MX180
MX200,MX220
MX240,MX270

Magnum Tractors

SERVICE MANUAL

7-85709

CASE IH AGRICULTURE

MidWestTech | Case Magnum MX180, MX200, MX220, MX240, MX270 Tractor Service Manual | Publication 7-85709

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TORQUE SPECIFICATIONS - DECIMAL HARDWARE

Use the torques in this chart when special torques are not given. These torques apply to fasteners with both UNC and UNF threads as received from suppliers dry, or when lubricated with engine oil. Not applicable if special graphites, Molydisulfide greases, or other extreme pressure lubricants are used.

Grade 5 Bolts, Nuts, and Studs



Size	Pound-Inches	Newton metres
1/4 inch	108 to 132	12 to 15
5/16 inch	204 to 252	23 to 28
3/8 inch	420 to 504	48 to 57
Size	Pound-Feet	Newton metres
7/16 inch	54 to 64	73 to 87
1/2 inch	80 to 96	109 to 130
9/16 inch	110 to 132	149 to 179
5/8 inch	150 to 180	203 to 244
3/4 inch	270 to 324	366 to 439
7/8 inch	400 to 480	542 to 651
1.0 inch	580 to 696	787 to 944
1-1/8 inch	800 to 880	1085 to 1193
1-1/4 inch	1120 to 1240	1519 to 1681
1-3/8 inch	1460 to 1680	1980 to 2278
1-1/2 inch	1940 to 2200	2631 to 2983

Grade 8 Bolts, Nuts, and Studs



Size	Pound-Inches	Newton metres
1/4 inch	144 to 180	16 to 20
5/16 inch	288 to 348	33 to 39
3/8 inch	540 to 648	61 to 73
Size	Pound-Feet	Newton metres
7/16 inch	70 to 84	95 to 114
1/2 inch	110 to 132	149 to 179
9/16 inch	160 to 192	217 to 260
5/8 inch	220 to 264	298 to 358
3/4 inch	380 to 456	515 to 618
7/8 inch	600 to 720	814 to 976
1.0 inch	900 to 1080	1220 to 1465
1-1/8 inch	1280 to 1440	1736 to 1953
1-1/4 inch	1820 to 2000	2468 to 2712
1-3/8 inch	2380 to 2720	3227 to 3688
1-1/2 inch	3160 to 3560	4285 to 4827

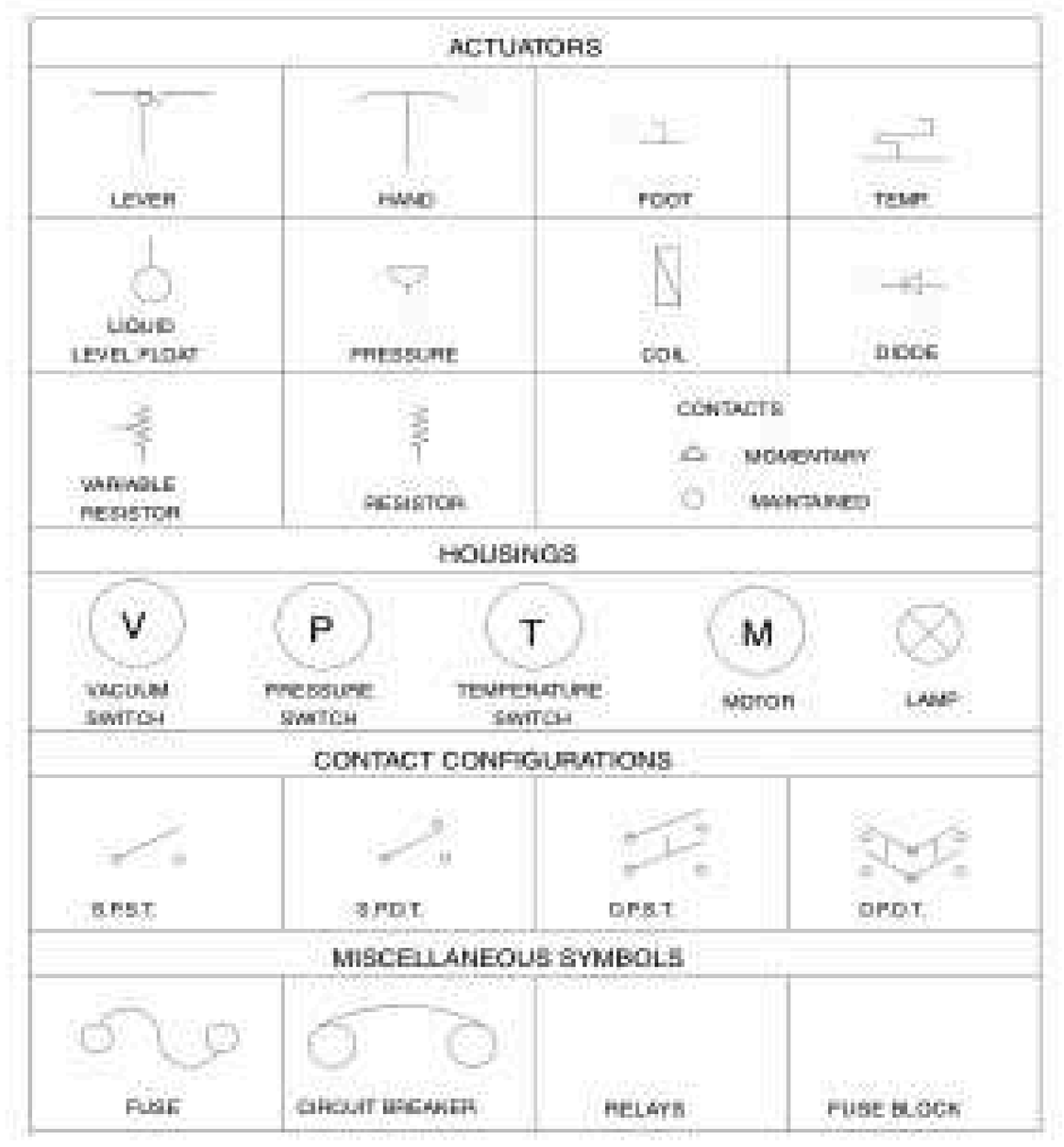
NOTE: *Use thick nuts with Grade 8 bolts.*

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ELECTRICAL SCHEMATIC DIAGRAM INF8857
NAO MX MAGNUM SERIES TRACTOR

CIRCUIT DESCRIPTION	SECTION	CIRCUIT DESCRIPTION	SECTION
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INSTRUMENT CLUSTER	23-25	TRAILER CONNECTOR (7 POLE)	34
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-BRAKE	32-33	WINDSHIELD WIPER/WASHER FRONT	66
-DOME/CONSOLE	64	WINDSHIELD WIPER/WASHER REAR	66

SECTION 1



NOTE: THE CONNECTOR GENDER ON THIS DIAGRAM IS IDENTIFIED BY THE GENDER OF THE TERMINALS USED IN THE CONNECTOR HOUSINGS

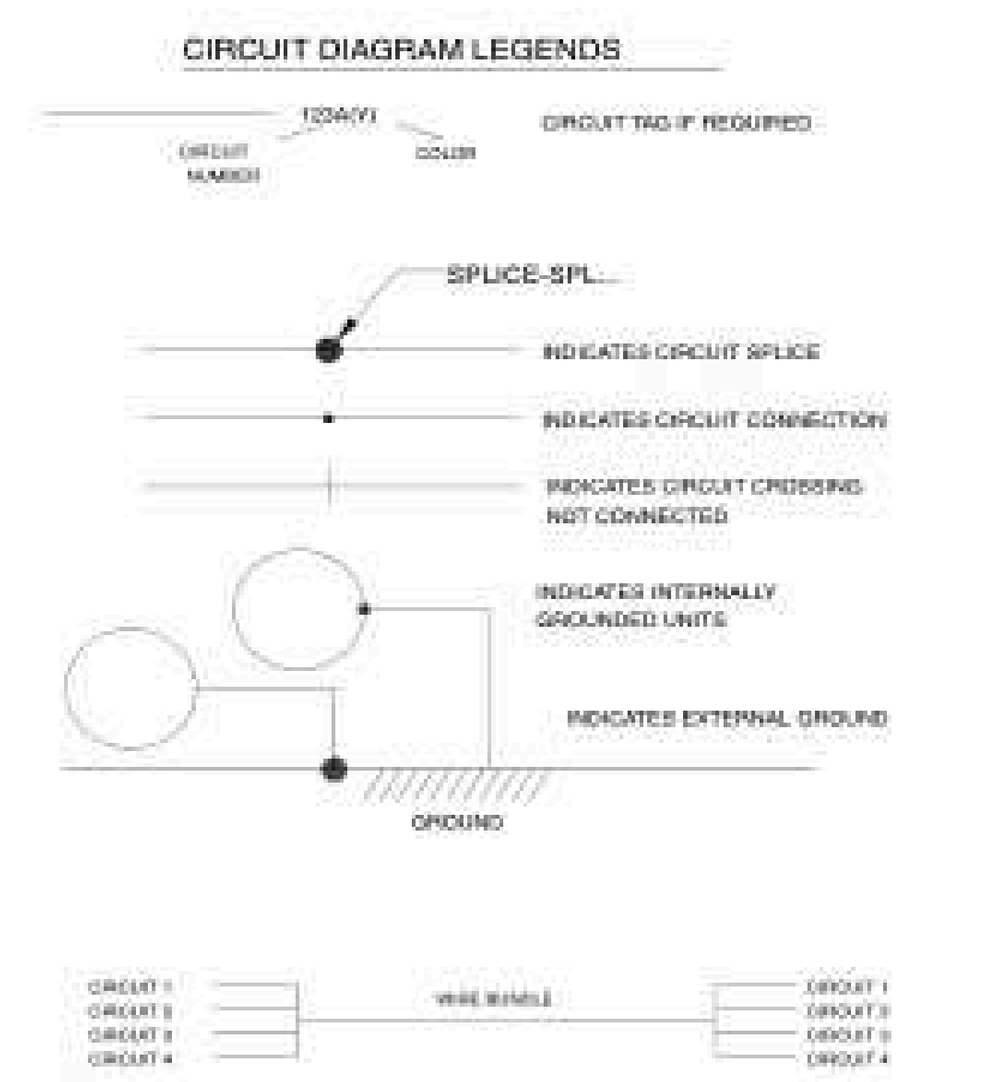
SECTION 2

COLOR ABBREVIATIONS

ABBREVIATION---COLOR
R-----------RED
T-----------TAN
W-----------WHITE
Y-----------YELLOW
B-----------BLACK
BR-----------BROWN
G-----------GREY

ABBREVIATION---COLOR
O-----------ORANGE
P-----------PINK
V-----------VIOLET (PURPLE)
DB-----------DARK BLUE
LB-----------LIGHT BLUE
DG-----------DARK GREEN
LG-----------LIGHT GREEN

CIRCUIT DIAGRAM LEGENDS



SECTION 3

TABLE OF FUSES

FUSE (281)	SECTION LOCATION	CIRCUIT IDENTIFICATION	FUSE (282)	SECTION LOCATION	CIRCUIT IDENTIFICATION
1	SECTION 20	GDC KEYSWITCH	29	SECTION 65	SEAT HEATER
2	SECTION 28	WORKLIGHTS	30	SECTION 24	ICU/PMU
3	SECTION 29	REAR WORKLIGHTS	31	SECTION 71	AFS
4	SECTION 28	BELT LINE WORKLIGHTS	32	SECTION 71	AFS
5	SECTION 29	ROOF WORKLIGHTS	33	SECTION 47	ARM REST CONTROL UNIT
6	SECTION 29	WORKLIGHT INTERLOCK	34	SECTION 25	RADAR
7	SECTION 20	KEY BATTERY	35	SECTION 39	TRCU
8	SECTION 69	SHELF POWER	36	SECTION 52	AUX
9	SECTION 68	SEAT/OPS	37	NOT USED	
10	SECTION 61	BLOWER CAB PRESSURE	38	SECTION 44	PTO
11	SECTION 70	CIGAR LIGHTER	39	SECTION 51	EDC (HITCH)
12	SECTION 33	TRAILER	40	NOT USED	
13	SECTION 66	FRONT/REAR AUX POWER	41	SECTION 15	CDB TRACTOR
14	NOT USED		42	SECTION 15	CDB DIAG CONN POWER
15	SECTION 38	GOVERNOR	43	NOT USED	
16	SECTION 23	ICU/PMU	44	SECTION 23	FUEL SHUTOFF SOL
17	NOT USED		45	SECTION 33	TRAILER AUX SW
18	SECTION 28	HIGH BEAM RELAY	46	SECTION 65	FRONT/REAR AUX
19	SECTION 64	DOME/MAP/RADIO	47	SECTION 62	HVAC CONTROLLER
20	SECTION 33	FLASHER	48	SECTION 65	SHELF AUX POWER
21	SECTION 29	TAIL LIGHTS	49	SECTION 61	HVAC BLOWER
22	NOT USED		50	NOT USED	
23	SECTION 67	BEACON/STROBE	51	SECTION 66	FRONT WIPER/WASHER
24	SECTION 64	MIRROR/RADIO/CIG LT	52	SECTION 66	REAR WIPER/WASHER
25	SECTION 36	ETHER/HORN	53	SECTION 30	R HIGH BEAM HEADLIGHT
26	NOT USED		54	SECTION 30	L HIGH BEAM HEADLIGHT
27	NOT USED		55	SECTION 30	R LOW BEAM HEADLIGHT
28	SECTION 61	ATC DISPLAY GROUND	56	SECTION 30	L LOW BEAM HEADLIGHT

TABLE OF RELAYS

RELAY NUMBER	SECTION LOCATION	REF. DES.	FUNCTION
1	SECTION 46	284	BOTTOM OF CLUTCH
2	SECTION 40	284	PARK
3	SECTION 28	284	HIGH BEAM
4	SECTION 29	284	WORK INTERLOCK
5	SECTION 41	284	TRANSMISSION CONTROL
6	SECTION 41	284	NEUTRAL RELAY
7	SECTION 28	283	REAR ROOF WORKLIGHTS
8	SECTION 28	283	BELTLINE WORKLIGHTS
9	SECTION 28	283	FRONT ROOF
10	SECTION 29	283	FENDER WORKLIGHTS
11	NOT USED	283	NOT USED
12	NOT USED	285	NOT USED
13	NOT USED	285	EURO BRAKE LIGHTS
14	SECTION 23	285	FUEL SHUTOFF
15	SECTION 20	285	STARTER
16	NOT USED	285	NOT USED
17	SECTION 20	285	GDC KEYSWITCH
18	SECTION 28	285	CENTER & SIDE WORKLIGHTS

AFS FUSES
FUSE 207, 30 AMPS HIGH POWER RELAY SECTION 72
FUSE 208, 20 AMPS LOW POWER RELAY SECTION 72

SECTION 4

TABLE OF CONNECTOR LOCATIONS

REF. DES.	SECTION LOCATION	HARNESS	REF. DES.	SECTION LOCATION	HARNESS
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

SECTION 5

TABLE OF CONNECTOR LOCATIONS (CONTINUED)

REF. DES.	SECTION LOCATION	HARNESS	REF. DES.	SECTION LOCATION	HARNESS
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

SECTION 6

TABLE OF CONNECTOR LOCATIONS (CONTINUED)

REF. DES.	SECTION LOCATION	HARNESS	REF. DES.	SECTION LOCATION	HARNESS
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

SECTION 7

TABLE OF CONNECTOR LOCATIONS (CONTINUED)

REF. DES.	SECTION LOCATION	HARNESS	REF. DES.	SECTION LOCATION	HARNESS
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

SECTION 8

TABLE OF SPLICES

SPLICE NAME	DIAGRAM LOCATION	HARNESS USED ON	CIRCUIT
SPL-A1	NOT USED	AUXILIARY/PTO HARNESS	NOT USED
SPL-A2	NOT USED	AUXILIARY/PTO HARNESS	NOT USED
SPL-A3	NOT USED	AUXILIARY/PTO HARNESS	NOT USED
SPL-A4	NOT USED	AUXILIARY/PTO HARNESS	NOT USED
SPL-A5	NOT USED	AUXILIARY/PTO HARNESS	NOT USED
SPL-A6	NOT USED	AUXILIARY/PTO HARNESS	NOT USED
SPL-A7	NOT USED	AUXILIARY/PTO HARNESS	NOT USED
SPL-A8	NOT USED	AUXILIARY/PTO HARNESS	NOT USED
SPL-A9	NOT USED	AUXILIARY/PTO HARNESS	NOT USED
SPL-A10	SECTION 52	AUXILIARY/PTO HARNESS	AUXILIARY B+
SPL-A11	SECTION 53	AUXILIARY/PTO HARNESS	CLEAN GROUND
SPL-A12	NOT USED	AUXILIARY/PTO HARNESS	NOT USED
SPL-A13	SECTION 30	AUXILIARY/PTO HARNESS	CHASSIS GROUND
SPL-A14	SECTION 33	AUXILIARY/PTO HARNESS	STOP LIGHTS
SPL-A15	NOT USED	AUXILIARY/PTO HARNESS	NOT USED
SPL-A16	NOT USED	AUXILIARY/PTO HARNESS	NOT USED
SPL-A17	SECTION 33	AUXILIARY/PTO HARNESS	TAIL LAMPS
SPL-A18	SECTION 29	AUXILIARY/PTO HARNESS	WORKLIGHT B+
SPL-A19	SECTION 39	AUXILIARY/PTO HARNESS	PARK SOLENOID B+
SPL-A20	SECTION 39	AUXILIARY/PTO HARNESS	
SPL-C1	SECTION 40	CAB HARNESS	SWITCHED B+
SPL-C2	SECTION 22	CAB HARNESS	CLEAN GROUND
SPL-C3	SECTION 29	CAB HARNESS	LIGHTS B+
SPL-C4	SECTION 40	CAB HARNESS	TRU SWITCHED B+
SPL-C5	SECTION 41	CAB HARNESS	NEUTRAL
SPL-C6	SECTION 65	CAB HARNESS	MIRROR COMMON
SPL-C7	SECTION 40	CAB HARNESS	CLEAN GROUND
SPL-C8	SECTION 44	CAB HARNESS	PTO/BRAKE B+
SPL-C9	SECTION 27	CAB HARNESS	UNFUSED CONTROLLER B+
SPL-C10	SECTION 21	CAB HARNESS	CHASSIS GROUND
SPL-C11	SECTION 24	CAB HARNESS	RADAR
SPL-C12	SECTION 41	CAB HARNESS	FNRP NOT NEUTRAL
SPL-C13	SECTION 22	CAB HARNESS	LIGHTS
SPL-C14	SECTION 41	CAB HARNESS	CHASSIS GROUND
SPL-C15	SECTION 09	CAB HARNESS	B+
SPL-C16	SECTION 61	CAB HARNESS	HVAC B+
SPL-C17	SECTION 34	CAB HARNESS	LEFT HAZARD
SPL-C18	SECTION 34	CAB HARNESS	RIGHT HAZARD
SPL-C19	SECTION 29	CAB HARNESS	LIGHTS
SPL-C20	SECTION 22	CAB HARNESS	UNSWITCHED B+
SPL-C21	SECTION 20	CAB HARNESS	SWITCHED B+
SPL-C22	SECTION 28	CAB HARNESS	CHASSIS GROUND
SPL-C23	SECTION 20	CAB HARNESS	SWITCHED B+
SPL-C24	SECTION 69	CAB HARNESS	SWITCHED B+
SPL-C25	SECTION 65	CAB HARNESS	UNSWITCHED B+
SPL-C26	NOT USED	CAB HARNESS	NOT USED
SPL-C27	NOT USED	CAB HARNESS	NOT USED

SECTION 9

TABLE OF SPLICES (CONTINUED)

SPLICE NAME	DIAGRAM LOCATION	HARNESS USED ON	CIRCUIT
SPL-E1	SECTION 19	ENGINE HARNESS	CHASSIS GROUND
SPL-E2	SECTION 38	ENGINE HARNESS	CLEAN GROUND
SPL-E3	SECTION 38	ENGINE HARNESS	GOVERNOR B+
SPL-E4	SECTION 37	ENGINE HARNESS	CLEAN GROUND
SPL-F1	SECTION 40	FRONT TO REAR HARNESS	CLEAN GROUND
SPL-F2	SECTION 38	FRONT TO REAR HARNESS	GOVERNOR B+
SPL-F3	SECTION 31	FRONT TO REAR HARNESS	CHASSIS GROUND
SPL-F4	SECTION 40	FRONT TO REAR HARNESS	PARK BRAKE
SPL-F5	SECTION 40	FRONT TO REAR HARNESS	ENGINE RPM
SPL-F6	SECTION 23	FRONT TO REAR HARNESS	ENGINE RPM
SPL-F7	SECTION 47	FRONT TO REAR HARNESS	GOVERNOR GROUND
SPL-F8	SECTION 40	FRONT TO REAR HARNESS	EURO PARK/BRAKE PRESS B+
SPL-FL1	SECTION 29	LEFT FENDER HARNESS	WORKLIGHTS B+
SPL-FL2	SECTION 29	LEFT FENDER HARNESS	CHASSIS GROUND
SPL-FR1	SECTION 29	RIGHT FENDER HARNESS	WORKLIGHTS B+
SPL-FR2	SECTION 29	RIGHT FENDER HARNESS	CHASSIS GROUND
SPL-H1	SECTION 30	HEADLAMP	GROUND
SPL-H2	SECTION 30	HEADLAMP	HEADLAMP B+
SPL-R1	SECTION 32	CAB ROOF HARNESS	TURN GROUND
SPL-R2	SECTION 28	CAB ROOF HARNESS	WORKLIGHT GROUND
SPL-R3	NOT USED	CAB ROOF HARNESS	NOT USED
SPL-R4	NOT USED	CAB ROOF HARNESS	NOT USED
SPL-R5	NOT USED	CAB ROOF HARNESS	NOT USED
SPL-R6	NOT USED	CAB ROOF HARNESS	NOT USED
SPL-SH1	SECTION 69	SHELF	GROUND
SPL-SH2	SECTION 69	SHELF	SWITCHED B+
SPL-SH3	SECTION 69	SHELF	UNSWITCHED B+

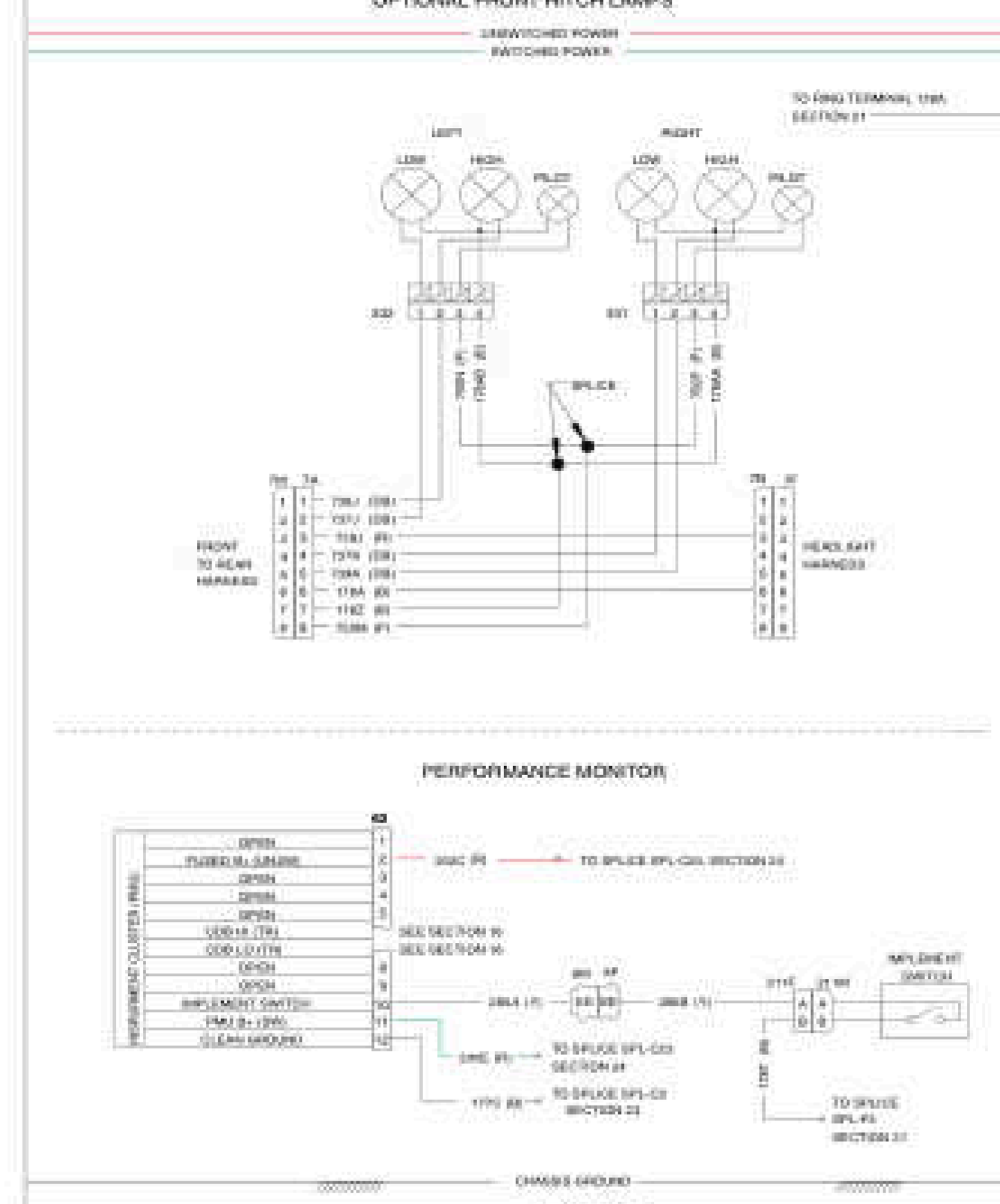
SECTION 10

TABLE OF SPLICES (CONTINUED)

SPLICE NAME	DIAGRAM LOCATION	HARNESS USED ON	CIRCUIT
SPL-T1	SECTION 38	TRANSMISSION/HITCH HARNESS	B+ COMMON
SPL-T2	SECTION 38	TRANSMISSION/HITCH HARNESS	B+ COMMON
SPL-T3	SECTION 38	TRANSMISSION/HITCH HARNESS	CLEAN GROUND
SPL-T4	NOT USED	TRANSMISSION/HITCH HARNESS	NOT USED
SPL-T5	NOT USED	TRANSMISSION/HITCH HARNESS	NOT USED
SPL-T6	NOT USED	TRANSMISSION/HITCH HARNESS	NOT USED
SPL-T7	NOT USED	TRANSMISSION/HITCH HARNESS	NOT USED
SPL-T8	NOT USED	TRANSMISSION/HITCH HARNESS	NOT USED
SPL-T9	NOT USED	TRANSMISSION/HITCH HARNESS	NOT USED
SPL-T10	NOT USED	TRANSMISSION/HITCH HARNESS	NOT USED
SPL-T11	NOT USED	TRANSMISSION/HITCH HARNESS	NOT USED
SPL-T12	SECTION 44	TRANSMISSION/HITCH HARNESS	CHASSIS GROUND
SPL-T13	SECTION 50	TRANSMISSION/HITCH HARNESS	HITCH SOLENOID B+
SPL-T14	SECTION 51	TRANSMISSION/HITCH HARNESS	REMOTE
SPL-T15	SECTION 50	TRANSMISSION/HITCH HARNESS	REMOTE
SPL-T16	SECTION 50	TRANSMISSION/HITCH HARNESS	REMOTE B+
SPL-T17	SECTION 50	TRANSMISSION/HITCH HARNESS	EDC +8V
SPL-T18	SECTION 50	TRANSMISSION/HITCH HARNESS	GROUND
SPL-T19	SECTION 37	TRANSMISSION/HITCH HARNESS	PRESSURE B+
SPL-T20	SECTION 37	TRANSMISSION/HITCH HARNESS	PRESSURE GROUND
SPL-AFSIN1	SECTION 71	AFS INSIDE	SWITCHED B+
SPL-AFSIN2	SECTION 71	AFS INSIDE	CLEAN GROUND
SPL-AFSOUT1	SECTION 72	AFS OUTSIDE	SWITCHED B+
SPL-AFSOUT2	SECTION 72	AFS OUTSIDE	CLEAN GROUND
SPL-AFSOUT3	SECTION 72	AFS OUTSIDE	SWITCHED B+
CDB-SPL-A1	14	AUXILIARY/PTO HARNESS	CASE DATA BUS
CDB-SPL-A2	14	AUXILIARY/PTO HARNESS	CASE DATA BUS
CDB-SPL-C1	NOT USED	CAB HARNESS	CASE DATA BUS
CDB-SPL-C2	15	CAB HARNESS	CASE DATA BUS
CDB-SPL-C3	NOT USED	CAB HARNESS	CASE DATA BUS
CDB-SPL-C4	15	CAB HARNESS	CASE DATA BUS
CDB-SPL-E1	14	ENGINE HARNESS	CASE DATA BUS
CDB-SPL-E2	NOT USED	ENGINE HARNESS	CASE DATA BUS
CDB-SPL-T1	13	TRANSMISSION/HITCH HARNESS	CASE DATA BUS
CDB-SPL-T2	13	TRANSMISSION/HITCH HARNESS	CASE DATA BUS

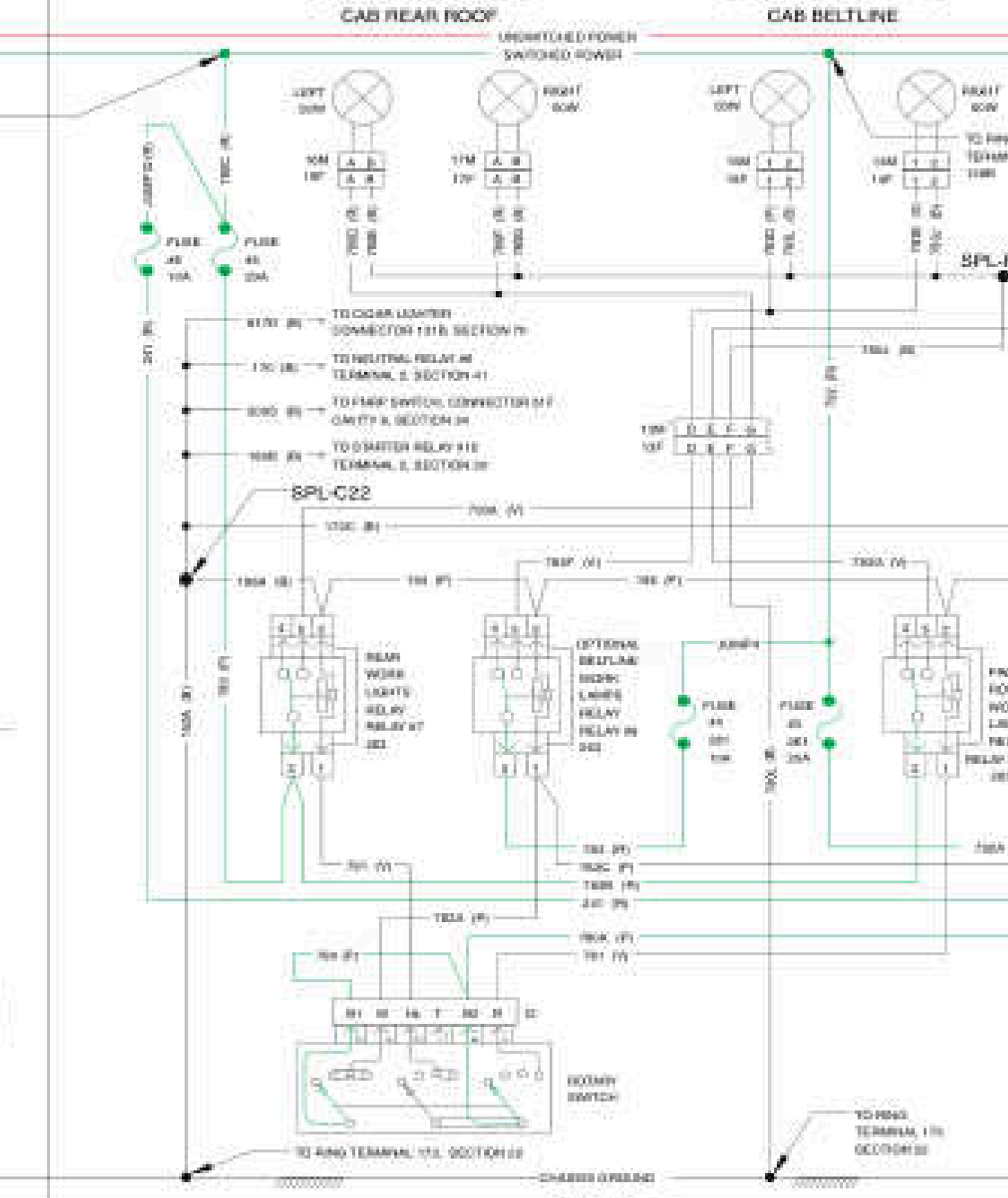
SECTION 11

OPTIONAL FRONT HITCH LAMPS



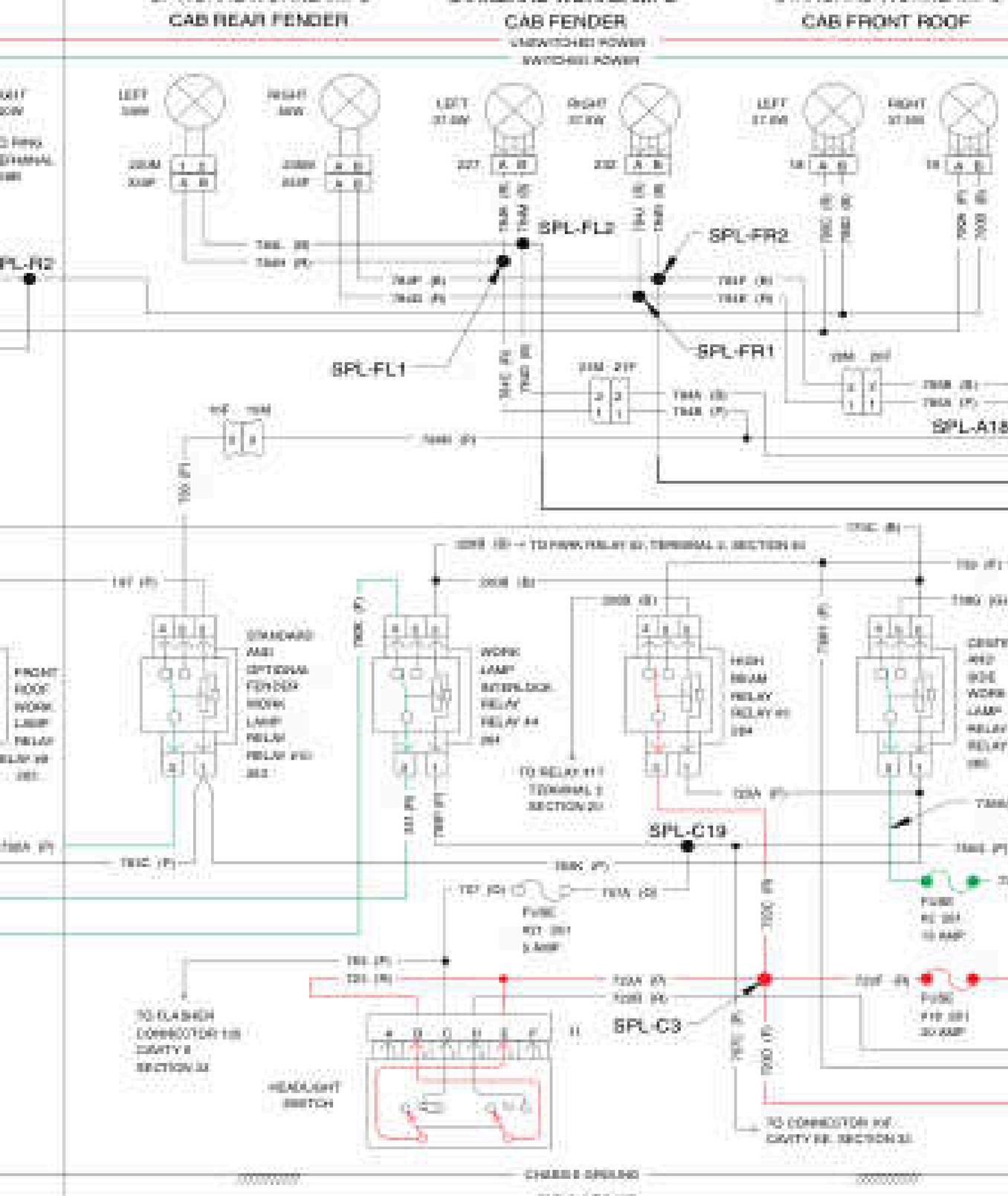
SECTION 27

OPTIONAL WORKLAMPS CAB REAR ROOF — OPTIONAL WORKLAMPS CAB BELTLINE



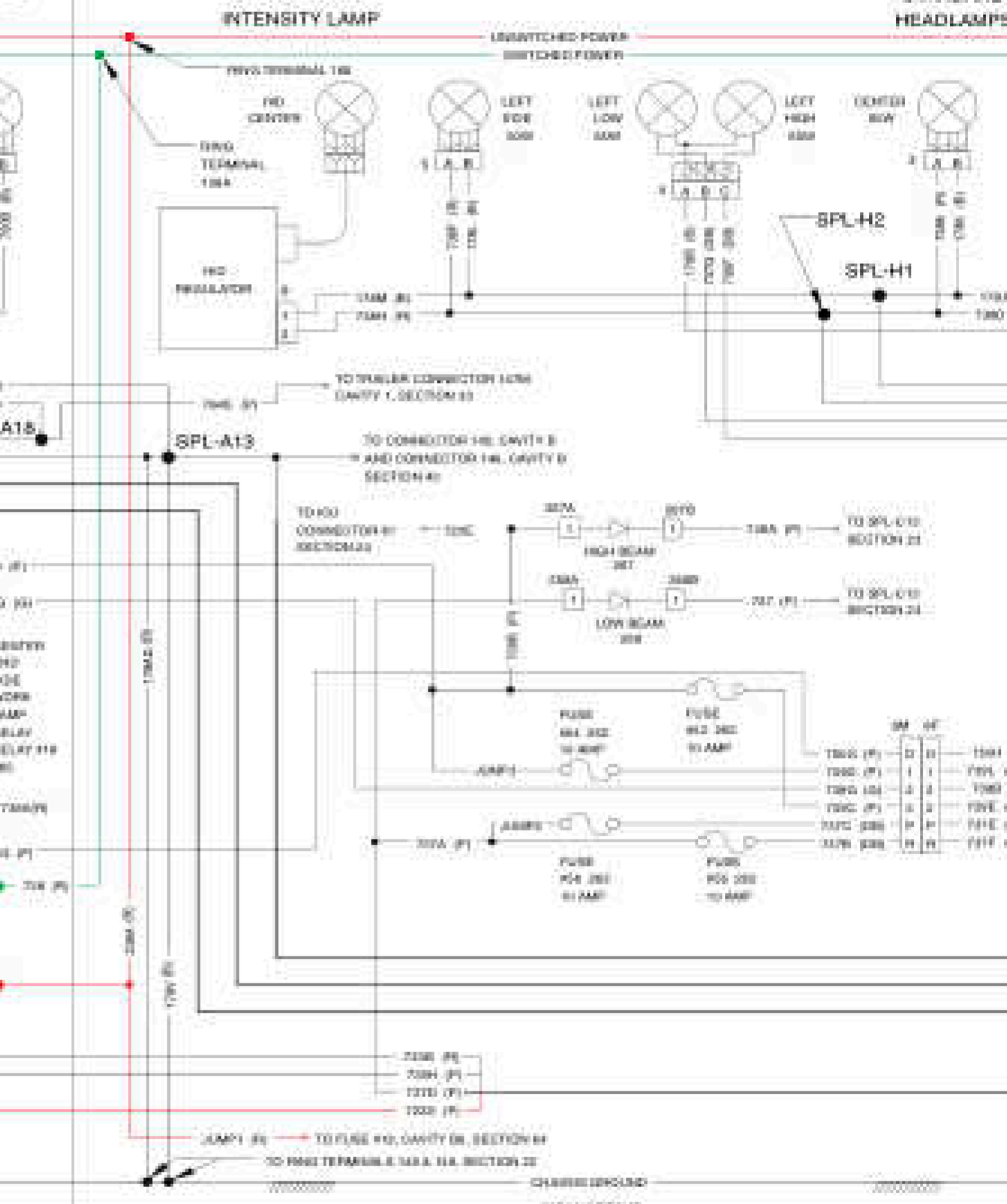
SECTION 28

OPTIONAL WORKLAMPS CAB REAR FENDER — STANDARD WORKLAMPS CAB FENDER — STANDARD WORKLAMPS CAB FRONT ROOF

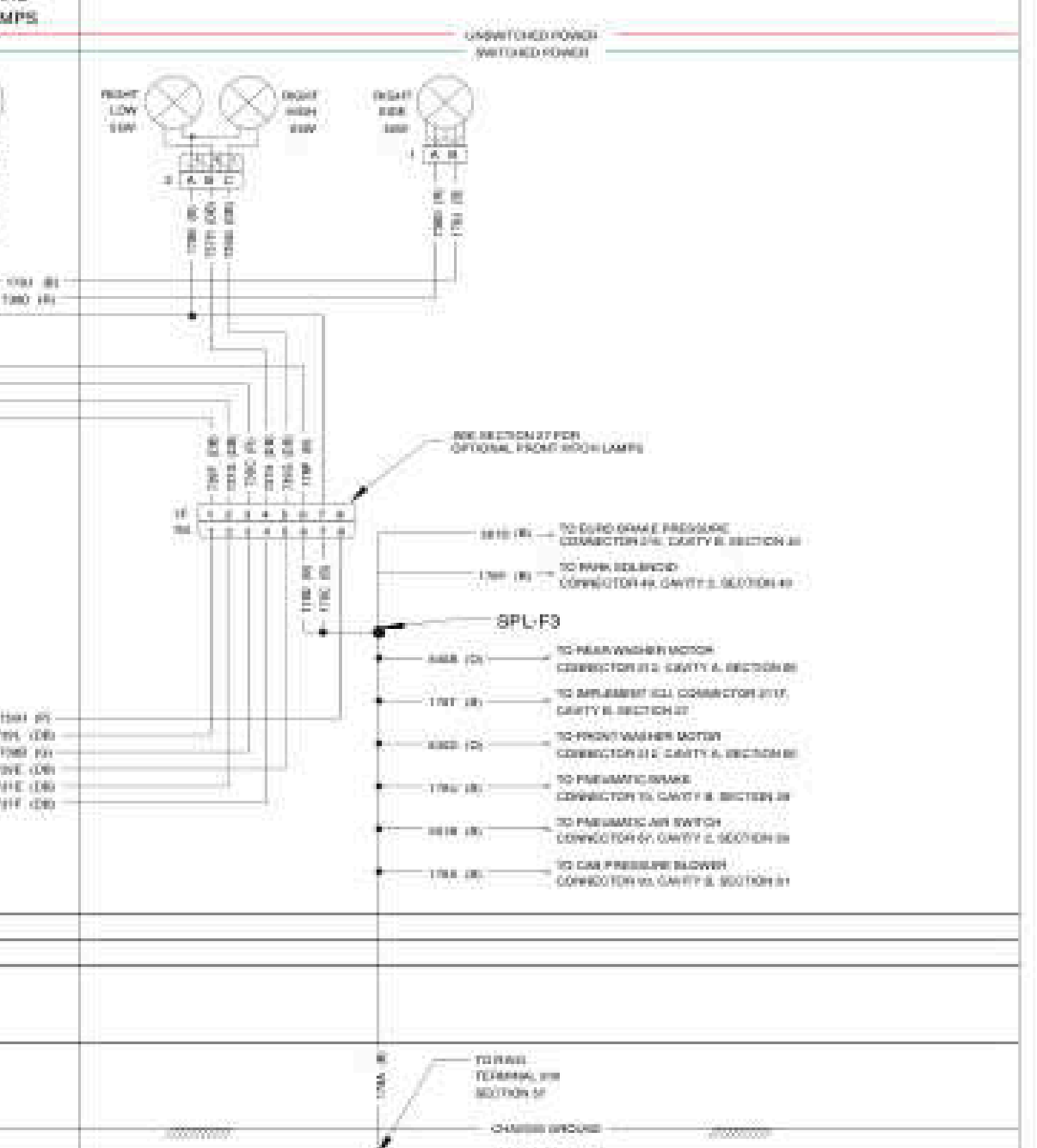


SECTION 29

OPTIONAL HIGH INTENSITY LAMP — STANDARD HEADLAMPS

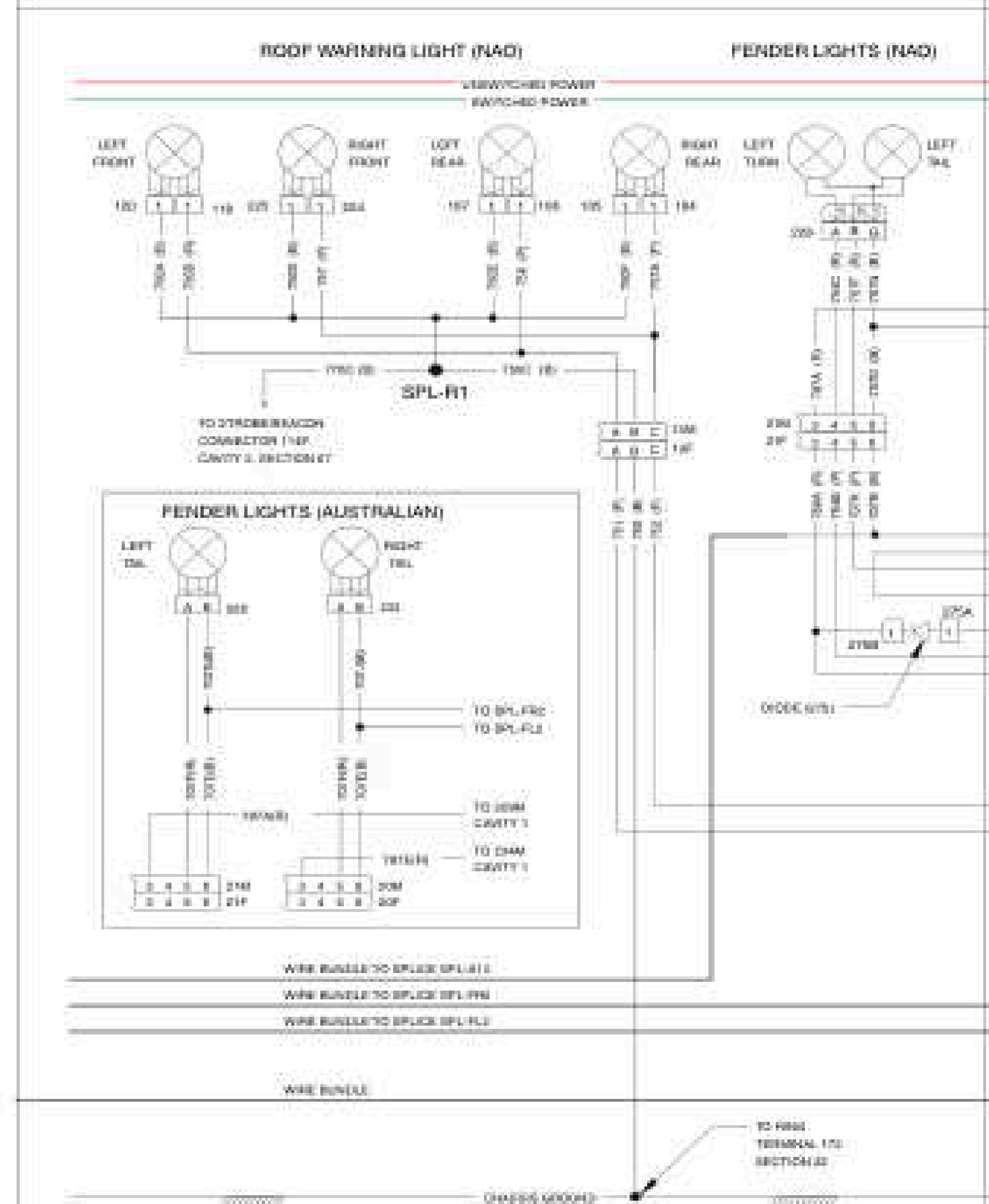


SECTION 30



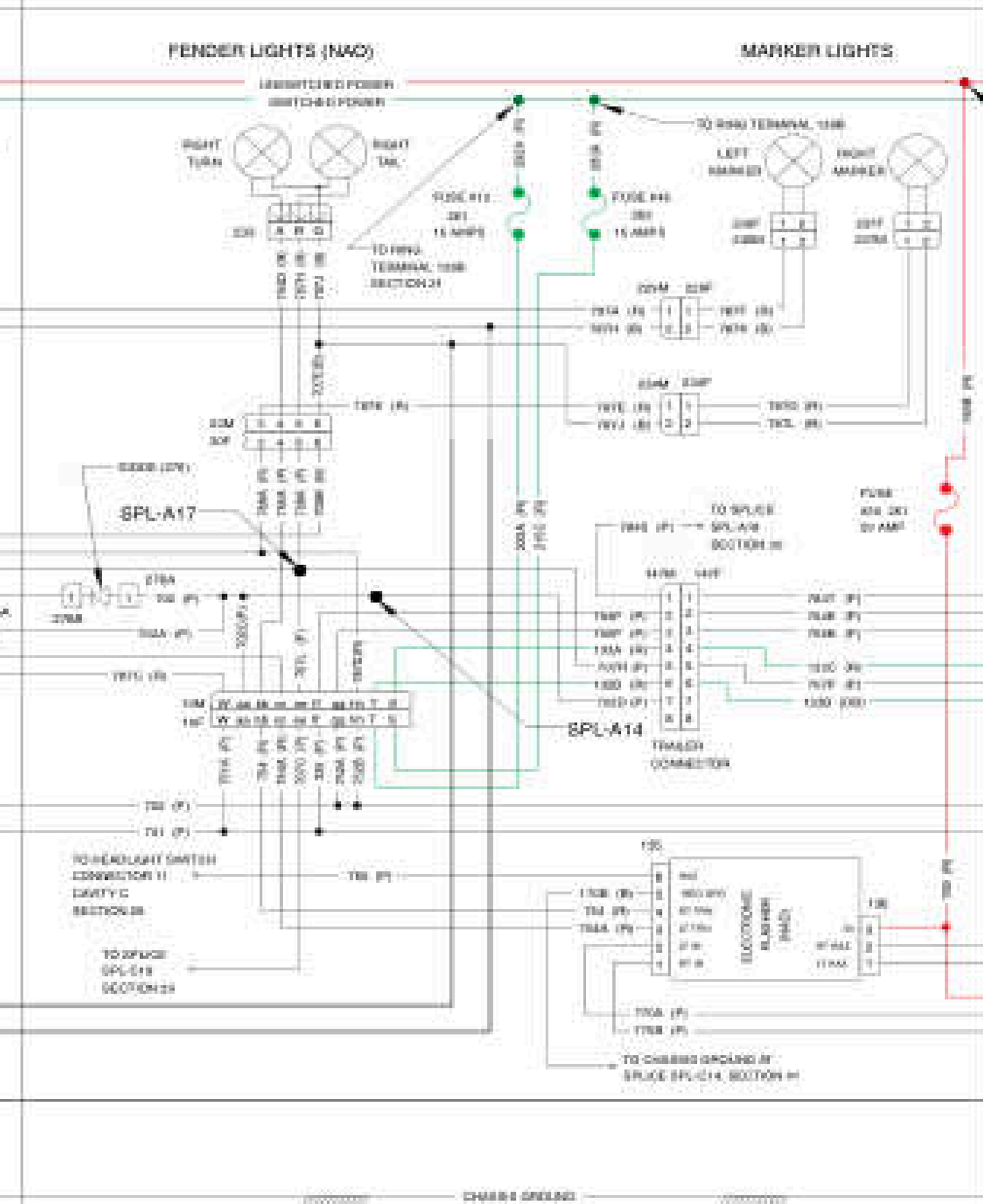
SECTION 31

ROOF WARNING LIGHT (NAO) — FENDER LIGHTS (NAO)



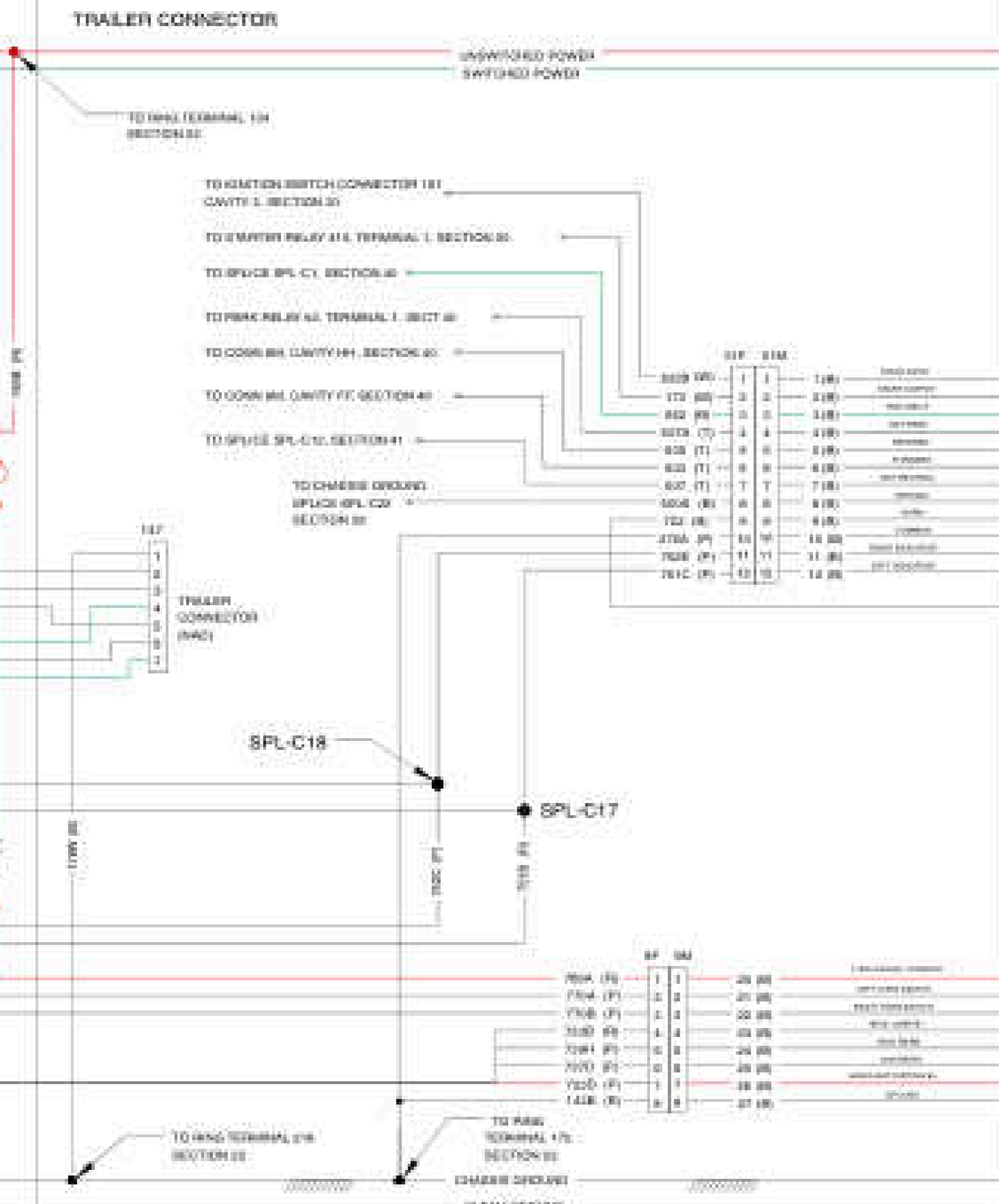
SECTION 32

FENDER LIGHTS (NAO) — MARKER LIGHTS



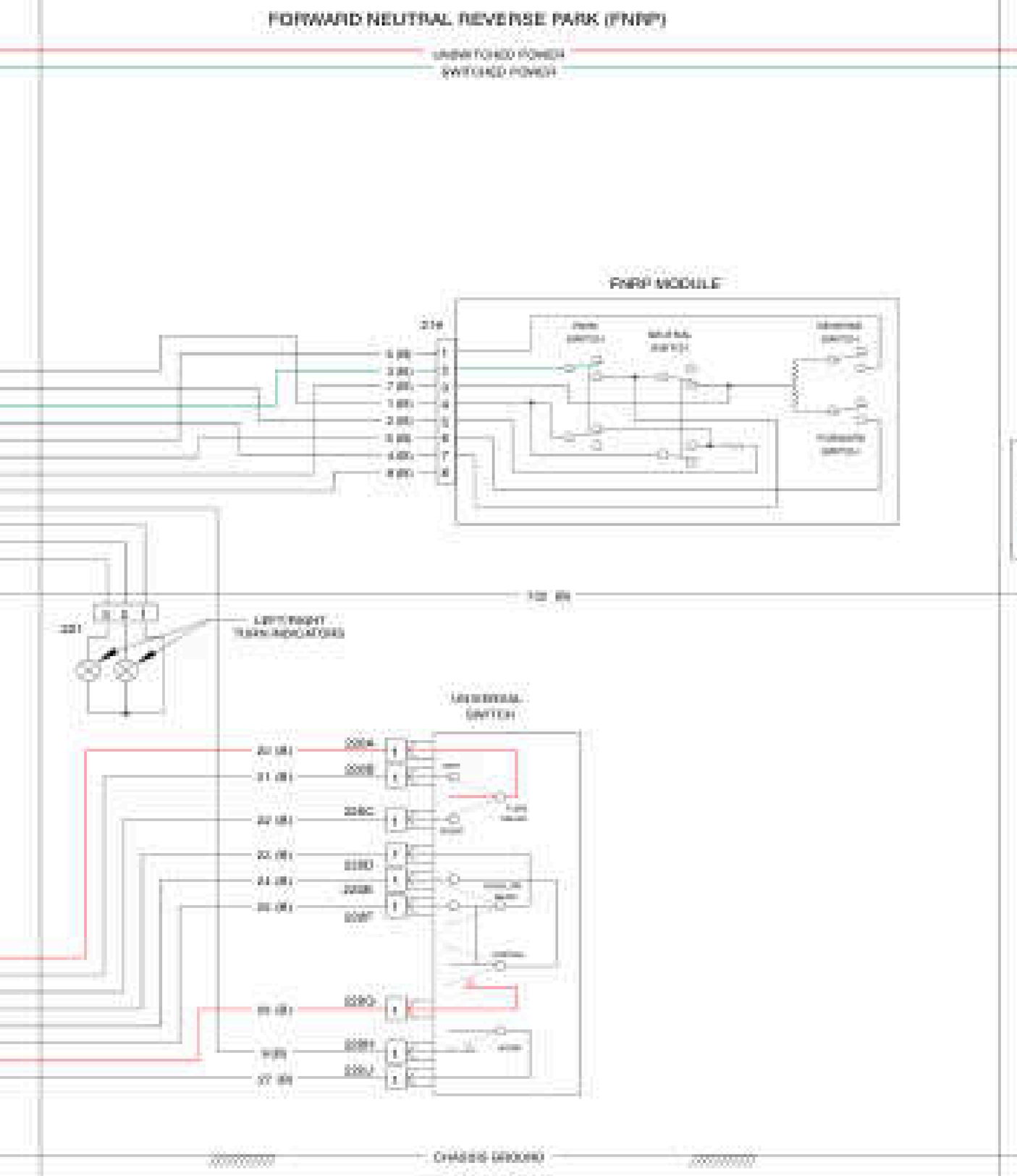
SECTION 33

TRAILER CONNECTOR



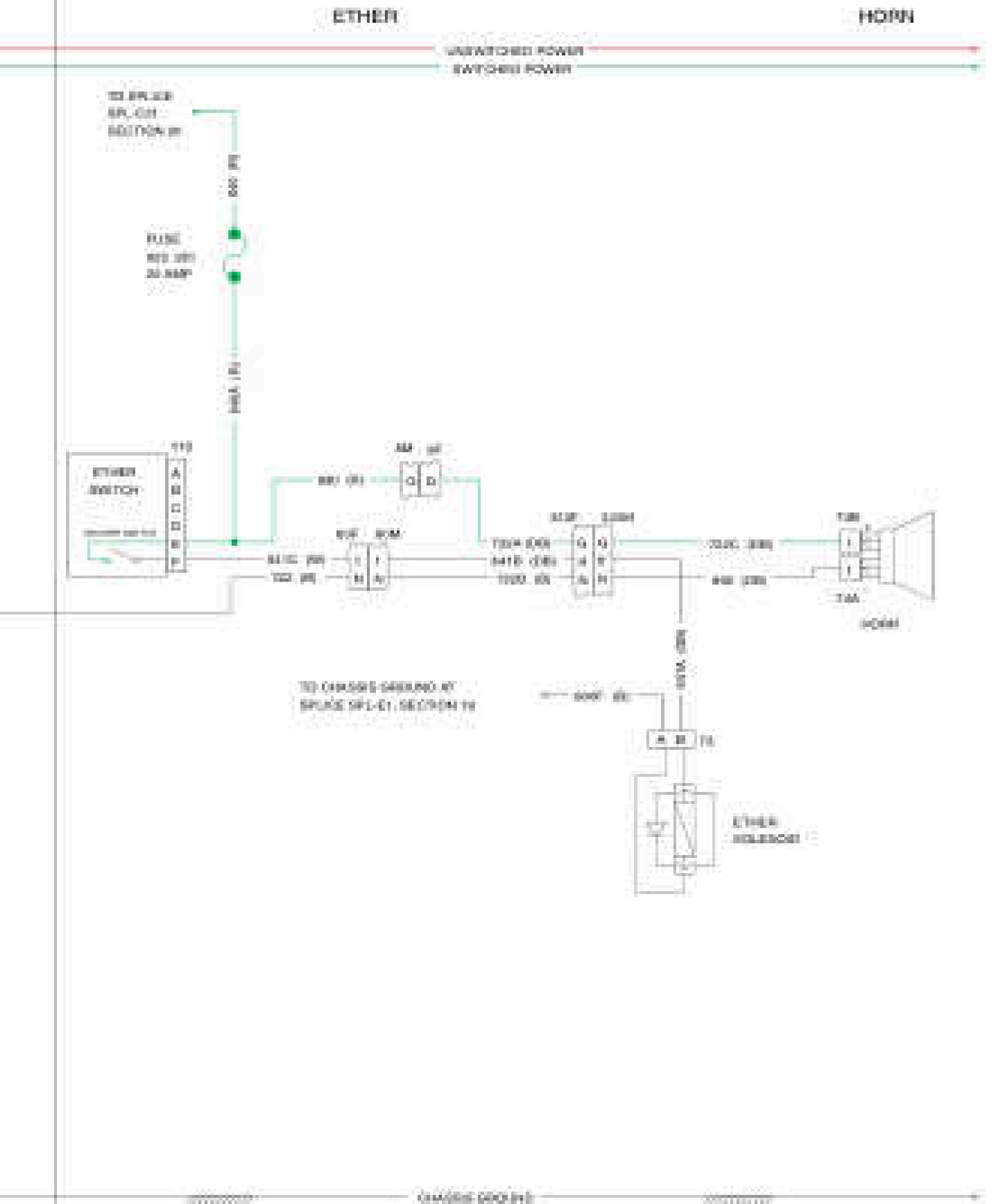
SECTION 34

FORWARD NEUTRAL REVERSE PARK (FNRP)



SECTION 35

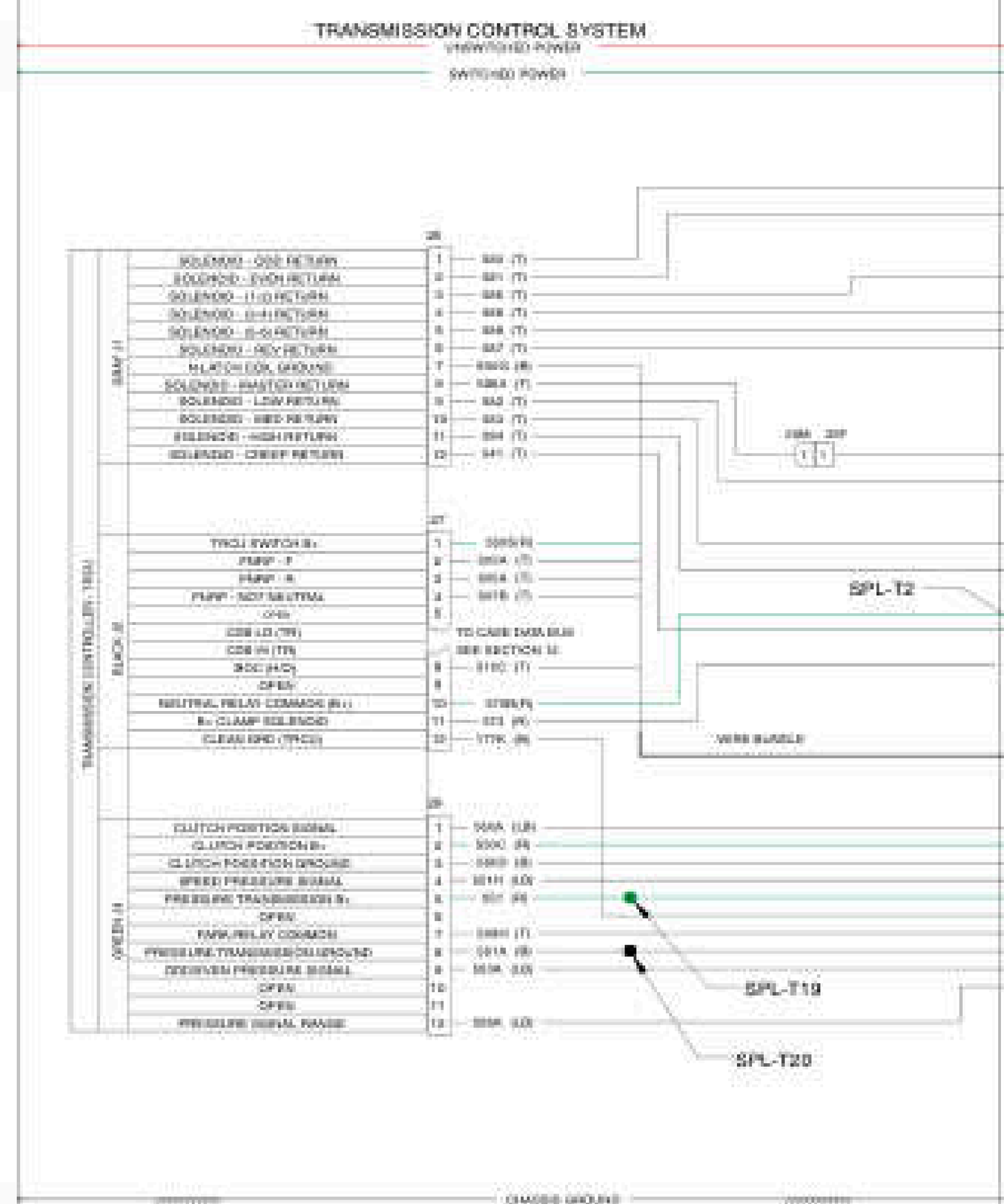
ETHER — HORN



SECTION 36

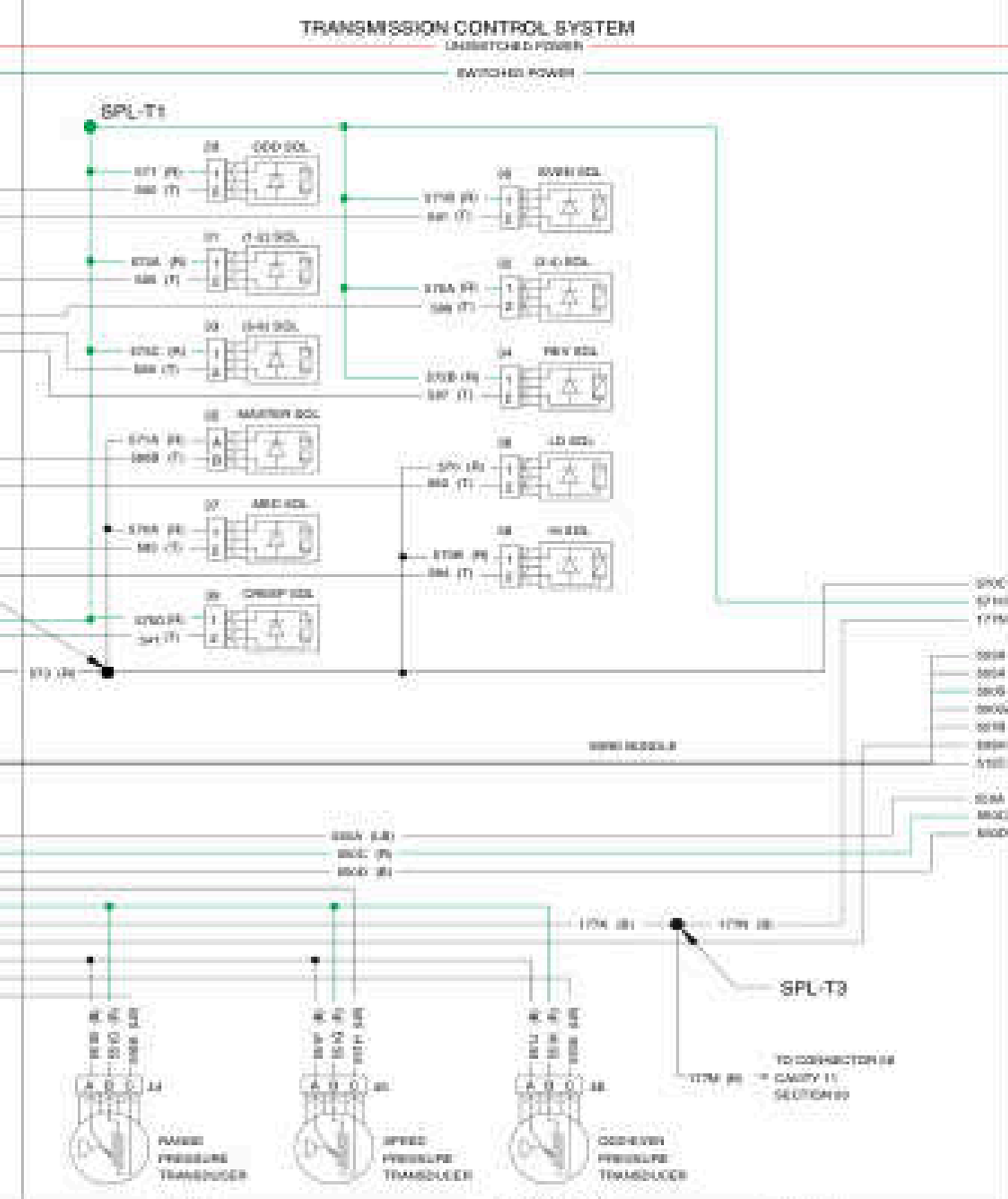
44

TRANSMISSION CONTROL SYSTEM



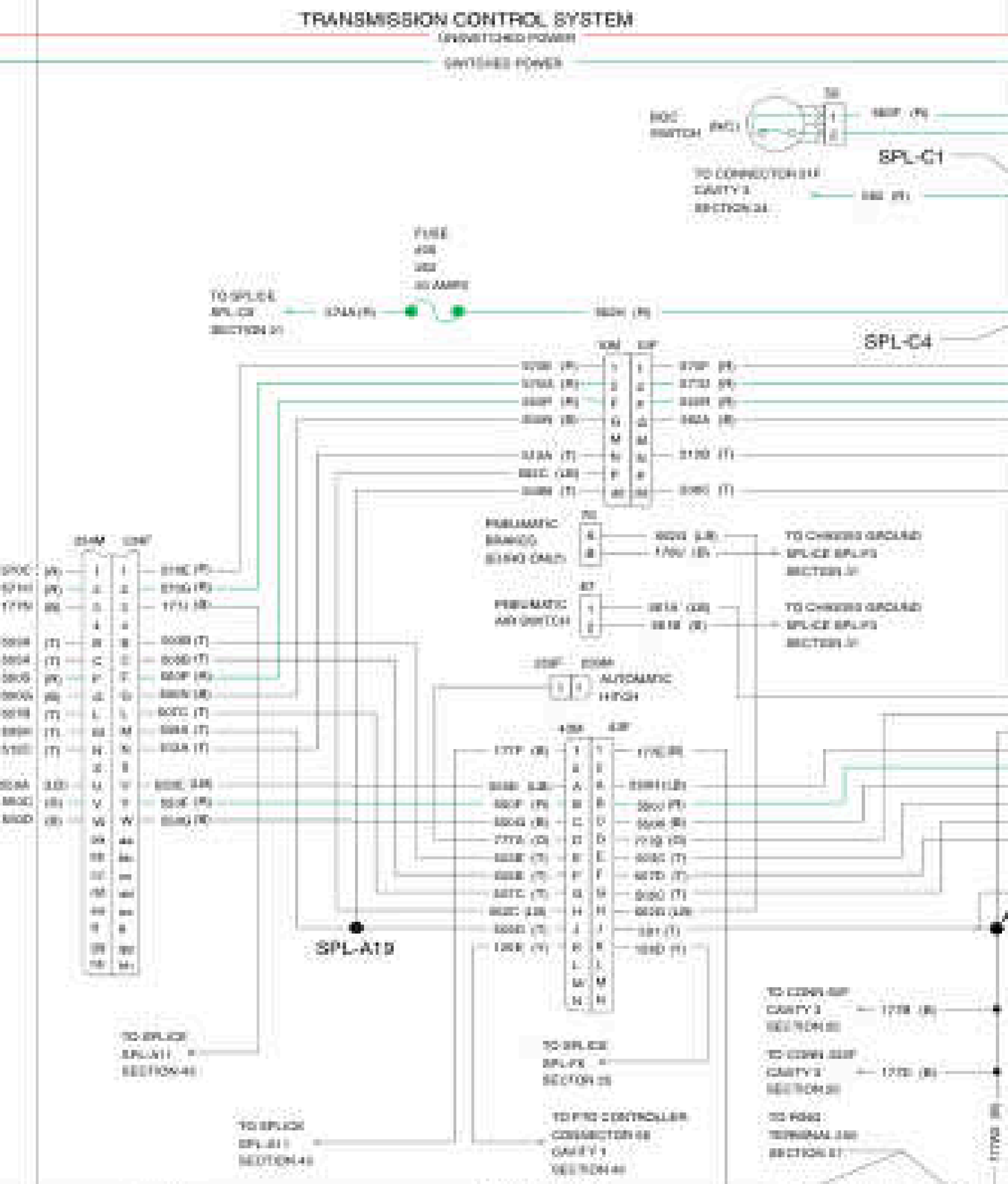
SECTION 37

TRANSMISSION CONTROL SYSTEM



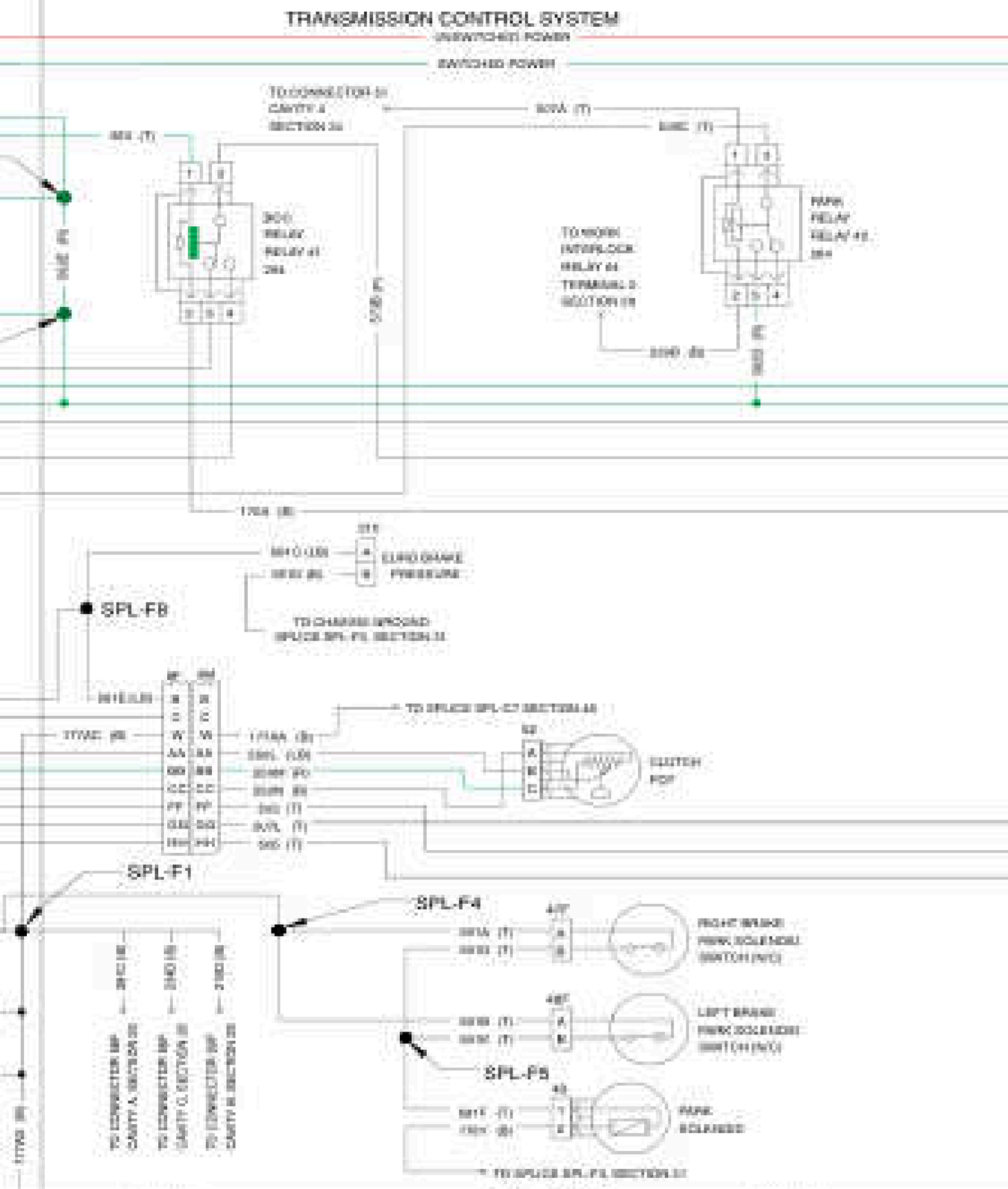
SECTION 38

TRANSMISSION CONTROL SYSTEM



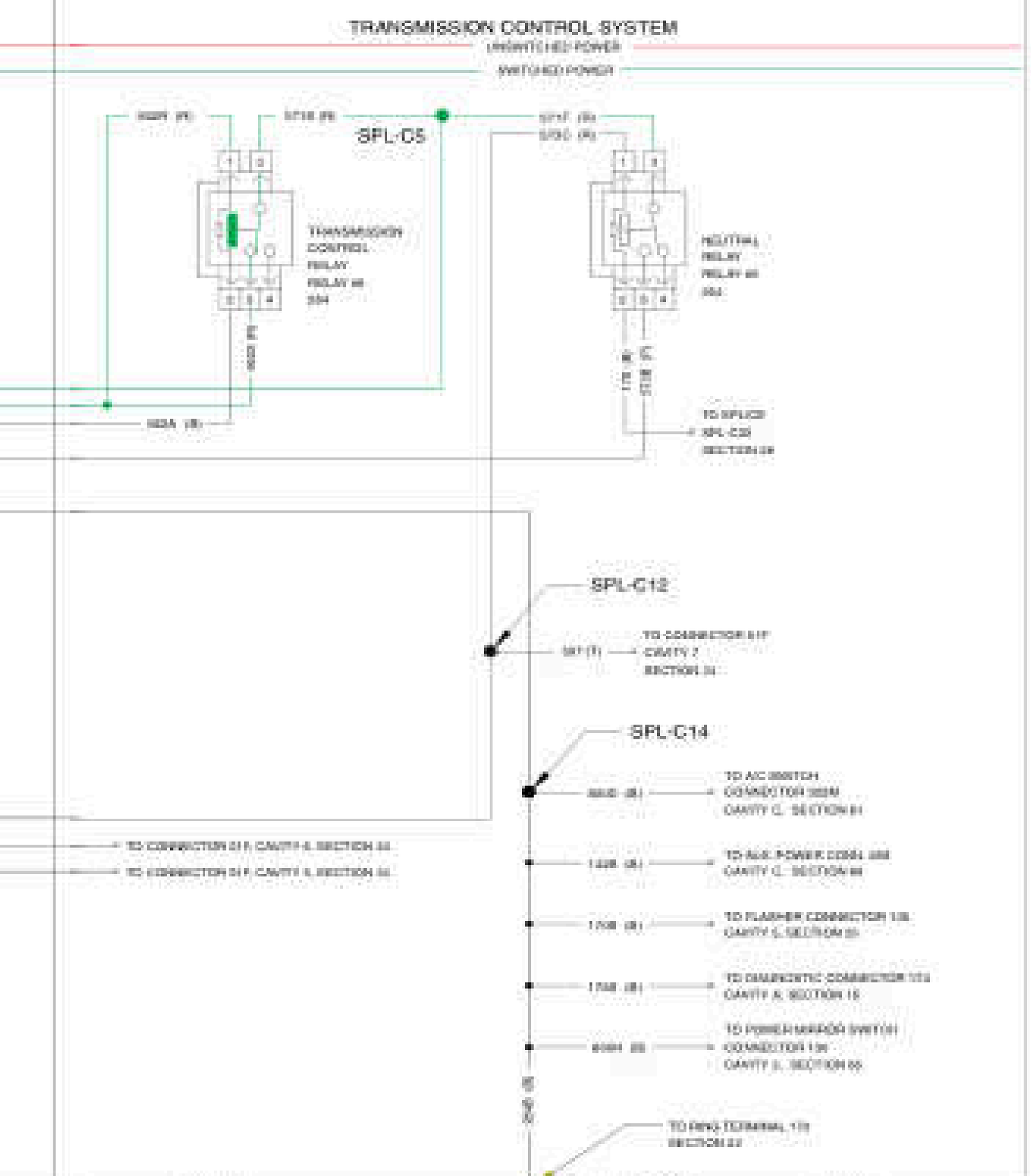
SECTION 39

TRANSMISSION CONTROL SYSTEM



SECTION 40

TRANSMISSION CONTROL SYSTEM



SECTION 41

MX SERIES MAGNUM TRACTORS
MX 180, MX200, MX220, MX240, AND MX270

NAO ELECTRICAL SCHEMATIC

P.I.N. JJA0105001 AND AFTER

RAC. 7-94120

LEGEND

INDICATES CONSTANT POWER

INDICATES POWER WHEN KEY SWITCH IS ON

TRANSMISSION CONTROL IN PARK
MFD IS OFF

RI99J004

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