

REFER TO INDIVIDUAL UNIT INSTALLATION INSTRUCTIONS (SHIPPED WITH EACH UNIT).

3.1 UNPACK AND INITIAL SET-UP.

NOTE: 1) THESE SYSTEMS ARE DESIGNED TO BE INSTALLED BY ONLY ONE IBM CUSTOMER SERVICE REPRESENTATIVE.

NOTE: 2) ALWAYS PRACTIVE GOOD SAFETY HABITS.

3.1.1 INVENTORY OF PACKAGES

MAKE AN INVENTORY OF PACKAGES AGAINST THE ORDER INVOICE TO CHECK THAT ALL BOXES HAVE BEEN RECEIVED. NOTE: THIS INVENTORY SHOULD BE DONE TO INSURE THAT ALL BOXES WERE RECEIVED AND THAT NO VISIBLE DAMAGE EXISTS.

3.1.2 REMOVE PACKAGING AS PER UNPACKING INSTRUCTIONS AND INSPECT THE UNIT FOR PHYSICAL DAMAGE.

3.1.3 REMOVE CONTENTS OF BOXES IN ACCORDANCE WITH THE UNPACKING INSTRUCTIONS WHICH ACCOMPANY EACH UNIT.

CHECK EACH ITEM AGAINST SHIP GROUP CHECKLIST AS BOXES ARE OPENED TO INSURE THAT ALL PARTS HAVE BEEN DELIVERED.

CAUTION: DO NOT INSTALL FRONT, OR REAR, COVERS AT THIS TIME; SET THEM ASIDE IN A SAFE PLACE.

3.2 INITIAL SET-UP

3.2.1 IT IS THE CUSTOMERS RESPONSIBILITY TO GET THE MACHINE TO THE FINAL INSTALLATION SITE BEFORE THE IBM CUSTOMER SERVICE REPRESENTATIVE BEGINS INSTALLATION.

SINCE THE STAND ALONE UNITS WEIGH APPROXIMATELY 130 LBS (59KG) A MECHANICAL HANDLING DEVICE SHOULD BE CONSIDERED IN GETTING THE MACHINE TO ITS FINAL INSTALLATION SITE. WHEN THIS IS IMPRACTICABLE, SPECIALLY TRAINED PERSONS, OR SERVICES SHALL BE USED - SUCH AS PROFESSIONAL MOVERS.

CAUTION: THE STAND ALONE UNITS WEIGH IN THE VICINITY OF 130 LBS. (59KG). DO NOT ATTEMPT TO LIFT THE UNIT BY EITHER THE FRONT, OR REAR COVER (SEE FIGURE 3.3.1.0). ALSO DO NOT ATTEMPT TO LIFT THE UNIT BY ANY BOLTED ON BRACKETS, PANELS, ETC. INSTEAD, BEFORE LIFTING THE UNIT; REMOVE THE FRONT, AND REAR COVER.

3.3 UNPACK

3.3.1 REMOVE ANY PACKING MATERIAL, OR LOOSE ITEMS FROM THE CARD FILE AREA.

3.3.2 VISUALLY INSPECT THE INTERIOR OF THE UNIT FOR POSSIBLE SHIPPING DAMAGE.

3.3.3 CHECK ALL LOGIC CARDS AND CONNECTORS FOR CURRENT SEATING.

NOTE: LOOSE ELECTRICAL CONNECTIONS (CARDS TO BOARD, AND CONNECTORS TO THE CARD) MAY CAUSE INTERMITTENT PROBLEMS WHEN THE UNIT IS POWERED-UP.

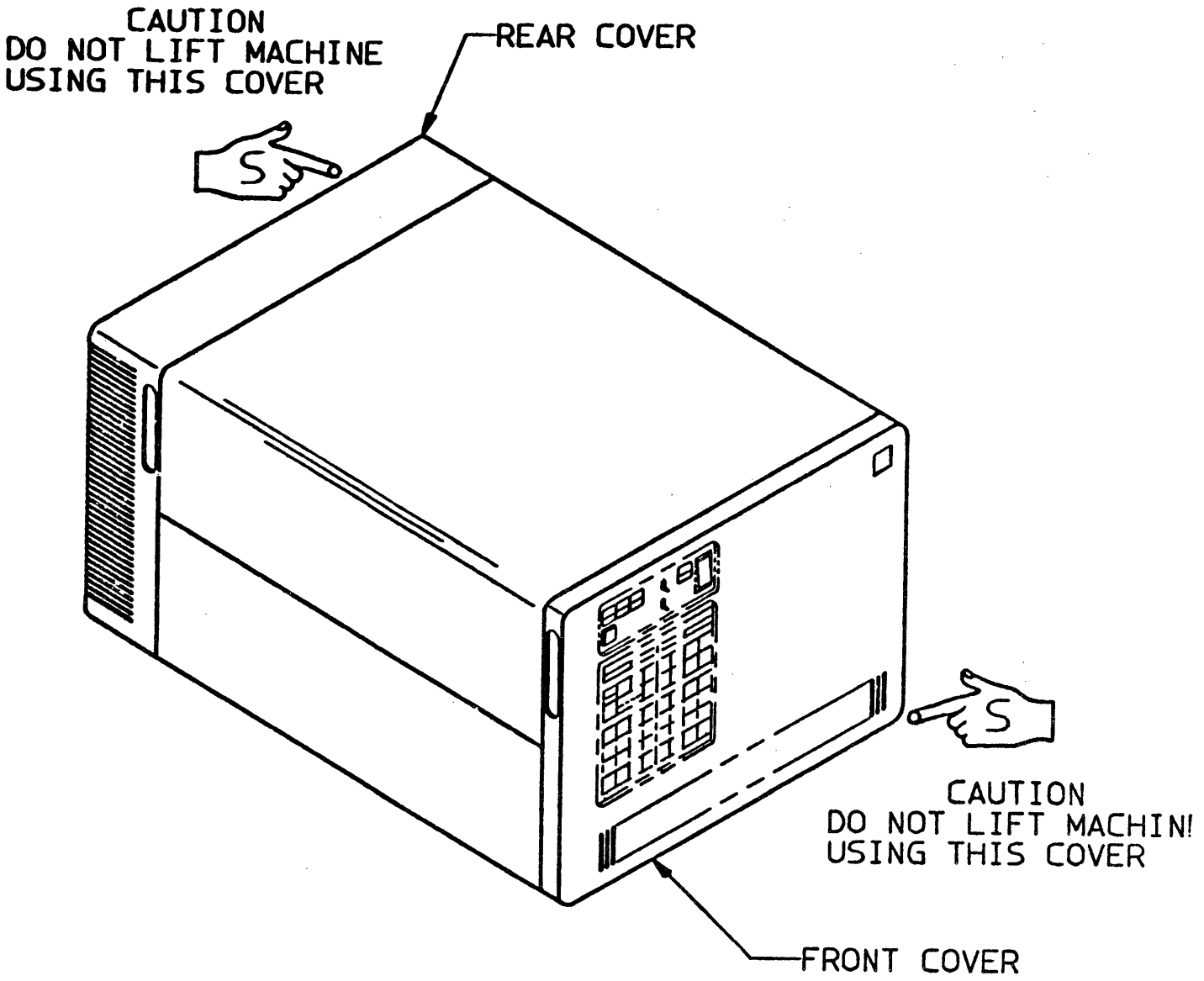

CAUTION
DO NOT LIFT MACHINE
USING THIS COVER
REAR COVER
CAUTION
DO NOT LIFT MACHIN!
USING THIS COVER
FRONT COVER

FIGURE 3.3.1.0

REFER TO INDIVIDUAL UNIT INSTALLATION INSTRUCTIONS (SHIPPED WITH EACH UNIT).

3.4 STAND ALONE PROCESSOR OR EXPANSION UNIT INSTALLATION.

( ) 1. REMOVE THE FRONT AND REAR DECORATIVE COVERS (IF ALREADY INSTALLED).

NOTE: IT IS NOT NECESSARY TO REMOVE THE TOP COVER OF THE UNITS CONTAINING DISK DRIVES TO FEED THE CABLES THROUGH. IF COVER REMOVAL IS DESIRED, REFER TO SECTION 3.5 FOR INSTRUCTIONS.

( ) 2. THE DISKETTE UNIT IN THE RIGHTMOST POSITION MAY HAVE TO BE PULLED OUT TO THE SERVICE POSITION IN ORDER TO FACILITATE THE REMOVAL OF THE TOP COVER. (MODEL (CXX)

( ) 3. REMOVE THE SCREWS WHICH FASTEN THE OPERATORS CONSOLE TO THE CHASSIS. SWING THE GATE OPEN. (MODEL CXX, G10, H10)

( ) 4. REMOVE THE 4 COVER MOUNTING SCREWS AND LIFT OFF THE TOP COVER. (MODEL CXX)

( ) 5. ROUTE THE CABLES FROM THE MACHINE REAR TO THE FRONT OF THE PROCESSOR VIA THE OPENING PROVIDED ON THE UNIT. INSERT CONNECTORS ONTO THE APPROPRIATE CARD AND TIGHTEN CABLE CLAMP BRACKET.

NOTE: IF SHIELD GROUNDING LEAD IS NOT TO BE TERMINATED ON THE CHASSIS GROUND BUS IT MUST BE POSITIONED AND TAPED BACK ALONG THE CABLE JACKET.

( ) 6. GROUP CABLES TOGETHER AND INSERT CLAMP P/N 1634983 INTO THE TOP OF THE UNIT TO RETAIN THE CABLES. (MODEL CXX)

( ) 7. CLAMP EACH CABLE TO THE MOUNTING STRIP IN THE REAR OF THE RACK.

( ) 8. CLOSE THE GATE (MODELS CXX, G10, H10) AND REPLACE THE TOP COVER (MODEL CXX) AND SNAP ON THE DECORATIVE COVERS.

( ) 9. FOR REMOVAL OF CABLES, PERFORM THE ABOVE STEPS IN REVERSE ORDER.

3.5 ATTACHING A STAND ALONE PROCESSOR TO A STAND ALONE UNIT.

NOTE: A CHANNEL REPOWER CARD (D/C 1565) MUST BE INSTALLED IN THE STAND ALONE PROCESSOR AND STAND ALONE ENCLOSURE CABLE (D/C 4525) MUST BE USED TO ATTACH THE STANDALONE EXPANSION UNIT.

( ) 1. PERFORM STEPS 1 THRU 8 IN SECTION 3.4 ABOVE FOR EACH UNIT.

( ) 2. WHEN CONNECTING A STAND ALONE PROCESSOR UNIT CONTAINING A DISK DRIVE TO A STAND ALONE EXPANSION UNIT ALSO CONTAINING A DISK DRIVE, YOU MUST TIE THE TWO AC LINE CORDS TOGETHER (FIG. 3.3.4.0) USING CABLE TIES PROVIDED.

TOP COVER REMOVAL - STAND ALONE UNITS CONTAINING DISK DRIVES.

( ) 1. PARTIALLY REMOVE DISK FILE FROM THE CHASSIS FOR ACCESS TO THE RIGHT FRONT COVER SCREW.

( ) 2. SWING POWER SUPPLY OPEN FOR ACCESS TO TOP LEFT COVER SCREW.

( ) 3. REMOVE ALL FOUR COVER SCREWS AND LIFT OFF COVER.

3.6 CABLING EXTERNAL UNITS TO RACK

EXTERNAL I/O UNITS ATTACH TO ATTACHMENT CARDS IN THE PROCESSOR AND/OR I/O EXPANSION UNITS THROUGH CABLES SUPPLIED WITH THE UNITS. THE FOLLOWING PROCEDURE MUST BE FOLLOWED FOR EACH UNIT THAT IS CONNECTED IN THIS WAY.

( ) 1. DETERMINE THE LOCATION OF THE ATTACHMENT CARD BY REVIEWING THE CARD PLUG CHARTS (PACKED WITH THE DIAGNOSTIC DISKETTES) FOR THE PROCESSOR AND/OR I/O EXPANSION UNITS THAT ARE IN YOUR SYSTEM.

( ) 2. REMOVE THE SCREWS THAT HOLD THE AFFECTED CARD FILE TO THE RACK.

( ) 3. PULL THE UNIT OUT OF THE RACK APPROXIMATELY 150 MILLIMETERS (6 INCHES).

WARNING: BE CAREFUL TO PREVENT DAMAGE TO CONNECTING CABLES.

( ) 4. REMOVE THE CABLE CLAMPS (2), (5), FIGURE 3.3.2.0 AND CABLE CLAMP BRACKET (7), FIGURE 3.3.2.0.

( ) 5. ROUTE THE CABLES (4), FIGURE 3.3.2.0 (FLAT OR CIRCULAR) FROM THE MACHINE REAR TO FRONT. CUSTOMER SIGNAL CABLES SHOULD ENTER THE SYSTEM IN THAT RACK IN WHICH THE CABLE WILL BE TERMINATED. RACKS ARE TO BE ASSEMBLED TOGETHER BEFORE CABLES ARE ROUTED INTO THE RACK ENCLOSURE.

( ) 6. ROUTE THE CABLES INTO THE CARD FILE THROUGH THE LARGE OPENING (3), FIGURE 3.3.2.0 ON TOP OF THE CARD FILE. INSERT CONNECTORS (6), FIGURE 3.3.2.0 ON THE

CORRECT CARD.

( ) 7. AFTER ALL OF THE EXTERNAL UNIT CABLES HAVE BEEN CONNECTED TO THEIR ATTACHMENT CARDS, INSTALL AND TIGHTEN THE CABLE CLAMP BRACKET (7), FIGURE 3.3.2.0.

( ) 8. (NOTE: IF A GOOD ELECTRICAL GROUND CAN BE MADE IN STEP 12, THIS STEP CAN BE OMITTED). CONNECT ALL OF THE GROUND WIRES TO THE BUS BAR ON TOP OF THE CARD FILE. ENSURE A GOOD ELECTRICAL GROUND BY USING THE LOCKWASHERS SUPPLIED.

( ) 9. GROUP CABLES TOGETHER AND INSERT CABLE CLAMP (5), FIGURE 3.3.2.0 P/N 1634983 INTO THE CARD FILE TO HOLD THE CABLES.

( ) 10. PUSH THE CARD FILE INTO THE RACK AND FASTEN WITH EIGHT BLACK #10-32 SCREWS.

( ) 11. GROUP CABLES AT THE REAR OF THE CARD FILE AND INSERT THE REAR CABLE CLAMP (2), FIGURE 3.3.2.0.

( ) 12. USE CLAMPS TO HOLD EACH EXTERNAL CABLE (9), FIGURE 3.3.3.0 TO THE VERTICAL MOUNTING STRIP (10), FIGURE 3.3.3.0 IN THE REAR OF THE RACK ON THE SIDE AWAY FROM THE POWER CABLE. DO NOT USE THE TOP HOLE. ONLY USE EVERY OTHER HOLE.

( ) 13. ROUTE THE CABLES OUT THROUGH THE CABLE ENTRY (11), FIGURE 3.3.3.0.

FIG. 3.3.2.0

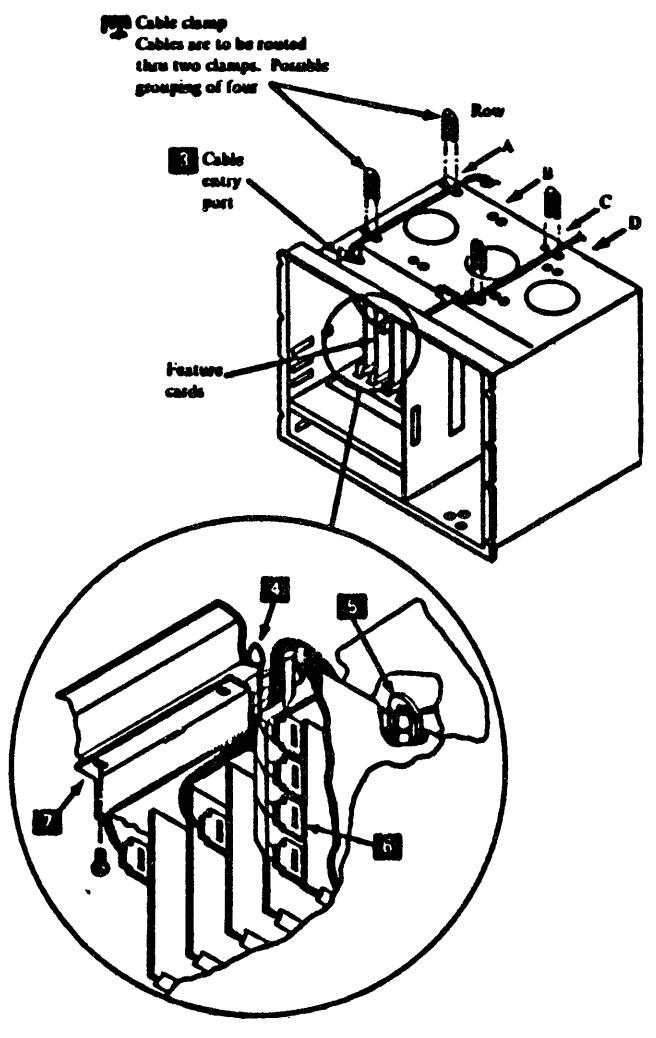


FIG. 3.3.3.0

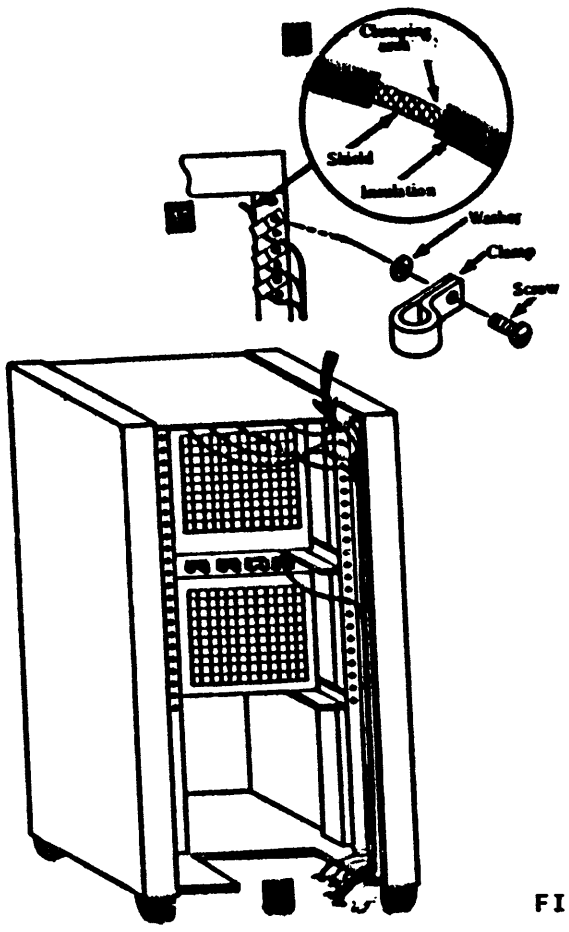
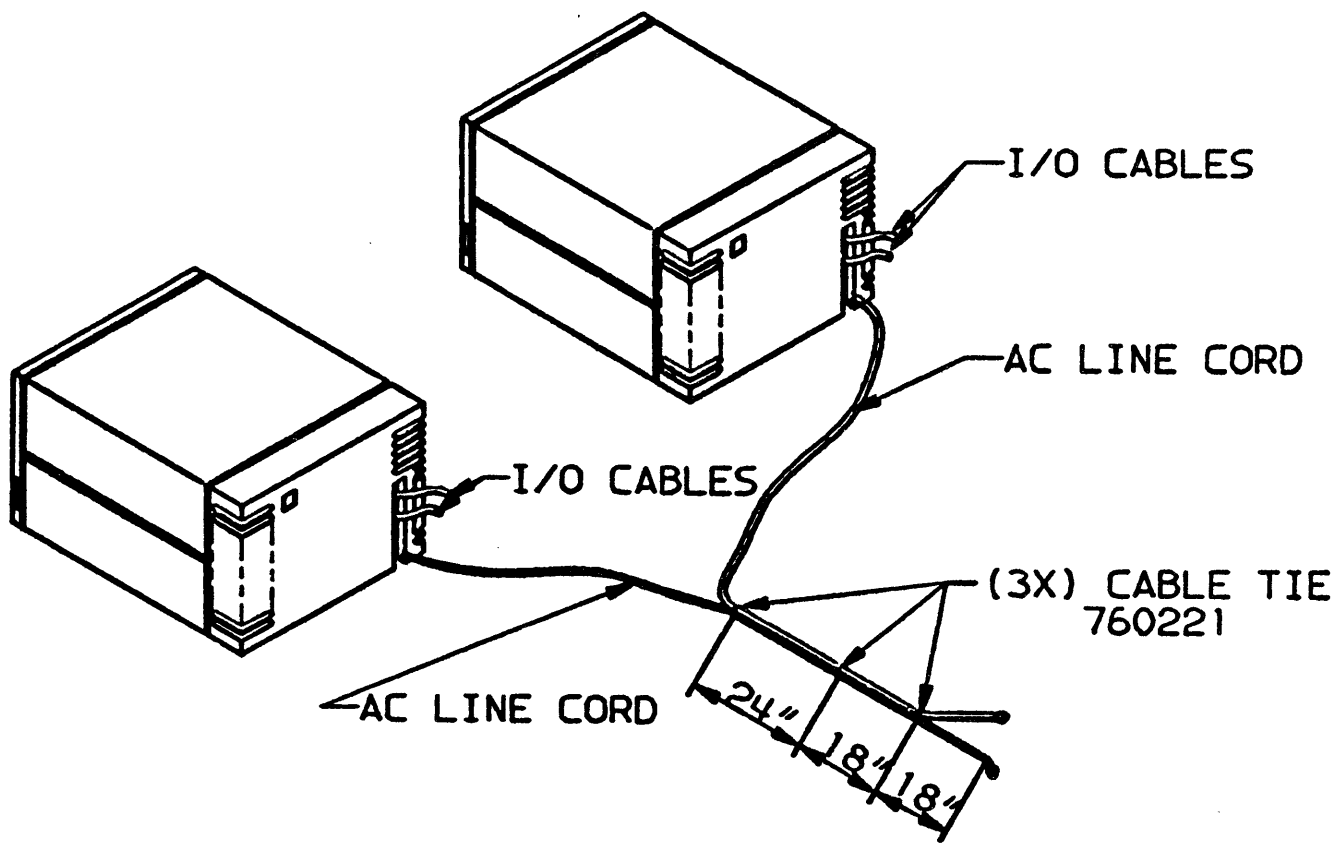


FIG. 3.3.4.0



3.7 CUSTOMER CABLING RESPONSIBILITY

THE IBM CSR DOES NOT CONNECT NON-IBM CABLES OR EQUIPMENT TO THE CUSTOMER ACCESS PANEL, ATTACHMENT CARDS, OR SENSOR I/O CARDS. THE FOLLOWING PROCEDURES ARE SUPPLIED SO THAT THE USER OR USER'S REPRESENTATIVE CAN COMPLETE THE INSTALLATION. CAUTION: GROUNDING CIRCUIT CONTINUITY MUST BE MAINTAINED ON A SYSTEM WITH SENSOR I/O ATTACHMENTS, THE POWER PLUGS MUST NOT BE DISCONNECTED WITHOUT FIRST DISCONNECTING ALL USER INPUT/OUTPUT CIRCUITS. INFORMATION ON CUSTOMER CABLING REQUIREMENTS IS CONTAINED IN CUSTOMER SITE PREPARATION MANUAL GA34-0050.

SECTION 4.0 SYSTEM POWER

PRIMARY POWER GROUNDING AND CONTROLS

A) PRIMARY POWER GROUNDING

IBM RECOMMENDED GROUNDING AND POWER DISTRIBUTION ARE SHOWN IN THE CUSTOMER SITE PREPARATION MANUAL CHAPTER 5. THE PERFORMANCE OF IBM UNITS CAN BE AFFECTED BY ELECTRICAL NOISE AND/OR TRANSIENTS ENTERING THE SYSTEM UNITS FROM THE PRIMARY POWER GROUNDING NETWORK.

ALL IBM MACHINE POWER CORDS CONTAIN AN INSULATED EQUIPMENT GROUNDING CONDUCTOR (GREEN OR GREEN WITH YELLOW STRIPES) CONNECTED BETWEEN THE MACHINE FRAME GROUND AND A PIN ON THE POWER CORD PLUG. THE WALL OR CORD RECEPTACLES RECOMMENDED BY IBM PROVIDE CONNECTION TO THIS GROUND PIN. THIS GROUND PIN MUST BE PROPERLY TERMINATED TO PROVIDE AN INSTALLATION WHICH IS SAFE, RELIABLE, AND RELATIVELY UNAFFECTED BY ELECTRICAL NOISE.

HOWEVER, IN GBG/I COUNTRIES USING 50HZ POWER, AND IN JAPAN, CERTAIN CONFIGURATIONS PROHIBIT THE USE OF POWER PLUGS AND WALL RECEPTACLES. THESE EXCEPTIONS ARE AS FOLLOWS:

- IN GBG/I COUNTRIES USING 50HZ POWER, THE GROUND CONDUCTOR LEAKAGE CURRENT MAY BE OF SOME CONCERN IF IT IS GREATER THAN 3.5 MILLIAMPERES. IF THIS GROUNDING CONDUCTOR CURRENT IS A CONCERN, SPECIAL CONSIDERATIONS MAY BE NECESSARY WHEN CONNECTING THE 4997 POWER CABLE TO THE A.C. POWER SOURCE. REFER TO APPENDIX F AND DETERMINE THE LEAKAGE CURRENT OF THE SYSTEM TO BE INSTALLED BEFORE PROCEEDING WITH THE INSTALLATION.
- IN GBG/I COUNTRIES USING 50HZ POWER, IF THE GROUND CONDUCTOR LEAKAGE CURRENT IS GREATER THAN 1 AMPERE, THE SYSTEM CANNOT BE INSTALLED. HOWEVER, THIS CONDITION CANNOT OCCUR WITH SERIES/1.
- IN JAPAN OTHER SPECIAL CONSIDERATIONS MUST BE TAKEN INTO ACCOUNT ALSO. IF JAPAN ONLY, REFER TO APPENDIX D BEFORE PROCEEDING WITH THE INSTALLATION.

TO MEET THE REQUIREMENTS FOR THE USAGE OF POWER PLUG AND WALL RECEPTACLES (IF IT HAS BEEN DETERMINED THAT THEY CAN BE USED), CONDITIONS DESCRIBED IN THE CUSTOMER SITE PREP MANUAL (CHAPTER 5) MUST BE MET.

B) INITIAL SYSTEM (CIRCUITS) GROUNDING AND CUSTOMER SIGNAL GROUNDING

IF THE SYSTEM BEING INSTALLED CONTAINS A 4982 (SENSOR I/O EQUIPMENT), ADDITIONAL GROUNDING AND SHIELDING PRECAUTIONS MUST BE TAKEN. REFER TO THE CUSTOMER SITE PREPARATION MANUAL, CHAPTER 7.

C) EMERGENCY POWER OFF CONTROL

IF AN IBM 4997 ENCLOSURE IS BEING INSTALLED, AN INSTANT POWER OFF (IPO) SWITCH IS PROVIDED WHICH WILL POWER OFF THE SINGLE BAY WITHIN TWO SECONDS AFTER PULLING THE IPO BUTTON. THE IPO BUTTON POWERS OFF ONLY THE UNITS MOUNTED WITHIN ITS 4997 RACK ENCLOSURE. IN SYSTEMS WITH MULTIPLE ENCLOSURES, THE IPO POWERS OFF ONLY THE UNITS MOUNTED WITHIN THAT SINGLE ENCLOSURE. SAFETY PRACTICES PREVENT ANY ENCLOSURE OR UNIT WITHIN THE ENCLOSURE FROM BEING POWERED BY ANOTHER ENCLOSURE. EACH ENCLOSURE MUST BE INDIVIDUALLY CONNECTED TO THE MAIN POWER SOURCE.

FOR INSTALLATIONS NOT USING AN IBM ENCLOSURE OR FOR NON-RACK MOUNTED DEVICES, CONTROLS FOR DISCONNECTING THE MAIN POWER SERVICE SUPPLYING THE COMPUTER EQUIPMENT SHOULD BE CONVENIENT TO THE OPERATOR.

D) LIGHTNING PROTECTION

IBM RECOMMENDS THAT THE USER INSTALL LIGHTNING PROTECTION ON HIS SECONDARY POWER SOURCE AND SIGNAL LINES THAT ARE EXPOSED TO LIGHTNING WHEN:

- THE UTILITY COMPANY INSTALLS LIGHTNING PROTECTORS ON THE PRIMARY.
- PRIMARY POWER IS SUPPLIED BY AN OVERHEAD POWER SERVICE.
- THE AREA IS SUBJECT TO ELECTRICAL STORMS OR EQUIVALENT POWER SURGES.

THE USER SHOULD DETERMINE WHETHER LIGHTNING PROTECTION IS DESIRABLE, AND SELECT AND INSTALL THE SERVICE PROTECTOR NEEDED.

E) CONVENIENCE OUTLETS

A SUITABLE NUMBER OF CONVENIENCE OUTLETS SHOULD BE (AT REQUIRED LOCAL COUNTRY VOLTAGE) INSTALLED IN THE SYSTEM AREA. THESE CONVENIENCE OUTLETS SHOULD BE ON BUILDING CIRCUITS OTHER THAN THE COMPUTER POWER PANEL (OR RISER), OR LIGHTNING CIRCUITS.

F) ATTACHED EQUIPMENT (NON-IBM)

EQUIPMENT NOT SUPPLIED BY IBM BUT ATTACHED TO, OR MOUNTED IN, THE IBM ENCLOSURE MUST NOT USE OR SHARE A.C. OR D.C. POWER FROM THE INTERNAL SYSTEM POWER DISTRIBUTION

PANEL-EXCEPT AS FOLLOWS:

*TEMPORARY POWER USE FOR SERVICE EQUIPMENT BEING USED BY EXPERIENCED MAINTENANCE PERSONNEL.

*I/O CHANNEL ATTACHMENT CARDS DESIGNED ACCORDING TO THE GUIDELINES CONTAINED IN S/1 USER ATTACH MANUAL (GA34-0033) TO MOUNT IN AN IBM PROCESSOR OR I/O EXPANSION CARD FILE MAY DRAW D.C. POWER FROM THAT UNIT.

MOUNTING NON-IBM EQUIPMENT IN THE SAME ENCLOSURE WITH IBM UNITS CAN AFFECT SYSTEM PERFORMANCE DUE TO ELECTRICAL NOISE, INCREASED THERMAL LOAD, OR ALTERED AIR-FLOW.

CAUTION: GROUNDING CIRCUIT CONTINUITY IS VITAL. ON A SYSTEM WITH 4982 (SENSOR I/O) ATTACHMENTS, THE POWER PLUGS MUST NOT BE DISCONNECTED WITHOUT FIRST DISCONNECTING ALL USER INPUT/OUTPUT CIRCUITS.

4.1 PREPOWER CHECKS.

CHECKING VOLTAGES AND RESISTANCES IN PRIMARY POWER CIRCUITS.

THE CSR MAY TAKE VOLTAGE AND RESISTANCE MEASUREMENTS AT THE FACE OF THE BRANCH CIRCUIT RECEPTACLE (CONNECTOR), BUT MUST NOT TAKE MEASUREMENTS INSIDE A CUSTOMER'S POWER PANEL, EQUIPMENT ROOM, MG POWER UNIT, OR SIMILAR AREA. ALSO, THE CSR SHOULD NOT ENTER A CUSTOMER'S MECHANICAL EQUIPMENT ROOM TRANSFER VAULT, OR UNINTERRUPTIBLE POWER SOURCE BATTERY ROOM.

( ) A. CHECK OUT CUSTOMER RECEPTACLE OR CONNECTOR.

NOTE: IF A BUILDING GROUND IS NOT AVAILABLE IN THE IMMEDIATE AREA, TO DO THE FOLLOWING CHECKS, USE THE GROUND PIN IN THE CUSTOMER RECEPTACLE.

BRANCH CIRCUIT CB TURNED OFF CHECK

1. HAVE THE CUSTOMER LOCATE AND TURN OFF THE BRANCH CIRCUIT CB THAT FEEDS THE OUTLET. ATTACH "DO NOT OPERATE" TAG (2229-0237).

CAUTION: AVOID PHYSICAL CONTACT WITH THE CASE OF THE RECEPTACLE WITH ANYTHING OTHER THAN TEST PROBES UNTIL STEP 3 IS COMPLETED.

2. CHECK THE VOLTAGE FROM THE RECEPTACLE CASE COVER SCREW TO THE BUILDING GROUND FOR LESS THAN 1.0 VAC. (BEGIN WITH THE METER SCALE THAT IS APPROPRIATE FOR NORMAL LINE VOLTAGE CHECKS).

3. CHECK THE VOLTAGE FROM THE GROUND PIN TO THE BUILDING GROUND FOR LESS THAN 1.0 VAC. THE RECEPTACLE IS NOW SAFE TO TOUCH.

4. CHECK THE RESISTANCE FROM THE GROUND PIN TO THE RECEPTACLE CASE COVER SCREWS.

   CHECK THE RESISTANCE FROM THE GROUND PIN TO THE BUILDING GROUND. A READING OF LESS THAN 1.0 OHM INDICATES THE PRESENCE OF A SAFE, CONTINUOUS GROUNDING CONDUCTOR.

CAUTION: AVOID CONTACT WITH INTERNAL PARTS (PINS AND SOCKETS) OF THE RECEPTACLE.

5. WITH THE CB STILL TURNED OFF, MEASURE THE PHASE-TO-PHASE VOLTAGE AND THE PHASE-TO-GROUND VOLTAGE.

   MEASURE THE PHASE-TO-NEUTRAL VOLTAGE (IF PRESENT) AND THE NEUTRAL-TO-GROUND VOLTAGE (IF PRESENT).

   ALL VOLTAGE VALUES ARE TO BE LESS THAN 1.0 VAC.

BRANCH CIRCUIT CB TURNED ON CHECK

CAUTION: DO NOT TOUCH THE RECEPTACLE BEFORE MEETING THE REQUIREMENTS OF STEPS 6 AND 7.

6. HAVE THE CUSTOMER TURN ON THE CB THAT SUPPLIES VOLTAGE TO THE RECEPTACLE.

7. MEASURE THE VOLTAGES FROM THE SHELL TO THE BUILDING GROUND TO NEUTRAL (IF PRESENT). VOLTAGE VALUES ARE TO BE LESS THAN 1.0 VAC.

CAUTION: IF MEASURED VOLTAGE VALUES ARE LESS THAN 1.0 VAC, THE RECEPTACLE CAN BE TOUCHED. AVOID CONTACT WITH THE INTERNAL PARTS (PINS AND SOCKETS) OF THE RECEPTACLE.

( ) B. CHECK OUT IBM MACHINE POWER PLUG.

THE POWER PLUG ON THE MACHINE POWER CABLE MUST BE CHECKED TO ENSURE THAT VOLTAGE HAS NOT BEEN APPLIED TO THE MACHINE FROM ANOTHER SOURCE, SUCH AS ANOTHER IBM MACHINE OR A NON-IBM ALTERATION OR ATTACHMENT, EITHER DIRECTLY OR

THROUGH THE CHANNEL.

CAUTION: DO NOT TOUCH THE PLUG SHELL UNTIL THE REQUIREMENT IN STEP 1 IS MET.

1. MEASURE THE VOLTAGE FROM THE SHELL AND THE GROUND PIN TO THE BUILDING GROUND. IF VOLTAGE VALUES ARE LESS THAN 1.0 VAC, THE PLUG SHELL CAN BE TOUCHED.

CAUTION: AVOID CONTACT WITH INTERNAL PINS.

2. MEASURE THE VOLTAGE FROM THE PHASE PINS TO THE GROUND PIN AND THE NEUTRAL PIN (IF PRESENT). ALL VOLTAGE VALUES ARE TO BE LESS THAN 1.0 VAC.

3. MEASURE THE RESISTANCE BETWEEN THE GROUND PIN AND THE MACHINE FRAME FOR LESS THAN 1.0 OHM.

NOTE: IF THE REQUIREMENTS IN STEPS 1 THROUGH 3 ARE MET, THE PLUG IS SAFE.

( ) C. MEASURE CUSTOMER PRIMARY POWER.

BRANCH CIRCUIT CB TURNED ON CHECK.

CAUTION: AVOID CONTACT WITH THE INTERNAL PARTS (PINS AND SOCKETS) OF THE RECEPTACLE.

1. MEASURE THE VOLTAGES FROM THE GROUND PIN AND THE NEUTRAL PIN (IF PRESENT) TO ALL PHASES. ENSURE THAT THE VALUES ARE ACCEPTACLE FOR THE MACHINE USING THEM. (REFER TO TABLE 1).

2. MEASURE THE PHASE-TO-PHASE VOLTAGE. ENSURE THAT THE VALUES ARE ACCEPTABLE FOR THE MACHINE USING THEM. (REFER TO TABLE 1).

NOTE: IF THE REQUIREMENTS IN STEPS 1 AND 2 ARE MET, HAVE THE CUSTOMER BRANCH CIRCUIT CB TURNED OFF BEFORE CONNECTING THE PLUG INTO THE CUSTOMER RECEPTACLE OR CONNECTOR.

( ) D. VERIFY THAT THE MACHINE VOLTAGE LABELS AND CUSTOMER'S SERVICE VOLTAGES ARE EQUAL.

SOME POWER SUPPLIES ARE LIMITED TO SPECIFIC AC INPUT VOLTAGES. THEREFORE, THE INPUT VOLTAGES FOR THE FOLLOWING PRODUCTS MUST MEASURE AS SHOWN IN TABLE 1.

- 4952A (PROCESSOR (BELOW S/N 50,000) - REMOVE THE BACK COVER. THE "THIS MACHINE IS WIRED FOR ___ VAC" LABEL IS ON THE BACK OF THE TRANSFORMER BOX.
- 4962 (DISK STORAGE) - LOCATE THE "THIS MACHINE IS WIRED FOR ___VAC" LABEL ON THE FRONT OF MACHINE UNDER THE DECORATIVE COVER.
- 4963 (DISK SUBSYSTEM) - REMOVE DECORATIVE COVER AND LOCATE LABEL "THIS MACHINE IS WIRED FOR ____VAC" ON FRONT OF MACHINE.
- 4964 (DISKETTE) OR 4966 (DISKETTE MAGAZINE) - PULL THE UNIT 1/2 OUT OF THE RACK ADAPTER. LOCATE THE "THIS MACHINE IS WIRED FOR ____VAC" LABEL ON TOP OF THE UNIT'S OUTER COVER.
- 4969-7X (TAPE DRIVE) FROM THE REAR OF THE MACHINE AT THE LOWER RIGHT HAND CORNER, LOCATE THE "THIS MACHINE IS WIRED FOR ____VAC" LABEL. IF THIS IS DRIVE ONE WITH CONTROLLER FEATURE, THEN THE CONTROLLER COVER MUST BE REMOVED TO GAIN ACCESS TO THE LABEL.
- 4969-4X (TAPE DRIVE) ON THE TAPE DRIVE POWER SUPPLY NEXT TO TB5, LOCATE THE "THIS MACHINE IS WIRED FOR ____VAC" LABEL. THE POWER SUPPLY IS MOUNTED ON REAR OF THE CASTING INSIDE THE TAPE DRIVE.
- 4982 (SENSOR I/O) - REMOVE THE FRONT COVER AND OPEN THE GATE. LOCATE THE "THIS MACHINE IS WIRED FOR ____VAC" LABEL ON THE FRONT OF THE POWER SUPPLY.
- 4987 (PROGRAMMABLE COMMUNICATIONS SUBSYSTEM) - REMOVE THE FRONT COVER. LOCATE THE "THIS MACHINE IS WIRED FOR ____VAC" LABEL ON THE FRONT OF THE POWER SUPPLY ABOVE THE FUSES.
- 4993 (TERMINATION ENCLOSURE) - REMOVE FRONT COVER. REMOVE THE POWER SUPPLY RETAINING CLAMP AND SLIDE POWER SUPPLY OUT. THE "THIS MACHINE IS WIRED FOR ____VAC" LABEL IS LOCATED ON THE TOP OF THE PRIMARY POWER BOX.

IF VOLTAGE CHANGES ARE TO BE MADE TO THE POWER SUPPLY TO EQUAL THE AC INPUT SERVICE VOLTAGES, YOU ARE TO INSTALL AN IBM FFBM VOLTAGE CONVERSION (FIELD FEATURE BILL MATERIAL).

60HZ AC INPUT VOLTAGE
(NOT APPLICABLE FOR HI FREQUENCY POWER SUPPLIES)

	MACHINE VOLTAGE LABEL (NOMINAL INPUT)	ACCEPTABLE RANGE HIGH	LOW
LOW VOLTAGE	100 VOLT AC	110	90
	110 VOLT AC	119	96.5
	120 VOLT AC	127	104
	127 VOLT AC	137	111
HIGH VOLTAGE	200 VOLT AC	220	180
	208 VOLT AC	220	180
	220 VOLT AC	238	193
	240 VOLT AC	254	208

50HZ AC INPUT VOLTAGE
(NOT APPLICABLE FOR HIGH FREQUENCY POWER SUPPLIES)

	MACHINE VOLTAGE LABEL (NOMINAL INPUT)	ACCEPTABLE RANGE HIGH	LOW
LOW VOLTAGE	100 VOLT AC	110	90
	110 VOLT AC	119	96.5
HIGH VOLTAGE	200 VOLT AC	220	180
	220 VOLT AC	238	193
	230 VOLT AC	249	202
	240 VOLT AC	259	210

NOTE: ALL PROCESSORS AND EXPANSION UNITS EXCEPT 4952 (A) (SN BELOW 50,000) USE A HIGH FREQUENCY POWER SUPPLY AND AS SUCH ARE NOT SENSITIVE TO ABSOLUTE VOLTAGES BUT RATHER OPERATE OVER A RANGE OF VOLTAGES. AS SUCH, THE INSTALLER IS TO INSURE THAT THE CORRECT LEVEL OF THE MACHINE MATCHES THE AC INPUT LEVEL ONLY (HI OR LOW).

- LOW = 90 - 137 VOLTS (NOMINAL 110V)
- HI = 180 - 254 VOLTS (NOMINAL 220V)

TABLE 1.

4.2 SWITCH ON POWER

SWITCH ON AC POWER TO THE SYSTEM INCLUDING ALL I/O UNITS AS FOLLOWS:

( ) 1. SWITCH OFF ALL THE MAIN POWER SWITCHES FOR EACH UNIT.

( ) 2. INSERT FREE END OF THE AC POWER CABLES INTO CUSTOMER SERVICE OUTLETS.

( ) 3. SET THE RACK EMERGENCY PULL (INSTANT POWER OFF) CIRCUIT BREAKER INTO THE REAR OF THE RACK TO THE ON POSITION.

( ) 4. SWITCH ON ALL SWITCHES, ONE AT A TIME WITH PROCESSOR LAST.

NOTE: MAKE SURE THE DEVICE FAN UNITS ARE WORKING.

IF POWER DOES NOT COME ON, SEE POWER SUPPLY MAP CHARTS FOR CORRECTING POWER SUPPLY PROBLEMS. IF ALL VOLTAGES ARE NOT PRESENT, THE POWER WILL GO OFF. A DC VOLTMETER OF +/-1% TOLERANCE SHOULD BE USED (SUCH AS SIMPSON MODEL 260, WESTON 901, FLUKE MODEL 885A/CC).

4.3 ADJUST OVERCURRENT SETTING

REFER TO FIGURES 4.4.1.0 AND 4.4.2.0. ADJUST THE OVERCURRENT SETTING ON THE SEQUENCE AND CONTROL CARD ON BOTH THE FULL WIDTH AND HALF WIDTH CARD FILES (125 WATT-4953A, C AND 300 WATT 4953B, D; 4955 A-D) AND ON THE LOW VOLTAGE CARD (400 WATT, 4952B (S/N 15399 OR 53-02499 AND BELOW) (4955E), ONLY IF FEATURES ARE ADDED TO THE PRODUCT BEYOND THE ORIGINAL PLANT ORDER.

NOTE: DO NOT ADJUST IF FEATURE CARDS ARE NOT ADDED TO THE MACHINE BEYOND ORIGINAL PLANT SHIPMENT CONFIGURATION.

( ) 1. TURN THE CURRENT LIMIT POTENTIOMETER, FIGURE 4.4.2.0 -125 AND 300 WATT: (3), FIGURE 4.4.1.0 -400 WATT) ON THE SEQUENCE AND CONTROL CARD OR LOW VOLTAGE CARD COUNTERCLOCKWISE UNTIL THE POWER UNIT POWERS OFF.

( ) 2. TURN THE POTENTIOMETER 8 FULL TURNS CW (CLOCKWISE) FOR 4953A AND C (125 W); 4 FULL TURNS CW FOR 4953B AND D AND 4955A (300W): 7 FULL TURNS CW FOR 4952B (S/N 15399 OR 53-02499 AND BELOW) 4955E (400W).

( ) 3. SWITCH POWER OFF AND THEN ON.

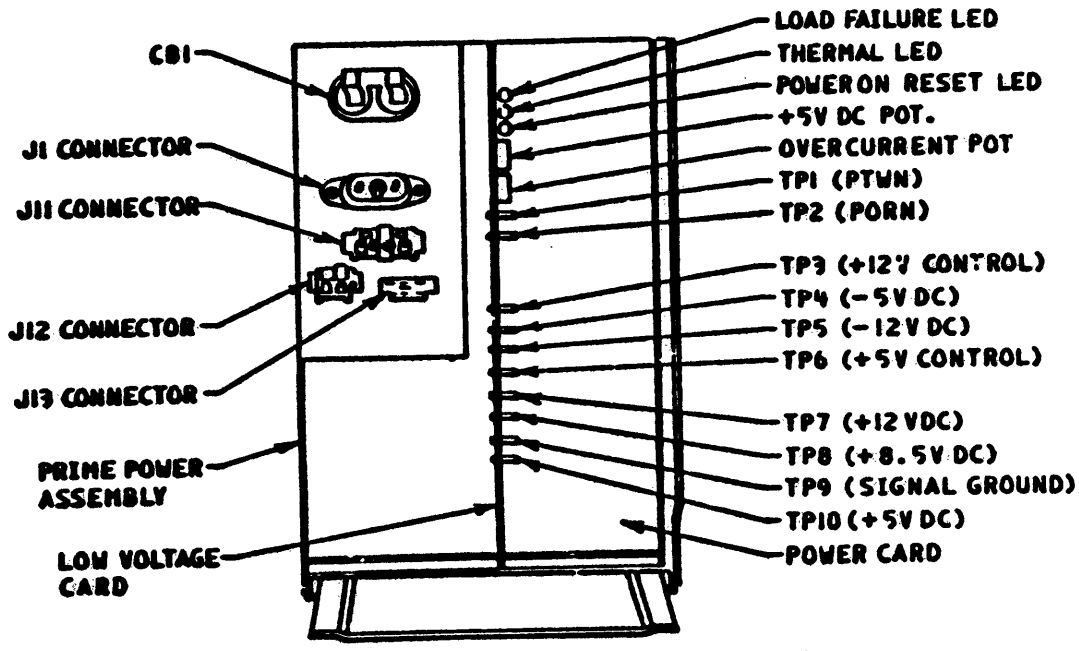
4.4 ADJUST +/-5 VOLTS DC POTENTIOMETER

IF THE +5 VOLT DC POTENTIOMETER, FIGURE 4.4.2.0 (LOCATED ON THE POWER SUPPLY SEQUENCE AND CONTROL CARD FOR THE 125 WATT AND 300 WATT SUPPLIES AND ON THE LOW VOLTAGE CARD FOR THE 400 WATT SUPPLY) FIGURE 4.4.1.0 IS NOT SEALED, ADJUST IT BETWEEN 5.0 AND 5.2 VDC. MEASURE THE VOLTAGE USING THE TABLE 4.6.1.0 (THERE IS NO ADJUSTMENT ON 4952A).

4.5 4952A MINIMUM LOAD SWITCH

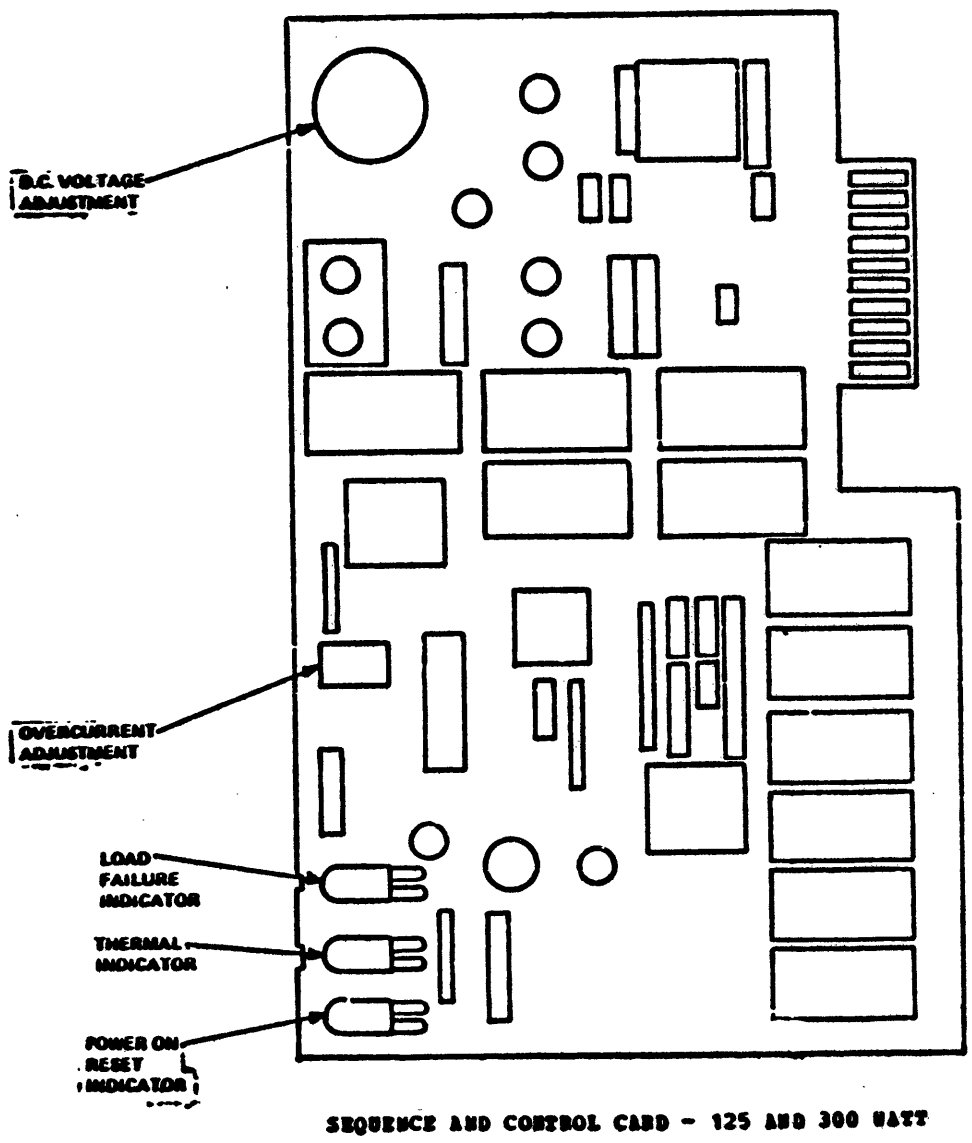
THE MINIMUM LOAD SWITCH MUST BE IN AN ON (UP) POSITION IF 4 LOGIC CARDS OR LESS ARE PLUGGED INTO THE BOARD. THE SWITCH MUST BE IN THE OFF (DOWN POSITION IF 5-6 CARDS ARE PLUGGED INTO THE BOARD. TO CHECK FOR THE CORRECT SWITCH POSITION, REMOVE THE REAR COVER AND DROP THE HINGED TRANSFORMER BOX DOWN.

ENG. CHANGE NO. 323200 327517 327517B A03140 A08066 A11022 A40740 A40870 A41059
DATE OF CHANGE 23NOV81 08JAN82 12MAR82 23MAY83 18AUG83 01AUG84 20MAR86 06MAY86 10OCT86



SEQUENCE AND CONTROL CARD - 400 WATT

FIG. 4.4.2.0



SEQUENCE AND CONTROL CARD - 125 AND 300 WATT

mm100

4.6 MEASURE DC VOLTAGES

REFER TO TABLE 4.6.1.0.

DC VOLTAGE RANGE AT EACH LEVEL AS MEASURED ON THE BOARD PINS ARE:

+5.0 = (+4.5 TO +5.5 VOLTS)	B2 D03
+8.5 = (+9.35 TO +7.82 VOLTS)	B2 G11
-5.0 = (-5.5 TO -4.55 VOLTS)	B2 G06
+12.0 = (+13.2 TO +10.92 VOLTS)	B2 B11
-12.0 = (-13.2 TO -10.92 VOLTS)	B2 B06
GROUND	B2 D08

IF VOLTAGES ARE NOT WITHIN SPECIFICATIONS, REFER TO THE MAINTENANCE MAPS.

TABLE 4.6.1.0

CAUTION: IF A SIGNAL AND VOLTAGE PIN ARE CONNECTED BY A SHORT CIRCUIT, ONE OF THE PROCESSOR CARDS WILL BE DESTROYED.

SWITCH OFF POWER BEFORE THE BACKPANEL COVER IS REMOVED. SWITCH POWER ON AFTER THE COVER IS REMOVED AND PERFORM THE STEPS BELOW, SWITCH OFF POWER AND REINSTALL COVER AFTER YOU END THIS SECTION. IT IS RECOMMENDED THAT THE PIN EXTENDER P/N 2594238 (SHIPPED IN THE PROCESSOR SHIP GROUP) BE USED WHEN TESTING VOLTAGES ON THE PIN SIDE OF THE BOARD.

MEASURE EACH DC VOLTAGE. USE TABLE 4.6.1.0 TO DETERMINE THE CORRECT TEST POINTS FOR THE PROCESSOR AND/OR I/O EXPANSION UNIT THAT YOU ARE INSTALLING.

THE +8.5 VDC, -5 VDC. +12 VDC, AND -12 VDC VOLTAGES SHOULD ALWAYS BE PRESNET ON ALL PROCESSORS AND EXPANSION UNITS EXCEPT THE 4953(B) AND (D), 4955 (A,B,C) AND (D) AND THE 4959 (BELOW SN22500). THE +12VD AND -12VDC WILL BE PRESENT ON THESE MACHINE TYPES ONLY IF THE OPTIONAL +/- 12V REGULATOR CARD IS INSTALLED. THIS REGULATOR CARD IS THE LEFTMOST CARD POSITION ON THE FRONT OF THE POWER SUPPLY. NOTE THAT THESE FOUR VOLTAGES ARE NOT ADJUSTABLE.

4.7 HALF WIDTH CARD FILES

NOTE: THERE IS NO ADJUSTMENT OF D.C. VOLTAGES ON THE 4952 AND 4954 A IF VOLTAGES ARE NOT IN TOLERANCE. CHECK LINE VOLTAGE AND FREQUENCY.

SECTION 5.0 SYSTEM VERIFICATION

THIS SECTION GIVES A SUMMARY OF THE PROCEDURE FOR SYSTEM VERIFICATION OF HARDWARE WITH DIAGNOSTIC ROUTINES.

SYSTEMS VERIFICATION STARTS WITH AN INTERNAL TEST OF THE BASIC PROCESSOR OPERATIONS, AND A TEST OF THE PROGRAM LOAD CAPABILITY. THE TESTING CONTINUES OUTWARD FROM THE PROCESSOR TO INCLUDE ALL PARTS OF THE SYSTEM.

THE MAINTENANCE DOCUMENTS ARE INCLUDED TO AID IN DETERMINING AND LOCATING PROBLEMS IF THE SYSTEM DOES NOT PERFORM CORRECTLY DURING ITS TEST.

ONE OF THE DISKETTE UNITS ON THE SYSTEM IS USED TO LOAD THE TEST DISKETTES.

IF A DISKETTE UNIT IS NOT A PART OF THE SYSTEM, THEN THE DISKETTE MAINTENANCE PROGRAM LOAD DEVICE P/N 1635514 MAY BE USED.

A NON-IBM DEVICE CANNOT BE USED TO INSTALL AND VERIFY THE SYSTEM WITHOUT SPECIFIC PERMISSION FROM THE CUSTOMER. IF THE ONLY AVAILABLE ALTERNATE CONSOLE DEVICE ON THE SYSTEM IS AN OEM DEVICE OBTAIN THE CUSTOMER'S PERMISSION OR USE THE PROGRAMMER CONSOLE. SEE 07.01.00 OF MAP 0010 FOR MESSAGE AND RESPONSE PROCEDURES FOR PROGRAMMER CONSOLE OPERATION.

INSIDE THE MACHINE SHIP GROUP ARE THE FOLLOWING DISKETTES WHICH ARE USED TO VERIFY THAT THE MACHINE IS OPERATIONAL:

1. DIAGNOSTIC DISKETTE (ONE OR MORE). A DIAGNOSTIC DISKETTE IS SHIPPED WITH ALL SYSTEMS. THIS DISKETTE IS PRECONFIGURED TO MATCH THE SYSTEM. IF ANY CHANGES ARE MADE TO THE SYSTEM, THE DISKETTE IS TO BE CHANGED TO MATCH THE SYSTEM. THE PERSON INSTALLING THE CHANGES WILL ENTER THE REAL DEVICE INFORMATION AS SPECIFIED IN DESCRIPTION (MAP 3880)

2. CVP/SYSTEM TEST DISKETTE

   THE SYSTEM TEST IS ON A SEPARATE DISKETTE. THE PURPOSE OF THE SYSTEM TEST IS TO RUN DEVICE EXERCISERS IN AN OVERLAP MODE. (REFER TO MAP 0016).

   TEST SEQUENCE.

( ) 1. ENTER THE SYSTEM ENTRY MAP, (MAP 0020, ENTRY POINT A) AND EXECUTE THE PROCESSOR AND STORAGE TESTS.

( ) 2. IF CONFIGURATION ERRORS OCCUR DURING THE CONFIGURATOR PROGRAM AUTOMATIC VERIFY, FOLLOW THE DIAGNOSTIC MAPS AND SEE:

   . MAP 3880 (CONFIGURATION PROGRAM DESCRIPTION).

   . MLD (ADDRESS AND OPTION JUMPERING).

( ) 3. WHEN THE DISKETTE HAS THE CORRECT CONFIGURATION, RUN DISK VERIFICATION PROGRAM (7869, 7CF9 OR 7A69), IF APPLICABLE.

( ) 4. AT THE END OF DISK VERIFICATION, RUN CE DISK INITIALIZATION PROGRAM 78F0 IF 4962 IS INSTALLED. FORMAT ENTIRE DISK (7CF9 OPTION 0D) IF PROCESSOR UNIT OR EXPANSION UNIT CONTAIN A DISK DRIVE.

( ) 5. SELECT AUTOMATIC MODE WITHOUT OPTIONS.

( ) 6. WHEN A GOOD AUTOMATIC RUN HAS BEEN COMPLETED, SEE THE MAP PROLOG FOR EACH OF THE INSTALLED DEVICES (LOCATED IN BINDER MLM FOLLOWING THE SERVICE GUIDE) AND RUN MANUAL TESTS.

NOTES:

1. THE CONFIGURATOR PROGRAM AUTOMATIC VERIFY OPERATION DOES NOT CHECK SYSTEM DATA (IN ENTRY 00) OR DEVICE DATA (IN ENTRY 00) OR DEVICE DATA (IN ENTRY 01-XX). ERRORS IN THIS DATA WILL CAUSE MAP ERRORS.

2. WHEN THE BASIC DISKETTE HAS BEEN CONFIGURATED, COPY THE CONFIGURATION RECORD TO THE SYSTEM VERIFY DISKETTE AND ANY SECONDARY DIAGNOSTIC DISKETTE(S).

( ) 7. IF AN OEM DEVICE IS AVAILABLE, IT CAN NOW BE ASSIGNED THE ALTERNATE CONSOLE OPERATION (SEE MAPS 3880 AND 3881).

( ) 8. SEE SYSTEM VERIFY USER'S GUIDE, VOLUME SYT 04, EXECUTE SYSTEM TEST, STARTING AND STOPPING ON DEVICE ADDRESSES UNTIL ALL DEVICES HAVE BEEN TESTED IN COMBINATION WITH (ALL/SEVERAL) OTHER DEVICES. EACH DEVICE SHOULD RUN A TOTAL OF AT LEAST TWO MINUTES.

SYSTEM INSTALLATION TESTING IS COMPLETE.

COVERS

REINSTALL ALL COVERS BEFORE PERMITTING THE CUSTOMER TO USE THE SYSTEM.

AFTER INSTALLATION

RECORD UPDATING

( ) 1. COMPLETE INSTALLATION RECORDS AND REPORT THAT THE INSTALLATION IS COMPLETE TO THE BRANCH OFFICE.

( ) 2. INSTALL THESE PROCEDURES IN THE MLD (LOGIC VOL. 1) BINDER FOR FUTURE REFERENCE.

SHIPPING MATERIAL DISPOSITION

( ) SHIPPING MATERIAL DISPOSITION IS THE RESPONSIBILITY OF THE CUSTOMER.

APPENDIX A

1.0 HARDWARE INSTALLATION RULES

A) INSTALL THE 4993 (TERMINATION ENCLOSURE) IN THE LOWER MOST POSITION IN THE RACK.

B) INSTALL THE 4962 (DISK STORAGE DEVICE) OR 4963 (DISK SUB-SYSTEM), AT THE LOWER LOCATION(S) OF THE RACK, BUT ABOVE THE 4993. IF FEATURED, THIS UNIT SHOULD BE INSTALLED BEFORE OTHER UNITS IN THE RACK (SAFETY). (REFER TO PUBLICATION #S131-0602). IT IS SUGGESTED THAT THE TOP OF THE UNIT SHOULD NOT MEASURE MORE THAN 41.5 INCHES FROM THE FLOOR (37 INCHES (940 MM) FOR THE 4963). REMOVE PACKING AND UNLOCK ACTUATOR AND SPINDLE PER DEVICE INSTALLATION INSTRUCTIONSC NOTE: DO NOT UNLOCK THE SPINDLE AND ACTUATOR UNTIL THE 4962 OR 4963 IS MOUNTED.

C) INSTALL THE 4966 AT THE LOWER LOCATIONS BUT ABOVE THE 4962 (DISK STORAGE DEVICE) OR THE 4963 (DISK SUB-SYSTEMS) IF FEATURED. IT IS SUGGESTED THAT THE TOP OF THE UNIT SHOULD NOT MEASURE MORE THAN 60 INCHES FROM THE FLOOR.

D) INSTALL PROCESSORS AND I/O EXPANSION UNITS ADJACENT TO ONE ANOTHER. UNITS SHOULD BE INSTALLED VERTICALLY OR HORIZONTALLY ADJACENT TO ONE ANOTHER.

E) INSTALL PROCESSORS AND I/O EXPANSION CARD FILE UNITS IN THE TOPMOST LOCATIONS OF THE RACK.

F) INSTALL ALL HALF-WIDE DEVICES INTO THE RACK MOUNTING FIXTURE P/N 1632229.

G) INSTALL HALF-WIDE PROCESSORS TO THE LEFT SIDE OF THE RACK MOUNTING FIXTURE.

2.0 UNPACK AND INITIAL SET-UP

NOTE: ALWAYS PRACTICE GOOD SAFETY HABITS DURING UNPACK AND INSTALLATION.

2.1 INVENTORY OF PACKAGES

2.1.1 MAKE AN INVENTORY OF PACKAGES AGAINST THE ORDER INVOICE TO CHECK THAT ALL BOXES HAVE BEEN RECEIVED. NOTE: THIS INVENTORY SHOULD BE DONE TO INSURE THAT ALL BOXES WERE RECEIVED AND THAT NO VISIBLE DAMAGE EXISTS.

2.1.2 REMOVE PACKAGING AS PER UNPACKING INSTRUCTIONS AND INSPECT THE UNIT FOR PHYSICAL DAMAGE.

2.1.3 REMOVE CONTENTS OF BOXES IN ACCORDANCE WITH THE UNPACKING INSTRUCTIONS WHICH ACCOMPANY EACH UNIT.

CHECK EACH ITEM AGAINST SHIP GROUP CHECKLIST AS BOXES ARE OPENED TO INSURE THAT ALL PARTS HAVE BEEN DELIVERED.

2.2 INITIAL SET-UP

2.2.1 IT IS THE CUSTOMERS RESPONSIBILITY TO GET THE MACHINE TO THE FINAL INSTALLATION SITE BEFORE THE IBM CUSTOMER SERVICE REPRESENTITIVE BEGINS INSTALLATION. DEPENDING ON THE UNITS WEIGHT, CERTAIN PRECAUTIONS MAY BE REQUIRED TO SAFELY LIFT THE UNIT INTO THE RACK.

THE MACHINES WEIGHT MAY BE FOUND IN THE CUSTOMER SITE PREP MANUAL IF IT DOES NOT HAVE A YELLOW AND BLACK WEIGHT LABEL ATTACHED. FIND THE UNITS WEIGHT, AND THEN LOOK AT THE CHART BELOW TO SEE WHAT MAY BE REQUIRED.

WEIGHT	SPECIAL REQUIREMENTS
BELOW 18KG (39.7 LB)	NO SPECIAL ACTIONS REQUIRED
FROM 18KG TO 32KG (39.7 LB TO 70.5 LB)	THERE WILL BE A WEIGHT LABEL, AND TWO OR MORE PERSONS ARE REQUIRED TO LIFT THE UNIT. DO NOT LIFT BY ANY BOLTED ON BRACKETS, PANELS, DOORS, ETC. LIFT ONLY BY THE MAIN METAL CHASSIS.
FROM 32KG TO 55KG (70.5 LB TO 121.2 LB)	SAME AS ABOVE, BUT THREE OR MORE PERSONS SHOULD BE USED TO LIFT THE UNIT.
ABOVE 55KG (121.2 LB)	A MECHANICAL HANDLING DEVICE SHOULD BE CONSIDERED IN GETTING THE UNIT TO ITS FINAL INSTALLATION SITE. WHERE THIS IS IMPRACTICABLE, SPECIALLY TRAINED PERSONS OR SERVICES SHALL BE USED - SUCH AS PROFESSIONAL MOVERS.

2.3 UNPACK

2.3.1 REMOVE ANY PACKING MATERIAL, OR LOOSE ITEMS FROM THE CARD FILE AREA.

2.3.2 VISUALLY INSPECT THE INTERIOR OF THE UNIT FOR POSSIBLE SHIPPING DAMAGE.

2.3.3 CHECK ALL LOGIC CARDS AND CONNECTORS FOR CORRECT SEATING.

NOTE: LOOSE ELECTRICAL CONNECTIONS (CARDS TO BOARD, AND CONNECTORS TO THE CARD) MAY CAUSE INTERMITTENT PROBLEMS WHEN THE UNIT IS POWERED-UP.

APPENDIX B

MACHINE INSTALLATION IN O.E.M. (NON-IBM RACK).

FULL WIDTH UNIT INSTALLATION (*):

VERIFY THAT HORIZONTAL UNIT SUPPORTS ARE INSTALLED IN RACK.

MOUNT THE UNIT FROM THE FRONT OF THE RACK AND FASTEN WITH EIGHT BLACK #10-32 SCREWS. (SEE FIGURE 1). (4 SCREWS FOR 4993).

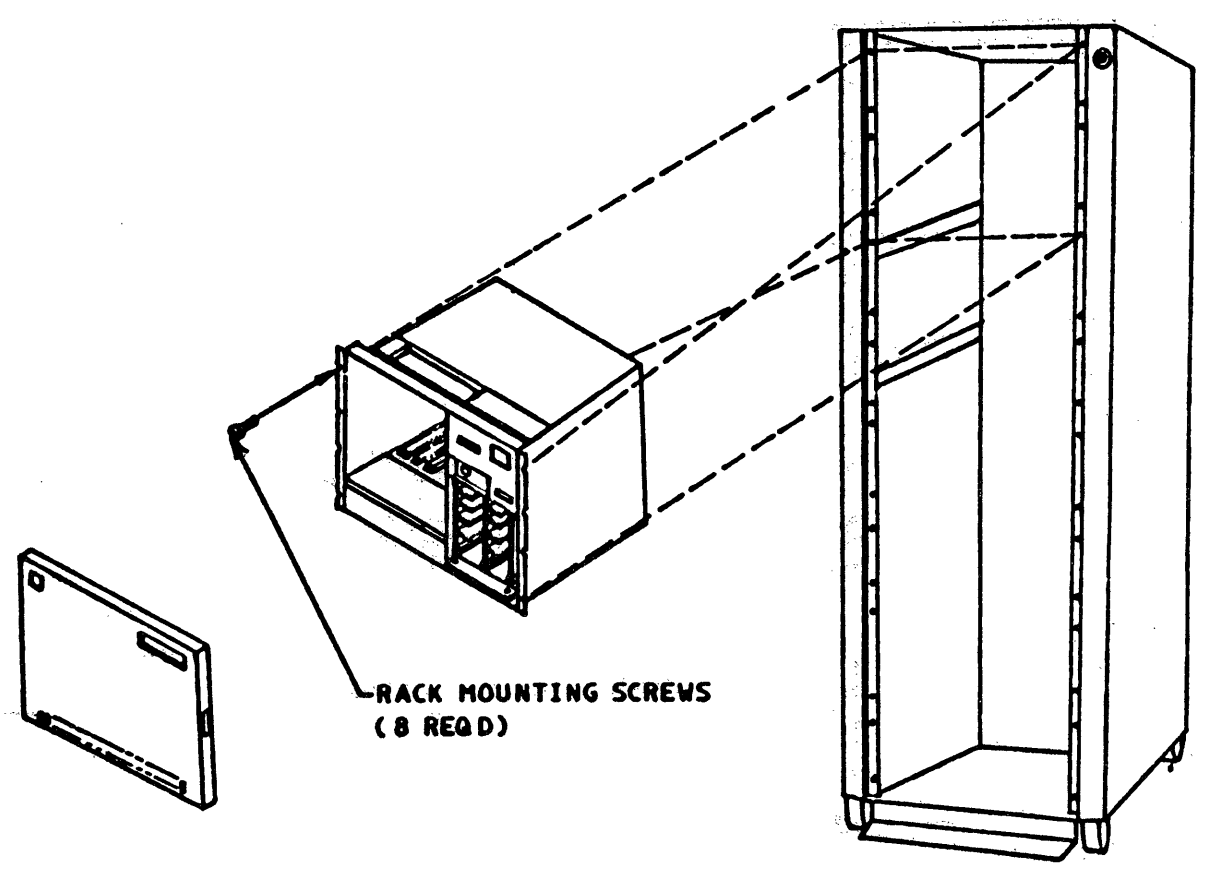
ENSURE THAT THE MOUNTING SCREWS ARE FIRMLY TIGHTENED SO AS TO MAKE GOOD ELECTRICAL GROUND BETWEEN THE CARD FILE AND THE RACK.

(*) FOR SPECIFIC INSTRUCTIONS, REFER TO THE APPROPRIATE INSTALLATION INSTRUCTIONS FOR EACH UNIT.

NOTE 1: IF ANY NON-RACK MOUNTED DEVICES ARE TO BE INSTALLED AT THIS TIME ALSO, IT IS ADVISABLE TO WAIT UNTIL THE UNIT'S SIGNAL CABLES ARE ROUTED PRIOR TO FASTENING DOWN THE CARD FILE.

NOTE 2: WHEN INSTALLING ANY PROCESSOR OR EXPANSION UNIT CONTAINING A DISK DRIVE IN A O.E.M. RACK THAT DOES NOT PROVIDE EMERGENCY POWER-OFF CAPABILITY, IT IS RECOMMENDED THAT THE EPO SWITCH BE MOUNTED DIRECTLY ON THE UNIT INSTALLED. THIS EPO PANEL IS ALSO OFFERED IN WORLD TRADE LANGUAGE TRANSLATIONS. REFER TO THE INDIVIDUAL UNIT PARTS CATALOG FOR THE P/N DESIRED.

FIG. 1



FULL WIDTH CARD FILE INSTALLATION

HALF WIDE UNIT INSTALLATION (*):

VERIFY THAT HORIZONTAL UNIT SUPPORTS ARE INSTALLED ON RACK.

MOUNT THE RACK MOUNTING FIXTURE (FEATURE CODE #4540) FROM THE FRONT OF THE RACK AND FASTEN WITH EIGHT BLACK #10-32 SCREWS (SEE FIGURE 2).

ENSURE THAT THE MOUNTING SCREWS ARE FIRMLY TIGHTENED SO AS TO MAKE GOOD ELECTRICAL GROUND BETWEEN THE HALFWIDE UNITS AND THE FIXTURE.

MOUNT HALF WIDE UNITS INTO THE MOUNTING FIXTURE AND FASTEN WITH FOUR BLACK #10-32 SCREWS (SEE FIGURE 3).

FOR 4952A, (S/N 49,999 AND BELOW) LOWER POWER SUPPLY, ADD A SCREW (#10/32 - P/N 332620) THRU A HOLE IN THE BOTTOM OF THE CARD FILE INTO THE BOTTOM OF THE RACK MOUNTING FIXTURE.

FOR 4952A (S/N 50000 AND ABOVE) AND 4954A, REMOVE REAR COVER, ADD A SCREW (#10-32 - P/N 332620) THRU HOLE IN BRACKET AT REAR OF CARD FILE INTO THE BOTTOM OF THE RACK MOUNTING FIXTURE.

ENSURE THAT THE MOUNTING SCREWS ARE FIRMLY TIGHTENED SO AS TO MAKE GOOD ELECTRICAL GROUND BETWEEN THE FIXTURE AND THE RACK.

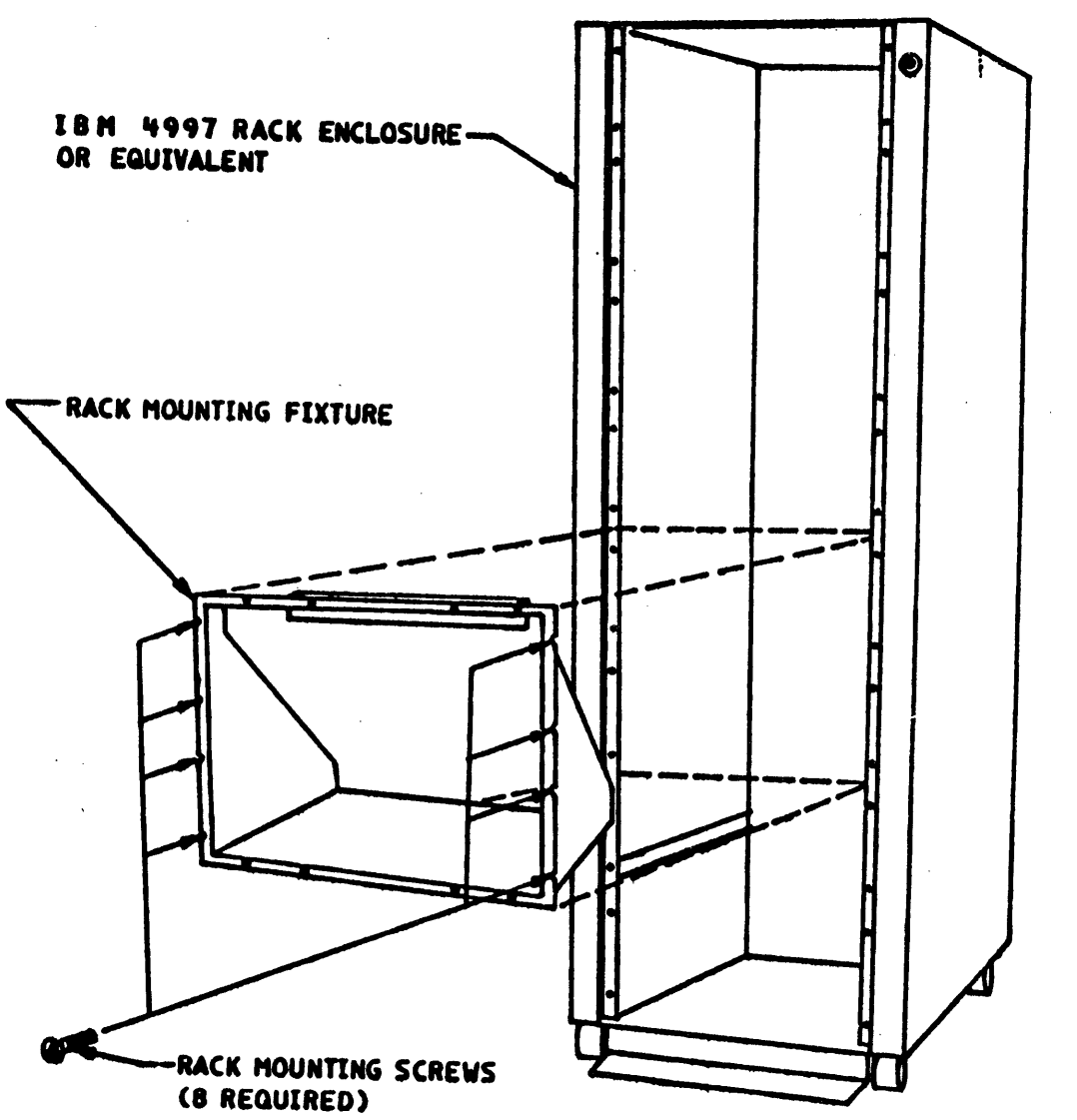
IT SHOULD BE NOTED THAT THE 4964 SERVICE GUIDE PIN IS TO BE INSTALLED TO THE RACK MOUNTING FIXTURE PRIOR TO THE UNIT BEING INSTALLED. REFER TO THE 4964 DISKETTE INSTALLATION INSTRUCTION DOCUMENT.

ADJUST FRONT COVER BY LOOSENING SCREWS AND BRACKET LATCH, CENTERING THE ON-OFF SWITCH AND RETIGHTEN.

(*) FOR SPECIFIC INSTRUCTIONS REFER TO THE APPROPRIATE INSTALLATION INSTRUCTION FOR EACH UNIT.

NOTE: IF ANY NON-RACK MOUNTED DEVICES ARE TO BE INSTALLED AT THIS TIME ALSO; IT IS ADVISABLE TO WAIT UNTIL THE UNIT'S SIGNAL CABLES ARE ROUTED PRIOR TO FASTENING DOWN THE CARD FILE .

FIG. 2



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APPENDIX C

FEATURE INSTALLATION SUMMARY

DUE TO THE LARGE NUMBER OF FEATURES AND OPTIONS AVAILABLE ON THE SERIES/1, THESE INSTALLATION INSTRUCTIONS WILL NOT ATTEMPT TO DESCRIBE PROCEDURES FOR INSTALLING EACH FEATURE.

NECESSARY INFORMATION FOR INSTALLING FEATURES MAY BE FOUND IN:

- MAP PROLOGS
- MLD PAGES
- FEATURE LOCATION/DEVICE ADDRESS PRIORTY PAGES (MAP PLUG P/N 4412857)
- CE HANDBOOK - G229-8079

APPENDIX D

D/C 7777 FEATURE CABLING (PROGRAMMABLE TWO CHANNEL SWITCH)

1.0 SCOPE AND COVERAGE OF THIS INSTALLATION INSTRUCTION:

1.1 IMPORTANT: SPECIFY CODES 9220 THROUGH 9224 ARE THE ONLY SUPPORTED CONFIGURATIONS. (SEE FIGURE D1 THRU D5). OTHER CONFIGURATIONS ARE POSSIBLE, AND ARE CONSIDERED TO BE SPECIFY CODE 9225. USE THIS SPECIFY CODE FOR ANY CONFIGURATION OTHER THAN SPECIFY CODES 9220 THROUGH 9224, AND SUBMIT A CONFIGURATION RPQ TO SPECIAL MARKETING; BOCA RATON, FLA.

THE MAXIMUM POSSIBLE CONFIGURATIONS FOR SPECIFY CODE 9225 ARE ILLUSTRATED IN FIGURES D1 THROUGH D5.

1.2 THREE TYPES OF INSTALLATIONS OF FACTORY SHIPPED SERIES/1'S WITH D/C 7777 (PROGRAMMABLE TWO CHANNEL SWITCH) ARE AFFECTED BY THIS INSTRUCTION TO VARYING DEGREES; LOCATE YOUR TYPE OF INSTALLATION AND READ THAT SECTION (A,B OR C).

A) SINGLE RACK SYSTEMS WITH D/C 7777 (SEE FIG. D.1):

SINGLE RACK SYSTEMS WILL HAVE BEEN CONFIGURED, AND CABLED, AT THE FACTORY-PER THE CUSTOMERS INITIAL ORDER. IN THIS CASE, THIS INSTRUCTION IS NOT REQUIRED BY THE C.S.R. - EXCEPT FOR THE FOLLOWING:

1) SHOULD D/C 7777 CABLING BECOME DISCONNECTED DURING SYSTEM INSTALLATION, REFER TO STEP 4 AND FIGURE D.6; IF REQUIRED TO LOCATE PLUGGING LOCATIONS OF CABLE(S) P/N 4413777.

2) READ AND EXPLAIN TO THE CUSTOMER STEP 5 (SUPPLIED CUSTOMER HARDWARE).

3) INSTALL THE SYSTEM PER THIS SYSTEM INSTALLATION INSTRUCTION.

B) MULTI-RACK SYSTEMS WITH D/C 7777 (SEE FIGURES D.2 THROUGH D.5):

FACTORY BUILT MULTI-RACK SYSTEMS WILL HAVE BEEN CONFIGURED, AND CABLED, PER THE CUSTOMERS INITIAL ORDER. HOWEVER, FOR SHIPMENT THE RACKS WILL HAVE BEEN DISASSEMBLED, AND D/C 7777 INTERFACE CABLE(S) (P/N 4413777) DETACHED. THEREFORE THE C.S.R. WILL BE REQUIRED TO DO THE FOLLOWING:

1) REASSEMBLE THE RACKS PER SECTION 2.0.

2) RECABLE THE D/C 7777 PER THE INFORMATION ON THE LABEL FOUND ON THE SEQ. 001 CABLE OF THE CABLE GROUP(S) P/N 4413777. SEE STEP 4, AND FIGURE D.6, TO DECODE THIS LABEL INFORMATION.

3) SEE FIGURES D.2 THROUGH D.5 TO CONFIRM THE CONFIGURATION YOU ARE INSTALLING, AND AS AN AIDE TO RECABLING.

4) READ AND EXPLAIN TO THE CUSTOMER STEP 5 (SUPPLIED CUSTOMER HARDWARE).

5) INSTALL THE SYSTEM PER THIS SYSTEM INSTALLATION INSTRUCTION.

C) INDEPENDENTLY SHIPPED 4959(S) OR 4965(S) WITH D/C 7777 (SEE FIGURE D.1 THRU D.5. FOR INDEPENDENTLY SHIPPED 4959'S, OR 4965'S, THIS INSTRUCTION MUST BE FOLLOWED IN ITS ENTIRETY.

BEFORE INSTALLATION BEGINS, READ 2.0 AFTER YOU HAVE READ THIS SECTION REVIEW FIGURES D.1 THROUGH D.5 WITH THE CUSTOMER TO DETERMINE THE REQUIRED, AND ALLOWABLE, CONFIGURATION OF D/C 7777. ATTEMPT TO CONFIGURE THE SYSTEM IN SUCH A WAY AS TO MINIMIZE THE SHIFTING AROUND OF UNITS WITHIN THE RACK(S).

2.0 GROUND RULES FOR INSTALLATION OF D/C 7777.

NOTE: THE FOLLOWING CONSIDERATIONS ARE NECESSARY TO INSURE THAT A SYSTEM WITH D/C 7777 IS OPERATIONAL AFTER INSTALLATION.

2.1 WHEN A PROCESSOR IS ASSOCIATED WITH ADDITIONAL 4959'S/4965'S (I/O EXPANSIONS) IN A CHAIN OF 4959'S/4965'S ON A CHANNEL, THE D/C 7777 INTERFACE CABLING (CABLE GROUP

P/N 4413777) COMES FROM THE LAST 4959/4965 (I/O EXPANSION) IN THE CHAIN (SEE FIGURES D.1 THROUGH D.5).

NOTE: A CHAIN IS DEFINED AS LOOKING DOWN AN I/O CHANNEL FROM THE PROCESSOR. IE: PROCESSOR UNIT TO 4959/4965 TO 4959/4965 TO ETC.

2.2 PROCESSORS AND/OR I/O EXPANSION UNITS MUST BE WITHIN 2 "WIRE" METERS OF THE 4959/4965 WITH D/C 7777 (P/N 4413777 IS ONLY 2 METERS LONG).

2.3 D/C 7777 FEATURE ATTACHMENT CARD MUST RESIDE IN THE "A" SOCKET OF A 4959 OR 4965.

2.4 THE D/C 7777 FEATURE ATTACHMENT CARD CONNECTS TO THE PROCESSORS, OR THE LAST 4959/4965 IN A CHAIN OF 4959'S/4965'S, ON A CHANNEL, AT THE CHANNEL REPOWER CARD (D/C 1565 B/M 1637599) LOCATED AT THE FOLLOWING POSITIONS:

A) PLUG CHANNEL REPOWER CARD INTO ROW IMMEDIATELY TO LEFT OF LEFTMOST I/O CARD.

B) "B" SOCKET, OR RIGHT JUSTIFIED SOCKET OF ALL 4959'S/4965'S ON THE CHANNEL (SEE FIGURE D.1 THROUGH D.5).

NOTE: TOTAL ALLOWABLE CHANNEL REPOWER CARDS (D/C 1565), INCLUDING TWO CHANNEL SWITCH (D/C 7900), AND PROGRAMMABLE TWO CHANNEL SWITCH (D/C 7777); THAT MAY BE SEEN BY THE PROCESSOR LOOKING DOWN THE CHAN TO D/C 7777 IS (5) FIVE; REMEMBER THAT THE D/C 7777 COUNTS AS (1) ONE.

2.5 EACH D/C 7777 ONLY SUPPORTS TWO PROCESSORS.

2.6 THE FLAT INTERFACE CABLES, PLUGGED INTO "A" ROW OF ONE D/C 7777 FEATURE ATTACHMENT CARD, GO UP THE CHANNEL TOWARD A PROCESSOR, THAT PROCESSOR IS THEN "A" PROCESSOR. (SEE FIGURES D.1 THROUGH D.5).

3.0 AFTER REVIEWING FIGURES D.1 THROUGH D.5 WITH THE CUSTOMER TO DETERMINE THE REQUIRED (AND ALLOWABLE) CONFIGURATION; PLAN A WAY TO ACHIEVE THAT CONFIGURATION WITH A MINIMUM SHIFTING OF THE UNITS IN THE CUSTOMERS SYSTEM; AND THEN BEGIN THE INSTALLATION.

3.1 SHIFT THE CUSTOMERS UNITS (IF REQUIRED) TO THE PROPER PLACEMENT WITHIN THE SYSTEM-FOLLOWING THE GUIDE LINES SET FORTH IN THIS SYSTEM INSTALLATION INSTRUCTION. (SEE ESPECIALLY SECTION 2.3, 3.2, APPENDIXS A, B AND G).

3.2 INSTALL THE INDEPENDENTLY SHIPPED 4959, OR 4965, PER THIS SYSTEM INSTALLATION INSTRUCTION.

NOTE: FOR QUAD CONFIGURATIONS REPEAT STEP 3.2 AS REQUIRED.

4.0 CABLING D/C 7777 (OR RECABLING IF A SYSTEM) (SEE FIGURES D.1 THROUGH D.5)

4.1 FACTORY SHIPPED SYSTEMS (SINGLE OR MULTI RACK) WILL HAVE A LABEL ON THE SEQUENCE 001 CABLE OF CABLE GROUP P/N 4413777. ON THIS LABEL WILL BE FOUND AN "A" OR "B". THIS "A" AND/OR "B" REFERS TO THE "A" AND "B" PROCESSORS (SEE STEP 2.6). BELOW THIS "A" AND "B" WILL BE FOUND A THREE DIGIT CODE (IE: 134) SEE FIGURE D.6 FOR IDENTIFICATION OF THIS CODE. THE CODE TELLS YOU INTO WHICH RACK (BAY) AND WHICH POSITION WITHIN THAT RACK (BAY) THAT THE LOOSE END OF THE CABLE MUST BE PLUGGED.

4.1.1 PLUG THE CABLE(S) INTO POSITION (SEE STEP 2.4 AND FIGURES D.1 THROUGH D.6) AS FOLLOWS:

THE SEQ 001-W (A2) LABELED CABLE GOES TO THE TOP CARD SOCKET; SEQ 002-X (A3) LABELED CABLE GOES TO THE SECOND FROM THE TOP SOCKET; SEQ 003-Y (A4) LABELED CABLE GOES TO THE THIRD FROM THE TOP SOCKET AND SEQ. 004-Z (A5) LABELED CABLE GOES TO THE BOTTOM SOCKET. THIS IS FOR THE CARD OR BOARD LOCATION OF THE PROCESSOR OR LAST PRIVATE I/O EXPANSION UNIT. THE I/O EXPANSION UNIT (WITH D/C 7777) CABLE END WILL BE NUMBERED. #1 CABLE WILL GO TO THE TOP SOCKET ON D/C 7777 CARD.

NOTE: IF A 4952B (S/N 15401 AND ABOVE), 4954B OR A 4955F PROCESSOR IS MOUNTED DIRECTLY BELOW A 4959 I/O EXPANSION UNIT, AND D/C 7777 IS BEING INSTALLED ON THE 4959 WITH SUPPORT TO THIS PROCESSOR. IT MAY BE NECESSARY TO FOLD THE I/O INTERCONNECTING CABLES OTHER THAN ON THE INDICATED FOLD MARKS FOR THEM TO REACH AND FIT PROPERLY IN THE PROCESSOR.

NEATLY COIL UP ANY EXCESS CABLE LENGTH.

4.2 ON INDEPENDLY SHIPPED 4959'S AND 4965'S THERE WILL BE TWO CABLE GROUPS (P/N 4413777) FOR EACH D/C 7777. ONE END OF THESE CABLE GROUPS WILL HAVE SMALL BLUE CONNECTORS. THIS END ATTACHES TO THE D/C 7777 FEATURE ATTACHMENT CARD. THE OTHER END GOES TO A PROCESSOR OR 4959/4965 THAT IS LAST IN THE CHAIN. ON THIS END OF THE CABLE GROUP, YOU MUST PLACE A BLANK LABEL (P/N 811825) ON THE SEQUENCE 001 CABLE NEAR THE LABEL ALREADY THERE (SEE FIGURE D.6).

NOTE: ON INDEPENDENT SHIPS THESE BLANK LABELS (ONE FOR EACH CABLE GROUP P/N 4413777) WILL BE FOUND IN THE SHIP GROUP. HOWEVER, IN SOME CASES THE FACTORY MAY HAVE PRE-INSTALLED THEM ON THE SEQUENCE 001 CABLE.

A) ON THIS LABEL WRITE AN "A" OR "B".

THE CABLE GROUP LABELED "A" WILL GO UP THE CHAIN LEADING TO THE PROCESSOR THAT HAS BEEN CHOSEN AS "A" PROCESSOR; AND WILL PLUG INTO THE "A" ROW OF THE D/C 7777 FEATURE ATTACHMENT CARD.

THE CABLE GROUP LABELED "B" WILL GO UP THE CHAIN LEADING TO THE PROCESSOR THAT HAS BEEN CHOSEN AS THE "B" PROCESSOR; AND WILL PLUG INTO THE "B" ROW OF THE D/C 7777 FEATURE ATTACHMENT CARD.

B) BELOW THIS A OR B THAT WAS PLACED ON THE LABEL ADD THE THREE DIGIT LOCATION CODE OF THAT PROCESSOR (OR LAST 4959/4965 IN THE CHAIN). SEE FIGURE D.6.

4.2.1 ROUTE THE CABLES IN THE SYSTEM PER THIS SYSTEM INSTALLATION INSTRUCTION.

4.2.2 PLUG THE CABLES INTO POSITION (SEE STEP 2.4 AND FIGURES D.1 THROUGH D.6) AS FOLLOWS:

THE SEQ 001-W (A2) LABELED CABLE GOES TO THE TOP CARD SOCKET; SEQ 002-X (A3) LABELED CABLE GOES TO THE SECOND FROM THE TOP SOCKET; SEQ 003-Y (A4) LABELED CABLE GOES TO THE THIRD FROM THE TOP SOCKET AND SEQ. 004-Z (A5) LABELED CABLE GOES TO THE BOTTOM SOCKET. THIS IS FOR THE CARD OR BOARD LOCATION OF THE PROCESSOR OR LAST PRIVATE I/O EXPANSION UNIT. THE I/O EXPANSION UNIT (WITH D/C 7777) CABLE END WILL BE NUMBERED. #1 CABLE WILL GO TO THE TOP SOCKET ON D/C 7777 CARD.

NOTE: IF A 4952B (S/N 15401 AND ABOVE), 4954B OR A 4955F PROCESSOR IS MOUNTED DIRECTLY BELOW A 4959 I/O EXPANSION UNIT, AND D/C 7777 IS BEING INSTALLED ON THE 4959 WITH SUPPORT TO THIS PROCESSOR. IT MAY BE NECESSARY TO FOLD THE I/O INTERCONNECTING CABLES OTHER THAN ON THE INDICATED FOLD MARKS FOR THEM TO REACH AND FIT PROPERLY IN THE PROCESSOR.

NEATLY COIL UP ANY EXCESS CABLE LENGTH.

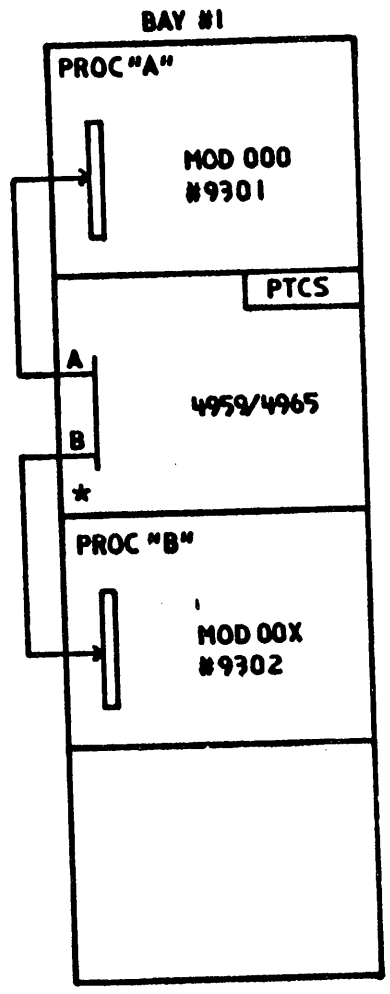
4.2.3 REPEAT STEP 4.2 FOR EACH D/C 7777.

5.0 EXPLANATION OF THE REMAINING HARDWARE. (SUPPLIED ON B/M 4772187).

SUPPLIED SEPARATELY IS A CONNECTOR HOUSING (P/N 1847528) AND FOUR (4) PINS (P/N 1661132). THESE PARTS ARE SUPPLIED SO THAT THE CUSTOMER CAN MAKE HIS ALARM, AUDIO OR WHATEVER, TO LET HIM KNOW WHEN A PROCESSOR IS DOWN. THIS ALARM AND CABLE ARE THE CUSTOMERS RESPONSIBILITY. THE PARTS ARE SUPPLIED SO THAT HE CAN MAKE HIS ALARM AND PLUG IT INTO THE 4 POSITION CONNECTOR ON THE D/C 7777 CONSOLE CARD.

EXPLAIN THIS TO THE CUSTOMER AND HAND HIM THE HARDWARE.

PTCS BASIC "Y" (1 BAY)
(SPECIFY CODE #9220)



*-INDICATES D/C 7777 ATTACHMENT CARD
[]-INDICATES CHANNEL REPOWER CARD (D/C 1565)

NOTE: PICTURED BELOW IS THE MAXIMUM SINGLE RACK CONFIGURATION BASIC Y FOR SPECIFY CODE 9225. SEE STEP 1.1

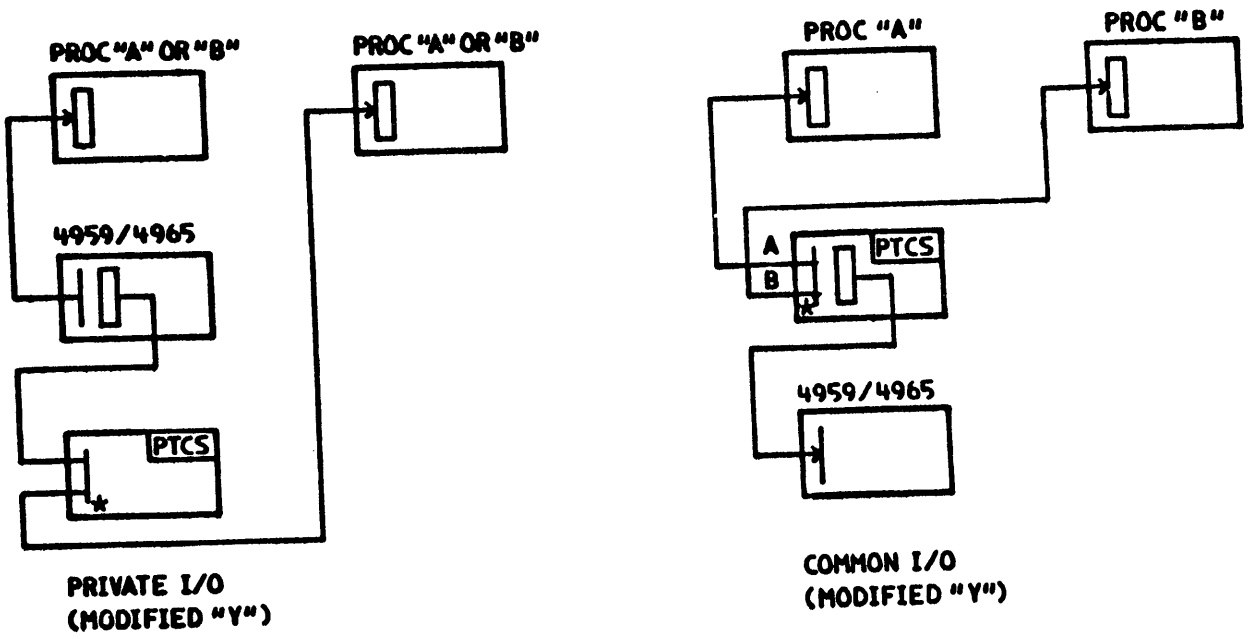
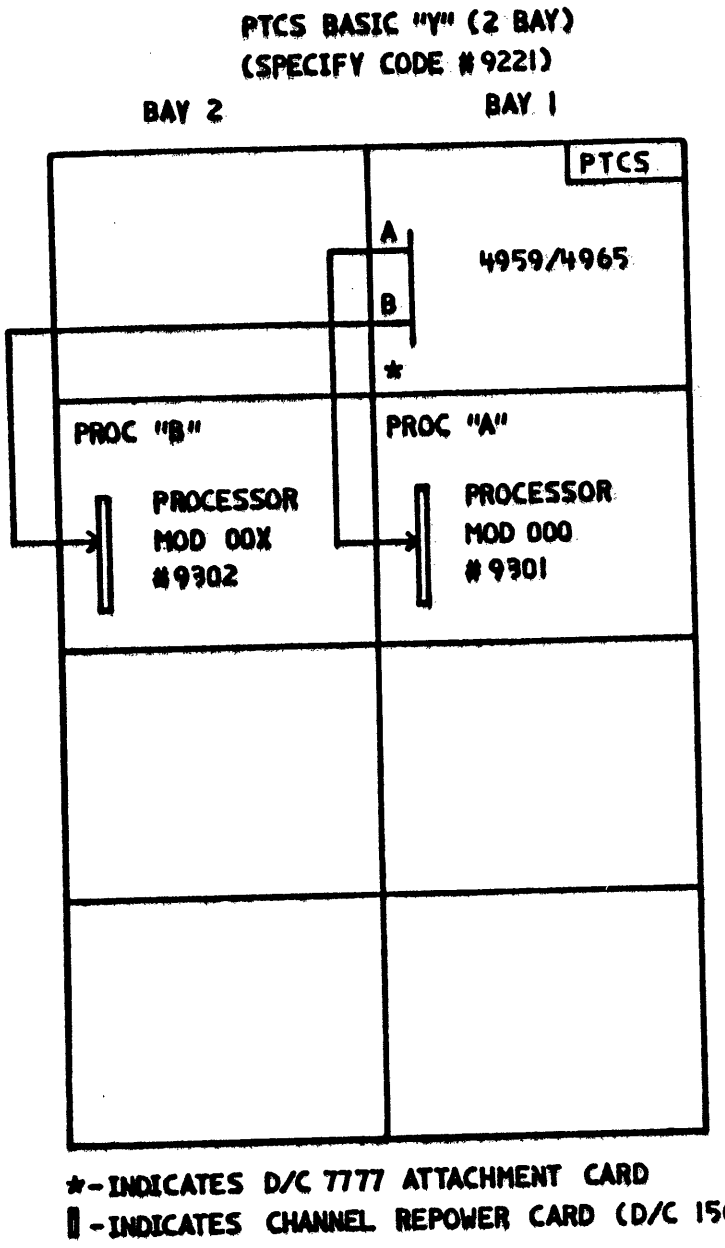


FIGURE D 1



*-INDICATES D/C 7777 ATTACHMENT CARD
▮-INDICATES CHANNEL REPOWER CARD (D/C 1565)

NOTE: PICTURED BELOW IS THE MAXIMUM CONFIGURATION BASIC Y FOR SPECIFY CODE 9225
SEE STEP 1.1

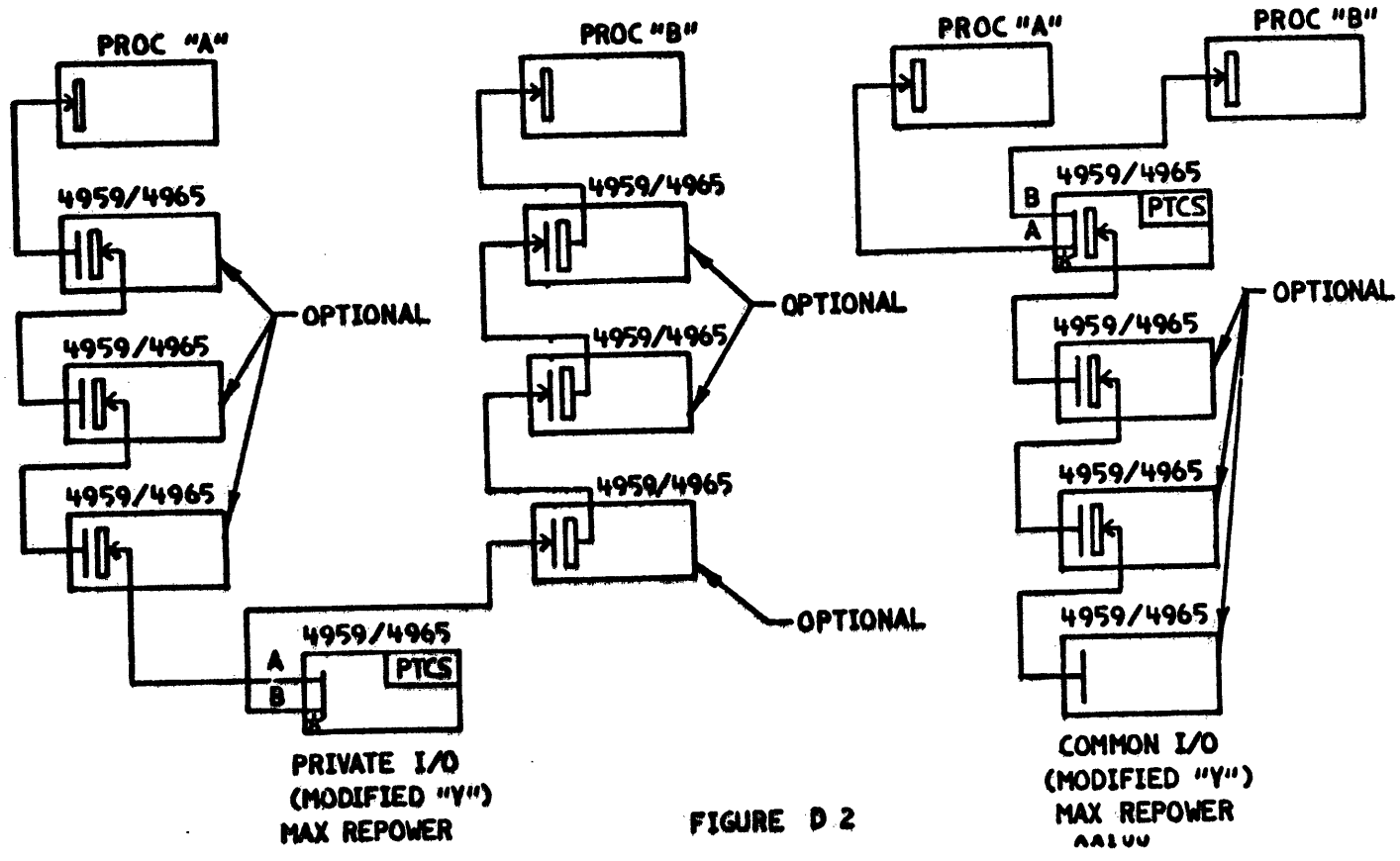
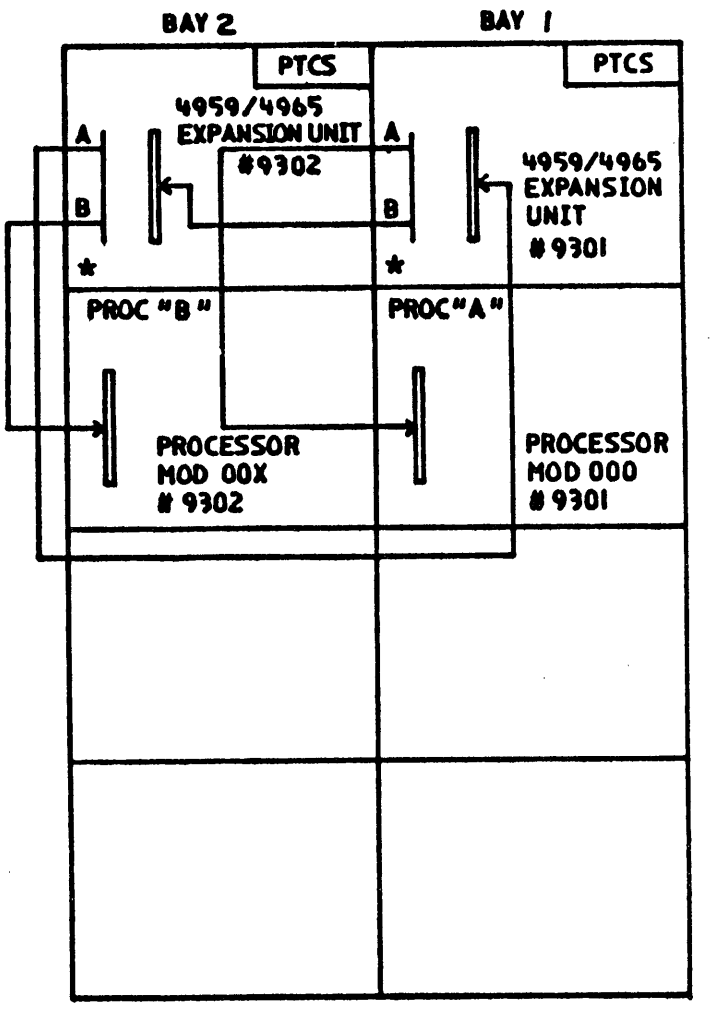


FIGURE D 2

PTCS BASIC QUAD (2 BAY)
(SPECIFY CODE #9222)



*-INDICATES D/C 7777 ATTACHMENT CARD

▌-INDICATES CHANNEL REPOWER CARD (D/C 1565)

FIGURE 03

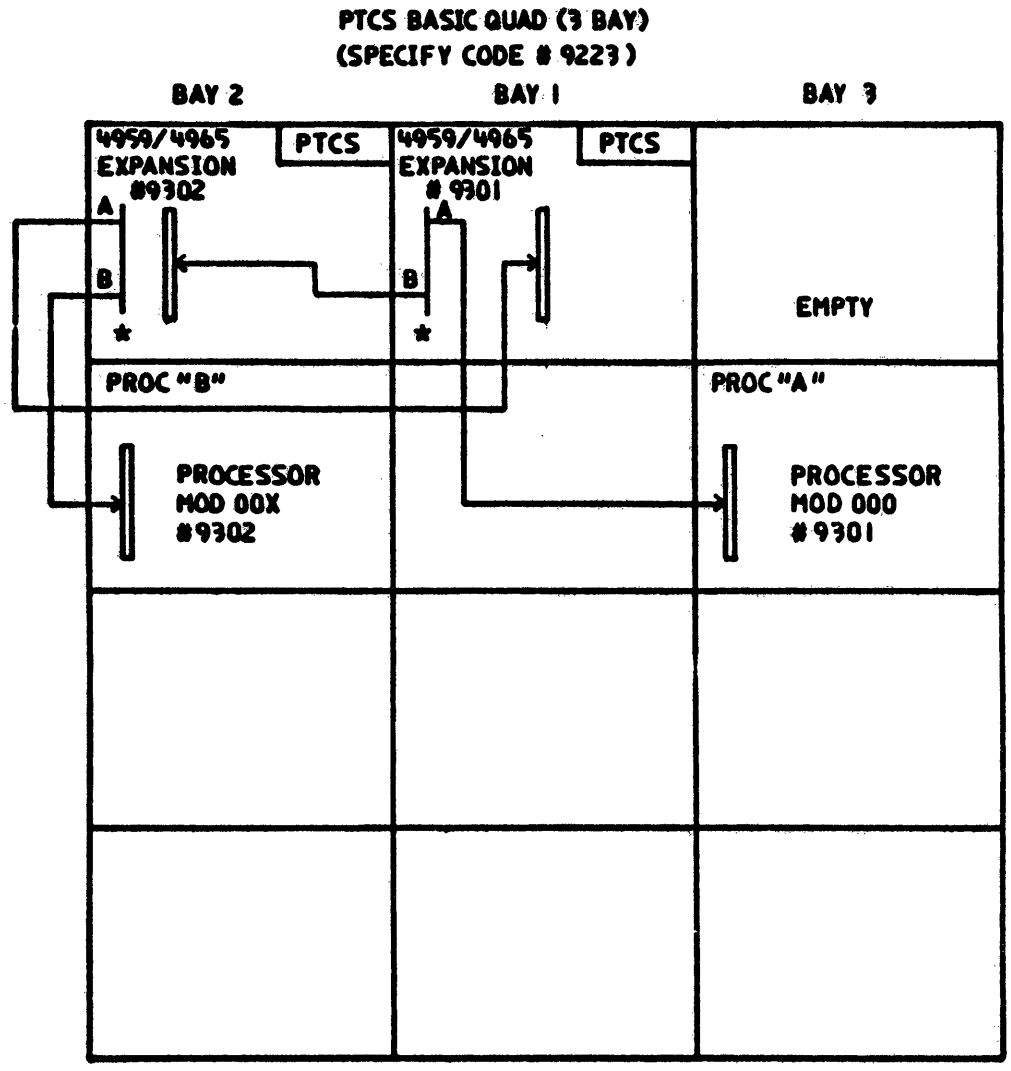
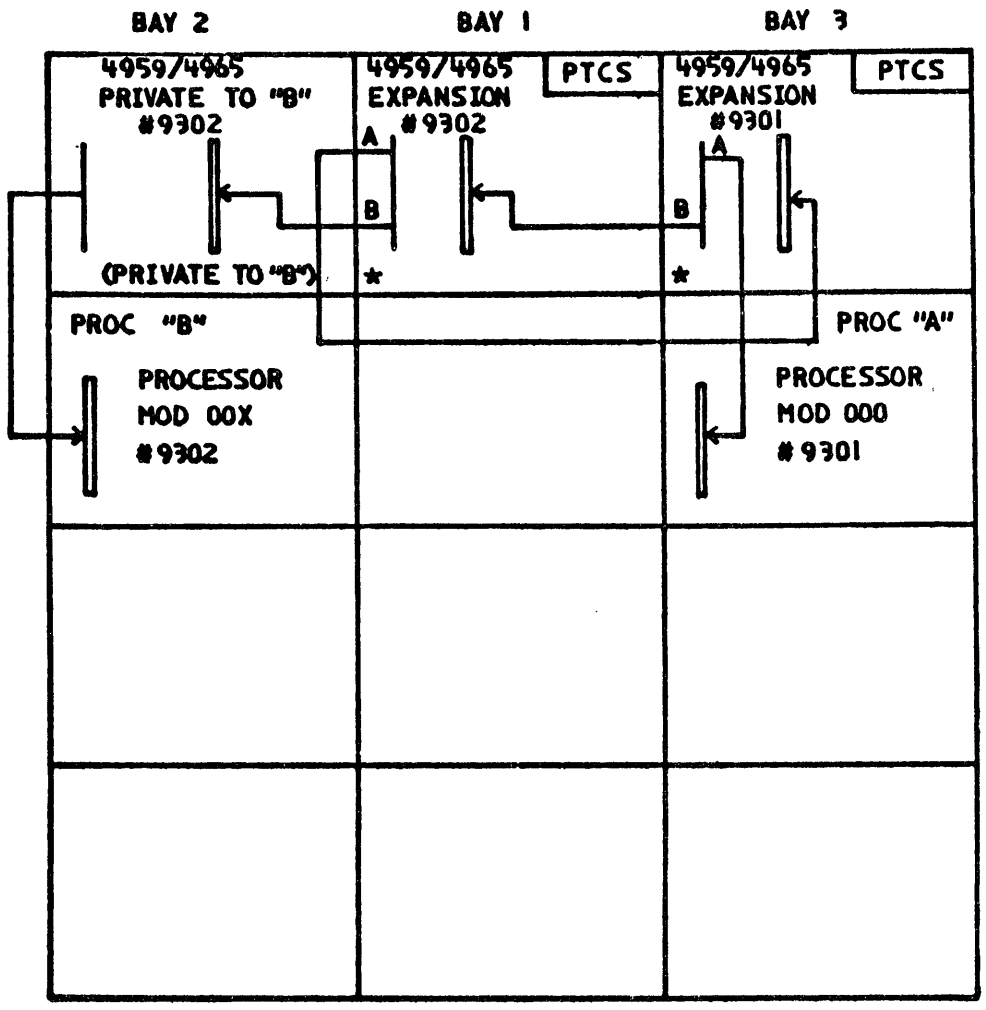

PTCS BASIC QUAD (3 BAY)
(SPECIFY CODE # 9223)
BAY 2
BAY 1
BAY 3
4959/4965
EXPANSION
#9302
PTCS
4959/4965
EXPANSION
9301
PTCS
A
B
A
B
EMPTY
PROC "B"
PROC "A"
PROCESSOR
MOD 00X
#9302
PROCESSOR
MOD 000
9301
*-INDICATES D/C 7777 ATTACHMENT CARD
-INDICATES CHANNEL REPOWER CARD (D/C 1565)

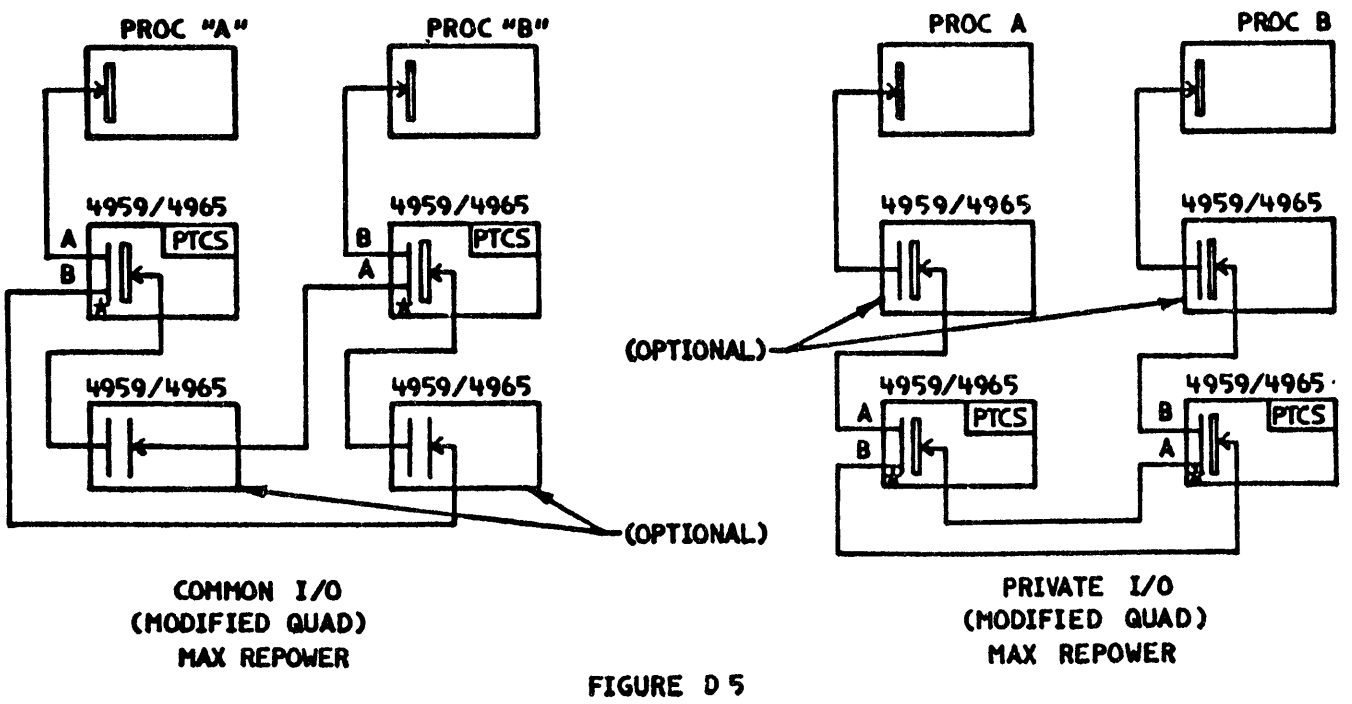
FIGURE D4

PTCS MODIFIED QUAD (3 BAY)
(SPECIFY CODE # 9224)



★-INDICATES D/C 7777 FEATURE ATTACHMENT CARD
▮-INDICATES CHANNEL REPOWER CARD (D/C 1565)

NOTE: PICTURED BELOW IS THE MAXIMUM MODIFIED QUAD CONFIGURATION FOR SPECIFY CODE 9225. SEE STEP 1.1



COMMON I/O
(MODIFIED QUAD)
MAX REPOWER

PRIVATE I/O
(MODIFIED QUAD)
MAX REPOWER

FIGURE D 5

RACK ENCLOSURE LOCATIONS

FIGURE D.6 SHOWS HOW THE 1.8 METRE AND THE 1.0 METRE RACK ENCLOSURE LOCATIONS ARE NUMBERED.

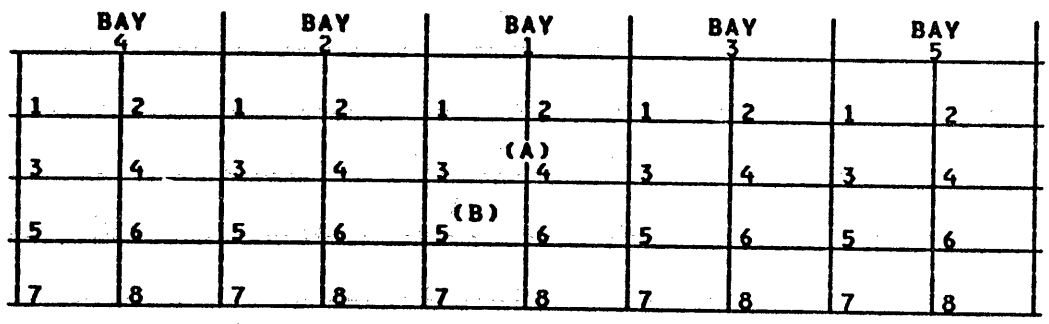
A LOCATION IS EXPRESSED AS A THREE DIGIT NUMBER. THE FIRST DIGIT IS THE BAY NUMBER. THE SECOND DIGIT IS EITHER THE LEFTHAND LOCATION, IF USED, OR A ZERO IF NOT USED FOR THIS UNIT, AND A THIRD DIGIT IS THE RIGHTHAND LOCATION, IF USED, OR A ZERO IF NOT USED FOR THIS UNIT.

FOR EXAMPLE: A 4955 PROCESSOR (1) MOUNTED IN THE FIRST BAY OF A 1.8 METRE MULTIPLE BAY ENCLOSURE WOULD NORMALLY BE ASSIGNED 134. THE 1 INDICATING BAY 1, THE 3 INDICATING THAT THE LEFTHAND HALF UNIT LOCATION AND THE 4 THAT THE RIGHT UNIT LOCATIONS WERE BEING USED.

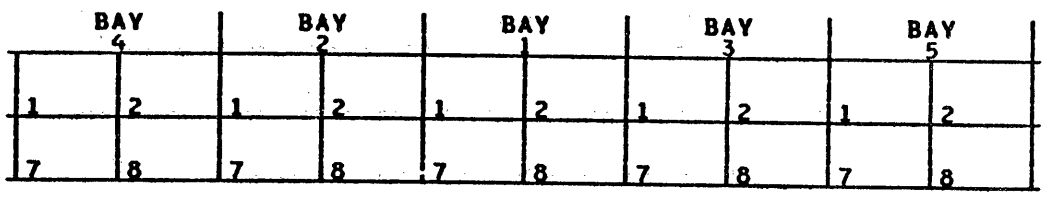
SIMILARLY, A 150 FOR A 4964 DISKETTE UNIT (B) WOULD USE THE 5 SPACE IN THE FIRST BAY IMMEDIATELY UNDER THE PROCESSOR AND LEAVE THE RIGHT HAND OR 6 SPACE, OPEN FOR SOME OTHER HALF-WIDTH UNIT LIKE A 4982 SENSOR I/O UNIT.

*NOTE: A BAY IS A RACK

1.8 METRE ENCLOSURES (4997-2)



1.0 METRE ENCLOSURES (4997-1)



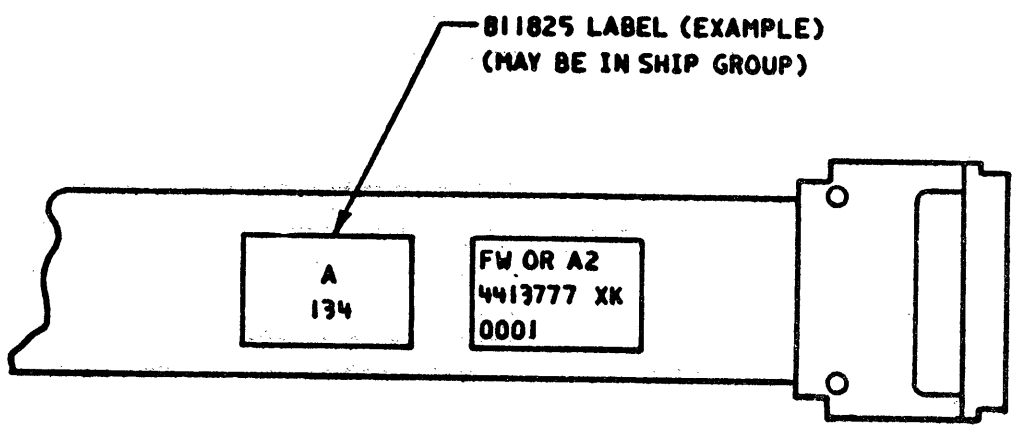


FIGURE D.6

APPENDIX E
D/C 7900 FEATURE CABLING (TWO CHANNEL SWITCH)

1.0 NOTES:

A) WHEN ATTACHING TWO CHANNEL SWITCH SPECIAL CONSIDERATIONS ARE NECESSARY AS TO WHERE THE D/C 7900 (TWO CHANNEL SWITCH) CAN BE IN RELATION TO THE TWO PROCESSORS IT SUPPORTS.

BEFORE INSTALLATION IT MUST BE DETERMINED HOW MANY UNITS AND BAYS ARE PRESENT TO ASSEMBLE THE UNIT(S) INTO THEIR CORRECT LOCATION USING THE FOLLOWING GUIDELINES.

1. HOW TO DETERMINE WHAT A UNIT IS BY LOOKING AT THE SYSTEM MLC.
PROCESSOR:

NOTE: D/C 92AA WHERE AA IS THE NUMBER OF PROCESSORS
D/C 93BB WHERE BB IS THE SEQUENCE OR PRIORITY NUMBER OF THE PROCESSOR.

IF 92AA IS NOT PRESENT, THEN THERE IS ONLY ONE PROCESSOR.
IF 92AA IS 9201, THERE IS ONLY ONE PROCESSOR; AND
IF 92AA IS 9202, THERE ARE 2 PROCESSORS IN SERIES/1; AND IF 92AA IS 9203, THERE ARE 3 PROCESSORS IN SERIES/1; AND SO ON.

IF 93BB IS NOT PRESENT, THEN THERE IS ONLY ONE PROCESSOR.

IF 93BB IS 9301, THERE IS ONE, OR FIRST PROCESSOR IN SERIES/1; AND IF 93BB IS 9302, THIS IS THE SECOND PRIORITY PROCESSOR IN SERIES/1; AND IF 93 BB IS 9303, THIS IS THE THIRD PRIORITY PROCESSOR IN SERIES/1; AND SO ON.

2. SYSTEM MLC DEFINITIONS:

NOTE: 7900 TWO CHANNEL SWITCH
93BB PRIORITY OF SEQUENCE NUMBER OF PROCESSOR
9450 A COMMON I/O EXPANSION UNIT, BOTH WITHOUT TCS
I/O EXPANSION UNIT.

IF 7900 NOT PRESENT
IF 93BB NOT PRESENT
IF 9450 NOT PRESENT
NORMAL EXPANSION I/O CARD FILE

IF 7900 NOT PRESENT
IF 9450 NOT PRESENT
IF 93BB PRESENT
IS EXPANSION FOR PROCESSOR WITH 93 BB

IF 7900 NOT PRESENT
IF 9450 PRESENT
IF 93BB, 93BB PRESENT (OPTIONAL)

IS A COMMON EXPANSION BOX AFTER TCS FOR
PROCESSOR INDICATED WITH 93 BB (OPTIONAL)

B) WHEN A PROCESSOR IS ASSOCIATED WITH ADDITIONAL I/O EXPANSION UNITS IN A CHAIN OF I/O EXPANSION UNITS, THE D/C 7900 INTERFACE CABLING COMES FROM THE LAST PRIVATE I/O EXPANSION UNIT IN THE CHAIN. HOWEVER, THE POR CABLE MUST GO TO THE PROCESSOR DRIVING THAT CHAIN. (A PRIVATE IS ONE WHICH IS NOT SHARED BETWEEN TWO PROCESSORS VIA D/C 7900, BUT IS A PRIVATE TO THE PROCESSOR AT THE BEGINNING OF THE CHANNEL ONLY).

C) PROCESSORS MUST BE WITHIN TWO "WIRE" METERS OF THE I/O EXPANSION UNIT WITH D/C 7900. D/C 7900 FEATURE ATTACHMENT CARD RESIDES IN THE "A" SOCKET OF AN I/O EXPANSION UNIT.

D) D/C 7900 CONNECTS TO THE PROCESSORS OR THE LAST PRIVATE I/O EXPANSION UNIT AT THE FOLLOWING LOCATIONS:

1. PLUG CHANNEL REPOWER CARD (D/C 1565) INTO ROW IMMEDIATELY TO LEFT OF LEFTMOST I/O CARD.

2. "B" THE REPOWER CARD (D/C 1565) THAT IS RIGHT JUSTIFIED IN AN I/O EXPANSION UNIT THAT IS THE LAST IN A CHAIN OF PRIVATE I/O EXPANSION UNITS ON A CHANNEL.

E) D/C 7900 ONLY SUPPORTS TWO PROCESSORS.

F) THE P.O.R. CABLE PLUGGED INTO THE "A" CONNECTOR AT THE CONSOLE, AND THE FLAT INTERFACE CABLE PLUGGED INTO "A" ROW OF THE D/C 7900 FEATURE CARD MUST GO TO THE SAME PROCESSOR. THIS PROCESSOR IS THEN "A" PROCESSOR. SEE LOGIC PAGE SW140.

G) IT DOES NOT MATTER WHICH PROCESSOR IS "A" OR "B" PROCESSOR, ONLY THAT "F" ABOVE IS FOLLOWED.

H) INSTALL FEATURE AND ADDRESS DEVICE JUMPERS PER LOGIC PAGE SW140. USE JUMPER P/N 4420751.

2.0 THE FOLLOWING ARE THE SUPPORTED CONFIGURATIONS FOR D/C 7900.

NOTE: FOR DETAILED PLUGGING LOCATIONS, LABEL INFORMATION AND POSSIBLE REWORK REQUIRED ON OLDER MODEL 4953'S AND 4955'S REFER TO STEP 3.

A) SUPPORTED 'Y' CONFIGURATIONS: - SEE FIGURE E.3.
NOTE: THERE SHOULD BE THE FOLLOWING PRESENT -
NOTE - THE 'X' REPRESENTS ANY PROCESSOR

495X
9202
9301

(BOTH OPTIONAL)
(PRIV) 9301

495X
9202
9302

I/O EXPANSION UNIT (BOTH OPTIONAL
9302

I/O EXPANSION UNIT
I/O EXPANSION UNIT (BOTH OPTIONAL) (COMMON #1)
9301
9302
9450
I/O EXPANSION UNIT (BOTH OPTIONAL) (COMMON #2)
9301
9302
9450
I/O EXPANSION UNIT (BOTH OPTIONAL) (COMMON #3)
9301
9302
9450

1. DETERMINE QUANTITY OF UNITS (3, 4, 5, OR 6).

2. FOR 3 UNITS, CHECK FOR PROCESSOR A TO HAVE 93 BB AND PROCESSOR B TO HAVE 93 BB. CHECK FOR I/O EXPANSION UNIT WITH 7900 TO HAVE 93 BB, 93 BB TO AGREE WITH ABOVE.

3. IF 2 BAY, GO TO #5; IF 3 BAY GO TO #6; IF ONE BAY PUT PROCESSOR "A" IN LOCATION X12, I/O EXPANSION UNIT IN LOCATION X34, AND PROCESSOR "B" IN LOCATION X56. (SEE CHART E.4 FOR CODE IDENTIFICATION.)

4. USE THE TWO CABLE GROUPS (3') 4413776 TO GO FROM THE TCS CARD TO EACH PROCESSOR.

NOTE: PLUG PROCESSOR END OF CABLE ONTO A CHANNEL REPOWER CARD.

5. FOR TWO BAYS, PUT PROCESSOR A IN LOCATION 112, PROCESSOR B IN LOCATION 212, AND THE AN I/O EXPANSION UNIT IN LOCATION 134, (WHEN THE 2 BAYS ARE ADJACENT). (SEE CHART E.4 FOR CODE IDENTIFICATION).

A. USE CABLE GROUP 4413776 (3') TO GO FROM TCS CARD ROW A TO PROCESSOR A.

(SEE NOTE IN 4).

B. USE CABLE GROUP 4413777 (6') TO GO FROM TSC CARD ROW B TO PROCESSOR B. (SEE NOTE IN 4).

6. FOR 3 BAYS, PUT PROCESSOR A IN 312, AN I/O EXPANSION UNIT IN 112, PROCESSOR B IN 212, (WHEN THE 3 BAYS ARE ADJACENT) (SEE CHART E.4 FOR CODE IDENTIFICATION).

A. USE TWO CABLE GROUPS 4413777 (6') TO GO FROM TCS CARD ROWS A AND B TO PROCESSOR A AND B RESPECTIVELY. (SEE NOTE IN 4).

B. IF 4 UNITS, CHECK THAT AN I/O EXPANSION UNIT WITHOUT 7900 HAS BOTH A PAIR OF 93 BB NUMBERS AND A 9450, SPECIFY CODE.

B) SUPPORTED 'QUAD' CONFIGURATIONS - SEE FIG. E.3.
NOTE: THERE WOULD BE THE FOLLOWING PRESENT -

I/O EXPANSION UNIT (BOTH OPTIONAL)
9301

I/O EXPANSION UNIT (BOTH OPTIONAL)
9302

I/O EXPANSION UNIT
7900
9301
9302

I/O EXPANSION UNIT
7900
9301
9302

1. DETERMINE QUANTITY OF UNITS (4, 5, OR 6).

2. FOR 4 UNITS, CHECK FOR 2 PROCESSORS AND TWO I/O EXPANSION UNITS WITH TCS 7900 IN EACH I/O EXPANSION UNIT.

3. IF ONE BAY, PLACE PROCESSOR A IN 112, PROCESSOR B IN 178, AND PLACE THE TWO I/O EXPANSION UNITS IN 134, AND 156 RESPECTIVELY. (SEE CHART E.4 FOR CODE IDENTIFICATION).

A. USE CABLE GROUP 4413776 TO GO FROM I/O EXPANSION UNIT 134, TCS CARD ROW A TO PROCESSOR A IN LOC 112.

B. USE CABLE GROUP 4413776 TO GO FROM I/O EXPANSION UNIT 156, TCS CARD ROW B TO PROCESSOR B IN LOC 178.

C. USE CABLE GROUP 4413776 TO GO FROM I/O EXPANSION UNIT 134, TCS CARD ROW B TO I/O EXPANSION UNIT IN LOC 156.

D. USE CABLE GROUP 4413776 TO GO FROM THE I/O EXPANSION UNIT IN LOC 156 TCS CARD ROW A TO THE I/O EXPANSION UNIT IN LOC 134.

4. IF TWO BAYS, PLACE PROCESSOR A IN 112, PROCESSOR B IN 212, AND THE TWO I/O EXPANSION UNITS IN 134 AND 234 RESPECTIVELY. (SEE CHART E.4 FOR CODE IDENTIFICATION).

A. USE CABLE GROUP 4413776 TO GO FROM THE I/O EXPANSION UNIT IN LOC 134, TCS CARD ROW A TO PROCESSOR A IN LOC 112.

B. USE CABLE GROUP 4413776 TO GO FROM THE I/O EXPANSION UNIT IN LOC 234, TCS CARD ROW B TO PROCESSOR B IN LOC 212.

C. USE CABLE GROUP 4413777 TO GO FROM THE I/O EXPANSION UNIT IN LOC 134, TCS CARD ROW B TO THE I/O EXPANSION UNIT IN LOC 234.

D. USE CABLE GROUP 4413777 TO GO FROM THE I/O EXPANSION UNIT IN LOC 234, TCS CARD ROW A TO THE I/O EXPANSION UNIT IN LOC 134.

5. FOR 5 UNITS, CHECK FOR TWO PROCESSORS AND THREE I/O EXPANSION UNITS, TWO OF WHICH WILL CONTAIN TCS 7900 IN EACH I/O EXPANSION UNIT.

6. IF TWO BAYS, PLACE PROCESSOR IN A 156, PROCESSOR B IN 234, AND TWO I/O EXPANSION UNITS WITH TCS 7900 IN 112.

A. USE CABLE GROUP 4413776 TO GO FROM THE I/O EXPANSION UNIT IN LOC 112, TCS CARD ROW A TO THE I/O EXPANSION UNIT IN LOC 234.

B. USE CABLE GROUP 4413776 TO GO FROM THE I/O EXPANSION UNIT IN LOC 212, TCS CARD ROW B TO PROCESSOR B IN LOC 234.

C. USE CABLE GROUP 4413777 TO GO FROM THE I/O EXPANSION UNIT IN LOC 112, TCS CARD ROW B TO THE I/O EXPANSION UNIT IN LOC 212.

D. USE CABLE GROUP 4413777 TO GO FROM THE I/O EXPANSION UNIT IN LOC 212, TCS CARD ROW A TO THE I/O EXPANSION UNIT IN LOC 112.

E. USE STANDARD I/O CABLES TO GO FROM THE I/O EXPANSION UNIT IN LOC 134 TO PROCESSOR IN THE I/O EXPANSION UNIT LOCATION 156.

7. FOR 6 UNITS, CHECK FOR TWO PROCESSORS AND FOUR I/O EXPANSION UNITS, TWO I/O EXPANSION UNITS WILL EACH CONTAIN TCS 7900.

8. IF TWO BAYS, PLACE PROCESSOR A IN 112, PROCESSOR B IN 212, AND TWO I/O EXPANSION UNITS WITH TCS 7900 IN 156 AND 256 RESPECTIVELY. AND THE I/O EXPANSION UNITS WITHOUT TCS 7900 IN 134 AND 234. RESPECTIVELY. (SEE CHART E.4 FOR CODE IDENTIFICATION).

A. USE CABLE GROUP 4413776 TO GO FROM THE I/O EXPANSION UNIT IN LOC 156, TCS CARD ROW A TO THE I/O EXPANSION UNIT IN LOC 134.

B. USE CABLE GROUP 4413776 TO GO FROM THE I/O EXPANSION UNIT IN LOC 256, TCS CARD ROW B TO THE I/O EXPANSION UNIT IN LOC 234.

C. USE CABLE GROUP 4413777 TO GO FROM THE I/O EXPANSION UNIT IN LOC 156, TCS CARD ROW B TO THE I/O EXPANSION UNIT IN LOC 256.

D. USE CABLE GROUP 4413777 TO GO FROM THE I/O EXPANSION UNIT IN LOC 256, TCS CARD ROW A TO THE I/O EXPANSION UNIT IN LOC 156.

E. USE STANDARD I/O CABLES TO GO FROM THE I/O EXPANSION UNIT IN LOC 134 TO PROCESSOR A IN LOC 112.

F. USE STANDARD I/O CABLES TO GO FROM THE I/O EXPANSION UNIT IN LOC 234 TO PROCESSOR B IN LOC 212.

3.0 CABLE PLUGGING, LABEL, POSSIBLE REWORK INFORMATION.

A) FLAT INTERFACE CABLES WILL BE FOUND (ON MULTI-RACK SYSTEMS AND INDEPENDENT I/O EXPANSION UNITS ONLY). THERE IS AN EXISTING LABEL AT THE CONNECTOR END OF SEQUENCE 001 CABLE. THIS LABEL WILL BE MARKED WITH EITHER AN "A" OR A "B".

CHECK CHART E.4 AND BELOW THE "A" OR "B" THAT IS WRITTEN ON THE LABEL, ADD THE PROCESSOR LOCATION IN A THREE DIGIT CODE AS SHOWN ON CHART E.4.

INSTALL THESE I/O INTERFACE CABLES IN THE PROCESSOR OR THE LAST PRIVATE I/O EXPANSION UNIT IN THE FOLLOWING MANNER:

NOTE: IF A 4952B (S/N 15399 OR BELOW OR 53-02499 AND BELOW), 4953 (B) AND (D), 4955 (A) THRU (E) IS MOUNTED DIRECTLY BELOW A 4959 I/O EXPANSION UNIT, AND D/C 7900 IS BEING INSTALLED ON THE 4959 WITH SUPPORT TO THIS PROCESSOR, IT MAY BE NECESSARY TO FOLD THE I/O INTERCONNECTING CABLES OTHER THAN ON THE INDICATED FOLD MARKS FOR THEM TO REACH AND FIT PROPERLY IN THE PROCESSOR.

THE SEQ 001-W (A2) LABELED CABLE GOES TO THE TOP CARD SOCKET; SEQ 002-X (A3) LABELED CABLE GOES TO THE SECOND FROM THE TOP SOCKET; SEQ 003-Y (A4) LABELED CABLE GOES TO THE THIRD FROM THE TOP SOCKET AND SEQ. 004-Z (A5) LABELED CABLE GOES TO THE BOTTOM SOCKET. THIS IS FOR THE CARD OR BOARD LOCATIONS OF THE PROCESSOR OR LAST PRIVATE I/O EXPANSION UNIT. THE I/O EXPANSION UNIT (WITH D/C 7900) CABLE END WILL BE NUMBERED. #1 CABLE WILL GO TO THE TOP SOCKET ON D/C 7900 CARD.

B) THE P.O.R. CABLES MUST BE ROUTED TO THE PIN SIDE OF THE BACK BOARD AS SHOWN IN FIGURES E.1, E.2, E.3.

NOTE: IF PROCESSOR "A" OR "B" IS THE LAST PRIVATE I/O EXPANSION UNIT, THE P.O.R. CABLE MUST GO TO THE PROCESSOR DRIVING THAT CHANNEL. IT MUST ALSO BE WITHIN TWO "WIRE" METERS OF THE I/O EXPANSION UNIT WITH D/C 7900.

1. IF AN OLDER MACHINE IS ENCOUNTERED, THEN THE REAR COVER WILL HAVE TO BE NOTCHED AS SHOWN IN FIGURES E.1 AND E.2. AFTER REMOVING THE REAR COVER DO THIS IF REQUIRED.

2. ON THE PIN END OF THE P.O.R. CABLE, THREE LABELS WILL BE FOUND. EITHER AN "A" OR "B" WILL BE MARKED ON THE ONE ATTACHED TO THE CABLE JACKET. REMEMBER, IF THE CABLE IS PLUGGED INTO THE "A" CONNECTOR AT THE CONSOLE, IT MUST BE LABELED "A" AT THE PROCESSOR END AND THAT PROCESSOR IS THE "A" PROCESSOR.

3. ON EACH LEAD THAT PLUGS TO THE PINS WILL BE FOUND ANOTHER LABEL. ON THIS LABEL, WRITE THE APPROPRIATE PIN INFORMATION AS SHOWN BELOW:

   FOR SINGLE CARD PROCESSORS: WRITE THE FOLLOWING PIN INFORMATION:

   FOR P.O. R. SIGNAL CABLE (RED WIRE) WRITE F2-S05 (FOR HALF WIDE UNITS) Q2-S05 (FOR FULL WIDE UNITS).

   FOR GROUND (YELLOW WIRE) WRITE F2-U08 (FOR THE HALF WIDE UNITS) Q2-U08 (FOR THE FULL WIDE UNITS).

   4955: WRITE THE FOLLOWING PIN INFORMATION:

   FOR P.O.R. SIGNAL CABLE (RED WIRE) WRITE Q2-M04.

   FOR GROUND (YELLOW WIRE) WRITE Q2-P08.

4. NOW PLUG THE P.O.R. CABLE ONTO THE APPROPRIATE PINS.

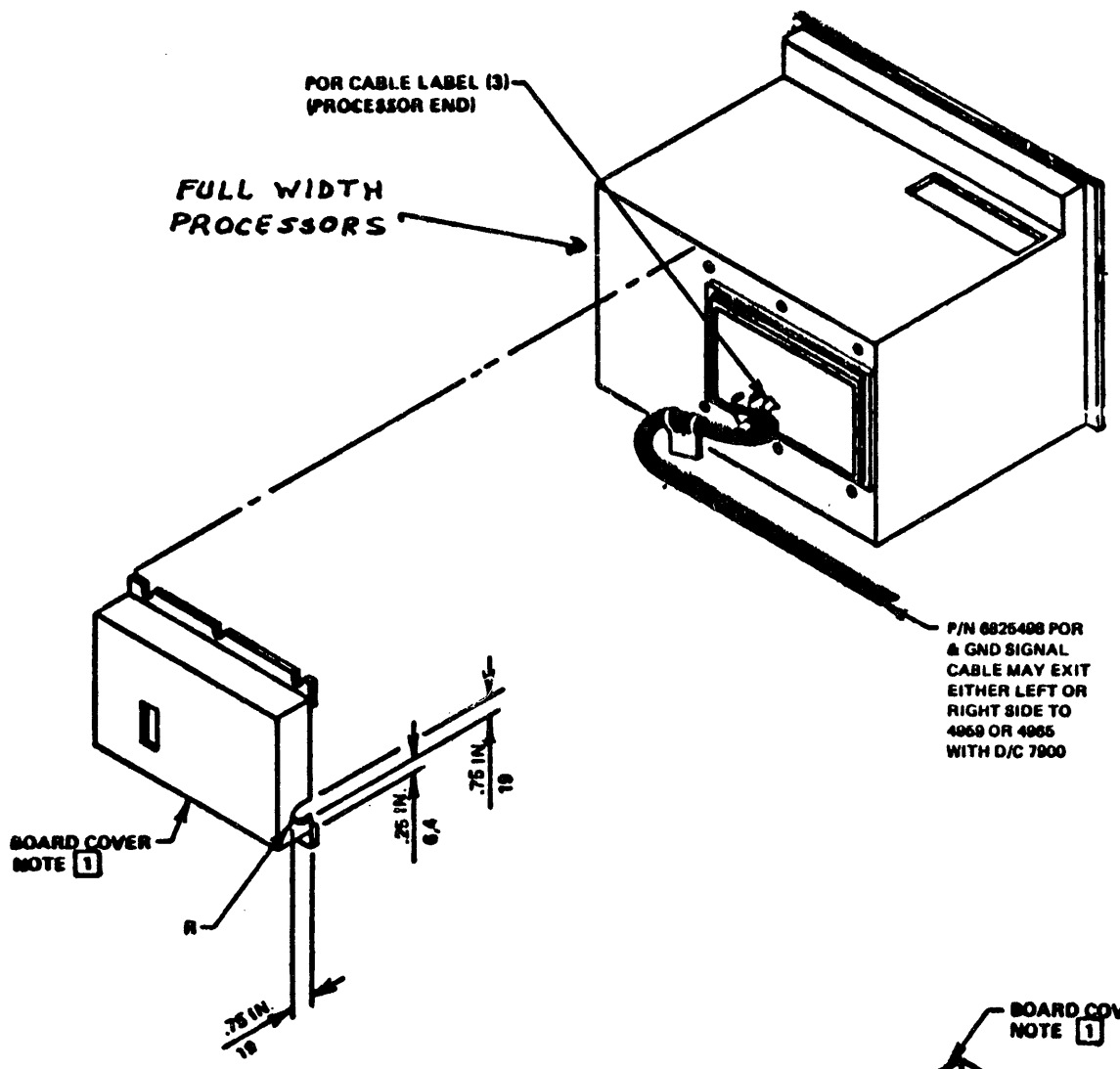
   REINSTALL BOARD COVER.

4.0 EXPLANATION OF THE REMAINING HARDWARE. (SUPPLIED ON B/M 6826831).

SUPPLIED SEPARATELY IS A CONNECTOR HOUSING (P/N 1847524) AND TWO (2) PINS (P/N 1847520). THESE PARTS ARE SUPPLIED SO THAT THE CUSTOMER CAN MAKE HIS ALARM, AUDIO OR WHATEVER, TO LET HIM KNOW WHEN A PROCESSOR IS DOWN. THIS ALARM AND CABLE ARE THE CUSTOMERS RESPONSIBLITY. THE PARTS ARE SUPPLIED SO THAT HE CAN MAKE HIS ALARM AND PLUG IT INTO THE "C" CONNECTOR ON THE D/C 7900 CONSOLE CARD.

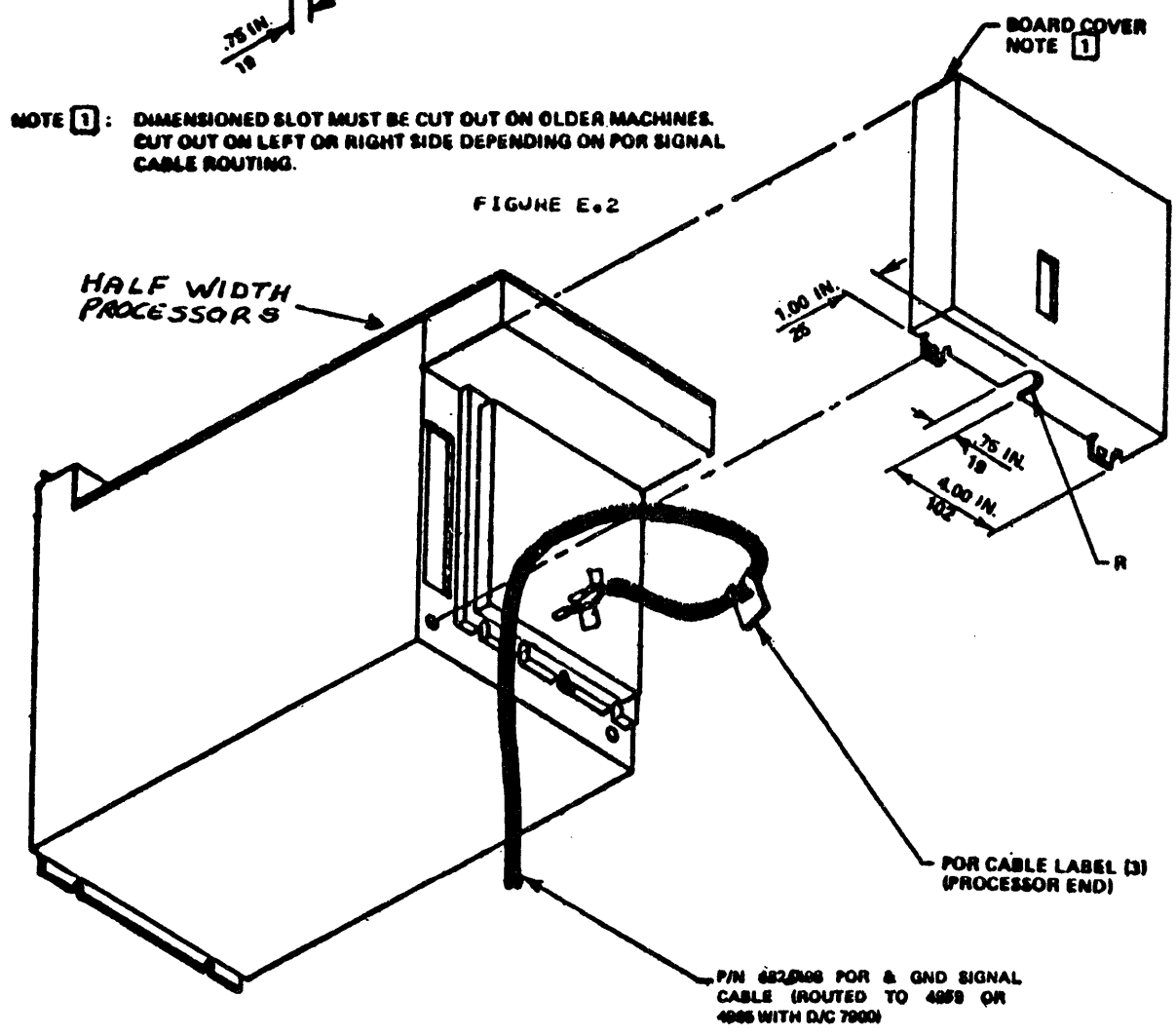
EXPLAIN THIS TO THE CUSTOMER AND HAND HIM THE HARDWARE.

FIGURE E.1



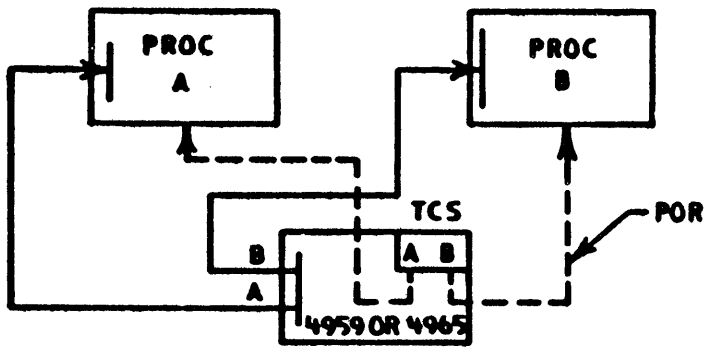
NOTE 1 : DIMENSIONED SLOT MUST BE CUT OUT ON OLDER MACHINES. CUT OUT ON LEFT OR RIGHT SIDE DEPENDING ON POR SIGNAL CABLE ROUTING.

FIGURE E.2

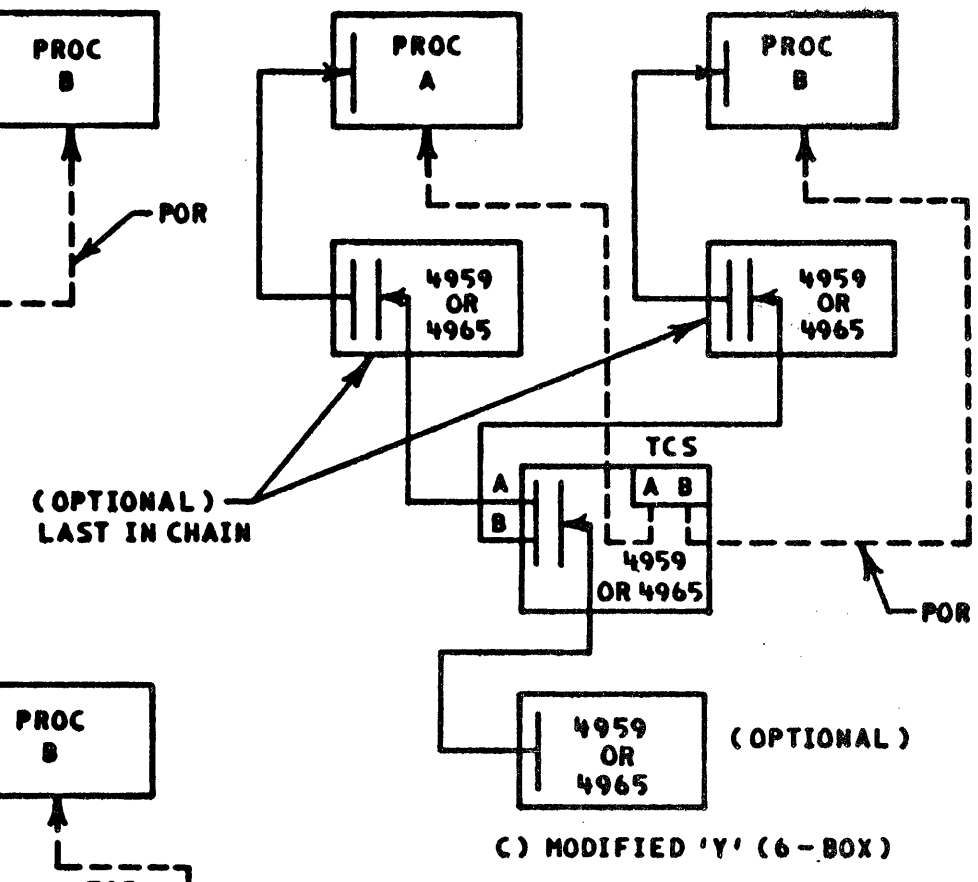


NOTE:
1 SLOT DIMENSIONED ON BOARD COVER WILL HAVE TO BE CUT OUT ON OLDER MACHINES.

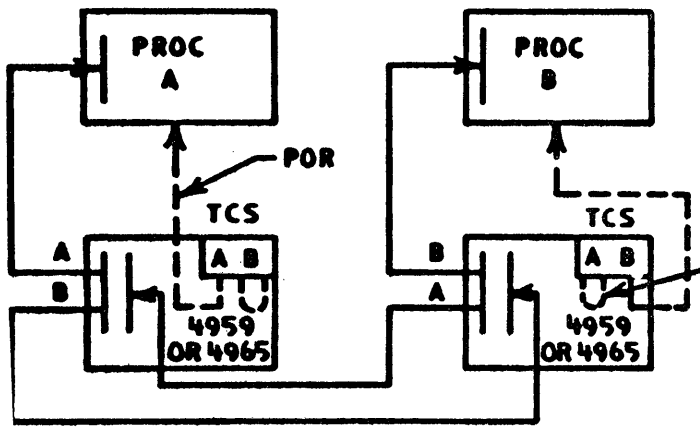
FIGURE E.3



A) BASIC 'Y' (3-BOX)

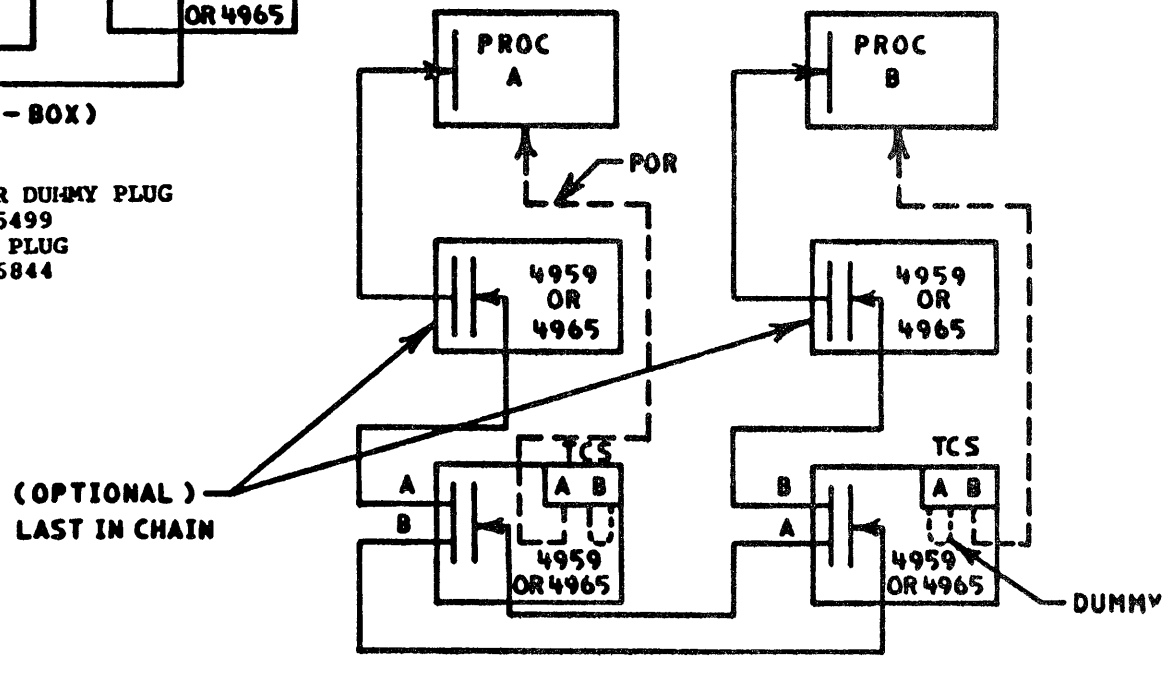


C) MODIFIED 'Y' (6-BOX)



B) BASIC 'QUAD' (4-BOX)

NOTE A: CUSTOMER DUMMY PLUG
P/N 6825499
CE TEST PLUG
P/N 6826844



D) MODIFIED 'QUAD' (6-BOX)

TCS SUPPORTED CONFIGURATIONS

4.0 RACK ENCLOSURE LOCATIONS

CHART E.4 SHOWS HOW THE 1.8 METRE AND THE 1.0 METRE RACK ENCLOSURE LOCATIONS ARE NUMBERED.

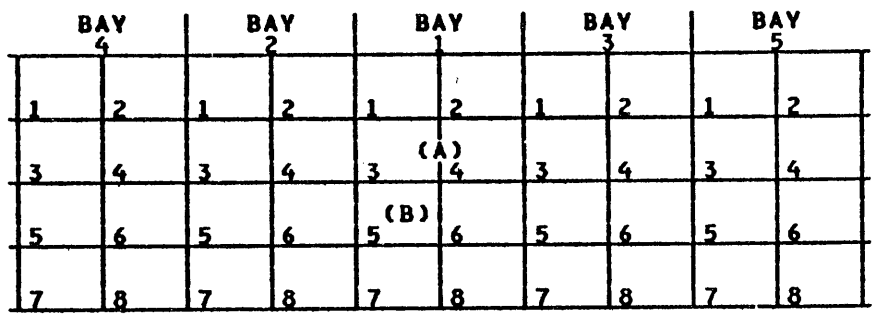
A LOCATION IS EXPRESSED AS A THREE DIGIT NUMBER. THE FIRST DIGIT IS THE BAY NUMBER. THE SECOND DIGIT IS EITHER THE LEFTHAND LOCATION, IF USED, OR A ZERO IF NOT USED FOR THIS UNIT, AND A THIRD DIGIT IS THE RIGHTHAND LOCATION, IF USED, OR A ZERO IF NOT USED FOR THIS UNIT.

FOR EXAMPLE: A 4955 PROCESSOR (A) MOUNTED IN THE FIRST BAY OF A 1.8 METRE MULTIPLE BAY ENCLOSURE WOULD NORMALLY BE ASSIGNED 134. THE 1 INDICATING BAY 1, THE 3 INDICATING THAT THE LEFTHAND HALF UNIT LOCATION AND THE 4 THAT THE RIGHTHAND UNIT LOCATIONS WERE BEING USED.

SIMILARLY, A 150 FOR A 4964 DISKETTE UNIT (B) WOULD USE THE 5 SPACE IN THE FIRST BAY IMMEDIATELY UNDER THE PROCESSOR AND LEAVE THE RIGHTHAND OR 6 SPACE, OPEN FOR SOME OTHER HALF-WIDTH UNIT LIKE A 4982 SENSOR I/O UNIT.

*NOTE: A BAY IS A RACK

1.8 METRE ENCLOSURES (4997-2)



1.0 METRE ENCLOSURES (4997-1)

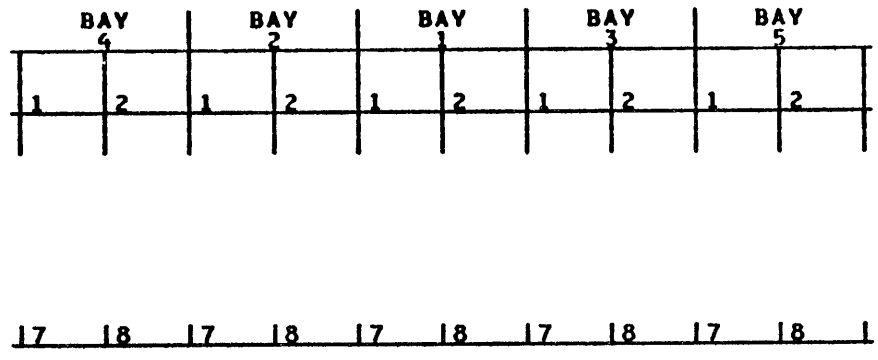


CHART E.4

APPENDIX F

WORLD TRADE POWER CONSIDERATIONS

FOR JAPAN ONLY:

SINCE JAPAN CANNOT HAVE GROUND CONDUCTOR LEAKAGE CURRENT IN EXCESS OF 3.5 MILLIAMPS, ALL 4997 ENCLOSURES INSTALLED IN JAPAN WILL HAVE A COMPENSATION NETWORK INSTALLED. THE COMPENSATION NETWORK IS MOUNTED ON THE RIGHT, REAR RAIL, ABOVE THE POWER DISTRIBUTION. THE PURPOSE OF THE COMPENSATION NETWORK IS TO REDUCE THE GROUND CONDUCTOR LEAKAGE CURRENT BELOW 3.5 MA - IF REQUIRED.

THE GROUND CONDUCTOR LEAKAGE CURRENT MUST BE DETERMINED FOR SINGLE PHASE POWER WHERE NONE OF THE CURRENT CARRYING CONDUCTORS ARE AT GROUND POTENTIAL. TO DETERMINE IF THIS CONDITION EXISTS, USE A SIMPSON 260 METER, OR SIMILAR METER (+/- 3%); AND CHECK THE PHASES AT THE SERVICE OUTLETS AS SHOWN IN FIGURE F.1, TABLE "A".

A) IF CONDITON "A" IS FOUND TO EXIST, CONTACT INSTALLATION PLANNING, AS AN IMPROPER POWER CONFIGURATION HAS BEEN PROVIDED FOR THE UNIT.

B) IF CONDITION "B" IS FOUND TO EXIST, THE COMPENSATION NETWORK IS NOT NEEDED. INSURE THAT THE NETWORK IS NOT PLUGGED INTO THE RACK POWER DISTRIBUTION AND PROCEED WITH THE INSTALLATION. OMIT THE REST OF THIS SECTION.

C) IF CONDITION "C" IS FOUND TO EXIST, THE COMPENSATION NETWORK MAY BE REQUIRED, AND THE LEAKAGE CURRENT FOR THE RACKS CONFIGURATION MUST BE DETERMINED.

REFER TO TABLE 3 AND DETERMINE THE LEAKAGE CURRENT BEFORE PROCEEDING.

NOTE: THE FOLLOWING STEPS ARE TO BE DONE ONLY IF THE TOTAL LEAKAGE CURRENT FOR THE RACK WAS DETERMINED TO BE BETWEEN 2.5 AND 5.0 MILLIAMPERES IN TABLE F.3.

A) LOCATE THE COMPENSATION NETWORK ASSEMBLY MOUNTED TO THE RIGHT REAR VERTICLE MEMBER OF THE RACK ABOVE THE POWER DISTRIBUTION.

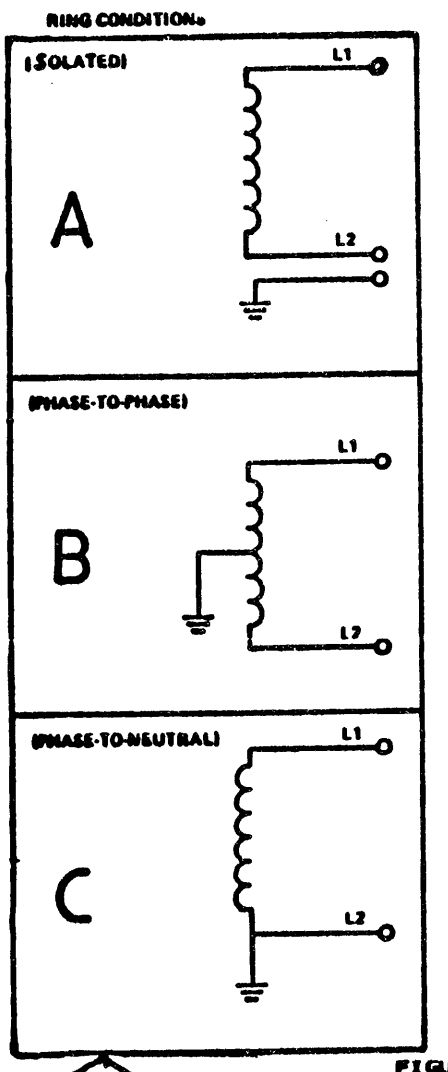
B) REMOVE THE THREE SCREWS (TWO ON THE BOTTOM AND ONE ON THE TOP MIDDLE OF THE COVER) AND REMOVE THE COVER. OBSERVE TB1 INSIDE THE COMPENSATION NETWORK ASSEMBLY. SEE FIGURE F.2.

C) NOTICE THAT THERE ARE TWO JUMPERS ON TB1. ONE CONNECTS TB1-2 TO TB1-3. THE OTHER CONNECTS TB1-3 TO TB1-4. REMOVE THE JUMPER BETWEEN TB1-2 AND TB1-3. REFER TO FIGURE F.2.

D) REASSEMBLE THE COMPENSATION NETWORK COVER TO THE ASSEMBLY, AND PLUG THE NETWORK INTO THE RACK POWER DISTRIBUTION.

PLUG THE UNITS MOUNTED IN THE RACK INTO THE POWER DISTRIBUTION AND CONTINUE WITH THE INSTALLATION IN SECTION 4.

FIGURE F.1



JAPAN ONLY

CONDITION	VOLT METER READING BETWEEN: L1, AND L2	L1, AND GND	L2, AND GND
A	EITHER 100, OR 200 VAC	EITHER 100, OR 200 VAC	EITHER 100, OR 200 VAC
B	200 VAC	100 VAC	100 VAC
C	EITHER 100, OR 200 VAC	EITHER 100, OR 200 VAC	0

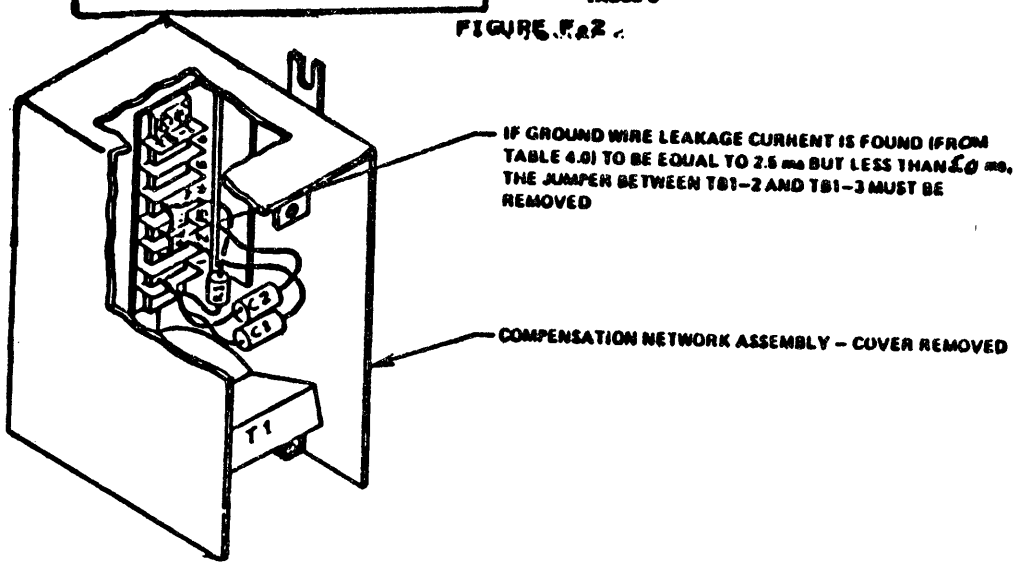
TABLE A

ALL HIGH VOLTAGE

CONDITION	VOLT METER READING BETWEEN: L1, AND L2	L1, AND GND	L2, AND GND
A	2XX VAC	2XX VAC	2XX VAC
B	2XX VAC	1XX VAC	1XX VAC
C	2XX VAC	2XX VAC	0

TABLE B

FIGURE F.2

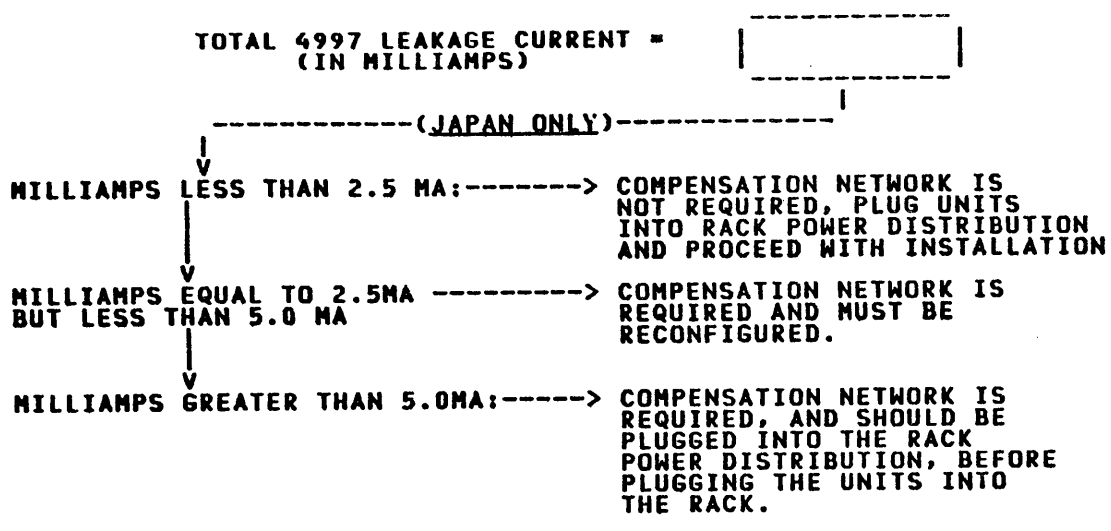


WIRING SCHEMATIC

(JAPAN ONLY)

TABLE F.3

MACHINE TYPE	LEAKAGE CURRENT (IN MILLIAMPS)	X	NUMBER OF UNITS	=	UNIT TOTALS
PROCESSOR UNITS					
4952, 4954 HALF WIDE UNITS 185 WATT POWER SUPPLY	0.4	X	_____	=	_____
4952,4954, 4956 UNITS CONTAINING DISKETTE DRIVES ONLY 230 WATT POWER SUPPLY	0.7	X	_____	=	_____
4952, 4954, 4955F. 4956 FULL WIDE UNITS 415 WATT POWER SUPPLY	1.0	X	_____	=	_____
4952, 4954, 4956 UNITS CONTAINING A DISK DRIVE 435 WATT POWER SUPPLY	1.4	X	_____	=	_____
4952 (S/N 15399 OR 53-02499 AND BELOW)	0.4	X	_____	=	_____
4953	1.2	X	_____	=	_____
4955 (OTHER THAN MODEL F)	1.2	X	_____	=	_____
4956 UNITS CONTAINING DISK AND DISKETTE DRIVES. 450 WATT POWER SUPPLY	0.4	X	_____	=	_____
EXPANSION UNITS					
4959	1.0	X	_____	=	_____
4965 UNITS CONTAINING DISKETTE DRIVES ONLY 230 WATT POWER SUPPLY	0.7	X	_____	=	_____
4965 UNITS CONTAINING A DISK DRIVE 435 WATT POWER SUPPLY	1.4	X	_____	=	_____
4965 UNITS CONTAINING A DISK DRIVE AND DISKETTE DRIVES. 450 WATT POWER SUPPLY	0.4	X	_____	=	_____
4966	2.0	X	_____	=	_____
4967	0.7	X	_____	=	_____
4968	2.5	X	_____	=	_____
4969	3.0	X	_____	=	_____
4982	0.0	X	_____	=	_____
4987	1.0	X	_____	=	_____
4993	1.0	X	_____	=	_____
4999	0.0	X	_____	=	_____
	TOTAL		_____		



EIA LEAKAGE CURRENT CHART

APPENDIX G

PROCESSOR/EXPANSION UNIT CABLING

THE PROCESSORS AND I/O EXPANSION UNITS ARE ATTACHED TO ONE ANOTHER VIA FOUR FLAT INTERFACE CABLES. THE CABLES EXIT THROUGH THE OPENING WITHIN THE UNIT AND ARE ROUTED VERTICALLY DOWN THROUGH A SIMILAR OPENING IN THE TOP OF THE UNIT.

NOTE: IF A 4952B (SN 15400 OR BELOW OR 53-02499) 4953 (B) AND (D) 4955 (A) THRU (E) IS MOUNTED DIRECTLY BELOW 4959 I/O EXPANSION UNIT, IT MAY BE NECESSARY TO FOLD THE I/O INTERCONNECTING CABLES OTHER THAN ON THE INDICATED FOLD MARKS FOR THEM TO REACH AND FIT PROPERLY IN THE PROCESSOR.

IF UNITS ARE MOUNTED HORIZONTALLY ADJACENT IN A MULTIRACK CONFIGURATION, CABLES ENTER AND EXIT THE CARD FILE IN THE SAME METHOD AS IF VERTICAL TO ONE ANOTHER.

CABLES ARE RETAINED VIA THE CABLE CLAMP BRACKET WITHIN THE CARD FILE UNIT CHASSIS. IT IS IMPORTANT THAT THIS CLAMP BE CLOSED IN ORDER FOR THE SYSTEM COOLING TO FUNCTION PROPERLY. THE CLAMP IS CLOSED BY THE TIGHTENING OF THE TWO SCREWS AS SHOWN IN FIGURE 2.3.1.0

THE TERM I/O EXPANSION UNIT DENOTES BOTH THE 4959 AND THE 4965. PROCEDURES FOR CABLING FEATURE CABLES INTO THE PROCESSOR OR I/O EXPANSION UNITS ARE AS FOLLOWS:

A) REMOVE FRONT COVER AND REMOVE SCREWS WHICH FASTEN THE UNIT TO THE RACK. PULL THE UNIT OUT FROM THE RACK APPROXIMATELY 6 INCHES.

NOTE: W.T.C. COUNTRIES MUST ALSO REMOVE PLASTIC SAFETY SHIELD FOUND IN CARD FILE AREA. THE CONSOLE GATE MUST BE SWUNG OPEN ON SOME MODELS.

NOTE: PULL OUT UNIT DIRECTLY BELOW 4952A AND 4954A 6 INCHES TO ALLOW ACCESS TO BOTTOM MOUNTING SCREW.

WARNING: CARE MUST BE TAKEN TO AVOID DAMAGE TO THE I/O EXPANSION UNITS' INTERCONNECTING CABLES.

B) ROUTE THE CABLES (FLAT OR ROUND) FROM THE MACHINE REAR TO FRONT.

NOTE: SOME PROCESSOR/I/O EXPANSION UNITS ALLOW FOR I/O CABLING TO ENTER/EXIT DIRECTLY THRU THE REAR BULKHEAD.

C) ROUTE THE CABLES INTO THE PROCESSOR OR I/O EXPANSION UNIT VIA THE LARGE OPENING ON TOP OF THE UNIT, INSERT CONNECTORS ONTO THE APPROPRIATE CARD AND TIGHTEN CABLE CLAMP BRACKET.

D) GROUP CABLES TOGETHER AND INSERT CABLE CLAMP P/N 1634933 INTO THE TOP OF THE UNIT TO RETAIN THE CABLES.

E) ATTACH THE CABLE SHIELD GROUND WIRE TO THE GROUND BUS LOCATED ON TOP OF THE PROCESSOR AND I/O EXPANSION UNIT. USE THE SCREW AND LOCKWASHER LOCATED THERE.

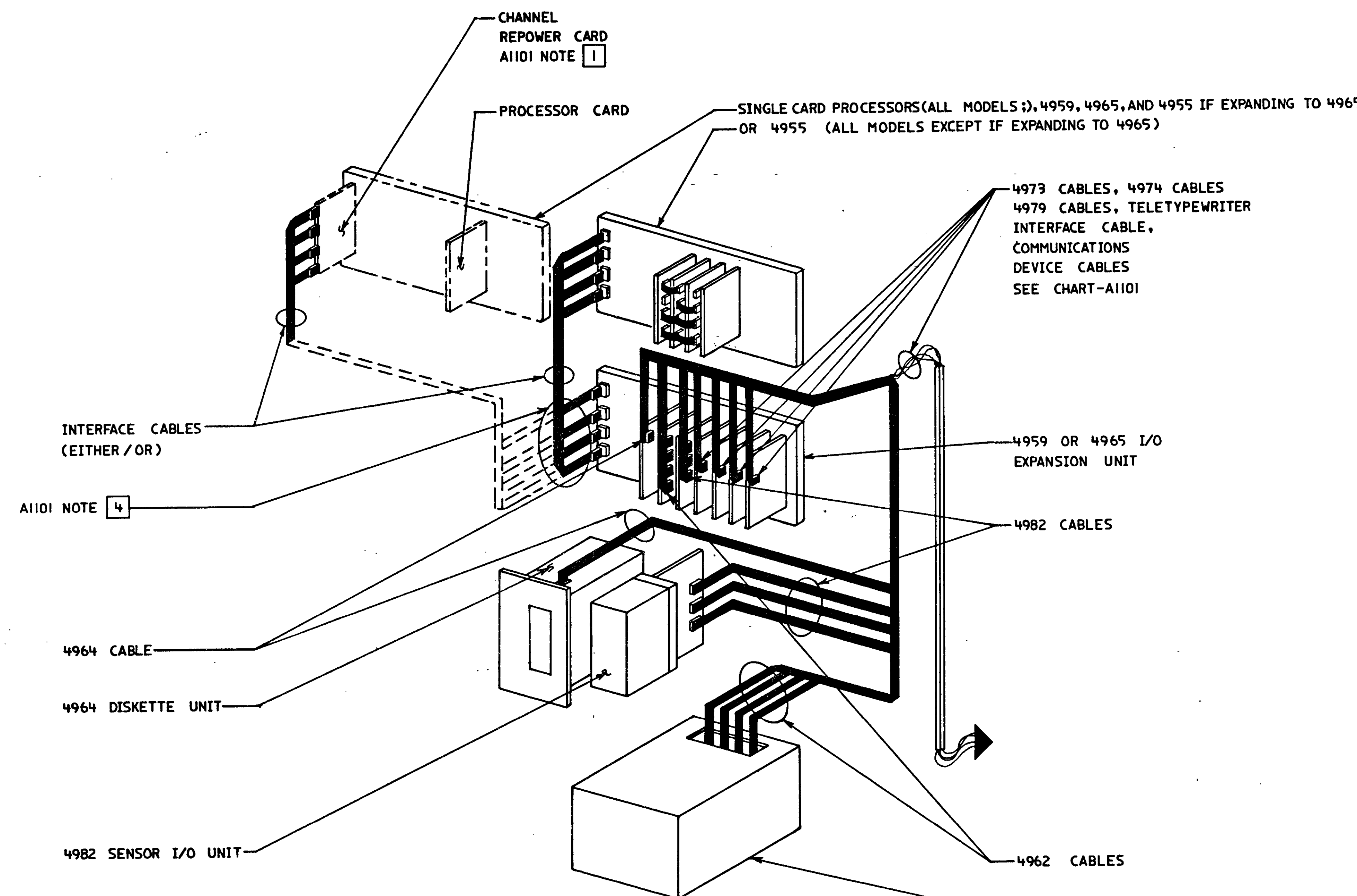
NOTE: IF A GOOD ELECTRICAL GROUND CAN BE MADE BETWEEN THE CABLE SHIELD AND CLAMP IN STEP H, THIS STEP MAY BE OMITTED.

F) PUSH THE UNIT INTO THE RACK AND FASTEN WITH THE SCREWS REMOVED IN STEP A). REPLACE SAFETY SHIELD IF APPLICABLE, CLOSE GATE IF APPLICABLE AND SNAP ON FRONT COVER.

G) GROUP CABLES AT THE REAR OF THE UNIT AND PERFORM ITEM #D, ABOVE.

H) CLAMP EACH EXTERNAL CABLE TO THE VERTICAL MOUNTING STRIP IN THE REAR OF THE RACK.

I) FOR REMOVAL OF CABLES, PERFORM THE ABOVE STEPS IN REVERSE ORDER.



TYPICAL RACK CABLING

	EC HISTORY		DRAWING TITLE
HIST	30 JUL 81	994400	I/O CABLE CHART
RED	24 NOV 81	466795	MACH SERIES/1
	16 MAR 82	997238	PART NO 8326721
D	17 JUN 82	329851	CLASSIFICATION IBM CORP

A100

A100

A1101

CABLE IDENTIFICATION CHART

CABLE P/N	D C	DESCRIPTION	FEAT. D/C	DESCRIPTION
0984023	5700	30 (9,1) FT – 4973 EXTENDED CABLE	5630	4973 PRINTER ATTACHMENT
0984024	↕	40 (12,2)	↕	↕
0984025		50 (15,2)		
0984026		60 (18,3)		
0984027		70 (21,3)		
0984028		80 (24,4)		
0984029		90 (27,4)		
0984030		100 (30,5)		
0984031		110 (33,5)		
0984032		120 (36,6)		
0984033		130 (39,6)		
0984034		140 (42,7)		
0984035	5700	150 (45,7) FT – 4973 EXTENDED CABLE	5630	4973 PRINTER ATTACHMENT
1632206	2060	BSC V35/H.S. DDN CABLE	2075	BSC SINGLE LINE CONTROL (H.S.)
1632207	5721	20 (6,1) – 4974 BASIC ATT. CABLE	5620	4974 PRINTER ATTACHMENT
1632208	2057	EIA DATA SET CABLE	1310	MULTI-FUNCTION ATTACHMENT
			1610	ASYNCHRONOUS COMMUNICATIONS SINGLE LINE CONTROL
			2074	BSC SINGLE LINE CONTROL
			2090	SDLC SINGLE LINE CONTROL
			2092	ASYNCHRONOUS COMMUNICATIONS-4 LINE ADAPTER
			2094	BSC-4 LINE ADAPTER [2]
			2096	PROGRAMMABLE COMMUNICATIONS-4 LINE ADAPTER
1632209	2055	TTY 20 (6.1) FT CABLE	7850	TTY ATTACHMENT
1632210	2058	BSC/HIGH SPEED CABLE	2075	BSC SINGLE LINE CONTROL (H.S.)
1632211	2056	ASYNCHRONOUS, LOCAL COMMUNICATIONS, CABLE	1310	MULTI-FUNCTION ATTACHMENT
			1610	ASYNCHRONOUS COMMUNICATIONS SINGLE LINE CONTROL
			2092	ASYNCHRONOUS COMMUNICATIONS-4 LINE ADAPTER [2]
			2096	PROGRAMMABLE COMMUNICATIONS-4 LINE ADAPTER
1632919	2944	JAPANESE EIA DATA SET CABLE	2057	EIA DATA SET CABLE
1632924	2064	TTY TO EIA DIR. CONN (MALE)	7850	TTY ATTACHMENT
1633096	----	COMMUNICATIONS CROSS-OVER CABLE	2091	ASYNCHRONOUS COMMUNICATIONS – 8 LINE CONTROL
			2093	BSC – 8 LINE CONTROL [2]
			2095	PROGRAMMABLE COMMUNICATIONS – 8 LINE CONTROL
1634981	5701	20 (6,1) – 4973 BASIC ATT. CABLE	5630	4973 – PRINTER ATTACHMENT
1727744	2724	U.K. MODEM ADAPTER CABLE	2057	EIA DATA SET CABLE
4411751	2065	TTY TO EIA DIR. CONN (FEMALE)	7850	TTY ATTACHMENT
4412661	5741	20 (6,1) FT – 4979 BASIC CABLE	3585	4979 VIDEO ATTACHMENT
4412662	5740	30 (9,1) FT – 4979 EXTENDED CABLE	3585	4979 VIDEO ATTACHMENT
4412663	↕	40 (12,2) FT	↕	↕
4412664		50 (15,2) FT		
4412665		60 (18,3) FT		
4412666		70 (21,3) FT		
4412667		80 (24,4) FT		
4412668		90 (27,4) FT		
4412669		100 (30,5) FT		
4412670		110 (33,5) FT		
4412671		120 (36,6) FT		
4412672		130 (39,6) FT		
4412673		140 (42,7) FT		
4412674	5740	150 (45,7) FT – 4979 EXTENDED CABLE	3585	4979 VIDEO ATTACHMENT
4412703	5720	30 (9,1) FT – 4974 EXTENDED CABLE	5620	4974 PRINTER ATTACHMENT
4412704	↕	40 (12,2) FT	↕	↕
4412705		50 (15,2) FT		
4412706		60 (18,3) FT		
4412707		70 (21,3) FT		
4412708		80 (24,4) FT		
4412709		90 (27,4) FT		
4412710		100 (30,5) FT		
4412711		110 (33,5) FT		
4412712		120 (36,6) FT		
4412713		130 (39,6) FT		
4412714		140 (42,7) FT		
4412715	5720	150 (45,7) FT – 4974 EXTENDED CABLE	5620	4974 PRINTER ATTACHMENT
6844552	5770		1310	MULTI-FUNCTION ATTACHMENT
8326751	5760	10 (3,05) FT 5250 IDS ATTACHMENT CABLE	1210	IDS ATTACHMENT FEATURE
8327455	2061	20 (6,1) FT PC 20 MA I-LOOP CABLE	2096	PROGRAMMABLE COMMUNICATIONS-4 LINE ADAPTER
6031258	2071	20 (6,1) FT TELEPHONE COMM CBL/VCA	7881	TELEPHONE COMMUNICATION FEATURE
6839455	2066	50 (15,2) FT 3101 CABLE CURRENT LOOP	7850	TTY ATTACHMENT
	↕	↕	2096	FPMLC 4 LINE ADAPTER
			4704	TTY ADAPTER (4987)
6839455	2066	50 (15,2) FT 3101 CABLE CURRENT LOOP	4734	TTY ADAPTER (4987)
6845570	2070	20 (6,1) FT TELEPHONE COMM CBL/DAA	7881	TELEPHONE COMMUNICATIONS FTR
1632206	2060	V.35 H.S. DDN CABLE	2075	BSC SINGLE LINE CONTROL (HS)
			2080	SYNC COMM CTRLR (HS)
6844126	2067	32.8 (10.0) FT X .21 CABLE	2080	SYNC COMM CTRLR (HS)
4498426		TWINAX	1400	LOCAL COMM CONTROLLER
2577672		COAX (INDOOR)	1400	LOCAL COMM CONTROLLER
1833108		COAX (OUTDOOR)	1400	LOCAL COMM CONTROLLER
6061135	5780	20 (6.1) FT TWINAX ATTACHMENT CABLE	5640	PRINTER ATTACHMENT 5200 SERIES
			1250	MULTIDROP WORKSTATION ATTACHMENT

WRAP-BACK TOOLS

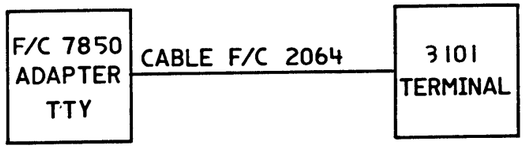
TOOL P/N	REQ'D FOR D/C
1633810	2058
1633811	2056
1633812	2060
1633834	2055, 2064, 2065
2704136	2057
6846868 NOTE [5]	
2722052	2944
4413770 NOTE [3]	2057
6825399	2061
6844547	5770
4468531	7880
6844226	2080

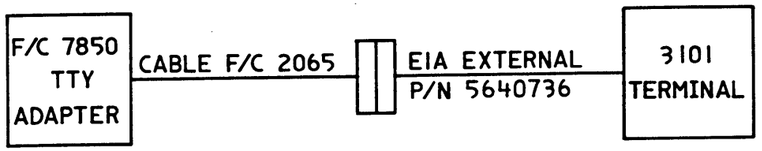
NOTES:
[1] CHANNEL REPOWER CARD (D/C 1565): USAGE – REQUIRED ON ALL PROCESSORS, 4959'S, AND 4965'S
[2] "ASYNCHRONOUS COMMUNICATIONS" ALSO KNOWN AS "START/STOP"
[3] THIS TOOL PRESENT ONLY WITH FEATURE CODES 2092 & 2094. THIS P/N 4413770 (QTY 16) SHOULD BE JUMPERED FROM PINS 4 THRU 5,6 THRU 20 ON SPECIFIED CABLE FOR INITIAL INSTALLATION CHECK-OUT
[4] "A" SLOT OF 4959 MAY CONTAIN D/C 7777, OR D/C 7900 ATTACHMENT CARD
[5] THIS TOOL REQUIRED FOR FEATURE CODE 1310 MULTI-FUNCTION ATTACHMENT WHEN USED WITH CABLE D/C 2057

EC HISTORY	
1 MAR 83	337313
10 AUG 83	A08003
26 JAN 84	337376

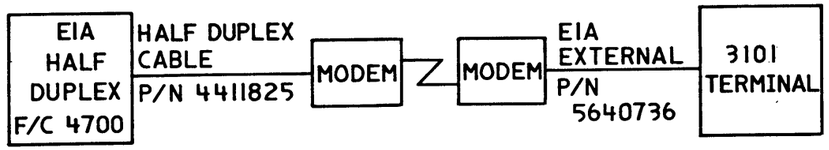
DRAWING TITLE: I/O CABLE CHART
MACH SERIES/1
PART NO 4745798
CLASSIFICATION
IBM CORP
D

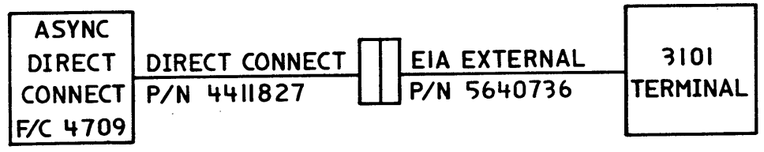
TELETYPEWRITER F/C 7850

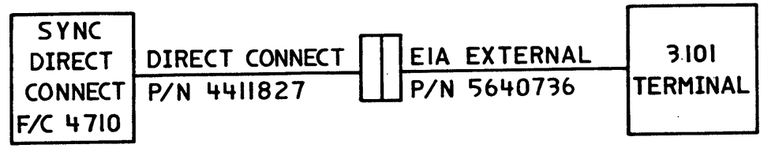




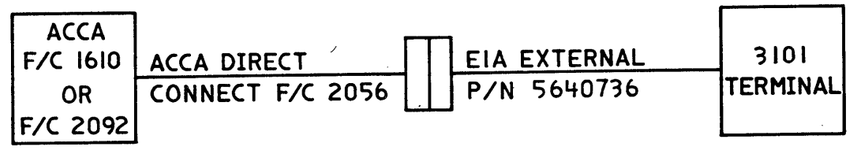
PROGRAMMABLE COMMUNICATIONS SUBSYSTEM TYPE 4987

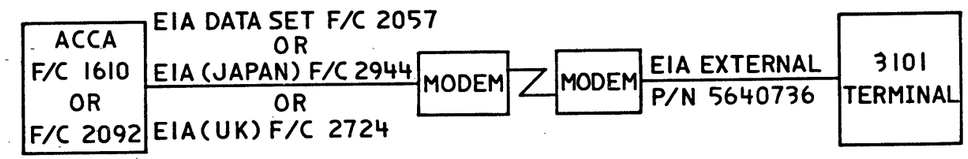




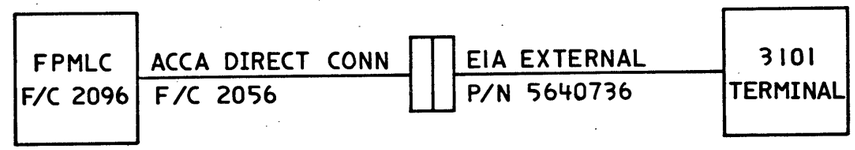


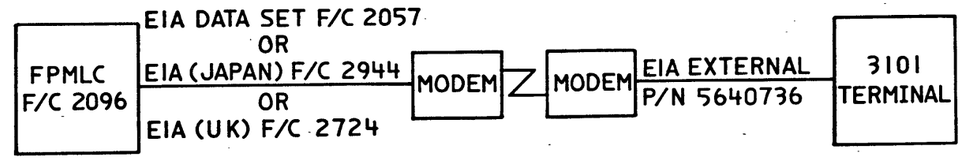
ASYNCHRONOUS COMMUNICATIONS F/C 1610, AND ASYNCHRONOUS COMMUNICATIONS (MULTI-LINE) F/C 2091/2092





FEATURE PROGRAMMABLE MULTI-LINE COMMUNICATIONS F/C 2095/2096





NOTE:

ALSO SEE GENERAL INFORMATION ON A1202

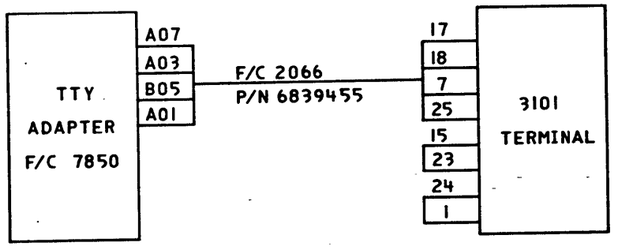
EC HISTORY		DRAWING TITLE
19SEP79	375342A	3101 TO SERIES I INTERFACES
24 NOV 81	466795	MACH RS232C
16 JUN82	329851	PART NO 6840609
		CLASSIFICATION

C

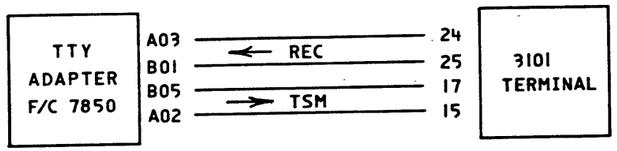
IBM CORP

A1200

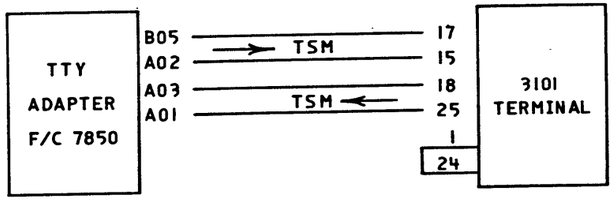
TELETYPEWRITER F/C 7850



CONNECTION WITH 3101 SUPPLYING
ALL CURRENT



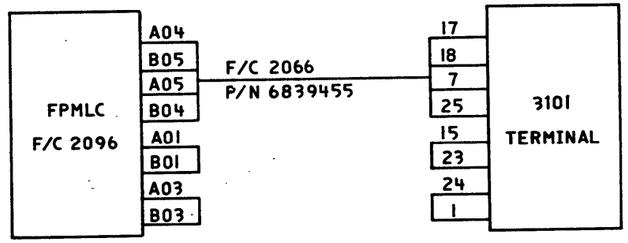
CONNECTIONS WITH TTY ADAPTER
F/C 7850 SUPPLYING ALL CURRENT.
CABLE NOT SUPPLIED



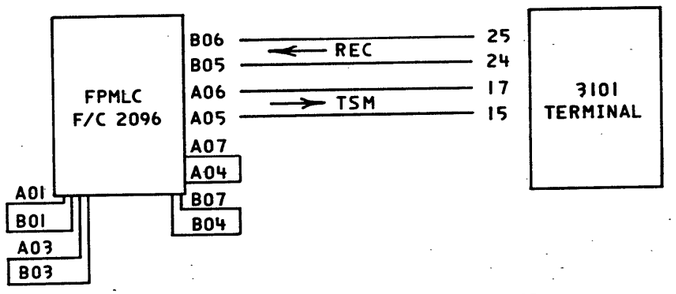
CONNECTIONS WITH EACH END
SUPPLYING ITS TSM LOOP CURRENT.
CABLE NOT SUPPLIED

NOTE:
ALSO SEE GENERAL INFORMATION ON A1202

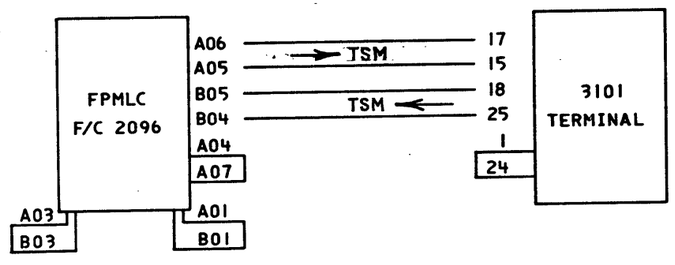
FEATURE PROGRAMMABLE MULTI-LINE COMMUNICATIONS



CONNECTION WITH 3101 SUPPLYING
ALL CURRENT

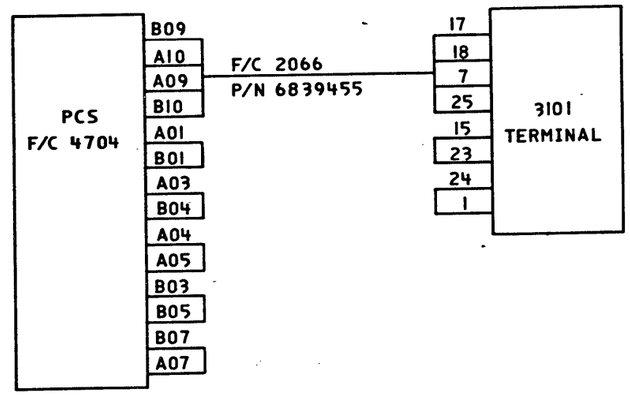


CONNECTION WITH FPMLC ADAPTER
F/C 2096 SUPPLYING ALL CURRENT.
CABLE NOT SUPPLIED



CONNECTIONS WITH EACH END
SUPPLYING ITS TSM LOOP CURRENT.
CABLE NOT SUPPLIED

PROGRAMMABLE COMMUNICATIONS SUB-SYSTEM 4987



CONNECTIONS WITH 3101 SUPPLYING
ALL CURRENT.
PCS DOES NOT HAVE A CURRENT
SUPPLYING CONFIGURATION

EC HISTORY		DRAWING TITLE
19SEP79	375342A	3101 TO SERIES 1 CURRENT LOOP INTERFACE
24 NOV 81	466795	MACH SERIES 1
17 JUN 82	329851	PART NO 6840610
		CLASSIFICATION

C

IBM CORP

A1201

A1201

GENERAL INFORMATION
SERIES 1 TO 3101 TERMINAL INTERCONNECT

1. IF CARRIER DETECT IS UP TO THE 3101 ALL THE TIME (S/1 ATTACHMENT JUMPERED FOR PERMANENT RTS), THEN THE 3101 HAS TO HAVE 'PRTS' SWITCH ON TO BE ABLE TO SEND DATA. (EIA OPERATION.)

2. WHEN THE 3101 'CRTS' SWITCH ON, RTS IS BROUGHT UP WHEN FIRST KEY IS DEPRESSED AND KEEPS IT UP UNTIL EOT/ETX (DEPENDS ON THE 3 SWITCH SETTING) IS SENT (EIA OP).

3. WITH CURRENT LOOP OPERATION, THE ONLY SWITCH ON THE 3101 WHICH AFFECTS THE OPERATION OF THE XMIT/REC DATA IS THE 'FDX' SWITCH. WHEN THIS IS ON, IT REQUIRES THE S/1 ATTACHMENT TO ECHO THE DATA.

4. IF OPERATING THE 3101 IN 'FDX' MODE (ECHOPLEX) WITH FPMLC ATTACH., RTS SHOULD BE JUMPERED ACTIVE ON THE FOUR LINE CARD SO AS TO PROVIDE CARRIER DETECT TO THE 3101. THIS ALLOWS THE ECHOED DATA TO BE RECEIVED BY THE 3101 (EIA OPERATION).

5. IF OPERATING THE 3101 IN 'FDX' MODE (ECHOPLEX) WITH THE PCS DIRECT CONNECT, THE SERIES/1 PROGRAM OR PCS FUNCTION STRING HAS TO ENSURE THAT CARRIER DETECT IS ACTIVE TO THE 3101 (EIA OPERATION).

6. THE TTY ATTACHMENT ALWAYS ECHOES THE DATA AND XMITS 2 STOP BITS.

7. WHEN USING THE TTY ATTACHMENT IN CURRENT LOOP MODE, THE TTY CARD SHOULD BE JUMPERED FOR ISOLATED CURRENT LOOP TO ALLOW THE 3101 TO SUPPLY THE CURRENT.

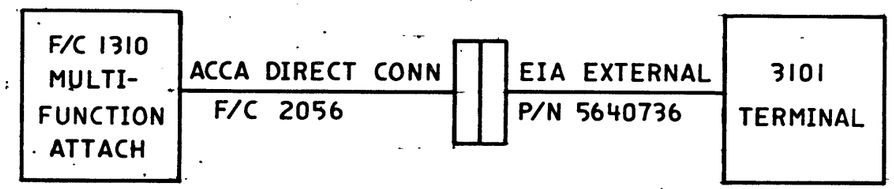
8. SINGLE LINE AND MULTILINE ACCA CANNOT ECHO THE DATA SO SHOULD OPERATE WITH THE 3101 'HDX' SWITCH ON AND 'PRTS' SWITCH ON, AND THE SERIES 1 ADAPTER JUMPERED FOR RTS ALWAYS ON.

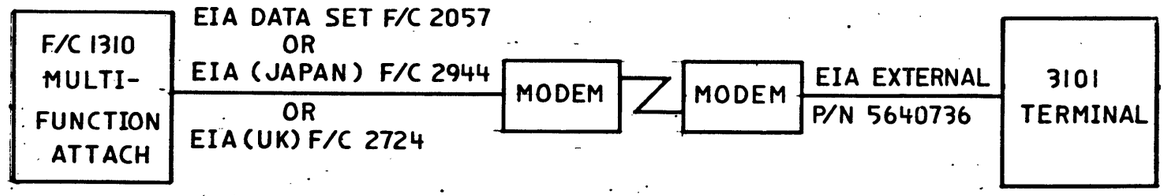
9. WHEN USING THE SINGLE LINE AND MULTILINE ACCA, THE SERIES 1 DATA HAS TO BE THE MIRROR IMAGE OF THE ASC II CHARACTERS USED BY THE 3101 (I.E., AN ASC II ETX=03, IN SERIES/1 IT IS = C0 WITH EVEN OR NO PARITY; OR C1 ODD PARITY).

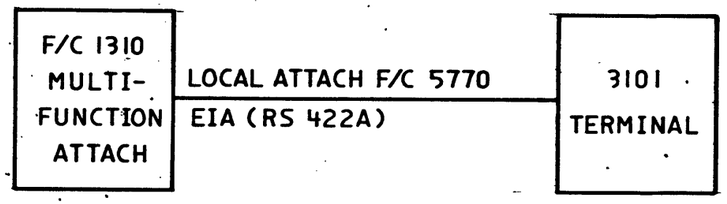
10. ACCA SINGLE STOP BIT RPQ D02236 SAME AS F/C 1610 EXCEPT FOR STOP BIT SWITCH SETTING ON THE 3101

A1202

MULTI-FUNCTION ATTACHMENT F/C 1310

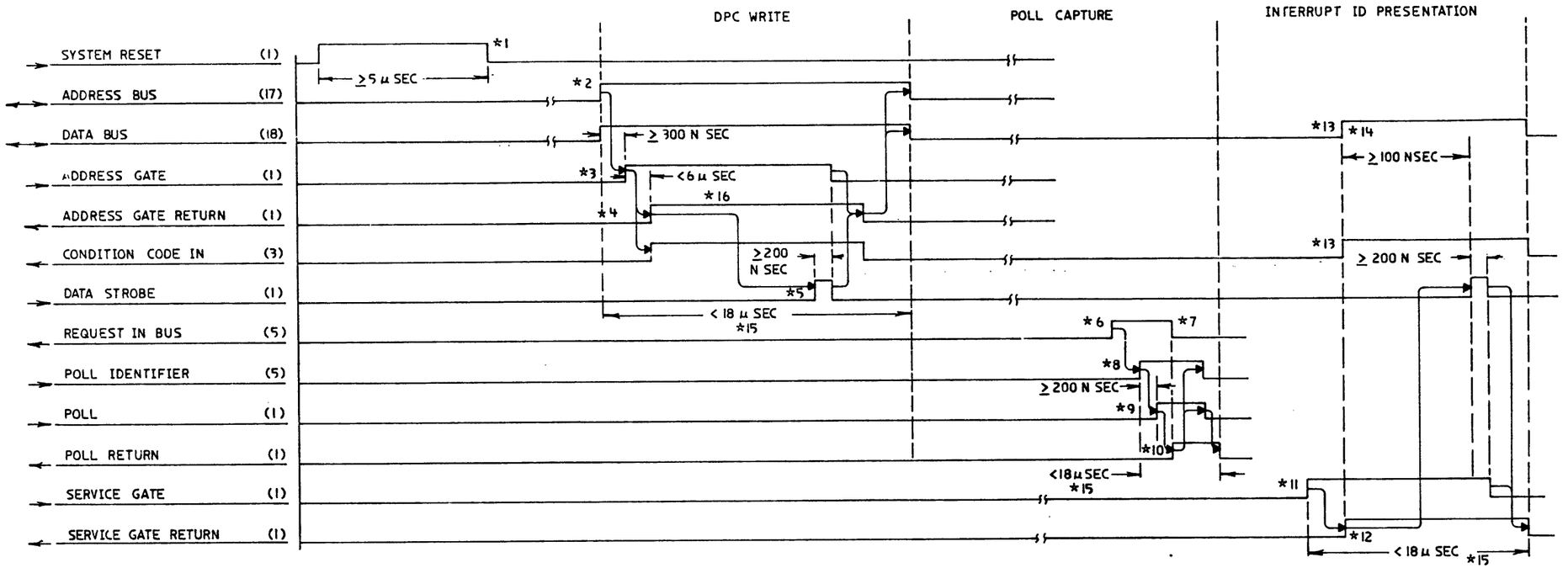






	EC HISTORY		DRAWING TITLE	
	19SEP79	375342A	3101 TO SERIES 1 INTERFACES	
	24NOV81	466795	MACH RS 232C	
	17 JUN 82	329851	PART NO 6840611	
B			CLASSIFICATION	IBM CORP

A1202



ALL OUTBOUND TAG AND BUS RELATIONSHIPS ARE AS SEEN AT THE OUTPUT OF THE CHANNEL. ALL INBOUND TAG AND BUS RELATIONSHIPS ARE AS SEEN AT THE OUTPUT OF THE DEVICE. ALL TIMES INDICATED ARE AS SEEN AT THE CHANNEL OUTPUT

THESE SEQUENCES (SYSTEM RESET, DPC WRITE, ETC) ARE SHOWN IN THIS ORDER FOR TIMING CHART SIMPLICITY. THEY DO NOT IMPLY A FIXED ORDER OF EVENTS REQUIRED BY THE CHANNEL

ALL TIMINGS ARE DRAWN AS LOGICAL LEVELS (NOT ACTUAL VOLTAGE LEVELS)
USE CYCLE STEAL SCOPE LOOP FOR INTERRUPT ID PRESENTATION

NOTES:

* 1 SYSTEM RESET MUST DISABLE SELECTION, BLOCK POLL PROPAGATION AND CLEAR ANY STATUS, STATES, REQUESTS, REGISTERS AND INTERFACE CONTROL LOGIC
* 2 BIT 16 ON, ADDRESS BUS CONTAINS THE COMMAND CODE (0-7) AND THE DEVICE ADDRESS (8-15)
* 3 ADDRESS BUS BIT 16 ON, EXAMINE 8-15 FOR DEVICE ADDRESS, LOGICAL COMPARE CONSTITUTES INITIAL SELECTION
* 4 INITIAL SELECTION - ADDRESS GATE SIGNALS A DEVICE THAT IT CAN RESPOND TO INITIAL SELECTION AND BEGIN EXECUTION OF THE COMMAND SPECIFIED BY BITS 0-7 OF THE ADDRESS BUS.
ADDRESS GATE RETURN - SIGNALS THE RECEPTION OF ADDRESS GATE-EXAMINE ADDRESS BUS BITS 0-7 FOR COMMAND ACCEPTANCE AND ACTIVATION OF CONDITION CODE IN BUS
* 5 DATA STROBE IS RAISED FOR A DURATION OF AT LEAST 200 NSEC AND FALLS BEFORE THE FALL OF ADDRESS GATE AND MAY BE USED TO SET DATA BUS INTO HOLDING REG
* 6 ONE OF BITS 0-15 IS SET ON BY AN INTERRUPTING CONDITION IN THE DEVICE, THE BIT IS DETERMINED BY THE PREVIOUS PREPARE COMMAND WITH "I" BIT ON
* 7 REQUEST IN BUS MUST STAY ACTIVE UNTIL IT IS SERVICED (POLL CAPTURE OCCURS), RECEIVES A HALT I/O, DEVICE RESET, SYSTEM RESET, OR POWER ON RESET
* 8 POLL IDENTIFIER BUS (5 BITS) IS RAISED AT LEAST 200 NSEC BEFORE POLL. BIT 0 OFF IS FOR INTERRUPT INDENTIFICATION
* 9 IF THE DEVICE DOES NOT CAPTURE THE POLL IT MUST PROPAGATE POLL TO THE NEXT DEVICE
* 10 POLL RETURN IS RAISED IF THE POLL IDENTIFIER MATCHES THE LOGICAL REQUEST BEING MADE ON THE REQUEST IN BUS. POLL RETURN RESETS THE DEVICE REQUEST IN BIT
* 11 SERVICE GATE AFTER POLL CAPTURE INDICATES THAT THE DEVICE MAY BEGIN TRANSFER OF INTERRUPT ID
* 12 SERVICE GATE RETURN SIGNALS THE DEVICE RECOGNITION OF SERVICE GATE AND ACTIVATION OF INTERRUPT ID ON DATA BUS
* 13 MUST BE ACTIVE BY THE RISE OF SERVICE GATE RETURN
* 14 DATA BUS BITS 0-7 ARE THE INTERRUPT STATUS BYTE (ISB), BITS 8-15 ARE THE DEVICE ADDRESS
* 15 I/O ATTACHMENTS ARE REQUIRED TO RESPOND WITHIN 18 MICRO-SEC, HOWEVER, THE PROCESSOR/CHANNEL TIMEOUT MECHANISM WILL NOT DETECT THIS CONDITION UNTIL 18.2 - 20.8 MICRO-SEC
* 16 I/O ATTACHMENTS ARE REQUIRED TO RESPOND WITHIN 6 MICRO-SEC OR DEVICE NOT ATTACHED WILL BE REPORTED (CC=0), HOWEVER, THE PROCESSOR/CHANNEL TIMEOUT MECHANISM WILL NOT DETECT THIS CONDITION UNTIL 6.5-9.1 MICRO-SEC

NOTE: ALL BUS BITS MUST BE STABLE PRIOR TO ACTIVATING ANY TAG LINE, TAG LINE MUST BE DEACTIVATED PRIOR TO ANY BUS LINES GOING ACTIVE

SCORE LOOP - DPC WRITE
(PREPARE DEVICE TO LEVEL 0, I-BIT ON)

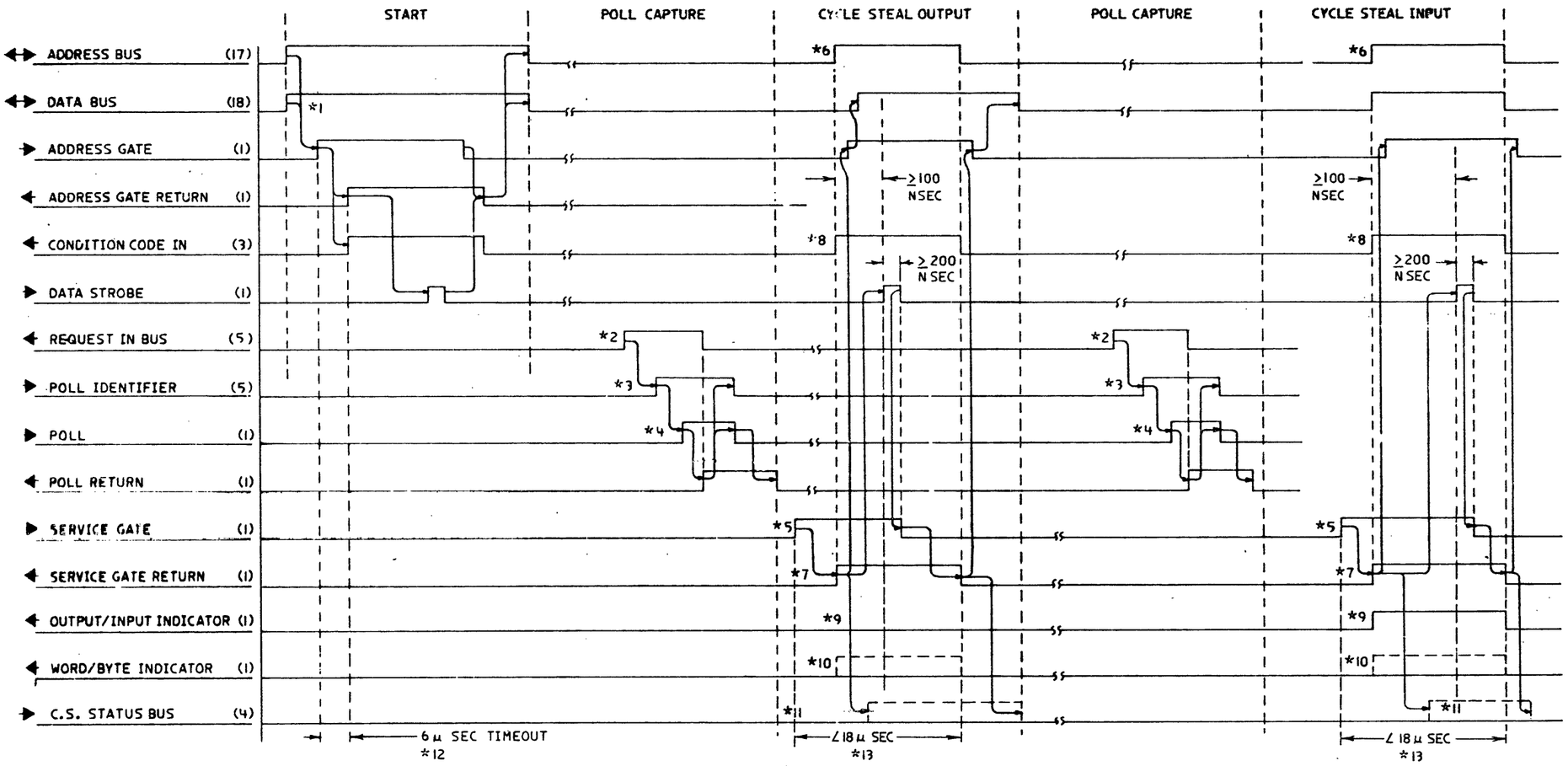
ADDRESS (HEX)	DATA (HEX)	
0000	680C	I/O COMMAND
0002	0024	ADDRESS OF IDCB
0004	6802	*UNCONDITIONAL BRANCH
0006	0000	*TO ADDRESS 0000
0024	60XX	IDCB PREPARE 'XX' - PUT DESIRED DEVICE
		ADDRESS HERE
0026	0001	PREPARE DATA, LEVEL 0, I BIT ENABLED

A4511-1

EC HISTORY		DRAWING TITLE
5 MAR 84	A10990	DPC WRITE
5 SEP 84	A23166	MACH SERIES 1
		PART NO 6407889
D		CLASSIFICATION

IBM CORP

A4511-1



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THESE SEQUENCES ARE SHOWN IN THIS ORDER FOR TIMING CHART SIMPLICITY. THEY DO NOT IMPLY A FIXED ORDER OF EVENTS REQUIRED BY THE CHANNEL

SEE A4521 OR A4522 FOR NOTES (*1 TO *13)

A4520

EC HISTORY		DRAWING TITLE
29 SEP 81	323322	CYCLE STEAL
16 JUN 82	329851	MACH SERIES 1
2 NOV 82	335407	PART NO 6060754
20 MAR 84	A10990	CLASSIFICATION
5 SEP 84	A23166	

D

IBM CORP

A4520

NOTES:

* 1 DATA BUS CONTAINS THE DEVICE CONTROL BLOCK (DCB) ADDRESS DURING A START COMMAND

* 2 REQUEST IN BUS BIT 16 ON EQUALS CYCLE STEAL REQUEST

* 3 POLL IDENTIFIER BITS 0 ON, 3 ON AND 4 ON EQUAL POLL FOR CYCLE STEAL

* 4 POLL IS CAPTURED BY THE FIRST DEVICE TO SEE IT WITH A REQUEST IN RAISED OTHERWISE POLL IS PROPAGATED TO THE NEXT DEVICE IN LINE

* 5 SERVICE GATE AFTER POLL CAPTURE INDICATES BEGIN DATA TRANSFER TO THE DEVICE

* 6 ADDRESS BUS BIT 16 OFF AT PROCESSOR PRIOR TO SERVICE GATE ACTIVE INDICATES CYCLE STEAL TO OR FROM STORAGE TO THE I/O DEVICE. ADDRESS BUS BITS 0-15 CONTAIN THE STORAGE ADDRESS FOR CYCLE STEAL

* 7 SERVICE GATE RETURN SIGNALS A SERVICE GATE CAPTURE BY THE DEVICE AND ACTIVATION OF ADDRESS BUS (ON A CYCLE STEAL SEQUENCE), DATA BUS, CONDITION CODE IN BUS AND OTHER TAGS AS REQUIRED BY THE PARTICULAR CYCLE STEAL OR INTERRUPT SERVICE SEQUENCE

* 8 CONDITION CODE IN BITS 0-2 RAISED DURING CYCLE STEAL DATA TRANSFERS ARE LOGICALLY EQUAL TO THE CYCLE STEAL ADDRESS KEY DURING CYCLE STEAL TRANSFERS. FOR FETCHING THE DCB AND REPORTING RESIDUAL STATUS, A VALUE OF LOGICAL ZERO IS USED FOR THE ADDRESS KEY. DURING DATA TRANSFER, THE ADDRESS KEY EQUALS CONTROL WORD BITS 5-7 WHICH WERE SET IN THE DCB

* 9 CYCLE INPUT INDICATOR OFF INDICATES AN OUTPUT FROM STORAGE, CYCLE INPUT INDICATOR ON INDICATES AN INPUT TO STORAGE

* 10 CYCLE BYTE INDICATOR ON INDICATES A BYTE TRANSFER, CYCLE BYTE INDICATOR OFF INDICATES A WORD TRANSFER

* 11 STATUS BUS - ANY BIT 0-3 SIGNALS THE DEVICE THAT A CHANNEL ERROR HAS BEEN DETECTED IF ACTIVATED DURING CYCLE STEAL SERVICING. THE DEVICE WILL RETAIN THIS INFORMATION FOR PRESENTATION IN THE ISB AT INTERRUPTION TIME, TERMINATE THE CYCLE STEAL OPERATION AND PRESENT AN END INTERRUPT

* 12 I/O ATTACHMENTS ARE REQUIRED TO RESPOND WITHIN 6 MICRO-SEC, OR DEVICE NOT ATTACHED WILL BE RERORTED (CC=0), HOWEVER, THE PROCESSOR/CHANNEL TIMEOUT MECHANISM WILL NOT DETECT THIS CONDITION UNTIL 6.5-9.1 MICRO-SEC

* 13 I/O ATTACHMENTS ARE REQUIRED TO RESPOND WITHIN 18 MICRO-SEC, HOWEVER, THE PROCESSOR/CHANNEL TIMEOUT MECHANISM WILL NOT DETECT THIS CONDITION UNTIL 18.2-20.8 MICRO-SEC

NOTE: ALL BUS BITS MUST BE STABLE PRIOR TO ACTIVATING OF ANY TAG LINE. TAG LINE MUST BE DEACTIVATED PRIOR TO ANY BUS LINES GOING INACTIVE

SCOPE LOOP - READ CYCLE STEAL STATUS (CYCLE STEAL DEVICES ONLY)		
ADDRESS (HEX)	DATA (HEX)	
0000	680C	I/O COMMAND
0002	0024	ADDRESS OF IDCB
0004	6802	*UNCONDITIONAL BRANCH
0006	0304	*TO ADDRESS 0304
0024	60XX	*IDCB - PREPARE 'XX' = DESIRED DEVICE ADDRESS
0026	0001	PREPARE DATA, LEVEL 0, I BIT ENABLED
0030		
↕	0300	PUT DDB POINTER (0300) IN PROPER ADDRESS
022F		ADDRESS (HEX) CALCULATION = 0030 +2
		(DEVICE ADDRESS). IT IS ONLY NECESSARY
		TO STORE INTO THE ONE CALCULATED
		ADDRESS
0300	0304	START INSTRUCTION POINTER
0302	0000	
0304	680C	I/O COMMAND
0306	030A	ADDRESS OF IDCB
0308	6100	LEVEL EXIT
030A	7FXX	IDCB 'XX' = DEVICE ADDRESS
030C	030E	DCB ADDRESS
030E	2000	DCB - START CYCLE STEAL
0310		
↕	0000	
0318		
031A	000X	BYTE COUNT - 'X' SEE DEVICE TDM FOR BYTE COUNT
031C	031E	DATA ADDRESS
031E	-	*CYCLE STEAL STATUS IS PUT HERE AT END
-	-	*OF CYCLE STEAL STATUS COMMAND

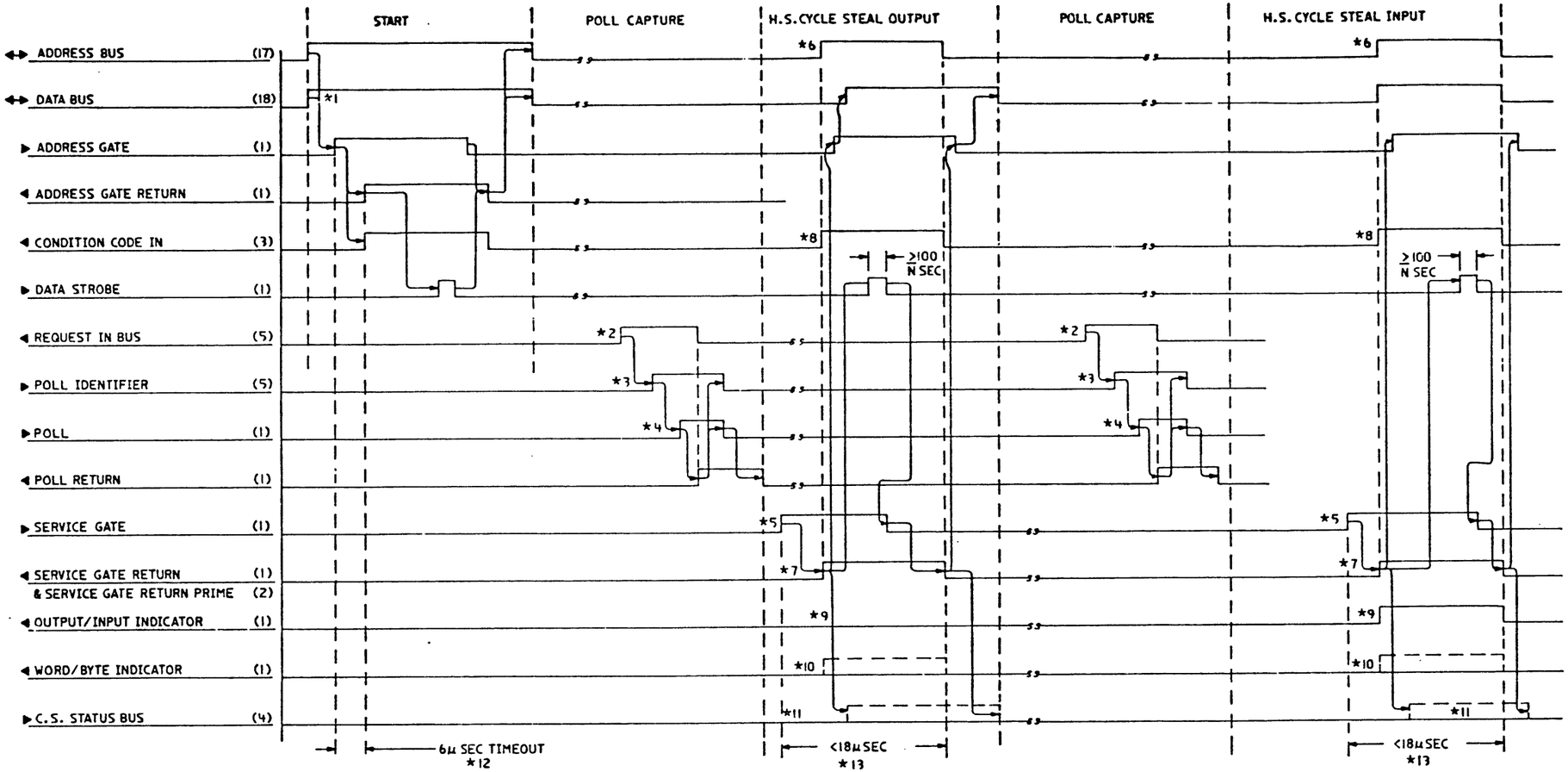
A4522

EC HISTORY		DRAWING TITLE
5 MAR 84	A10990	A4520 NOTES
		MACH SERIES 1
		PART NO 6407890
		CLASSIFICATION

D

IBM CORP

A4522



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THESE SEQUENCES ARE SHOWN IN THIS ORDER FOR TIMING CHART SIMPLICITY. THEY DO NOT IMPLY A FIXED ORDER OF EVENTS REQUIRED BY THE CHANNEL
SEE A4526 OR A4527 FOR NOTES (*1 TO *13)

A4525

EC HISTORY		DRAWING TITLE
	998287	H.S. CYCLE STEAL
2 NOV 82	335407	MACH SERIES 1
5 MAR 84	A10990	PART NO 4760698
5 SEP 84	A23166	CLASSIFICATION
D		IBM CORP

A4525

NOTES:

* 1 DATA BUS CONTAINS THE DEVICE CONTROL BLOCK (DCB) ADDRESS DURING A START COMMAND

* 2 REQUEST IN BUS BIT 16 ON EQUALS CYCLE STEAL REQUEST

* 3 POLL IDENTIFIER BITS 0 ON, 3 ON AND 4 ON EQUAL POLL FOR CYCLE STEAL

* 4 POLL IS CAPTURED BY THE FIRST DEVICE TO SEE IT WITH A REQUEST IN RAISED, OTHERWISE POLL IS PROPAGATED TO THE NEXT DEVICE IN LINE

* 5 SERVICE GATE AFTER POLL CAPTURE INDICATES BEGIN DATA TRANSFER TO THE DEVICE

* 6 ADDRESS BUS BIT 16 OFF AT PROCESSOR PRIOR TO SERVICE GATE ACTIVE INDICATES CYCLE STEAL TO OR FROM STORAGE TO THE I/O DEVICE. ADDRESS BUS BITS 0-15 CONTAIN THE STORAGE ADDRESS FOR CYCLE STEAL

* 7 SERVICE GATE RETURN SIGNALS A SERVICE GATE CAPTURE BY THE DEVICE AND ACTIVATION OF ADDRESS BUS (ON A CYCLE STEAL SEQUENCE), DATA BUS, CONDITION CODE IN BUS AND OTHER TAGS AS REQUIRED BY THE PARTICULAR CYCLE STEAL OR INTERRUPT SERVICE SEQUENCE

* 8 CONDITION CODE IN BITS 0-2 RAISED DURING CYCLE STEAL DATA TRANSFERS ARE LOGICALLY EQUAL TO THE CYCLE STEAL ADDRESS KEY DURING CYCLE STEAL TRANSFERS, FOR FETCHING THE DCB AND REPORTING RESIDUAL STATUS, A VALUE OF LOGICAL ZERO IS USED FOR THE ADDRESS KEY. DURING DATA TRANSFER, THE ADDRESS KEY EQUALS CONTROL WORD BITS 5-7 WHICH WERE SET IN THE DCB

* 9 CYCLE INPUT INDICATOR OFF INDICATES AN OUTPUT FROM STORAGE, CYCLE INPUT INDICATOR ON INDICATES AN INPUT TO STORAGE

* 10 CYCLE BYTE INDICATOR ON INDICATES A BYTE TRANSFER, CYCLE BYTE INDICATOR OFF INDICATES A WORD TRANSFER

* 11 STATUS BUS - ANY BIT 0-3 SIGNALS THE DEVICE THAT A CHANNEL ERROR HAS BEEN DETECTED IF ACTIVATED DURING CYCLE STEAL SERVICING. THE DEVICE WILL RETAIN THIS INFORMATION FOR PRESENTATION IN THE ISB AT INTERRUPTION TIME, TERMINATE THE CYCLE STEAL OPERATION AND PRESENT AN END INTERPUPT

* 12 I/O ATTACHMENTS ARE REQUIRED TO RESPOND WITHIN 6 MICRO-SEC, OR DEVICE NOT ATTACHED WILL BE REPORTED (CC=0), HOWEVER THE PROCESSOR/CHANNEL TIMEOUT MECHANISM WILL NOT DETECT THIS CONDITION UNTIL 6.5-9.1 MICRO-SEC

* 13 I/O ATTACHMENTS ARE REQUIRED TO RESPOND WITHIN 18 MICRO-SEC, HOWEVER THE PROCESSOR/CHANNEL TIMEOUT MECHANISM WILL NOT DETECT THIS CONDITION UNTIL 18.2-20.8 MICRO-SEC

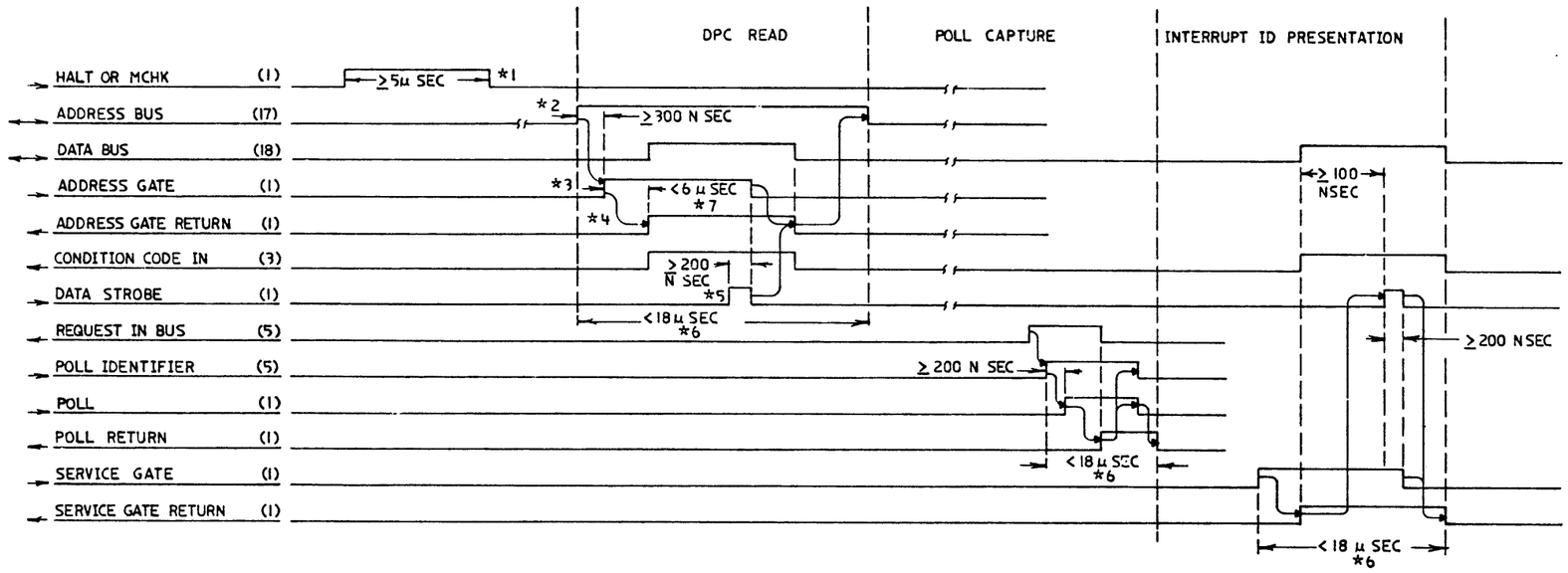
NOTE: ALL BUS BITS MUST BE STABLE PRIOR TO ACTIVATING OF ANY TAG LINE. TAG LINE MUST BE DEACTIVATED PRIOR TO ANY BUS LINES GOING INACTIVE

SCOPE LOOP - READ CYCLE STEAL STATUS
(CYCLE STEAL DEVICES ONLY)

ADDRESS (HEX)	DATA (HEX)	
0000	680C	I/O COMMAND
0002	0024	ADDRESS OF IDCB
0004	6802	* UNCONDITIONAL BRANCH
0006	0304	* TO ADDRESS 0304
0024	60XX	*IDCB-PREPARE 'XX' = DESIRED DEVICE ADDRESS
0026	0001	PREPARE DATA, LEVEL 0, 1 BIT ENABLED
0030		
	0300	PUT DDB POINTER (0300) IN PROPER ADDRESS
022F		ADDRESS (HEX) CALCULATION = 0030+2
		(DEVICE ADDRESS). IT IS ONLY NECESSARY
		TO STORE INTO THE ONE CALCULATED
		ADDRESS
0300	0304	START INSTRUCTION POINTER
0302	0000	
0304	600C	I/O COMMAND
0306	030A	ADDRESS OF IDCB
0308	6100	LEVEL EXIT
030A	7FXX	IDCB 'XX' = DEVICE ADDRESS
030C	030E	DCB ADDRESS
030E	2000	DCB - START CYCLE STEAL
0310		
↓	0000	
0318		
031A	000X	BYTE COUNT - 'X' SEE DEVICE TDM FOR BYTE COUNT
031C	031E	DATA ADDRESS
031E	--	* CYCLE STEAL STATUS IS PUT HERE AT END
-	-	* OF CYCLE STEAL STATUS COMMAND

EC HISTORY		DRAWING TITLE
5 MAR 84	A10990	A4525 NOTES
		MACH SERIES 1
		PART NO 6407891
D		CLASSIFICATION IBM CORP

A4527



ALL OUTBOUND TAG AND BUS RELATIONSHIPS ARE AS SEEN AT THE OUTPUT OF THE CHANNEL. ALL INBOUND TAG AND BUS RELATIONSHIPS ARE AS SEEN AT THE OUTPUT OF THE DEVICE. ALL TIMES INDICATED ARE AS SEEN AT THE CHANNEL OUTPUT

THESE SEQUENCES ARE SHOWN IN THIS ORDER FOR TIMING CHART SIMIPLICITY. THEY DO NOT IMPLY A FIXED ORDER OF EVENTS REQUIRED BY THE CHANNEL
ALL TIMINGS ARE SHOWN AS LOGICAL LEVELS (NOT ACTUAL VOLTAGE LEVELS)
USE CYCLE STEAL SCOPE LOOP FOR INTERRUPT ID PRESENTATION

NOTES:

*1 HALT OR MCHK SIGNALS THE DEVICE TO DESELECT, BLOCK POLL PROPOGATION AND TO CLEAR ANY STATUS REQUESTS OR REGISTERS EXCEPT FOR PREPARE FIELD, OUTPUT SENSOR POINTS AND TIMER VALUES

*2 BIT 16 ON, ADDRESS BUS CONTAINS THE COMMAND CODE (0-7) AND THE DEVICE ADDRESS (8-15)

*3 ADDRESS BUS BIT 16 ON, EXAMINE 8-15 FOR DEVICE ADDRESS, EQUAL COMPARE CONSTITUTES INITIAL SELECTION - EXAMINE ADDRESS BUS BITS 0-7 FOR COMMAND ACCEPTANCE. ACTIVATE IMMEDIATE STATUS ON CONDITION CODE IN AND DATA ON DATA BUS

*4 INITIAL SELECTION AND ADDRESS GATE - DEVICE SETS ADDRESS GATE RETURN

*5 ON INBOUND DPC TRANSFERS, SHOULD THE CHANNEL DETECT A PARITY ERROR, DATA STROBE WILL NOT BE ACTIVATED AND ADDRESS GATE WILL BE DROPPED

*6 I/O ATTACHMENTS ARE REQUIRED TO RESPOND WITHIN 18 MICRO - SEC, HOWEVER, THE PROCESSOR/CHANNEL TIMEOUT MECHANISM WILL NOT SAMPLE FOR THIS CONDITION UNTIL 18.2 - 20.8 MICRO-SEC

*7 I/O ATTACHMENTS ARE REQUIRED TO RESPOND WITHIN 6 MICRO-SEC OR DEVICE NOT ATTACHED WILL BE REPORTED (CC=0), HOWEVER, THE PROCESSOR/CHANNEL TIMEOUT MECHANISM WILL NOT DETECT THIS CONDITION UNTIL 6.5 - 9.1 MICRO-SEC

NOTE: ALL BUS BITS MUST BE STABLE PRIOR TO ACTIVATING ANY TAG LINES
TAG LINE MUST BE DEACTIVATED PRIOR TO ANY BUS LINE GOING INACTIVE

SCOPE LOOP - DPC READ (READ DEVICE ID)		
ADDRESS (HEX)	DATA (HEX)	
0000	680C	I/O COMMAND
0002	0024	ADDRESS OF IDCB
0004	6802	*UNCONDITIONAL BRANCH
0006	0000	*TO ADDRESS 0000
0024	20XX	IDCB - READ DEVICE ID 'XX' = DESIRED DEVICE
		ADDRESS DEVICE ID IS STORED IN ADDRESS
0026	0000	0026 WHEN READ DEVICE ID ENDS

EC HISTORY		DRAWING TITLE
5 MAR 84	A10990	DPC READ
4 SEP 84	A23166	MACH SERIES 1
		PART NO 6407892
		CLASSIFICATION

D

IBM CORP

A4531

4956 MOD K00 PROCESSOR BOARD

* STANDARD CHANNEL	PROCR Q	DIR	I/O STOR P	I/O STOR N	I/O STOR L M	I/O B C D E F G H J K	I/O A
- ADDR BUS BIT--00---	-B02-	<->	-B02-	-B02-	-B02-	-B02-	-B02
- ADDR BUS BIT--01---	-B03-	<->	-B02-	-B03-	-B03-	-B03-	-B03
- ADDR BUS BIT--02--	-B04-	<->	-B02-	-B04-	-B04-	-B04-	-B04
- ADDR BUS BIT--03---	-B05-	<->	-B02-	-B05-	-B05-	-B05-	-B05
- ADDR BUS BIT--04---	-B07-	<->	-B02-	-B07-	-B07-	-B07-	-B07
- ADDR BUS BIT--05---	-B08-	<->	-B08-	-B08-	-B08-	-B08-	-B08
- ADDR BUS BIT--06---	-B09-	<->	-B09-	-B09-	-B09-	-B09-	-B09
- ADDR BUS BIT--07---	-B10-	<->	-B10-	-B10-	-B10-	-B10-	-B10
- ADDR BUS BIT--08---	-B12-	<->	-B12-	-B12-	-B12-	-B12-	-B12
- ADDR BUS BIT--09---	-D02-	<->	-D02-	-D02-	-D02-	-D02-	-D02
- ADDR BUS BIT--10---	-D04-	<->	-D04-	-D04-	-D04-	-D04-	-D04
- ADDR BUS BIT--11---	-D05-	<->	-D05-	-D05-	-D05-	-D05-	-D05
- ADDR BUS BIT--12---	-D06-	<->	-D06-	-D06-	-D06-	-D06-	-D06
- ADDR BUS BIT--13---	-D07-	<->	-D07-	-D07-	-D07-	-D07-	-D07
- ADDR BUS BIT--14---	-D09-	<->	-D09-	-D09-	-D09-	-D09-	-D09
- ADDR BUS BIT--15---	-D10-	<->	-D10-	-D10-	-D10-	-D10-	-D10
- ADDR BUS BIT--16---	-D11-	<->	-D11-	-D11-	-D11-	-D11-	-D11
- ADDR GATE----------	-M08-	-->	-M08-	-M08-	-M08-	-M08-	-M08
- ADDR GATE RETURN---	-M09-	<--	-M09-	-M09-	-M09-	-M09-	-M09
- NOT USED----------	-S12-	---	-----	-----	-----	-------	----
- BURST RETURN-------	-P04-	<--	-P04-	-P04-	-P04-	-P04-	-P04
- COND CODE IN BIT-00	-D12-	<--	-D12-	-D12-	-D12-	-D12-	-D12
- COND CODE IN BIT-01	-D13-	<--	-D13-	-D13-	-D13-	-D13-	-D13
- COND CODE IN BIT-02	-B13-	<--	-B13-	-B13-	-B13-	-B13-	-B13
- MANUFACTURING TEST-	S13	<--	INPUT TO CPU FOR TEST			-------	----
- CYCLE BYTE IND-----	-P10-	<->	-P10-	-P10-	-P10-	-P10-	-P10
- CYCLE INPUT IND----	-P09-	<->	-P09-	-P09-	-P09-	-P09-	-P09
- CYCLE STEAL REQ IN-	-M02-	<--	-M02-	-M02-	-M02-	-M02-	-M02
- DATA BUS BIT-----00	-G02-	<->	-G02-	-G02-	-G02-	-G02-	-G02
- DATA BUS BIT-----01	-G03-	<->	-G03-	-G03-	-G03-	-G03-	-G03
- DATA BUS BIT-----02	-G04-	<->	-G04-	-G04-	-G04-	-G04-	-G04
- DATA BUS BIT-----03	-G05-	<->	-G05-	-G05-	-G05-	-G05-	-G05
- DATA BUS BIT-----04	-G07-	<->	-G07-	-G07-	-G07-	-G07-	-G07
- DATA BUS BIT-----05	-G08-	<->	-G08-	-G08-	-G08-	-G08-	-G08
- DATA BUS BIT-----06	-G09-	<->	-G09-	-G09-	-G09-	-G09-	-G09
- DATA BUS BIT-----07	-G10-	<->	-G10-	-G10-	-G10-	-G10-	-G10
- DATA BUS BIT-----P0	-G12-	<->	-G12-	-G12-	-G12-	-G12-	-G12
- DATA BUS BIT-----08	-J02-	<->	-J02-	-J02-	-J02-	-J02-	-J02
- DATA BUS BIT-----09	-J04-	<->	-J04-	-J04-	-J04-	-J04-	-J04
- DATA BUS BIT-----10	-J05-	<->	-J05-	-J05-	-J05-	-J05-	-J05
- DATA BUS BIT-----11	-J06-	<->	-J06-	-J06-	-J06-	-J06-	-J06
- DATA BUS BIT-----12	-J07-	<->	-J07-	-J07-	-J07-	-J07-	-J07
- DATA BUS BIT-----13	-J09-	<->	-J09-	-J09-	-J09-	-J09-	-J09
- DATA BUS BIT-----14	-J10-	<->	-J10-	-J10-	-J10-	-J10-	-J10
- DATA BUS BIT-----15	-J11-	<->	-J11-	-J11-	-J11-	-J11-	-J11
- DATA BUS BIT-----P1	-J12-	<->	-J12-	-J12-	-J12-	-J12-	-J12
- DATA STROBE--------	-M10-	-->	-M10-	-M10-	-M10-	-M10-	-M10
- MANUFACTURING TEST-	-M03-	<--	INPUT TO CPU FOR TEST			-------	----
- HALT OR MCHK-------	-M07-	-->	-M07-	-M07-	-M07-	-M07-	-M07
- INITIATE IPL-------	-P07-	-->	-P07-	-P07-	-P07-	-P07-	-P07
- IPL----------------	-S04-	<--	-S04-	-S04-	-S04-	-S04-	-S04
- POLL IDENT BIT---00	-P11-	-->	-P11-	-P11-	-P11-	-P11-	-P11
- POLL IDENT BIT---01	-S02-	-->	-S02-	-S02-	-S02-	-S02-	-S02
- POLL IDENT BIT---02	-S03-	-->	-S03-	-S03-	-S03-	-S03-	-S03
- POLL IDENT BIT---03	-P12-	-->	-P12-	-P12-	-P12-	-P12-	-P12
- POLL IDENT BIT---04	-P13-	-->	-P13-	-P13-	-P13-	-P13-	-P13
- POLL PROPAGATE-----	-M11-	-->	--------SEE DIAGRAM BELOW--------				-M04
- POLL RETURN--------	-M04-	<--	-M04-	-M04-	-M04-	-M04-	-M04
- POWER ON RESET **	-S05-	<->	-S05-	-S05-	-S05-	-S05-	-S05
- POWER THERMAL------	-M13-	TO T2M05 REFER TO YA450					
- REQ IN BUS BIT---00	-S07-	<--	-S07-	-S07-	-S07-	-S07-	-S07
- REQ IN BUS BIT---01	-S08-	<--	-S08-	-S08-	-S08-	-S08-	-S08
- REQ IN BUS BIT---02	-S09-	<--	-S09-	-S09-	-S09-	-S09-	-S09
- REQ IN BUS BIT---03	-S10-	<--	-S10-	-S10-	-S10-	-S10-	-S10
- SERVICE GATE-------	-P05-	-->	-P05-	-P05-	-P05-	-P05-	-P05
- SERVICE GATE RETURN	-P06-	<--	-P06-	-P06-	-P06-	-P06-	-P06
- SERV GTE RET PRIME	-U13-	<--	-U13-	-U13-	-U13-	-U13-	-U13
- STATUS BUS BIT---00	-J13-	-->	-J13-	-J13-	-J13-	-J13-	-J13
- STATUS BUS BIT---01	-G13-	-->	-G13-	-G13-	-G13-	-G13-	-G13
- STATUS BUS BIT---02	-S02-	-->	-M03-	-M03-	-M03-	-M03-	-M03
- STATUS BUS BIT---03	-P02-	-->	-P02-	-P02-	-P02-	-P02-	-P02
- NOT USED----------	-U02-	---	-----	-----	-----	-------	----
- NOT USED----------	-U04-	---	-----	-----	-----	-------	----
- COND CODE IN BIT 03	-U05-	<->	-U05-	-U05-	-U05-	-U05-	-U05
- COND CODE IN BIT 04	-U06-	<->	-U06-	-U06-	-U06-	-U05-	-U05
- COND CODE IN BIT 05	-U07-	<->	-U07-	-U07-	-U07-	-U05-	-U05
- NOT USED----------	-U09-	---	-----	-----	-----	-------	----
- NOT USED----------	-U10-	---	-----	-----	-----	-------	----
- NOT USED----------	-U11-	---	-----	-----	-----	-------	----
- NOT USED----------	-U12-	---	-----	-----	-----	-------	----
- SYSTEM RESET-------	-M05-	-->	-M05-	-M05-	-M05-	-M05-	-M05
- NOT USED----------	-S11-	---	-----	-----	-----	-------	----
- NOT USED----------	-S06-	---	-----	-----	-----	-------	----

VOLTAGE PIN ASSIGNMENTS (YA450)
+5V---D03--J03--P03--U03 -5V---G06
GND--D08--J08--P08--U08
+8.5V-G11
-12V--B06 +12V--B11 NOT ON Q SLOT

* NOT USED ON 4956. TERMINATED ON PROCESSOR CARD THROUGH S02 PIN.
** POWER ON RESET FROM T2M04 SEE YA450

POLL NET ON BOARD

	A	B	C	D	E	F	G	H	J	K	L	M	N	P
POLL PROP M11	2	2	2	2	2	2	2	2	2	2	2	2	2	2
POLL M12	*	*	*	*	*	*	*	*	*	*	*	*	*	*
POLL M13 PRIME	*	*	*	*	*	*	*	*	*	*	*	*	*	*

* Q2M11 POLL FROM PROCESSOR

4956 MOD K00 PROCESSOR BOARD

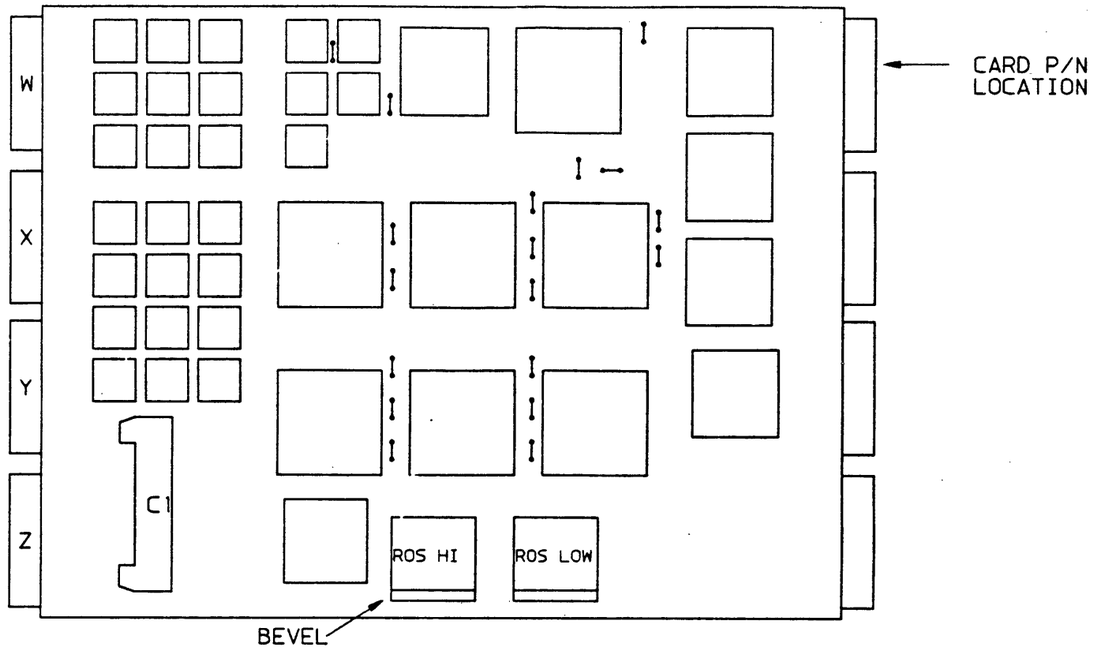
E.C. HISTORY 30JUL86 A40867 MACH. 4956K

DATE 30MAR87 LAST E.C. A71494 IBM CORP. GSD P.N. 85X2514

A66000 000

A6620

CADAM DESIGN



PROCESSOR CARD
COMPONENT SIDE

1. ALL JUMPERS ARE ALWAYS INSTALLED AS SHOWN.

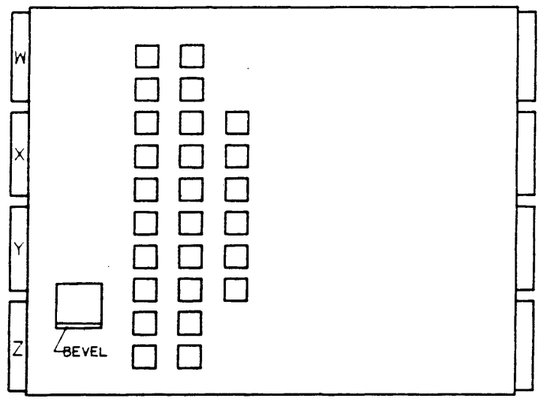
A6620

EC HISTORY		DRAWING TITLE
DATE	EC NO.	PROCESSOR CARD LOGIC
28JUN86	A40867	MACH TYPE: 4956J00/K00
20MAR87	A71494	PART NO.: 85X2516
		CLASSIFICATION

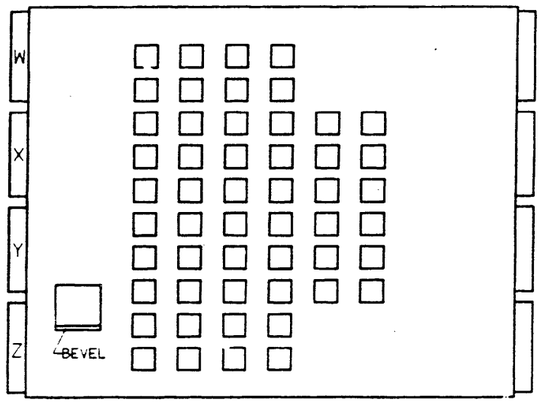
C

IBM

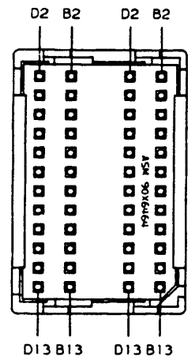
A6620



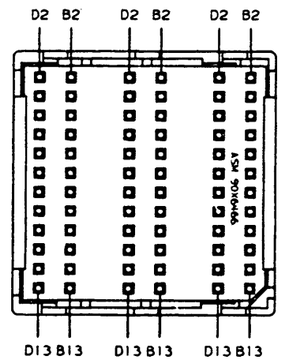
P/N 6523114 2MBYTE STORAGE CARD



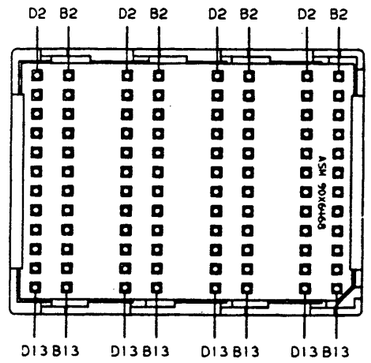
P/N 58X8089 4MBYTE STORAGE CARD



TWO-WIDE



THREE-WIDE



FOUR-WIDE

NOTE: LIKE-NUMBERED PINS ARE WIRED TOGETHER ON EACH CROSSOVER CONNECTOR ; FOR EXAMPLE, B2 TO B2 TO B2, B3 TO B3 TO B3, AND SO FORTH

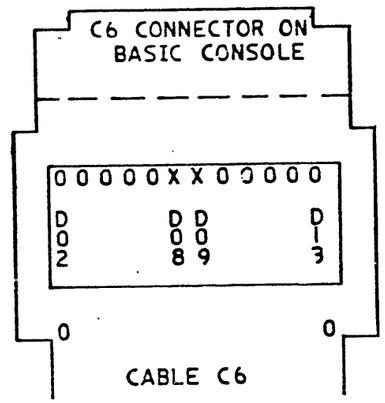
EC-HISTORY		DRAWING TITLE
30MAR87	A71494	STORAGE CARD LOGIC
		MACH 4956 J00/K00
		PART NO. 90X6544
		CLASSIFICATION

A3

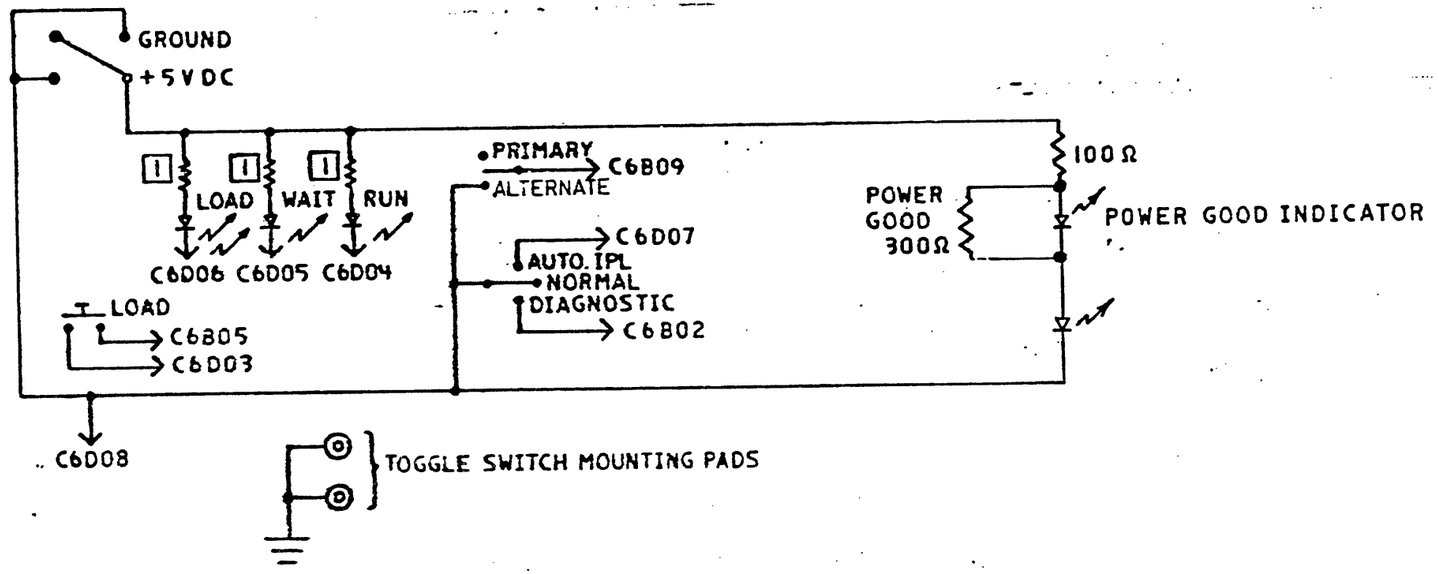
IBM CORP

A 6625 001

C6 CABLE AND CONNECTOR
(REAR VIEW)



BASIC CONSOLE BOARD—REAR VIEW
PIN ROW AWAY FROM BOARD IS
D ROW



PA110

NOTE

[1] RESISTORS ARE 200Ω (R-PAC)

PA110

EC HISTORY		DRAWING TITLE
29 APR 77	578751	BASIC CONSOLE WIRING DIAGRAM
22 MAR 83	337369	MACH
18 JUN 84	A23101	PART NO 4414121
B		CLASSIFICATION

IBM CORP

+5V 9
VOLTAGE INPUT
CONNECTOR U2

CARD TAB PINS
TO CLIXON KEYPAD

LINE NAME	POS
COL 5	0
COL 4	1
COL 6	2
COL 3	3
COL 2	4
COL 0	5
COL 8	6
COL 9	7
ROW A	8
ROW B	9
ROW C	10
ROW D	11
COL 11	12
COL 10	13
COL 7	14
COL 1	15

HIGHER ORDER COLUMN CR

C06 G06 D07

H02 A08 C09 J02 F03 J01 A01 G04 J08 A09 A02 E08 C04 F09 H01 J03 J05 H09 J07 J09

J04 F07 C01 TP1 E01 TP2 D01 RUN E09 WAIT A05 STOP G09 LVL2 D03 LVL3 B08 LVL0 F01 LVL1 B09 DATA IND 14 B02 DATA IND 15 H08 DATA IND 12 A03 DATA IND 13 J06 DATA IND 10 A06 DATA IND 11 G01 DATA IND 8 H05 DATA IND 9

2K 2K 2K

CONNECTOR C2
TO BASIC CONSOLE

D04 D05 B05 B09 D06 D03 D07 B02 D08

19 BUZZER CONNECTOR U2

LOWER ORDER COLUMN CS

C06 G06 D07

H02 A08 C09 J02 F03 J01 A01 G04 J08 A09 A02 E08 C04 F09 H01 J03 J05 H09 J07 J09

J04 F07 BUZZER D01 LOCK C01 TP1 E01 TP2 E09 CK A05 LOAD G09 CK RESTART D03 STOP ON ERROR B08 STOP ON ADDR F01 INSTR STEP B09 DATA IND 6 B02 DATA IND 7 H08 DATA IND 4 A03 DATA IND 5 J06 DATA IND 2 A06 DATA IND 3 G01 DATA IND 0 H05 DATA IND 1

VTL MODULE

7 6 5 4 3 2 1 8 9 10 11 12 13 14

14 BUZZER CONNECTOR U2

CONNECTOR C1
TO PROCESSOR

LINE NAME	POS
CONSOLE DB 00	B03
CONSOLE DB 01	B04
CONSOLE DB 02	D09
CONSOLE DB 03	B06
CONSOLE DB 04	B07
CONSOLE DB 05	B08
CONSOLE DB 06	B11
CONSOLE DB 07	B12
CONSOLE CB 00	D10
CONSOLE CB 01	B10
CONSOLE DATA STR	B13
CONSOLE SELECT	D02
GROUND	D08
+PRI I-SEC	B09
AUTO IPL	D07
DIAGNOSTIC	D13
RESERVED	D12

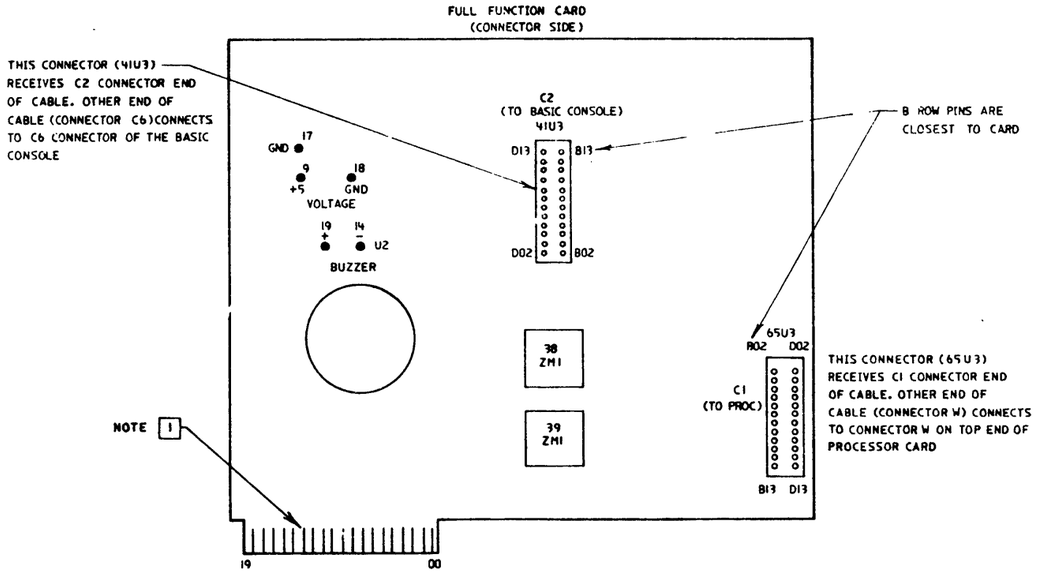
18 VOLTAGE INPUT CONNECTOR U2

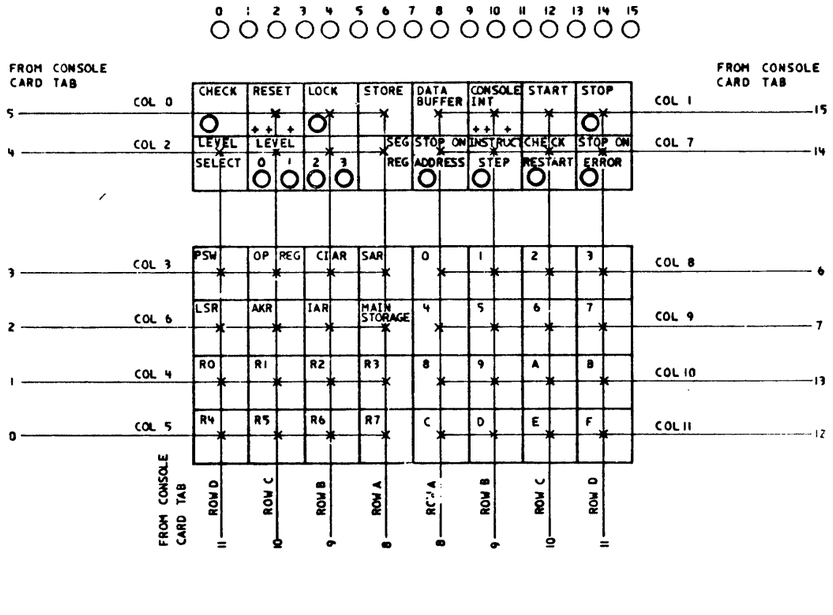
EC HISTORY		DRAWING TITLE
19 JUN 81	994400	FULL FUNCTION CONSOLE DIAGRAM
16 MAR 82	997238	MACH SERIES 1
16 JUN 82	329851	PART NO 6042411
18 MAY 83	337369	CLASSIFICATION

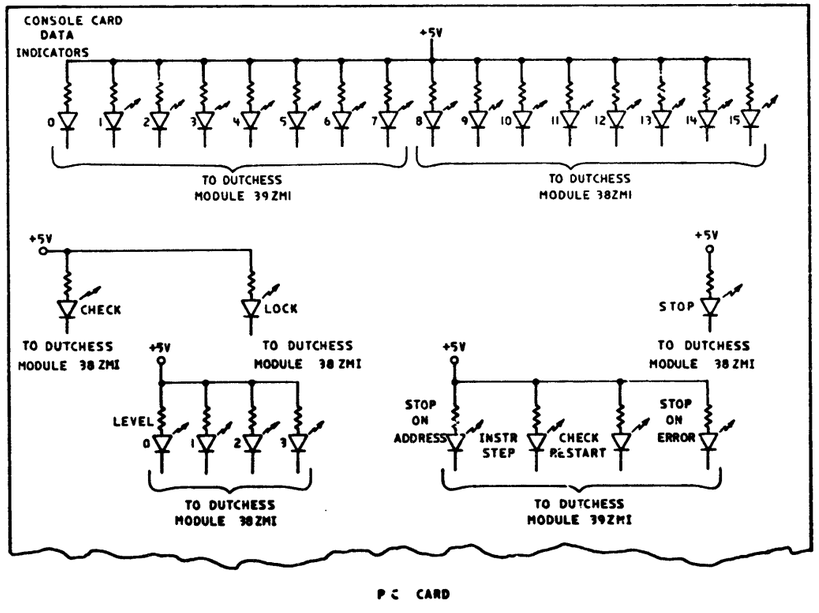
D

IBM CORP

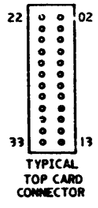
PA200







BASIC CONSOLE INSTALLED ONLY				
AUTO IPL MODE		W07		C6D07
LOAD SW N/O		W03		C6D03
DIAGNOSTIC MODE		W22		C6B02
GROUND		W08		C6D08
LOAD IND		W06		C6D06
PRIMARY		W29		C6B09
LOAD SW COMMON		W25		C6B05
RUN IND		W04		C6D04
WAIT IND		W05		C6D05



CABLE CONNECTION	
BASIC * CONSOLE	PROC * CARD
C6	W

NOTES:

1. TAB PINS RECEIVE CONTACT CONNECTOR WHICH WRAP AROUND TO CONNECT TO TAB PINS OF THE CONSOLE SWITCH MATRIX. WRAP AROUND CONTACT PART NUMBER 6840328
2. ALL LED RESISTORS ARE 200Ω R-PACS

EC HISTORY		DRAWING TITLE
17 DEC 79	375337-G	FULL FUNCTION CONSOLE WIRING DIA
28 JUL 81	994400	MACH SERIES 1
17 JUN 82	329851	PART NO 6840369
18 MAR 83	337369	CLASSIFICATION
5 MAR 84	A10990	

D

IBM CCRP

FEATURE PROGRAMMABLE MULTI LINE COMMUNICATIONS CONTROLLER
FEATURE CODE 2095

STANDARD CHANNEL

```
  ADDRESS BUS BIT--00------B02
  ADDRESS BUS BIT--01------B03
  ADDRESS BUS BIT--02------B04
  ADDRESS BUS BIT--03------B05
  ADDRESS BUS BIT--04------B07
  ADDRESS BUS BIT--05------B08
  ADDRESS BUS BIT--06------B09
  ADDRESS BUS BIT--07------B10
  ADDRESS BUS BIT--08------B12
  ADDRESS BUS BIT--09------D02
  ADDRESS BUS BIT--10------D04
  ADDRESS BUS BIT--11------D05
  ADDRESS BUS BIT--12------D06
  ADDRESS BUS BIT--13------D07
  ADDRESS BUS BIT--14------D09
  ADDRESS BUS BIT--15------D10
  ADDRESS BUS BIT--16------D11
  ADDRESS GATE------------M08
  ADDRESS GATE RETURN-----M09
# BURST RETURN-----------(P04)
  CONDITION CODE IN BIT-00-D12
  CONDITION CODE IN BIT-01-D13
  CONDITION CODE IN BIT-02-B13
  CYCLE BYTE INDICATOR----P10
  CYCLE INPUT INDICATOR---P09
  CYCLE STEAL REQUEST IN--M02
  DATA BUS BIT-----00------G02
  DATA BUS BIT-----01------G03
  DATA BUS BIT-----02------G04
  DATA BUS BIT-----03------G05
  DATA BUS BIT-----04------G07
  DATA BUS BIT-----05------G08
  DATA BUS BIT-----06------G09
  DATA BUS BIT-----07------G10
  DATA BUS BIT-----P0------G12
  DATA BUS BIT-----08------J02
  DATA BUS BIT-----09------J04
  DATA BUS BIT-----10------J05
  DATA BUS BIT-----11------J06
  DATA BUS BIT-----12------J07
  DATA BUS BIT-----13------J09
  DATA BUS BIT-----14------J10
  DATA BUS BIT-----15------J11
  DATA BUS BIT-----P1------J12
  DATA STROBE-------------M10
  HALT OR MCHK-----------(M07)
# INITIATE IPL-----------(P07)
# IPL----------------------S04
  POLL---------------------M12
  POLL IDENTIFIER BIT--00--P11
  POLL IDENTIFIER BIT--01--S02
  POLL IDENTIFIER BIT--02--S03
  POLL IDENTIFIER BIT--03--P12
  POLL IDENTIFIER BIT--04--P13
  POLL PRIME---------------M13
  POLL PROPAGATE-----------M11
  POLL RETURN--------------M04
  POWER ON RESET-----------S05
  REQUEST IN BUS BIT--00---S07
  REQUEST IN BUS BIT--01---S08
  REQUEST IN BUS BIT--02---S09
  REQUEST IN BUS BIT--03---S10
  REQUEST IN BUS BIT--04---S12
  REQUEST IN BUS BIT--05---S13
  REQUEST IN BUS BIT--06---U02
  REQUEST IN BUS BIT--07---U04
  REQUEST IN BUS BIT--08---U05
  REQUEST IN BUS BIT--09---U06
  REQUEST IN BUS BIT--10---U07
  REQUEST IN BUS BIT--11---U09
  REQUEST IN BUS BIT--12---U10
  REQUEST IN BUS BIT--13---U11
  REQUEST IN BUS BIT--14---U12
  REQUEST IN BUS BIT--15---U13
  SERVICE GATE-------------P05
  SERVICE GATE RETURN------P06
  STATUS BUS BIT------00---J13
  STATUS BUS BIT------01---G13
  STATUS BUS BIT------02---M03
  STATUS BUS BIT------03---P02
  SYSTEM RESET-------------M05
```

CONTROLLER TOP CARD CONNECTOR(S)

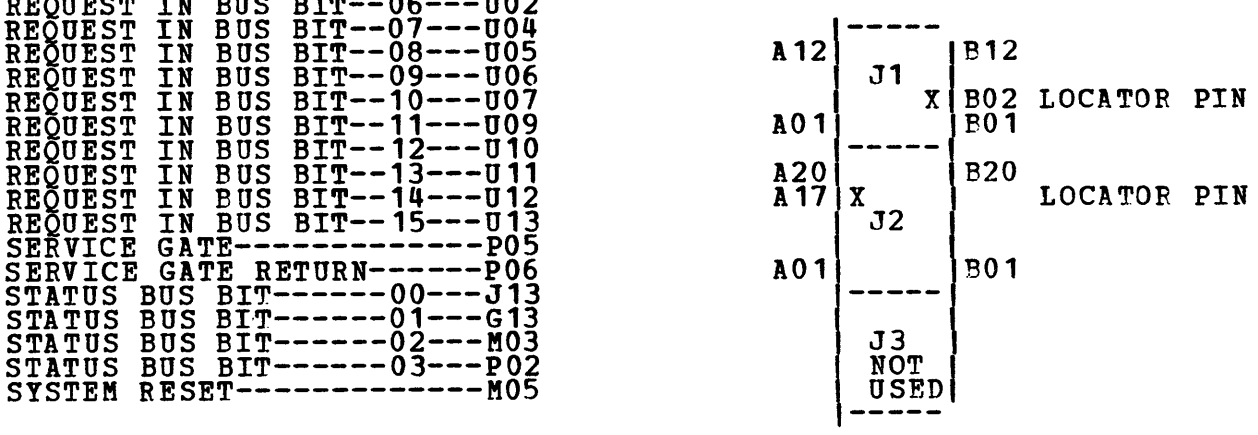
INDICATOR PANEL CONNECTOR

```
J1B05-- -FUNCTION/DISPLAY SW  01
J1A06-- -FUNCTION/DISPLAY SW  02
J1B06-- -FUNCTION/DISPLAY SW  04
J1A07-- -FUNCTION/DISPLAY SW  08
J1B07-- -FUNCTION/DISPLAY SW  16
J1B01--  GROUND
J1B12-- -LAMP DRIVER  00
J1A12-- -LAMP DRIVER  01
J1B11-- -LAMP DRIVER  02
J1A11-- -LAMP DRIVER  03
J1B10-- -LAMP DRIVER  04
J1A10-- -LAMP DRIVER  05
J1B09-- -LAMP DRIVER  06
J1A09-- -LAMP DRIVER  07
J1A04-- -LINE SELECT SW  01
J1B04-- -LINE SELECT SW  02
J1A05-- -LINE SELECT SW  04
J1A03-- +5V
```

ADAPTER CONNECTOR CABLE

```
J2B18-- -ADDRESS BUS OUT BIT  00
J2B19-- -ADDRESS BUS OUT BIT  01
J2A18-- -ADDRESS BUS OUT BIT  02
J2A19-- -ADDRESS BUS OUT BIT  03
J2B12-- -ADDRESS BUS OUT BIT  04
J2B13-- -ADDRESS BUS OUT BIT  05
J2B14-- -ADDRESS BUS OUT BIT  06
J2B15-- -ADDRESS BUS OUT BIT  07
J2B16-- -CONTROL STROBE POWERED
J2A08-- -DATA BUS IN BIT  00
J2A09-- -DATA BUS IN BIT  01
J2A10-- -DATA BUS IN BIT  02
J2A11-- -DATA BUS IN BIT  03
J2A15-- -DATA BUS IN BIT  04
J2A14-- -DATA BUS IN BIT  05
J2A12-- -DATA BUS IN BIT  06
J2A13-- -DATA BUS IN BIT  07
J2B03-- -DATA BUS OUT BIT  00
J2B04-- -DATA BUS OUT BIT  01
J2B05-- -DATA BUS OUT BIT  02
J2B06-- -DATA BUS OUT BIT  03
J2B07-- -DATA BUS OUT BIT  04
J2B08-- -DATA BUS OUT BIT  05
J2B09-- -DATA BUS OUT BIT  06
J2B10-- -DATA BUS OUT BIT  07
J2B11-- -HEX F
J2A04-- +LINE LATCH  00
J2A05-- +LINE LATCH  01
J2A06-- +LINE LATCH  02
J2A07-- +LINE LATCH  03
J2A01-- +LINE LATCH  04
J2A02-- +LINE LATCH  05
J2A03-- +LINE LATCH  06
J2B01-- +LINE LATCH  07
J2B17-- -SENSE STROBE
J2A16--  153.6 KHZ
J2B20-- -1.63 USEC. CLK
J2A20-- -6.66 MSEC CLK
# J2B02--  NOT USED
```

TOP CARD CONNECTORS



CABLE LOCATIONS

VOLTAGE PIN ASSIGNMENTS
+5V---D03--J03--P03--U03
GND---D08--J08--P08--U08
-5V---G06
+8.5V-G11

LINES ARE NOT USED BY THIS ATTACHMENT.

SEE THE PROCESSOR THEORY DIAGRAMS MANUAL FOR DATA FLOW.

F P M L COMMUNICATIONS CONTROLLER

E.C. HISTORY

MACH. SERIES/1

SC450

IBM CORP. GSD

DATE 23-02-79 LAST E.C. 375094

P.N. 6839764

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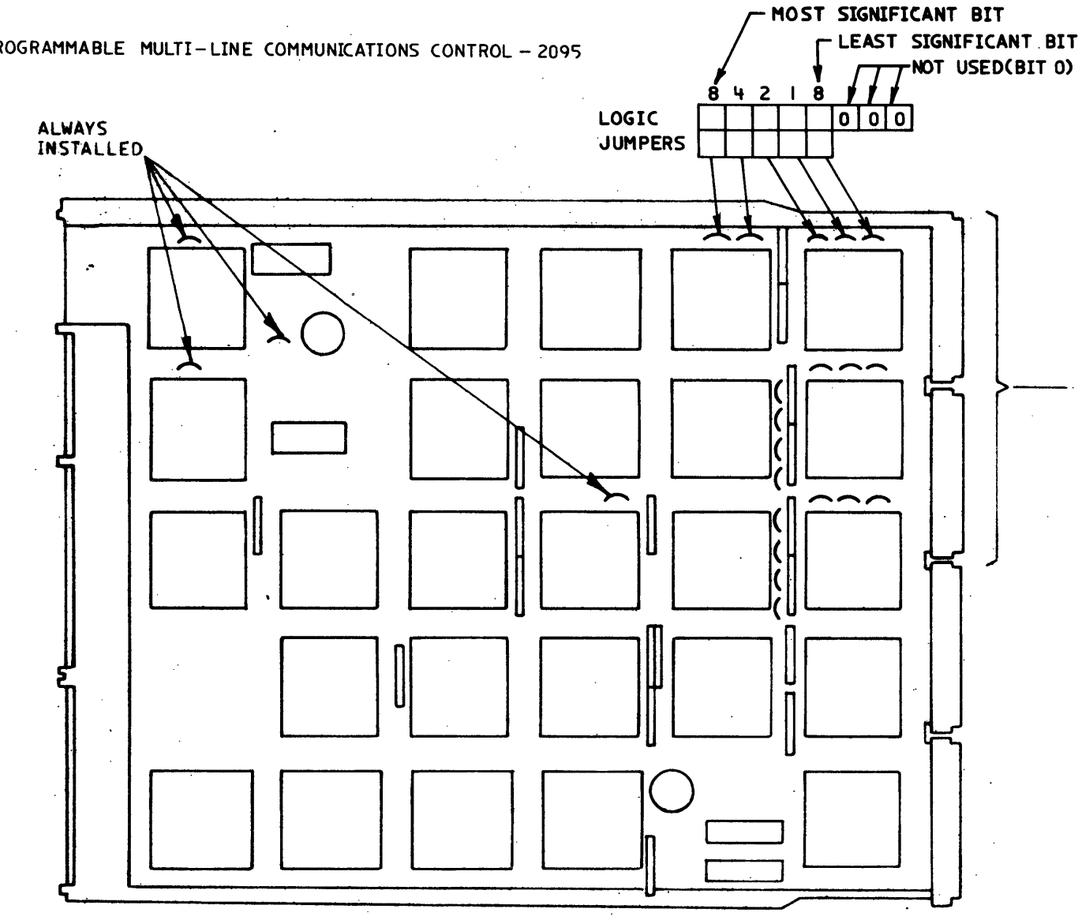
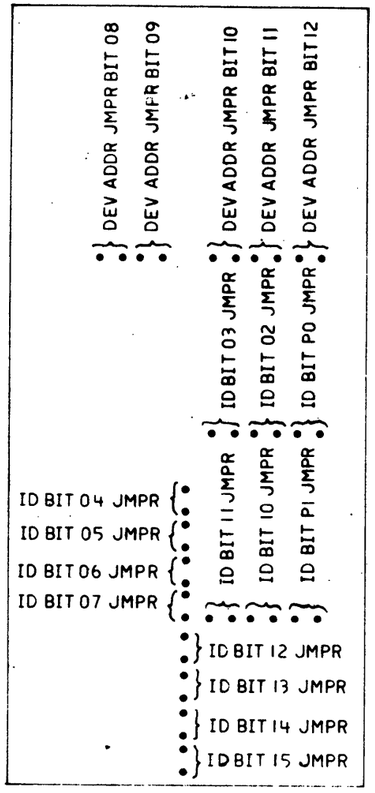
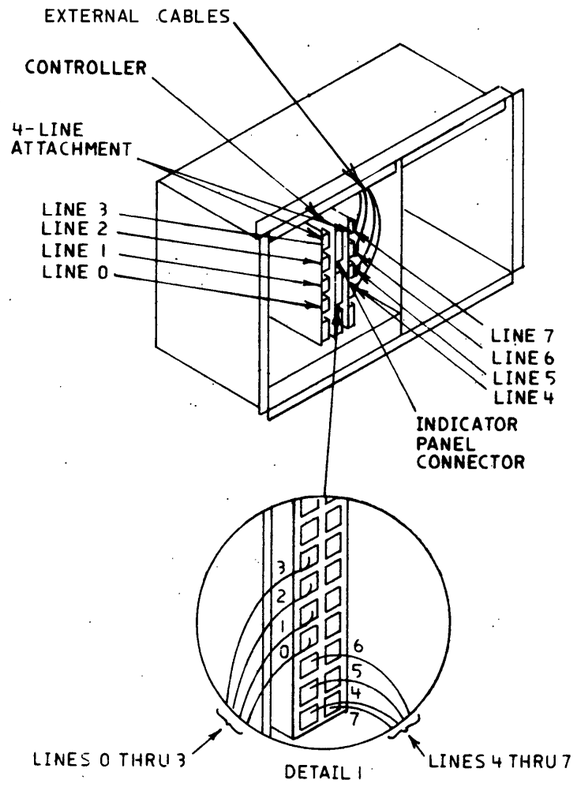
FEATURE PROGRAMMABLE MULTI-LINE COMMUNICATIONS CONTROL - 2095







NOTE:
TO INSURE PROPER INSTALLATION OF THE CABLE BETWEEN THE CONTROLLED CARD AND THE 4-LINE ATTACHMENT CARDS SEE DETAIL 1

NOTES:

THE FEATURE PROGRAMMABLE MULTI-LINE COMMUNICATIONS CONTROL ID WORD IS JUMPERED OR WIRE WRAPPED AS FOLLOWS:

BIT 2 - ON
BITS 3,4,5 - OFF
BITS 6&7 - DETERMINED BY THE NUMBER OF LINES ATTACHED. FOR TWO LINES JUMPER ON BIT 7; FOR FOUR LINES JUMPER ON BIT 6; FOR SIX LINES JUMPER ON BOTH 6 & 7; FOR EIGHT LINES NC JUMPERS ON 6 OR 7
BIT P0 - JUMPERED AS REQUIRED TO MAKE BIT 2 THRU 7 ODD PARITY - 2 LINES = P0 ON, 4 LINES = P0 ON, 6 LINES = P0 OFF, 8 LINES = P0 OFF
BITS 10,12,P1-OFF
BITS 11,13,14-ON
DEVICE ADDRESS JUMPERS ON = LOGICAL 1
TYPICAL DEV ADDR: 48 = HEX 01001000

SC455

EC HISTORY		DRAWING TITLE
14MAR79	375094	FEAT. PROGRAMMABLE MULTI-LINE COMM'S. CONT.
16 AUG 79	375589	MACH SERIES/1
10 MAR 82	326765	PART NO 6839765
		CLASSIFICATION

C

IBM CORP

SC455

FEATURE PROGRAMMABLE FOUR (4) COMMUNICATIONS LINE ADAPTER CARD
FEATURE 2096

STANDARD CHANNEL

POLL----------M12
POLL PRIME ----------M13
POLL PROPAGATE----------M11

NOTE-
FOR POLL PROPAGATION ONLY.
NOT USED BY ADAPTER CARD.

TOP CARD CONNECTORS

DATASET INTERFACE CABLE FEATURE CODE 2057 PIN (WHEN LINE IS JUMPERED FOR EIA RS232C / CCITT V.24)

		MODEM
	JXB03-- +CLEAR TO SEND	05
	JXB01-- +DATA SET READY	06
	JXA02-- -DATA SIGNAL RATE SELECT	23
	JXA01-- +DATA TERMINAL READY	20
	JXA07-- +DATA CARRIER DETECT	08
#	JXB08-- -MODEM TEST	
	JXB06-- +RECEIVE CLOCK	17
	JXB04-- -RECEIVE DATA	03
	JXA03-- +REQUEST TO SEND	04
#	JXA05-- RESERVED	
#	JXB05-- RESERVED	
	JXB07-- +RING INDICATOR	22
	JXA08-- SIGNAL GROUND	07
	JXA06-- +TRANSMIT CLOCK	15
	JXA04-- -TRANSMIT DATA	02

CURRENT LOOP INTERFACE CABLE FEATURE CODE 2061 (WHEN LINE JUMPERED FOR CURRENT LOOP)

	JXA05-- -XMIT DATA RTN	+XMIT	WHITE
	JXA06-- -XMIT BIAS RTN	-XMIT	RED
	JXB05-- -RCV DATA RTN	+RCV	BLACK
	JXB06-- -RCV BIAS RTN	-RCV	YELLOW
	JXA01-- +DATA TERMINAL READY		JUMPER 1
	JXB01-- +DATA SET READY		JUMPER 1
#	JXA02-- +RATE SELECT		NOT USED
	JXA03-- +REQUEST TO SEND		JUMPER 2
	JXB03-- +CLEAR TO SEND		JUMPER 2
	JXA04-- +XMIT DATA		JUMPER 3
	JXA07-- +XMIT BIAS		JUMPER 3
	JXB04-- +RCV DATA		JUMPER 4
	JXB07-- +RCV BIAS		JUMPER 4
#	JXA08-- GROUND		NOT USED
#	JXB08-- -MODEM TEST		NOT USED

** JX=ANY MODEM CABLE, J1 TO J4

TOP CARD CONNECTORS

A08	J1 LINE 3/7	B08	
	X	B02	LOCATOR PIN
A01		B01	
A08	J2 LINE 2/6	B08	
	X	B02	LOCATOR PIN
A01		B01	
A08	J3 LINE 1/5	B08	
	X	B02	LOCATOR PIN
A01		B01	
A08	J4 LINE 0/4	B08	
	X	B02	LOCATOR PIN
A01		B01	
A20		B20	
A17	X J5		LOCATOR PIN
A01		B01	

CABLE LOCATIONS

VOLTAGE PIN ASSIGNMENTS
+5V---D03--J03--P03--U03
GND---D08--J08--P08--U08
-12V--B06
+12V--B11

CONTROLLER CONNECTOR CABLE

#	J5B18-- -ADDRESS BUS OUT BIT	00
#	J5B19-- -ADDRESS BUS OUT BIT	01
#	J5A18-- -ADDRESS BUS OUT BIT	02
#	J5A19-- -ADDRESS BUS OUT BIT	03
	J5B12-- ADDRESS BUS OUT BIT	04
	J5B13-- -ADDRESS BUS OUT BIT	05
	J5B14-- -ADDRESS BUS OUT BIT	06
	J5B15-- -ADDRESS BUS OUT BIT	07
	J5B16-- -CONTROL STROBE POWERED	
	J5A08-- -DATA BUS IN BIT	00
	J5A09-- -DATA BUS IN BIT	01
	J5A10-- -DATA BUS IN BIT	02
	J5A11-- -DATA BUS IN BIT	03
	A5A15-- -DATA BUS IN BIT	04
	J5A14-- -DATA BUS IN BIT	05
	J5A12-- -DATA BUS IN BIT	06
	J5A13-- -DATA BUS IN BIT	07
	J5B03-- -DATA BUS OUT BIT	00
	J5B04-- -DATA BUS OUT BIT	01
	J5B05-- -DATA BUS OUT BIT	02
	J5B06-- -DATA BUS OUT BIT	03
	J5B07-- -DATA BUS OUT BIT	04
	J5B08-- -DATA BUS OUT BIT	05
	J5B09-- -DATA BUS OUT BIT	06
	J5B10-- -DATA BUS OUT BIT	07
	J5B11-- -HEX F	
	J5A04-- +LINE LATCH	00/04
	J5A05-- +LINE LATCH	01/05
	J5A06-- +LINE LATCH	02/06
	J5A07-- +LINE LATCH	03/07
	J5B17-- -SENSE STROBE	
#	J5A16-- -153.6 KHZ	
#	J5B20-- -1.63 USEC. CLOCK	
	J5A20-- -6.66 MSEC CLOCK	
#	J5B02-- NOT USED	

LINES ARE NOT USED BY THIS ADAPTER.

SEE THE PROCESSOR THEORY DIAGRAMS MANUAL FOR DATA FLOW.

F P 4 LINE COMMUNICATIONS ADAPTER

E.C. HISTORY
E. C. 375094

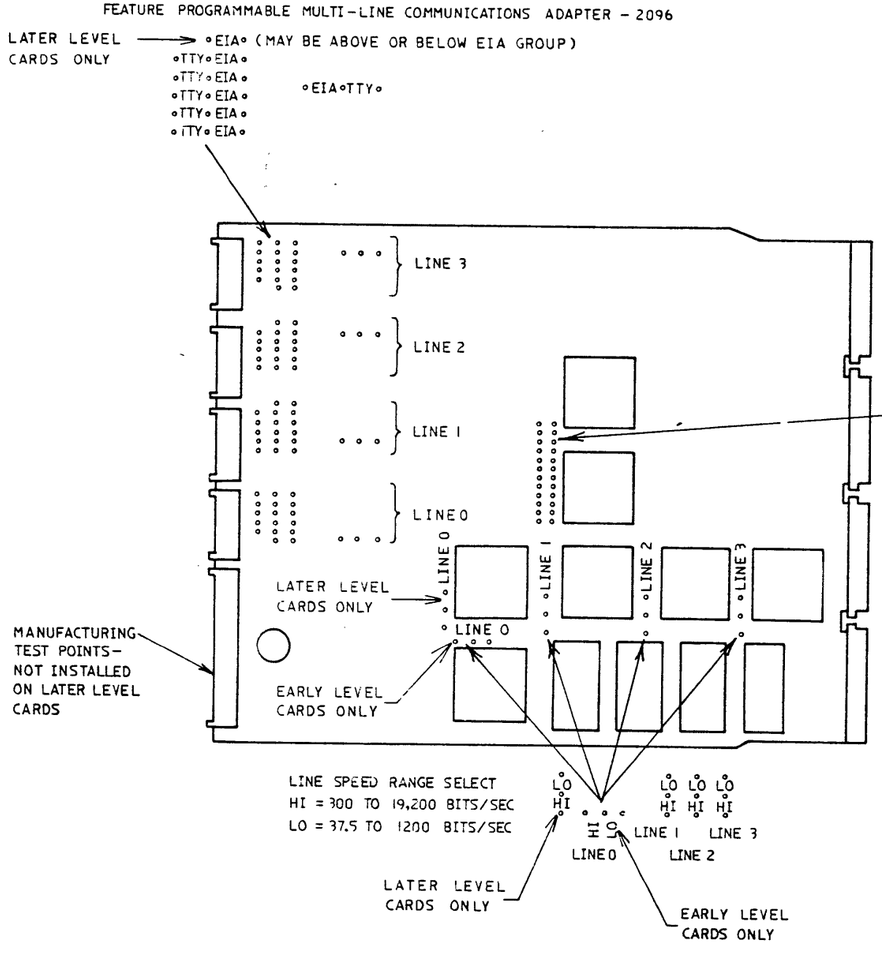
MACH.
SERIES/1

SC460000

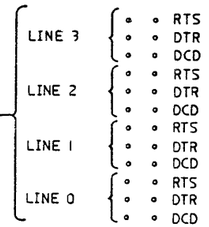
IBM CORP. GSD

DATE 16-07-79
LAST E.C. 375589
P.N. 6839766

FEATURE PROGRAMMABLE MULTI-LINE COMMUNICATIONS ADAPTER - 2096



EIA / TTY JUMPERS
MUST BE INSTALLED AS A GROUP OF 6 (TTY) OR 7 (EIA) JUMPERS.
EIA = R5232C/CCITT V.24
TTY = CURRENT LOOP INTERFACE



MODEM CONTROL JUMPERS
INSTALLED AS REQUIRED BY USER CONFIGURATION. IF JUMPER IS INSTALLED, IT UNCONDITIONALLY ACTIVATES SIGNAL.
RTS = REQUEST TO SEND (TO MODEM)
DTR = DATA TERMINAL READY (TO MODEM)
DCD = DATA CARRIER DETECT (TO ADAPTER)

NOTE: FOR DIRECT CONNECT APPLICATIONS OR CURRENT LOOP APPLICATIONS INSTALL DCD, DTR AND RTS JUMPERS FOR EACH LINE IN USE

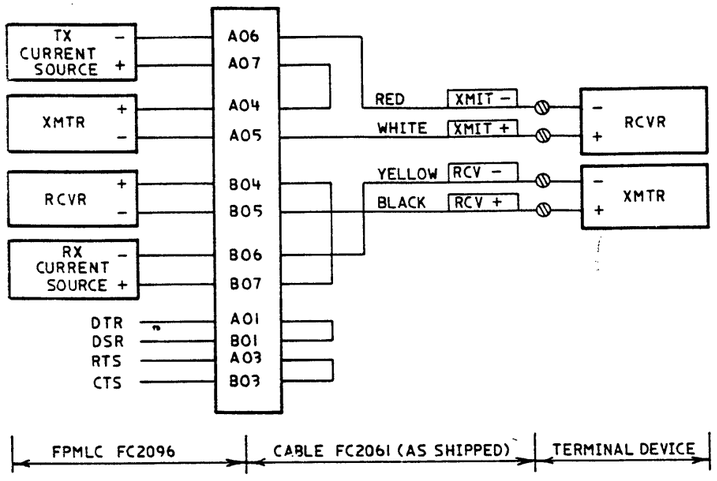
SC465

EC HISTORY		DRAWING TITLE	
14 MAR 79	375094	FEATURE PROGRAMMABLE MULTI-LINE COMM'S.	
15 AUG 79	375589	MACH SERIES 1	
14 SEP 79	375743	PART NO 6839767	
C 15 MAY 81	987965	CLASSIFICATION	IBM CORP

SC465

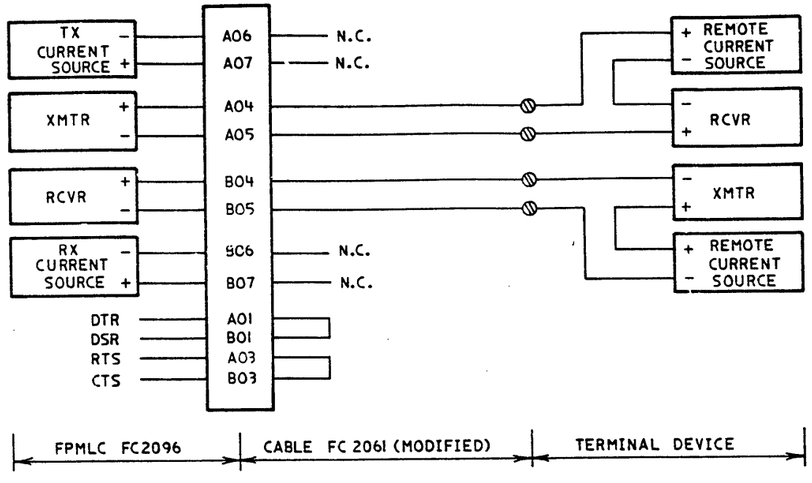
CONFIGURATION # 1

4-WIRE, FC 2096 SUPPLIES 20MA FOR BOTH LOOPS



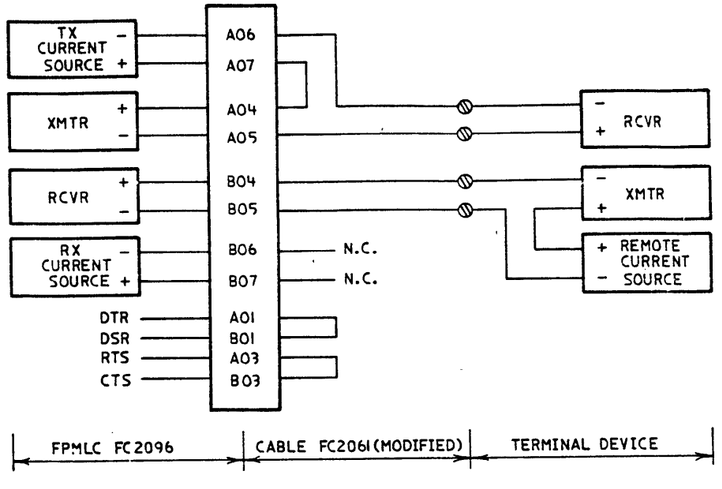
CONFIGURATION # 2

4-WIRE, REMOTE CURRENT SOURCES SUPPLY 20MA/60MA FOR BOTH LOOPS



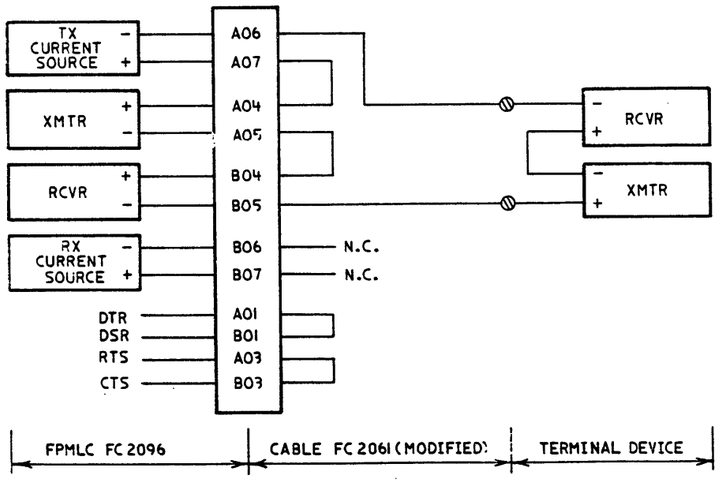
CONFIGURATION # 3

4-WIRE, EACH DEVICE POWERS ITS TRANSMIT LOOP



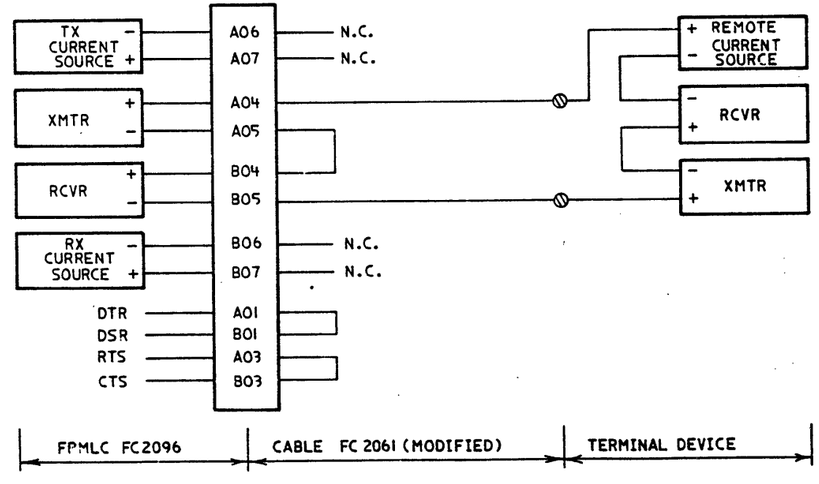
CONFIGURATION # 4

2-WIRE, FC 2096 SUPPLIES 20MA FOR LOOP



CONFIGURATION # 5

2-WIRE, REMOTE CURRENT SOURCE SUPPLIES 20MA/60MA FOR LOOP



NOTES:

1 CONFIGURATION # 1 REPRESENTS CABLE ASSEMBLY FC 2061 AS SHIPPED. OTHER CONFIGURATIONS ARE ACCOMPLISHED BY REARRANGING FOUR WIRES AND TWO JUMPERS AT THE CABLE ASSEMBLY BERG CONNECTOR

2 CONFIGURATION # 3 IS RECOMMENDED FOR LONGER CABLE RUNS AND/OR HIGHER DATA RATES

3 ECHO PLEX IS PROVIDED BY FC 2096 AS A PROGRAMABLE OPTION

EC HISTORY		DRAWING TITLE
23AUG79	375589	FPMLC CURRENT LOOP CONFIGURATION
	987965	MACH
		PART NO 6841485
		CLASSIFICATION

D

IBM CORP

SC470

SC470

4967 DISK ATTACHMENT CARD

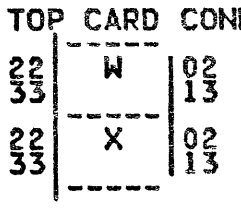
STANDARD CHANNEL

```
ADDRESS BUS BIT--00------B02
ADDRESS BUS BIT--01------B03
ADDRESS BUS BIT--02------B04
ADDRESS BUS BIT--03------B05
ADDRESS BUS BIT--04------B07
ADDRESS BUS BIT--05------B08
ADDRESS BUS BIT--06------B09
ADDRESS BUS BIT--07------B10
ADDRESS BUS BIT--08------B12
ADDRESS BUS BIT--09------D02
ADDRESS BUS BIT--10------D04
ADDRESS BUS BIT--11------D05
ADDRESS BUS BIT--12------D06
ADDRESS BUS BIT--13------D07
ADDRESS BUS BIT--14------D09
ADDRESS BUS BIT--15------D10
ADDRESS BUS BIT--16------D11
ADDRESS GATE- ------------M08
ADDRESS GATE RETURN------M09
# BURST RETURN------------(P04)
CONDITION CODE IN BIT-00-D12
CONDITION CODE IN BIT-01-D13
CONDITION CODE IN BIT-02-B13
CYCLE BYTE INDICATOR-----P10
CYCLE INPUT INDICATOR----P09
CYCLE STEAL REQUEST IN---M02
DATA BUS BIT------00-----G02
DATA BUS BIT------01-----G03
DATA BUS BIT------02-----G04
DATA BUS BIT------03-----G05
DATA BUS BIT------04-----G07
DATA BUS BIT------05-----G08
DATA BUS BIT------06-----G09
DATA BUS BIT------07-----G10
DATA BUS BIT------P0-----G12
DATA BUS BIT------08-----J02
DATA BUS BIT------09-----J04
DATA BUS BIT------10-----J05
DATA BUS BIT------11-----J06
DATA BUS BIT------12-----J07
DATA BUS BIT------13-----J09
DATA BUS BIT------14-----J10
DATA BUS BIT------15-----J11
DATA BUS BIT------P1-----J12
DATA STROBE-------------M10
HALT OR MCK-------------M07
INITIATE IPL------------P07
IPL---------------------S04
POLL--------------------M12
POLL IDENTIFIER BIT--00--P11
POLL IDENTIFIER BIT--01--S02
POLL IDENTIFIER BIT--02--S03
POLL IDENTIFIER BIT--03--P12
POLL IDENTIFIER BIT--04--P13
POLL PRIME--------------M13
POLL PROPAGATE----------M11
POLL RETURN-------------M04
POWER ON RESET----------S05
REQUEST IN BUS BIT--00---S07
REQUEST IN BUS BIT--01---S08
REQUEST IN BUS BIT--02---S09
REQUEST IN BUS BIT--03---S10
REQUEST IN BUS BIT--04---S12
REQUEST IN BUS BIT--05---S13
REQUEST IN BUS BIT--06---U02
REQUEST IN BUS BIT--07---U04
REQUEST IN BUS BIT--08---U05
REQUEST IN BUS BIT--09---U06
REQUEST IN BUS BIT--10---U07
REQUEST IN BUS BIT--11---U09
REQUEST IN BUS BIT--12---U10
REQUEST IN BUS BIT--13---U11
REQUEST IN BUS BIT--14---U12
SERV GATE RTN PRIME-15---U13
SERVICE GATE------------P05
SERVICE GATE RETURN-----P06
STATUS BUS BIT------00---J13
STATUS BUS BIT------01---G13
STATUS BUS BIT------02---M03
STATUS BUS BIT------03---P02
SYSTEM RESET------------M05
```

4967 TOP CARD CONNECTORS

```
W22-- -FILE DATA BUS BIT 00
W23-- -FILE DATA BUS BIT 01
W24-- -FILE DATA BUS BIT 02
W25-- -FILE DATA BUS BIT 03
W26-- -FILE DATA BUS BIT 04
W28-- -FILE DATA BUS BIT 05
W29-- -FILE DATA BUS BIT 06
W30-- -FILE DATA BUS BIT 07
W31-- -FILE DATA BUS BIT P0
W03-- -FILE DATA BUS BIT 08
W04-- -FILE DATA BUS BIT 09
W05-- -FILE DATA BUS BIT 10
W06-- -FILE DATA BUS BIT 11
W07-- -FILE DATA BUS BIT 12
W09-- -FILE DATA BUS BIT 13
W10-- -FILE DATA BUS BIT 14
W11-- -FILE DATA BUS BIT 15
W12-- -FILE DATA BUS BIT P1
X31-- -INTRFC PAR CHECK
X03-- -FILE TAG 0
X04-- -FILE TAG 1
X05-- -FILE TAG 2
X06-- -FILE TAG 3
X12-- -FILE TAG P
X25-- -AKN REQ OUT
X28-- -STROBE IN
X29-- -REQUEST IN
X13-- -SWIFT POR
X23-- -SYSTEM RESET
X24-- -REQUEST OUT
X26-- -STROBE OUT
X30-- -AKN REQ IN PWRD
X32-- -SYSTEM PWR ON RST
X07-- -FILE TAG 4
X09-- -FILE TAG 5
X10-- -FILE TAG 6
X11-- -FILE TAG 7
W02--  GND
W08--  GND
W27--  GND
W33--  GND
X02--  GND
X08--  GND
X27--  GND
X33--  GND
W32--  NOT USED
W13-- -CABLE CONTINUITY/IPL
X22-- -CABLE CONTINUITY/BURST MODE
```

TOP CARD CONNECTORS



CABLE LOCATIONS

VOLTAGE PIN ASSIGNMENTS
+5V---D03--J03--P03--U03
GND---D08--J08--P08--U08
-5V---G06
+8.5V---G11

LINES ARE NOT USED BY THIS ATTACHMENT.

SEE 4967 THEORY DIAGRAMS MANUAL FOR DATA FLOW

4967 ATTACHMENT CARD

E.C. HISTORY
22OCT82 329912

MACH. 4967 SERIES 1

S7000

IBM CORP. SPD

DATE 15APR83 LAST E.C. A03075

P.N. 4750107

000

4967 DISK ATTACHMENT CABLE

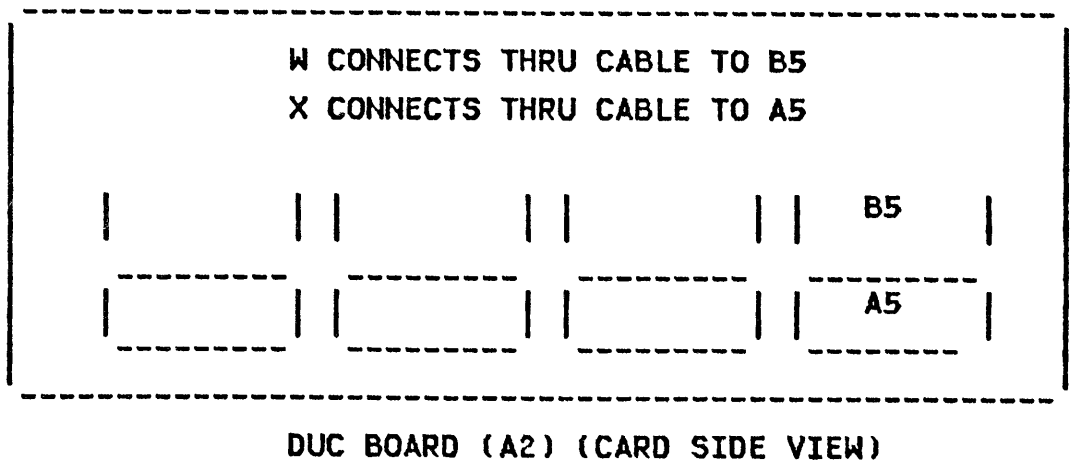
ATTACHMENT CABLES PIN ASSIGNMENTS		DUC BOARD (A2) PIN ASSIGNMENTS
	W22-- -CHAN DATA 00	-- B5B02
	W23-- -CHAN DATA 01	-- B5B03
	W24-- -CHAN DATA 02	-- B5B04
	W25-- -CHAN DATA 03	-- B5B05
	W26-- -CHAN DATA 04	-- B5B06
	W28-- -CHAN DATA 05	-- B5B08
	W29-- -CHAN DATA 06	-- B5B09
	W30-- -CHAN DATA 07	-- B5B10
	W31-- -CHAN DATA PH	-- B5B11
	W03-- -CHAN DATA 08	-- B5D03
	W04-- -CHAN DATA 09	-- B5D04
	W05-- -CHAN DATA 10	-- B5D05
	W06-- -CHAN DATA 11	-- B5D06
	W07-- -CHAN DATA 12	-- B5D07
	W09-- -CHAN DATA 13	-- B5D09
	W10-- -CHAN DATA 14	-- B5D10
	W11-- -CHAN DATA 15	-- B5D11
	W12-- -CHAN DATA PL	-- B5D12
*	W13-- -CABLE CONTINUITY/IPL	-- B5D13
	X31-- -ERROR CHECK TO SYSTEM	-- A5B11
	X03-- -CHAN TAG BIT 0	-- A5D03
	X04-- -CHAN TAG BIT 1	-- A5D04
	X05-- -CHAN TAG BIT 2	-- A5D05
	X06-- -CHAN TAG BIT 3	-- A5D06
	X12-- -CHAN TAG BIT P	-- A5D12
*	X22-- -CABLE CONTINUITY/BURST	-- A5B02
	X25-- -ACK REQ OUT	-- A5B05
	X28-- -STROBE IN	-- A5B08
	X29-- -REQUEST IN	-- A5B09
	X13-- +POWER GOOD	-- A5D13
	X23-- -SYS DC RESET	-- A5B03
	X24-- -REQUEST OUT	-- A5B04
	X26-- -STROBE OUT	-- A5B06
	X30-- -ACK REQUEST IN	-- A5B10
	X07-- -CHAN TAG BIT 4	-- A5D07
	X09-- -CHAN TAG BIT 5	-- A5D09
	X10-- -CHAN TAG BIT 6	-- A5D10
	X11-- -CHAN TAG BIT 7	-- A5D11
	W02-- GND	-- B5D02
	W08-- GND	-- B5D08
	W27-- GND	-- B5B07
	W33-- GND	-- B5B13
	X02-- GND	-- A5D02
	X08-- GND	-- A5D08
	X27-- GND	-- A5B07
	X33-- GND	-- A5B13
	X32-- SPARE	-- A5B12
	W32-- NOT USED	-- B5B12

* CABLE CONTINUITY TO THE ATTACHMENT CARD IS GROUNDED ON THE A2 BOARD AND SENSED BY THE ATTACHMENT CARD.

PROCESSOR ATTACHMENT TOP CARD CONNECTORS

22	W	02
33		13
22	X	02
33		13

CABLE LOCATIONS



DUC BOARD (A2) (CARD SIDE VIEW)

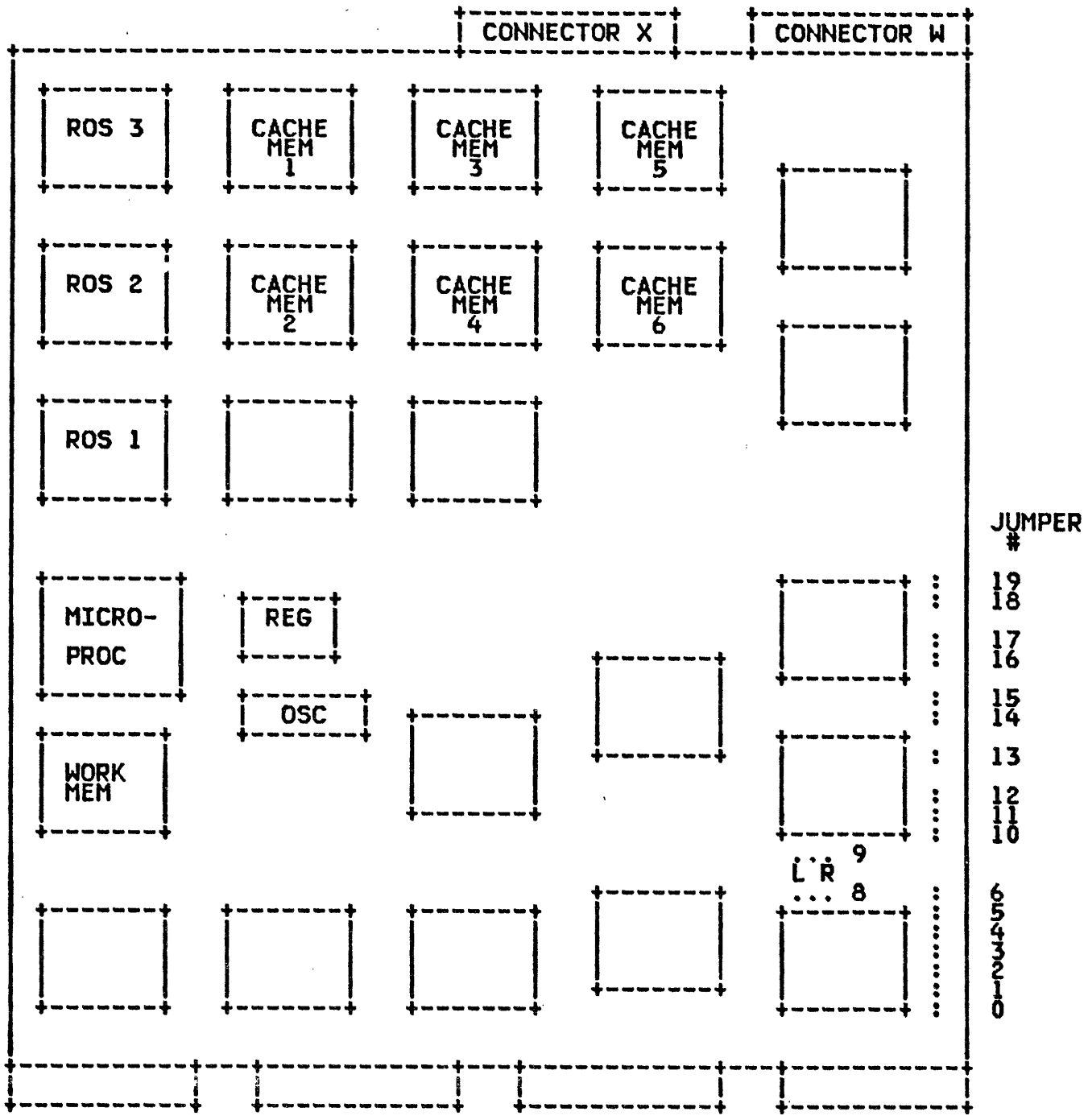
LINES ARE NOT USED

SEE 4967 THEORY DIAGRAMS MANUAL FOR DATA FLOW

4967 ATTACHMENT CABLE

E.C. HISTORY		MACH.	SF7010
22OCT82	329912	4967	
DATE	LAST E.C.	IBM CORP. SPD	0 0 0
15APR83	A03075	P.N. 4750108	

4967 DISK ATTACHMENT CARD



EXAMPLE OF DEVICE ADDRESS JUMPERING FOR 48.

JUMPER NUMBER	0	1	2	3	4	5	6	7
LOGICAL ADDRESS JUMPERS INSTALLED	0	1 X	0	0	1 X	0	0	0

IPL JUMPERING	JMP 13	JMP 14	JMP 15
IPL NOT SUPPORTED			
FILE 0 PRIMARY			X
FILE 1 PRIMARY	X		X
FILE 0 ALTERNATE	X	X	
FILE 1 ALTERNATE		X	
FILE 0 PRIMARY AND FILE 1 ALTERNATE		X	X
FILE 1 PRIMARY AND FILE 0 ALTERNATE	X	X	X
X MEANS JUMPER INSTALLED			

JUMPER NUMBER	8L	8R	10	11	12	18	19
1 UNIT INSTALLED	X		X			X	X
2 UNITS INSTALLED	X			X			X
3 UNITS INSTALLED		X	X	X		X	
4 UNITS INSTALLED		X			X		
X MEANS JUMPER INSTALLED							

*NOTE JUMPER #7 IS HARD WIRED ON THE CARD.

*NOTE THE BASE ADDRESS IS ALWAYS DIVISABLE BY 2 AND IF MORE THAN 2 ARE INSTALLED ,THE BASE ADDRESS MUST BE DIVISABLE BY 4.

*JUMPERS 16 & 17 SHOULD ALLWAYS BE ON.

*JUMPER 9 SHOULD BE IN POSITION L.

4967 ATTACHMENT CARD

E.C. HISTORY 22OCT82 329912 MACH. 4967

DATE 15APR83 LAST E.C. A03075

IBM CORP. SPD P.N. 4750109

SF702

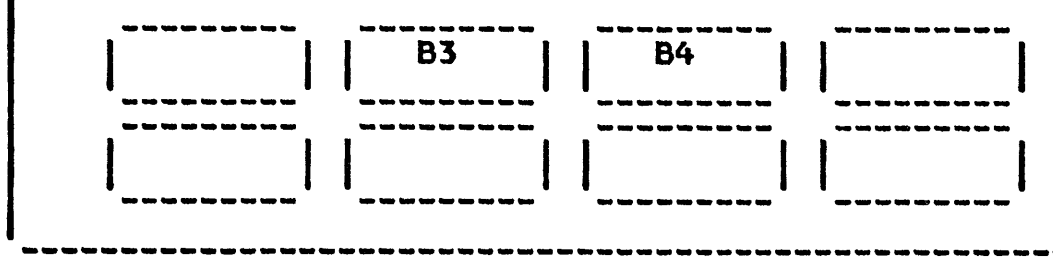
0 0 0

4967 DEDICATED CABLES (TO FILE 0 & FILE 1)

DUC BOARD (A2) PIN ASSIGNMENTS		FILE 0 BOARD (A1) PIN ASSIGNMENTS
B3B02--	-CABLE CONTINUITY 0	-- A3B02
B3B03--	-CNTRL SAMPLE FILE 0	-- A3B03
B3B04--	-INTERRUPT FILE 0	-- A3B04
B3B05--	-FILE 0 SECTOR	-- A3B05
B3B08--	+R/W DATA BIT 0 FILE 0	-- A3B08
B3B10--	-R/W DATA BIT 1 FILE 0	-- A3B10
B3D04--	-FILE SELECT 0	-- A3D04
B3D05--	-FILE 0 WRITE GATE RTN	-- A3D05
B3D06--	-ID SCAN 0	-- A3D06
B3D07--	-FILE 0 INDEX	-- A3D07
B3D09--	-READ GATE 0	-- A3D09
B3D10--	-FILE 0 L1 CLK	-- A3D10
B3D11--	-WRITE GATE 0	-- A3D11
B3D12--	-FILE 0 L2 CLK	-- A3D12
B3D13--	-CABLE CONTINUITY 1	-- A3D13
B3B07--	GND	-- A3B07
B3B13--	GND	-- A3B13
B3D02--	GND	-- A3D02
B3D08--	GND	-- A3D08

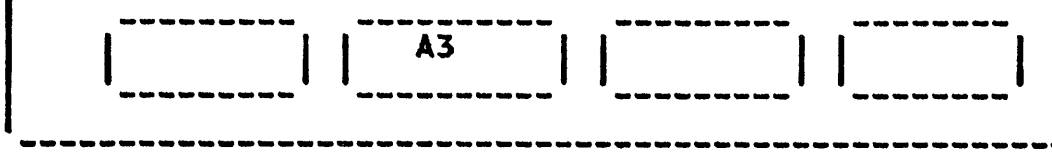
DUC BOARD (A2) PIN ASSIGNMENTS		FILE 1 BOARD (A1) PIN ASSIGNMENTS
B4B02--	-CABLE CONTINUITY 1	-- A3B02
B4B03--	-CNTRL SAMPLE FILE 1	-- A3B03
B4B04--	-INTERRUPT FILE 1	-- A3B04
B4B05--	-FILE 1 SECTOR	-- A3B05
B4B08--	-R/W DATA BIT 0 FILE 1	-- A3B08
B4B10--	-R/W DATA BIT 1 FILE 1	-- A3B10
B4D04--	-FILE SELECT 1	-- A3D04
B4D05--	-FILE 1 WRITE GATE RTN	-- A3D05
B4D06--	-ID SCAN 1	-- A3D06
B4D07--	-FILE 1 INDEX	-- A3D07
B4D09--	-READ GATE 1	-- A3D09
B4D10--	-FILE 1 L1 CLK	-- A3D10
B4D11--	-WRITE GATE 1	-- A3D11
B4D12--	-FILE 1 L2 CLK	-- A3D12
B4D13--	-CABLE CONTINUITY 2	-- A3D13
B4B07--	GND	-- A3B07
B4B13--	GND	-- A3B13
B4D02--	GND	-- A3D02
B4D08--	GND	-- A3D08

B3 CONNECTS THRU CABLE TO A3 DU BOARD FILE 0
B4 CONNECTS THRU CABLE TO A3 DU BOARD FILE 1
(IF EXISTING)



DUC BOARD (A2)

A3B02 TIED TO A3D13 ON BOARD



DU BOARD (A1)

SEE 4967 THEORY DIAGRAMS MANUAL FOR DATA FLOW

4967 DEDICATED CABLES

E.C. HISTORY 220CT82 329889

MACH. 4967

IBM CORP. SPD

DATE 15APR83 LAST E.C. A03075

P.N. 4750110

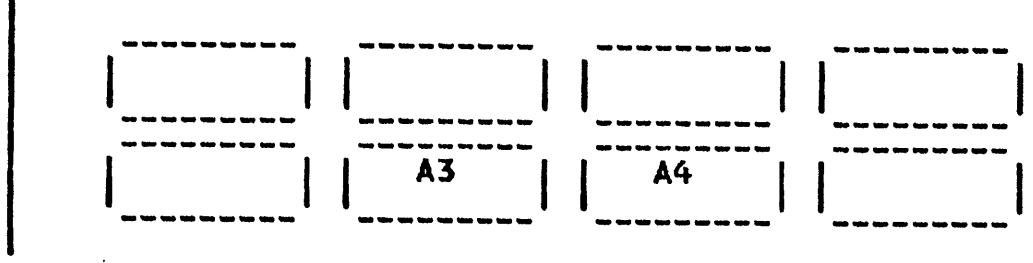
SF7030 000

4967 DEDICATED CABLES (TO FILE 2 & FILE 3)

DUC BOARD (A2) PIN ASSIGNMENTS		FILE 2 BOARD (A1) PIN ASSIGNMENTS
A4B02--	-CABLE CONTINUITY 2	-- A3B02
A4B03--	-CNTRL SAMPLE FILE 2	-- A3B03
A4B04--	-INTERRUPT FILE 2	-- A3B04
A4B05--	-FILE 2 SECTOR	-- A3B05
A4B08--	-R/W DATA BIT 0 FILE 2	-- A3B08
A4B10--	-R/W DATA BIT 1 FILE 2	-- A3B10
A4D04--	-FILE SELECT 2	-- A3D04
A4D05--	-FILE 2 WRITE GATE RTN	-- A3D05
A4D06--	-ID SCAN 2	-- A3D06
A4D07--	-FILE 2 INDEX	-- A3D07
A4D09--	-READ GATE 2	-- A3D09
A4D10--	-FILE 2 L1 CLK	-- A3D10
A4D11--	-WRITE GATE 2	-- A3D11
A4D12--	-FILE 2 L2 CLK	-- A3D12
A4D13--	-CABLE CONTINUITY 3	-- A3D13
A4B07--	GND	-- A3B07
A4B13--	GND	-- A3B13
A4D02--	GND	-- A3D02
A4D08--	GND	-- A3D08

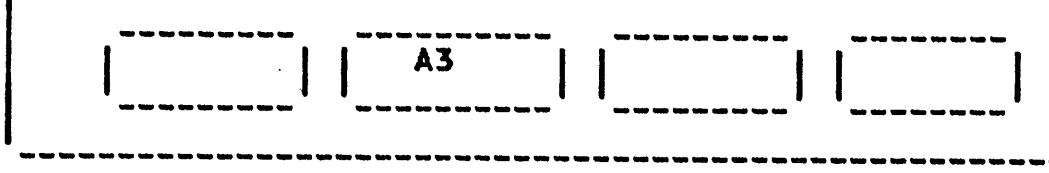
DUC BOARD (A2) PIN ASSIGNMENTS		FILE 3 BOARD (A1) PIN ASSIGNMENTS
A3B03--	-CNTRL SAMPLE FILE 3	-- A3B03
A3B04--	-INTERRUPT FILE 3	-- A3B04
A3B05--	-FILE 3 SECTOR	-- A3B05
A3B08--	-R/W DATA BIT 0 FILE 3	-- A3B08
A3B10--	-R/W DATA BIT 1 FILE 3	-- A3B10
A3D04--	-FILE SELECT 3	-- A3D04
A3D05--	-FILE 3 WRITE GATE RTN	-- A3D05
A3D06--	-ID SCAN 3	-- A3D06
A3D07--	-FILE 3 INDEX	-- A3D07
A3D09--	-READ GATE 3	-- A3D09
A3D10--	-FILE 3 L1 CLK	-- A3D10
A3D11--	-WRITE GATE 3	-- A3D11
A3D12--	-FILE 3 L2 CLK	-- A3D12
A3B02--	-CABLE CONTINUITY 3	-- A3B02
A3D13--	-CABLE CONTINUITY RECD	-- A3D13
A3B07--	GND	-- A3B07
A3B13--	GND	-- A3B13
A3D02--	GND	-- A3D02
A3D08--	GND	-- A3D08

A4 CONNECTS THRU CABLE TO A3 DU BOARD FILE 2 (IF EXISTING)
A3 CONNECTS THRU CABLE TO A3 DU BOARD FILE 3 (IF EXISTING)



DUC BOARD (A2)

A3B02 TIED TO A3D13 ON BOARD



DU BOARD (A1)

SEE 4967 THEORY DIAGRAMS MANUAL FOR DATA FLOW

4967 DEDICATED CABLES

E.C. HISTORY
22OCT82 329889

MACH.
4967

IBM CORP. SPD

DATE LAST E.C.
15APR83 A03075

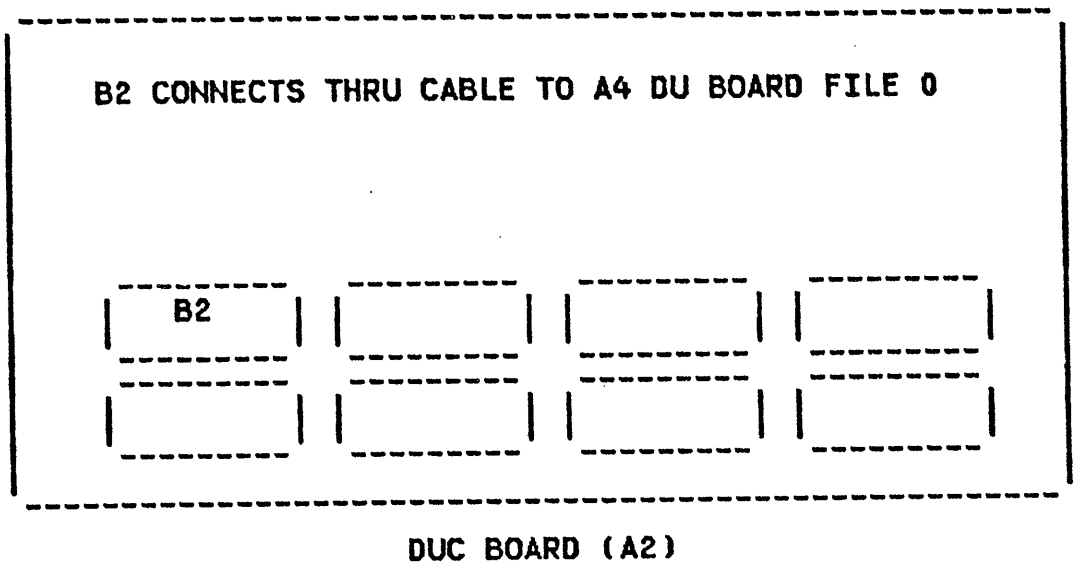
P.N. 4750111

SF704 0 0 0

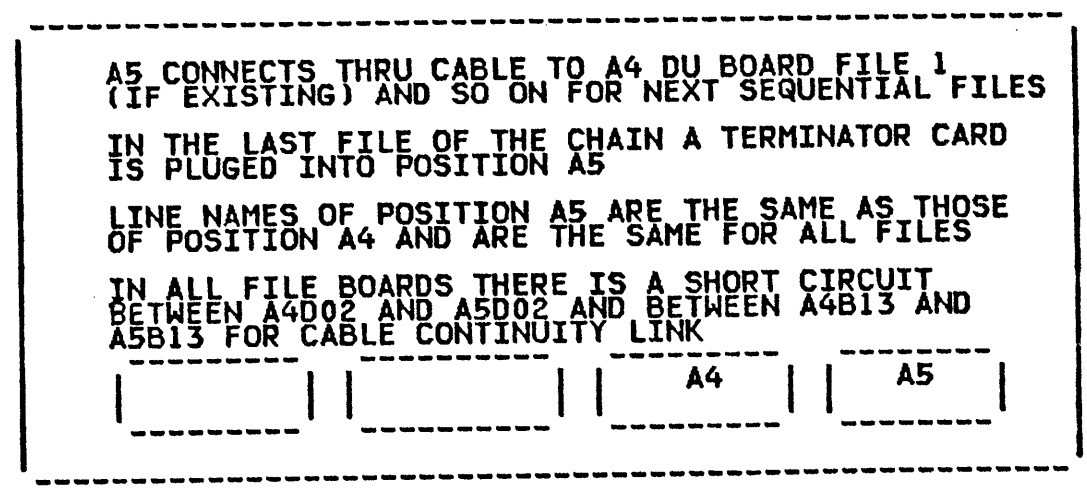
4967 CHAIN CABLE

DUC BOARD (A2)
PIN ASSIGNMENTS

B2B02--	-FILE TAG BIT 0	-- A4B02
B2B03--	-FILE TAG BIT 1	-- A4B03
B2B04--	-FILE TAG BIT 2	-- A4B04
B2B05--	-FILE TAG BIT P	-- A4B05
B2B06--	NOT USED	-- A4B06
B2B07--	+5 VOLTS	-- A4B07
B2B08--	+5 VOLTS	-- A4B08
B2B09--	+5 VOLTS	-- A4B09
B2B10--	-DEVICE DC RESET	-- A4B10
B2B11--	NOT USED	-- A4B11
B2B12--	-CONTROL SAMPLE RTN	-- A4B12
B2B13--	-CABLE CONTINUITY DRVR	-- A4B13
B2D02--	-CABLE CONTINUITY 0	-- A4D02
B2D03--	NOT USED	-- A4D03
B2D04--	- DAISY BIT 0	-- A4D04
B2D05--	- DAISY BIT 1	-- A4D05
B2D06--	- DAISY BIT 2	-- A4D06
B2D07--	- DAISY BIT 3	-- A4D07
B2D08--	GROUND	-- A4D08
B2D09--	- DAISY BIT 4	-- A4D09
B2D10--	- DAISY BIT 5	-- A4D10
B2D11--	- DAISY BIT 6	-- A4D11
B2D12--	- DAISY BIT 7	-- A4D12
B2D13--	- DAISY BIT P	-- A4D13



DUC BOARD (A2)



DU BOARD A1 (FILE 0)

SEE 4967 THEORY DIAGRAMS
MANUAL FOR DATA FLOW

4967 CHAIN CABLE

E.C. HISTORY
22OCT82 329889

MACH.
4967

IBM CORP. SPD

DATE
15APR83

LAST E.C.
A03075

P.N. 4750112

SF7050

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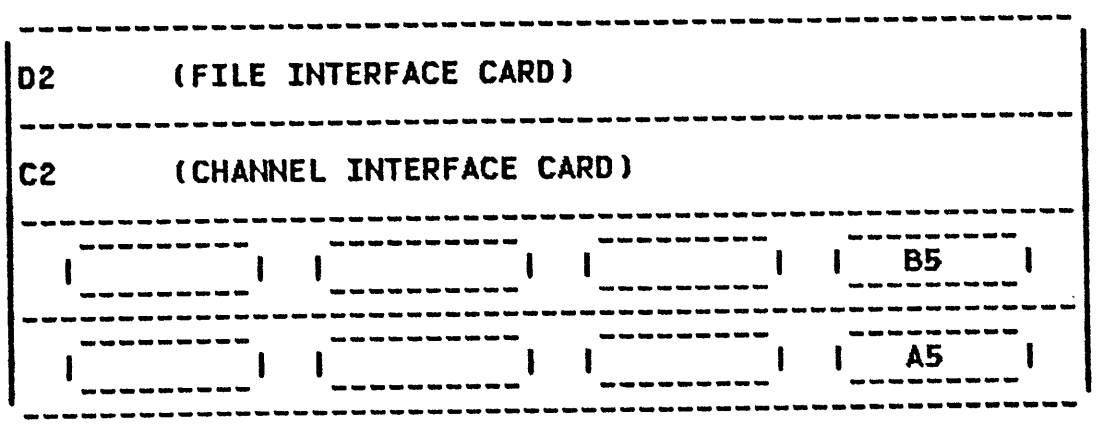
4967 DUC BOARD (A2) CABLE POSITIONS A5, B5 TO CARD A2C2

DUC BOARD (A2) CABLE POSITIONS A5, B5 PIN ASSIGNMENTS	DUC CARD A2C2 PIN ASSIGNMENTS
B5B02-- - CHAN DATA BIT 00	-- C2B02-
B5B03-- - CHAN DATA BIT 01	-- C2B03-
B5B04-- - CHAN DATA BIT 02	-- C2B04-
B5B05-- - CHAN DATA BIT 03	-- C2B05-
B5B06-- - CHAN DATA BIT 04	-- C2B07-
B5B08-- - CHAN DATA BIT 05	-- C2B08-
B5B09-- - CHAN DATA BIT 06	-- C2B09-
B5B10-- - CHAN DATA BIT 07	-- C2B10-
B5B11-- - CHAN DATA BIT PH	-- C2B12-
B5D03-- - CHAN DATA BIT 08	-- C2U02-
B5D04-- - CHAN DATA BIT 09	-- C2U04-
B5D05-- - CHAN DATA BIT 10	-- C2U05-
B5D06-- - CHAN DATA BIT 11	-- C2U06-
B5D07-- - CHAN DATA BIT 12	-- C2U07-
B5D09-- - CHAN DATA BIT 13	-- C2U09-
B5D10-- - CHAN DATA BIT 14	-- C2U10-
B5D11-- - CHAN DATA BIT 15	-- C2U11-
B5D12-- - CHAN DATA BIT PL	-- C2U12-
* B2B13-- -CABLE CONTINUITY DRIVER	-- C2G13-
* A3D13-- -CABLE CONTINUITY RECEIVER	-- C2G07-
A5B11-- -ERROR CHECK TO SYSTEM	-- C2P13-
A5D03-- - CHAN TAG BIT 0	-- C2S02-
A5D04-- - CHAN TAG BIT 1	-- C2S03-
A5D05-- - CHAN TAG BIT 2	-- C2S04-
A5D06-- - CHAN TAG BIT 3	-- C2S05-
A5D12-- - CHAN TAG BIT P	-- C2S13-
A5B05-- -AKN REQ OUT	-- C2S12-
A5B08-- -STROBE IN	-- C2U02-
A5B09-- -REQUEST IN	-- C2P09-
A5D13-- + POWER GOOD	-- C2P12-
A5B03-- -SYSTEM DC RESET	-- C2P11-
A5B04-- -REQUEST OUT	-- C2S10-
A5B06-- -STROBE OUT	-- C2S11-
A5B10-- -AKN REQ IN	-- C2S12-
A5B12-- SPARE	-- C2U03,C2P03-
A5D07-- - CHAN TAG BIT 4	-- C2S06-
A5D09-- - CHAN TAG BIT 5	-- C2S07-
A5D10-- - CHAN TAG BIT 6	-- C2S08-
A5D11-- - CHAN TAG BIT 7	-- C2S09-
B5D02-- GND	
B5D08-- GND	
B5B07-- GND	
B5B13-- GND	
A5D02-- GND	
A5D08-- GND	
A5B07-- GND	
A5B13-- GND	

*SEE SF752 FOR MORE INFORMATION CABLE CONTINUITY



DUC (A2) BOARD (CARD SIDE VIEW)

SEE 4967 THEORY DIAGRAMS MANUAL FOR DATA FLOW

4967 DUC BOARD PINS

E.C. HISTORY		MACH.
22OCT82	329889	
28FEB83	337418	4967

IBM CORP. SPD

DATE	LAST E.C.	P.N.
15APR83	A03075	4750113

SF7006 0 0 0

4967 DUC BOARD (A2) CABLE POSITIONS B2,B3,B4,A3,A4 TO CARD C2

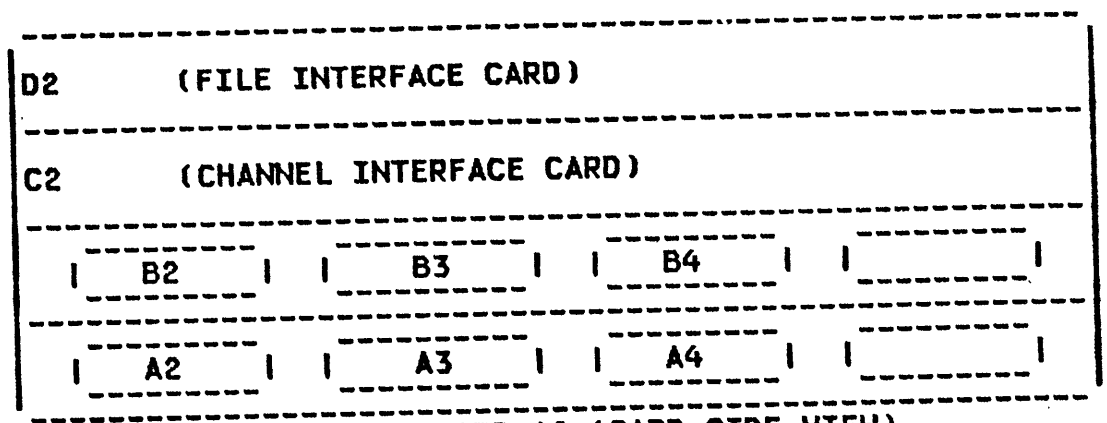
DUC BOARD (A2) CABLE POSITIONS B2,B3,B4,A3,A4 PIN ASSIGNMENTS		DUC CARD A2C2 PIN ASSIGNMENTS
B2B02--	-FILE TAG 0	-- C2P02-
B2B03--	-FILE TAG 1	-- C2P04-
B2B04--	-FILE TAG 2	-- C2P05-
B2B05--	-FILE TAG P	-- C2P06-
B2B12--	-CNTRL SAMPLE RTN	-- C2U09-
B2D04--	-DAISY BIT 0	-- C2J04-
B2D05--	-DAISY BIT 1	-- C2J05-
B2D06--	-DAISY BIT 2	-- C2J06-
B2D07--	-DAISY BIT 3	-- C2J07-
B2D09--	-DAISY BIT 4	-- C2J09-
B2D10--	-DAISY BIT 5	-- C2J10-
B2D11--	-DAISY BIT 6	-- C2J11-
B2D12--	-DAISY BIT 7	-- C2J12-
B2D13--	-DAISY BIT P	-- C2J13-
B3B03--	-CNTRL SAMPLE FILE 0	-- C2G05-
B3B04--	-INTRPT FILE 0	-- C2U10-
B4B03--	-CNTRL SAMPLE FILE 1	-- C2G02-
B4B04--	-INTRPT FILE 1	-- C2D11-
A4B03--	-CNTRL SAMPLE FILE 2	-- C2J04-
A4B04--	-INTRPT FILE 2	-- C2P05-
A3B03--	-CNTRL SAMPLE FILE 3	-- C2G04-
A3B04--	-INTRPT FILE 3	-- C2P06-
D2D04--	- SYSTEM DC RESET	-- C2J02-
D2J10--	- T6 CLOCK	-- C2M04-
D2G02--	- T8 CLOCK	-- C2M07-
D2G13--	+ POWER GOOD	-- C2P12-
D2B13--	- TEST POINT	-- C2D13-
D2J08--	- TEST POINT	-- C2G12-

FOR CABLE CONTINUITY LINK SEE SF752

DUC BOARD (A2) CABLE CONTINUITY JUMPERS

DEPENDING ON THE NUMBER OF FILES CONNECTED A JUMPER MUST BE INSTALLED ON THE DUC BOARD (A2) PER THE FOLLOWING TABLE

	A2B02-A2D02	A2B03-A2D03	A2B04-A2D04
1 FILE CONNECTED	YES	NO	NO
2 FILES CONNECTED	NO	YES	NO
3 FILES CONNECTED	NO	NO	YES
4 FILES CONNECTED	NO	NO	NO



DUC BOARD A2 (CARD SIDE VIEW)

SEE 4967 THEORY DIAGRAMS MANUAL FOR DATA FLOW

4967 DUC BOARD PINS

E.C. HISTORY MACH.
22OCT82 329889
14FEB83 336688 4967

IBM CORP. SPD

DATE LAST E.C.
15APR83 A03075 P.N. 4750114

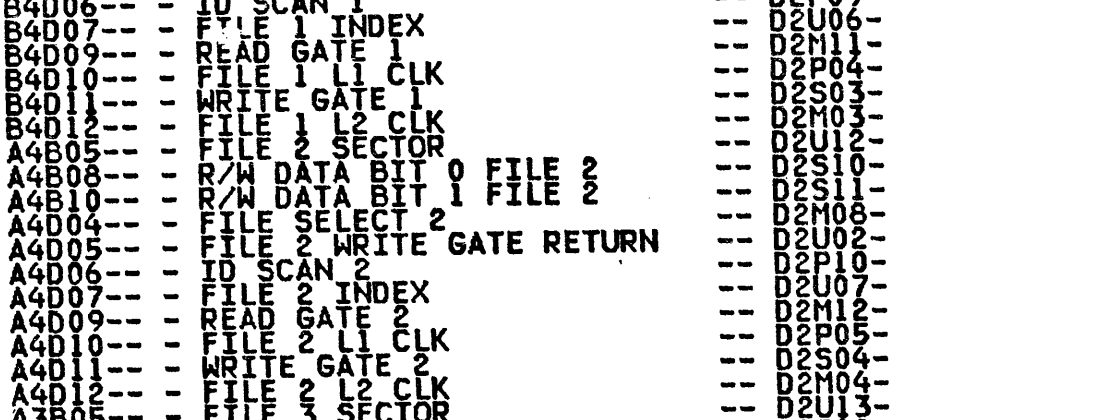
SF7070000

4967 DUC BOARD (A2) CABLE POSITIONS B3,B4,A3,A4,TO CARD D2

DUC BOARD (A2) CABLE POSITIONS B3,B4,A3,A4 PIN ASSIGNMENTS		DUC CARD A2D2 PIN ASSIGNMENTS
B3B05--	- FILE 0 SECTOR	-- D2U10-
B3B08--	- R/W DATA BIT 0 FILE 0	-- D2S06-
B3B10--	- R/W DATA BIT 1 FILE 0	-- D2S07-
B3D04--	- FILE SELECT 0	-- D2M06-
B3D05--	- FILE 0 WRITE GATE RETURN	-- D2P12-
B3D06--	- ID SCAN 0	-- D2P07-
B3D07--	- FILE 0 INDEX	-- D2U05-
B3D09--	- READ GATE 0	-- D2M10-
B3D10--	- FILE 0 L1 CLK	-- D2P02-
B3D11--	- WRITE GATE 0	-- D2S02-
B3D12--	- FILE 0 L2 CLK	-- D2M02-
B4B05--	- FILE 1 SECTOR	-- D2U11-
B4B08--	- R/W DATA BIT 0 FILE 1	-- D2S08-
B4B10--	- R/W DATA BIT 1 FILE 1	-- D2S09-
B4D04--	- FILE SELECT 1	-- D2M07-
B4D05--	- FILE 1 WRITE GATE RETURN	-- D2P13-
B4D06--	- ID SCAN 1	-- D2P09-
B4D07--	- FILE 1 INDEX	-- D2U06-
B4D09--	- READ GATE 1	-- D2M11-
B4D10--	- FILE 1 L1 CLK	-- D2P04-
B4D11--	- WRITE GATE 1	-- D2S03-
B4D12--	- FILE 1 L2 CLK	-- D2M03-
B4B05--	- FILE 1 SECTOR	-- D2U11-
B4B08--	- R/W DATA BIT 0 FILE 1	-- D2S08-
B4B10--	- R/W DATA BIT 1 FILE 1	-- D2S09-
B4D04--	- FILE SELECT 1	-- D2M07-
B4D05--	- FILE 1 WRITE GATE RETURN	-- D2P13-
B4D06--	- ID SCAN 1	-- D2P09-
B4D07--	- FILE 1 INDEX	-- D2U06-
B4D09--	- READ GATE 1	-- D2M11-
B4D10--	- FILE 1 L1 CLK	-- D2P04-
B4D11--	- WRITE GATE 1	-- D2S03-
B4D12--	- FILE 1 L2 CLK	-- D2M03-
A4B05--	- FILE 2 SECTOR	-- D2U12-
A4B08--	- R/W DATA BIT 0 FILE 2	-- D2S10-
A4B10--	- R/W DATA BIT 1 FILE 2	-- D2S11-
A4D04--	- FILE SELECT 2	-- D2M08-
A4D05--	- FILE 2 WRITE GATE RETURN	-- D2U02-
A4D06--	- ID SCAN 2	-- D2P10-
A4D07--	- FILE 2 INDEX	-- D2U07-
A4D09--	- READ GATE 2	-- D2M12-
A4D10--	- FILE 2 L1 CLK	-- D2P05-
A4D11--	- WRITE GATE 2	-- D2S04-
A4D12--	- FILE 2 L2 CLK	-- D2M04-
A3B05--	- FILE 3 SECTOR	-- D2U13-
A3B08--	- R/W DATA BIT 0 FILE 3	-- D2S12-
A3B10--	- R/W DATA BIT 1 FILE 3	-- D2S13-
A3D04--	- FILE SELECT 3	-- D2M09-
A3D05--	- FILE 3 WRITE GATE RETURN	-- D2U04-
A3D06--	- ID SCAN 3	-- D2P11-
A3D07--	- FILE 3 INDEX	-- D2U09-
A3D09--	- READ GATE 3	-- D2M13-
A3D10--	- FILE 3 L1 CLK	-- D2P06-
A3D11--	- WRITE GATE 3	-- D2S05-
A3D12--	- FILE 3 L2 CLK	-- D2M05-
C2J02--	- SYSTEM DC RESET	-- D2D04-
C2M04--	- T6 CLOCK	-- D2J10-
C2M07--	- T8 CLOCK	-- D2G02-
C2P12--	+ FILE GOOD	-- D2G13-

CARD PINS TIED TOGETHER ON BOARD FOR TEST POINTS	
D2B04--	- RAM CLOCK -- D2B05-
D2B07--	- T0 3 6 9 -- D2B08-
D2D06--	- T9 -- D2D07-
D2D11--	- TEST POINT -- D2D12-
D2D13--	- T0 -- D2J02,D2J04-
D2G05--	- TEST POINT -- D2G12-
D2J06--	- T1 -- D2J07-
D2J10--	- T6 -- D2J11,D2J12,D2J13-

PINS ON CARD TIED TO GROUND AT BOARD
D2B12,B10,B09



DUC BOARD A2 (CARD SIDE VIEW)

SEE 4967 THEORY DIAGRAMS MANUAL FOR DATA FLOW

4967 DUC BOARD PINS

E.C. HISTORY 220CT82 329889

MACH. 4967

IBM CORP. SPD

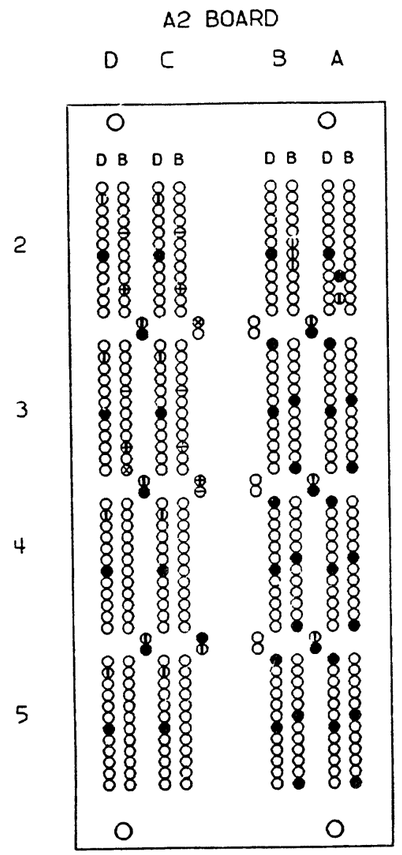
DATE 15APR83 LAST E.C. A03075

P.N. 4750115

SE7080 000

CADAM DESIGN

A2 BOARD



CARDS

*CHANNEL CARD
PLUGS IN C2

*FILE CARD
PLUGS IN D2

OF FILES ATTACHED

*1 FILE JUMPER
A2B02 TO A2D02

*2 FILES JUMPER
A2B03 TO A2D03

*3 FILES JUMPER
A2B04 TO A2D04

*4 FILES NO JUMPERS

*ATTACHMENT CABLES
W2 PLUGS TO B5
X2 PLUGS TO A5

*CHAIN CABLE
A3 OF FILE 0 TO B2

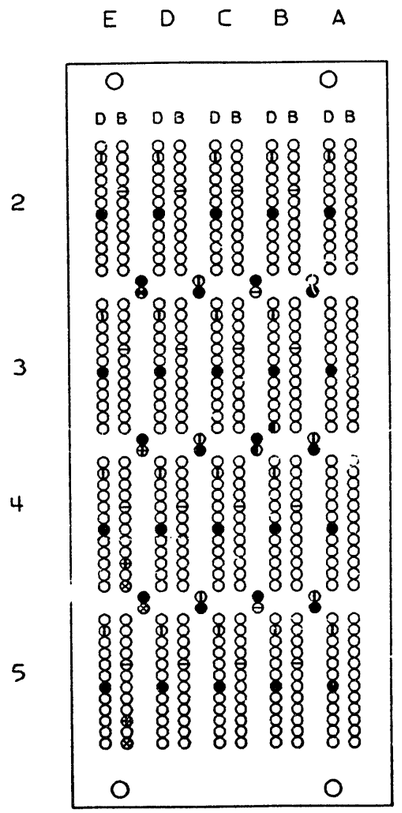
*DEDICATED CABLES
A5 OF FILE 0 TO B3
A5 OF FILE 1 TO B4
A5 OF FILE 2 TO A4
A5 OF FILE 3 TO A3

*DECOUPLING CAP
PLUG IN A2

● GND (C2D8)
⊕ +8.5 (C2B11)
◐ +5 (C2D3)
⊖ -5 (C2B6)
⊗ POR (D3B13)*

*3.5V TO 5.5V 20 SEC. AFTER POWER GOOD

A1 BOARD

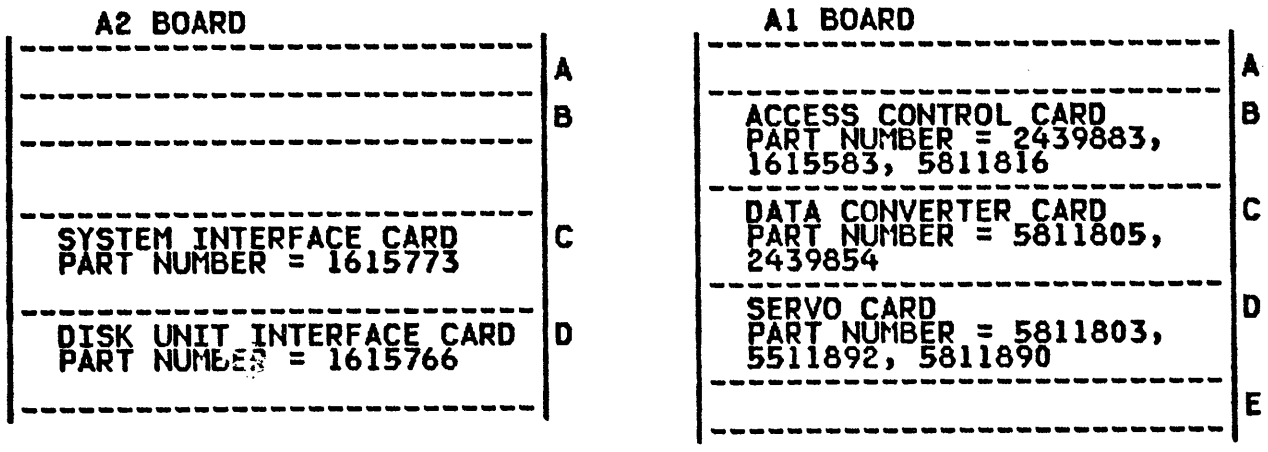


● GROUND
⊖ -5V
◐ +5V
⊕ +12V
⊗ -12V
⊕ FILE READY
◐ POWER GOOD

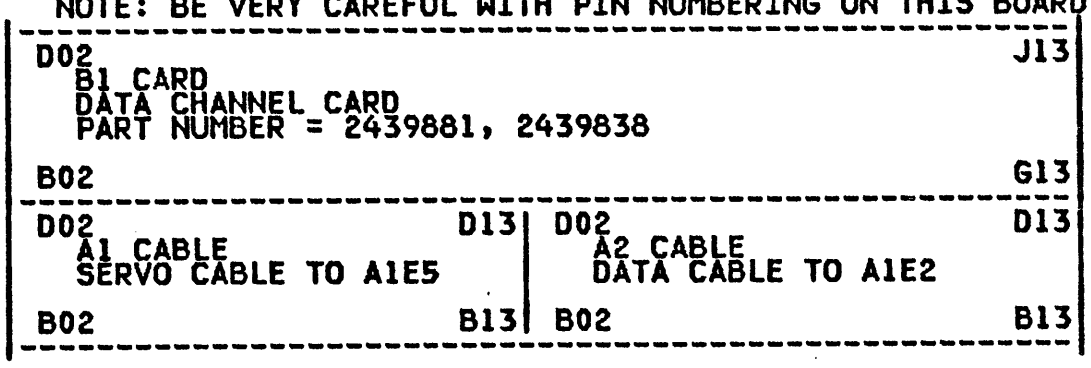
EC HISTORY		DRAWING TITLE	
DATE	EC NO.	POWER,DVC-JUMPERING	
	329889 B	MACH TYPE:	4967
28OCT82	329889	PART NO.:	4750116.
		CLASSIFICATION	
C			IBM

SF709

CARD LOCATIONS AND PART NUMBERS.



W1 BOARD (CARD SIDE VIEW)
LOCATED AT BACK OF THE HDA (HEAD DISK ASSEMBLY).
NOTE: BE VERY CAREFUL WITH PIN NUMBERING ON THIS BOARD.



BRAKE RELEASE JUMPER.

CAUTION:

REMOVE J6 CONNECTOR ON MOTOR CONTROL ASSEMBLY.
(AC LINE TO MOTOR)
THIS WILL INSURE THE MOTOR WILL NOT START.
SEE MIM SECTION 2.10 FOR LOCATION OF J6 CONNECTOR.
EXPECT TO HEAR THE PICK SOUND OF THE BRAKE WHEN
THE JUMPER IS INSTALLED.

JUMPER A1E5B04 (-MOTOR RELAY) TO A1E5D08 (GROUND).
THE BRAKE SHOULD NOW BE RELEASED.

MOTOR START JUMPER.

CAUTION:

EXPECT TO HEAR THE PICK SOUND OF THE BRAKE
AND THE SOUND OF THE MOTOR STARTING WHEN THE JUMPER
IS INSTALLED.

JUMPER A1E5B04 (-MOTOR RELAY) TO A1E5D08 (GROUND).
THE MOTOR SHOULD NOW START.

READY JUMPER.

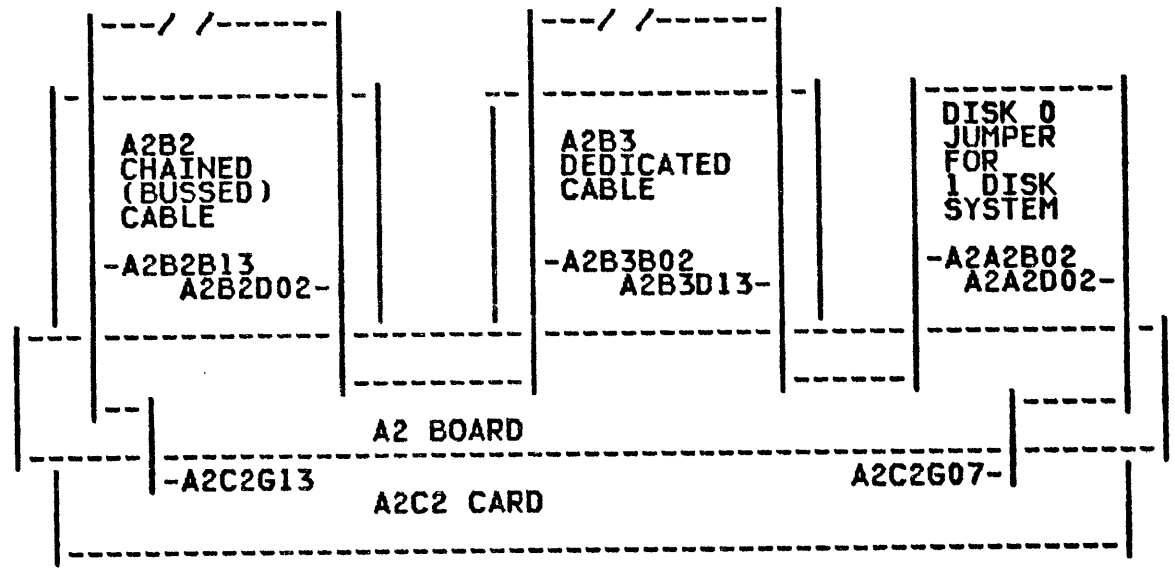
POWER OFF.
JUMPER A1C2J13 (-DEDICATED CABLE LINK OK) TO
A1C2J08 (GROUND).
POWER ON.
IF THE DISK DRIVE IS OK, IT SHOULD COME READY:
READY LED ON.
HEAD CARRIAGE HOME AND READY.

NOTE: THE DISK DRIVE SHOULD ALSO COME READY WITH THIS
JUMPER INSTALLED IF:
1) CABLES A2A5 AND A2B5 TO SERIES/1 ATTACHMENT CARD
HAVE BEEN REMOVED. THIS ISOLATES THE DISK FROM THE
SERIES/1.
2) CABLES A1A3 AND A1A4 TO CONTROLLER HAVE BEEN REMOVED,
AND A TERMINATOR CARD INSTALLED IN A1A5.
THIS ISOLATES THE DISK FROM THE CONTROLLER IN THE
A2 BOARD.

4967 ADDITIONAL SERVICE INFORMATION
E.C. HISTORY
04JAN83 336688
28FEB83 337418
MACH. 4967
SERIES 1
IBM CORP. SPD
DATE LAST E.C.
15APR83 A03075
P.N. 6091824
S71000

CABLE CONTINUITY IN A2 BOARD.

EXAMPLE BELOW IS FOR A 1 DISK SYSTEM.
SEE FLD SF752 FOR ADDITIONAL INFORMATION.



SIGNAL START.
A2C2G13 (- CABLE CONTINUITY DRIVER)
A2B2B13 (- CABLE CONTINUITY DRIVER)
A2B2D02 (- CABLE CONTINUITY)
A2B3B02 (- CABLE CONTINUITY)
A2B3D13 (- CABLE CONTINUITY)
A2A2B02 (- CABLE CONTINUITY)
A2A2D02 (- CABLE CONTINUITY FROM FILES)
A2C2G07 (- CABLE CONTINUITY FROM FILES)
SIGNAL END.

CABLE CONTINUITY OF DEDICATED CABLE TO DISK DRIVE.

SEE FLD SF752 FOR ADDITIONAL INFORMATION.

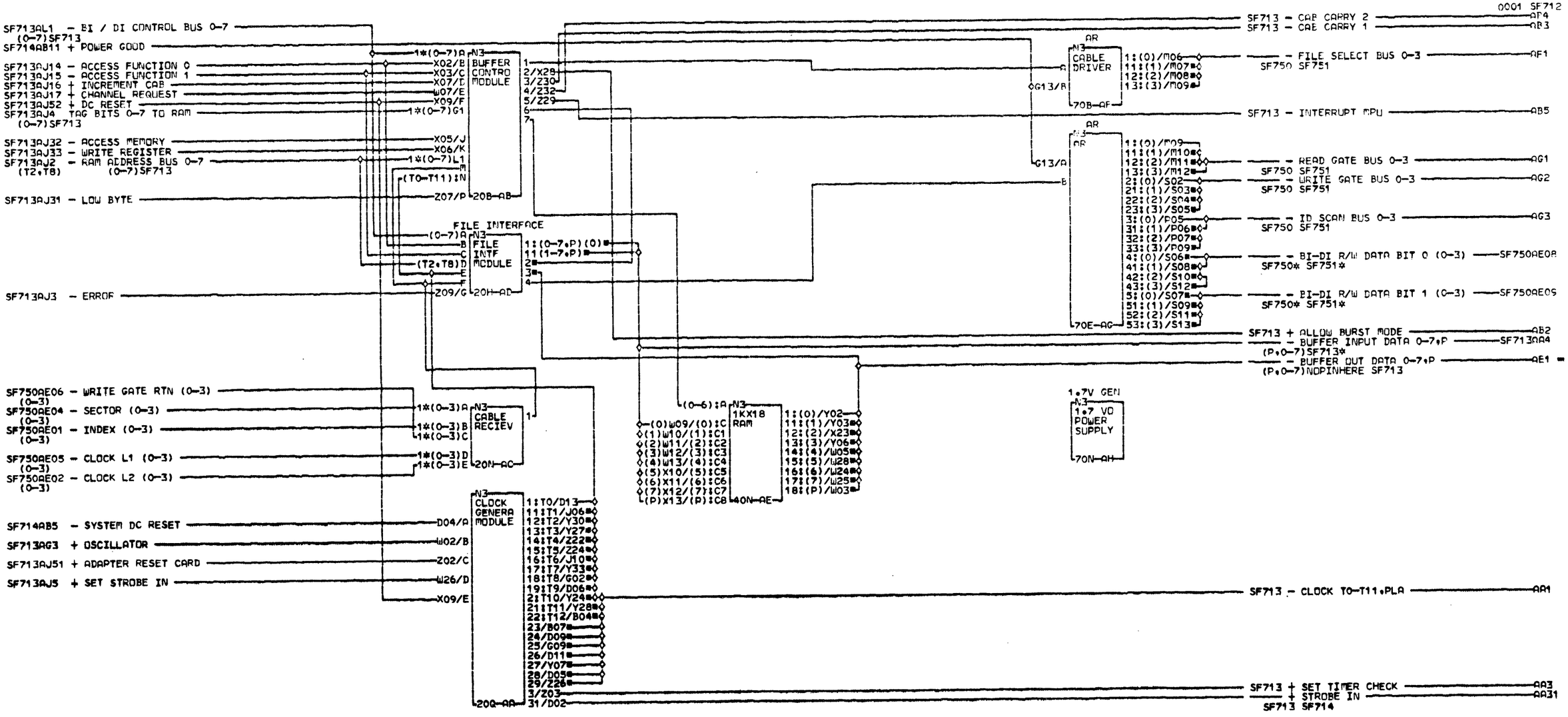
START OF THE DEDICATED CABLE INTERLOCK PATH		A2B3B02 SF752
A2B3B02 CABLE	TO	A1A3B02 SF752 AND SF758
A1A3B02 -DEDICATED CABLE INTERLOCK	TO	A1B2B02 SF759
A1B2B02 THROUGH A1B2 CARD	TO	A1B2U13 SF759
A1B2U13 -DEDICATED CABLE LINK OK	TO	A1A3D13 SF758
A1A3D13 CABLE	TO	A2B3D13 SF752
A2B3D13 IS THE END OF THE DEDICATED CABLE INTERLOCK PATH IN THE A2 BOARD.		

CABLE CONTINUITY INSIDE THE DISK DRIVE.

SEE FLD SF752 FOR ADDITIONAL INFORMATION.

THE FOLLOWING SHOWS THE CABLE/CARD INTERLOCK PATH INSIDE THE DISK DRIVE.

START OF DISK UNIT INTERLOCK PATH.		A1B2G09 SF759
A1B2G09 -INTERLOCK SOURCE	TO	A1E2B02 SF764
A1E2B02 CABLE	TO	W1A2B02 SF766
W1A2B02 -INTERLOCK SOURCE	TO	W1B1D02 SF767
W1A2D02 THROUGH CARD W1B1	TO	W1B1G12 SF767
W1B1G12 -INTERLOCK LINK #1	TO	W1A2D13 SF766
W1A2D13 CABLE	TO	A1E2D13 SF764
A1E2D13 -INTERLOCK LINK #1	TO	A1E5B03 SF764
A1E5B03 CABLE	TO	W1A1B03 SF765
W1A1B03 INSIDE W1 BOARD BECOMES -INTERLOCK LINK #2	TO	W1A1D13 SF765
W1A1D13 CABLE	TO	A1E5D13 SF764
A1E5D13 -INTERLOCK LINK #2	TO	A1D2U13 SF763
A1D2U13 THROUGH A1D2 CARD	TO	A1D2B02 SF763
A1D2B02 -INTERLOCK LINK #3	TO	A1C2B02 SF761
A1C2B02 THROUGH A1C2 CARD	TO	A1C2X02 SF762
A1C2X02 THROUGH TCC X -TOP CARD CONN 1 INTERLOCK IN	TO	A1B2X02 SF760
A1B2X02 THROUGH A1B2 CARD	TO	A1B2X33 SF760
A1B2X33 THROUGH TCC X -TOP CARD CONN 1 INTERLOCK OUT	TO	A1C2X33 SF762
A1C2X33 THROUGH A1C2 CARD	TO	A1C2Y02 SF762
A1C2Y02 THROUGH TCC Y -TOP CARD CONN 2 INTERLOCK IN	TO	A1B2Y02 SF760
A1B2Y02 THROUGH A1B2 CARD	TO	A1B2Y33 SF760
A1B2Y33 THROUGH TCC Y -TOP CARD CONN 2 INTERLOCK OUT	TO	A1C2Y33 SF762
A1C2Y33 THROUGH A1C2 CARD	TO	A1C2U13 SF761
A1C2U13 -INTERLOCK OK	TO	A1B2U09 SF759
A1B2U09 IS THE END OF THE DISK UNIT INTERLOCK PATH.		



	PINS	PINS	PINS	PINS
	AB	G6/Y05	A2/U12	E0/M02
	A0/W29	G7/X24	A3/U13	E1/M03
	A1/W30	G8/X25	B0/U05	E2/M04
	A2/W32	L1/Y09	B1/U06	E3/M05
	A3/W33	L2/Y10	B2/U07	
	A4/X29	L3/Y11	B3/U09	
	A5/X30	L4/Y12	C0/P12	
S	A6/X32	L5/Z10	C1/P13	
F	A7/X33	L6/Z11	C2/U02	
7	G1/W22	L7/Z12	C3/U04	
1	G2/W23	L8/Z13	D0/P02	
2	G3/Z05	AC	D1/P04	
	G4/Z06	A0/U10	D2/P05	
0001	G5/X22	A1/U11	D3/P06	

DISK FILE CONTROLER
FILE INTERFACE CARD
DATE 5-12-83 PFC 329A89
P.N.4750117 E.C.A03075

LOC=

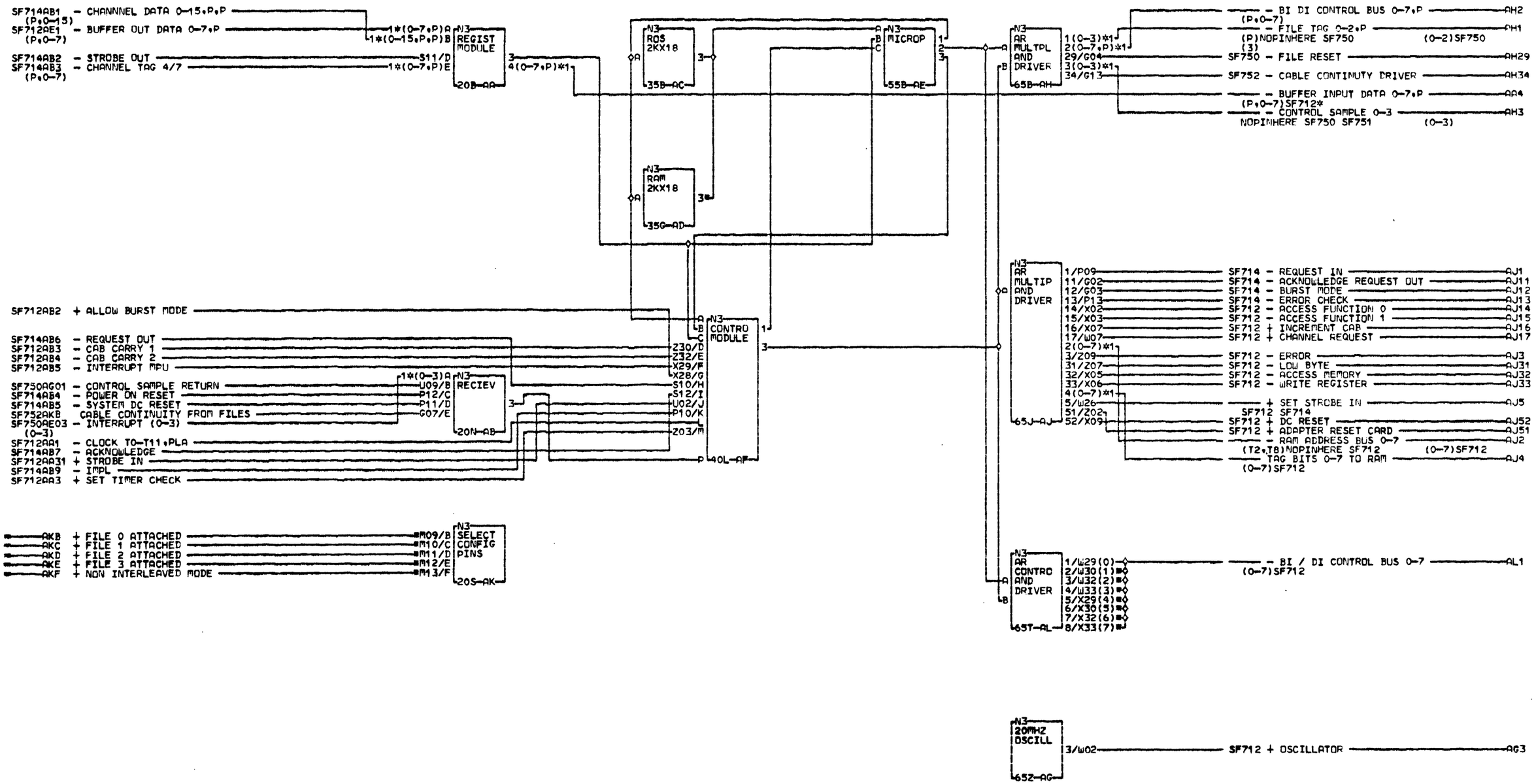
USN 00001 PRI=13MAY83 0942 S F 7

AUC= SEC 1

PFORM=KSFB NEXTBLK AI 2

MACH=B0CA

CID TBRVPC1 JOB SFSMART 0001



	PINS	PINS	PINS	PINS	PINS	PINS	PINS
	AA	B4/B07	E0/S02	45/X10	20/J04	20/Y09	46/X24
	A0/Y02	B5/B08	E1/S03	46/X11	21/J05	21/Y10	47/X25
	A1/Y03	B6/B09	F2/S04	47/X12	22/J06	22/Y11	
	A2/X23	B7/B10	E3/S05	48/X13	23/J07	23/Y12	
	A3/Y06	B8/D02	E4/S06	AB	24/J09	24/Z10	
	A4/W05	B9/D04	E5/S07	A0/U10	25/J10	25/Z11	
	A5/W28	C0/D05	E6/S08	A1/U11	26/J11	26/Z12	
S	A6/W24	C1/D06	E7/S09	A2/U12	27/J12	27/Z13	
F	A7/W25	C2/D07	E8/S13	A3/U13	28/J13	40/W22	
7	A8/W03	C3/D09	40/W09	AM	30/G05	41/W23	
1	B0/B02	C4/D10	41/W10	10/P02	31/G08	42/Z05	
3	B1/B03	C5/D11	42/W11	11/P04	32/G09	43/Z06	
	B2/B04	C6/B12	43/W12	12/P05	33/G10	44/X22	
0001	B3/B05	C7/D12	44/W13	13/P06	AJ	45/Y05	

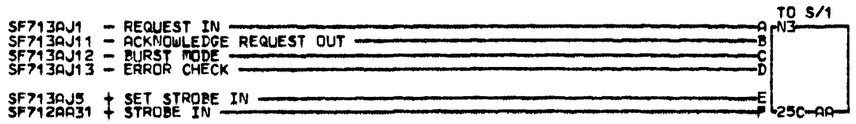
DISK FILE CINTROLLES
SYSTEM INTERBACE CARD
DATE 5-12-83 PEC 329889
P.N.4750118 E.C.A03075

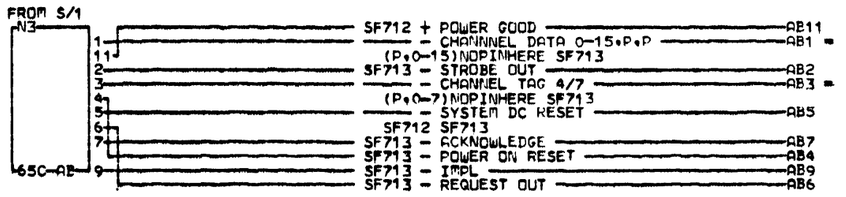
LOC=

USN 00001 PRI=13MAY83 0942

AUC= SEC
PFORM=KSFR NEXTBLK AM
MACH=BOCA
CID TARVPC1 JNB SFSMART

S F 7 1 3 0001





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SERIES ONE INTERFACE

DATE 5-12-83 PEC 329889
P.N.4750119 E.C.A03075

LOC=

USN 00001 PRI=13MAY83 0942

AUC= SEC
PFORM=KSFR NEXTBLK AD
MACH=BDCA
CID TARVPC1 JOB SFSMART

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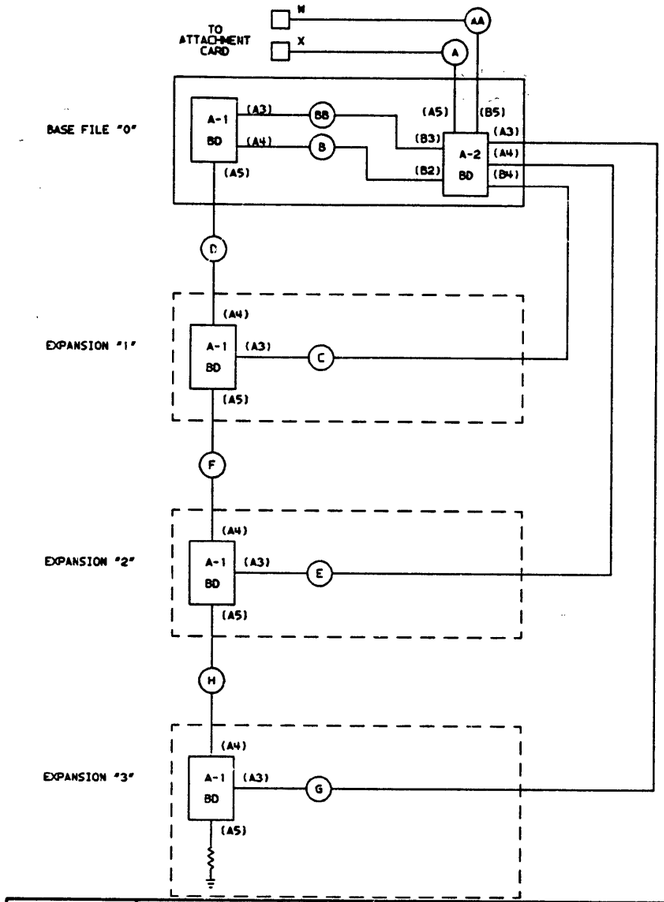
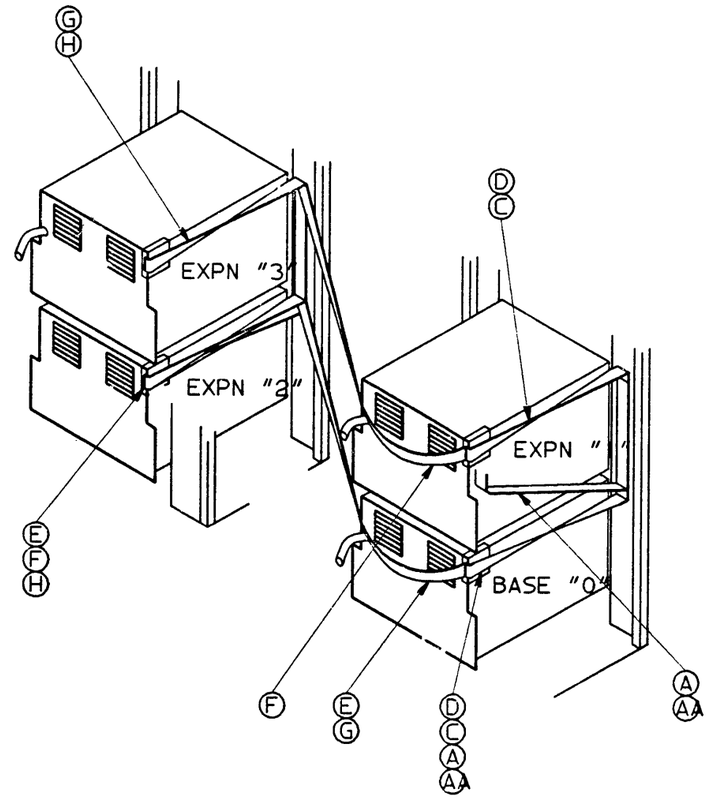


INSTALL ORDER	LOCATION	FLAT CABLE P/N	MADE WITH ASM. NO. (REF)	USED ON FEATURE B/M
6	(A)	6031207(SEQ 1)	5802425	6042206
5	(AA)	6031207(SEQ 2)	5802425	6042206
2	(B)	6031208(SEQ 1)	5802225	6042206
1	(BB)	6031208(SEQ 2)	5802425	6042206
3	(C)	6031209	5802425	6195386
4	(D)	6031210	5802225	6195386
7	(E)	6031211	5802425	6195387
9	(F)	6031212	5802225	6195387
8	(G)	6031213	5802425	6195388
10	(H)	6031214	5802225	6195388

5802425-20 SIG (4 GND-D8,D2,B7,B13)
5802225-20 SIG (1 GND-D8, UNUSED P/NS D03, B06, B11)



CADAM DESIGN

EC HISTORY		DRAWING TITLE	
DATE	EC NO.	EXTERNAL SIGNAL CABLE ROUTING	
	329889	MACH TYPE: 4967	
		PART NO.: 4750130	
		CLASSIFICATION	
C			IBM

SF741

SEE DC SCHEMATIC SF742

A2 BOARD

A1 BOARD

SEE DC SCHEMATIC SF742

J1/P1

J2/P2

J3/P3

TO VOICE COIL DRIVER J2

110V 220V

FILE READY

J7/P7

POWER SUPPLY

J4 /P4

J5/P5

J6 /P6

BLOWER ASSEMBLY

P4

MOTOR CONTROL ASSEMBLY

J6 J5 J4

GN/YL

BLK

ON/OFF SWITCH

2 5 3 6

BLK

CIRCUIT PROTECTOR

LINE E F

H G LOAD

LINE FILTER

C A D B

BLK (BLUE)

WHITE (BRN)

BLK BLK CLEAR GN/YL

(SHEILD) CLEAR GN/YL

LINE CORD

BLACK (BLUE)

EC HISTORY		DRAWING TITLE	
DATE	EC NO.	AC SCHEMATIC	
	329889	MACH TYPE:	4967
1-10-83	336688	PART NO.:	4750131
		CLASSIFICATION	

C

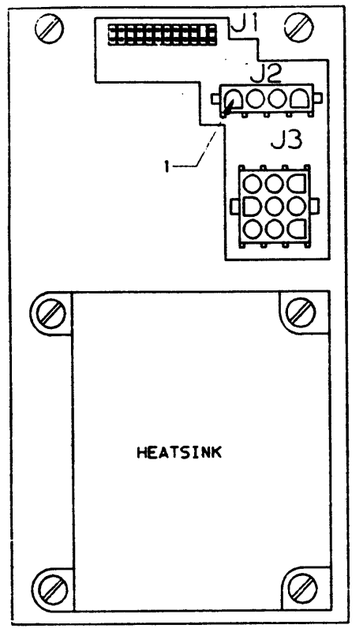
IBM

CADAM DESIGN

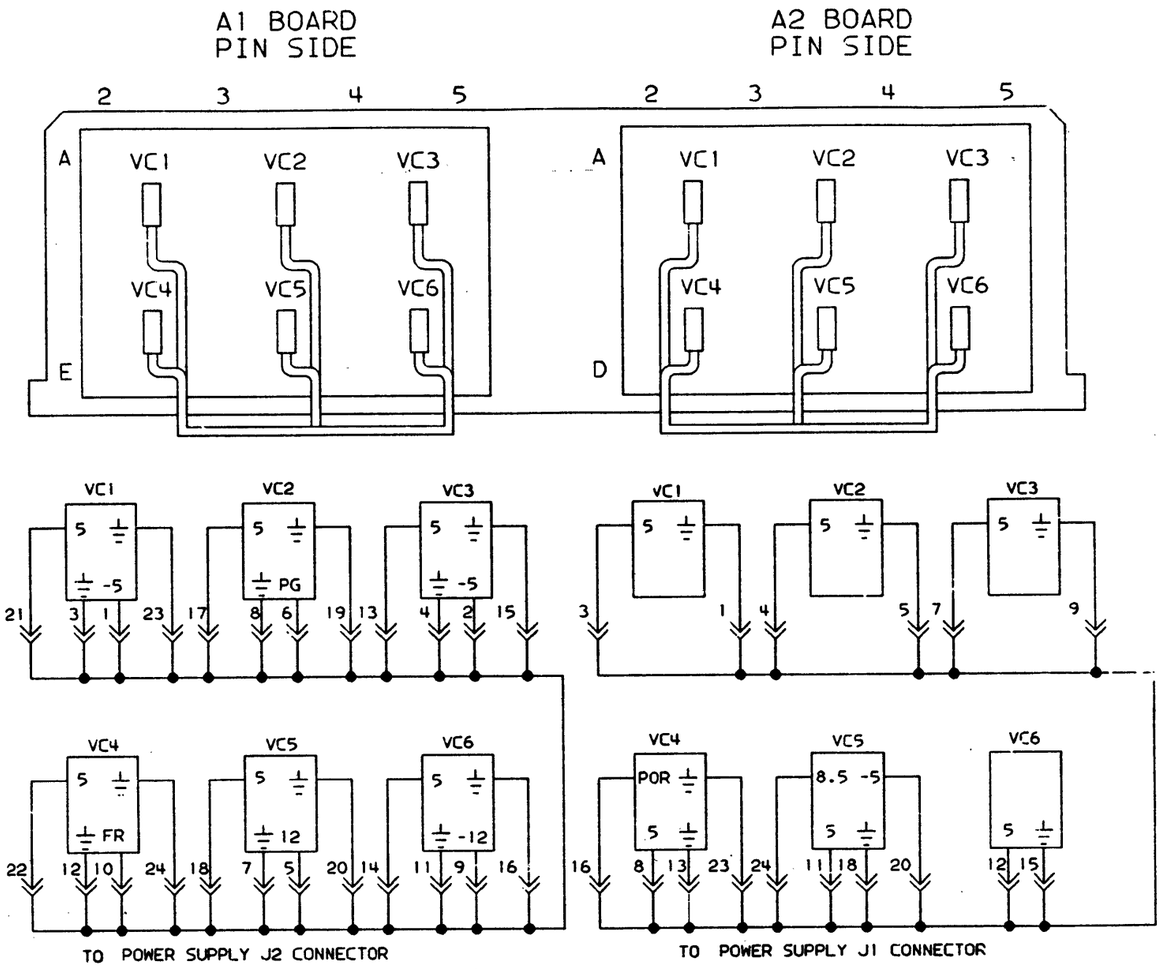
SF7411

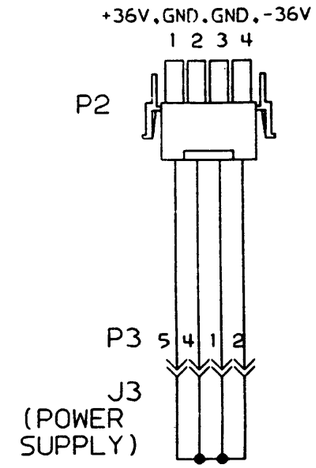
SF742

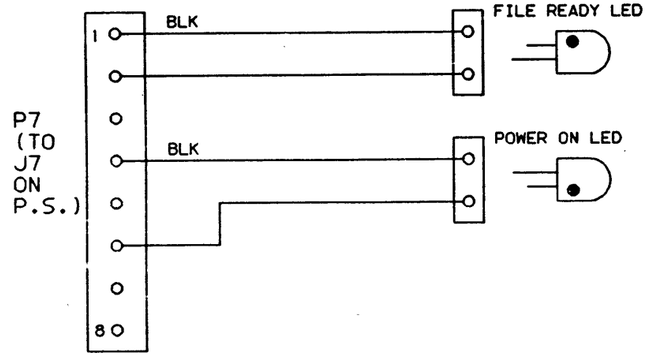
CADAM DESIGN

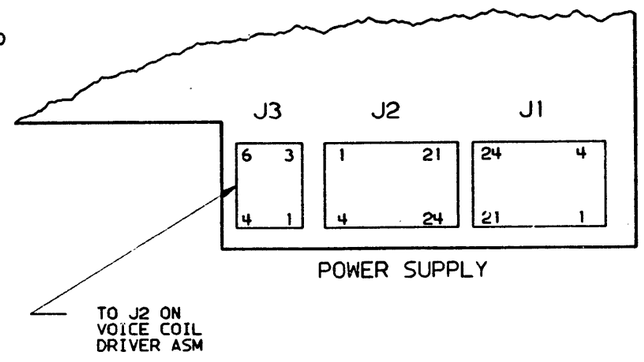


VOICE COIL
DRIVER
ASSEMBLY







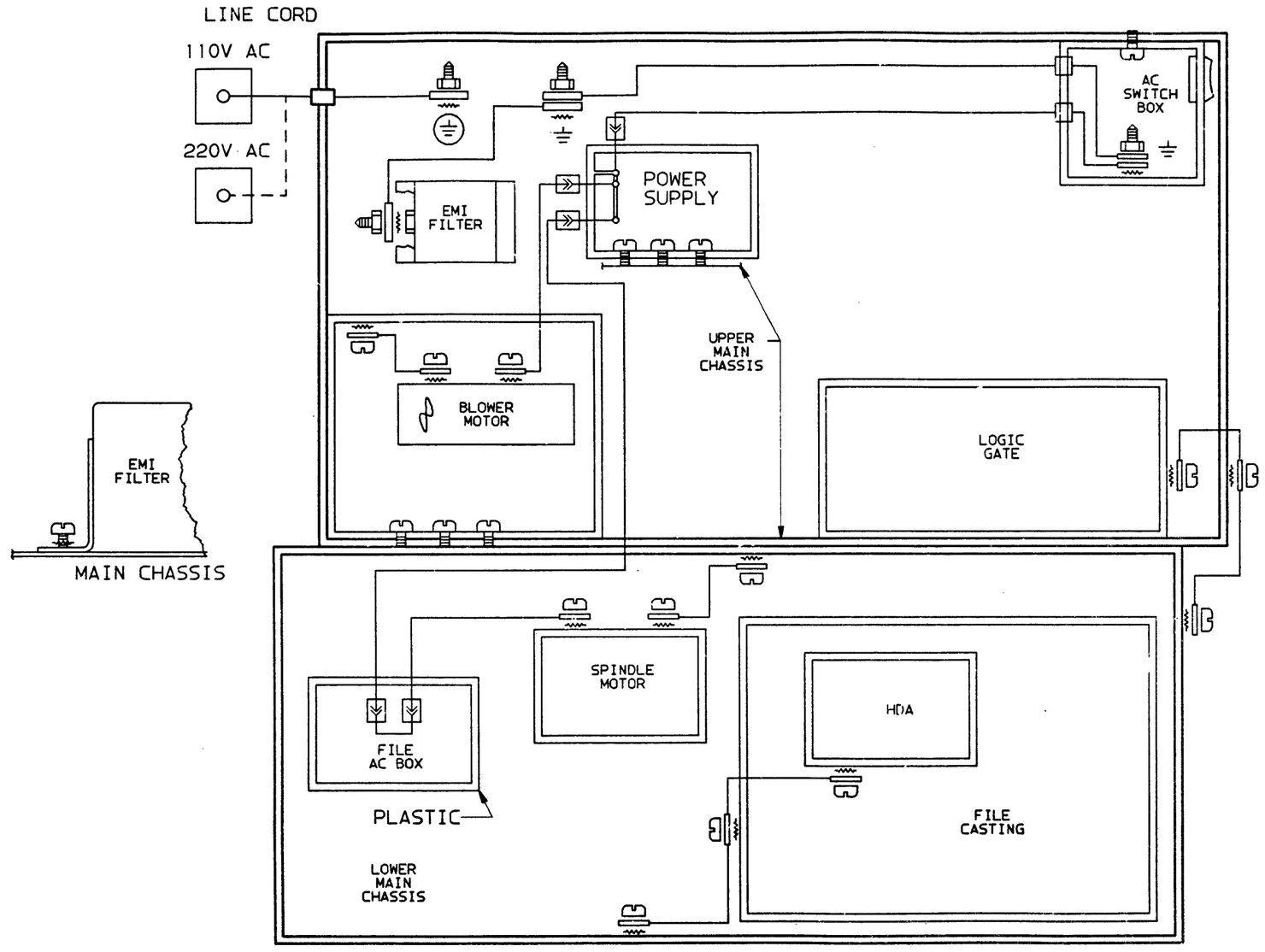


EC HISTORY		DRAWING TITLE	
DATE	EC NO.	DC SCHEMATIC	
	329889	MACH TYPE:	4967
1-10-83	336688	PART NO.:	4750132
		CLASSIFICATION	
C			IBM

SF742

SF743

CADAM DESIGN



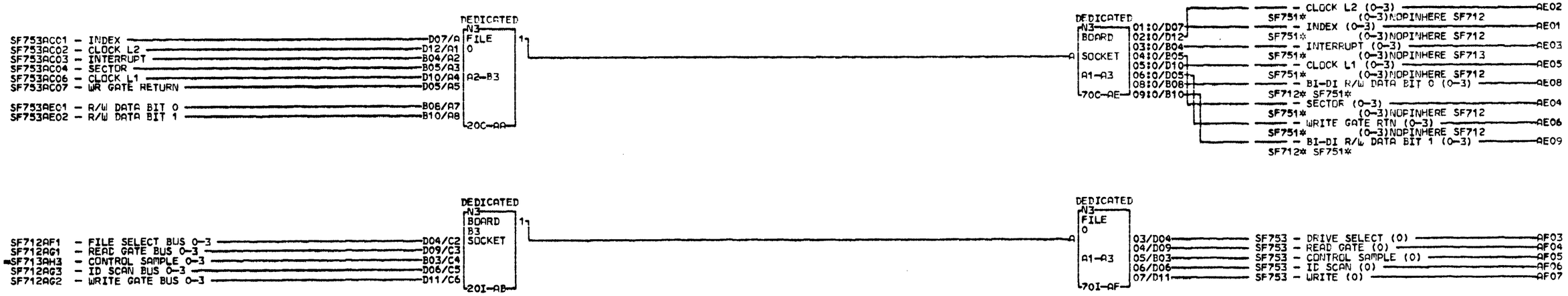
SCREW WITH EXTERNAL TOOTH LCKW

STUD WITH EXTERNAL TOOTH LCKW AND A NUT

METAL TO METAL CONTACT

SCREW WITH EXTERNAL TOOTH LCKW AND A NUT

EC HISTORY		DRAWING TITLE		
DATE	EC NO.	GROUND SCHEMATIC		
	329889	MACH TYPE: 4967		
		PART NO.: 4750133		
		CLASSIFICATION:		
C				IBM



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0001

FILE 0 CABLE
INTERFACE
DATE 5-12-83 PEC 329889
P,N,4750122 E,C,A03075

LOC=

USN 00001 PRI=13MAY83 0942

AIC= SEC
PFORM=KSFB NEXTBLK AI
MACH=BOCA
CID TBRVPC1 JOB SFSMART

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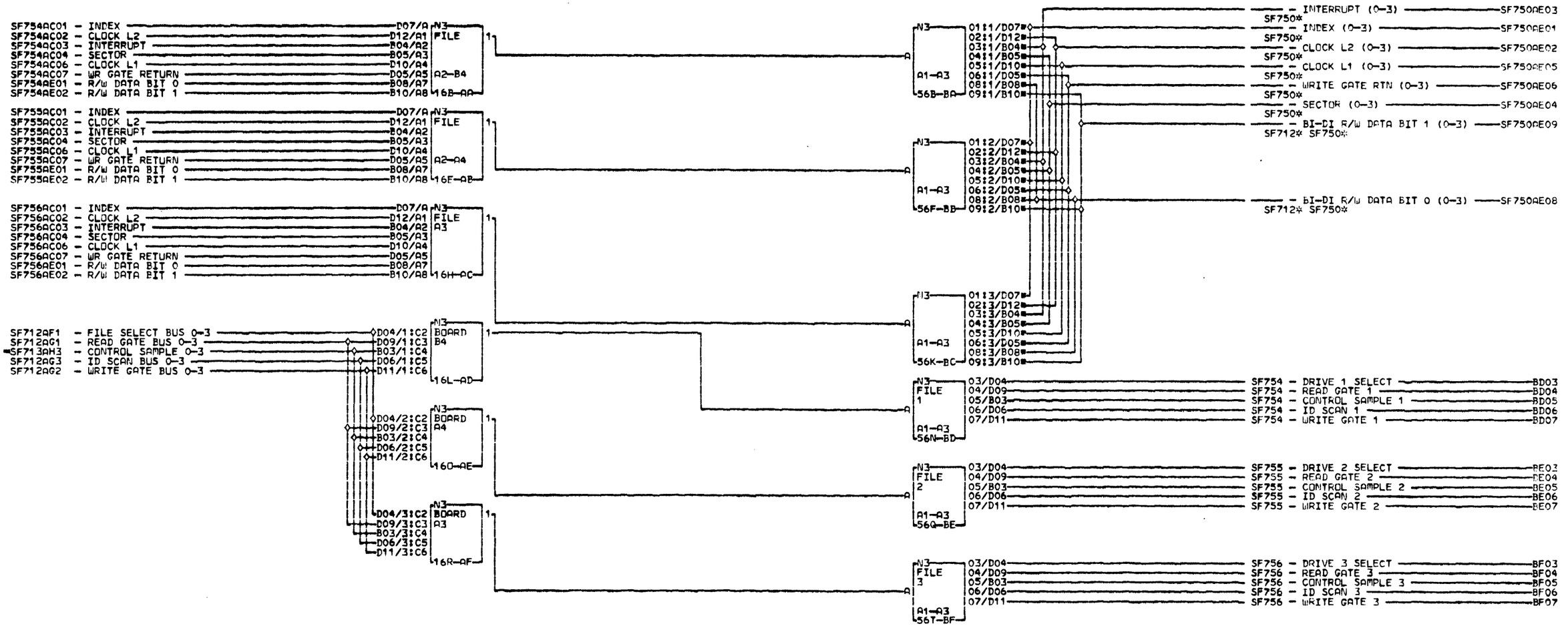
0

0001



FILES 1,2,3
CABLE INTERFACE
DATE 5-12-83 PEC 329839
P.N.4750123 E.C.A03075

LOC=

USN 00001 PRI=13MAY83 0942

AUC= SEC

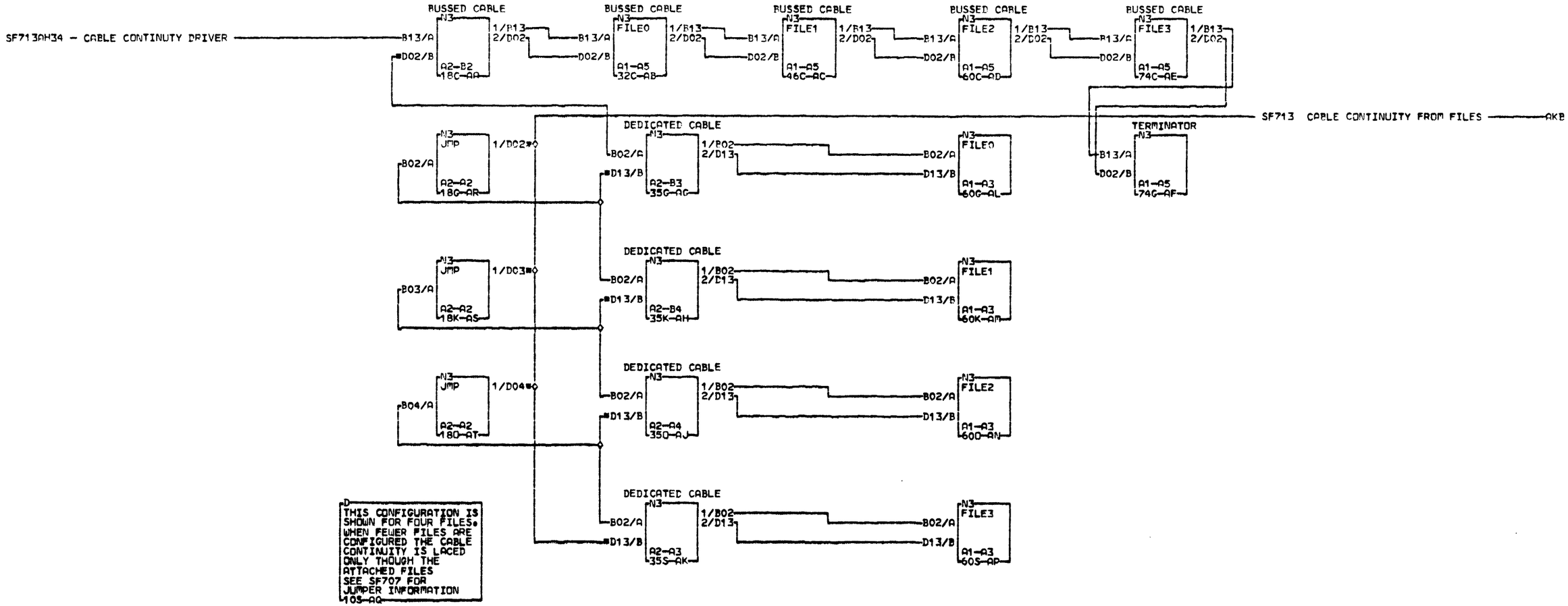
PFORM=KSFB NEXTBLK BG

MACH=BOCA

CID TBRVPC1 JOB SFSMART

S
F
7
5
1
0001

0001



CABLE CONTINUITY

DATF 5-12-87 PFC 329A89
P.N.4750124 E.C.A03075

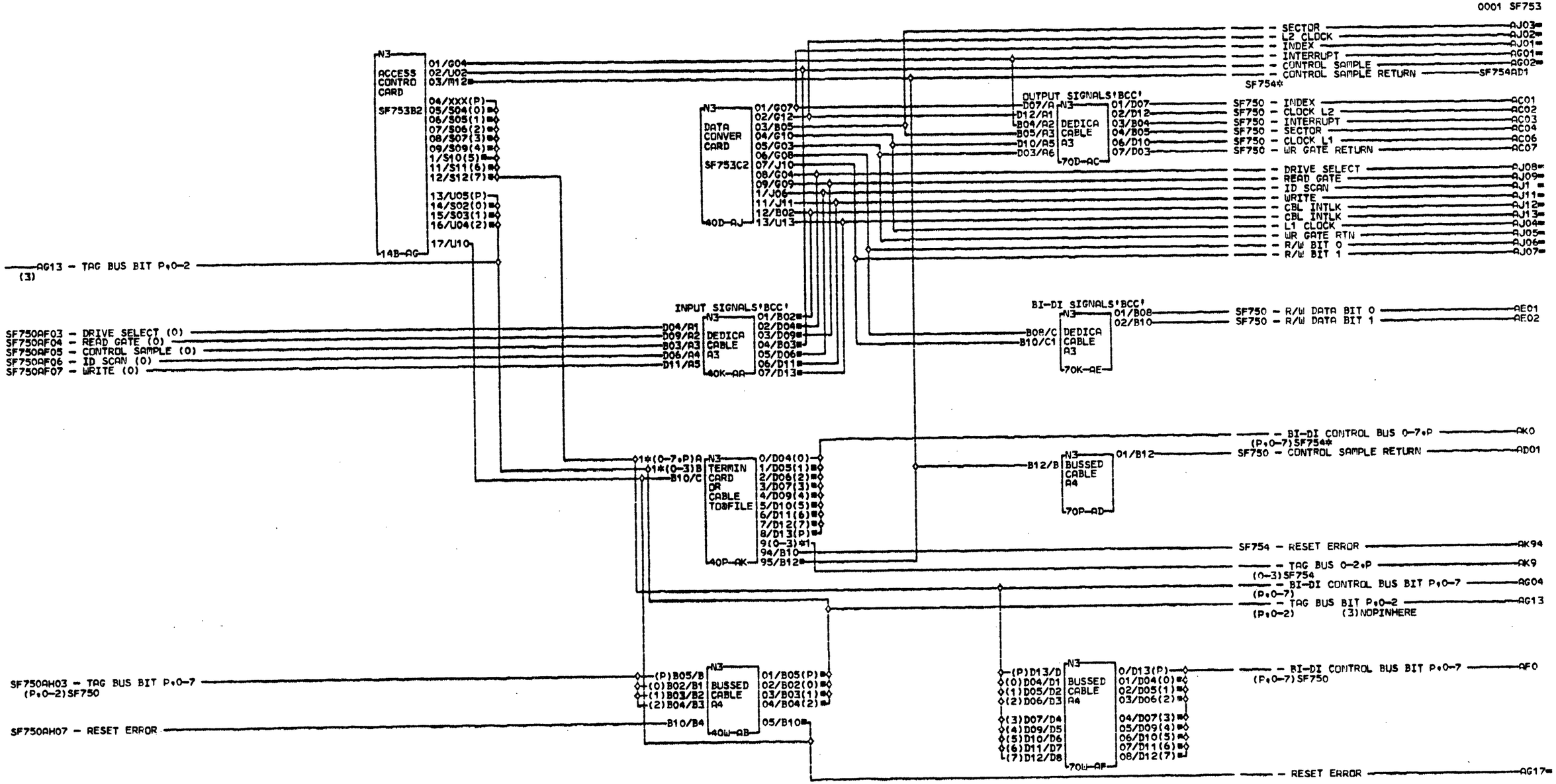
LOC=

USN 00001 PRI=13MAY83 0942

AUC= SEC
PFORM=KSFB NEXTALK All
MACH=BOCA
CID TBRVPC1 JOB SFSMART

SF752 0001

SF752 0001



	PINS	PINS
	AK	90/B02
	A0/D04	91/B03
	A1/D05	92/B04
	A2/D06	93/B05
	A3/D07	
	A4/D09	
	A5/D10	
S	A6/D11	
F	A7/D12	
7	A8/D13	
5	B0/B02	
3	B1/B03	
	B2/B04	
0001	B3/B05	

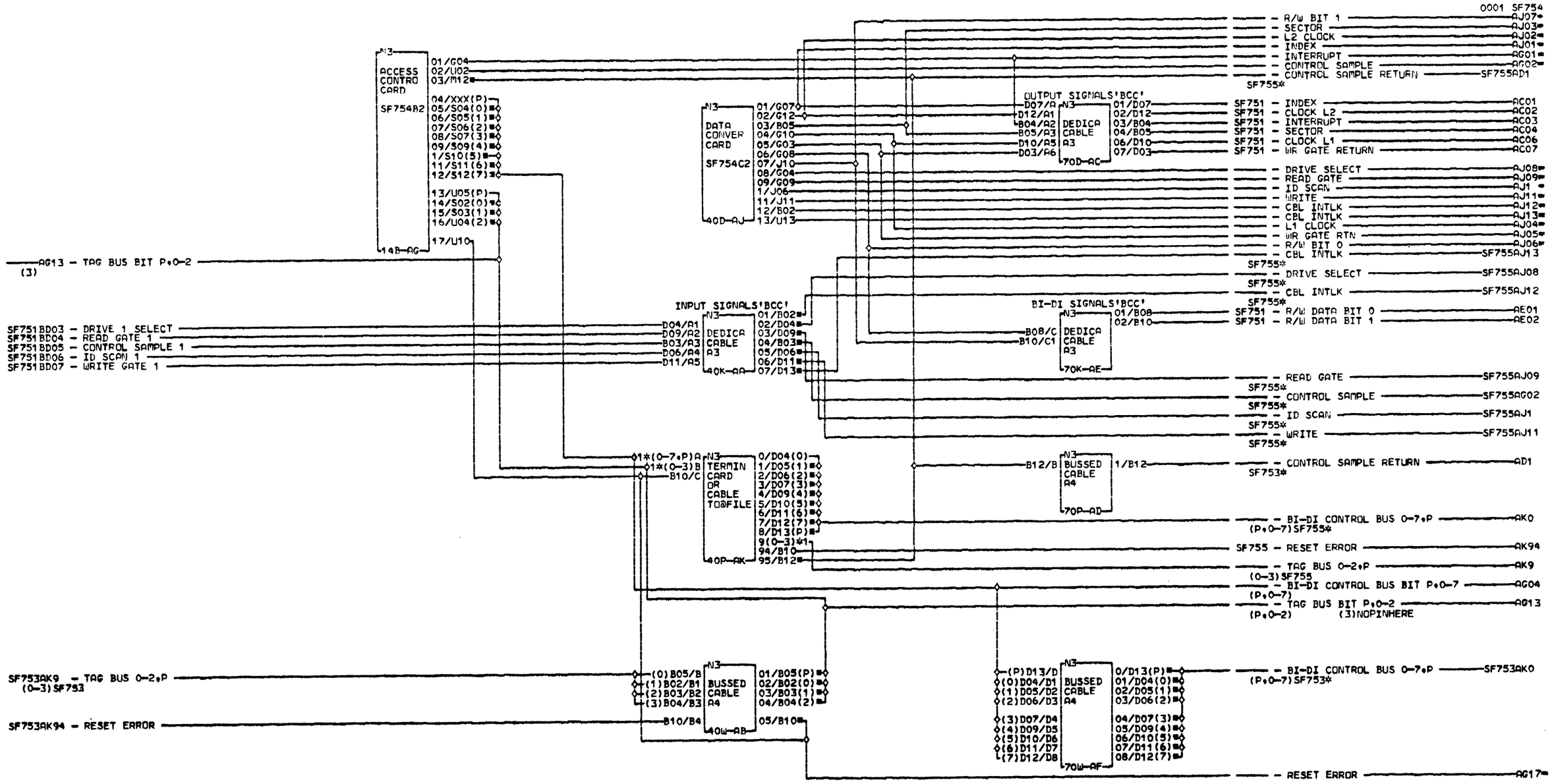
STAR FILE 0
STAR FILE
DATE 5-12-83 EFC 329889
P,N,4750125 E,C,A03075

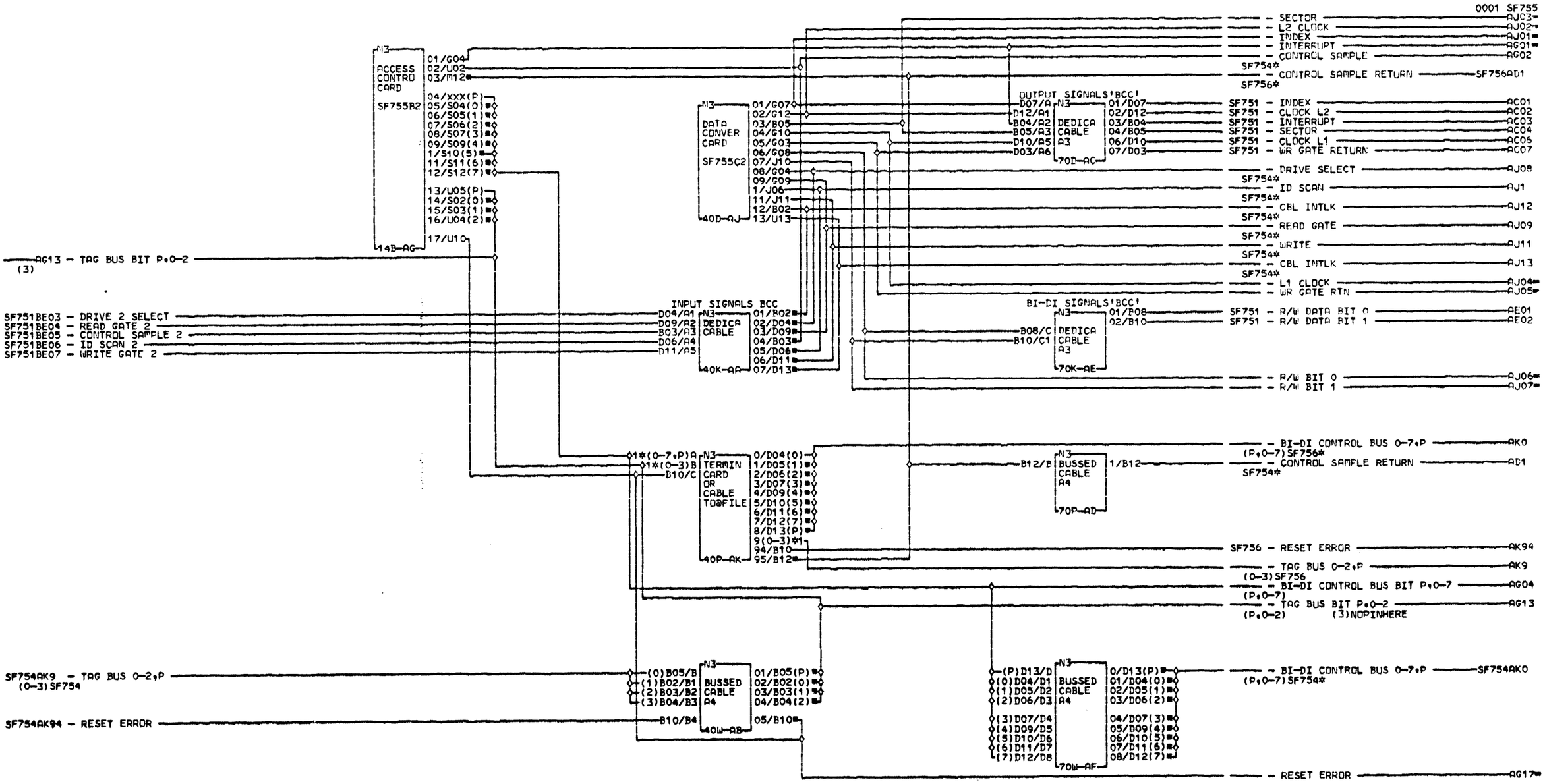
LOC=

USN 00001 PRI=13MAY83 0942

AUC= SEC
DFORM=KSFB NEXTBLK AL
MACH=BOCA
CID TBRVPC1 JNB SFSMART

S F 7 5 3 0001


0001 SF754
ACCESS CONTRO CARD
SF754A2
N3
01/G04
02/U02
03/M12
04/XXX(P)
05/S04(0)
06/S05(1)
07/S06(2)
08/S07(3)
09/S09(4)
1/S10(5)
11/S11(6)
12/S12(7)
13/U05(P)
14/S02(0)
15/S03(1)
16/U04(2)
17/U10
14B-AG
AG13 - TAG BUS BIT P.0-2
(3)
DATA CONVER CARD
SF754C2
01/G07
02/G12
03/B05
04/G10
05/G03
06/G08
07/J10
08/G04
09/G09
1/J06
11/J11
12/B02
13/U13
40D-AJ
OUTPUT SIGNALS'BCC'
D07/A1
D12/A1
B04/A2
B05/A3
D10/A5
D03/A6
DEDICA CABLE A3
70D-AC
01/D07
02/D12
03/B04
04/B05
06/D10
07/D03
SF751 - INDEX AC01
SF751 - CLOCK L2 AC02
SF751 - INTERRUPT AC03
SF751 - SECTOR AC04
SF751 - CLOCK L1 AC06
SF751 - WR GATE RETURN AC07
- R/W BIT 1 AJ07
- SECTOR AJ03
- L2 CLOCK AJ02
- INDEX AJ01
- INTERRUPT AG01
- CONTROL SAMPLE AG02
- CONTROL SAMPLE RETURN SF755AD1
SF755*
- DRIVE SELECT AJ08
- READ GATE AJ09
- ID SCAN AJ1
- WRITE AJ11
- CBL INTLK AJ12
- CBL INTLK AJ13
- L1 CLOCK AJ04
- WR GATE RTN AJ05
- R/W BIT 0 AJ06
- CBL INTLK SF755AJ13
SF755* - DRIVE SELECT SF755AJ08
SF755* - CBL INTLK SF755AJ12
SF751BD03 - DRIVE 1 SELECT
SF751BD04 - READ GATE 1
SF751BD05 - CONTROL SAMPLE 1
SF751BD06 - ID SCAN 1
SF751BD07 - WRITE GATE 1
INPUT SIGNALS'BCC'
D04/A1
D09/A2
B03/A3
D06/A4
D11/A5
DEDICA CABLE A3
40K-AA
01/B02
02/D04
03/D09
04/B03
05/D06
06/D11
07/D13
BI-DI SIGNALS'BCC'
B08/C
B10/C1
DEDICA CABLE A3
70K-AE
01/B08
02/B10
SF751 - R/W DATA BIT 0 AE01
SF751 - R/W DATA BIT 1 AE02
- READ GATE SF755AJ09
SF755* - CONTROL SAMPLE SF755AG02
SF755* - ID SCAN SF755AJ1
SF755* - WRITE SF755AJ11
SF755*
1*(0-7.P)A
1*(0-3)B
B10/C
TERMIN CARD OR CABLE TO@FILE
40P-AK
0/D04(0)
1/D05(1)
2/D06(2)
3/D07(3)
4/D09(4)
5/D10(5)
6/D11(6)
7/D12(7)
8/D13(P)
9(0-3)*1
94/B10
95/B12
B12/B
BUSSED CABLE A4
70P-AD
1/B12
- CONTROL SAMPLE RETURN AD1
SF753*
- BI-DI CONTROL BUS 0-7.P AK0
(P.0-7)SF755*
SF755 - RESET ERROR AK94
- TAG BUS 0-2.P AK9
(0-3)SF755
- BI-DI CONTROL BUS BIT P.0-7 AG04
(P.0-7)
- TAG BUS BIT P.0-2 AG13
(P.0-2) (3)NOPINHERE
SF753AK9 - TAG BUS 0-2.P
(0-3)SF753
SF753AK94 - RESET ERROR
(0)B05/B
(1)B02/B1
(2)B03/B2
(3)B04/B3
B10/B4
BUSSED CABLE A4
40W-AB
01/B05(P)
02/B02(0)
03/B03(1)
04/B04(2)
05/B10
(P)D13/D
(0)D04/D1
(1)D05/D2
(2)D06/D3
(3)D07/D4
(4)D09/D5
(5)D10/D6
(6)D11/D7
(7)D12/D8
BUSSED CABLE A4
70W-AF
0/D13(P)
01/D04(0)
02/D05(1)
03/D06(2)
04/D07(3)
05/D09(4)
06/D10(5)
07/D11(6)
08/D12(7)
- BI-DI CONTROL BUS 0-7.P SF753AK0
(P.0-7)SF753*
- RESET ERROR AG17
PINS AK
A0/D04
A1/D05
A2/D06
A3/D07
A4/D09
A5/D10
A6/D11
A7/D12
A8/D13
B0/B02
B1/B03
B2/B04
B3/B05
PINS
90/B02
91/B03
92/B04
93/B05
S
#
7
5
4
0001
STAR FILE 1
STAR FILE
DATE 5-12-83 PFC 329A89
P.N.4750126 E.C.A03075
LOC=
USN 00001
PRI=13MAY83 0942
ALIC=
SEC
PFORM=KSFB
NEXTBLK AL
MACH=BDCA
CID TBRVPC1
JOB SFSMART
S
F
7
5
4
0001



	PINS	PINS
	AK	90/B02
	A0/D04	91/B03
	A1/D05	92/B04
	A2/D06	93/B05
	A3/D07	
	A4/D09	
	A5/D10	
S	A6/D11	
F	A7/D12	
7	A8/D13	
5	B0/B02	
5	B1/B03	
	B2/B04	
0001	B3/B05	

STAR FILE 2

DATE 5-12-83 PFC 329889
P.N.4750127 E.C.A03075

LOC=

USN 00001 PRI=13MAY83 0942

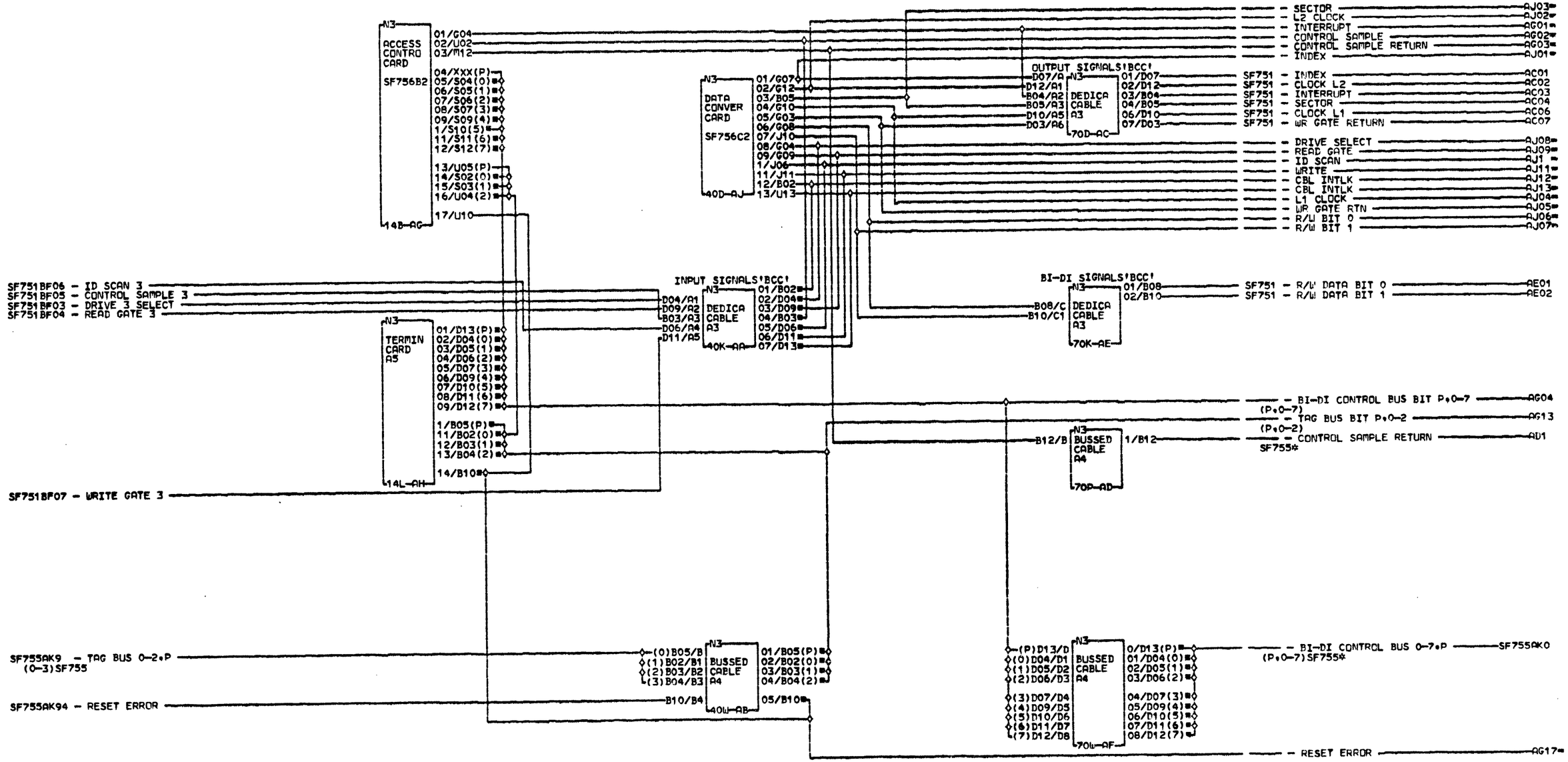
AUC= SEC

PFORM=KSFB NEXTBLK AL

MACH=BOCA

CID TBRVPC1 JOB SFSMART

5 F 7 5 5 0001



STAR FILE 3

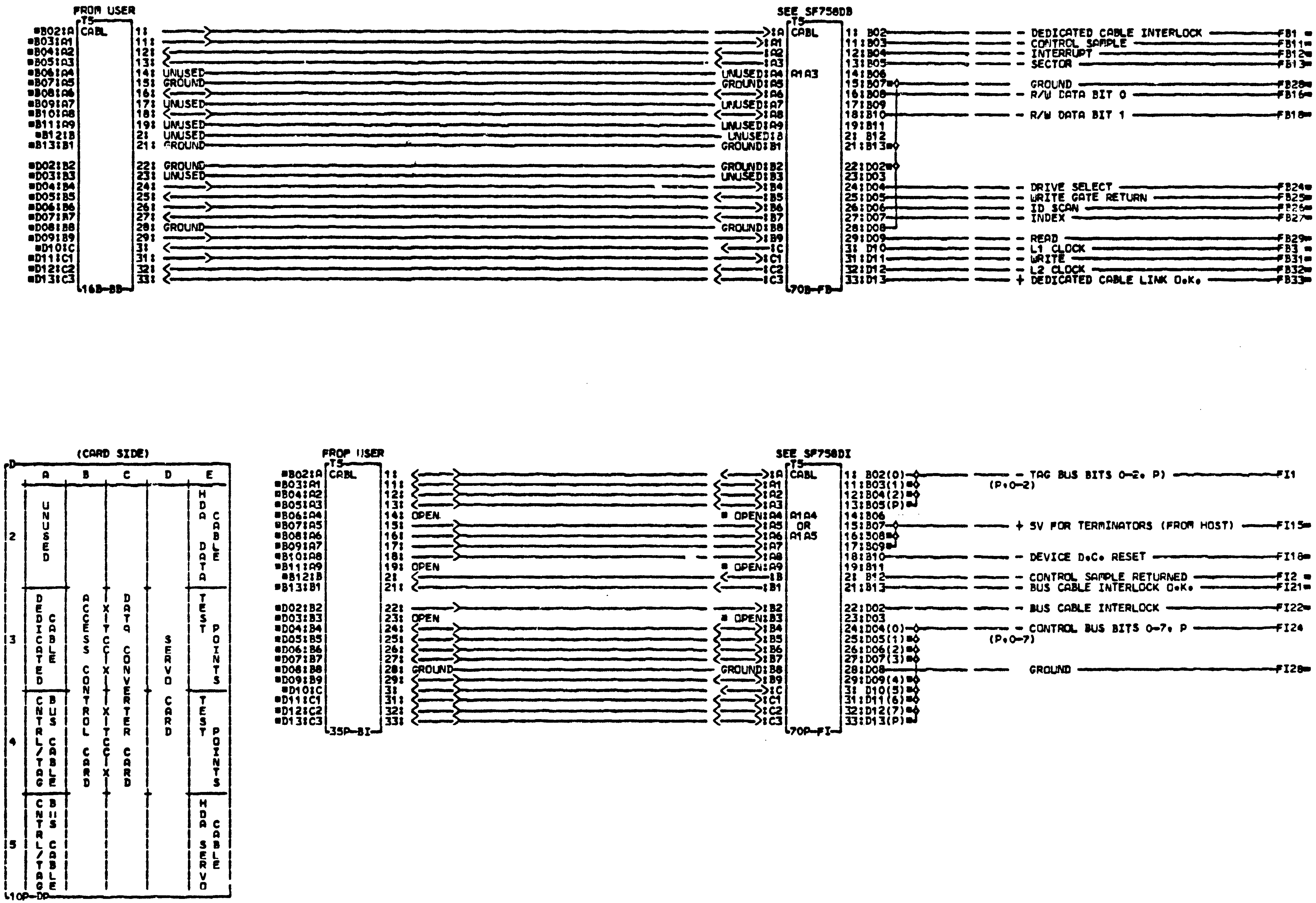
DATE %-12-83 PFC 329AA9
P.N.4750128 E.C.A03075

LOC=

USN 00001 PRI=13MAY83 0942

AUC= SEC
PFORM=KSFB NEXTBLK AK
MACH=BOCC
CID TBRVPC1 JOB SFSMART

0001



DEDICATED & CONTROL/TAG CABLES
P/N 4750140 E.C. 329889
DATE: 20SEPT82 SHEET 1 OF 1

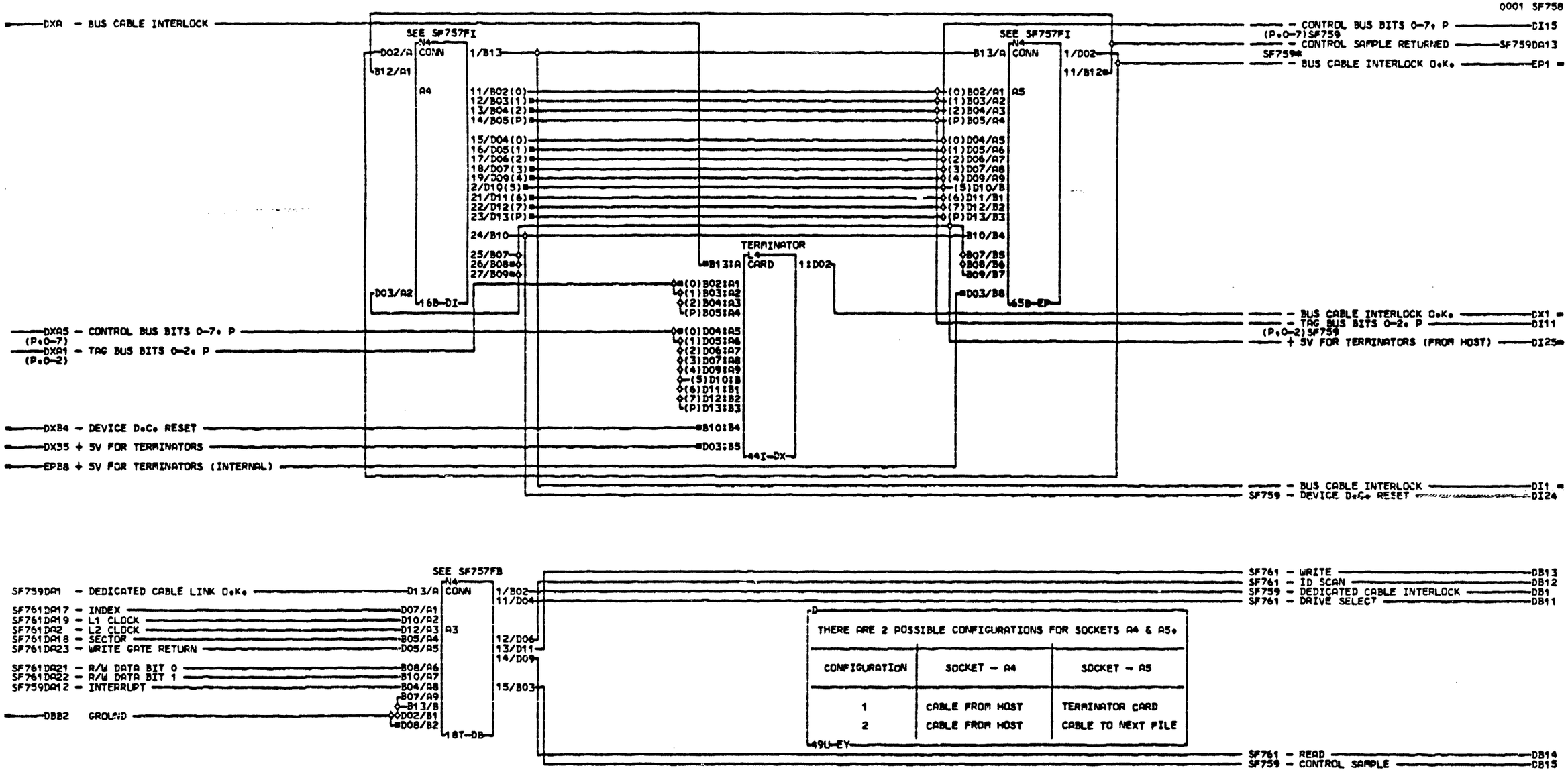
LOC=1A-

ISN 00001 PRI=04NOV82 0813

AUC= SEC
PFORM=KSFR NEXTBLK F.I
MACH=BOCA
CID TRAVPB1 JOB STAR

S
F
7
5
7

S
F
7
5
7



DEDICATED & CNTRL/TAG CONNECTORS
P/N 4750141 E,C, 329889
DATE: 20SEP82 SHEET 1 OF 1

LOC=1A-A1

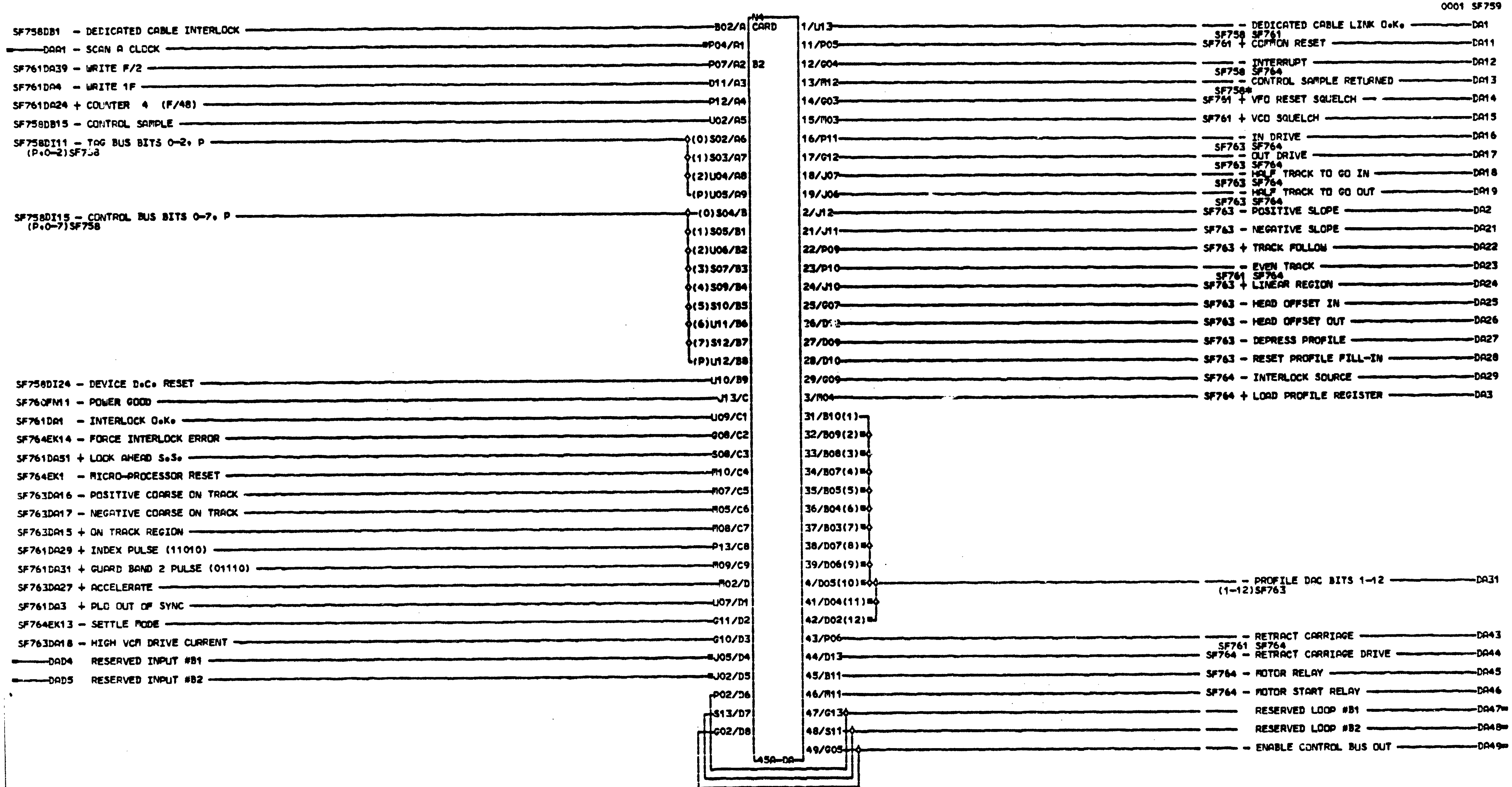
USN 00001 PRI=04NOV82 0813

ALC=
PROM=
MACH=ROCA
CID TARVDA1

SEC
NEXTFILE ??
JOB STAR

5
F
7
5
8

0001



COMMENTS
A1 REQUIRED VOLTAGES FOR CARD
2+5V = D03 J03 P03 U03
3GND = D08 J08 P08 U08

S F 7 5 9

0001

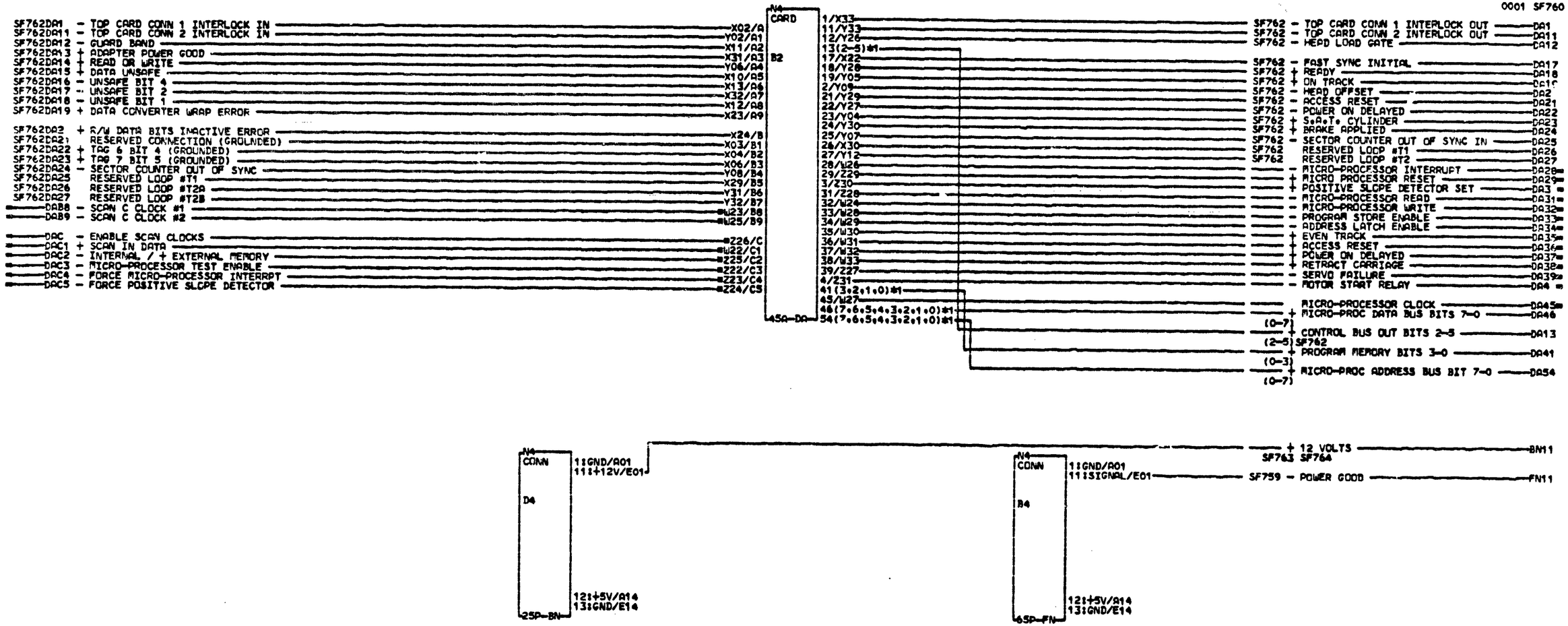
ACCESS CONTROL CARD
P/N 4750142 E.C. 329889
DATE: 20SEPT82 SHEET 1 OF 1

LOC=1A-A1

USN 00001 PRI=04NOV82 0813

AUC= SEC
PFORM=KSFB NEXTALK DR
MACH=BOCA
CID TARVPA1 JOB STAR

S F 7 5 9



	PINS DA	PINS
	13/Y24	52/Z03
	14/Y23	53/Z02
	15/Y22	54/W09
	16/Y25	55/W08
	41/W13	56/W07
	42/W12	57/W06
S	43/W11	58/W05
F	44/W10	59/W04
7	46/Z09	60/W03
6	47/Z08	61/W02
0	48/Z07	
	49/Z06	
0001	50/Z05	

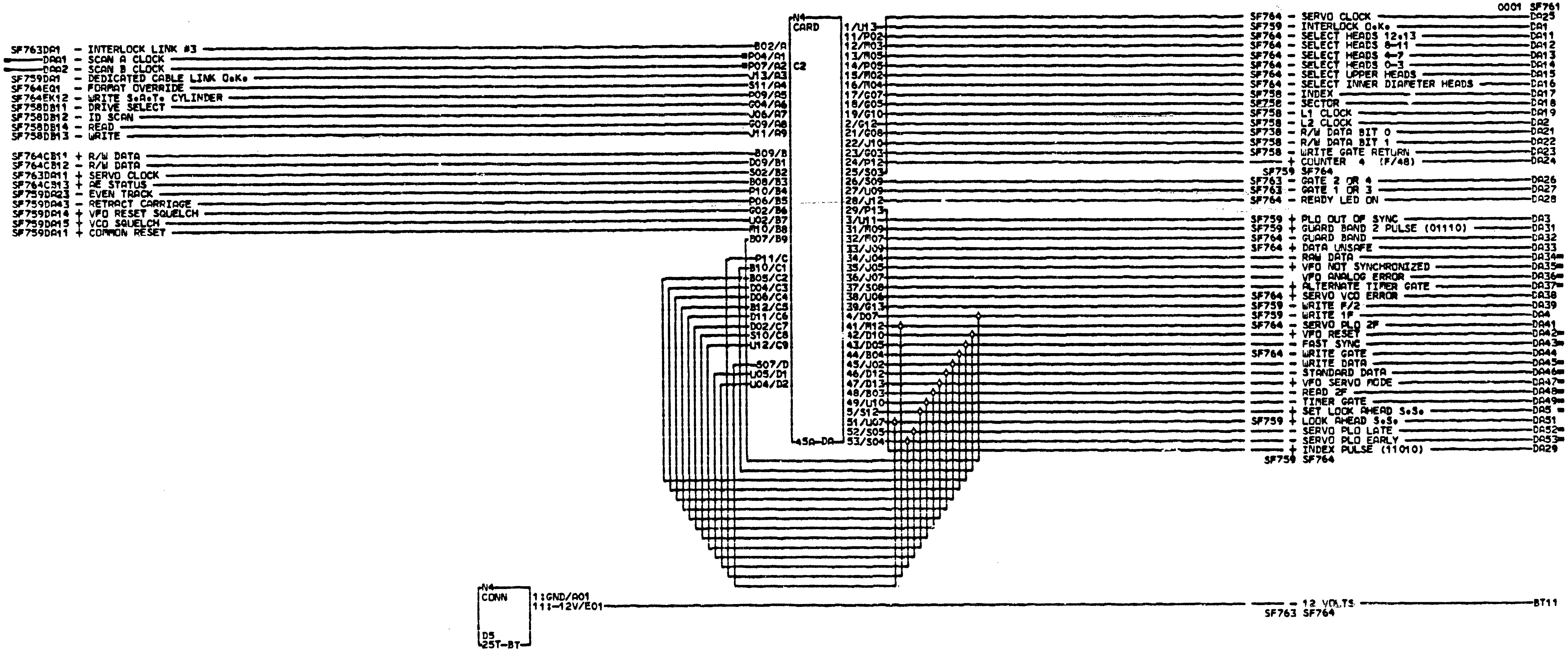
ACCESS CONTROL CARD (TCC)
P/N 4750143 E.C. 329889
DATE: 20SEP82 SHEET 1 OF 1

LOC=1A-A1

LSN 00001 PRI=04NOV82 0813

QUC= SEC
DFORM=KSFR NEXTBLK FD
MACH=BOCA
CTD TRRVP81 JOB STOR

0001



COMMENTS

A1REQUIRED VOLTAGES FOR CARD
2+5V = D03 J03 P03 U03
3GND = D0A J08 P08 U08
4-5V = B06 S06

S
F
7
6
1

0001

DATA CONVERTER CARD
P/N 4750144 E.C. 329889
DATE: 20SEPT82 SHEET 1 OF 1

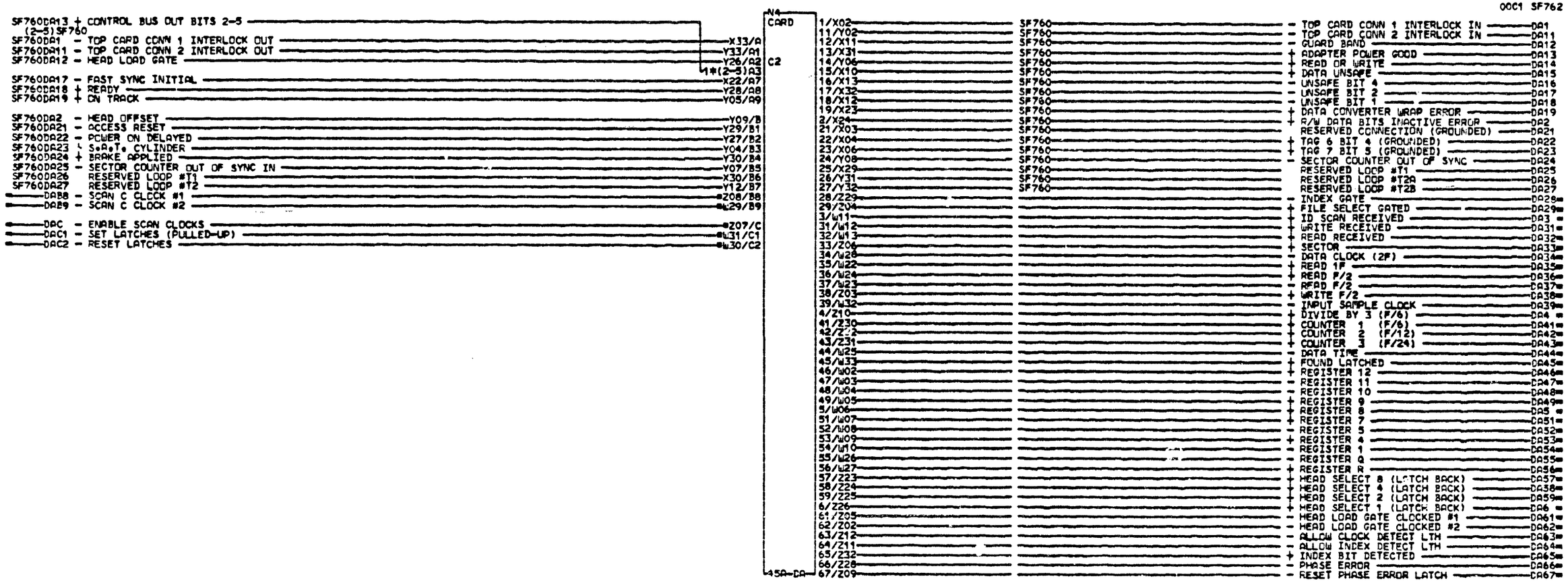
LOC=1A-A1

USN 00001 PRI=04NOV82 0813

AUC= SFC
PFORM=KSFB NEXTALK 0A
MACH=AUCA
CID TARVPB1 JOB STAR

S
F
7
6
1

0000



PINS
DA
A3/Y24
A4/Y23
A5/Y22
A6/Y25

SF762
0001

DATA CONVERTER CARD (TCC)
P/N 4750145 ECo 329889
DATE 20SEPT82 SHEET 1 OF 1

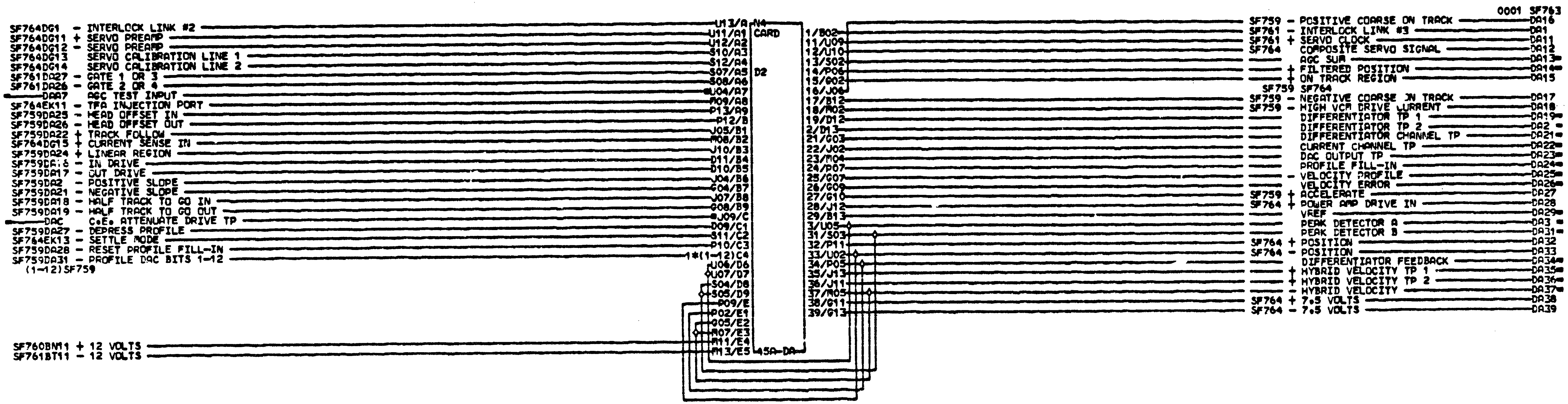
LOC=1A-A1

USN 00001 PRI=04NOV82 0A13

QUC=
DFAR#=KSFR
MACH=ROCA
CID TARVPB1

SFC
NEXTBLK DA
JOB STAR

SF762
0001



COMMENTS

A1 REQUIRED VOLTAGES FOR CARD:
2 +5V = D03 J03 P03 U03
3 GND = D08 J08 P08 U08
4 -5V = B06 G06 M06 S06
5 +12V = M11
6 -12V = M13
7 VOLTAGES GENERATED ON CARD:
8 +7.5V = G11
9 -7.5V = G13

PINS
DA
C4/B10
C5/B09
C6/B08
C7/B07
C8/B05
C9/B04
D0/B03
D1/D07
D2/D06
D3/D05
D4/D04
D5/D02

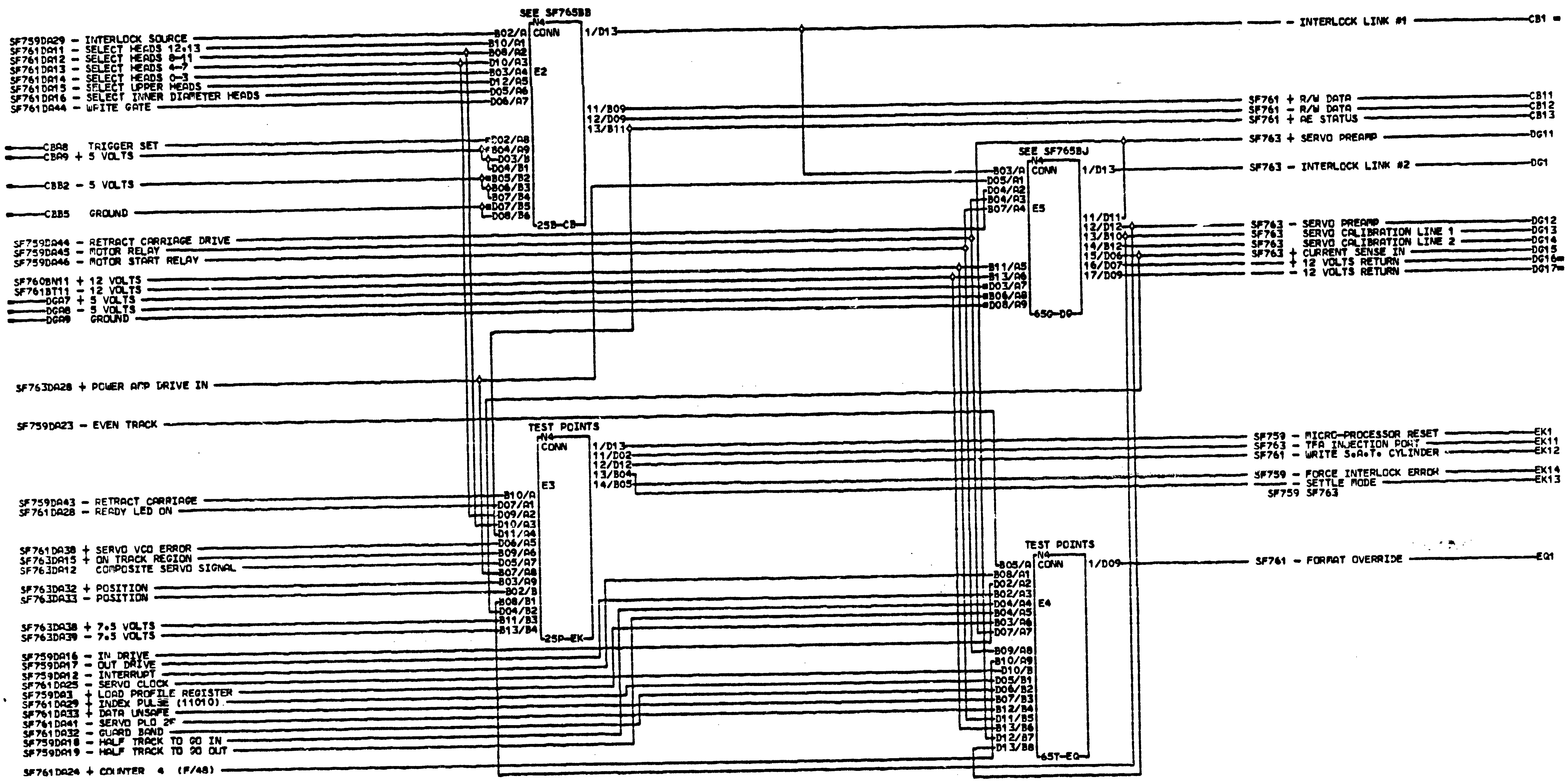
S F 7 6 3
0001

SERVO CARD
P/N 4750146 E.C. 329889
DATE: 20SEPT82 SHEET 1 OF 1

LOC=1A-A1
USN 00001 PRI=04NOV82 0813

ALIC= SEC
PFORM=KSFA NEXTBLK DB
MACH=BOCA
CID TARVPA1 JOB STAR

S F 7 6 3
0001



COMMENTS

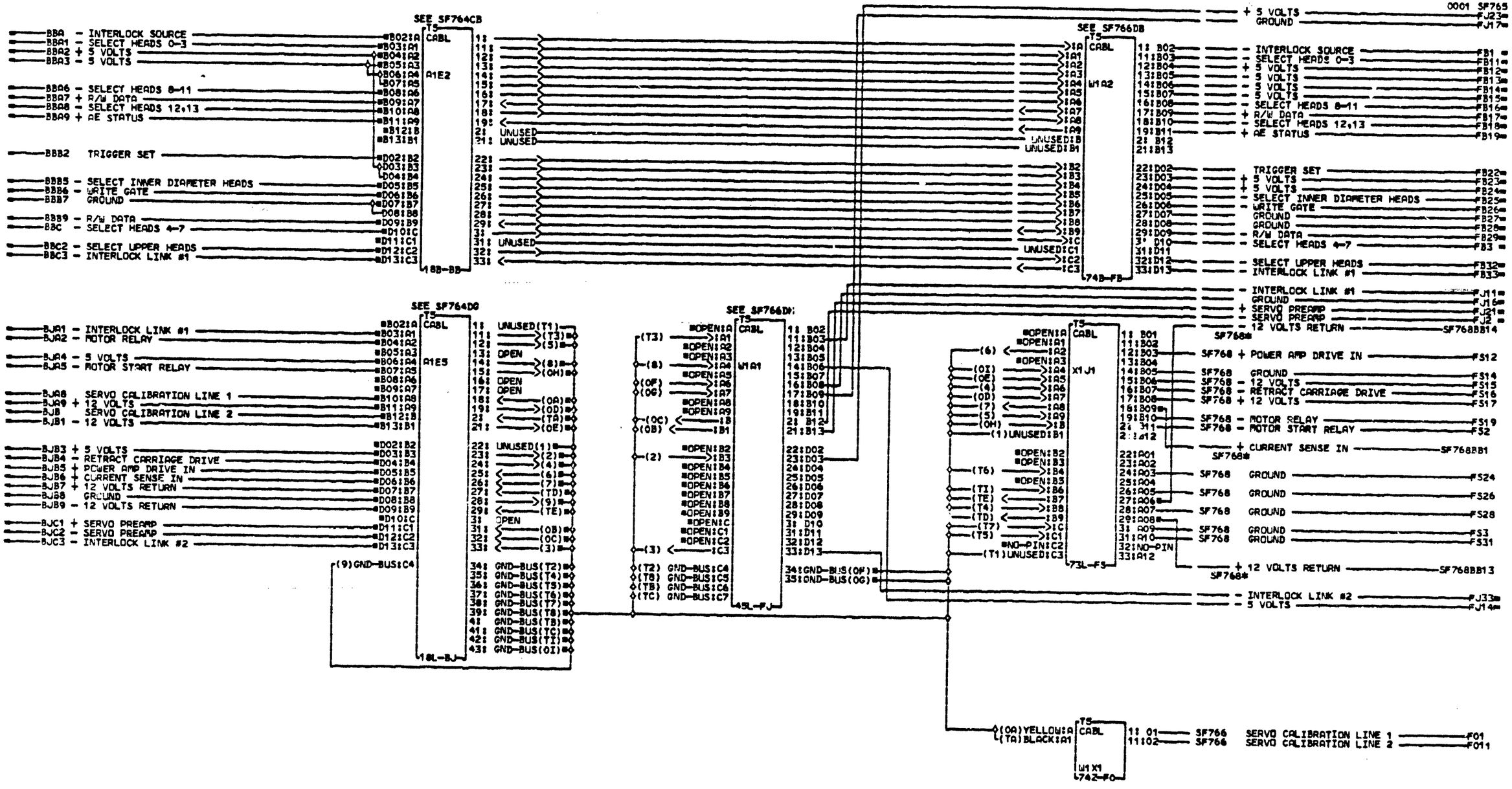
A1E2 = HDA DATA CONNECTOR
2E3 / E4 = TEST POINTS
3E5 = HDA SERVO CONNECTOR

BOARD CONNECTORS & TEST POINTS
P/N 4750147 E.C. 329889
DATE: 20SEPT82 SHEET 1 OF 1

LOC=1A-A1

USN 00001 PRI=04NOV82 0813

AUC= SEC
PFORM=KSFA NEXTBLK ER
MACH=BOCA
CID TRAVPA1 JOB STAR

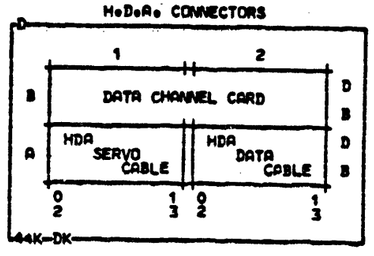

SEE SF764CB
SEE SF764DB
SEE SF764D0
SEE SF766D0
BBA - INTERLOCK SOURCE
BBA1 - SELECT HEADS 0-3
BBA2 + 5 VOLTS
BBA3 - 5 VOLTS
BBA6 - SELECT HEADS 8-11
BBA7 + R/W DATA
BBA8 - SELECT HEADS 12,13
BBA9 + AE STATUS
BBB2 TRIGGER SET
BBB5 - SELECT INNER DIAMETER HEADS
BBB6 - WRITE GATE
BBB7 GROUND
BBB9 - R/W DATA
BBC - SELECT HEADS 4-7
BBC2 - SELECT UPPER HEADS
BBC3 - INTERLOCK LINK #1
A1E2
18B-BB
74B-FB
+ 5 VOLTS
GROUND
- INTERLOCK SOURCE
- SELECT HEADS 0-3
+ 5 VOLTS
- 5 VOLTS
- 5 VOLTS
- SELECT HEADS 8-11
+ R/W DATA
- SELECT HEADS 12,13
+ AE STATUS
TRIGGER SET
+ 5 VOLTS
+ 5 VOLTS
- SELECT INNER DIAMETER HEADS
- WRITE GATE
GROUND
GROUND
- R/W DATA
- SELECT HEADS 4-7
- SELECT UPPER HEADS
- INTERLOCK LINK #1
- INTERLOCK LINK #1
GROUND
+ SERVO PREAMP
- SERVO PREAMP
- 12 VOLTS RETURN
BJA1 - INTERLOCK LINK #1
BJA2 - MOTOR RELAY
BJA4 - 5 VOLTS
BJA5 - MOTOR START RELAY
BJA8 SERVO CALIBRATION LINE 1
BJA9 + 12 VOLTS
BJB SERVO CALIBRATION LINE 2
BJB1 - 12 VOLTS
BJB3 + 5 VOLTS
BJB4 - RETRACT CARRIAGE DRIVE
BJB5 + POWER AMP DRIVE IN
BJB6 + CURRENT SENSE IN
BJB7 + 12 VOLTS RETURN
BJB8 GROUND
BJB9 - 12 VOLTS RETURN
BJC1 + SERVO PREAMP
BJC2 - SERVO PREAMP
BJC3 - INTERLOCK LINK #2
A1E5
18L-BJ
45L-FJ
W1A1
W1A2
X1J1
73L-FS
W1 X1
74Z-FO
SF768 + POWER AMP DRIVE IN
SF768 GROUND
SF768 - 12 VOLTS
SF768 - RETRACT CARRIAGE DRIVE
SF768 + 12 VOLTS
SF768 - MOTOR RELAY
SF768 - MOTOR START RELAY
+ CURRENT SENSE IN
SF768 GROUND
SF768 GROUND
SF768 GROUND
SF768 GROUND
SF768 GROUND
+ 12 VOLTS RETURN
- INTERLOCK LINK #2
+ 5 VOLTS
SERVO CALIBRATION LINE 1
SERVO CALIBRATION LINE 2
HDA DATA & SERVO CABLES
P/N 4750148 F.C. 329889
DATE: 20SEPT82 SHEET 1 OF 1
LOC=1A=
USN 00001 PRI=04NOV82 0813
QUC=
SEC
PROM=KSER
MACH=BOCA
CTD TARVP81
JOB STAR

SF767DA1 - INTERLOCK LINK #1 — D13/A
SF767DA13 + R/W DATA — B09/A1
SF767DA14 - R/W DATA — D09/A2
SF767DB12 + AE STATUS — B11/A3

SEE SF765FB
N4
CONN
A2
45B-DB

1/B02 — SF767 - INTERLOCK SOURCE — DB1
11/B10 — SF767 - SELECT HEADS 12,13 — DB11
12/B08 — SF767 - SELECT HEADS 8-11 — DB12
13/D10 — SF767 - SELECT HEADS 4-7 — DB13
14/B03 — SF767 - SELECT HEADS 0-3 — DB14
15/D12 — SF767 - SELECT UPPER HEADS — DB15
16/D05 — SF767 - SELECT INNER DIAMETER HEADS — DB16
17/D06 — SF767 - WRITE GATE — DB17
18/D02 — SF767 TRIGGER SET — DB18
19/B04
2/D03
21/D04 — SF767 + 5 VOLTS — DB19
22/B05
23/B06 — SF767 - 5 VOLTS — DB22
24/B07
25/D07 — SF767 GROUND — DB25
26/D08

HeDeAe CONNECTORS



DHA - INTERLOCK LINK #2 — D13/A
SF767DM1 + SERVO PREAMP — B13/A1
SF767DM11 - SERVO PREAMP — B12/A2

SEE SF765FJ
NK
CONN
A1
45T-DH

1/B03 — - INTERLOCK LINK #1 — DH1
11/D03 — SF767 + 5 VOLTS — DH11
12/B06 — SF767 - 5 VOLTS — DH12
13/B08 — SF767 GROUND — DH13
14/B09

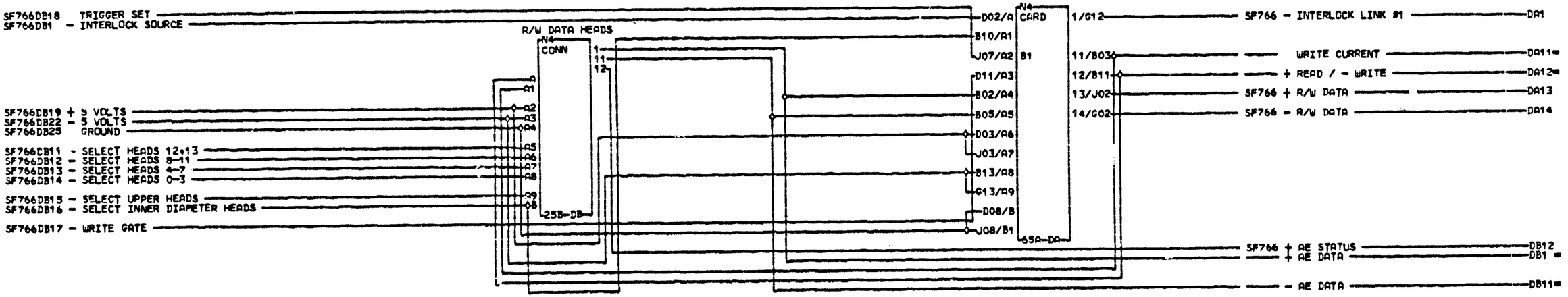
SF765F01 SERVO CALIBRATION LINE 1 — 01 /YELLOW:A
SF765F011 SERVO CALIBRATION LINE 2 — 02 /BLACK:A1

RES TRIMMER
N4
CONN
X1
45Z-D2

HDA DATA & SERVO CONNECTORS
P/N 4750149 E S. 329889
DATE: 20SEPT82 SHEET 1 OF 1

LOC=1A-W1
USN 00001 PRI=04NOV82 0813
AIC= SFC
PFORM=KSFB NEXTBLK NO
MACH=BOCA
CID TARVPB1 JNB STAR

SF766 0001



HEAD SELECT TABLE

SIGNAL NAME	HEAD SELECTED 0 0 0 0 0 0 0 0 0 0 1 1 1 1 0 1 2 3 4 5 6 7 8 9 0 1 2 3
- SELECT HEADS 12,13	+ + + + + + + + + + + + - -
- SELECT HEADS 8-11	+ + + + + + + + - - - - + +
- SELECT HEADS 4-7	+ + + + - - - - + + + + + +
- SELECT HEADS 0-3	- - - - + + + + + + + + + +
- SELECT UPPER HEADS	+ + - - + + - - + + - - + +
- SELECT INNER DIAMETER HEADS	+ - + - + - + - + - + - + -

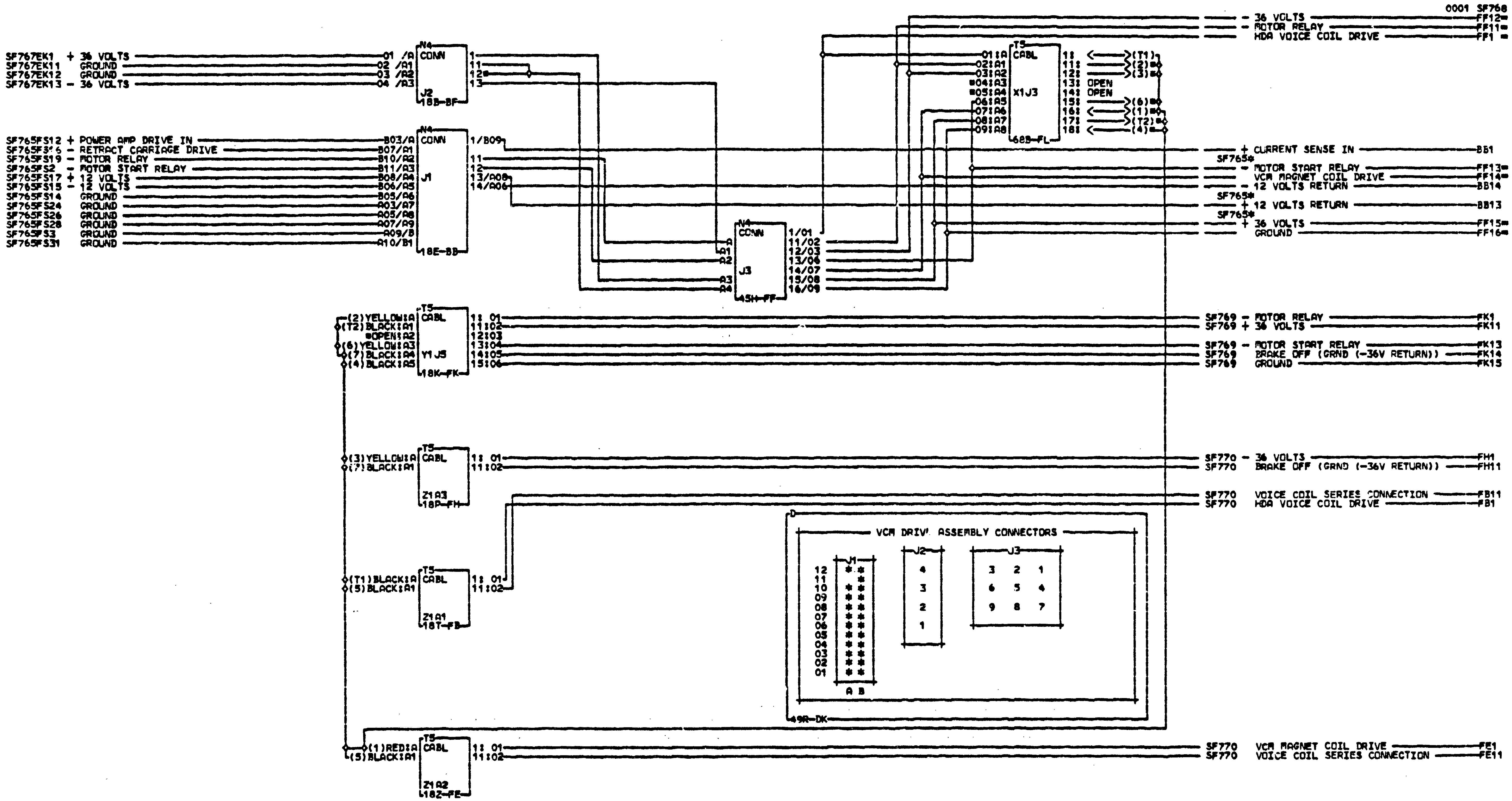
4AR-DH

DATA CHANNEL CARD
P/N 4750150 E.C. 329889
DATE: 20SEP82 SHEET 1 OF 1

LOC=1A-W1
USR: 00001 PRI=04NOV82 0813
ALIC=
PFNAM=KSFA
MACH=BOCA
CID T8RVP81
SEC
NEXTALK EL
JNR STAR

S F 7 6 7

0001



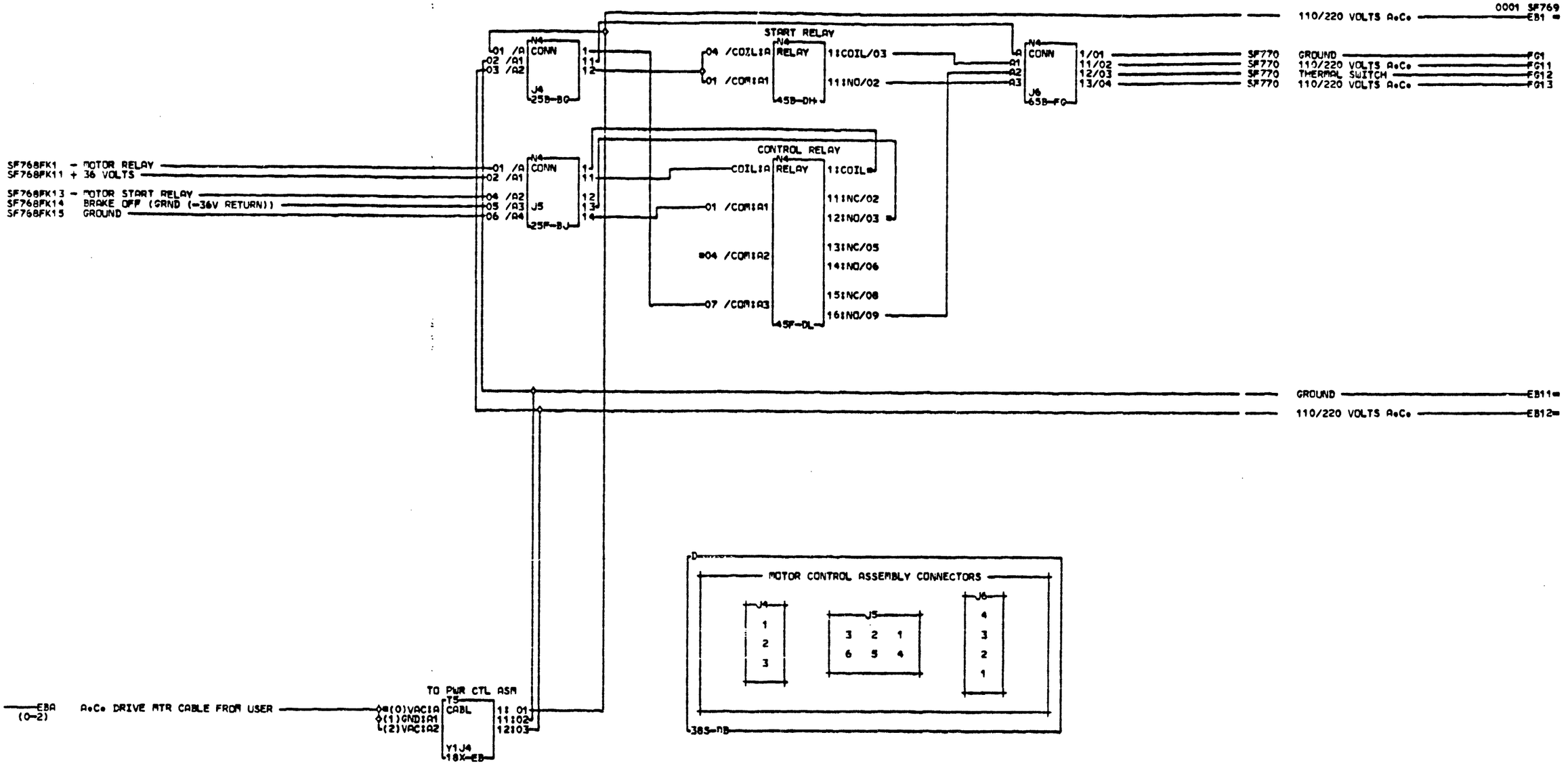
VCM DRIVE ASSEMBLY
P/N 4750151 E.C. 329889
DATE: 20SEPT8 SHEET 1 OF 1

LOC=1A-X1

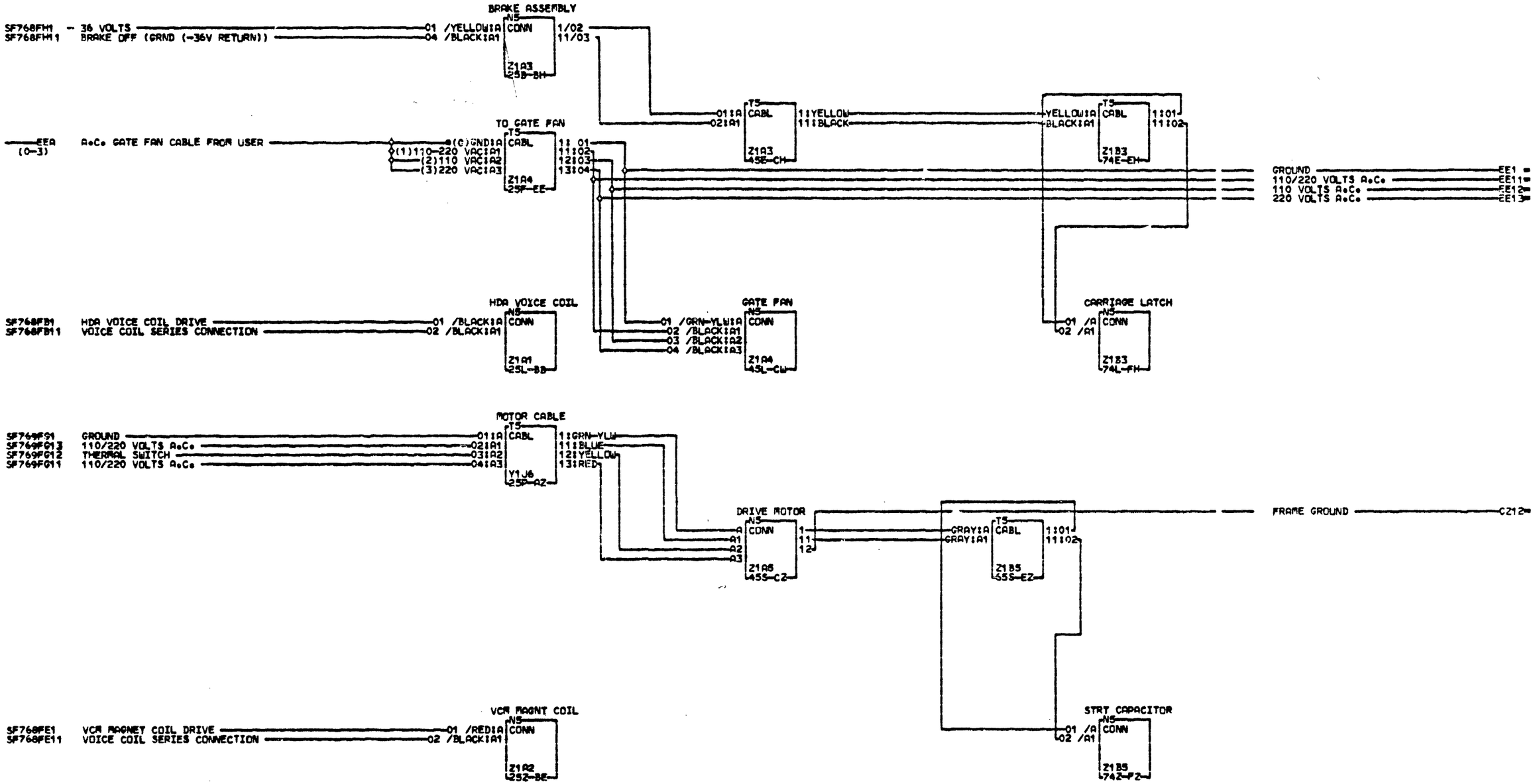
SGN 00001 PRI=04NOV82 0813

ALC= SEC
PFORM=KSFA NEXTBLK FR
MACH=
CID TRRVPB1 JOB STAR

SF768



MOTOR CONTROL ASSEMBLY	
P/N 4750152	E.C.O. 336688
DATE: 12JAN83	SHEET 1 OF 1
LOC=1A-Y1	
USN 00001	PRI=13JAN83 0850
AUC=	SEC
PFORM=KSFB	NEXTBLK FH
MACH=BOCA	
CID TBRVPC1	JOB SFSTAR



ELECTRO-MECHANICAL COMPONENTS
P/N 4750153 E.C. 329869
DATE: 20SEPT82 SHEET 1 OF 1

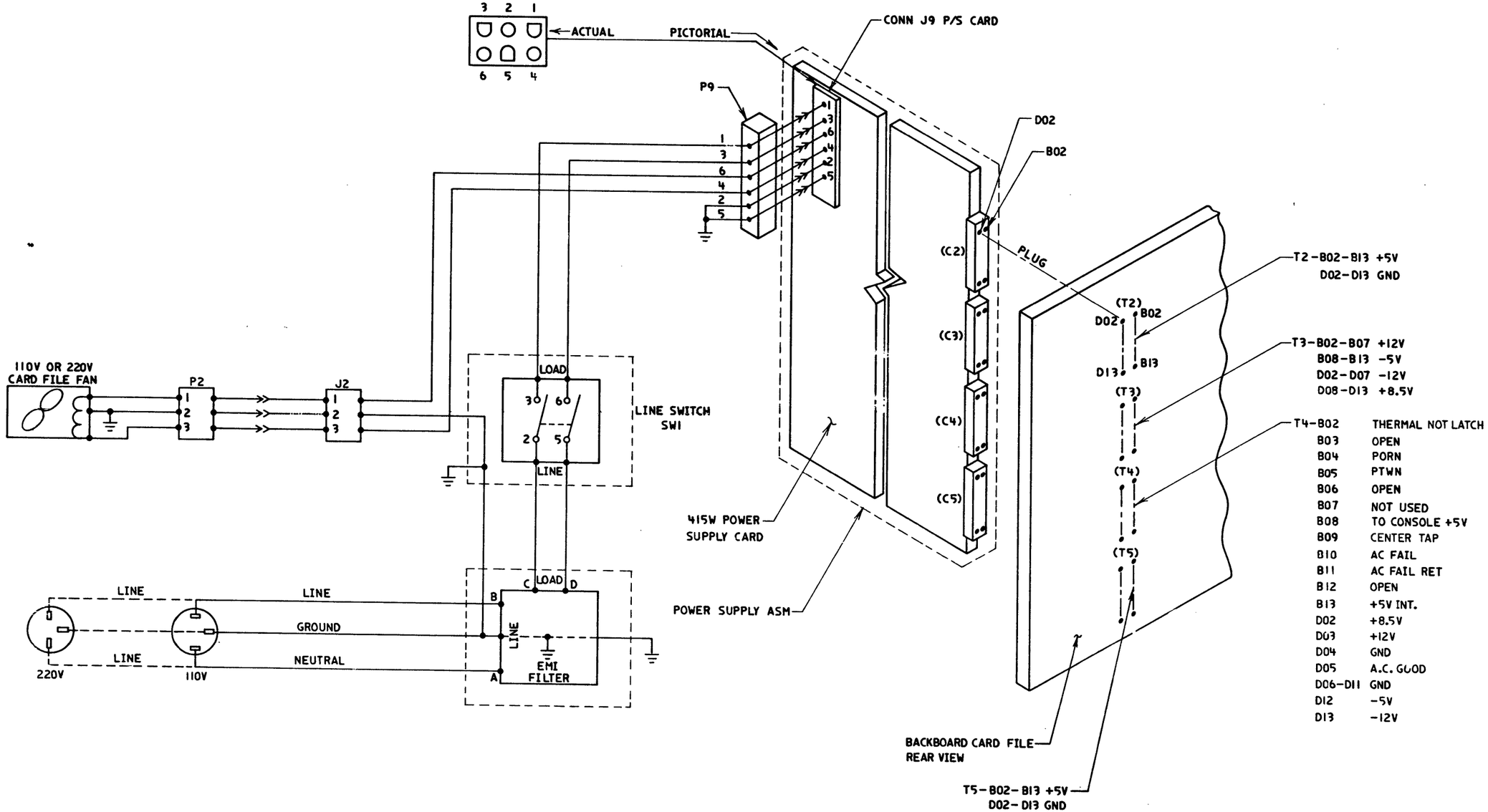
LOC=1A-

USA 00001 PRI=04NOV82 0813

AUC= SEC
PFORM=K&FB NEXTALK F0
ROOM=BOCA
CID TBRVPB1 JOB STAR

S F 7 7 0 0001

YA450

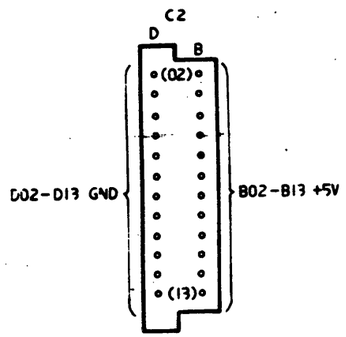


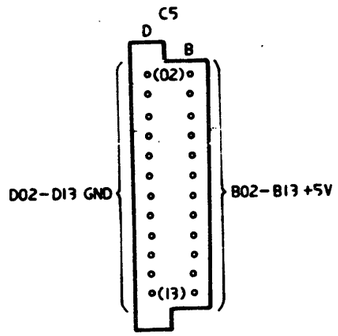
EC HISTORY		DRAWING TITLE
13AUG80	869341C	FULL FILE AC/DC DISTRIBUTION
28JUL 81	994400	MACH
		PART NO 6844420
		CLASSIFICATION

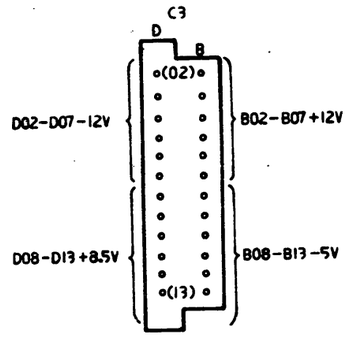
D

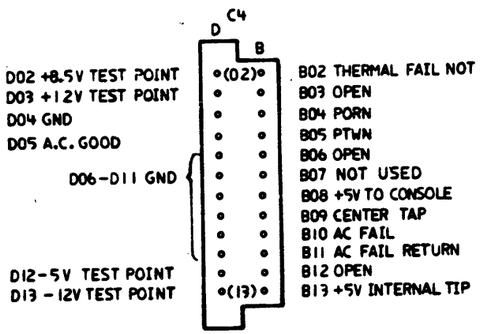
IBM CORP

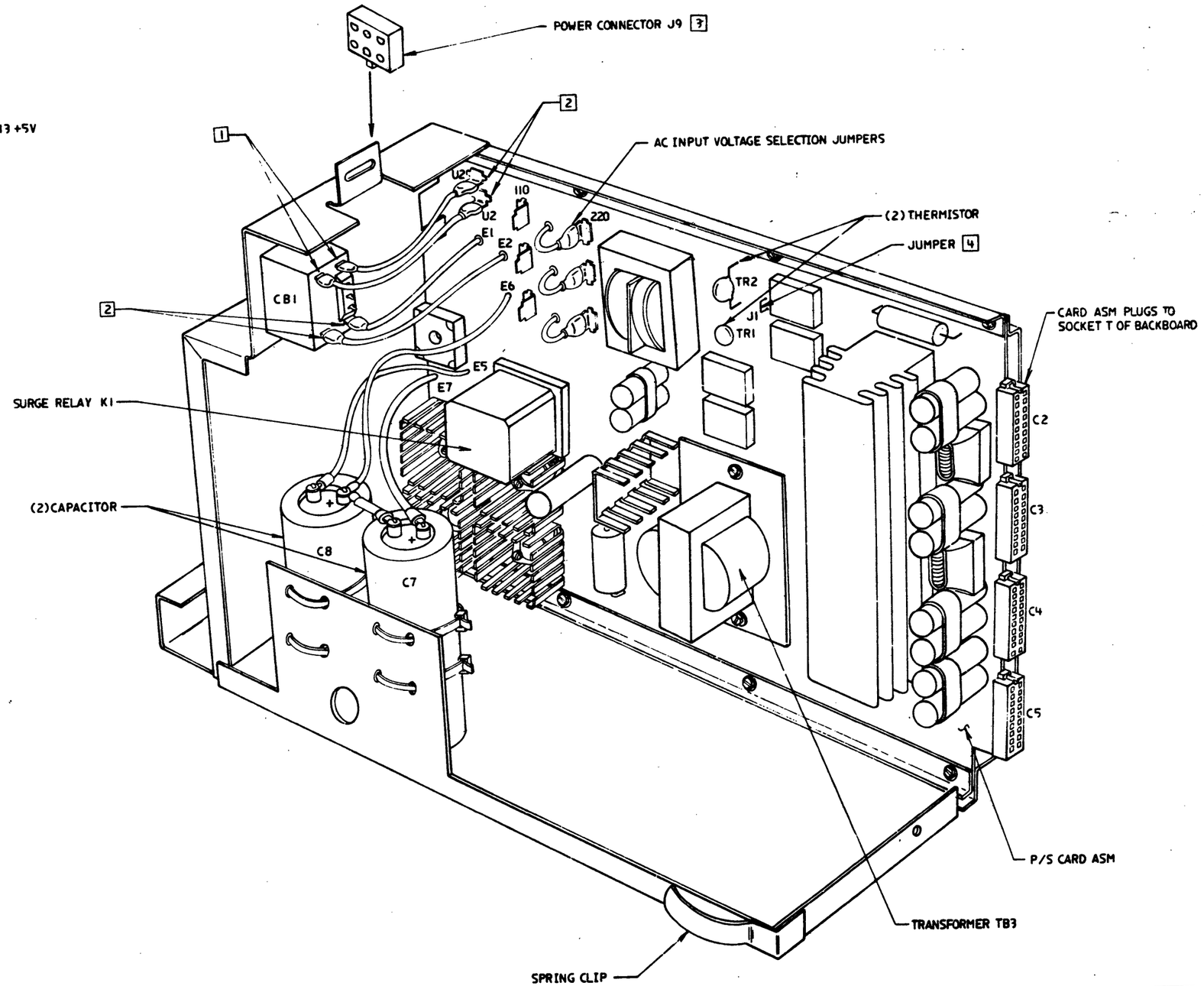
YA450











NOTES:

1. THESE LEADS ARE SOLDERED ONTO THE CIRCUIT BREAKER
2. SLIP-ON TERMINALS
3. POWER CONNECTOR J9 IS ON THE FRONT OF THE POWER SUPPLY CHASSIS
4. JUMPER (J1) MUST BE REMOVED IF A 4999 (BBU) IS INSTALLED IN SYSTEM

EC HISTORY		DRAWING TITLE
13 AUG 80	869341 C	POWER SUPPLY 415 WATT-PLUGGABLE
21 JAN 81	987893	MACH
28 JUL 81	994400	PART NO 6844421
14 OCT 86	A41059	CLASSIFICATION

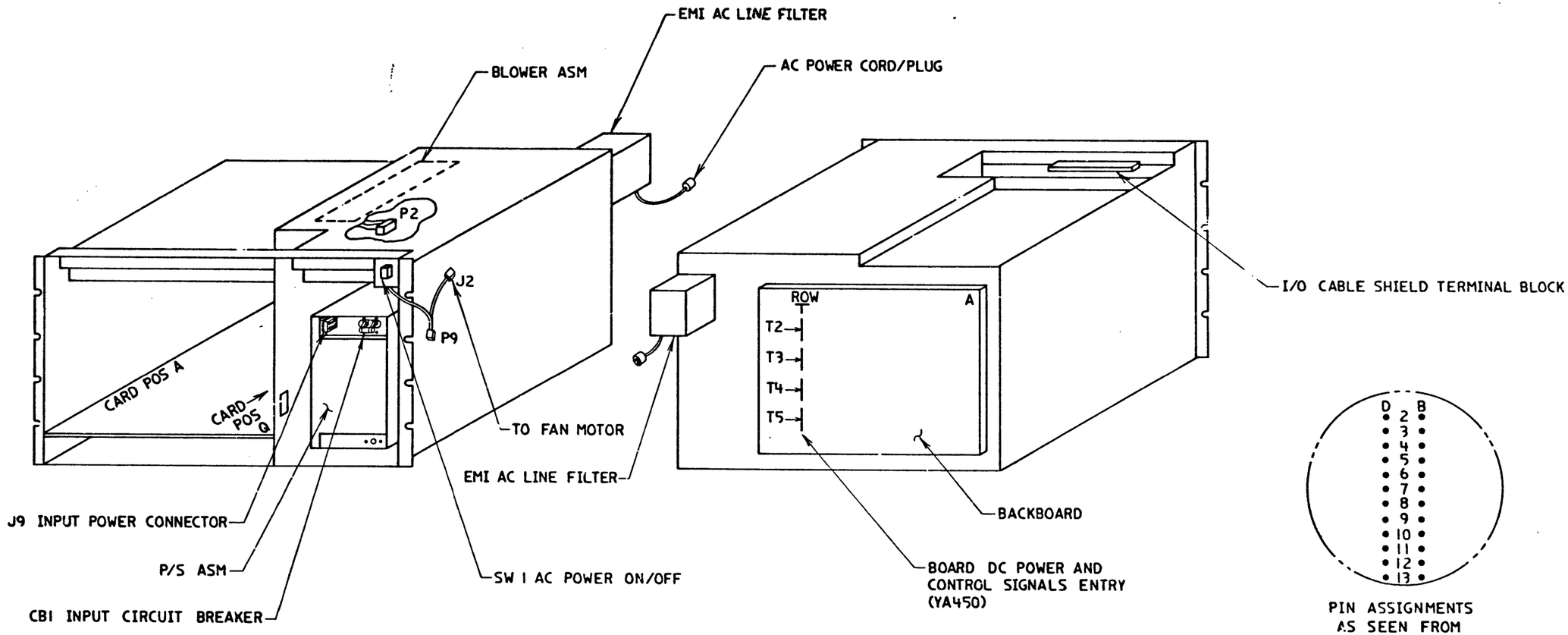
D

IBM CORP

Y455

Y455

YA460



PIN ASSIGNMENTS
AS SEEN FROM
BACKBOARD SIDE

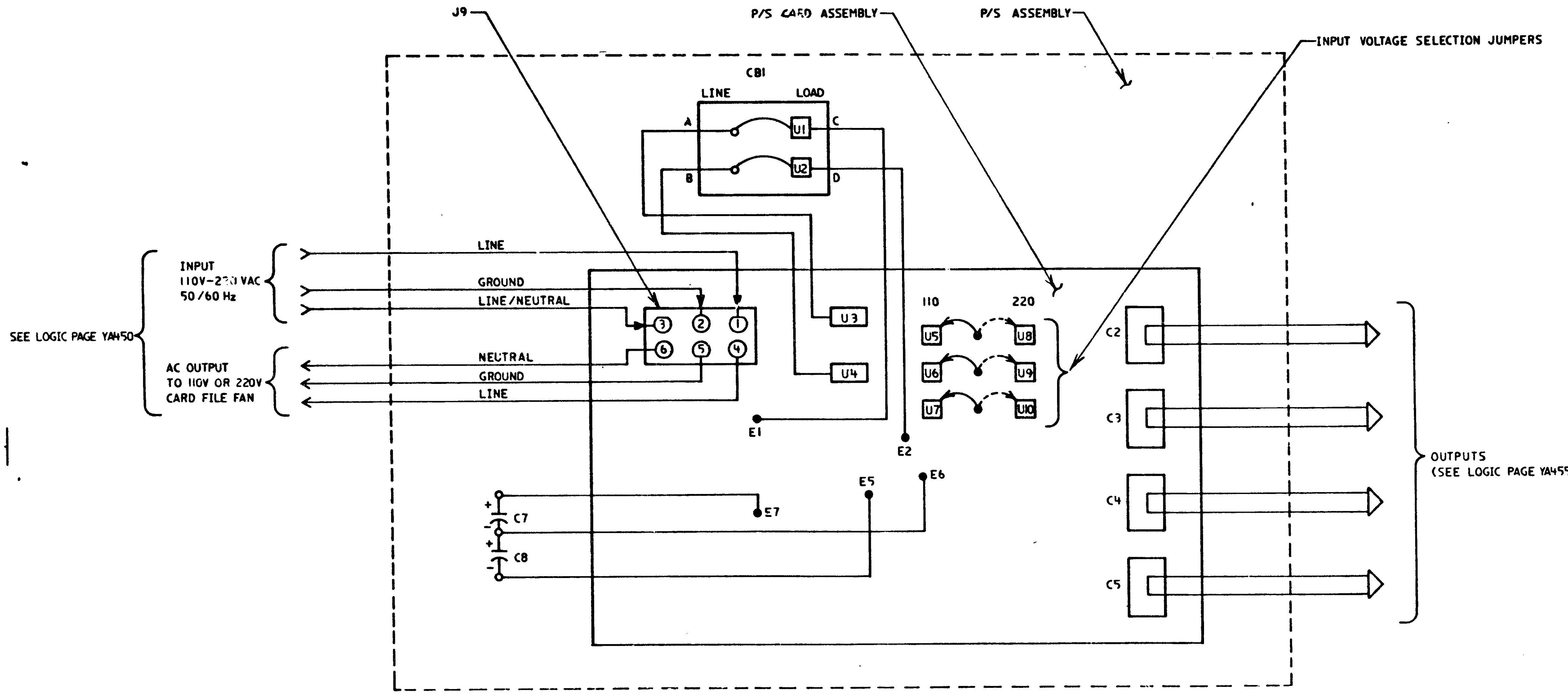
EC HISTORY		DRAWING TITLE
13 AUG 80	869341C	CARD FILE COMPONENT LOC
		MACH 415 W
		PART NO 6844422
		CLASSIFICATION

D

IBM CORP

YA460

YA465



NOTE: U2 CONNECTIONS ARE FOR SLIP-ON TERMINALS

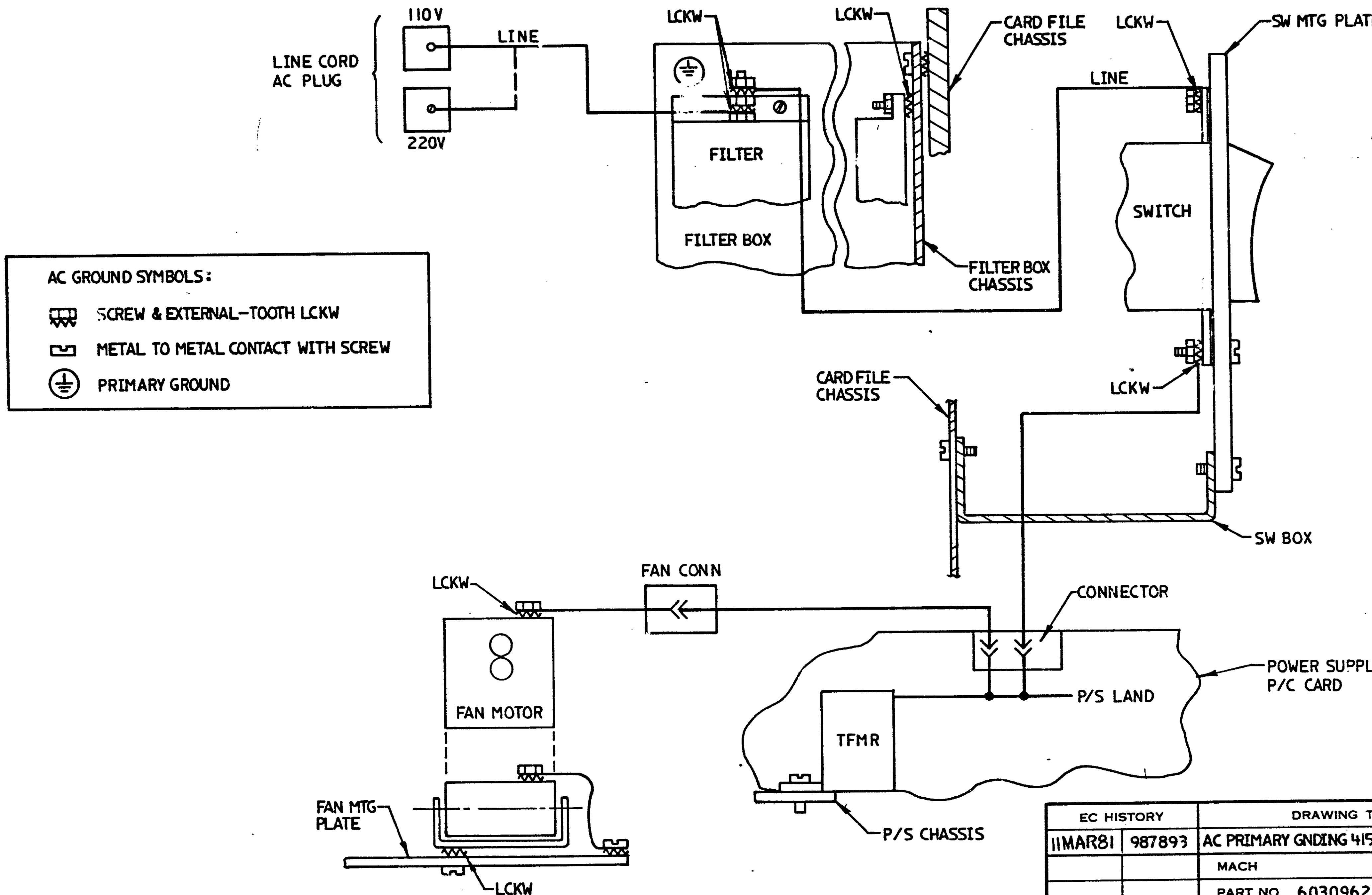
COMPONENTS	
SYM	DESCRIPTION
C7,C8	CAPACITOR, 2900 µF 200VDC
CB1	CIRCUIT BREAKER, 10A, 240VAC

YA465

EC HISTORY		DRAWING TITLE
	869341C	POWER SUPPLY SCHEMATIC
		MACH 415 W
		PART NO 6844423
C		CLASSIFICATION
		IBM CORP

YA465

YA470



EC HISTORY		DRAWING TITLE
11MAR81	987893	AC PRIMARY GNDING 415W HI FREQ. P/S
		MACH
		PART NO 6030962
C		CLASSIFICATION — IBM CORP

YA470

YA470