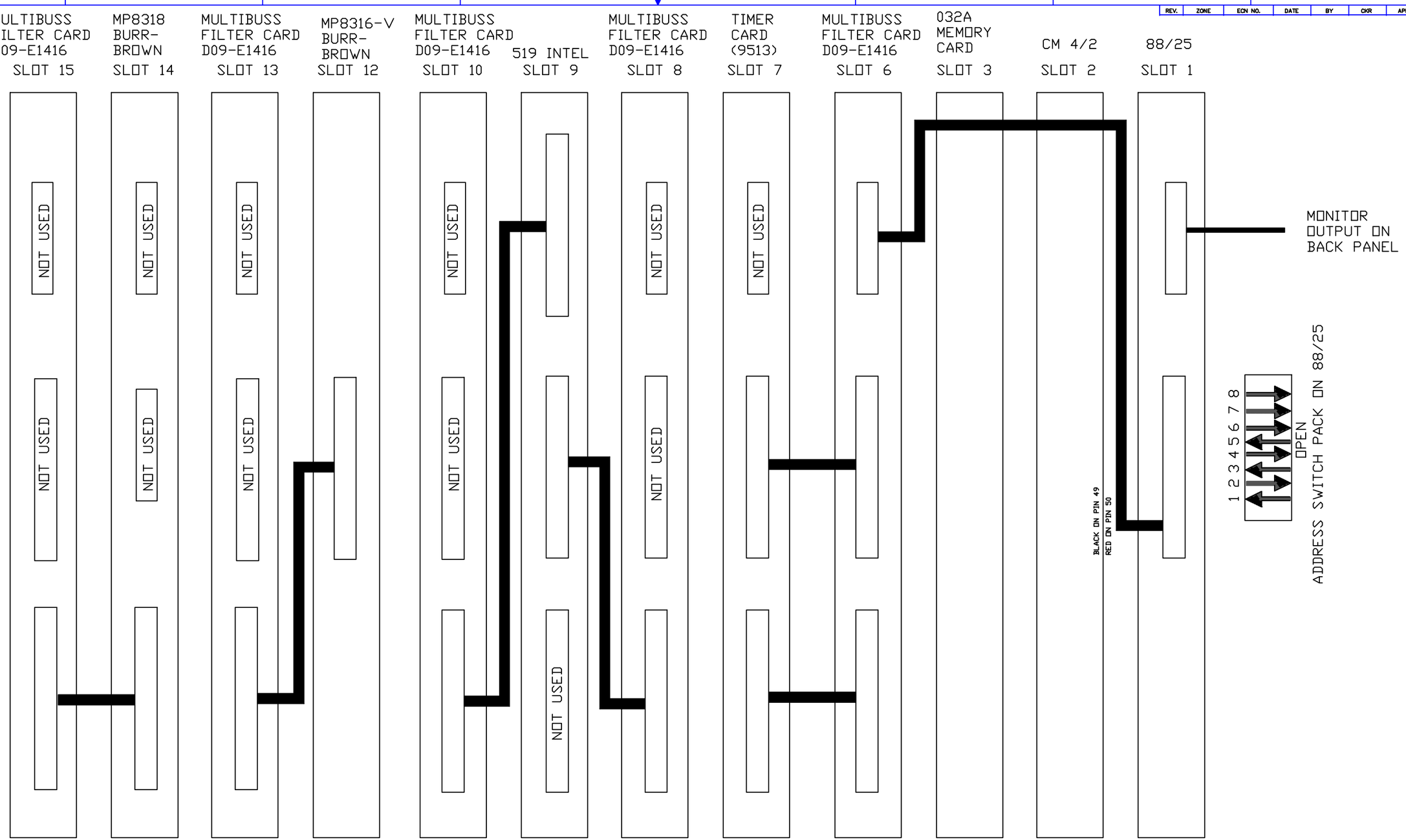


CONTROLS- 8/1/02 11:10 AM Tune_Meter_controller_top_cable.dwg

-3	-2	-1	REF DESIGNATOR	ITEM NO.	DESCRIPTION	MAT'L. DWG NO./SPEC. NO.
QTY REQD						

INTERPRET IN GENERAL ACCORDANCE WITH ASME Y14.24M-1989

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
DECIMAL TOLERANCES
.X ±.030
.XX ±.015
.XXX ±.005
ANGULAR TOLERANCE ± .5°

OUTSTANDING ECN

NA FINISH

BREAK SHARP EDGES MAX. XX MIN. XX

Q.A. CATEGORY A-3		DATE
DRAWN BY	JAPPE	8/1/02
CHECKED BY		
DESIGN APPROVAL		
ENGINEER APPROVAL		
SUPVR. APPROVAL		

NEXT ASSEMBLY

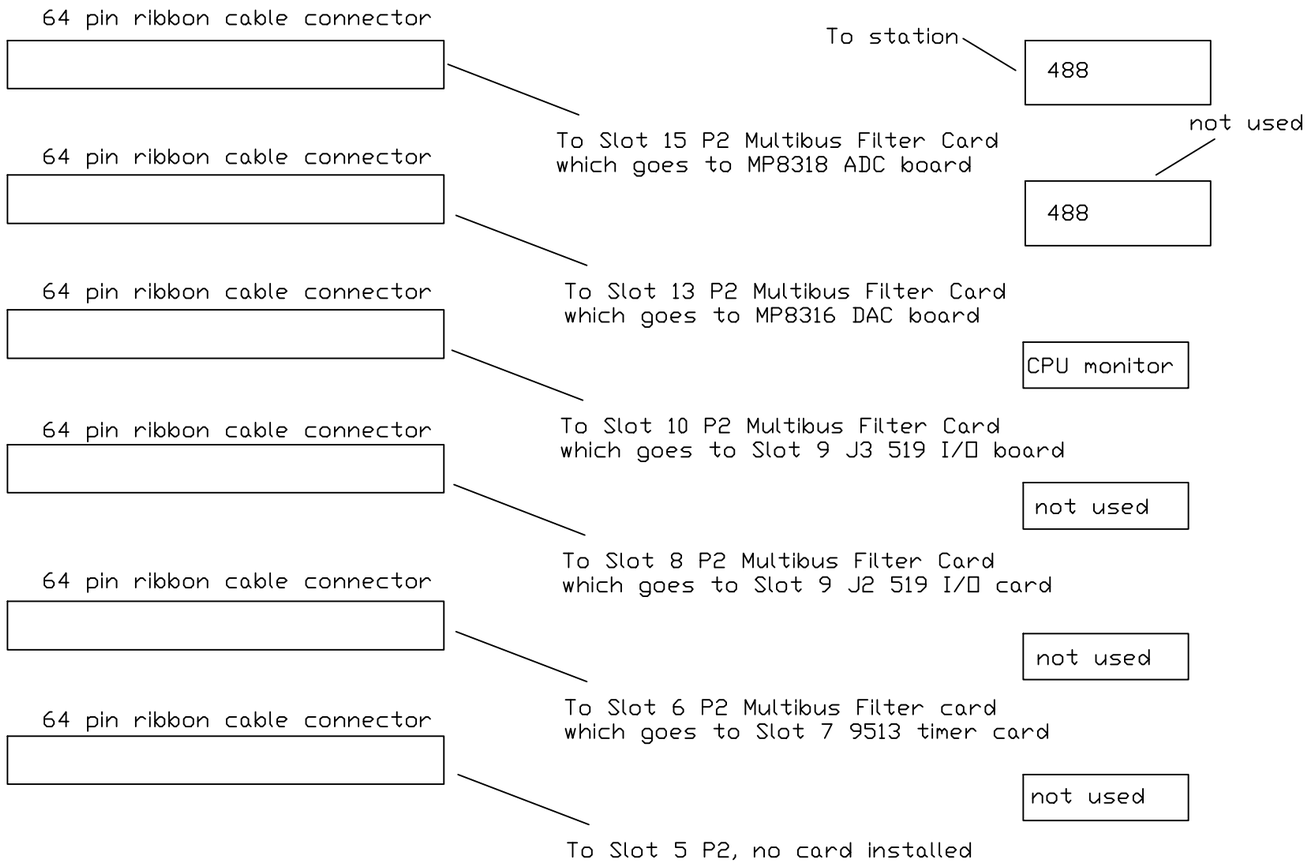
BROOKHAVEN NATIONAL LABORATORY
ASSOCIATED UNIVERSITIES, INC.
UPTON, N.Y. 11973

AGS CONTROLS WIRING DIAGRAM
AGS TUNE METER CONTROLLER
TOP CABLING DIAGRAM

SIZE D | DRAWING NUMBER | REV. A

MATERIAL: ——— SCALE: NA WEIGHT: – SHEET 4

*AUTOCAD



CONTROLS- 8/1/02 4:01 PM Tune_Meter_controller_back_panel.dwg

REV.	ZONE	ECN NO.	DATE	BY	CKR	APP.

-3	-2	-1	REF DESIGNATOR	ITEM NO.	DESCRIPTION	MAT'L DWG NO./DWG NO.
QTY REQD						

INTERPRET IN GENERAL ACCORDANCE WITH ASME Y14.24M-1989

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

DECIMAL TOLERANCES
.X ±.030
.XX ±.015
.XXX ±.005
ANGULAR TOLERANCE
± .5°

OUTSTANDING ECN

NA FINISH

BREAK SHARP EDGES
MAX. XX MIN. XX

Q.A. CATEGORY A-3

		DATE
DRAWN BY	JAPPE	8/1/02
CHECKED BY		
DESIGN APPROVAL		
ENGINEER APPROVAL		
SUPVR. APPROVAL		

NEXT ASSEMBLY

BROOKHAVEN NATIONAL LABORATORY
ASSOCIATED UNIVERSITIES, INC.
UPTON, N.Y. 11973

AGS CONTROLS WIRING DIAGRAM

AGS TUNE METER CONTROLLER

back panel DIAGRAM

SIZE D

DRAWING NUMBER

REV. A

MATERIAL: ——— SCALE: NA WEIGHT: — SHEET 4

*AUTOCAD

AGS Tune Meter Controller
ISBC88/25 Jumper List

E1	E2	1 I/O WAIT
E4	E6	1 PROM WAIT
E9	E10	2 INT ACK WAIT
E13	E14	Enable Fail-safe timer
E14	E121	Timeout to IR0.
E17	E18	PROM BUSY
E23	E25	Enable TMR1
E25	E26	Port A Transceiver = Input mode
E27	E33	Test Pin to Ground
E30	E31	Enable TMR0
E52	E13	Time Out to DS-1 (T.O. light).
E53	E54	1.23 MHz to CLK2
E55	E56	1.23 MHz to CLK0
E57	E58	153.6 KHz to CLK1
E76	E77	RxC to TMR2
E80	E81	TxC to TMR2
E84	E85	RTS to CTS
E86	E87	CLK osc (required)
E88	E89	Enable DSR input
E90	E91	16K x 8 PROMS (27128)
E92	E93	16K x 8 PROMS (27128)
E95	E96	RAM @ 00000 - 00FFF
E103	E104	PROM @ F0000 - FFFFF
E109	E110	NMI to gnd
E112	E113	TMR0 to IR2
E117	E137	INT6 to IR6
E130	E133	Multibus INT to IR5
E143	E145	4K RAM
E149	E150	ON BD ADR (required)
E151	E152	U45 CLK (required)
E154	E155	U44 ALE (required)
E156	E157	U44 DT/R (required)
E158	E159	Disable Battery backup
E160	E161	ANYRQST to IOB
E163	E164	BCLK to Multibus
E165	E166	(required)
E168	E169	CBRQ to Ground
E183	E184	CCLK to Multibus
E189	E190	Enable PROM addr decoder (Rev A only)

J6: 1-14, 6-9, 7-8
8287 in U7, 74LS00 in U8 & U9

Intel 032A Memory Card

For the AGS Tune Meter Controller

E123	E126
E103	E104
E79	E87
E105	E106
E107	E108
E76	E77
E89	E90
E64	E71
E66	E67
E44	E46
E116	E117
E15	E22
E4	E5
E23	E24
E47	E146
E118	E120
E119	E121
E21	E22
E91	E92
E94	E96
E97	E99
E101	E102

J2

5	16
10	11

AGS Tune Meter Controller
CM4-2 Jumper List

E6	E9	XACK delay
E9	E10	XACK delay
E10	E11	XACK delay
E12	E18	I/O ADDR8 = 0
E13	E16	I/O ADDR9 = 0
E14	E15	I/O ADDR9 = 0
E19	E21	Memory Base Address = 80000h
E17	E23	Memory Base Address = 80000h
E30	E32	Memory Base Address = 80000h

AGS Tune Meter Controller
ISBC-519 Jumper List

E37	E38	I/O Base Address = 50h
E48	E41	"
E33	E34	AACK = immediate
E35	E29	XACK = 4 to 5 delay units
E50	E51	Disable Timer Interrupt
E83	E85	Enable Output at 8226 (Port 54)
E78	E80	Disable Port 54 Interrupt
E109	E111	Enable Output at 8226 (Port 58)
E104	E106	Disable Port 58 Interrupt
E91	E100	Connect Port 56, Bit 0 to J2-24
E92	E101	Connect Port 56, Bit 1 to J2-22
E93	E102	Connect Port 56, Bit 2 to J2-20
E94	E103	Connect Port 56, Bit 3 to J2-18
E115	E119	Connect Port 56, Bit 4 to J2-26
E114	E118	Connect Port 56, Bit 5 to J2-28
E113	E117	Connect Port 56, Bit 6 to J2-30
E112	E116	Connect Port 56, Bit 7 to J2-32
E121	E126	Connect Port 5A, Bit 0 to J3-24
E122	E127	Connect Port 5A, Bit 1 to J3-22
E123	E128	Connect Port 5A, Bit 2 to J3-20
E124	E129	Connect Port 5A, Bit 3 to J3-18
E89	E98	Connect Port 5A, Bit 4 to J3-26
E88	E97	Connect Port 5A, Bit 5 to J3-28
E87	E96	Connect Port 5A, Bit 6 to J3-30
E86	E95	Connect Port 5A, Bit 7 to J3-32
E20	E23	
E53	E55	
E56	E65	
E57	E66	
E58	E67	
E59	E68	
E60	E69	
E61	E70	
E62	E71	
E63	E72	
E64	E73	
E75	E77	
E90	E99	
E120	E125	

Install SBC 901 (220/330) in sockets A43,A29,A48,A34,A53,A38
Install SN74LS38 in sockets A27,A26,A31,A32,A35
Install SN7438 in socket A36

AGS Tune Meter Controller

MP8418 ADC Jumper List

JP2	JP6			31 Channel Pseudo-Differential
JP11	JP15			0 to +10 volts
JP17	JP29	JP30	JP81	Halt mode
JP57	JP56	JP55	JP54	Memory Address = 0F7xxh
JP61	JP52	JP51	JP50	“
JP35	JP32	JP34		ADR 7,6,5 = 0
JP43	JP39			Memory Expansion Disabled
JP48				Straight Binary
JP9				P3-1 to Analog Common

Connect wire from TP10 to Gnd @ JP65 to enable Ch0 msb

MP 8316 DAC Jumper List

W3				Enable XACK/
W4				Memory Mapped Addressing
W6	W7			Enable INH2 & INH1
W26	W24	W30	W28	Memory Address = 0F6xxh
W19	W16	W20	W23	“
W33	W35	W37		ADR 7,6,5 = 0
W39	W40			20 bit Address
W42	W44			0 to +10 volts

N. B. Literature contains duplicate jumper labels W39 - W40;

Output voltage configuration jumpers are corrected.

AGS TUNE METER

MULTIBUSS FILTER CARD SLOT 10

(GROUPS OF 8 TERMINALS
NEAR THESE CHIPS)

+5	+ ON DIODE RAIL
GND	- ON DIODE RAIL

All tied together:
J1-1, thru J1-33 odd only, J1-37, J1-39, J1-43, J1-45, J1-47, A1(8)-1, A1(8)-3, A1(8)-5, A1(8)-7, A2(8)-9, A2(8)-11, A2(8)-13, A2(8)-15, A3(8)-17, A3(8)-19 , A3(8)-21, A3(8)-23, A4(8)-25, A4(8)-27, A4(8)-29, A4(8)-31, A5(8)-33, A5(8)-35, A5(8)-37, A5(8)-39, A6(8)-41, A6(8)-43, A6(8)-45, A6(8)-47

A1(8)-2	J1-49
A1(8)-4	J1-46
A1(8)-6	J1-44
A1(8)-8	J1-42
A2(8)-10	J1-40
A2(8)-12	J1-38
A2(8)-14	J1-36
A2(8)-16	J1-34
A3(8)-18	J1-16
A3(8)-20	J1-14
A3(8)-22	J1-12
A3(8)-24	J1-10
A4(8)-26	J1-8
A4(8)-28	J1-6
A4(8)-30	J1-4
A4(8)-32	J1-2
A5(8)-34	J1-24
A5(8)-36	J1-22
A5(8)-38	J1-20
A5(8)-40	J1-18
A6(8)-42	J1-26
A6(8)-44	J1-28
A6(8)-46	J1-30
A6(8)-48	J1-32

MAKE 4 HEADERS WITH SHORTS

1-16, 2-15, 3-14, 4-13, 5-12, 6-11, 7-10, 8-9

INSERT INTO A26, A28, A30, A32

AGS TUNE METER

MULTIBUSS FILTER CARD SLOT 13 page 1 of 2

(GROUPS OF 8 TERMINALS NEAR THESE CHIPS)

Edge connector	term	chip
J1-48	1	(A1)
J1-47	2	(A1)
J1-46	3	(A1)
J1-45	4	(A1)
J1-42	5	(A1)
J1-41	6	(A1)
J1-40	7	(A1)
J1-39	8	(A1)
J1-36	9	(A2)
J1-35	10	(A2)
J1-34	11	(A2)
J1-33	12	(A2)
J1-30	13	(A2)
J1-29	14	(A2)
J1-28	15	(A2)
J1-27	16	(A2)
J1-24	17	(A3)
J1-23	18	(A3)
J1-22	19	(A3)
J1-21	20	(A3)
J1-18	21	(A3)
J1-17	22	(A3)
J1-16	23	(A3)
J1-15	24	(A3)
J1-12	25	(A4)
J1-11	26	(A4)
J1-10	27	(A4)
J1-9	28	(A4)
J1-6	29	(A4)
J1-5	30	(A4)
J1-4	31	(A4)
J1-3	32	(A4)

AGS TUNE METER

MULTIBUSS FILTER CARD SLOT 13 page 2

(GROUPS OF 8 TERMINALS NEAR THESE CHIPS)

Edge connector	**term**	**chip**
J2-48	1	(A5)
J2-47	2	(A5)
J2-46	3	(A5)
J2-45	4	(A5)
J2-42	5	(A5)
J2-41	6	(A5)
J2-40	7	(A5)
J2-39	8	(A5)
J2-36	9	(A6)
J2-35	10	(A6)
J2-34	11	(A6)
J2-33	12	(A6)
J2-30	13	(A6)
J2-29	14	(A6)
J2-28	15	(A6)
J2-27	16	(A6)
J2-24	17	(A7)
J2-23	18	(A7)
J2-22	19	(A7)
J2-21	20	(A7)
J2-18	21	(A7)
J2-17	22	(A7)
J2-16	23	(A7)
J2-15	24	(A7)
J2-12	25	(A8)
J2-11	26	(A8)
J2-10	27	(A8)
J2-9	28	(A8)
J2-6	29	(A8)
J2-5	30	(A8)
J2-4	31	(A8)
J2-3	32	(A8)

AGS TUNE METER

MULTIBUSS FILTER CARD SLOT 15 page 1 of 2

(GROUPS OF 8 TERMINALS NEAR THESE CHIPS)

All tied together

J1-10 , A1(8)-1,A1(8)-3, A1(8)-5, A1(8)-7, A2(8)-9, A2(8)-11, A2(8)-13, A2(8)-15, A3(8)-17, A3(8)-19 , A3(8)-21, A3(8)-23, A4(8)-25, A4(8)-27, A4(8)-29, A4(8)-31, A5(8)-33, A5(8)-35, A5(8)-37, A5(8)-39, A6(8)-41, A6(8)-43, A6(8)-45, A6(8)-47, A7(8)-49, A7(8)-51, A7(8)-53, A7(8)-55, A8(8)-57, A8(8)-59, A8(8)-61, A8(8)-63

A1(8)-2	J1-9
A1(8)-4	J1-39
A1(8)-6	J1-41
A1(8)-8	J1-43
A2(8)-10	J1-45
A2(8)-12	J1-49
A2(8)-14	J1-47
A2(8)-16	J1-37
A3(8)-18	J1-35
A3(8)-20	J1-11
A3(8)-22	J1-13
A3(8)-24	J1-19
A4(8)-26	J1-25
A4(8)-28	J1-21
A4(8)-30	J1-31
A4(8)-32	J1-29
A5(8)-34	J1-33
A5(8)-36	J1-40
A5(8)-38	J1-42
A5(8)-40	J1-44
A6(8)-42	J1-46
A6(8)-44	J1-50
A6(8)-46	J1-48
A6(8)-48	J1-38
A7(8)-50	J1-36
A7(8)-52	J1-12
A7(8)-54	J1-14
A7(8)-56	J1-20
A8(8)-58	J1-26
A8(8)-60	J1-22
A8(8)-62	J1-32
A8(8)-64	J1-30

AGS TUNE METER

MULTIBUSS FILTER CARD SLOT 15 page 2 of 2

MAKE 4 HEADERS WITH SHORTS

1-16, 2-15, 3-14, 4-13, 5-12, 6-11, 7-10, 8-9

INSERT INTO A26, A28, A30, A32

AGS TUNE METER

MULTIBUSS FILTER CARD SLOT 6

+5 + ON DIODE RAIL, GND- ON DIODE RAIL
WIRE "LD" TO 26LS31's (7EA.)

(GROUPS OF 4 TERMINALS NEAR THESE CHIPS)

Edge connector	**term**	**chip**
J1-22	6	(A2)
J1-24	1	(A1)
J1-26	21	(A6)
J1-28	22	(A6)
J1-30	23	(A6)
J1-32	24	(A6)
J1-34	10	(A3)
J1-36	9	(A3)
J1-38	8	(A2)
J1-40	7	(A2)
J1-42	5	(A2)
J1-44	4	(A1)
J1-46	3	(A1)
J1-48	2	(A1)
J2-22	16	(A4)
J2-24	11	(A3)
J2-26	25	(A7)
J2-28	26	(A7)
J2-30	27	(A7)
J2-32	28	(A7)
J2-34	20	(A5)
J2-36	19	(A5)
J2-38	18	(A5)
J2-40	17	(A5)
J2-42	15	(A4)
J2-44	13	(A4)
J2-48	12	(A3)
J3-1	21	(A6)

Install AMLS31PC in A1, A2, A3, A4, A5, A6, A7
Install AMLS32PC in A15, A14, A13, A12, A11
Install 316B102 in A32, A23
Install 316B101 in A30, A21
Install 316A201 in A22, A29 installed backwards

AGS TUNE METER

MULTIBUSS FILTER CARD SLOT 8

(GROUPS OF 8 TERMINALS
NEAR THESE CHIPS)

+5 + ON DIODE RAIL, GND - ON DIODE RAIL

All tied together:
A3(8)-17, J1-1, thru J1-15 odd only, J1-21, J1-25, J1-27, J1-31, A3(8)-19 , A3(8)-21, A3(8)-23, A4(8)-25, A4(8)-27, A4(8)-28, A4(8)-31, A5(8)-35, A6(8)-41, A6(8)-43, A6(8)-47
Board is marked DIO Single End 8 out/16 in
The tied connections are done by the board itself and/or the shorting headers

A1(8)-1 J1-47
A1(8)-2 J1-48
A1(8)-3 J1-45
A1(8)-4 J1-46
A1(8)-5 J1-43
A1(8)-6 J1-44
A1(8)-7 J1-47
A1(8)-8 J1-42
A2(8)-9 J1-39
A2(8)-10 J1-40
A2(8)-11 J1-37
A2(8)-12 J1-38
A2(8)-13 J1-35
A2(8)-14 J1-36
A2(8)-15 J1-33
A2(8)-16 J1-34
A3(8)-18 J1-16
A3(8)-20 J1-14
A3(8)-22 J1-12
A3(8)-24 J1-10
A4(8)-26 J1-8
A4(8)-28 J1-6
A4(8)-30 J1-4
A4(8)-32 J1-2
A5(8)-33 J1-23
A5(8)-34 J1-24
A5(8)-36 J1-22
A5(8)-37 J1-19
A5(8)-38 J1-20
A5(8)-39 J1-17
A5(8)-40 J1-18
A6(8)-42 J1-26
A6(8)-44 J1-28
A5(8)-45 J1-29
A6(8)-46 J1-30
A6(8)-48 J1-32

MAKE 2 HEADERS WITH SHORTS

1-16, 2-15, 3-14, 4-13, 5-12, 6-11, 7-10, 8-9
INSERT INTO A28, A30

AGS Tune Meter Controller
9513 Timer Card Jumper List

44	45
45	46
46	47
47	48
48	55
49	40
50	41
51	42
52	43
53	67
54	81
71	72
72	73
73	74
74	75
76	147
77	148
78	149
79	150
80	68
81	139
139	167
81	141
71	82
142	143
143	144
144	145
145	146
146	152
147	134
148	135
149	136
150	137
134	95
135	96
136	97
137	98
67	87
68	88
69	89
70	90
109	110
110	111
111	112
5	120
6	118
157	117
158	119
151	69
129	130
130	131
131	132
132	133
133	140
SW1	1 thru 4 open
W1	D to U7
install W11	
install W10	
112	W9-D
W9-A	W9-B
W9-C	W9-D
W8-A	W8-B
W8-C	W8-D
W7-A	W7-B
W7-C	W7-D
W6-A	W6-B
W6-C	W6-D
W5-A	W5-B
W5-C	W5-D
W4-A	W4-B
W4-C	W4-D
W3-A	W3-B
W3-C	W3-D
W2-A	W2-B
W2-C	W2-D