

CHAPTER

30

ICE AND RAIN PROTECTION



CHAPTER 30
ICE AND RAIN PROTECTION

CH-SC-SU	Schem	Page	Sheet	Date	CH-SC-SU	Schem	Page	Sheet	Date
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30-ALPHABETICAL INDEX							101.1	1	Jul 26/2006
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		2		BLANK	D		101.2	1	Aug 10/2009
30-11-11					D			2	Aug 10/2009
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		101		Feb 09/2009			102.1	1	May 13/2008
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R			2	Aug 10/2009	30-71-11				
D		101.2	1	Aug 10/2009			101	1	Jul 17/2007
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D			2	Aug 10/2009				2	Feb 09/2009
		102.1	1	May 13/2008			103	1	Feb 09/2009

A = Added, R = Revised, D = Deleted, O = Overflow

30-EFFECTIVE PAGES



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ICE AND RAIN PROTECTION

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30-71-11 (cont.)		103							
			2	Feb 09/2009					

A = Added, R = Revised, D = Deleted, O = Overflow

30-EFFECTIVE PAGES

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D280A203



CHAPTER 30
ICE AND RAIN PROTECTION

Title	CH-SC-SU	Schem	Page	Sheet	Date	Effectivity	
<u>WING THERMAL ANTI-ICING SYSTEM</u>							
WING THERMAL ANTI-ICE SYSTEM	30-11-11		101		Feb 09/2009	ALL	
<u>INLET COWL AND NACELLE ANTI-ICING SYSTEM</u>							
ENGINE NACELLE ANTI-ICE	30-21-11		101		Feb 09/2009	ALL	
<u>PITOT TUBES AND TEMPERATURE PROBE ANTI-ICING SYSTEM</u>							
PITOT AND PROBE HEATERS - SYSTEM A	30-31-11		101		Feb 09/2009	ALL	
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<u>FLIGHT COMPARTMENT WINDOW ANTI-ICING SYSTEM</u>							
WINDSHIELD HEAT SYSTEM - L. FRONT, R. SIDE AND OPTIONAL L3 WINDOWS	30-41-11		101.1	1	Jul 26/2006	YC001-YC007	
				2	Aug 10/2009	YC001-YC007	
				102.1	1	May 13/2008	YC008-YC030
				2	May 13/2008	YC008-YC030	
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WINDSHIELD HEAT SYSTEM - R. FRONT, L. SIDE AND OPTIONAL R3 WINDOWS	30-41-12		101.1	1	Jul 26/2006	YC001-YC007	
				2	Aug 10/2009	YC001-YC007	
				102.1	1	May 13/2008	YC008-YC030
				2	May 13/2008	YC008-YC030	
				103	1	Feb 09/2009	YC031-YM670
				2	Feb 09/2009	YC031-YM670	



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ICE AND RAIN PROTECTION

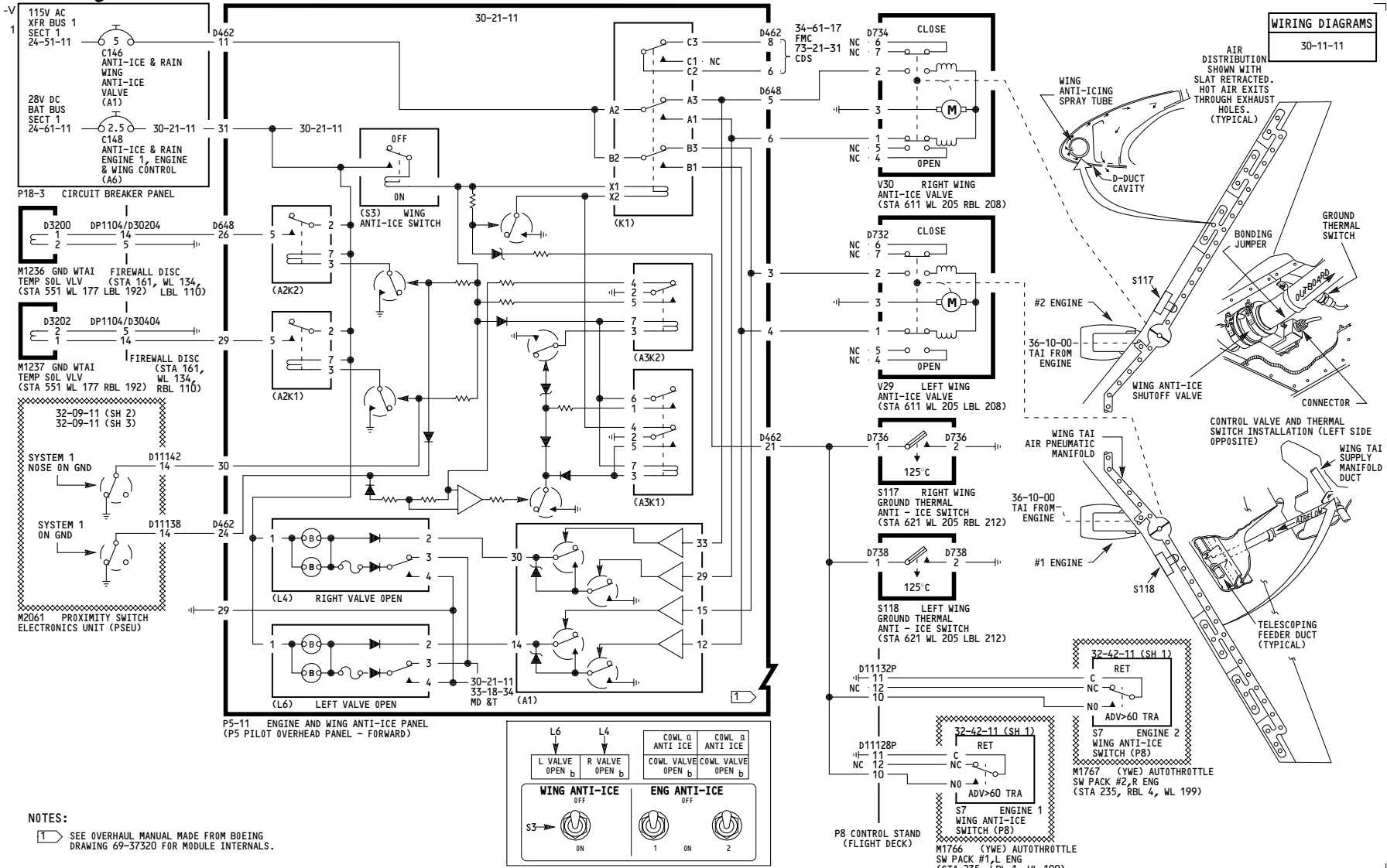
Title	CH-SC-SU	Schem	Page	Sheet	Date	Effectivity
<u>WINDSHIELD WIPER SYSTEM</u>						
WINDSHIELD WIPERS	30-42-11		101		Mar 31/2005	YC001-YC019
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<u>WATER AND TOILET DRAIN ANTI-ICING SYSTEM</u>						
DRAIN HEATERS	30-71-11		101	1	Jul 17/2007	YC001-YC050
				2	Jul 17/2007	YC001-YC050
			102	1	Feb 09/2009	YK901-YK912 YK918 YL401-YL426 YM643-YM651
				2	Feb 09/2009	YK901-YK912 YK918 YL401-YL426 YM643-YM651
			103	1	Feb 09/2009	YK913-YK917 YK919-YK920 YL427-YL430 YM652-YM670
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ICE AND RAIN PROTECTION

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30-71-11	DRAIN HEATERS
30-21-11	ENGINE NACELLE ANTI-ICE
30-31-11	PITOT AND PROBE HEATERS - SYSTEM A
30-31-12	PITOT AND PROBE HEATERS - SYSTEM B
30-41-11	WINDSHIELD HEAT SYSTEM - L. FRONT, R. SIDE AND OPTIONAL L3 WINDOWS
30-41-12	WINDSHIELD HEAT SYSTEM - R. FRONT, L. SIDE AND OPTIONAL R3 WINDOWS
30-42-11	WINDSHIELD WIPERS
30-11-11	WING THERMAL ANTI-ICE SYSTEM

CH-SC-SU	Title
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30-ALPHABETICAL INDEX



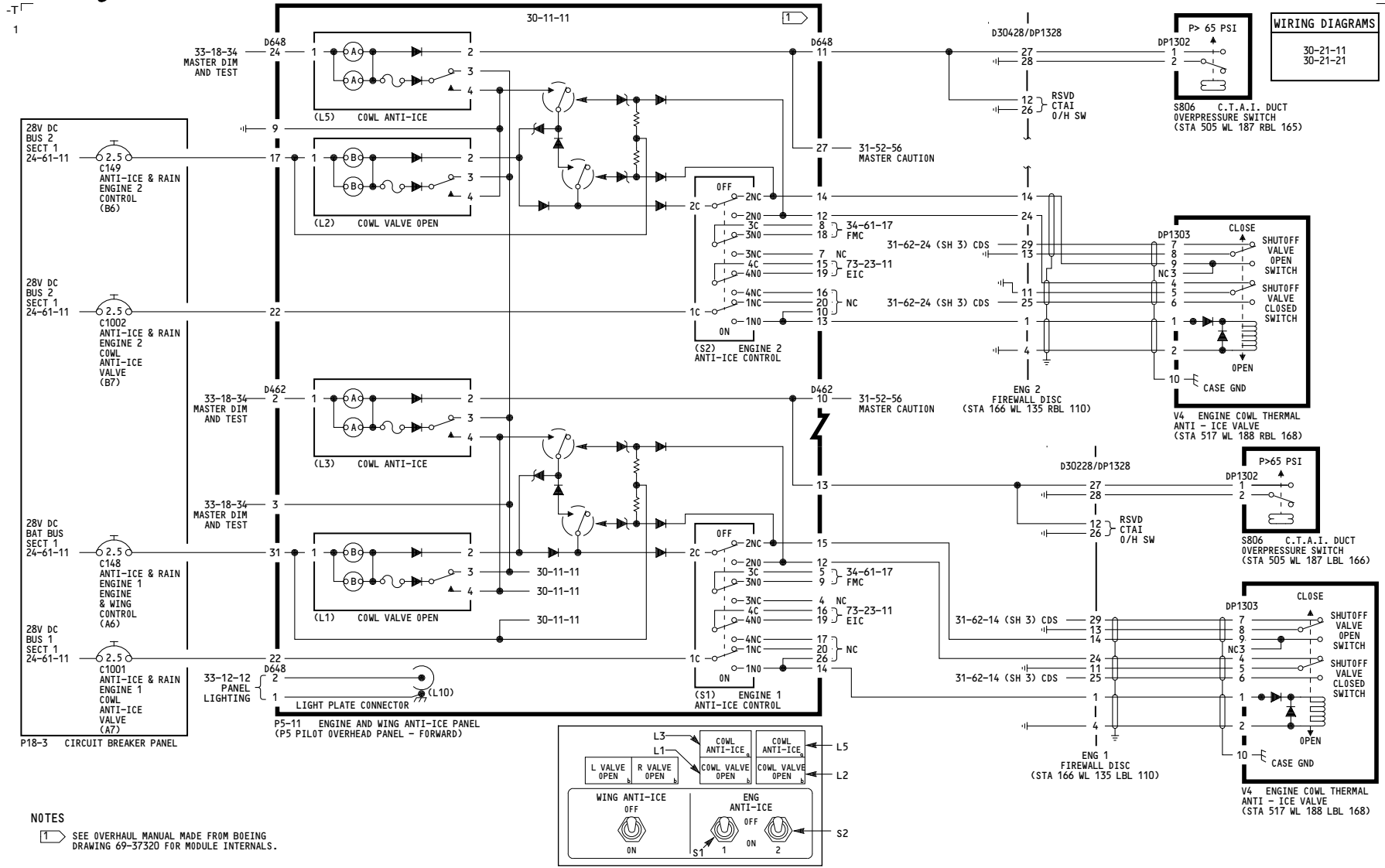
NOTES:
 1 SEE OVERHAUL MANUAL MADE FROM BOEING DRAWING 69-37320 FOR MODULE INTERNALS.

ALL	<p>WING THERMAL ANTI-ICE SYSTEM</p> <p>D280A203</p>
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30-11-11

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Feb 09/2009

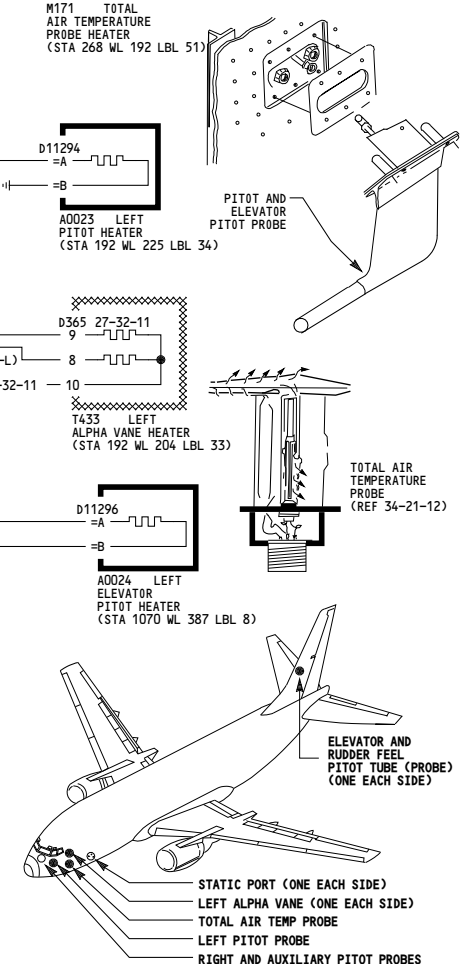
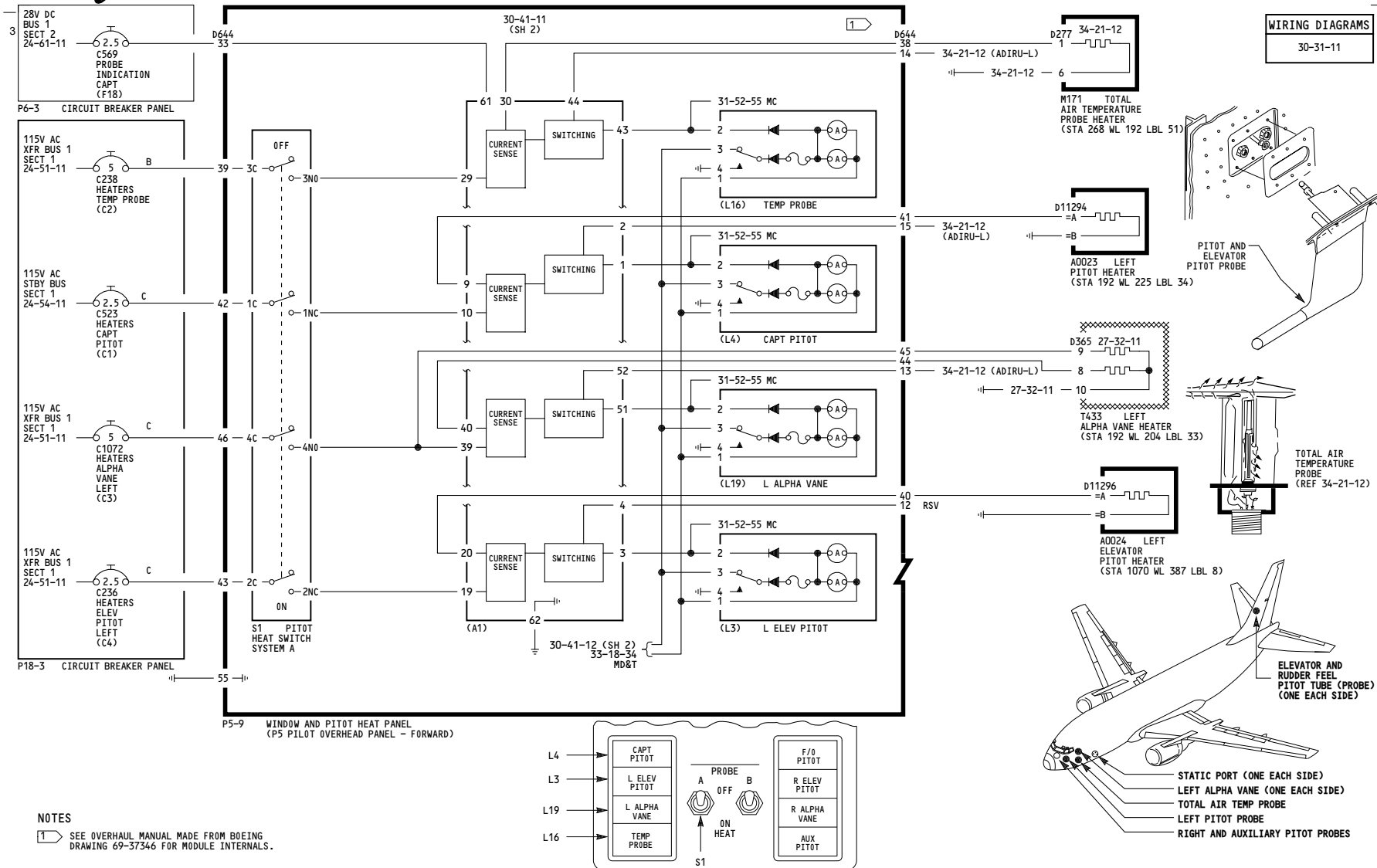


30-21-11

ALL

ENGINE NACELLE ANTI-ICE

D280A203

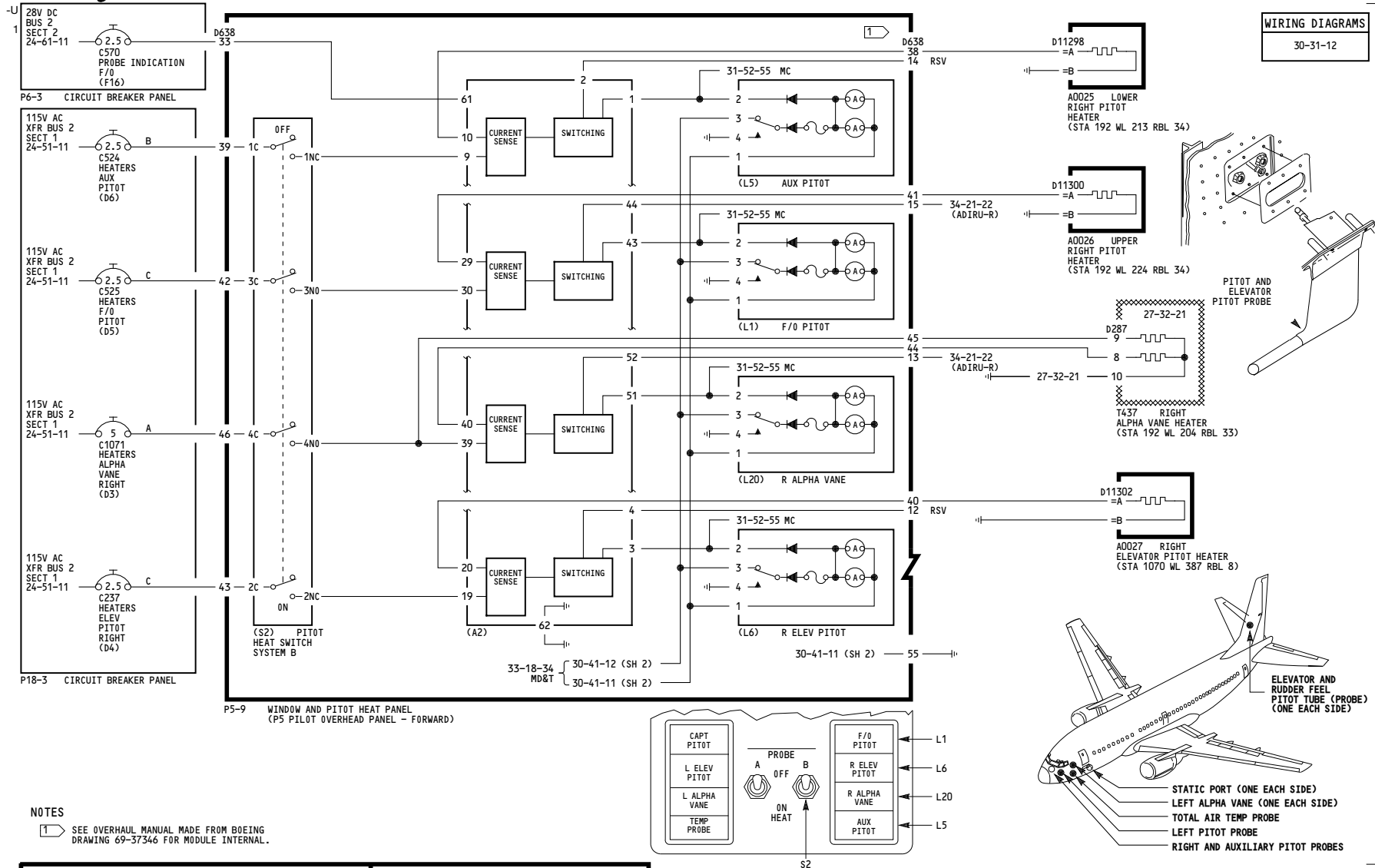


ALL

PITOT AND PROBE HEATERS - SYSTEM A

D280A203

30-31-11



WIRING DIAGRAMS
30-31-12

NOTES
1 SEE OVERHAUL MANUAL MADE FROM BOEING DRAWING 69-37346 FOR MODULE INTERNAL.

ALL	<p>PITOT AND PROBE HEATERS - SYSTEM B</p> <p>D280A203</p>
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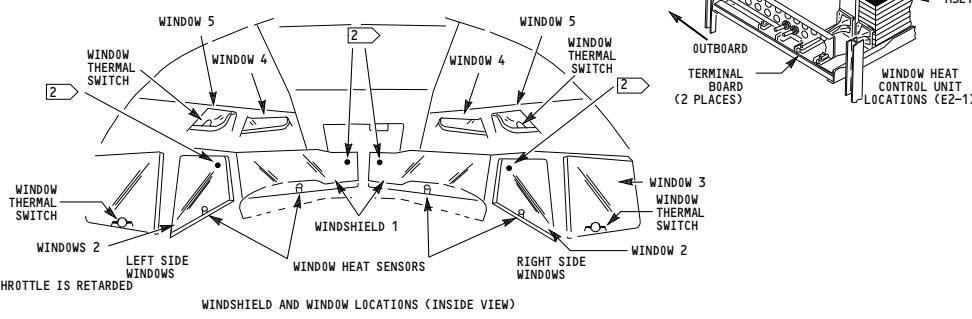
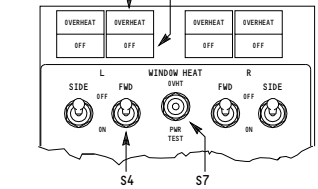
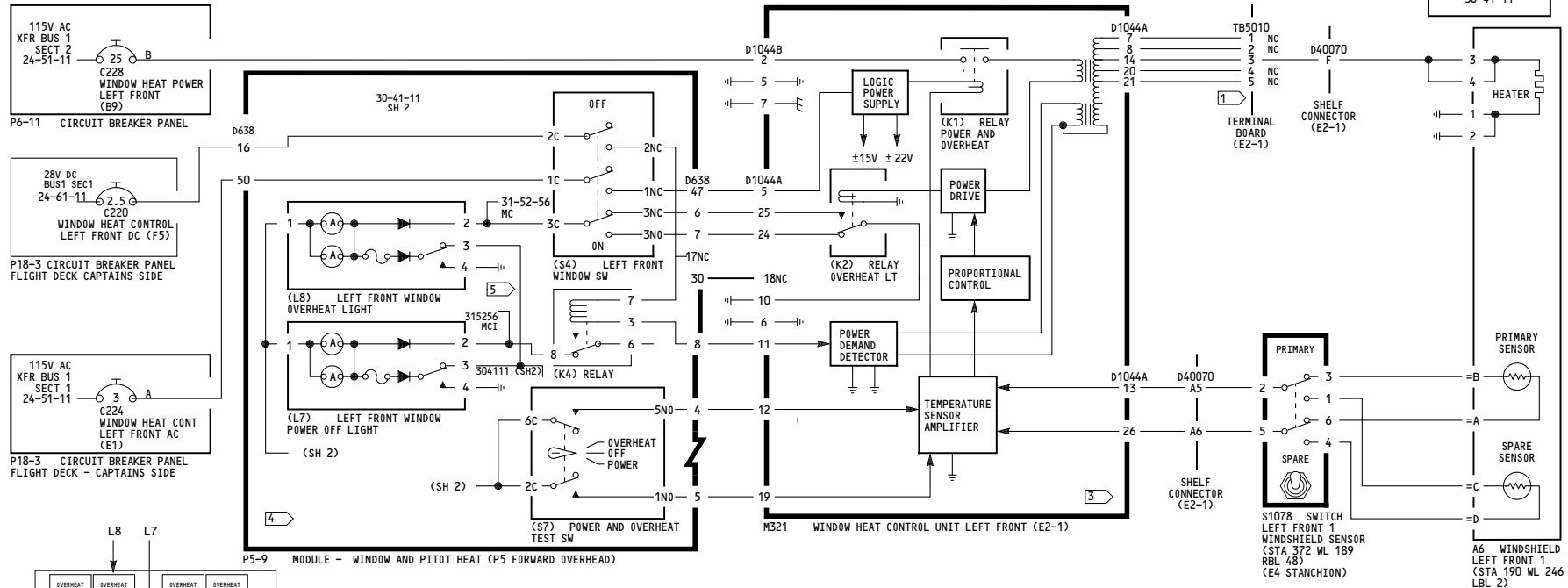
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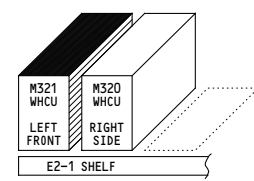
Feb 09/2009

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WINDSHIELD CODE	BUS TO BUS WINDOW RESISTANCE (OHMS) WINDSHIELD TEMP AT 88°F 20°F		LUG ID NUMBERS ON TERMINAL BOARD TB5010	WHCU OUTPUT VAC PER TAP SET	
	MIN	MAX			
NEW	H13	31.4	35.1	1	271
	H12	35.1	38.8	2	285
OLD	H11	38.8	42.6	3	300
		42.6	47.3	4	315
		47.3	5	331	



- USE WINDSHIELD CODE AND RESISTANCE VALUES FOR OLD (USED) AND NEW WINDSHIELDS TO DETERMINE TERMINAL CONNECTIONS.
- WINDSHIELD "H" NUMBER CODE LOCATION.
- SEE SUPPLIER OVERHAUL MANUAL MADE TO BOEING 10-61833 SPECIFICATION FOR LRU INTERNALS.
- SEE OVERHAUL MANUAL MADE FROM BOEING DRAWING 233A3201 FOR MODULE INTERNALS.
- MASTER CAUTION INPUT INHIBITED WHEN ENGINE #1 THROTTLE IS RETARDED AIRPLANE IS ON GRD AND S3-S6 ARE ON.

YC001-YC007

WINDSHIELD HEAT SYSTEM - L. FRONT, R. SIDE AND OPTIONAL L3 WINDOWS

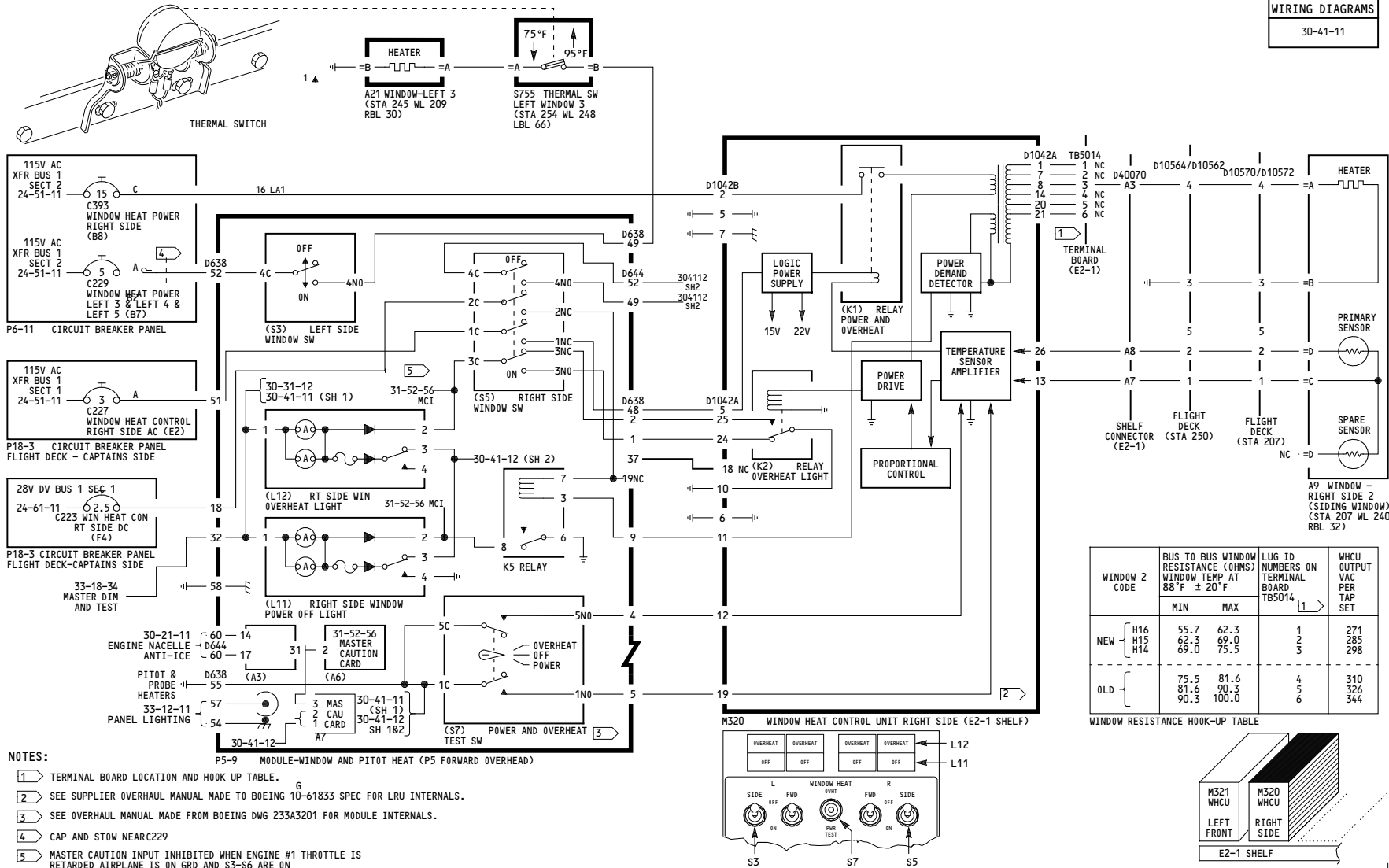
Incorporates 30-1047

D280A203

30-41-11

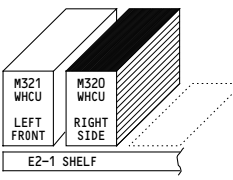
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Sheet 1
Jul 26/2006

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WINDOW 2 CODE	BUS TO BUS WINDOW RESISTANCE (OHMS) WINDOW TEMP AT 88°F ± 20°F		LUG ID NUMBERS ON TERMINAL BOARD TBS014	WHCU OUTPUT VAC PER TAP SET
	MIN	MAX		
NEW	H16	55.7	62.3	1 2 3
	H15	62.3	69.0	
	H14	69.0	75.5	
OLD		75.5	81.6	4 5 6
		81.6	90.3	
		90.3	100.0	

WINDOW RESISTANCE HOOK-UP TABLE



- NOTES:
- 1 TERMINAL BOARD LOCATION AND HOOK UP TABLE.
 - 2 SEE SUPPLIER OVERHAUL MANUAL MADE TO BOEING 10-61833 SPEC FOR LRU INTERNALS.
 - 3 SEE OVERHAUL MANUAL MADE FROM BOEING DWG 233A3201 FOR MODULE INTERNALS.
 - 4 CAP AND STOW NEAR C229
 - 5 MASTER CAUTION INPUT INHIBITED WHEN ENGINE #1 THROTTLE IS RETARDED AIRPLANE IS ON GRD AND S3-S6 ARE ON

YC001-YC007

WINDSHIELD HEAT SYSTEM - L. FRONT, R. SIDE AND OPTIONAL L3 WINDOWS

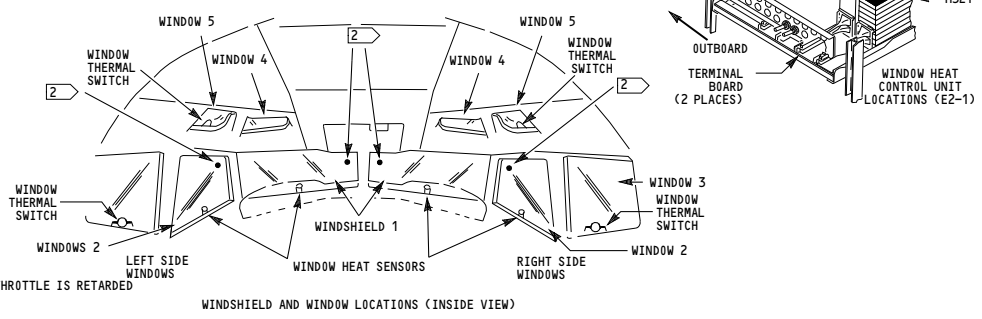
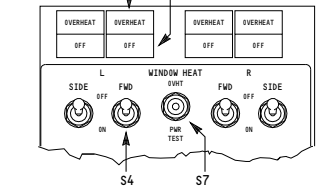
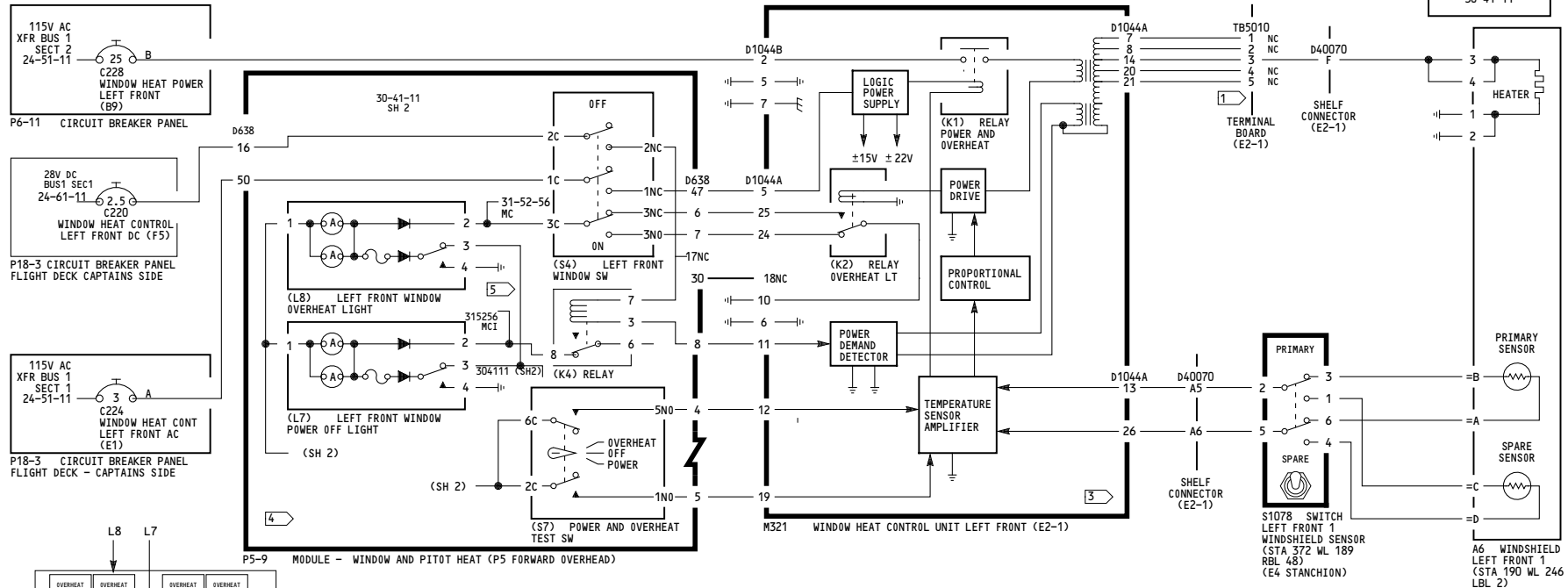
Incorporates
 30-1047
 56-1017 R01

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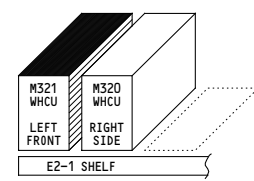
30-41-11

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Sheet 2
Aug 10/2009

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WINDSHIELD CODE	BUS TO BUS WINDOW RESISTANCE (OHMS) WINDSHIELD TEMP AT 88°F 20°F		LUG ID NUMBERS ON TERMINAL BOARD TB5010	WHCU OUTPUT VAC PER TAP SET	
	MIN	MAX			
NEW	H13	31.4	35.1	1	271
	H12	35.1	38.8	2	285
OLD	H11	38.8	42.6	3	300
		42.6	47.3	4	315
		47.3	52.0	5	331



- USE WINDSHIELD CODE AND RESISTANCE VALUES FOR OLD (USED) AND NEW WINDSHIELDS TO DETERMINE TERMINAL CONNECTIONS.
- WINDSHIELD "H" NUMBER CODE LOCATION.
- SEE SUPPLIER OVERHAUL MANUAL MADE TO BOEING 10-61833 SPECIFICATION FOR LRU INTERNALS.
- SEE OVERHAUL MANUAL MADE FROM BOEING DRAWING 233A3201 FOR MODULE INTERNALS.
- MASTER CAUTION INPUT INHIBITED WHEN ENGINE #1 THROTTLE IS RETARDED AIRPLANE IS ON GRD AND S3-S6 ARE ON.

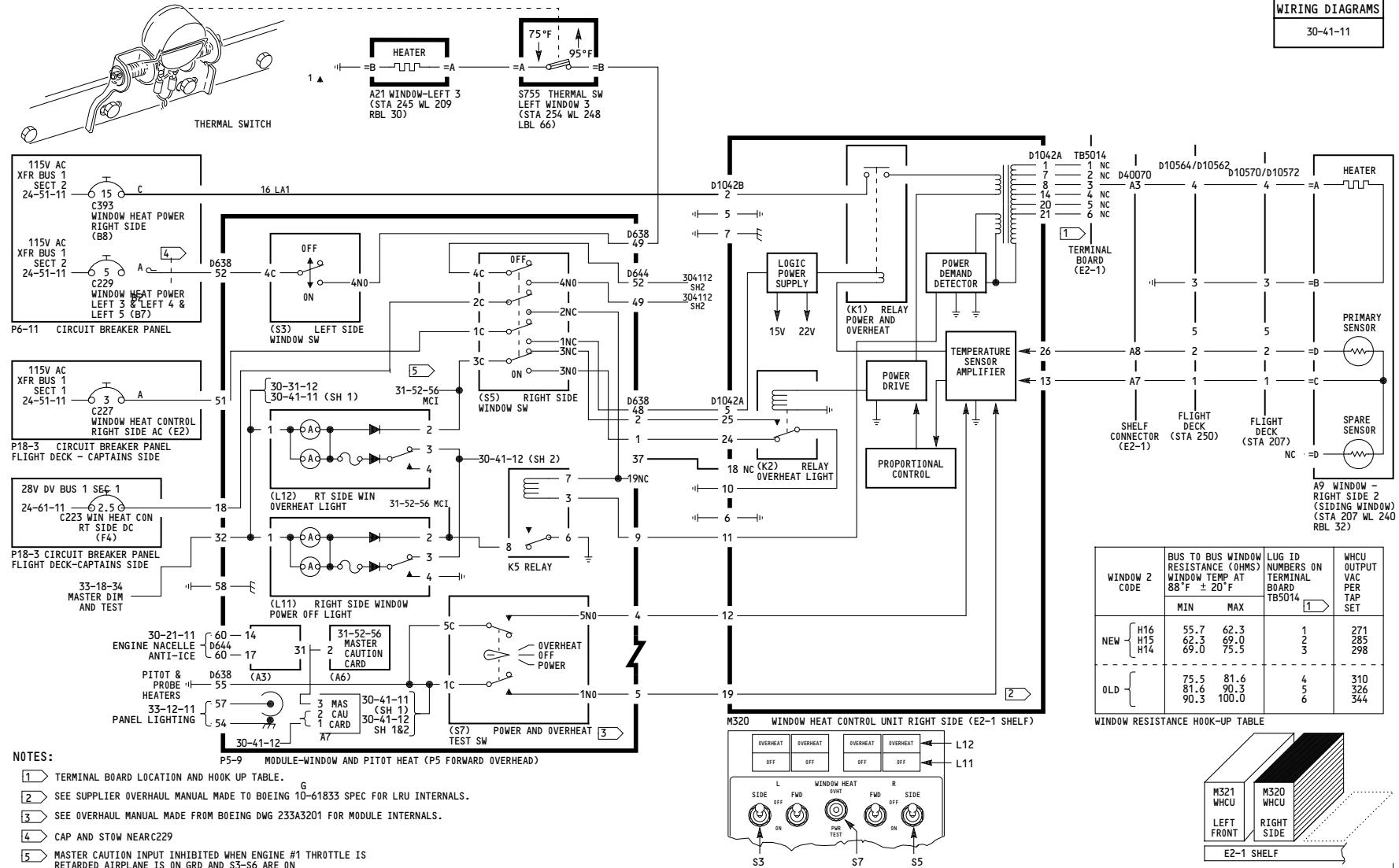
YC008-YC030

WINDSHIELD HEAT SYSTEM - L. FRONT, R. SIDE AND OPTIONAL L3 WINDOWS

D280A203

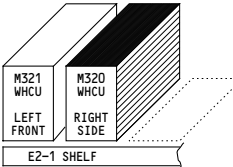
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WINDOW 2 CODE	BUS TO BUS WINDOW RESISTANCE (OHMS) WINDOW TEMP AT 88°F ± 20°F		LUG ID NUMBERS ON TERMINAL BOARD TB5014	WHCU OUTPUT VAC PER TAP SET	
	MIN	MAX			
NEW	H16	55.7	62.3	1	271
	H15	62.3	69.0	2	285
	H14	69.0	75.5	3	298
OLD		75.5	81.6	4	310
		81.6	90.3	5	326
		90.3	100.0	6	344

WINDOW RESISTANCE HOOK-UP TABLE



- NOTES:**
- 1 TERMINAL BOARD LOCATION AND HOOK UP TABLE.
 - 2 SEE SUPPLIER OVERHAUL MANUAL MADE TO BOEING 10-61833 SPEC FOR LRU INTERNALS.
 - 3 SEE OVERHAUL MANUAL MADE FROM BOEING DWG 233A3201 FOR MODULE INTERNALS.
 - 4 CAP AND STOW NEAR C229
 - 5 MASTER CAUTION INPUT INHIBITED WHEN ENGINE #1 THROTTLE IS RETARDED AIRPLANE IS ON GRD AND S3-56 ARE ON.

YC008-YC030

WINDSHIELD HEAT SYSTEM - L. FRONT, R. SIDE AND OPTIONAL L3 WINDOWS

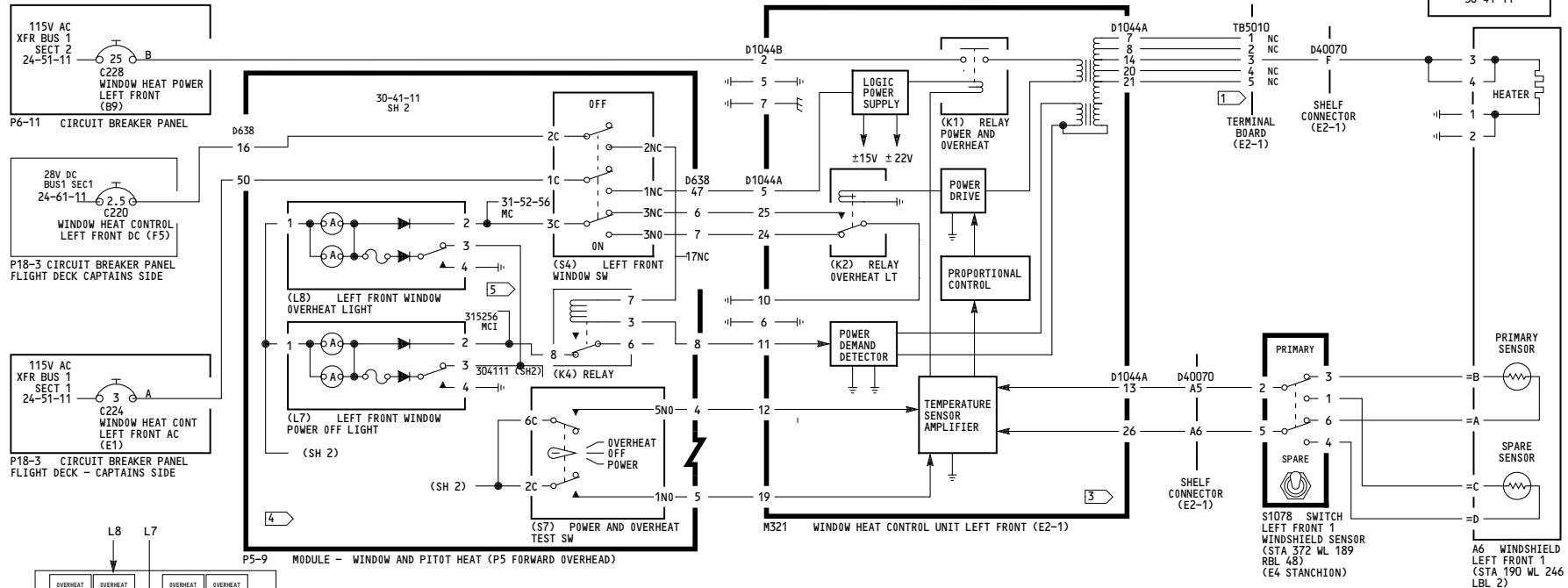
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Incorporates
56-1017 R01

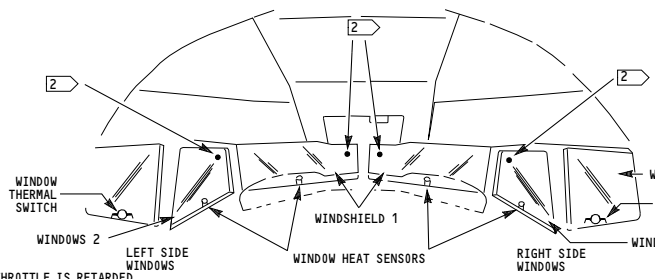
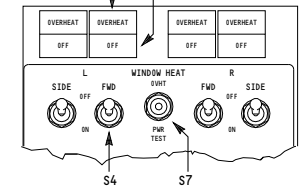
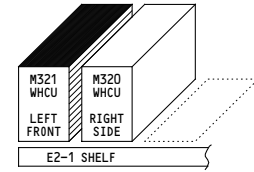
30-41-11

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May 13/2008

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WINDSHIELD CODE	BUS TO BUS WINDOW RESISTANCE (OHMS) WINDSHIELD TEMP AT 88°F 20°F		LUG ID NUMBERS ON TERMINAL BOARD TB5010		WHCU OUTPUT VAC PER TAP SET
	MIN	MAX			
NEW	H13	31.4	35.1	1	271
	H12	35.1	38.8	2	285
	H11	38.8	42.6	3	300
OLD		42.6	47.3	4	315
		47.3	52.0	5	331



WINDSHIELD AND WINDOW LOCATIONS (INSIDE VIEW)

- USE WINDSHIELD CODE AND RESISTANCE VALUES FOR OLD (USED) AND NEW WINDSHIELDS TO DETERMINE TERMINAL CONNECTIONS.
- WINDSHIELD "H" NUMBER CODE LOCATION.
- SEE SUPPLIER OVERHAUL MANUAL MADE TO BOEING 10-61833 SPECIFICATION FOR LRU INTERNALS.
- SEE OVERHAUL MANUAL MADE FROM BOEING DRAWING 233A3201 FOR MODULE INTERNALS.
- MASTER CAUTION INPUT INHIBITED WHEN ENGINE #1 THROTTLE IS RETARDED AIRPLANE IS ON GRD AND S3-S6 ARE ON.

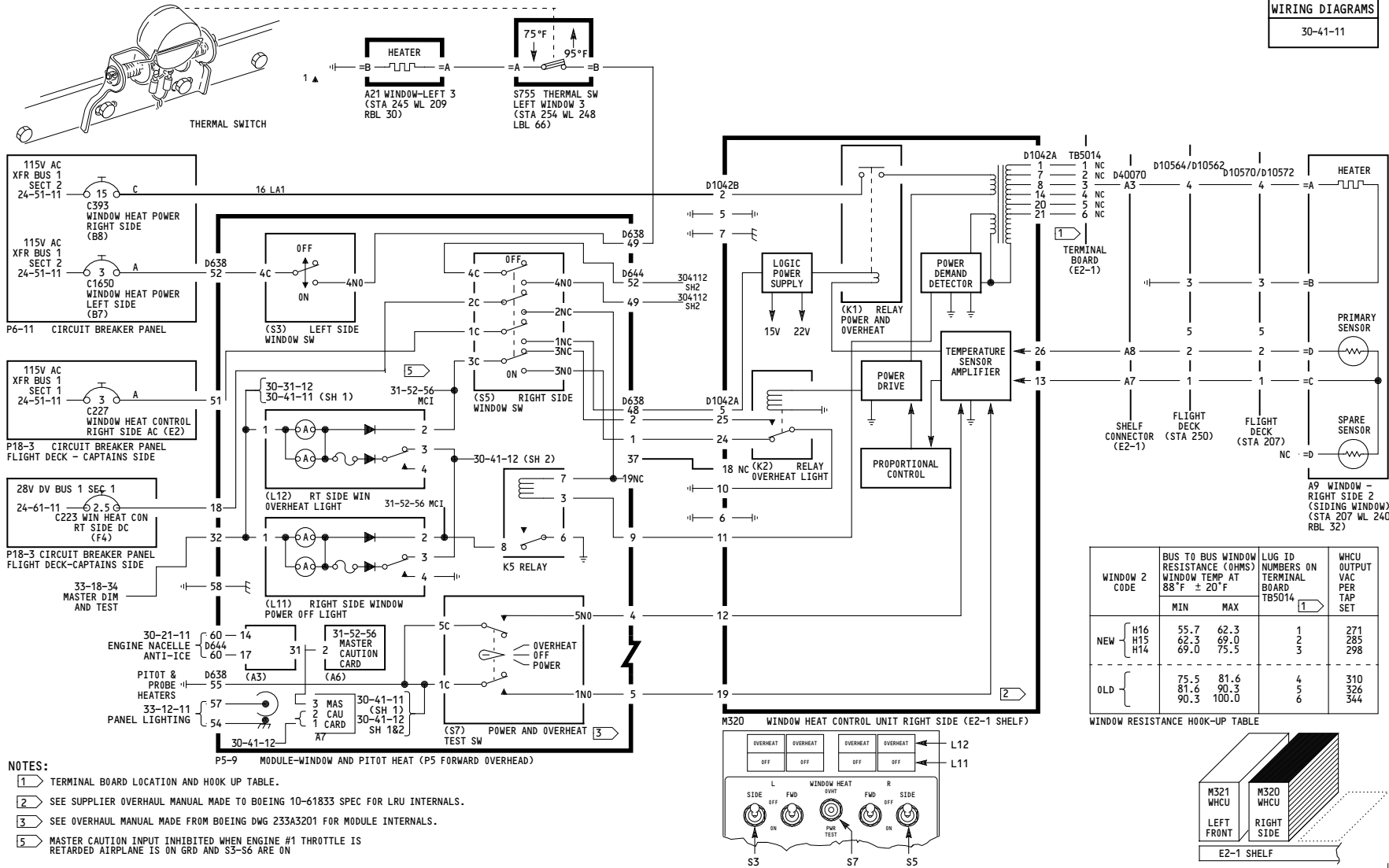
YC031-YM670

WINDSHIELD HEAT SYSTEM - L. FRONT, R. SIDE AND OPTIONAL L3 WINDOWS

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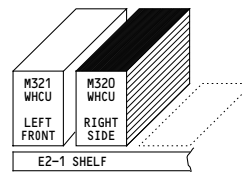
30-41-11

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WINDOW 2 CODE	BUS TO BUS WINDOW RESISTANCE (OHMS) WINDOW TEMP AT 88°F ± 20°F		LUG ID NUMBERS ON TERMINAL BOARD TB5014	WHCU OUTPUT VAC PER TAP SET	
	MIN	MAX			
NEW	H16	55.7	62.3	1	271
	H15	62.3	69.0	2	285
	H14	69.0	75.5	3	298
OLD		75.5	81.6	4	310
		81.6	90.3	5	326
		90.3	100.0	6	344

WINDOW RESISTANCE HOOK-UP TABLE



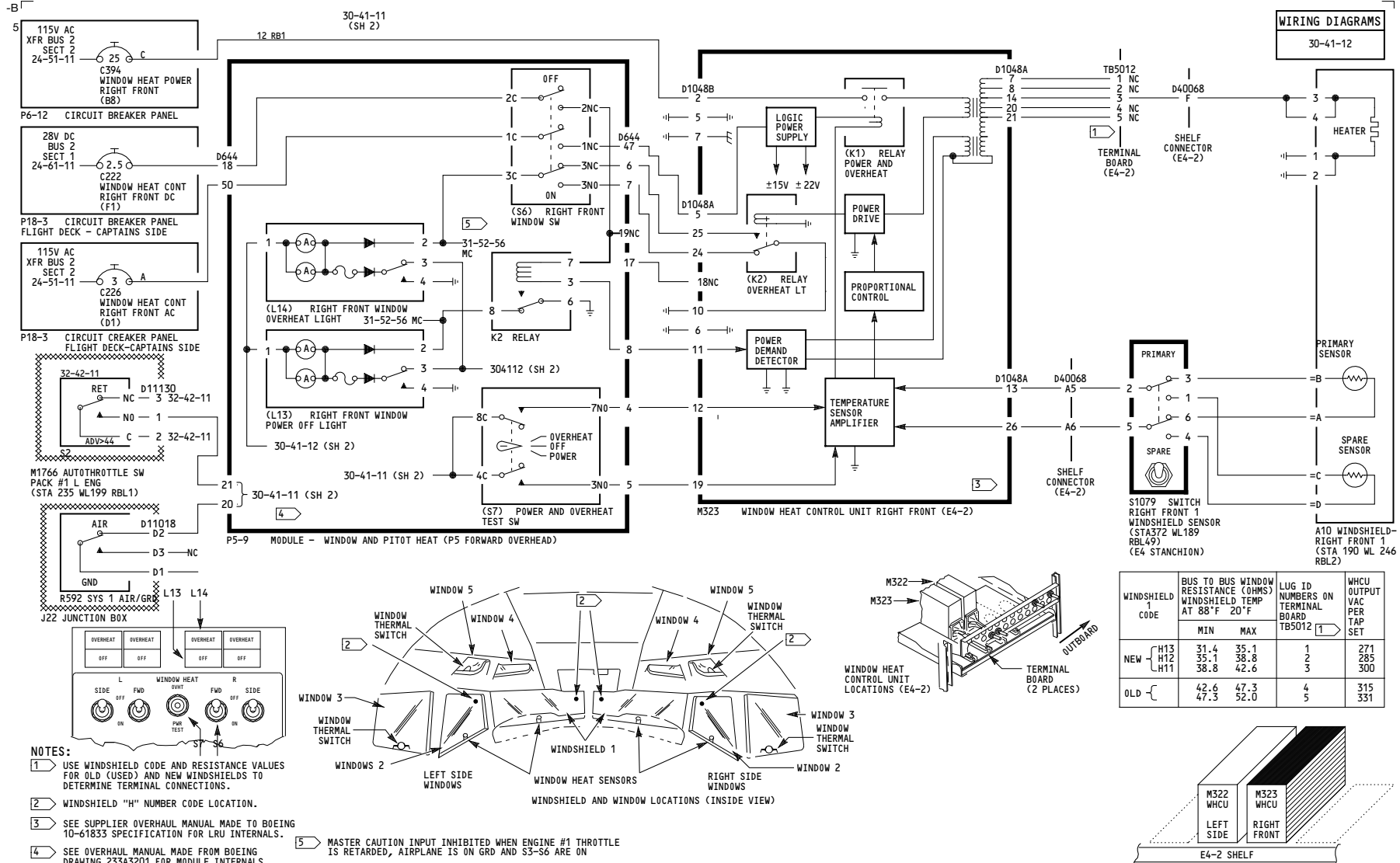
- NOTES:**
- 1 TERMINAL BOARD LOCATION AND HOOK UP TABLE.
 - 2 SEE SUPPLIER OVERHAUL MANUAL MADE TO BOEING 10-61833 SPEC FOR LRU INTERNALS.
 - 3 SEE OVERHAUL MANUAL MADE FROM BOEING DWG 233A3201 FOR MODULE INTERNALS.
 - 5 MASTER CAUTION INPUT INHIBITED WHEN ENGINE #1 THROTTLE IS RETARDED AIRPLANE IS ON GRD AND S3-S6 ARE ON

YC031-YM670

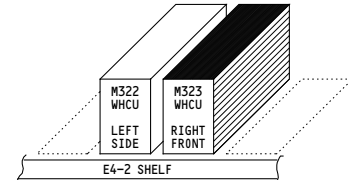
WINDSHIELD HEAT SYSTEM - L. FRONT, R. SIDE AND OPTIONAL L3 WINDOWS

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WINDSHIELD CODE	BUS TO BUS WINDOW RESISTANCE (OHMS) WINDSHIELD TEMP AT 88°F 20°F		LUG ID NUMBERS ON TERMINAL BOARD TB5012	WHCU OUTPUT VAC PER TAP SET
	MIN	MAX		
NEW { H13 H12 H11	31.4	35.1	1	271
	35.1	38.8	2	285
	38.8	42.6	3	300
OLD {	42.6	47.3	4	315
	47.3	52.0	5	331



YC001-YC007

WINDSHIELD HEAT SYSTEM - R. FRONT, L. SIDE AND OPTIONAL R3 WINDOWS

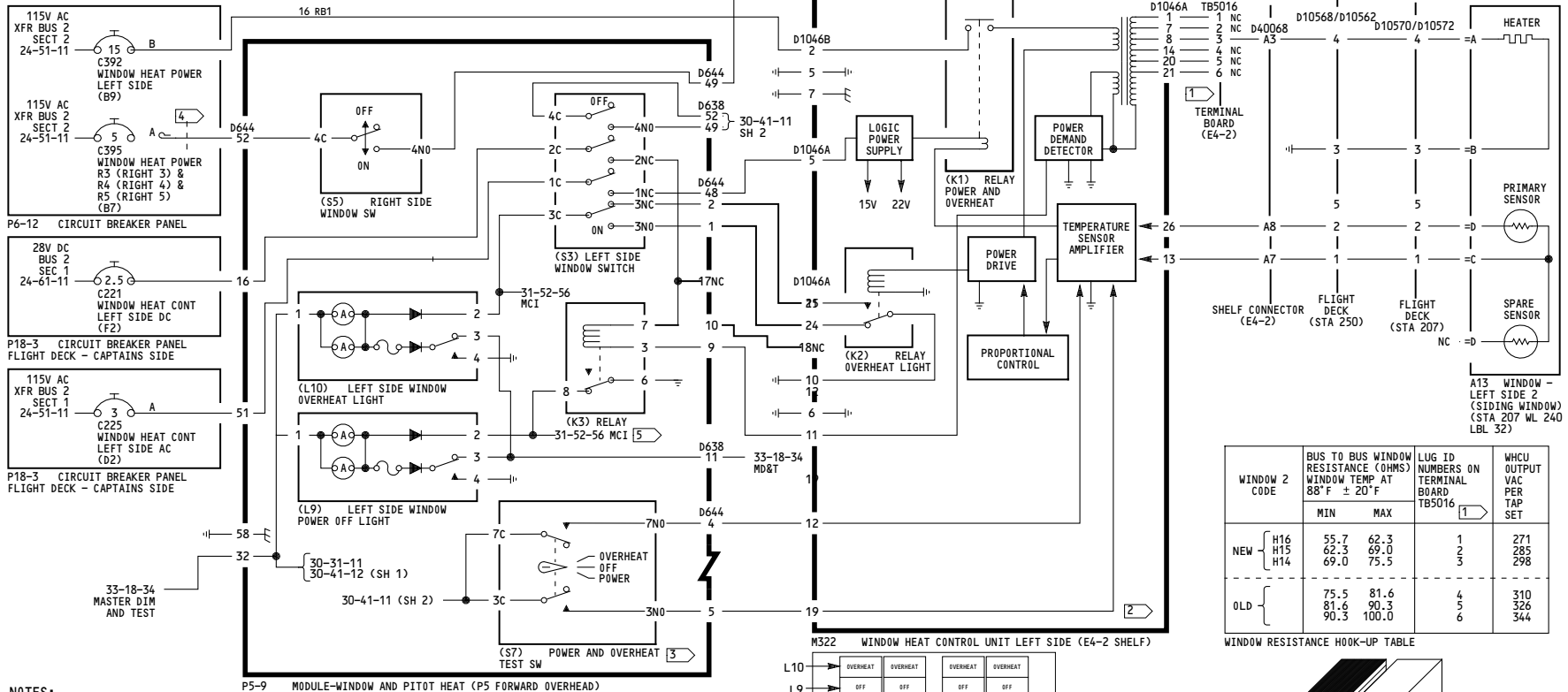
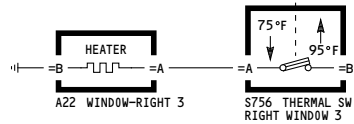
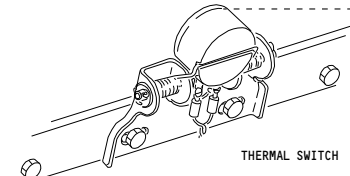
Incorporates 30-1047

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30-41-12

WIRING DIAGRAMS
30-41-12

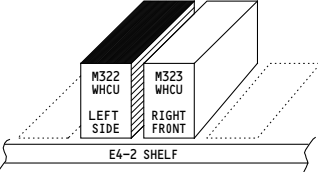
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- NOTES:**
- 1 TERMINAL BOARD LOCATION AND HOOK UP TABLE.
 - 2 SEE SUPPLIER OVERHAUL MANUAL MADE TO BOEING 10-61833 SPEC FOR LRU INTERNALS.
 - 3 SEE OVERHAUL MANUAL MADE FROM BOEING DWG 233A3201 FOR MODULE INTERNALS.
 - 4 CAP AND STOW NEAR C395
 - 5 MASTER CAUTION INPUT INHIBITED WHEN ENGINE #1 THROTTLE IS RETARDED AIRPLANE IS ON GRD AND S3-S6 ARE ON.

WINDOW RESISTANCE HOOK-UP TABLE

WINDOW 2 CODE	BUS TO BUS WINDOW RESISTANCE (OHMS) WINDOW TEMP AT 88°F ± 20°F		LUG ID NUMBERS ON TERMINAL BOARD TB5016	WHCU OUTPUT VAC PER TAP SET
	MIN	MAX		
NEW	H16	55.7	62.3	1 2 3
	H15	62.3	69.0	
	H14	69.0	75.5	
OLD		75.5	81.6	4 5 6
		81.6	90.3	
		90.3	100.0	



YC001-YC007

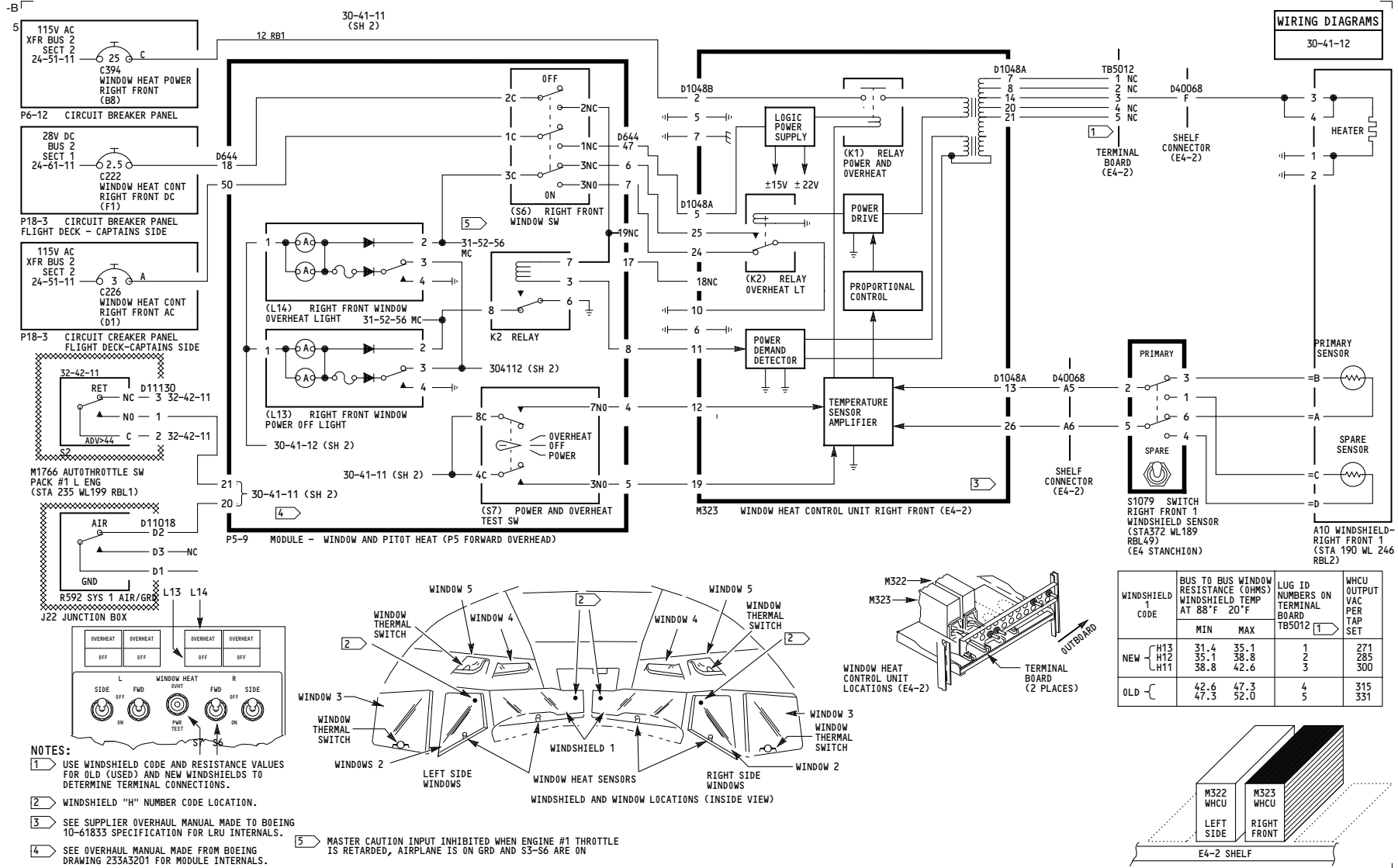
WINDSHIELD HEAT SYSTEM - R. FRONT, L. SIDE AND OPTIONAL R3 WINDOWS

D280A203

- Incorporates**
- 30-1047
 - 56-1017 R01

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YCO08-YC030

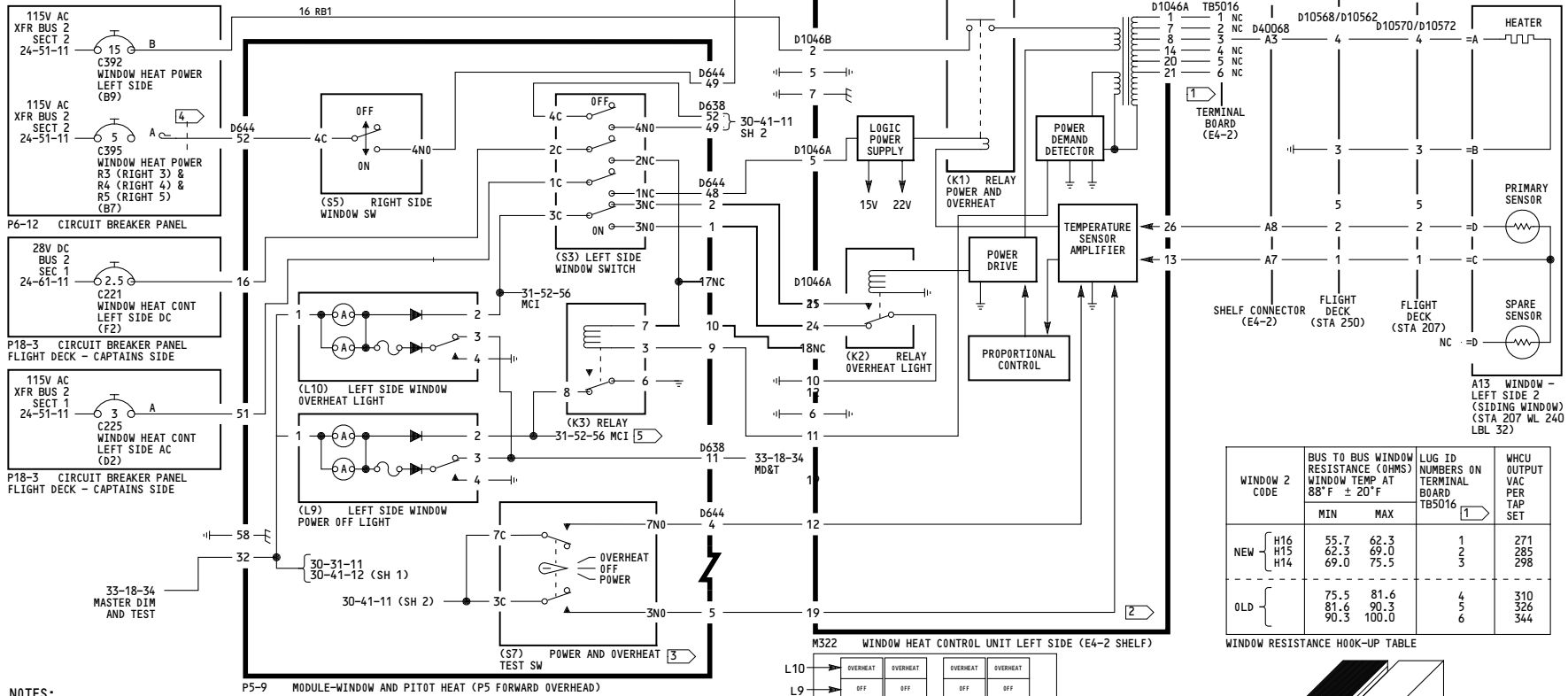
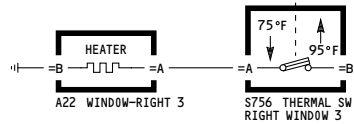
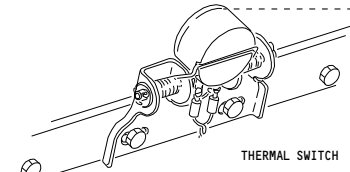
WINDSHIELD HEAT SYSTEM - R. FRONT, L. SIDE AND OPTIONAL R3 WINDOWS

D280A203

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WIRING DIAGRAMS
30-41-12

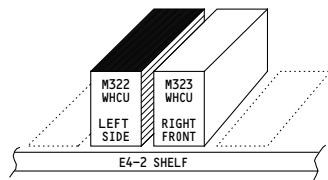
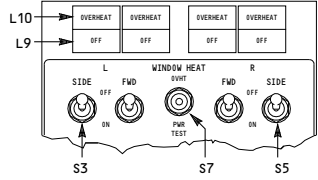
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WINDOW RESISTANCE HOOK-UP TABLE

WINDOW 2 CODE	BUS TO BUS WINDOW RESISTANCE (OHMS) AT 88°F ± 20°F		LUG ID NUMBERS ON TERMINAL BOARD TB5016	WHCU OUTPUT VAC PER TAP SET
	MIN	MAX		
NEW	H16	55.7	62.3	1
	H15	62.3	69.0	2
	H14	69.0	75.5	3
OLD		75.5	81.6	4
		81.6	90.3	5
		90.3	100.0	6

- NOTES:**
- 1 TERMINAL BOARD LOCATION AND HOOK UP TABLE.
 - 2 SEE SUPPLIER OVERHAUL MANUAL MADE TO BOEING 10-61833 SPEC FOR LRU INTERNALS.
 - 3 SEE OVERHAUL MANUAL MADE FROM BOEING DWG 233A3201 FOR MODULE INTERNALS.
 - 4 CAP AND STOW NEAR C395
 - 5 MASTER CAUTION INPUT INHIBITED WHEN ENGINE #1 THROTTLE IS RETARDED AIRPLANE IS ON GRD AND S3-S6 ARE ON.



YC008-YC030

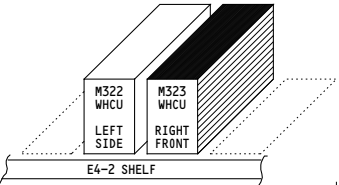
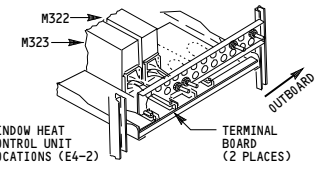
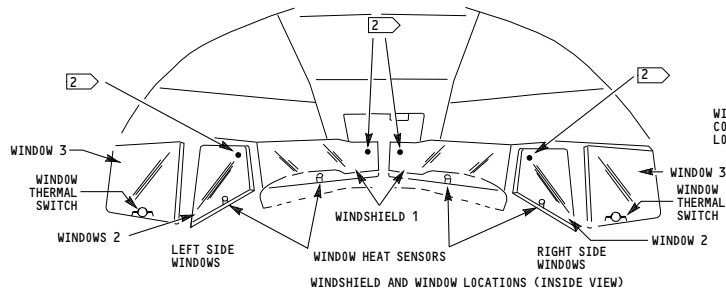
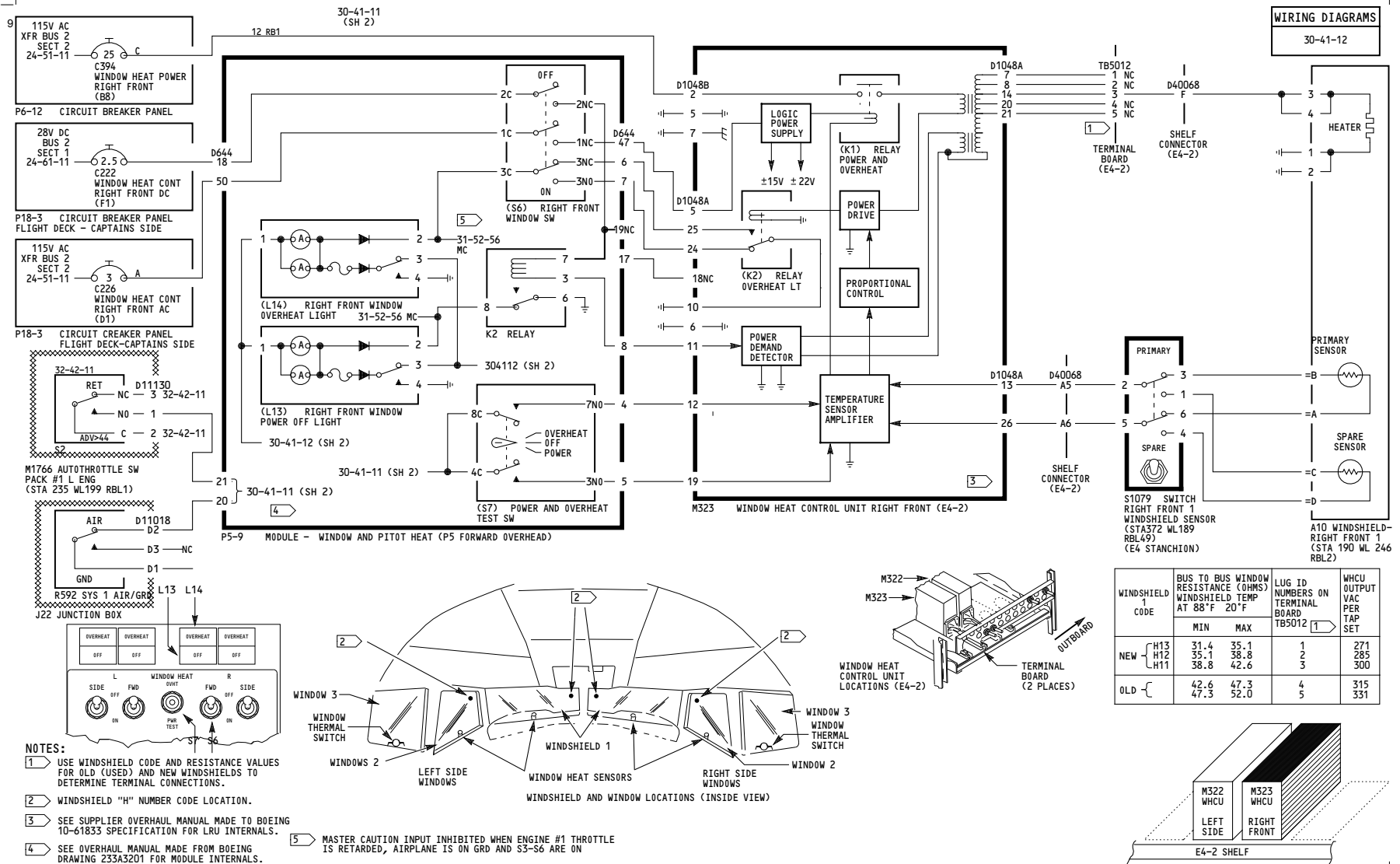
WINDSHIELD HEAT SYSTEM - R. FRONT, L. SIDE AND OPTIONAL R3 WINDOWS

D280A203

Incorporates
56-1017 R01

30-41-12

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May 13/2008



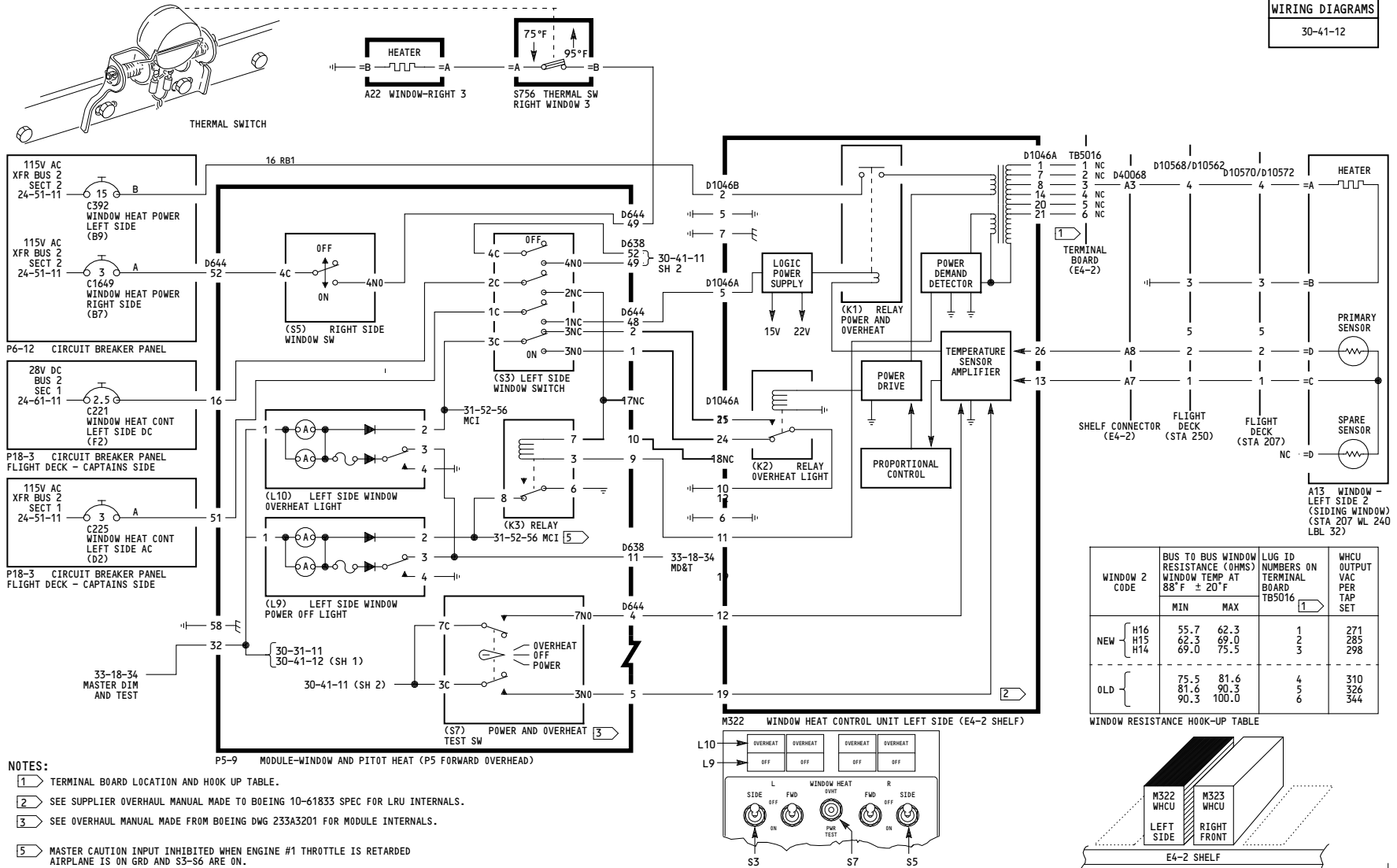
YC031-YM670

WINDSHIELD HEAT SYSTEM - R. FRONT, L. SIDE AND OPTIONAL R3 WINDOWS

D280A203

30-41-12

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9

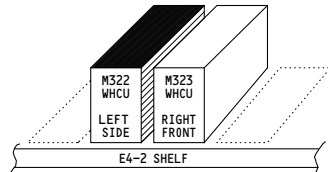


- NOTES:**
- 1 TERMINAL BOARD LOCATION AND HOOK UP TABLE.
 - 2 SEE SUPPLIER OVERHAUL MANUAL MADE TO BOEING 10-61833 SPEC FOR LRU INTERNALS.
 - 3 SEE OVERHAUL MANUAL MADE FROM BOEING DWG 233A3201 FOR MODULE INTERNALS.
 - 5 MASTER CAUTION INPUT INHIBITED WHEN ENGINE #1 THROTTLE IS RETARDED AIRPLANE IS ON GRD AND S3-S6 ARE ON.

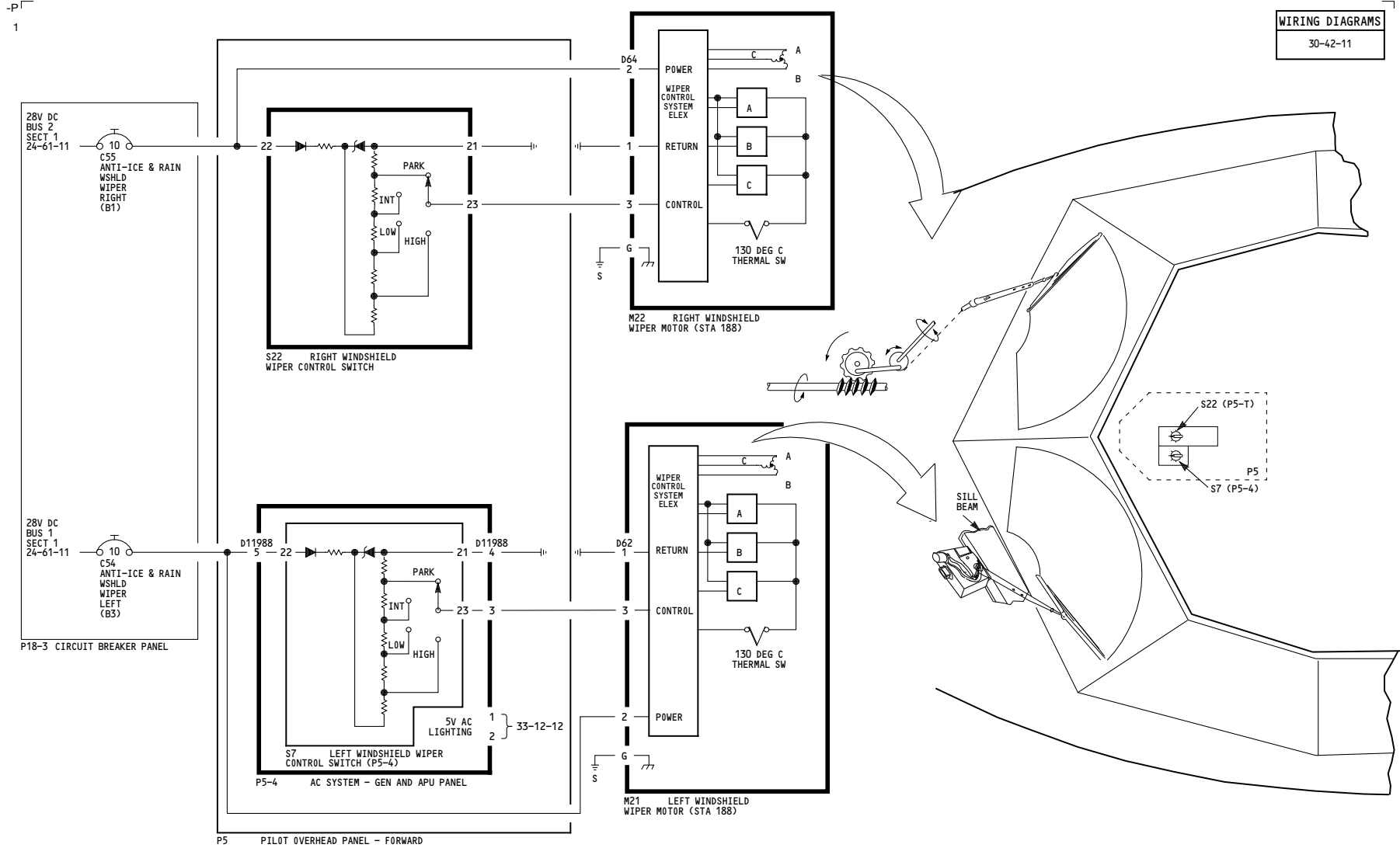
YC031-YM670

WINDSHIELD HEAT SYSTEM - R. FRONT, L. SIDE AND OPTIONAL R3 WINDOWS

D280A203



30-41-12

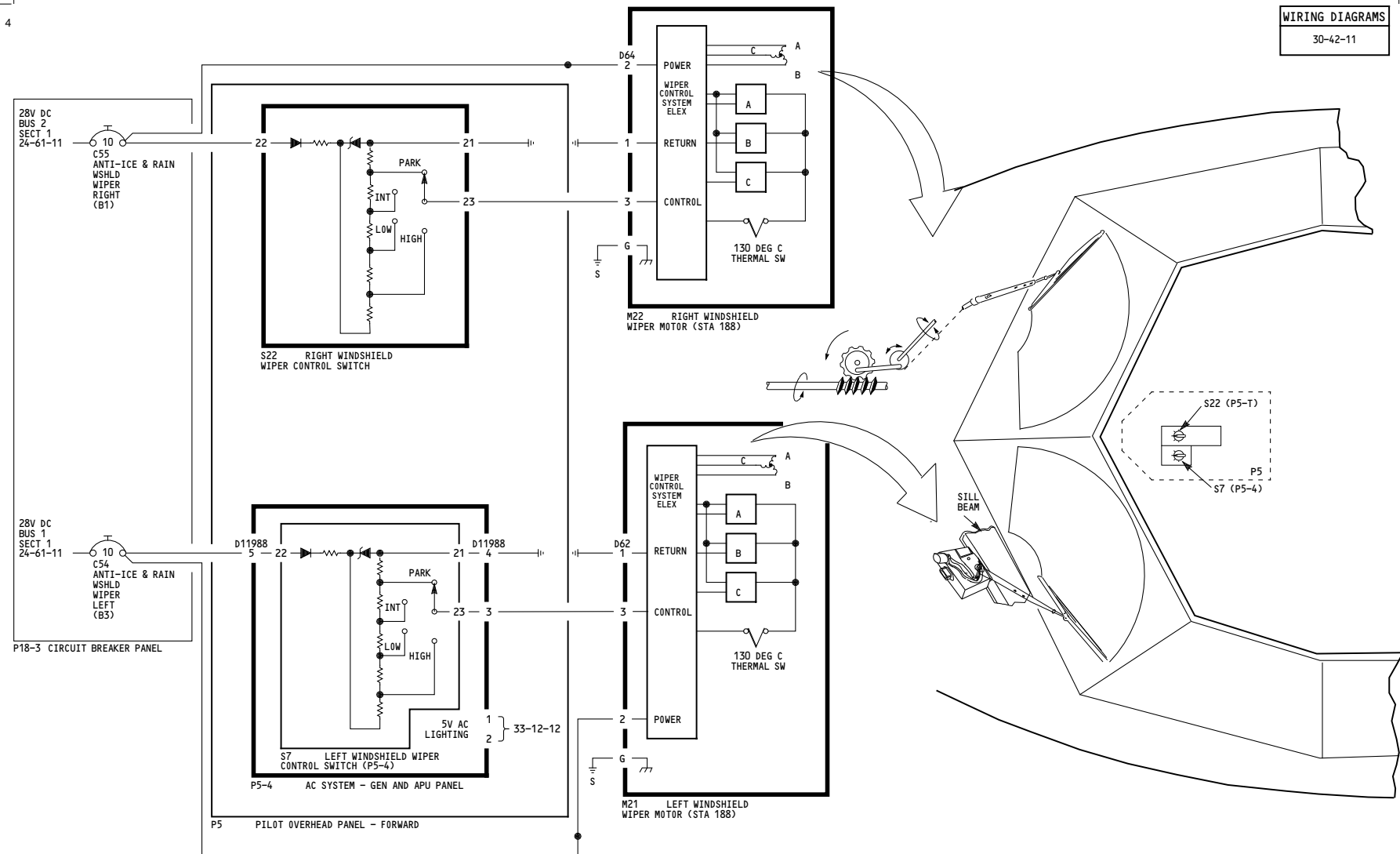


<p>YC001-YC019</p>	<p>WINDSHIELD WIPERS</p> <p>D280A203</p>
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30-42-11

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Mar 31/2005

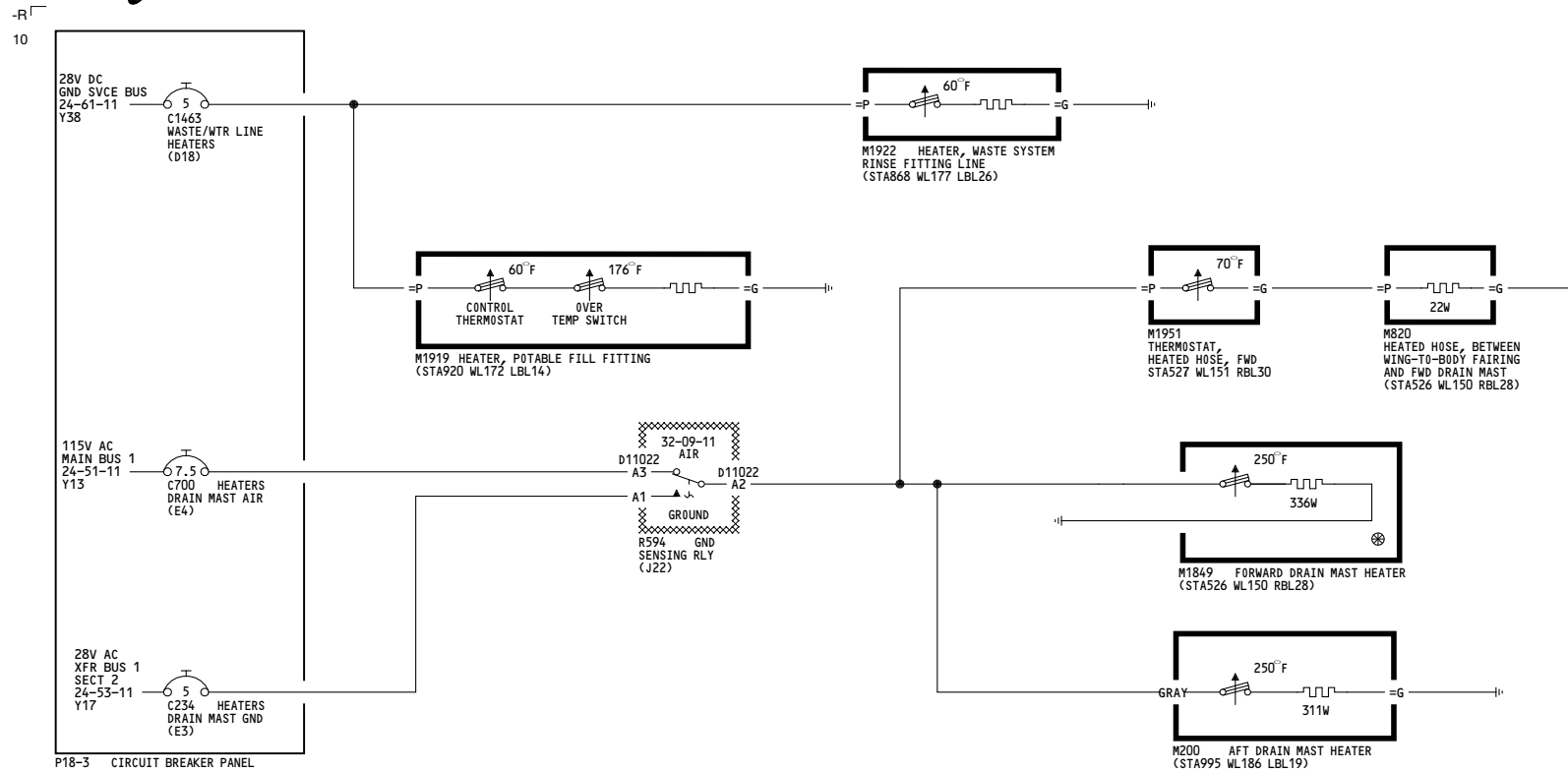


YC020-YM670	WINDSHIELD WIPERS
D280A203	

30-42-11

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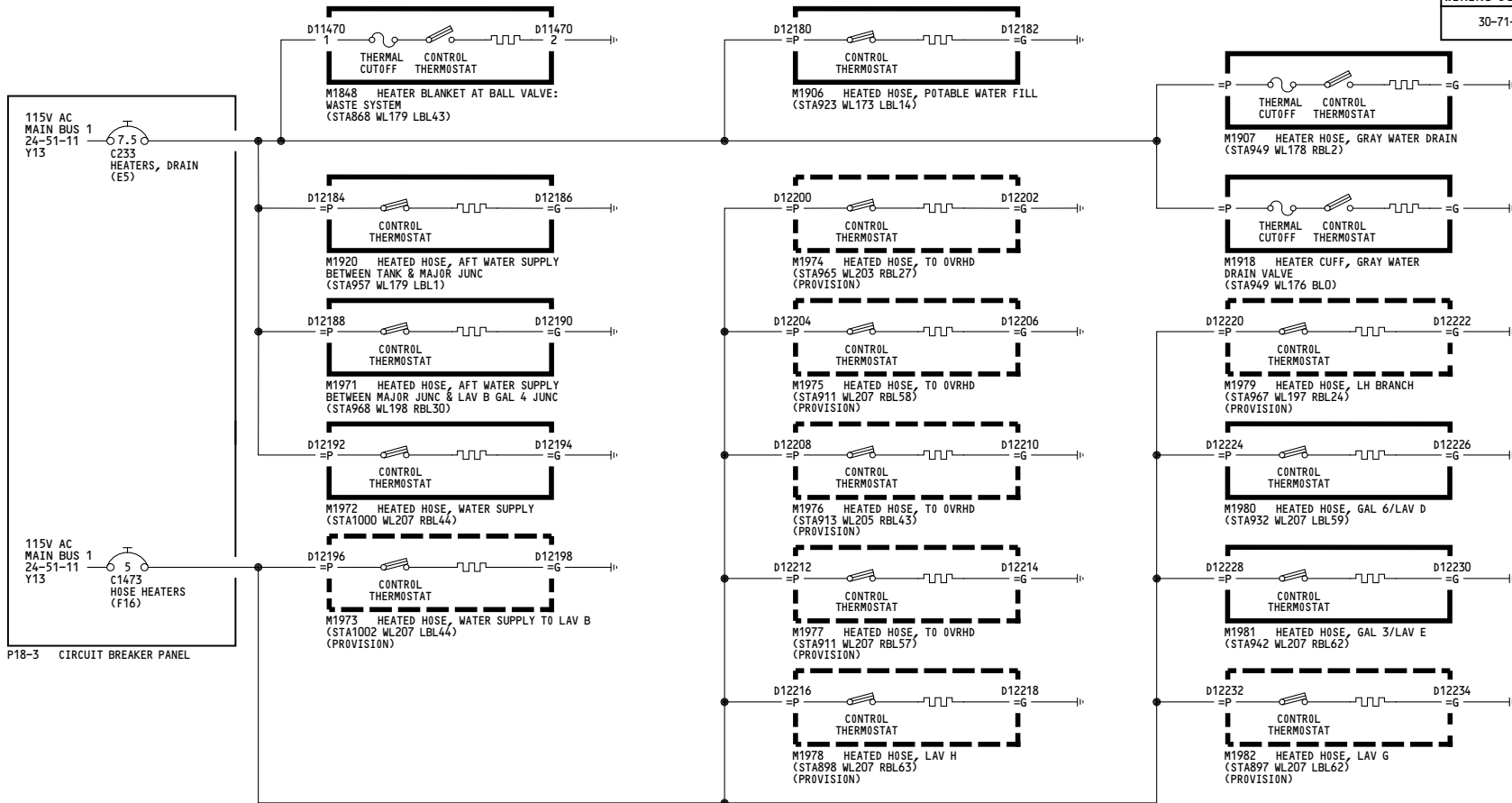
Feb 09/2009



NOTES:
1. HEATER LEAD LENGTH MINIMUM 36 INCHES FOR POWER, 12 INCHES FOR GROUND.

YC001-YC050	<p align="center">DRAIN HEATERS</p> <p align="center">D280A203</p>
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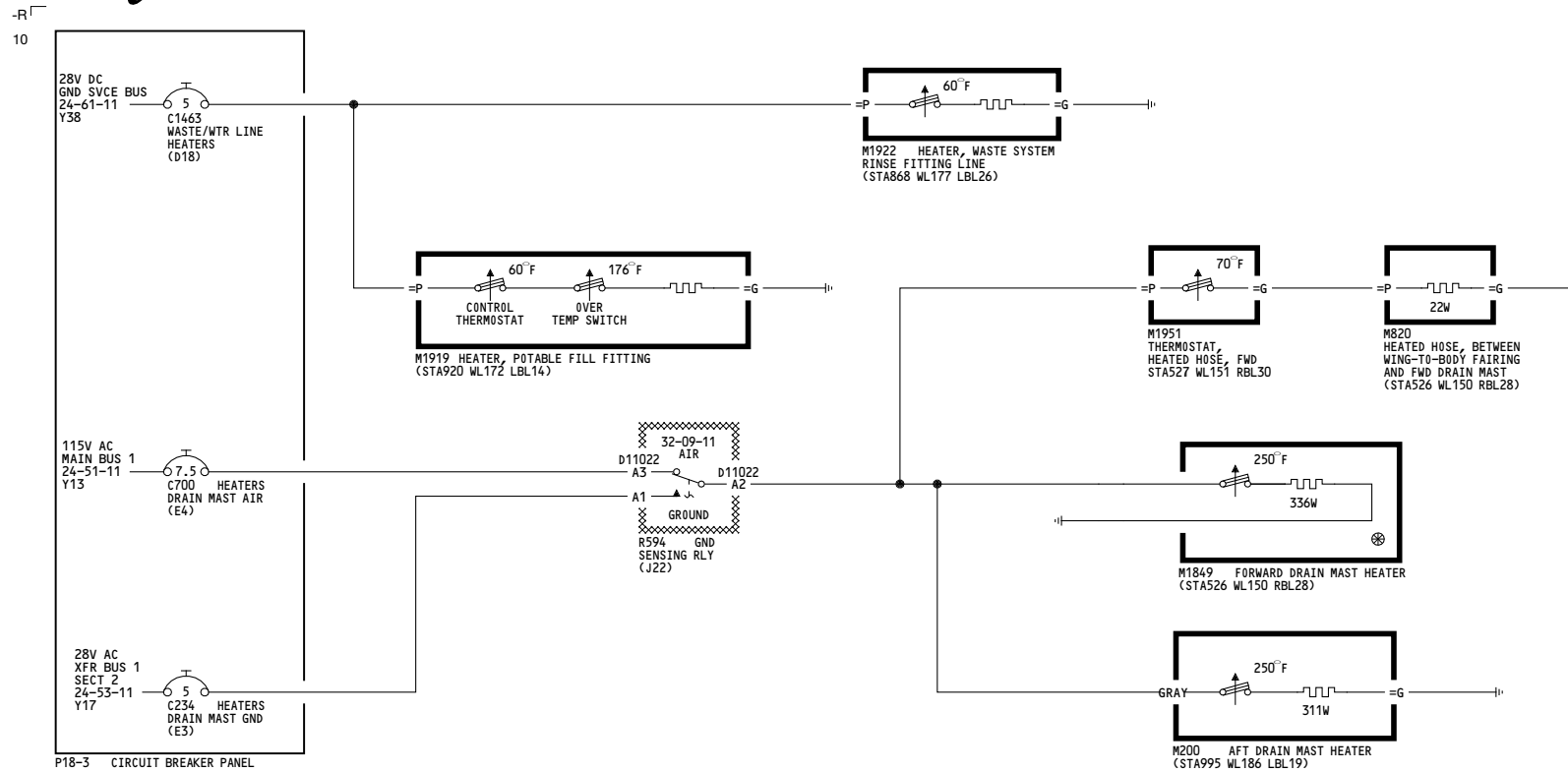
WIRING DIAGRAMS
30-71-11



NOTES:

YC001-YC050	<p align="center">DRAIN HEATERS</p> <p align="center">D280A203</p>
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30-71-11

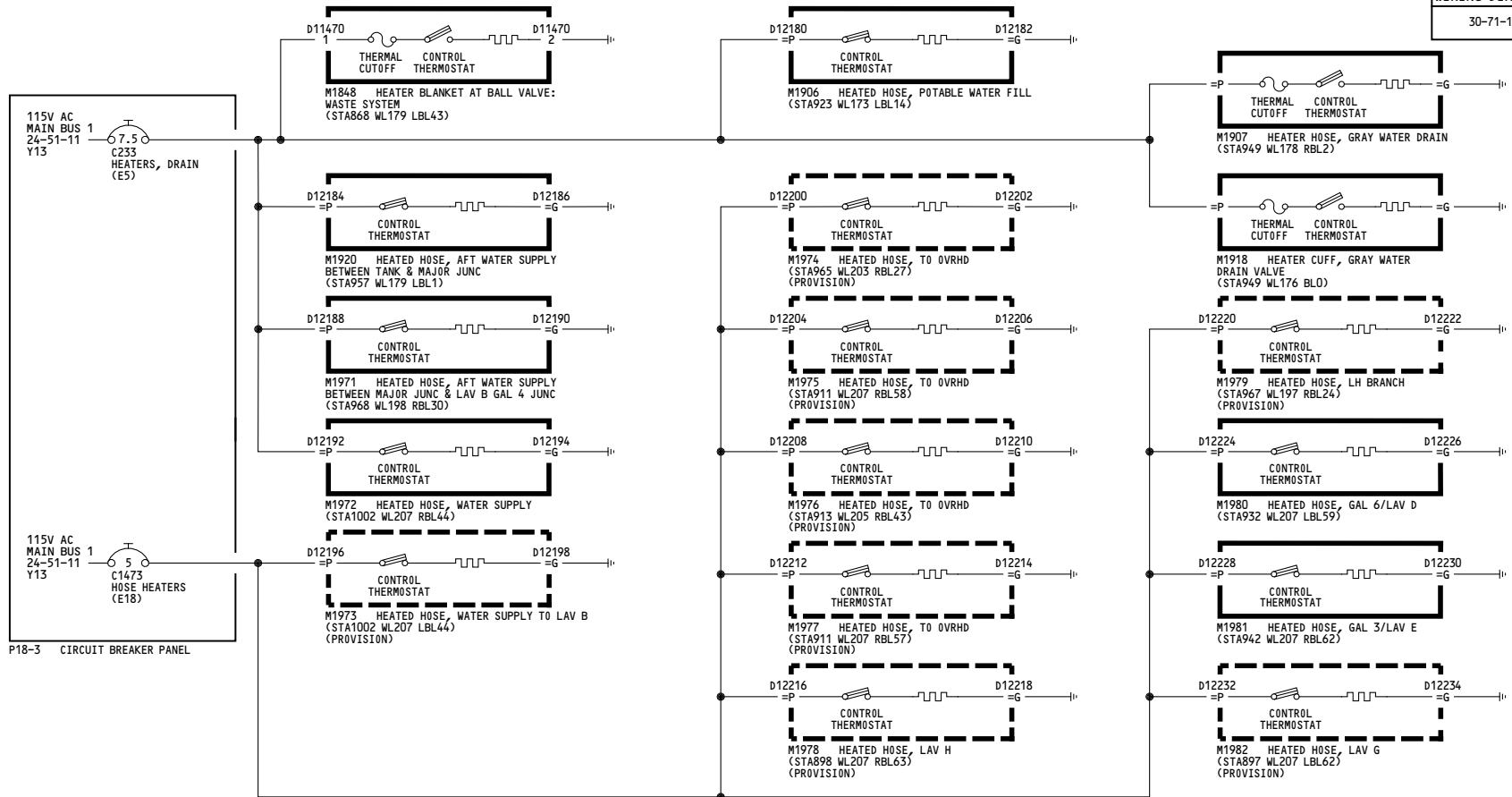


NOTES:
1. HEATER LEAD LENGTH MINIMUM 36 INCHES FOR POWER, 12 INCHES FOR GROUND.

YK901-YK912, YK918, YL401-YL426, YM643-YM651	DRAIN HEATERS
	D280A203

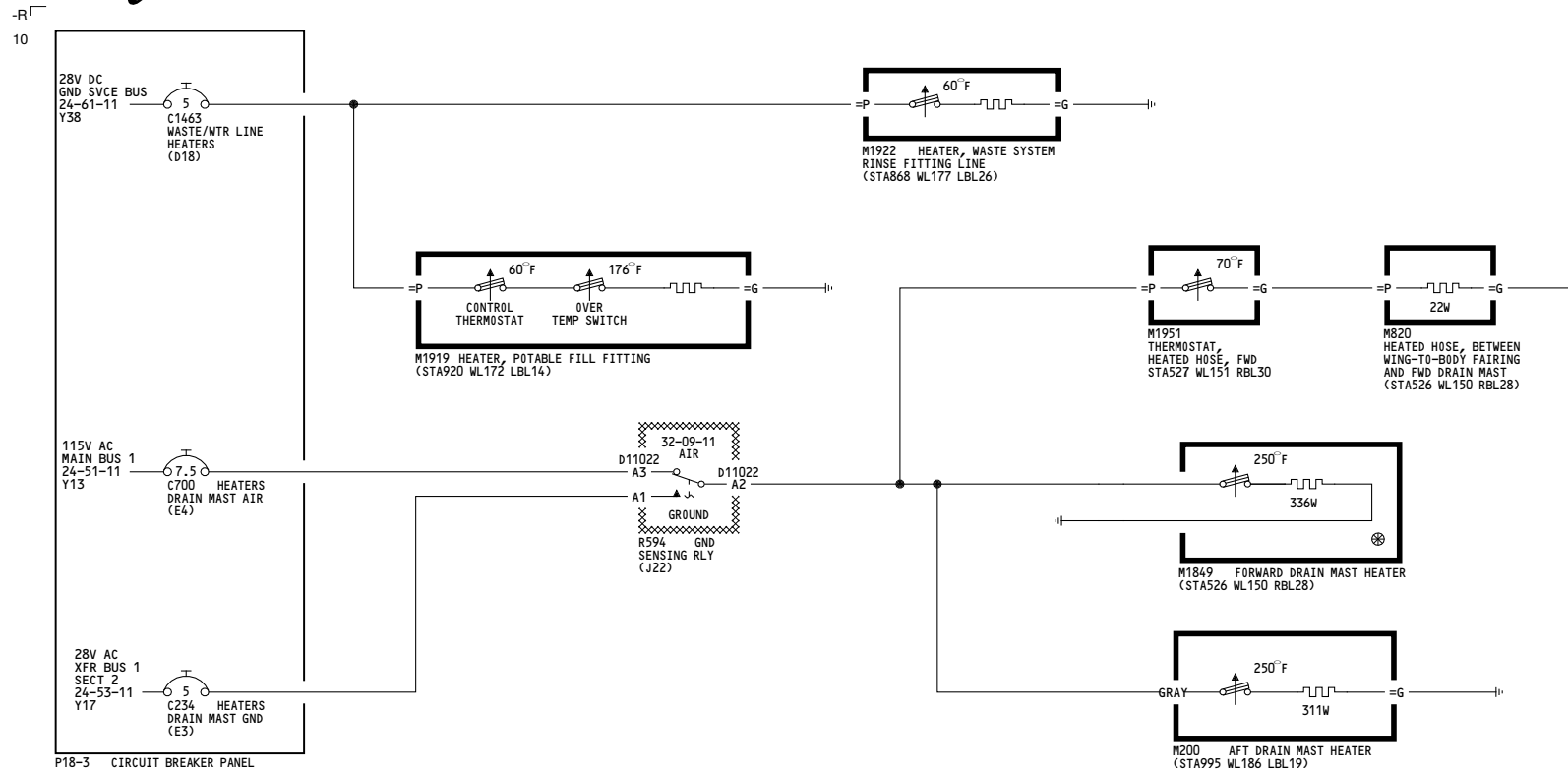
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NOTES:

YK901-YK912, YK918, YL401-YL426, YM643-YM651	DRAIN HEATERS
	D280A203



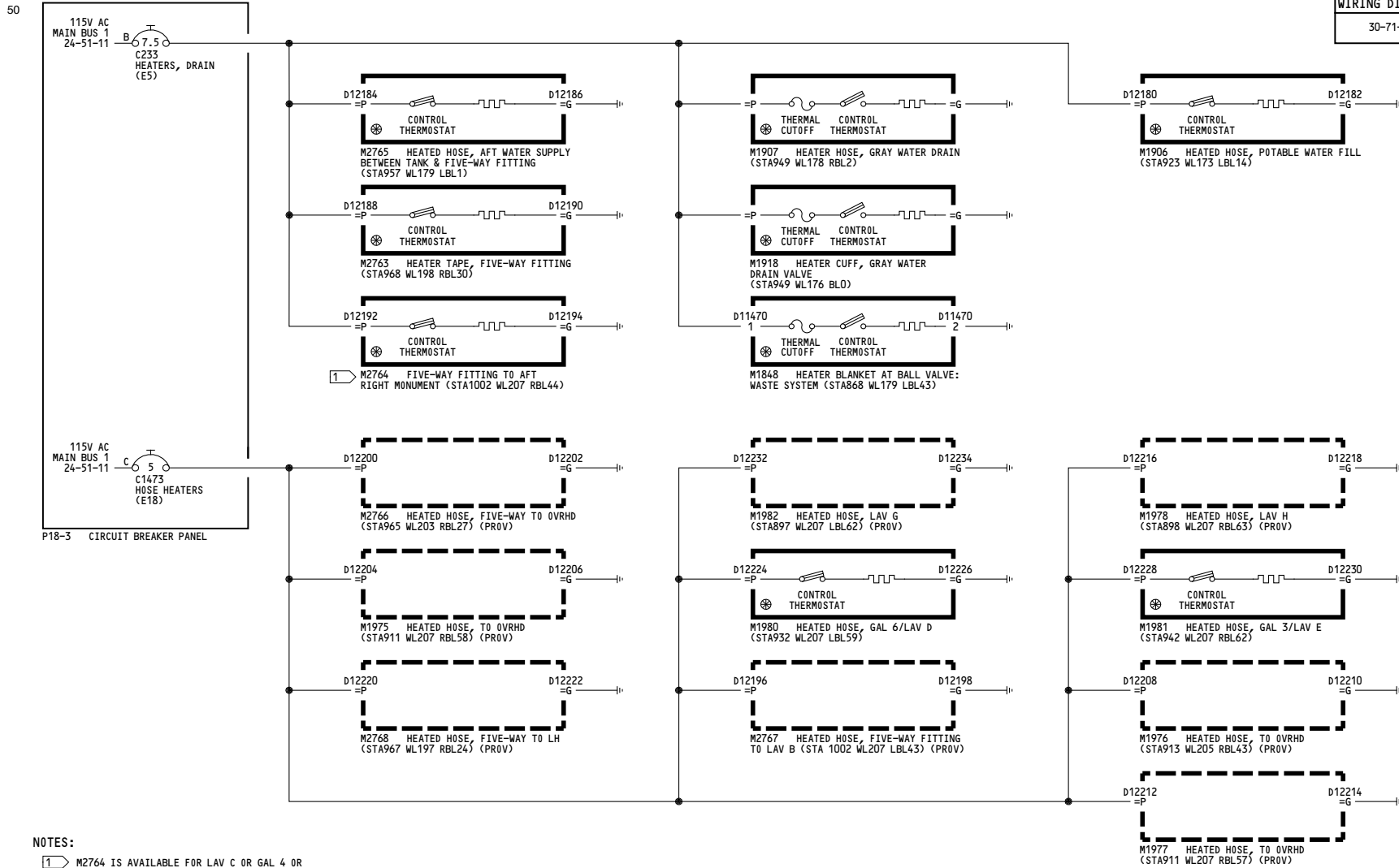
NOTES:
1. HEATER LEAD LENGTH MINIMUM 36 INCHES FOR POWER, 12 INCHES FOR GROUND.

YK913-YK917, YK919-YK920, YL427-YL430, YM652-YM670	DRAIN HEATERS
	D280A203

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WIRING DIAGRAMS
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NOTES:
1 M2764 IS AVAILABLE FOR LAV C OR GAL 4 OR GAL 4B, WHICHEVER IS INSTALLED

YK913-YK917, YK919-YK920, YL427-YL430, YM652-YM670	DRAIN HEATERS
	D280A203

30-71-11