TM 9-4931-381-14&P-3

TECHNICAL MANUAL

OPERATOR'S ORGANIZATIONAL, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE MANUAL INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST (INCLUDING DEPOT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS)

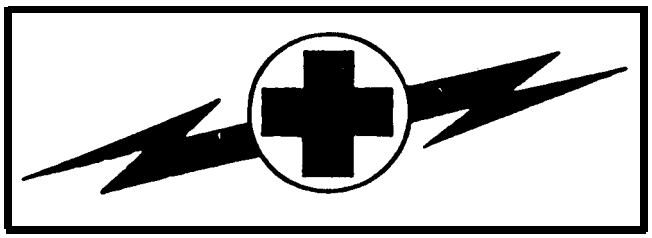
VOLUME. V
SCHEMATICS

THERMAL SYSTEM TEST SET

(4931-01-119-7092)

HEADQUARTERS, DEPARTMENT OF THE ARMY

DECEMBER 1986



WARNING

HIGH VOLTAGE

is used in the operation of this equipment.

DEATH ON CONTACT

may result if personnel fail to observe safety precautions.

Never work on electronic equipment unless there is another person nearby. He should be familiar with the operation and hazards of the equipment. He should also be competent in giving first aid. When the technician is helped by operators, he must warn them about dangerous areas.

The power supply to the equipment must be shut off before beginning work on the equipment. Take special care to ground every capacitor likely to hold a dangerous potential.

Be careful not to contact high-voltage connections when installing or operating this equipment.

When possible, keep one hand away from the equipment to reduce the hazard of current flowing through vital organs of the body.

WARNING

Do not be misled by the term "low voltage." Potentials as low as 50 volts may cause death.

For artifical respiration, refer to FM 2I-II.

WARNING

RADIATION HAZARD

The anti-reflective coating on all infrared optics contains thorium fluoride which is slightly radioactive. The only potential hazard involves ingestion (swallowing or inhaling) of this coating material. Dispose of broken lens, etc., in accordance with AR 385-II.

DON'T TAKE CHANCES!

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C. 31 December 1986

TECHNICAL MANUAL
OPERATOR'S, ORGANIZATIONAL,
DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE MANUAL
INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST
INCLUDING DEPOT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS
THERMAL SYSTEM TEST SET
(4931-01-119-7092)

RPSTL current as of technical manual date

Software PN 12303273 Revision C, current as of technical manual date.

Reporting Errors and Recommending Improvements

You can help improve this manual. If you find any mistakes or if you know a way to improve the procedures, please let us know. Mai I your letter DA Form 2028 (Recommended Changes to Publication and Blank Forms), or DA Form 2028-2 located in back of this manual direct to: Commander, US Army Armament, Munitions and Chemical Command, ATTN: AMSMC-MAS, Rock Island, IL 61299-6000. A reply will be furnished to you.

NOTE

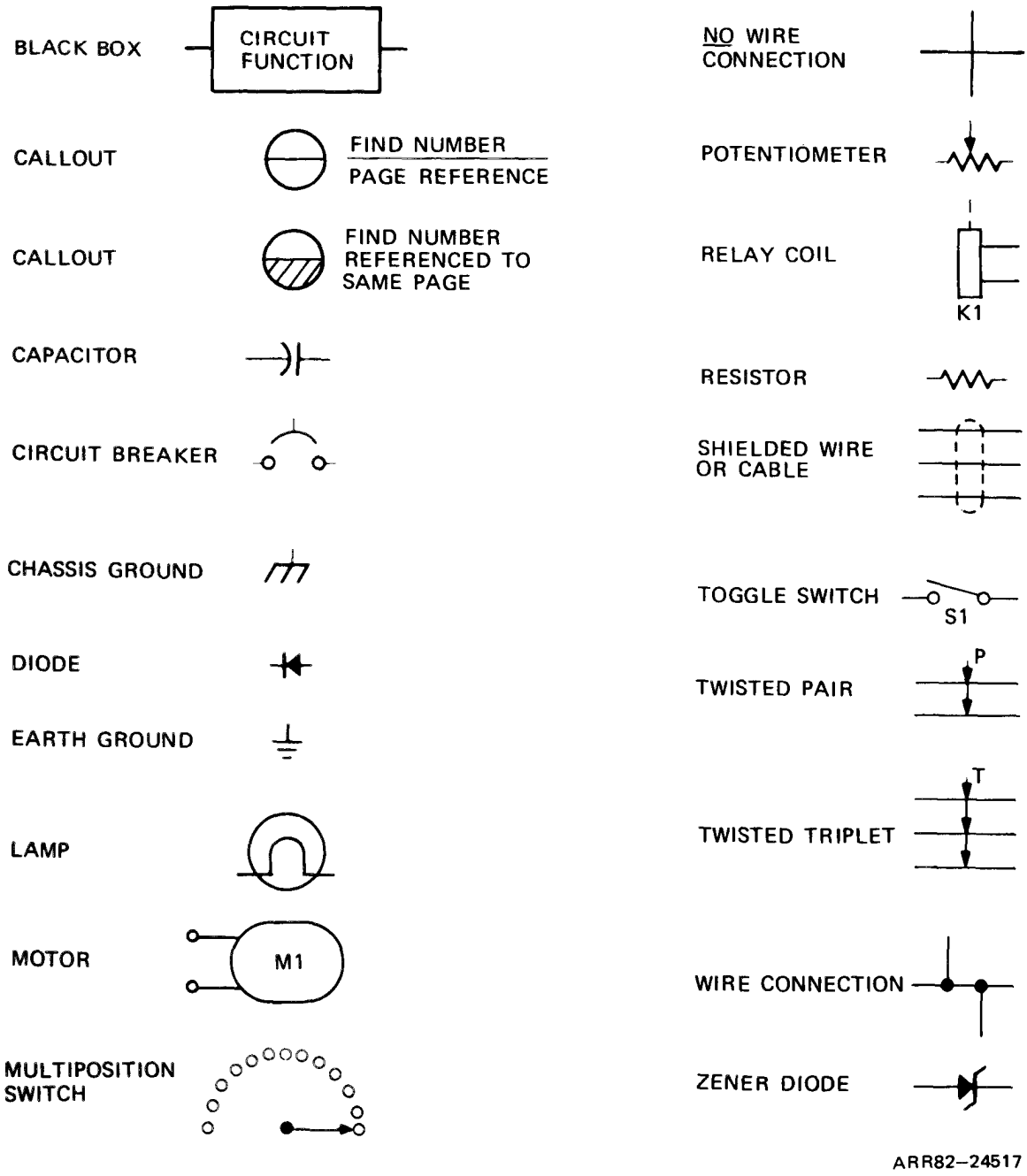
This manual is divided into three bindings. The first binding consists of volumes I, II, and III and front matter for all three bindings. The second binding consists of volume IV and an index for volumes I through IV. Test set schematic and functional diagrams are contained in the third binding.

LIST OF ILLUSTRATIONS

APPENDIX A

SCHEMATIC DIAGRAM ELECTRICAL SYMBOLS

A-1. General. The following symbols are used in schematic diagrams throughout this manual. Use this appendix to detirmine what each symbol represents.



ARR82–24517

By Order of the Secretary of the Army:

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General, United States Army
Chief of Staff

Official:

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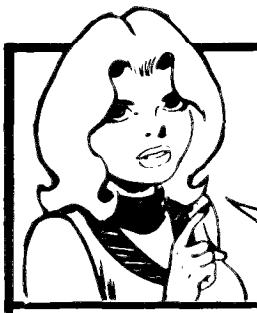

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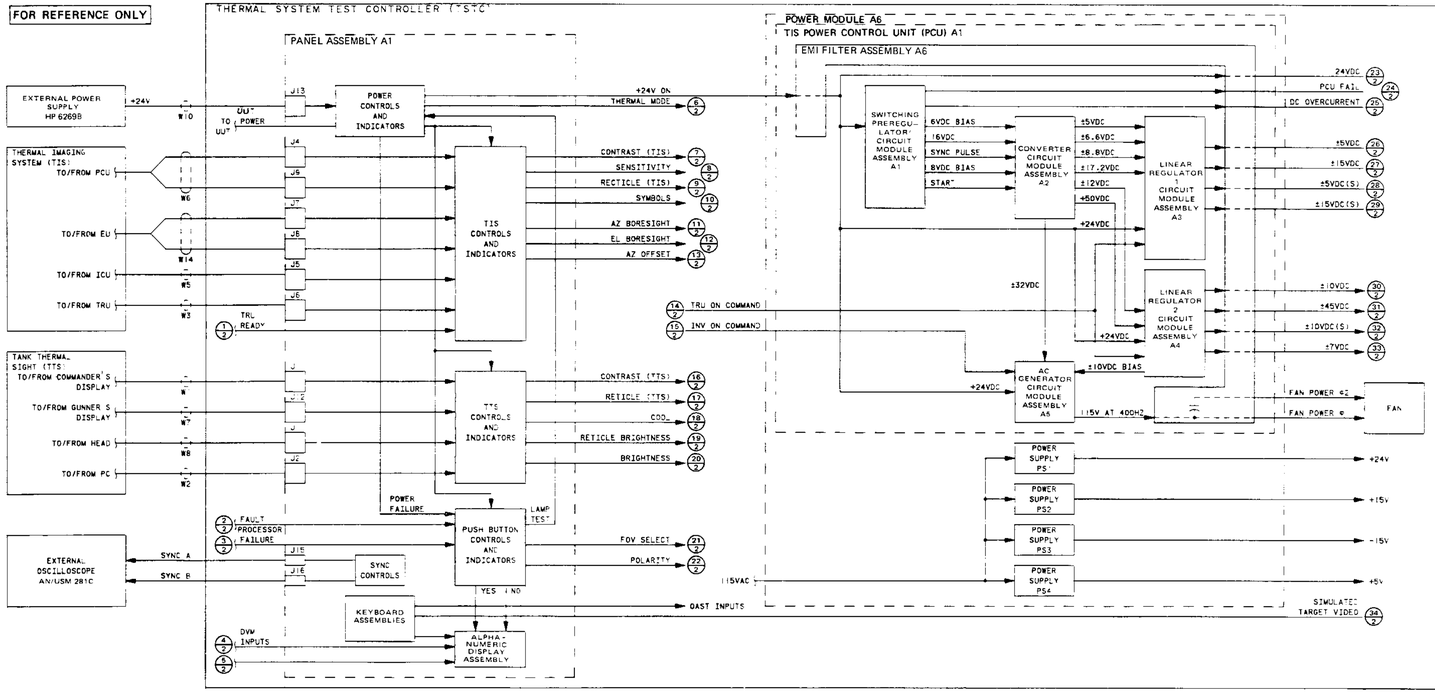
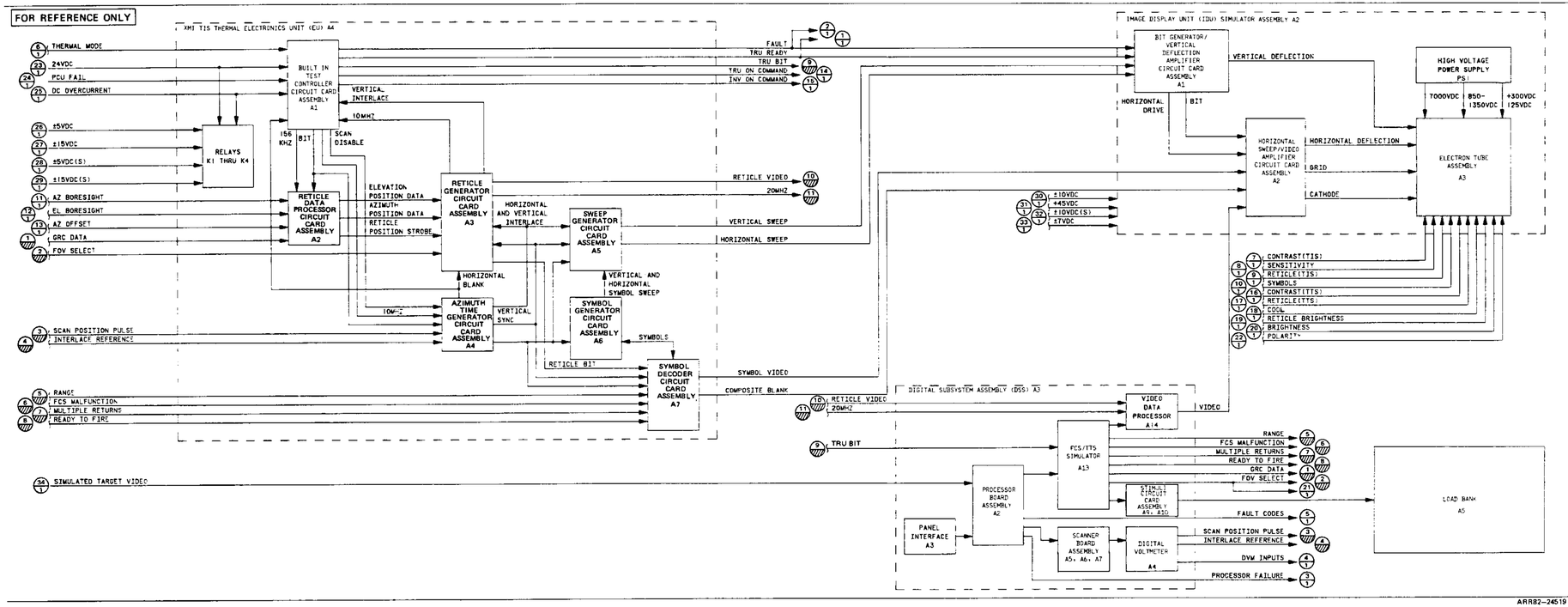
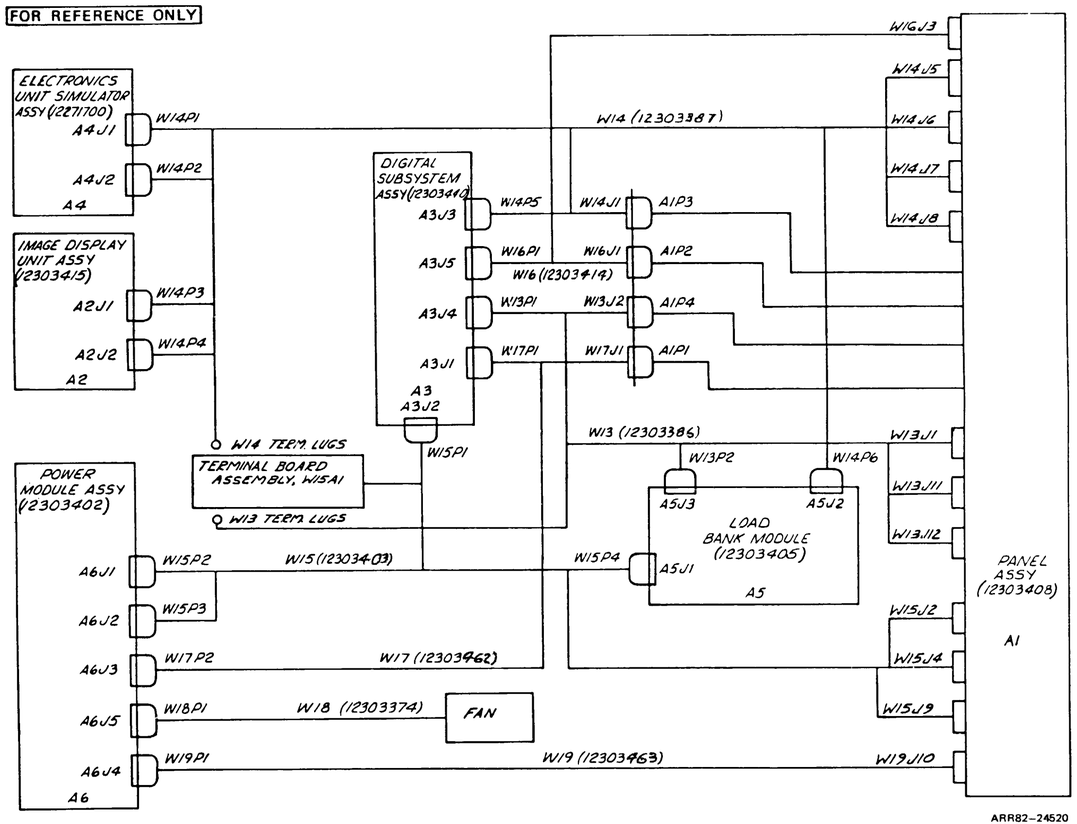


ARR82-24518

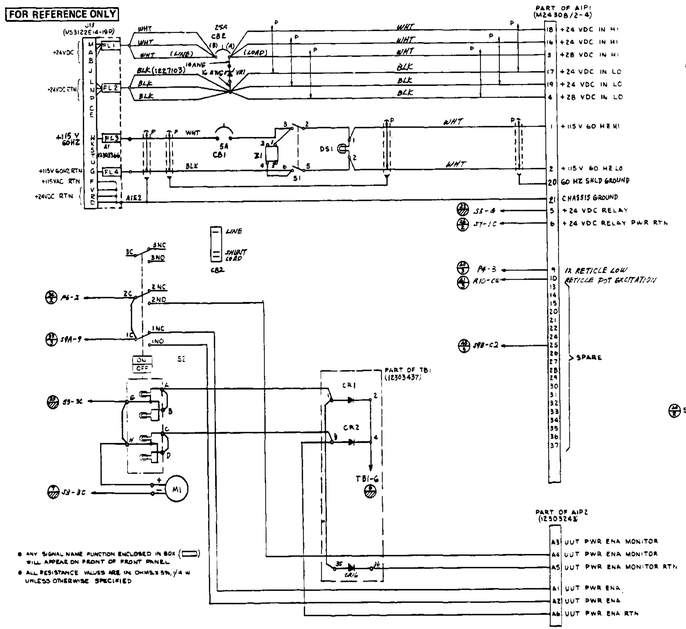
FO-1. Thermal System Test Set (TSTS) Functional Block Diagram (Sheet 1 of 2)

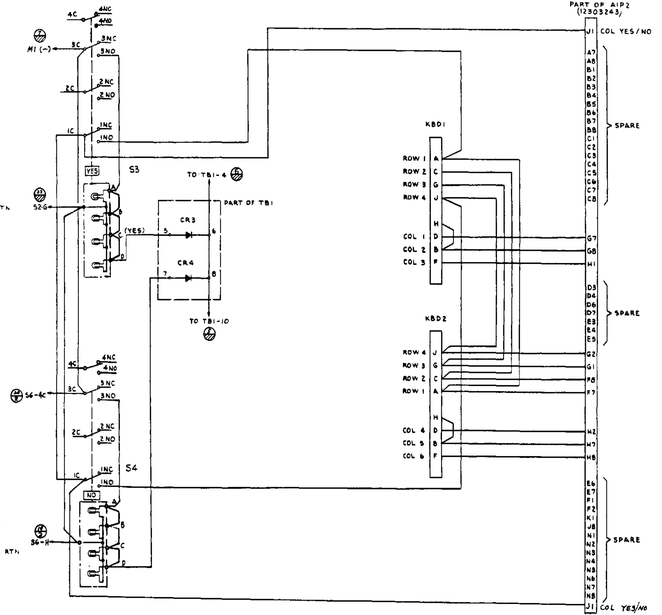


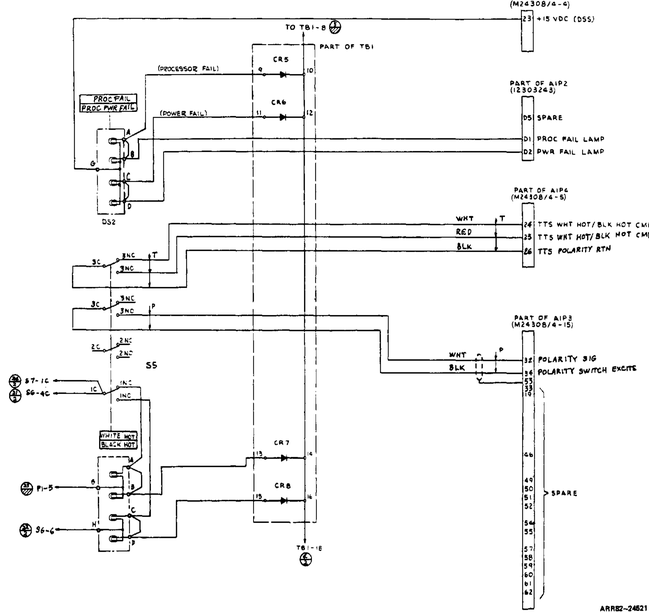
FO-1. Thermal System Test Set (TSTS) Functional Block Diagram (Sheet 2 of 2)



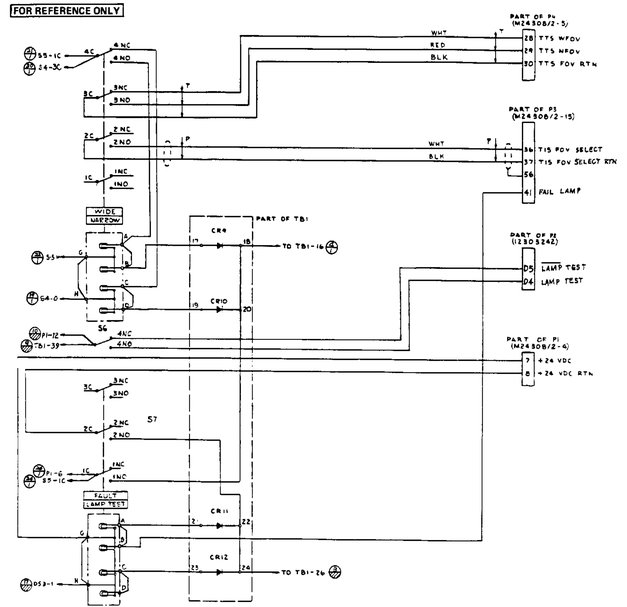
FO-2. Internal Harness Interconnection Diagram

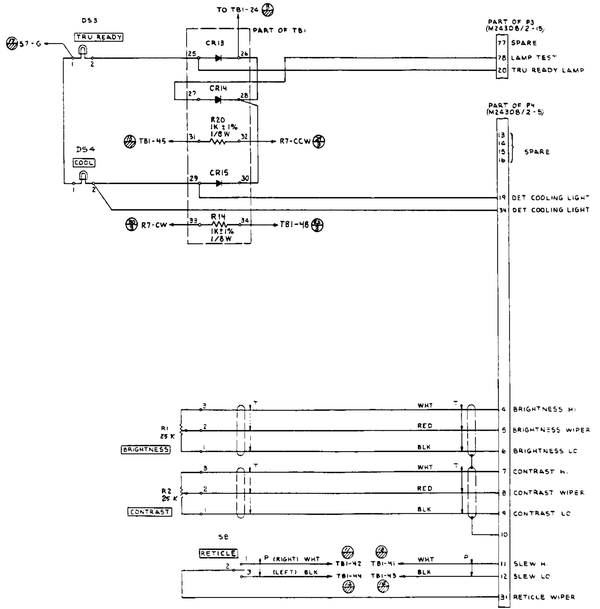


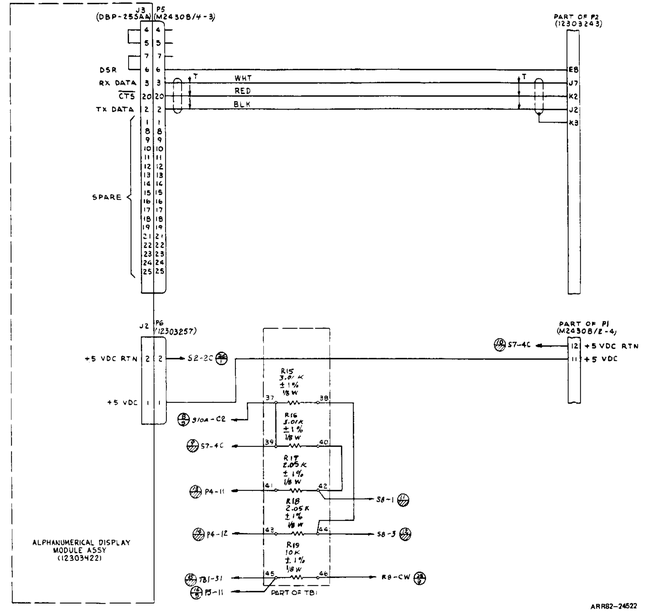




FO-3. Front Panel Assembly A1 Schematic Diagram (Sheet 1 of 3)







FO-3. Front Panel Assembly A1 Schematic Diagram (Sheet 2 of 3)

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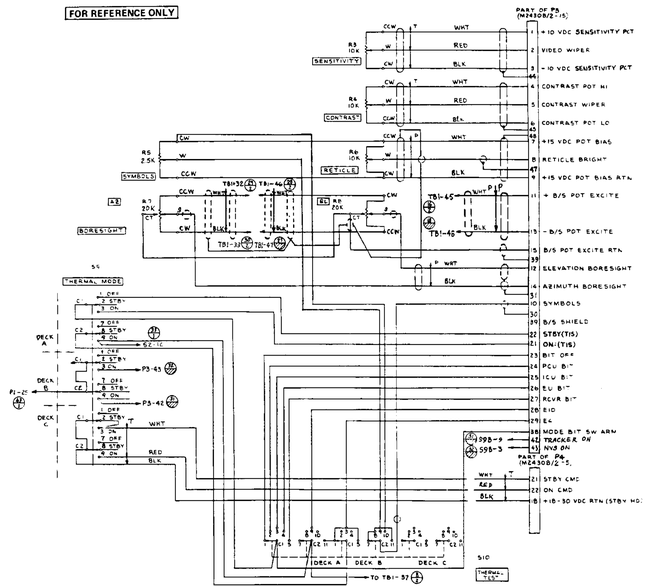

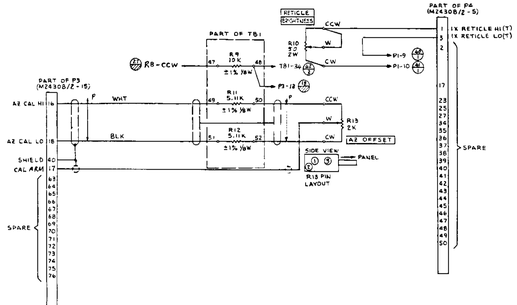

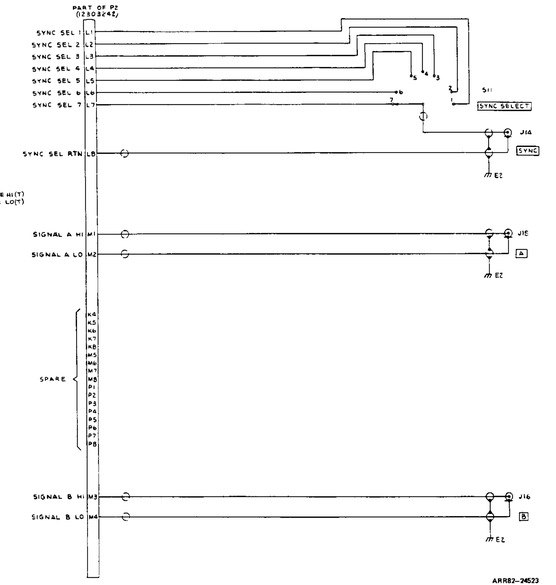

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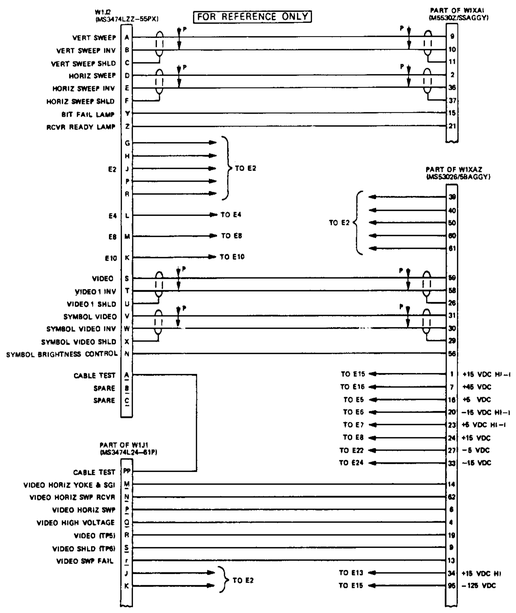
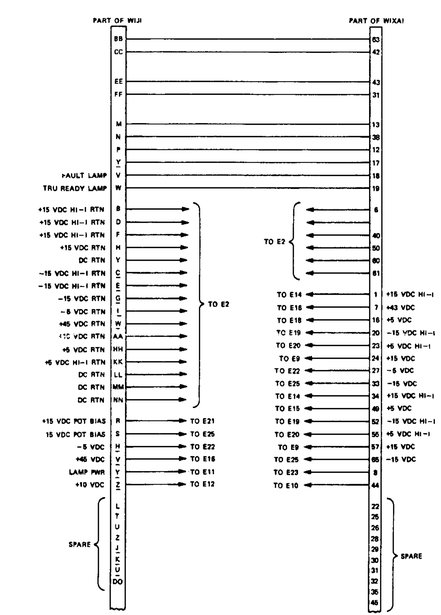
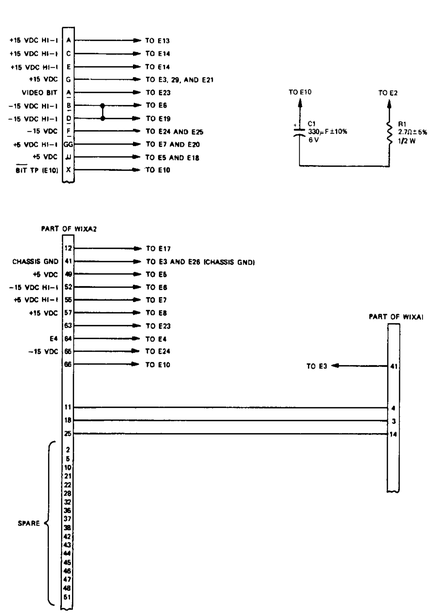
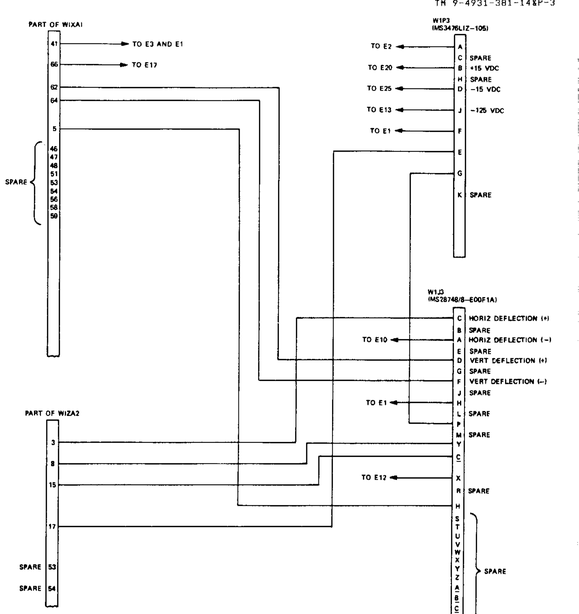
FO-3. Front Panel Assembly A1 Schematic Diagram (Sheet 3 of 3)









FO-4. IDU Simulator Assembly A2 Schematic Diagram

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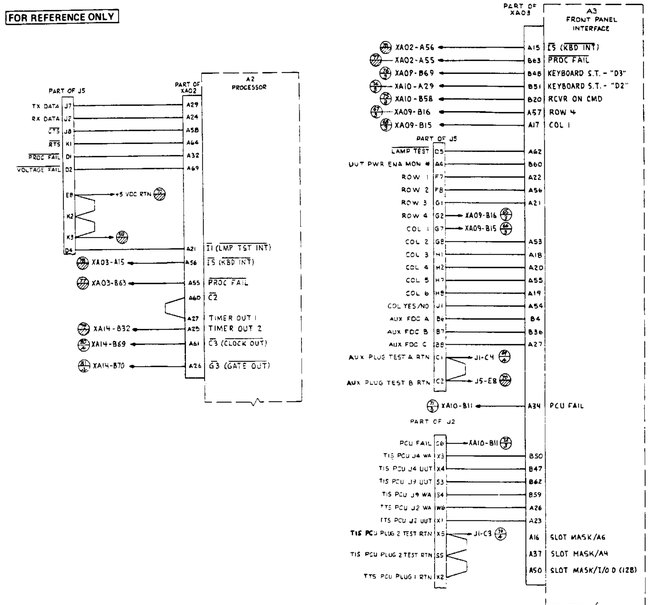
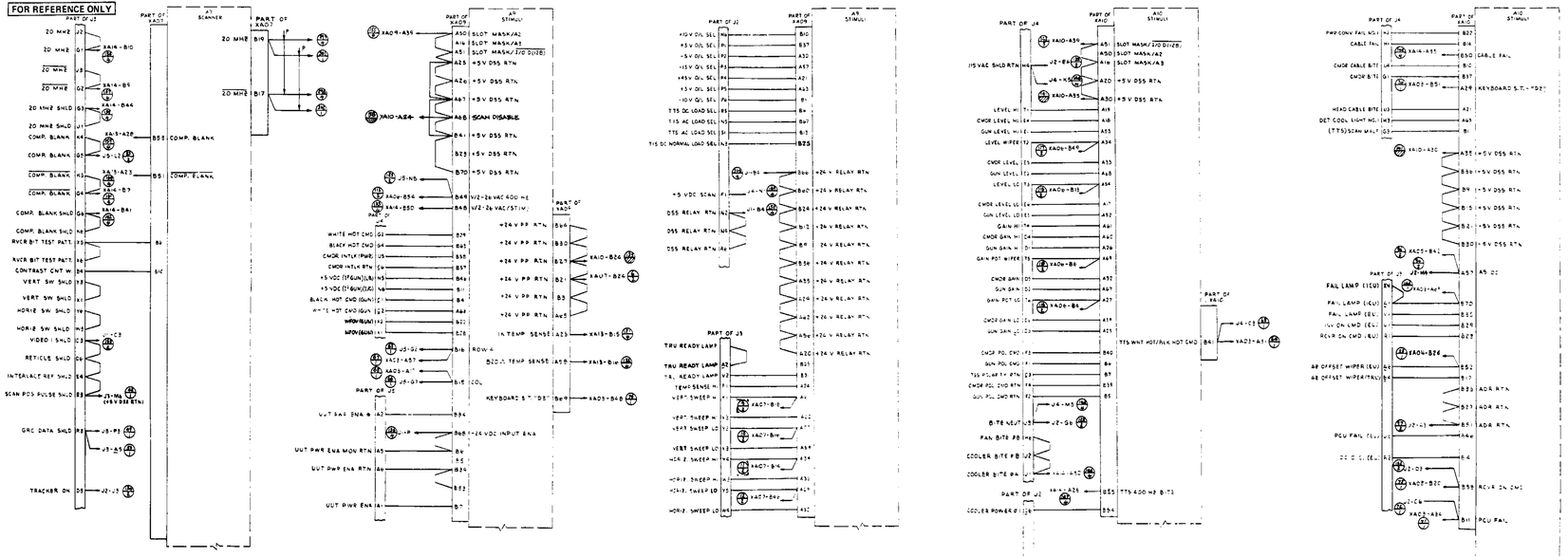


FO-5. DSS Motherboard Wiring Diagram (Sheet 1 of 5)

FOR REFERENCE ONLY

FO-5. DSS Motherboard Wiring Diagram
(Sheet 2 of 5)



FO-5. DSS Motherboard Wiring Diagram (Sheet 3 of 5)

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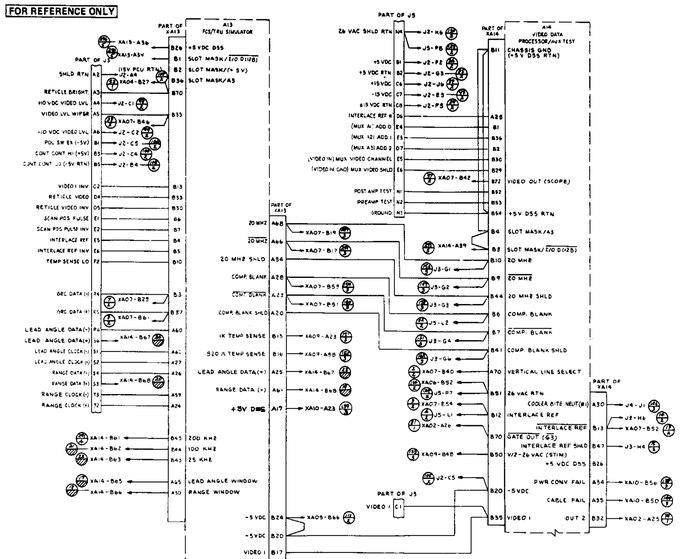

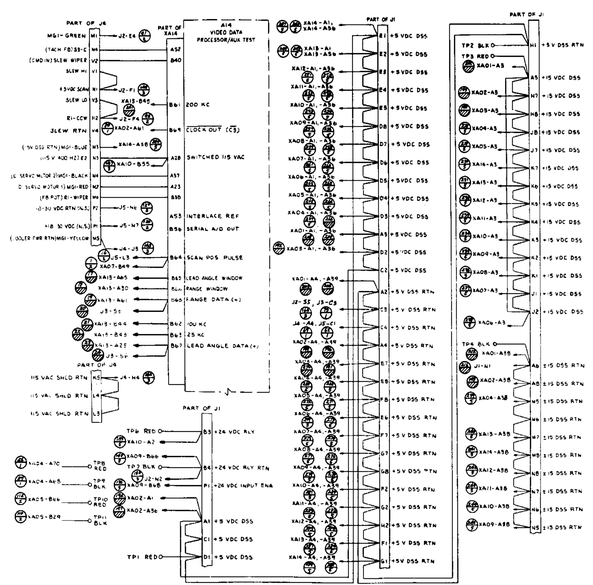

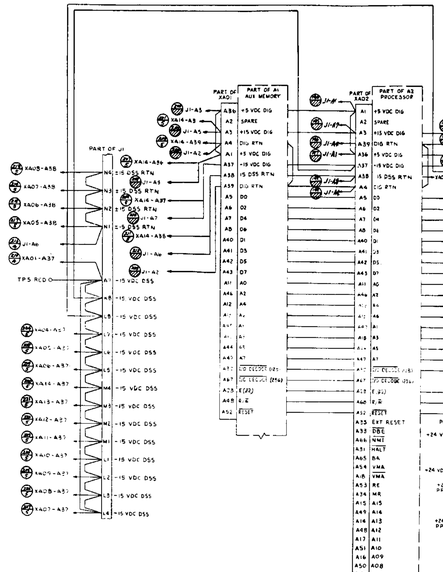

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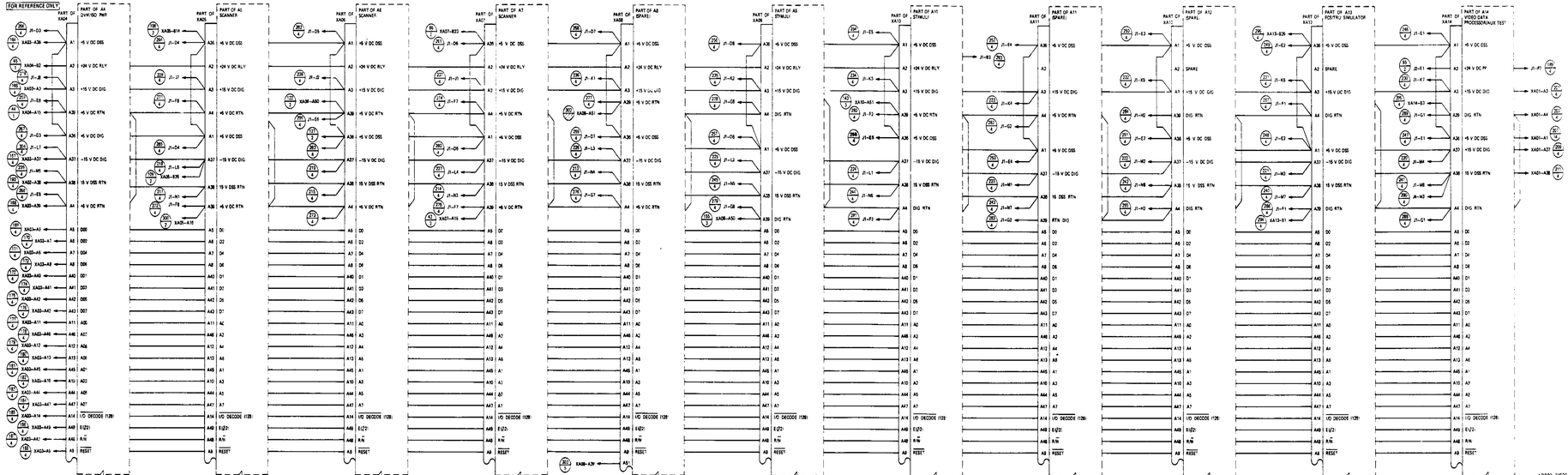
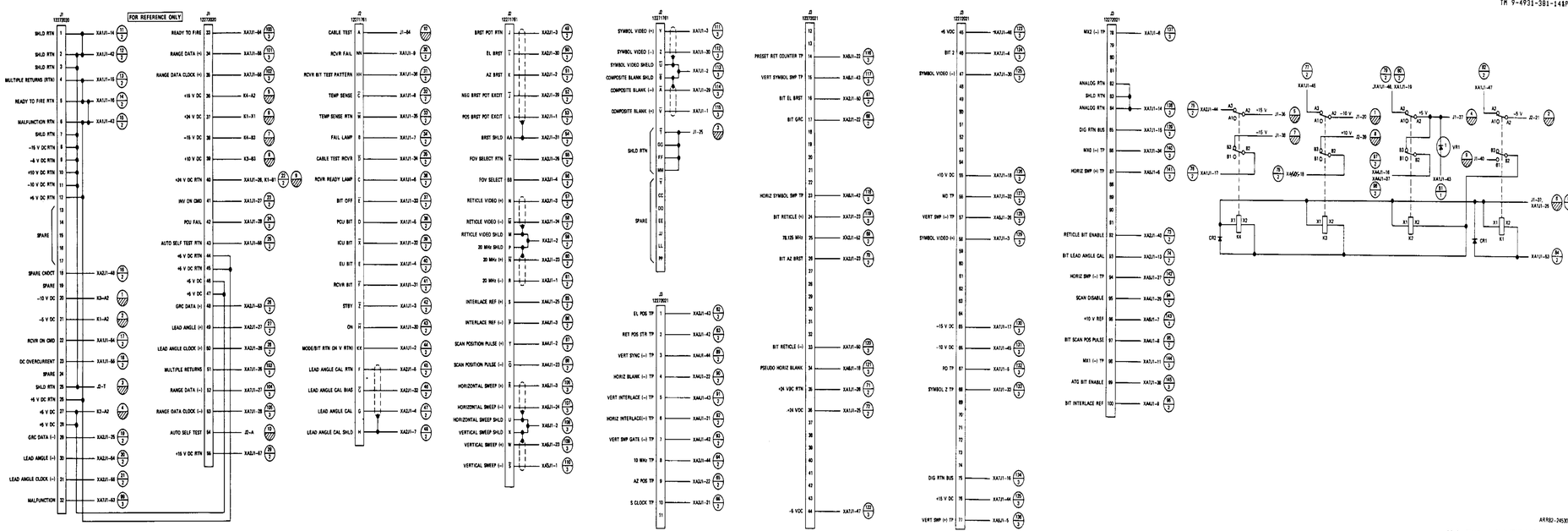
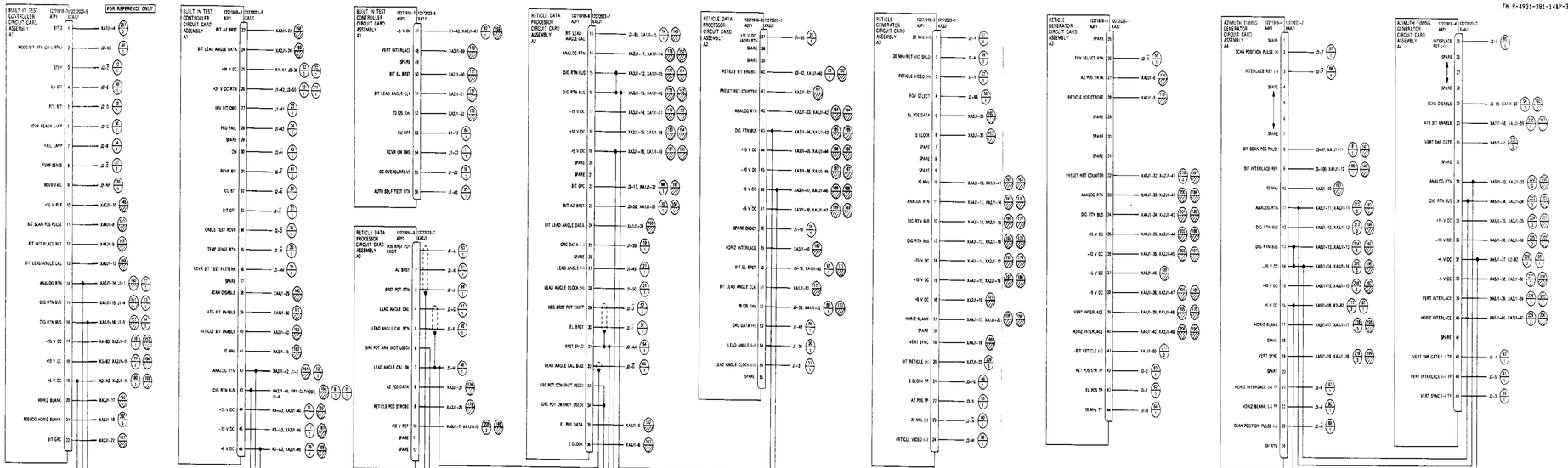
FO-5. DSS Motherboard Wiring Diagram (Sheet 4 of 5)



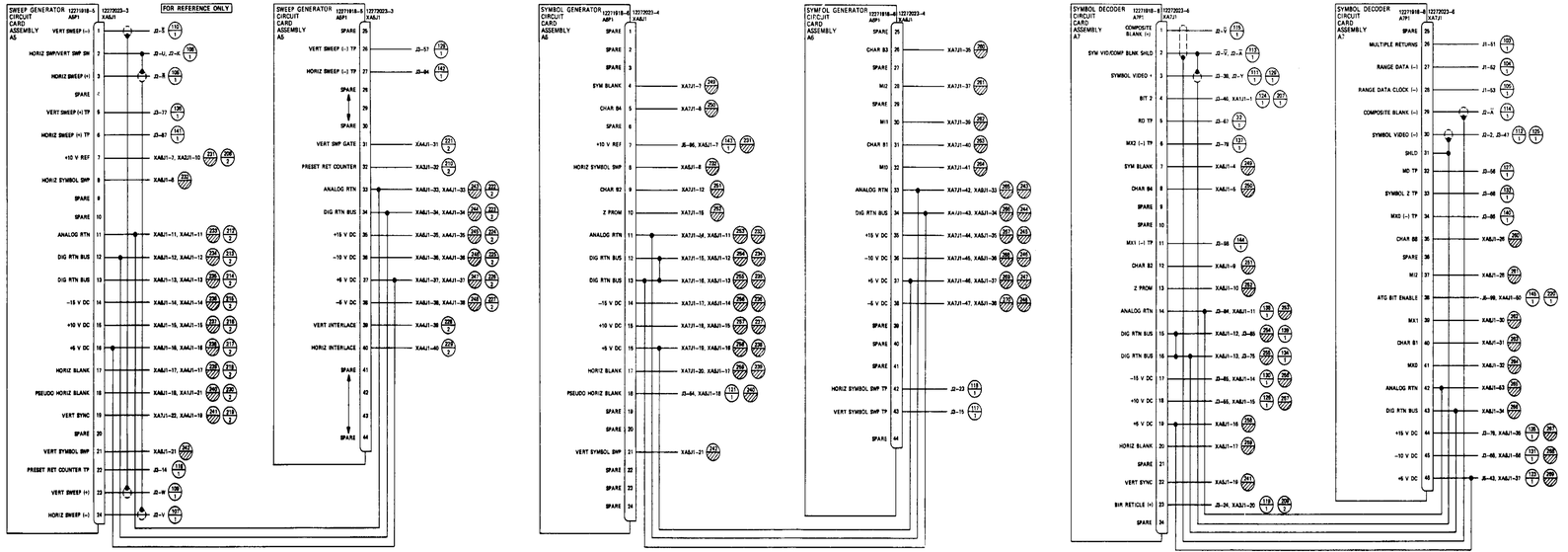
FO-5. DSS Motherboard Wiring Diagram (Sheet 5 of 5)



FO-6. Electronic Unit (EU) A4 Schematic Diagram (Sheet 1 of 3)



FO-6. Electronic Unit (EU) A4 Schematic Diagram (Sheet 2 of 3)



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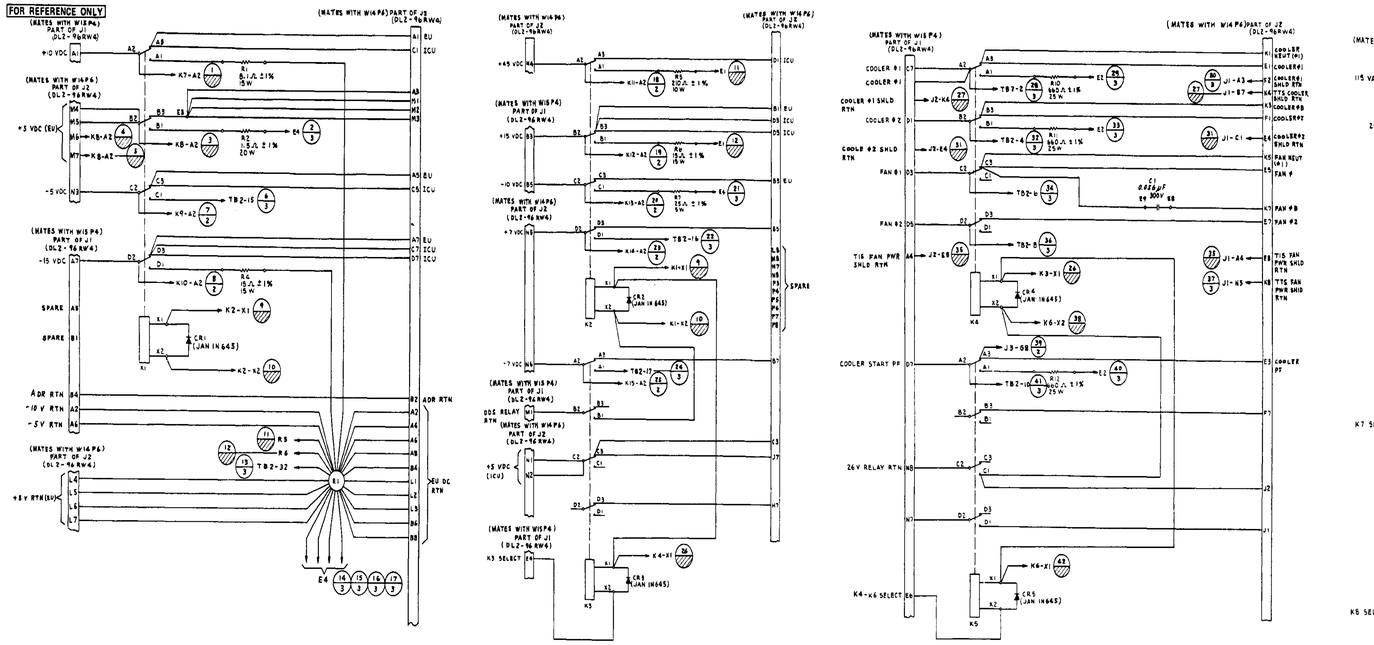
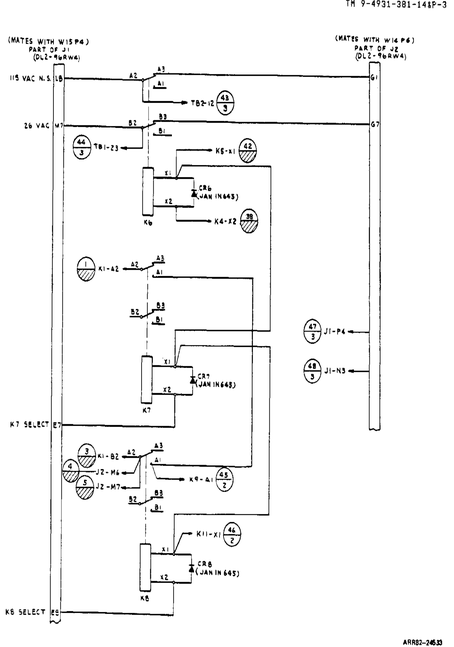
FO-6. Electronic Unit (EU) A4 Schematic Diagram (Sheet 3 of 3)





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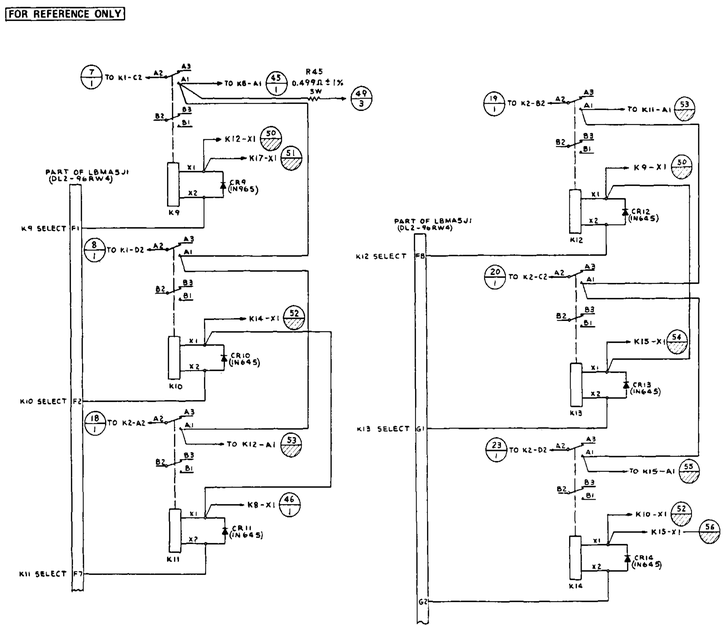
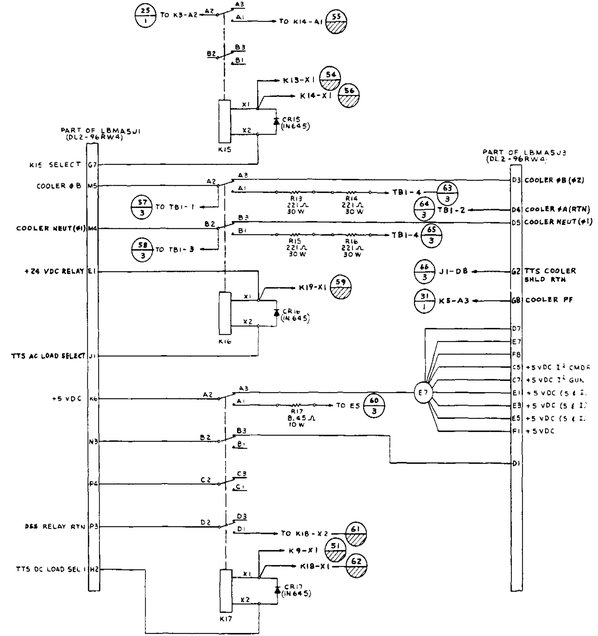
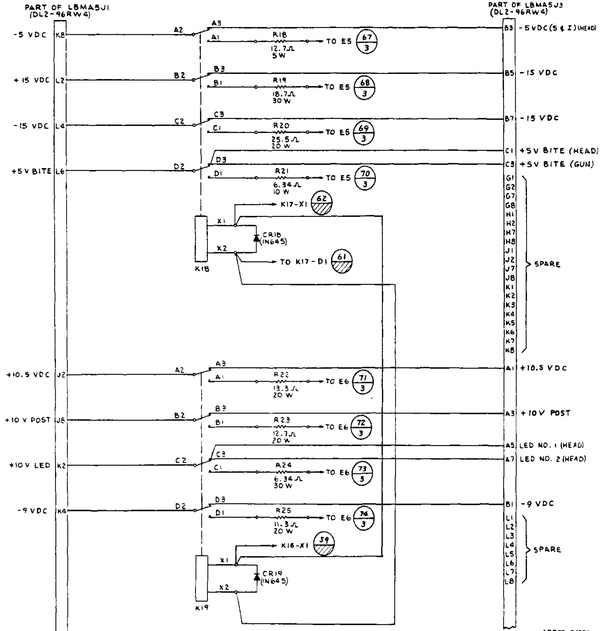
FO-7. Load Bank AS Schematic Diagram (Sheet 1 of 3)

FOR REFERENCE ONLY

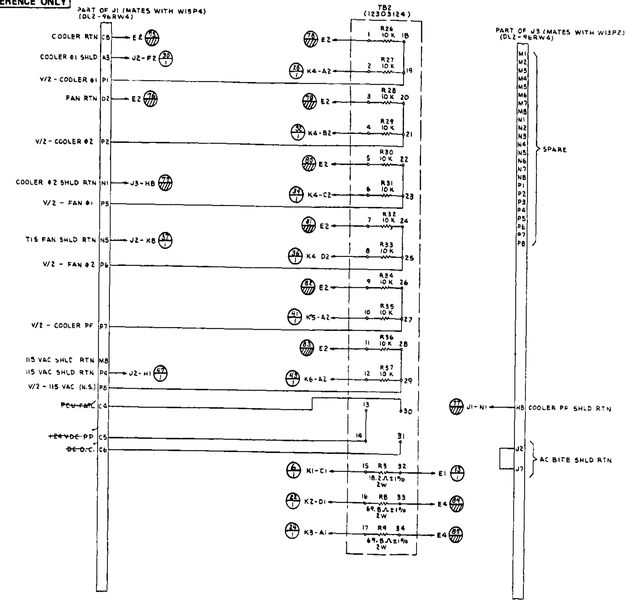


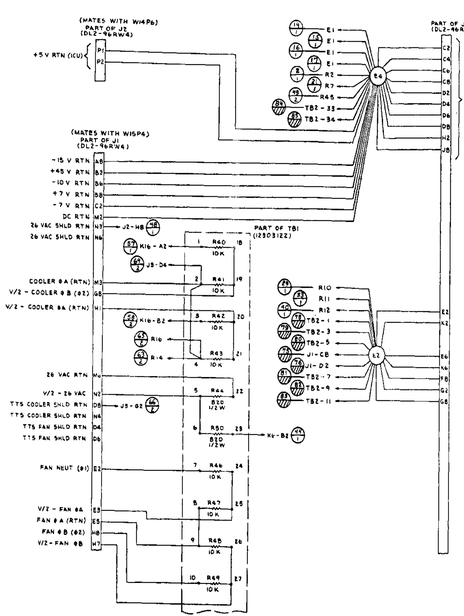


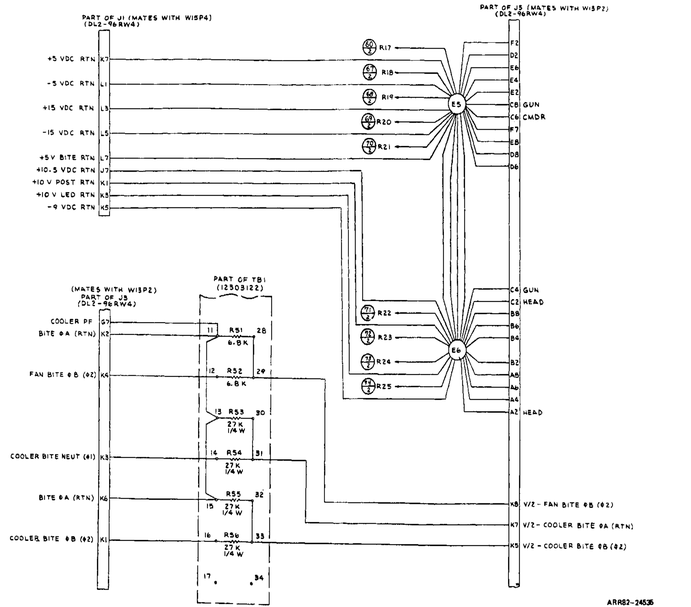


FO-7. Load Bank A5 Schematic Diagram (Sheet 2 of 3)

FOR REFERENCE ONLY

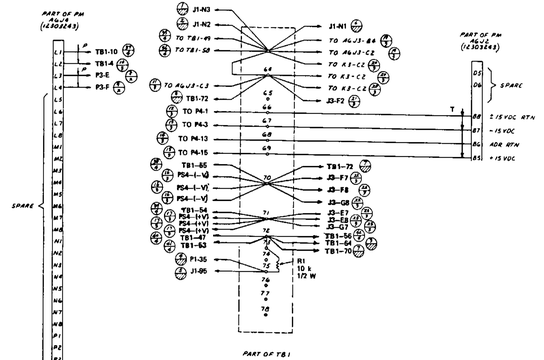


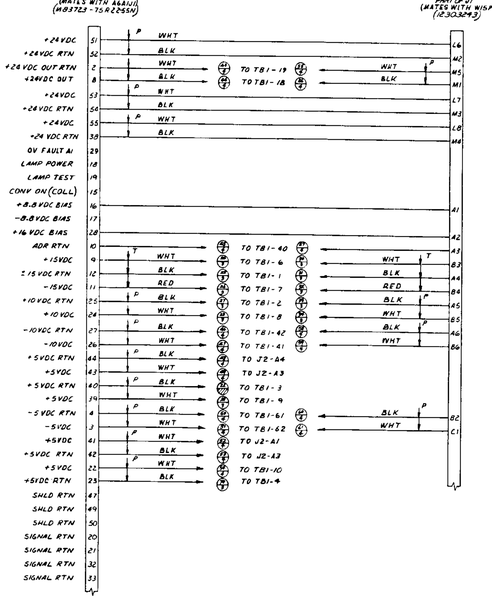


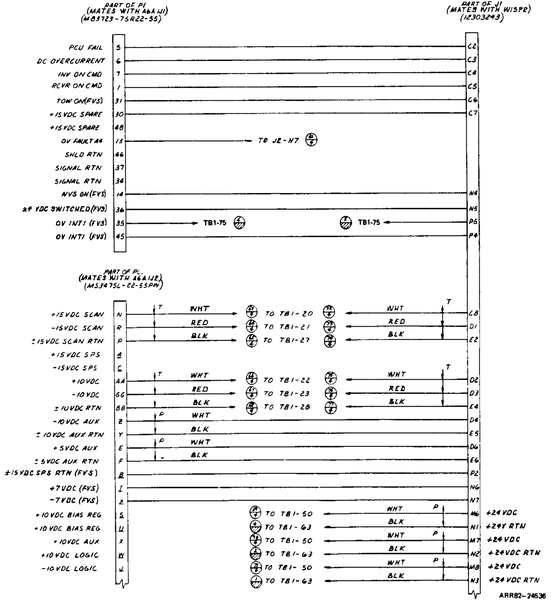


FO-7. Load Bank A5 Schematic Diagram (Sheet 3 of 3)

FOR REFERENCE ONLY

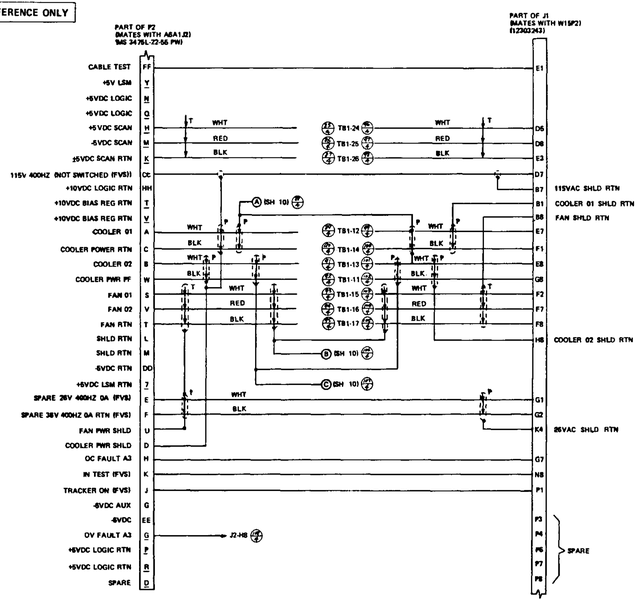


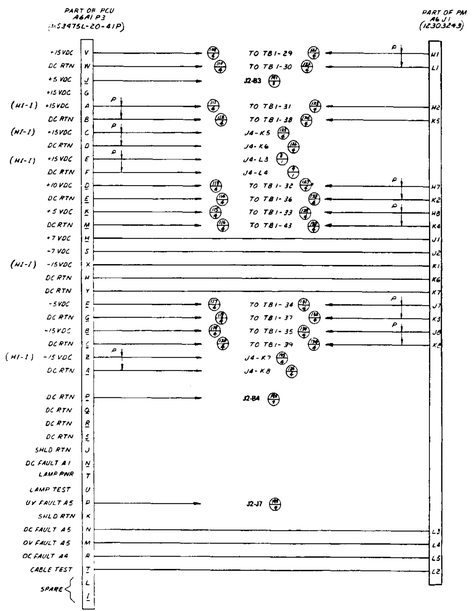


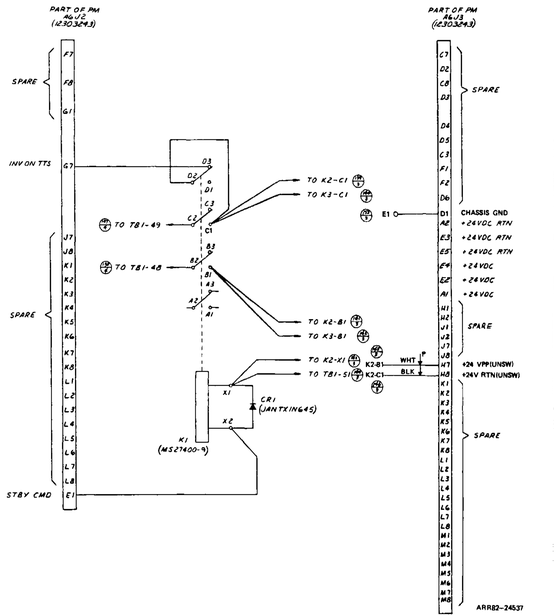


FO-8. Power Module A6 Schematic Diagram (Sheet 1 of 4)

FOR REFERENCE ONLY

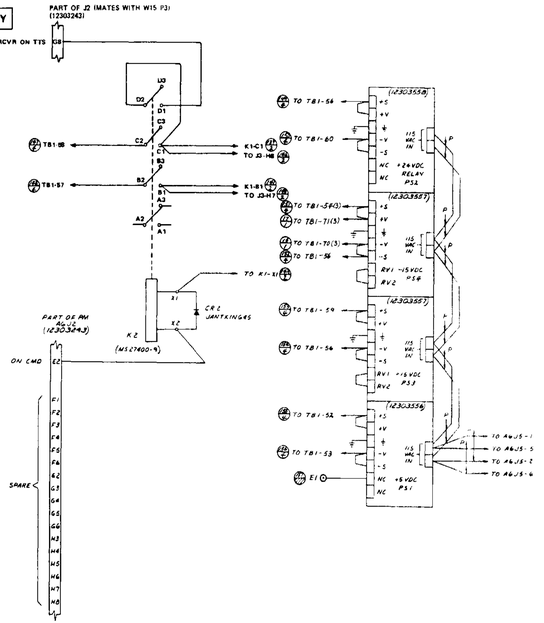


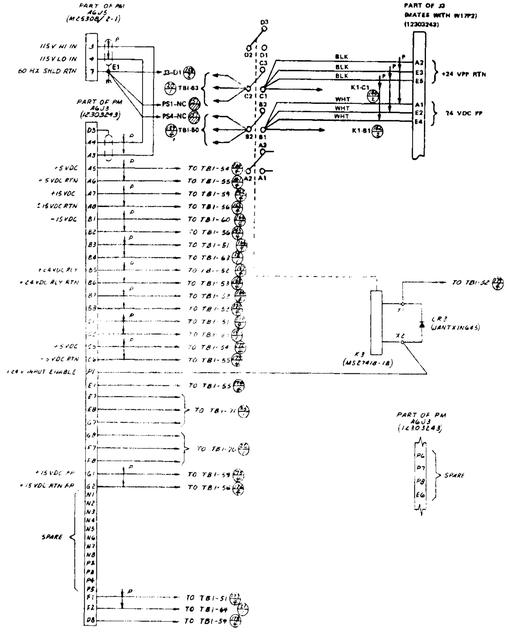


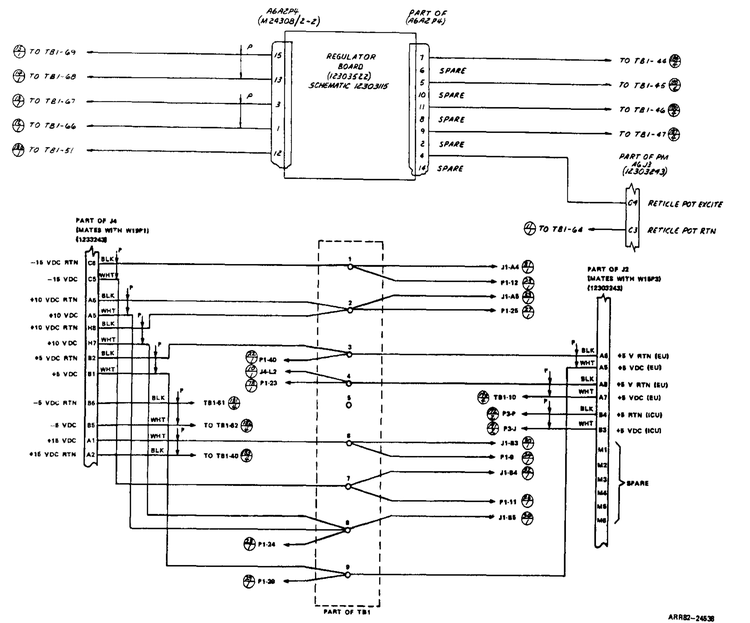


FO-8. Power Module A6 Schematic Diagram (Sheet 2 of 4)

FOR REFERENCE ONLY







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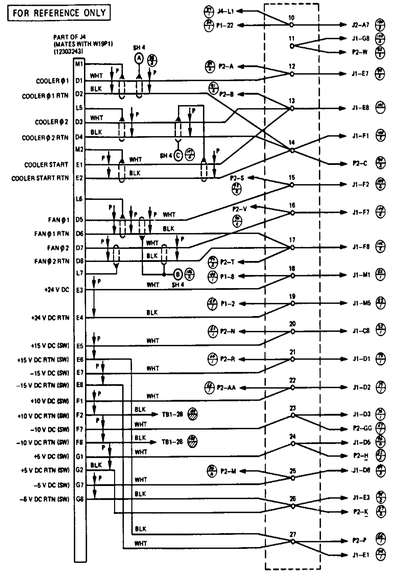
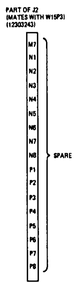
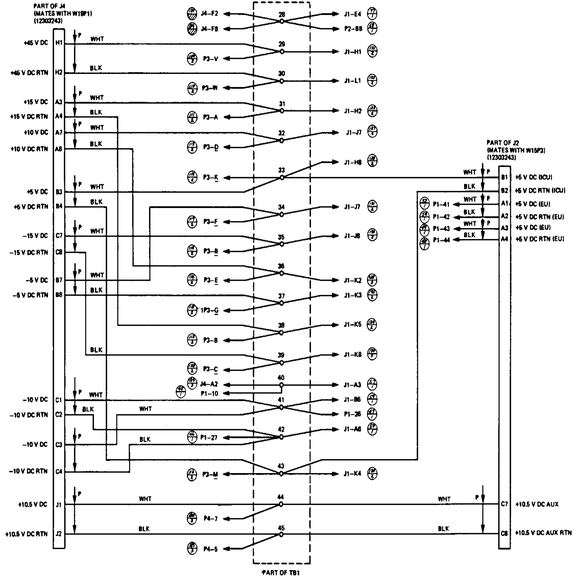
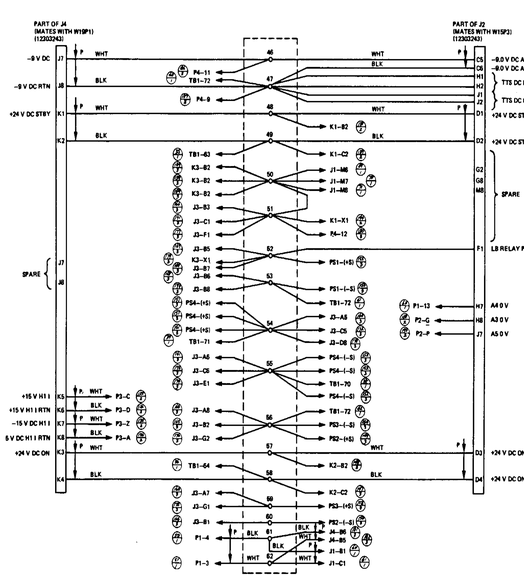
FO-8. Power Module A6 Schematic Diagram (Sheet 3 of 4)









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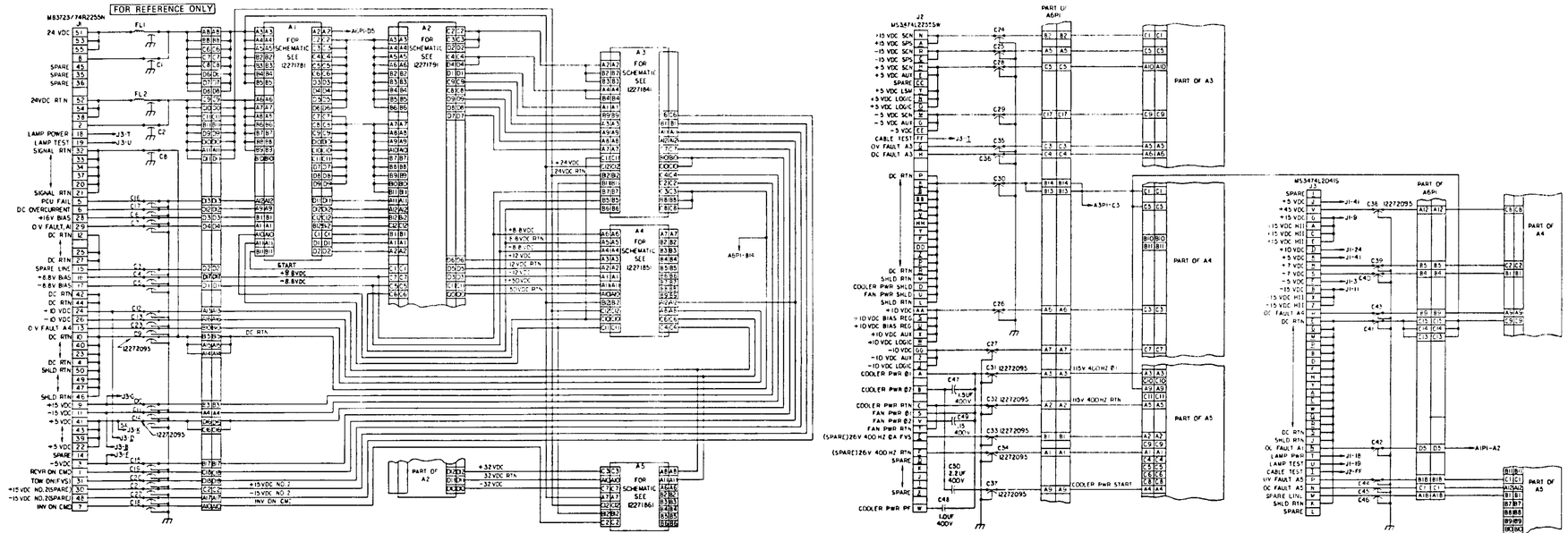
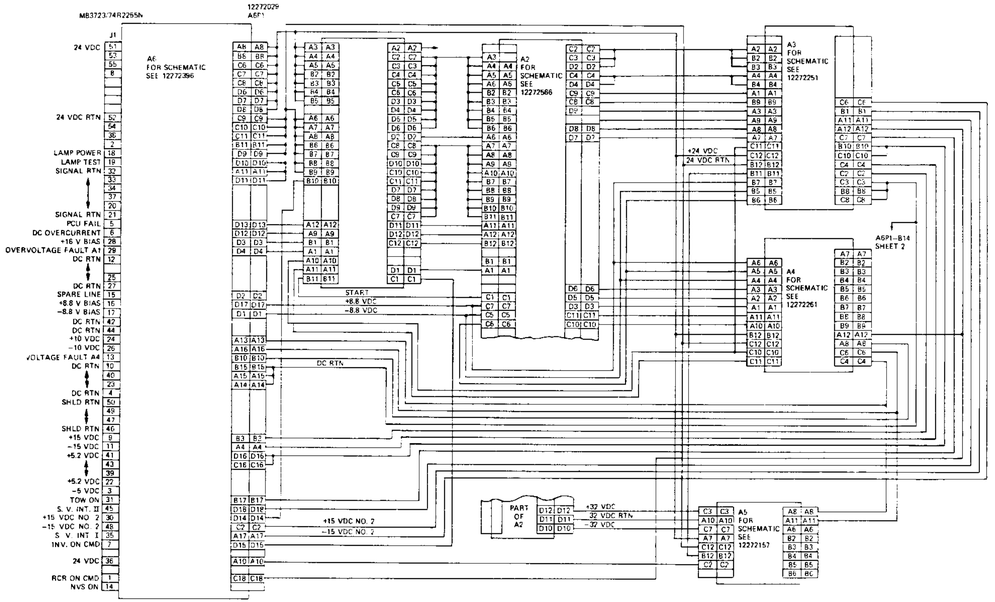
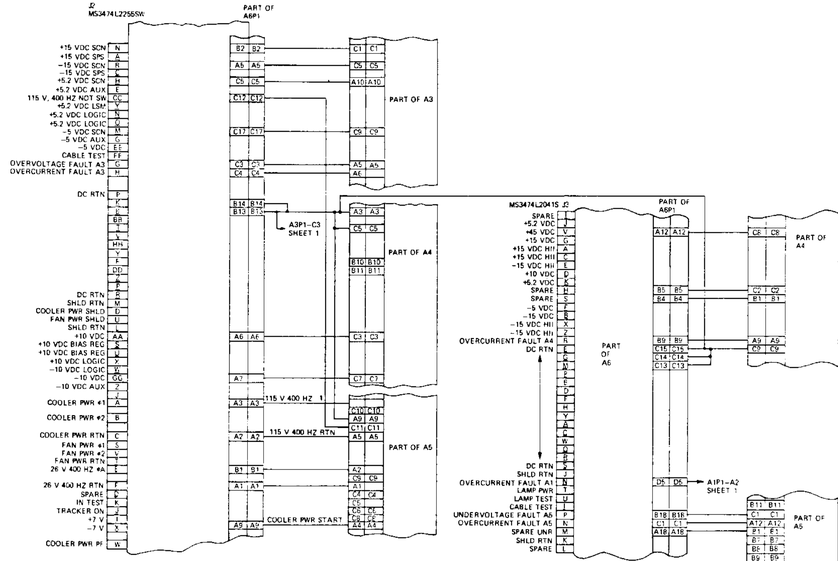
FO-8. Power Module A6 Schematic Diagram. (Sheet 4 of 4)



FO-9. Power Control Unit (PCU) A6A1 Schematic Diagram

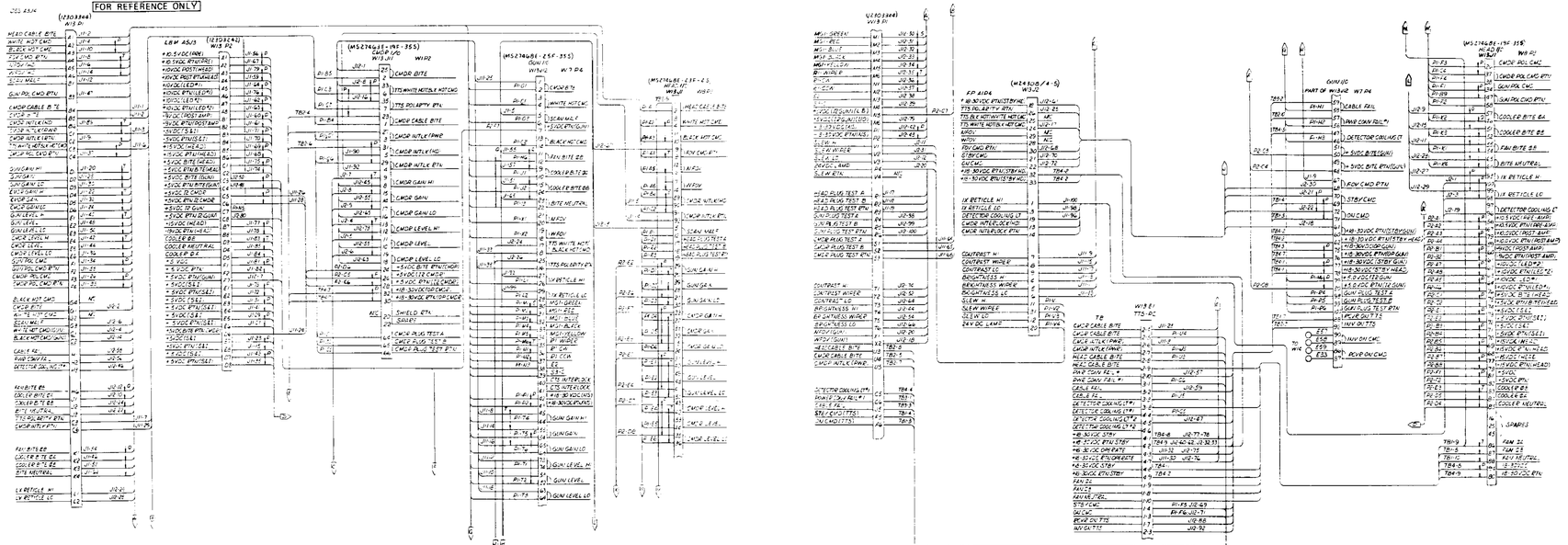
FOR REFERENCE ONLY





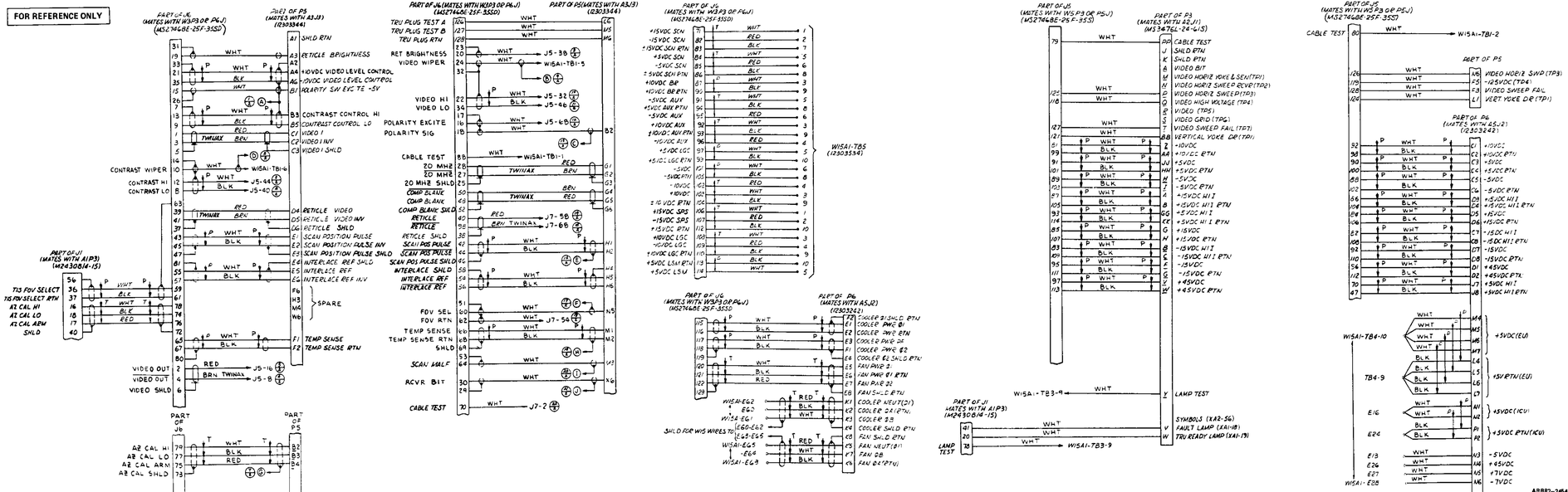
ARR87-24541

FO-10. Common Power Control Unit (PCU) A6A1 Schematic Diagram.

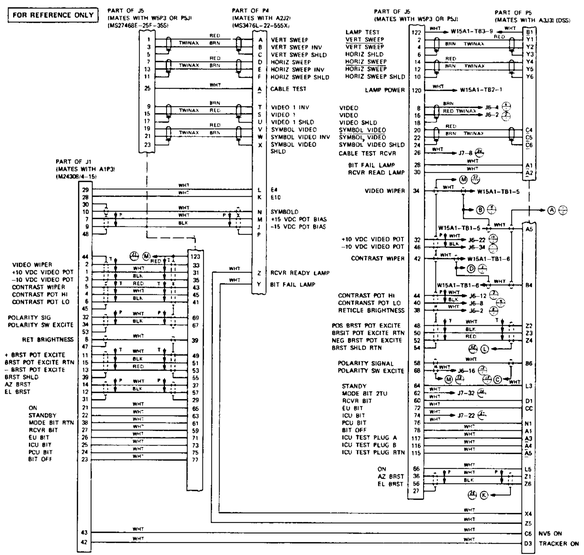


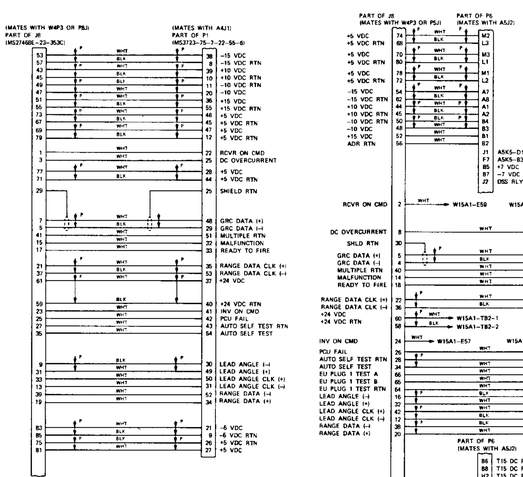
FO-11. Internal TTS Interconnect Harness W13 Wiring Diagram

FOR REFERENCE ONLY



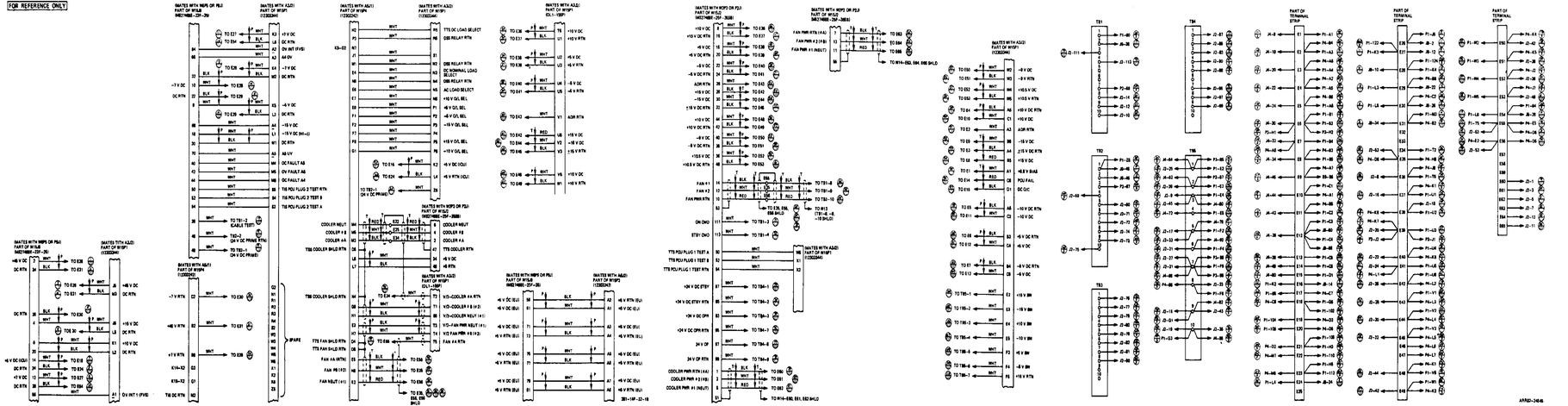
FO-12. Internal TIS Interconnect Harness W14 Wiring Diagram (Sheet 1 of 2)



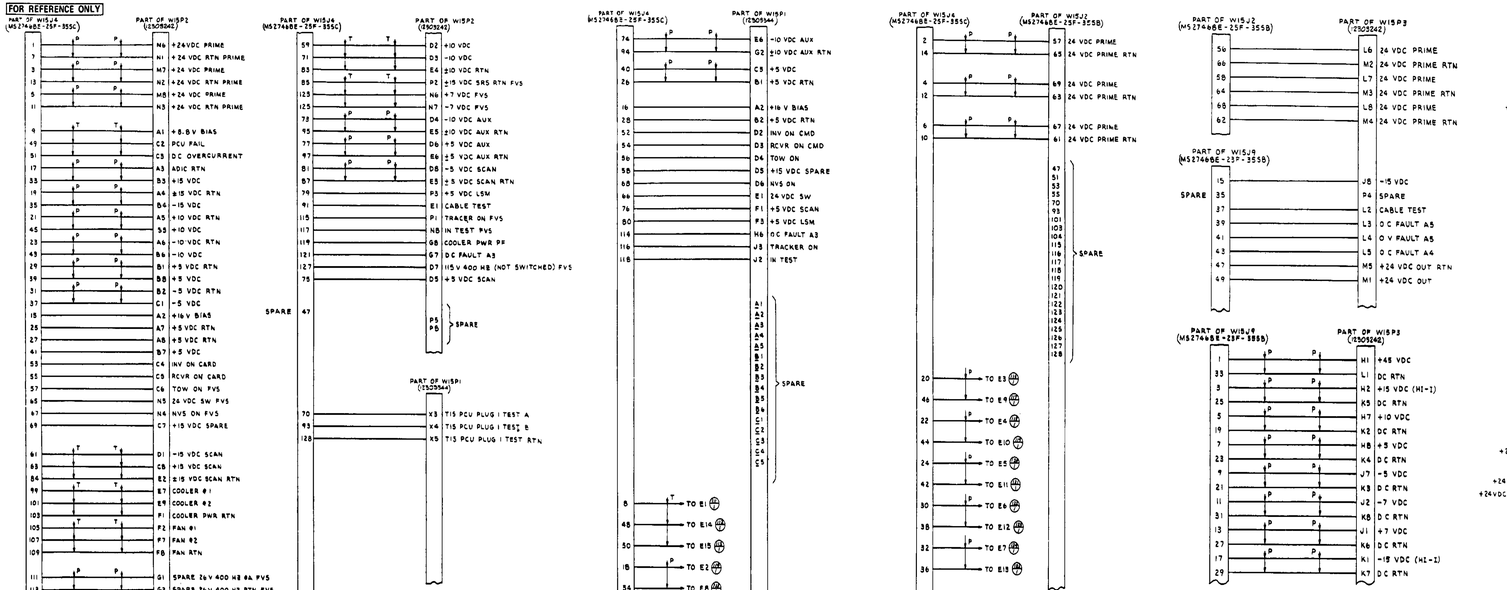


FO-12. Internal TIS Interconnect Harness W14 Wiring Diagram (Sheet 2 of 2)

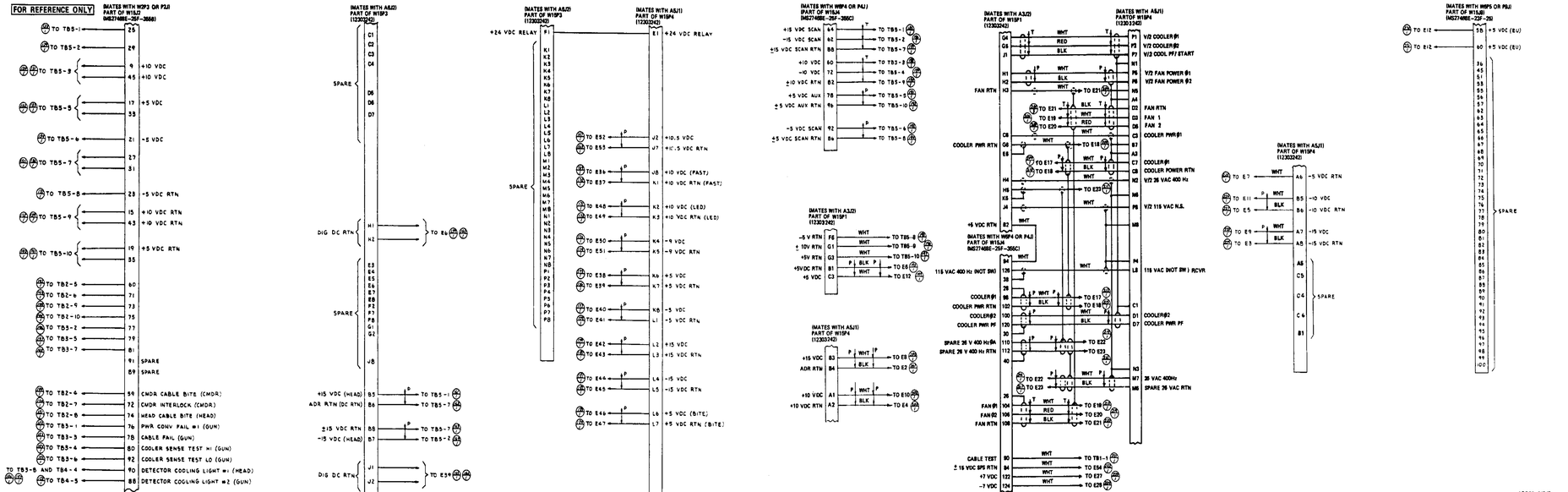
FOR REFERENCE ONLY



FO-13. Internal PCU Interconnect Harness W15 Wiring Diagram (Sheet 1 of 3)



FO-13. Internal PCU Interconnect Harness W15 Wiring Diagram (Sheet 2 of 3)



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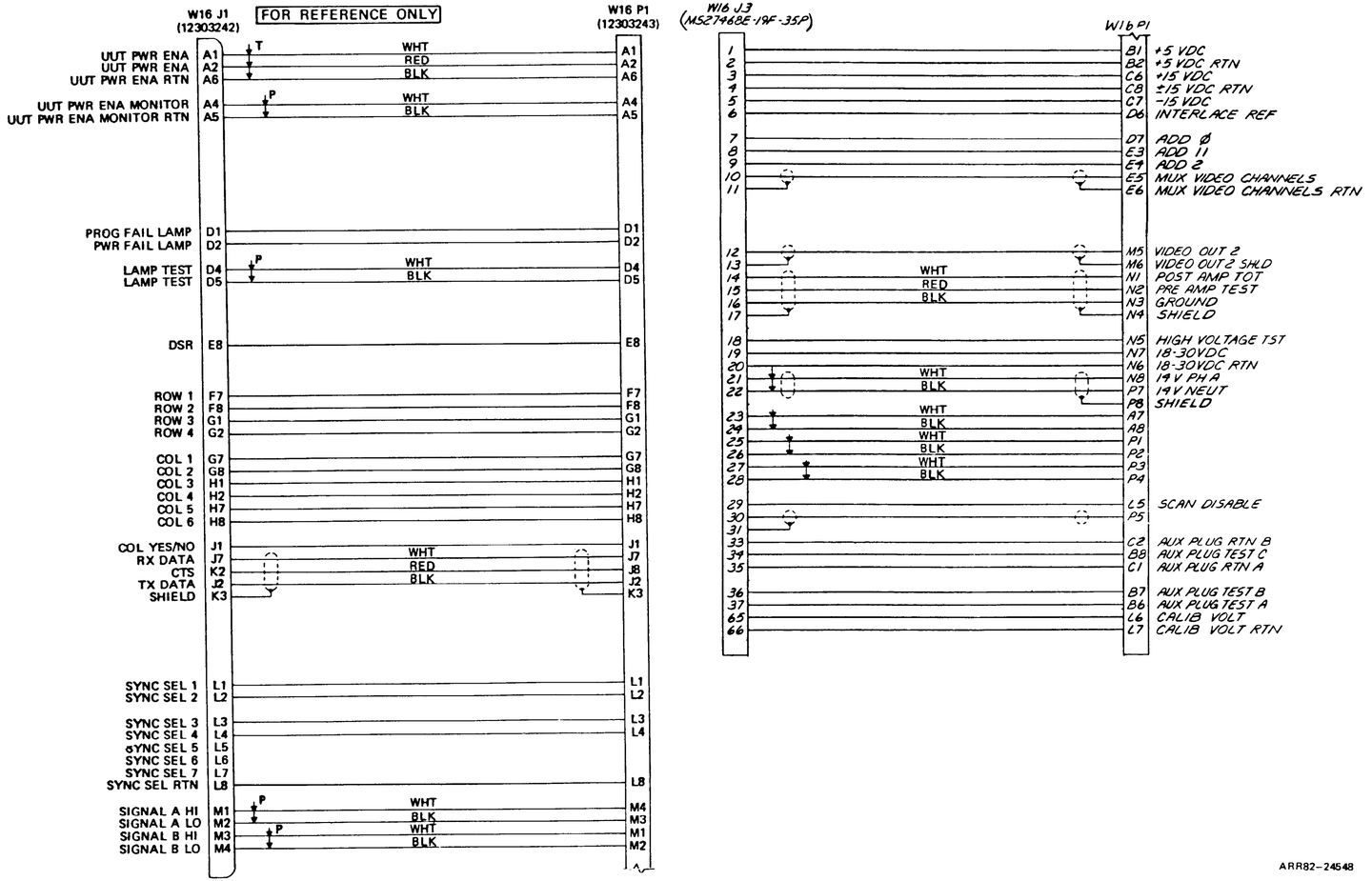
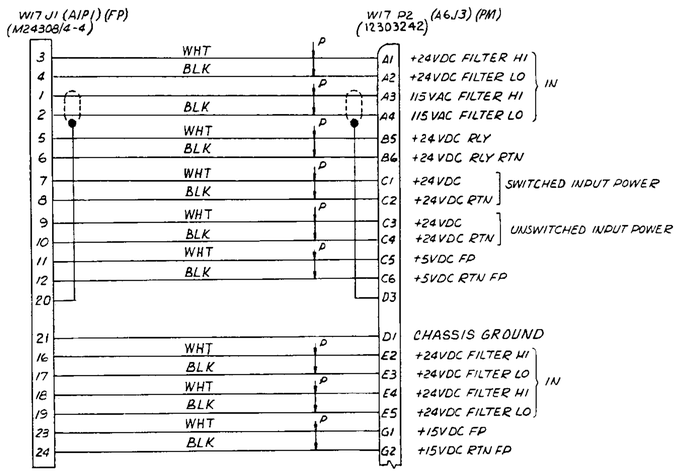
FO-13. Internal PCU Interconnect Harness W1S Wiring Diagram (Sheet 3 of 3)

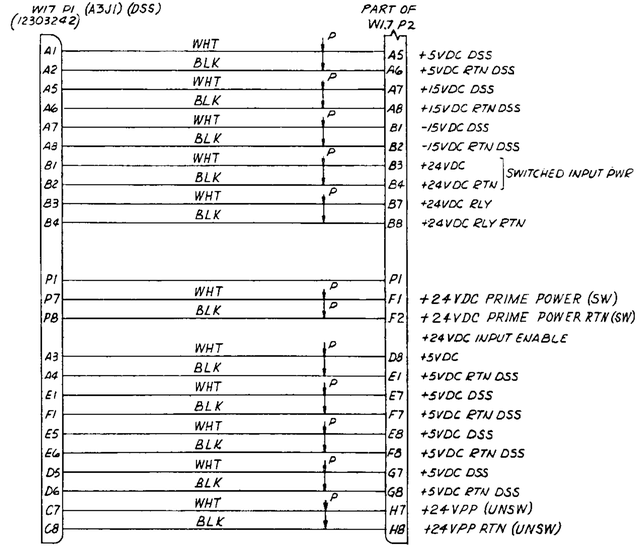


ARR82-24548

FO-14. Internal Panel Interconnect Harness W16 Wiring Diagram

FOR REFERENCE ONLY





ARRB2-24545

FO-15. Internal Power Distribution Harness W17 Wiring Diagram

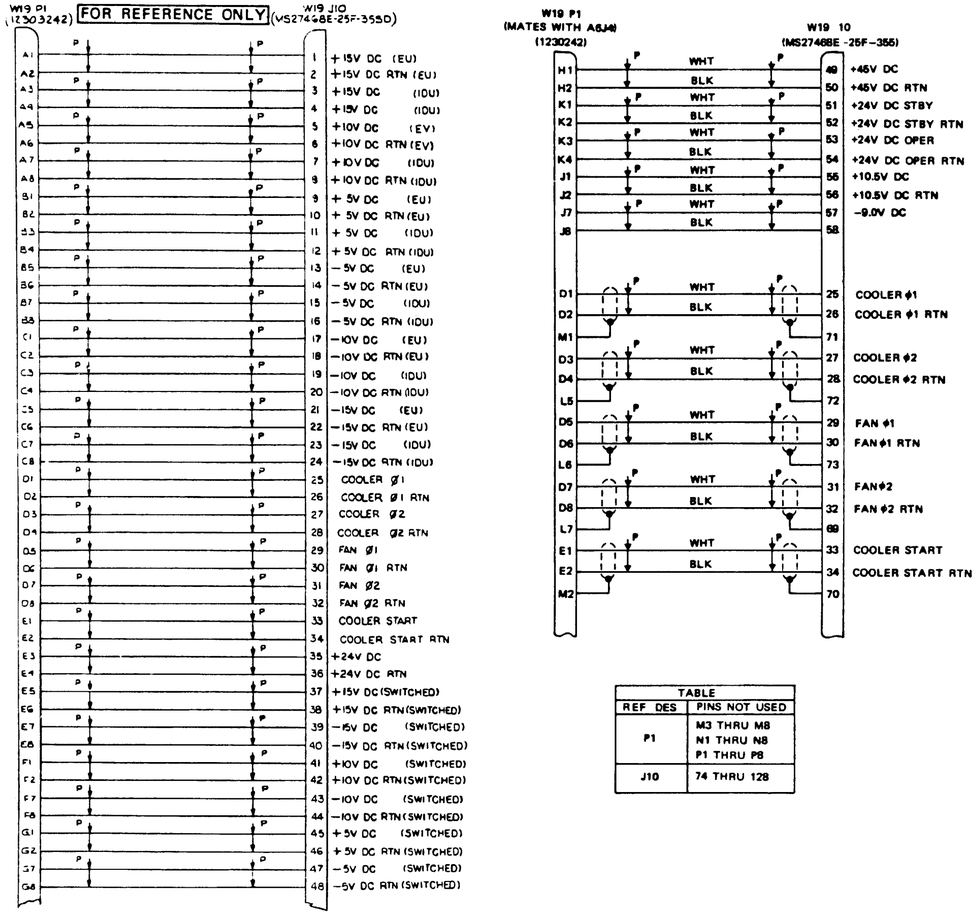


TABLE	
REF DES	PINS NOT USED
P1	M3 THRU M8 N1 THRU N8 P1 THRU P8
J10	74 THRU 128

ARR82-24550

FO-16. Internal TIS Interconnect Harness W19 Wiring Diagram

FOR REFERENCE ONLY

FROM CONTACT	TO CONTACT
P1A –1	P1A –2
–3	–4
–97	–98
–99	–98
–11	–10
–5	–12
–17	–19
–29	–20
–23	–22
–15	–24
–27	–26
–39	–28
–21	–30
–33	–32
–45	–34
–35	–36
–37	–38
–31	–40
–43	–42
–53	–44
–57	–46
–49	–48
–41	–50
–51	–52
–55	–54
–65	–66
–47	–58
–89	–90
–91	–92
P1A –93	P1A –100

CONTACTS 16, 18, 25, 59, THRU 64, 67 THRU 88, 94, 96, NOT USED

P1A

FROM CONTACT	TO CONTACT
P2A –1	P2A –2
–3	–4
–5	–6
–9	–8
–11	–10
–13	–12
–7	–14
–15	–16
–17	–18
–19	–20
–21	–22
–23	–24
–25	–26
–27	–28
–29	–30
–31	–32
–33	–34
–37	–36
–39	–38
–41	–40
–43	–42
–45	–44
–35	–46
–49	–48
–65	–66
P2A –67	P2A –68

P2A

FROM CONTACT	TO CONTACT
P2A –83	P2A –82
–85	–86
–87	–88
–89	–88
–91	–90
–61	–92
–65	–94
–67	–96
–69	–98
–71	–72
–73	–74
–79	–80
–113	–114
–75	–76
–77	–78
–111	–112
–57	–56
–69	–58
–63	–64
–61	–62
P2A –59	P2A –60

CONTACTS 47, 50 THRU 55, 70, 93, 100 THRU 110, 115 THRU 128 NOT USED

FROM CONTACT	TO CONTACT
P4A –1	P4A –2
–3	–4
–5	–6
–9	–8
–11	–10
–13	–12
–7	–14
–15	–16
–17	–18
–19	–20
–21	–22
–23	–24
–25	–26
–27	–28
–29	–30
–31	–32
–33	–34
–37	–36
–39	–38
–41	–40
–43	–42
–45	–44
–35	–46
–49	–48
–51	–60
–53	–62
–55	–64
–57	–58
–69	–68
–59	–60
P4A –61	P4A –62

P4A

FROM CONTACT	TO CONTACT
P4A –63	P4A –64
–65	–66
–67	–68
–71	–72
–73	–74
–75	–76
–77	–78
–79	–80
–83	–82
–85	–84
–87	–86
–89	–88
–81	–90
–91	–92
–95	–94
–97	–96
–99	–98
–101	–100
–103	–102
–105	–104
–107	–106
–109	–108
–111	–110
–113	–112
–121	–114
–115	–116
–117	–118
–119	–120
–125	–124
–123	–122
P4A –127	P4A –126
P4A –70	P4A –128

CONTACTS 47, 93 NOT USED

FROM CONTACT	TO CONTACT
P5A –1	P5A –2
–3	–4
–5	–6
–9	–8
–11	–10
–13	–12
–7	–14
–15	–16
–17	–18
–19	–20
–21	–22
–23	–24
–25	–26
–27	–28
–29	–30
–31	–32
–33	–34
–37	–36
–39	–38
–41	–40
–43	–42
–45	–44
–35	–46
–49	–48
–51	–60
–53	–62
–55	–64
–57	–56
–69	–58
–59	–60
–61	–62
–63	–64
–65	–66
–67	–68
–71	–72
–73	–74
–75	–76
P5A –77	P5A –78

P5A

FROM CONTACT	TO CONTACT
P5A –79	P5A –80
–82	–83
–85	–84
–101	–100
–61	–60
–69	–88
–87	–86
–95	–94
–97	–96
–99	–98
–103	–102
–105	–104
–107	–106
–109	–108
–111	–110
–113	–112
–81	–92
–70	–63
–115	–117
P5A –47	P5A –114

CONTACTS 116, 118, THRU 128 NOT USED

FROM CONTACT	TO CONTACT
P6A –1	P6A –2
–3	–4
–5	–6
–9	–8
–41	–98
–13	–12
–7	–14
–15	–16
–17	–18
–19	–20
–21	–22
–79	–78
–75	–76
–74	–77
–31	–30
–33	–32
–35	–34
–73	–72
–37	–38
–39	–40
–43	–42
–45	–44
–47	–46
–67	–68
–66	–88
–63	–64
–55	–54
–57	–56
–81	–58
P6A –61	P6A –62

CONTACTS 10, 11, 23 THRU 29, 35, 48 THRU 53, 69, 70, 71, 80, 83 THRU 87, 90 THRU 128 NOT USED

P6A

FROM CONTACT	TO CONTACT
P7A –1	P7A –2
–3	–4
–5	–6
–9	–8
–11	–10
–13	–12
–7	–14
–15	–16
–17	–18
–19	–20
–21	–22
–23	–24
–25	–26
–27	–28
–29	–30
–31	–32
–33	–34
–37	–36
–39	–38
–41	–40
–43	–42
–45	–44
–35	–46
–49	–48
–51	–60
–63	–62
–55	–54
–57	–56
–69	–58
–59	–60
–61	–62
–64	–64
–65	–66
–67	–68
–71	–72
–72	–74
–75	–76
–79	–80
P7A –83	P7A –82

P7A

FROM CONTACT	TO CONTACT
P7A –85	P7A –84
–87	–86
–89	–88
–91	–90
–81	–92
–103	–102
–105	–104
–77	–78
–95	–94
–97	–96
–99	–98
–101	–100
–107	–106
–109	–108
–112	–116
–119	–118
–121	–120
–123	–122
P7A –125	P7A –124

CONTACTS 43, 70, 93, 111, 113, 114, 115, 117, 126, 127, 128 NOT USED

FROM CONTACT	TO CONTACT
P8A –1	P8A –2
–6	–4
–7	–8
–3	–8
–2	–16
–13	–12
–15	–14
–33	–42
–17	–18
–19	–20
–21	–22
–23	–24
–25	–26
–27	–28
–29	–30
–31	–32
–35	–34
–37	–36
–39	–38
–41	–40
–43	–44
–45	–46
–47	–48
–49	–50
–51	–52
–53	–54
–55	–56
–57	–62
–61	–60
–59	–58
P8A –64	P8A –65

CONTACTS 10, 11, 63, 66, 67 THRU 100 NOT USED

P8A

FROM CONTACT	TO CONTACT
P8A –1	P8A –2
–3	–4
–5	–6
–7	–14
–9	–8
–13	–12
–15	–16
–17	–18
–11	–10
–19	–20
–23	–24
–25	–26
–27	–28
–29	–30
–31	–32
–33	–34
–35	–36
–37	–38
–39	–40
–41	–42
–43	–44
–21	–22
–47	–46
–49	–48
P8A –50	P8A –54

CONTACTS 45, 51, 52, 53, 55 THRU 95 NOT USED

P8A

FROM CONTACT	TO CONTACT
P11A –3	P11A –2
–6	–4
–7	–6
–17	–8
–9	–10
–11	–12
–13	–14
–25	–16
–19	–18
–21	–20
–23	–22
–15	–24
–27	–26
–29	–28
–63	–44
–65	–66
–67	–68
–69	–70
–45	–44
–47	–46
–49	–48
–51	–50
–53	–52
–55	–64
–57	–56
–69	–58
–71	–72
–73	–74
–86	–87
–89	–90
P12A –98	P12A –100

CONTACTS 7, 30 THRU 43, 62, 75, 86, 88, 91 THRU 100 NOT USED

P12A

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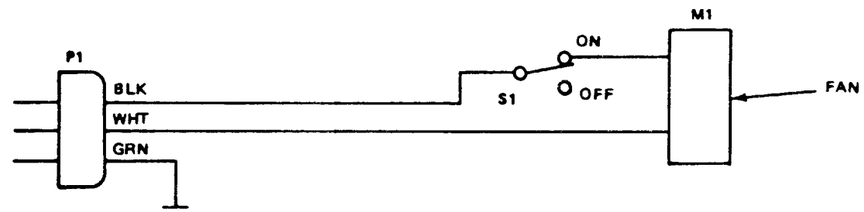
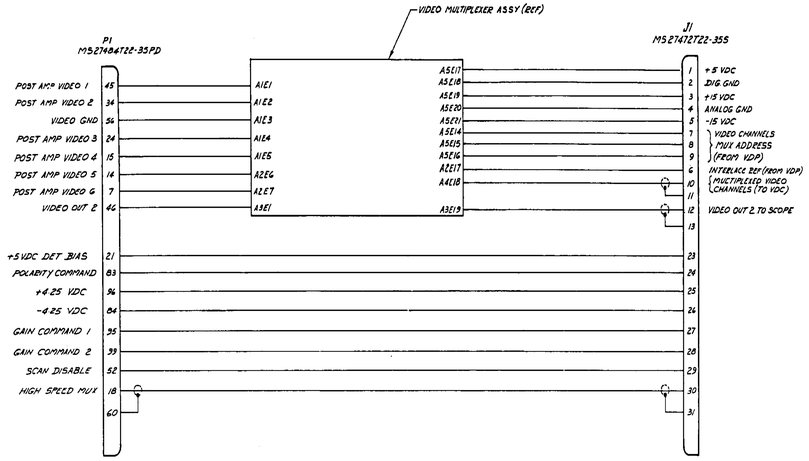
FO-17. Shorting Plug Connectors Wiring Lists

FOR REFERENCE ONLY



FO-18. PCU Heatsink Holding Fixture Schematic Diagram

FOR REFERENCE ONLY



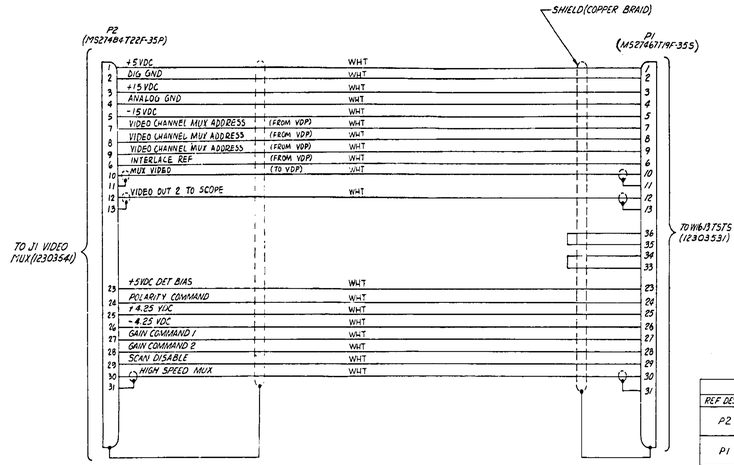


TABLE	
REF DESIG	PINS, NOT USED
P2	14 THRU 22, 32 THRU 100
P1	14 THRU 22, 32, 37 THRU 44

ARR82-24653

FO-19. Cable Assembly W9/Video Multiplexer Assembly Schematic Diagram

THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
1 Kilometer = 1000 Meters = 0.621 Miles

WEIGHTS

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
1 Kilogram = 1000 Grams = 2.2 Lb
1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE

1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inches
1 Sq Meter = 10,000 Sq Centimeters = 10.76 Sq Feet
1 Sq Kilometer = 1,000,000 Sq Meters = 0.386 Sq Miles

CUBIC MEASURE

1 Cu Centimeter = 1000 Cu Millimeters = 0.06 Cu Inches
1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

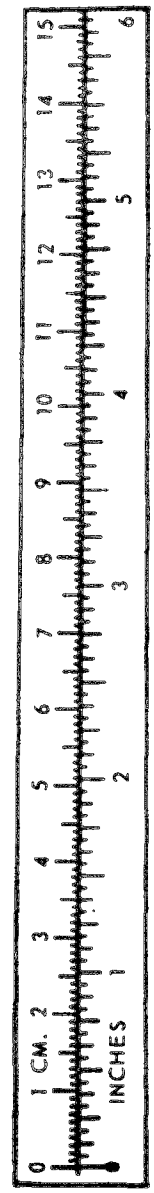
TEMPERATURE

$5/9\ (^{0}F - 32) = {}^{0}C$
212^{0} Fahrenheit is equivalent to 100^{0} Celsius
90^{0} Fahrenheit is equivalent to 32.2^{0} Celsius
32^{0} Fahrenheit is equivalent to 0^{0} Celsius
$9/5\ C^{0} + 32 = F^{0}$

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621



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