

# **SERVICE MANUAL**

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## **TRUCK SERVICE MANUAL**

**BE, CE Bus Starting August, 2006 — ELECTRICAL CIRCUIT DIAGRAMS  
(Chassis Only)**

**Model: BE 200**

**Start Date: 08/01/2006**

**Model: CE Bus**

**Start Date: 08/01/2006**

**Model: CE 200**

**Start Date: 08/01/2006**

**Model: CE 300**

**Start Date: 08/01/2006**

**S08320**

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## SAFETY INFORMATION

**IMPORTANT** – Read the following before starting the service procedure.

The information contained in this International Service Manual Section was current at the time of printing and is subject to change without notice or liability.

You must follow your company safety procedures when you service or repair equipment. Be sure to understand all of the procedures and instructions before you begin work on the unit.

International uses the following types of notations to give warning of possible safety problems and to give information that will prevent damage to the equipment being serviced or repaired.



**WARNING** – A warning indicates procedures that must be followed exactly. Personal injury or possible death can occur if the procedure is not followed.

**CAUTION** – A caution indicates procedures that must be followed exactly. If the procedure is not followed, damage to equipment or components can occur.

**NOTE** – A note indicates an operation, procedure or instruction that is important for correct service.

Some procedures require the use of special tools for safe and correct service. Failure to use these special tools when required can cause injury to service personnel or damage to vehicle components.

This service manual section is intended for use by professional technicians, NOT a “do-it-yourselfer.” It is written to inform these technicians of conditions that may occur on some vehicles, or to provide information that could assist in the proper service of a vehicle. Properly trained technicians have the equipment, tools, safety instructions, and know-how to do a job properly and safely. If a condition is described, DO NOT assume that the service section applies to your vehicle. See your International Truck Dealer for information on whether this service section applies to your vehicle.



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## 1. INSTRUCTIONS AND CHARTS (CHAPTER 1)

### 1.1. CIRCUIT NUMBER IDENTIFICATION CHART, P. 1

<b>INTERNATIONAL TRUCK AND ENGINE CORPORATION</b> <small>THIS PRINT IS PROVIDED ON A RESTRICTED BASIS AND IS NOT TO BE USED IN ANY WAY DEDIMENTIAL TO THE INTEREST OF INTERNATIONAL TRUCK AND ENGINE CORPORATION.</small>	<b>ELECTRICAL CIRCUIT DIAGRAM CHAPTER 1</b> INTERNATIONAL CIRCUIT NUMBER IDENTIFICATION AND LOCATION																																										
<b>PREFIX DESIGNATIONS</b> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <thead> <tr> <th style="width: 10%;">PREFIX</th> <th style="width: 90%;">LOCATION</th> </tr> </thead> <tbody> <tr><td>A</td><td>CAB - INSTRUMENT PANEL</td></tr> <tr><td>K</td><td>ENGINE/TRANSMISSION</td></tr> <tr><td>L</td><td>DRIVE TRAIN DATA LINK/FAN SOLENOID</td></tr> <tr><td>M</td><td>HORN</td></tr> <tr><td>N</td><td>CHASSIS, FRONT SECTION</td></tr> <tr><td>R</td><td>CHASSIS, REAR SECTION</td></tr> <tr><td>U</td><td>HOOD HARNESS</td></tr> </tbody> </table>		PREFIX	LOCATION	A	CAB - INSTRUMENT PANEL	K	ENGINE/TRANSMISSION	L	DRIVE TRAIN DATA LINK/FAN SOLENOID	M	HORN	N	CHASSIS, FRONT SECTION	R	CHASSIS, REAR SECTION	U	HOOD HARNESS																										
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Figure 1 Circuit Number Identification Chart

## 1.2. CIRCUIT NUMBER IDENTIFICATION CHART, P. 2

INTERNATIONAL TRUCK AND ENGINE CORPORATION		ELECTRICAL CIRCUIT DIAGRAM CHAPTER 1																																											
		INTERNATIONAL CIRCUIT NUMBER IDENTIFICATION AND LOCATION (CONT.)																																											
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10	WH	CHASSIS/ENGINE GROUND																																											
11	WH	CAB GROUND																																											
12	LTBL	ACCESSORY FEED																																											
13	PK BK	IGNITION FEED IGNITION FEED(BODY BUILDER CONNECTOR)																																											
14	RD	BATTERY FEED																																											
15	RD	KEY SWITCH FEED																																											
16																																													
17	PK	STARTER CONTROL																																											
18	PK	GLOW PLUG/PRE-HEATER																																											
19	GY	ENGINE SHUTDOWN																																											
20	LTGN	REMOTE POWER MODULE																																											
21	TN	COLD START CONTROLS (ETHER)																																											
22																																													
23	TN	ENGINE FAN/SHUTTERS																																											
24	GY	ENGINE EXHAUST BRAKE																																											
25	TN	PYROMETER																																											
26	TN	AMMETER																																											
27	TN	VOLTMETER																																											
28	TN	INSTRUMENTS & GAUGES																																											
29	TN	ENGINE WATER TEMPERATURE																																											
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Figure 2 Circuit Number Identification Chart (Cont.)

### 1.3. CIRCUIT NUMBER IDENTIFICATION CHART, P. 3

INTERNATIONAL TRUCK AND ENGINE CORPORATION THIS PRINT IS PROVIDED ON A RESTRICTED BASIS AND IS NOT TO BE USED IN ANY WAY DEDIMENTIAL TO THE INTEREST OF INTERNATIONAL TRUCK AND ENGINE CORPORATION.		ELECTRICAL CIRCUIT DIAGRAM	CHAPTER I																																										
INTERNATIONAL CIRCUIT NUMBER IDENTIFICATION AND LOCATION (CONT.)																																													
CIRCUIT NUMBER AND IDENTIFICATION (CONT.)																																													
CIRCUIT NUMBER	COLOR	DESCRIPTION																																											
33	TN	ENGINE OIL LEVEL																																											
34	TN	COOLANT LEVEL																																											
35	TN	ENGINE OIL PRESSURE																																											
36	TN	FUEL LEVEL																																											
37	TN	FUEL PUMP																																											
38																																													
39	GY	AIR DRYER HEATER																																											
40	GY	LOW AIR PRESSURE WARNING																																											
41	TN	AIR TEMPERATURE																																											
42	GY	FRONT AXLE ENGAGED																																											
43	GY	POWER DIVIDER LOCK(PDL) WARNING																																											
44	GY	PARK BRAKE WARNING																																											
45	LTGN	ANTI-THEFT WARNING																																											
46	GY	POWER TAKE-OFF WARNING																																											
47	GY	SPEEDOMETER																																											
48	GY	TACHOMETER																																											
49	GY	DIFFERENTIAL LOCK WARNING																																											
50	YL	LIGHT SWITCH FEED																																											
51	YL	DIMMER SWITCH FEED																																											
52	YL	HEADLIGHT HI-BEAM																																											
53	YL	HEADLIGHT LO-BEAM																																											
54	BN	PARKING/MARKER LIGHTS																																											
55	OR	TURN SIGNAL-FEED																																											
56	OR	TURN SIGNAL LIGHTS-LEFT																																											
	YL	TURN SIGNAL LIGHTS-LEFT (BODY BUILDER CONNECTION)																																											
	OR	TURN SIGNAL LIGHTS-RIGHT																																											
57	LTGN	TURN SIGNAL LIGHTS-RIGHT(BODY BUILDER CONNECTION)																																											
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Figure 3 Circuit Number Identification Chart (Cont.)

## 1.4. CIRCUIT NUMBER IDENTIFICATION CHART, P. 4

INTERNATIONAL TRUCK AND ENGINE CORPORATION		ELECTRICAL CIRCUIT DIAGRAM CHAPTER 1																																											
		INTERNATIONAL CIRCUIT NUMBER IDENTIFICATION AND LOCATION (CONT.)																																											
CIRCUIT NUMBER AND IDENTIFICATION (CONT.)																																													
CIRCUIT NUMBER COLOR DESCRIPTION																																													
58	BN	CLEARANCE IDENTIFICATION LIGHTS																																											
59	GY	SOLENOID																																											
60	OR	HAZARD LIGHTS																																											
61	GY	AIR SUSPENSION																																											
62	DKBL	PANEL LIGHTS																																											
63	DKBL	COURTESY/DOME LIGHTS																																											
64	YL	FOG/DRIVING LIGHTS																																											
65	OR	CAB REAR FLOOD LIGHTS																																											
66	YL	DAY TIME RUNNING LIGHTS																																											
67																																													
68	BN	TAIL LIGHTS																																											
69	BN	LICENSE PLATE LIGHT																																											
70	OR	STOP LIGHTS STOP LIGHTS(BODY BUILDER CONNECTION)																																											
71	OR	BACK-UP LIGHTS BACK-UP LIGHTS(BODY BUILDER CONNECTION)																																											
72	OR	TRAILER AUXILIARY FEED -BATTERY																																											
73																																													
74	LTGN	HEATER RECIRC MOTOR																																											
75	LTGN	HEATER BLOWER MOTOR																																											
76	LTGN	AUXILIARY FAN																																											
77	LTGN	AIR CONDITIONER																																											
78	LTGN	MIRRORS-HEATED,MOTORIZED																																											
79	GY	SEAT BELTS																																											
80	BK	SLEEPER BOX RELAY-FEED																																											
81	LTGN	POWER DOOR LOCKS																																											
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">CHG</td> <td style="width: 10%;">DATE</td> <td style="width: 20%;">CHANGE</td> <td style="width: 10%;">REV</td> <td style="width: 10%;">REFERENCE</td> <td style="width: 10%;">DRAWN</td> <td style="width: 30%;">NAME DRIVE • CONVENTIONAL BUS ELECTRICAL CIRCUIT DIAGRAMS</td> </tr> <tr> <td>CNA</td> <td>28FEB06</td> <td>CONVERTED FROM SABER</td> <td>C</td> <td>59968M</td> <td>U00JLH3</td> <td></td> </tr> <tr> <td></td> <td></td> <td>TO UG.</td> <td></td> <td></td> <td>RELEASE NO.</td> <td>DATE</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>55806A</td> <td>19JUL02</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>PART NO.</td> <td>04</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Sheet</td> <td></td> </tr> </table>				CHG	DATE	CHANGE	REV	REFERENCE	DRAWN	NAME DRIVE • CONVENTIONAL BUS ELECTRICAL CIRCUIT DIAGRAMS	CNA	28FEB06	CONVERTED FROM SABER	C	59968M	U00JLH3				TO UG.			RELEASE NO.	DATE						55806A	19JUL02						PART NO.	04						Sheet	
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Figure 4 Circuit Number Identification Chart (Cont.)

## 1.5. CIRCUIT NUMBER IDENTIFICATION CHART, P. 5

INTERNATIONAL TRUCK AND ENGINE CORPORATION THIS PRINT IS PROVIDED ON A RESTRICTED BASIS AND IS NOT TO BE USED IN ANY WAY DEDIMENTIAL TO THE INTEREST OF INTERNATIONAL TRUCK AND ENGINE CORPORATION.		ELECTRICAL CIRCUIT DIAGRAM INTERNATIONAL CIRCUIT NUMBER IDENTIFICATION AND LOCATION (CONT.)		CHAPTER 1																																																	
CIRCUIT NUMBER AND IDENTIFICATIONS (CONT.)																																																					
CIRCUIT NUMBER	COLOR	DESCRIPTION																																																			
82	GY	WINDSHIELD WIPER																																																			
83	LTGN	POWER WINDOWS																																																			
84	LTGN	CIGAR LIGHTER																																																			
85	GY	HORN																																																			
86	LTGN	RADIO-ENTERTAINMENT																																																			
87	GY	WINDSHIELD WASHER																																																			
88	LTGN	CLOCK/HOURMETER																																																			
89	VT	AIR BAG																																																			
90	GY	HYDRAULIC BRAKE PUMP																																																			
91	VT	INTERCOMMUNICATIONS																																																			
92	TN	TRANSMISSION CONTROLS-ELECTRONICS																																																			
93	TN	AXLE SHIFT CONTROL																																																			
94	GY	ANTILOCK BRAKE SYSTEM																																																			
95	TN	EXHAUST EMISSION																																																			
96	YL	SNOW PLOW LIGHTS																																																			
97	VT	ENGINE CONTROLS-ELECTRONIC																																																			
98	BK	DATALINK AND DIAGNOSTICS																																																			
99	VT	ACCELERATOR POSITION SENSOR(APS)																																																			
100	GY	AIR HORN(ELECTRIC SOLENOID ACTUATED)																																																			
101	TN	BRAKE APPLICATION AIR																																																			
102	YL	FLASH TO PASS																																																			
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Figure 5 Circuit Number Identification Chart (Cont.)

## 1.6. CIRCUIT DIAGRAM INSTRUCTIONS, P. 6

INTERNATIONAL TRUCK AND ENGINE CORPORATION		ELECTRICAL CIRCUIT DIAGRAM CHAPTER 1																																																		
THIS PRINT IS PROVIDED ON A RESTRICTED BASIS AND IS NOT TO BE USED IN ANY WAY DEDIMENTIAL TO THE INTEREST OF INTERNATIONAL TRUCK AND ENGINE CORPORATION.		CIRCUIT DIAGRAM INSTRUCTIONS																																																		
<b>A - SWITCH AND RELAY POSITIONS AS SHOWN ON CIRCUIT DIAGRAMS INDICATE NORMAL POSITION WITH IGNITION OFF UNLESS OTHERWISE NOTED.</b> <p><b>SWITCH:</b> MANUAL/MECHANICAL    <b>RELAY - SUPPRESSED</b></p> <p><b>SWITCH MAGNETIC SUPPRESSED</b></p> <p><b>INDICATES CASE GROUND</b></p>		<b>B - MULTIPLE CONNECTIONS ARE DISPLAYED ON SCHEMATIC AS SHOWN. REFER TO CONNECTOR COMPOSITE WITH APPLICABLE NUMBER FOR MORE COMPLETE INFORMATION.</b> <p>12 + AND/OR #1211#109</p> <p>SINGLE IN-LINE CONNECTORS DISPLAYED AS SHOWN WITH OR WITHOUT CONNECTOR NUMBER.</p>																																																		
<b>C - PHANTOM LINES INDICATE PRINTED CIRCUITS OR BUSSING CIRCUITS. THESE CIRCUITS EXIST IN THE INSTRUMENT CLUSTER AND FUSE/CIRCUIT BREAKER CONNECTORS.</b> <p><b>VOLTMETER</b></p>		<p><b>LOCATION / CIRCUIT NUMBER</b> <b>WIRE GAUGE/WIRE COLOR</b></p> <p><b>BUSS IN FUSE CIRCUIT BREAKER CONNECTOR</b></p> <p><b>LOCATION IN FUSE/CIRCUIT BREAKER CONNECTION</b></p> <p><b>F1</b></p> <p><b>B</b></p> <p><b>20A</b></p> <p><b>FUSE RATING</b></p>																																																		
<b>D - MULTIPLE CIRCUIT NUMBERS ON A LINE INDICATE ONE WIRE DISTRIBUTING CURRENT TO TWO CIRCUITS.</b>																																																				
<b>E - SWITCHES, RELAYS AND COMPONENTS INDICATE EXTERNAL WIRE CONNECTIONS AND/OR INTERNAL CONNECTIONS OR CONTACTS.</b> <p><b>WIRE CONNECTION</b></p> <p><b>A12A</b></p> <p><b>A12</b></p> <p><b>KEY SWITCH</b></p> <p><b>INTERNAL CONNECTION</b></p> <p><b>A12B</b></p> <p><b>WIRE CONNECTION</b></p> <p><b>F18</b></p> <p><b>F19</b></p> <p><b>F20A</b></p> <p><b>BUSS ED CONTACT</b></p> <p><b>CONTACT</b></p> <p><b>ETHER SWITCH</b></p> <p><b>PIGTAIL</b></p>																																																				
<b>F - CIRCUIT "III" DENOTES ANY COMMON GROUND (MORE THAN ONE CIRCUIT) ANY INDIVIDUAL GROUND CIRCUIT IS IDENTIFIED WITH THAT PARTICULAR CIRCUIT NUMBER.</b> <p><b>NOTE: FOR CIRCUIT DESCRIPTION OTHER THAN GROUNDS NEITHER THE LETTER "G" NOR THE COLOR WHITE SHALL BE USED</b></p> <p><b>COMMON GROUND CIRCUIT NUMBER</b></p> <p><b>GROUND CIRCUITS ARE DESCRIBED THUS:</b></p> <p><b>III-G</b></p> <p><b>III-GA</b></p> <p><b>III-GB</b></p> <p><b>SUFFIX</b></p> <p><b>G IS NOT A SUFFIX BUT INDICATES A GROUND CIRCUIT</b></p> <p><b>R32-G</b></p> <p><b>R32-GA</b></p> <p><b>R32-GB</b></p> <p><b>LOCATION</b></p> <p><b>INDIVIDUAL GROUND CIRCUIT NUMBER</b></p> <p><b>SUFFIX</b></p> <p><b>G IS NOT A SUFFIX BUT INDICATES A GROUND CIRCUIT</b></p>																																																				
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Figure 6 Circuit Diagram Instructions

## 1.7. CIRCUIT NUMBER IDENTIFICATION AND COLOR, P. 7

INTERNATIONAL TRUCK AND ENGINE CORPORATION THIS PRINT IS PROVIDED ON A RESTRICTED BASIS AND IS NOT TO BE USED IN ANY WAY DEDIMENTIAL TO THE INTEREST OF INTERNATIONAL TRUCK AND ENGINE CORPORATION.		ELECTRICAL CIRCUIT DIAGRAM CHAPTER 1 INTERNATIONAL CIRCUIT NUMBER IDENTIFICATION AND COLOR																																																									
G - ABBREVIATIONS: COLOR, NOUN AND ENGINE																																																											
COLOR ABBREVIATION																																																											
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>ABBREVIATION</th><th>COLOR</th><th>ABBREVIATION</th><th>COLOR</th></tr> </thead> <tbody> <tr><td>AO</td><td>AQUA</td><td>LTGN</td><td>LIGHT GREEN</td></tr> <tr><td>BK</td><td>BLACK</td><td>OR</td><td>ORANGE</td></tr> <tr><td>BL</td><td>BLUE</td><td>PK</td><td>PINK</td></tr> <tr><td>BN</td><td>BROWN</td><td>PL</td><td>PURPLE</td></tr> <tr><td>DKGN</td><td>DARK GREEN</td><td>RD</td><td>RED</td></tr> <tr><td>GD</td><td>GOLD</td><td>SIL</td><td>SILVER</td></tr> <tr><td>GY</td><td>GRAY</td><td>TN</td><td>TAN</td></tr> <tr><td>GN</td><td>GREEN</td><td>VT</td><td>VOILET</td></tr> <tr><td>LTBL</td><td>LIGHT BLUE</td><td>WH</td><td>WHITE</td></tr> <tr><td></td><td></td><td>YL</td><td>YELLOW</td></tr> </tbody> </table>				ABBREVIATION	COLOR	ABBREVIATION	COLOR	AO	AQUA	LTGN	LIGHT GREEN	BK	BLACK	OR	ORANGE	BL	BLUE	PK	PINK	BN	BROWN	PL	PURPLE	DKGN	DARK GREEN	RD	RED	GD	GOLD	SIL	SILVER	GY	GRAY	TN	TAN	GN	GREEN	VT	VOILET	LTBL	LIGHT BLUE	WH	WHITE			YL	YELLOW												
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FWD	FORWARD	S	STARTER OR SENDER																																																								
GA	GAUGE	THERMO	THERMOSTAT																																																								
		W/	WITH																																																								
ENGINE ABBREVIATION :																																																											
VB- MFG (INTERNATIONAL) VB 6.0 LITER ELECTRONIC ENGINE CONTROL																																																											
16- MFG (INTERNATIONAL) NGD 16 DT466 & DT/HT530 ELECTRONIC ENGINE CONTROL																																																											
IDM- MFG (INTERNATIONAL) INJECTOR DRIVE MODULE																																																											
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>CHG</td><td>DATE</td><td>CHANGE</td><td>REV</td><td>REFERENCE</td><td>DRASH</td><td>NAME</td><td></td></tr> <tr> <td>CNA</td><td>10JUL06</td><td>TITLE DESCRIPTION:</td><td>D</td><td>60296A</td><td>U00JLH3</td><td>DRIVE + CONVENTIONAL BUS CIRCUIT DIAGRAMS</td><td></td></tr> <tr> <td></td><td></td><td></td><td></td><td></td><td>RELEASE NO.</td><td>DATE</td><td>PART NO. SHEET</td></tr> <tr> <td></td><td></td><td>COLOR WAS LOCATION</td><td></td><td></td><td>55806A</td><td>19JUL02</td><td>AEOB-54425 07</td></tr> </table>				CHG	DATE	CHANGE	REV	REFERENCE	DRASH	NAME		CNA	10JUL06	TITLE DESCRIPTION:	D	60296A	U00JLH3	DRIVE + CONVENTIONAL BUS CIRCUIT DIAGRAMS							RELEASE NO.	DATE	PART NO. SHEET			COLOR WAS LOCATION			55806A	19JUL02	AEOB-54425 07																								
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					RELEASE NO.	DATE	PART NO. SHEET																																																				
		COLOR WAS LOCATION			55806A	19JUL02	AEOB-54425 07																																																				

Figure 7 Circuit Number Identification and Color

## 1.8. SCHEMATIC SYMBOL CHART, P. 8

INTERNATIONAL TRUCK AND ENGINE CORPORATION THIS PRINT IS PROVIDED ON A RESTRICTED BASIS AND IS NOT TO BE USED IN ANY WAY DEDIMENTIAL TO THE INTEREST OF INTERNATIONAL TRUCK AND ENGINE CORPORATION.		ELECTRICAL CIRCUIT DIAGRAM SCHEMATIC SYMBOL CHART		CHAPTER 1																																								
<b>SYMBOL</b>  <b>DESCRIPTION</b> MALE/FEMALE IN-LINE CONNECTION		<b>DESCRIPTION</b>  <b>RELAY - SUPPRESSED</b>  <b>SOLENOID GENERAL USAGE</b>  <b>MOTOR - ELECTRIC</b>  <b>HORN</b>  <b>SPEAKER - SOUND SYSTEM</b>  <b>MAGNETIC SWITCH</b>  <b>LIGHT - SINGLE FILAMENT</b>  <b>LIGHT - DOUBLE FILAMENT</b>  <b>SENDER - OIL, WATER, FUEL, TEMPERATURE</b>																																										
 <b>SWITCH-PRESSURE</b>		 <b>SWITCH MANUAL/MECHANICAL</b>																																										
<table border="1"> <tr> <td>CHG</td><td>DATE</td><td>CHANGE</td><td>REV</td><td>REFERENCE</td></tr> <tr> <td>CNA</td><td>28FEB06</td><td>CONVERTED FROM SABER</td><td>C</td><td>59968M</td></tr> <tr> <td></td><td></td><td></td><td></td><td>DRASH U00JLH3</td></tr> <tr> <td></td><td></td><td></td><td></td><td>NAME DRIVE • CONVENTIONAL BUS ELECTRICAL CIRCUIT DIAGRAMS</td></tr> <tr> <td></td><td></td><td></td><td></td><td>RELEASE NO. 55806A</td></tr> <tr> <td></td><td></td><td></td><td></td><td>DATE 19JUL02</td></tr> <tr> <td></td><td></td><td></td><td></td><td>PART NO. AE08-54425</td></tr> <tr> <td></td><td></td><td></td><td></td><td>SHEET 08</td></tr> </table>					CHG	DATE	CHANGE	REV	REFERENCE	CNA	28FEB06	CONVERTED FROM SABER	C	59968M					DRASH U00JLH3					NAME DRIVE • CONVENTIONAL BUS ELECTRICAL CIRCUIT DIAGRAMS					RELEASE NO. 55806A					DATE 19JUL02					PART NO. AE08-54425					SHEET 08
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				PART NO. AE08-54425																																								
				SHEET 08																																								

Figure 8 Schematic Symbol Chart

## 1.9. CIRCUIT NUMBER IDENTIFICATION AND LOCATION, P. 9

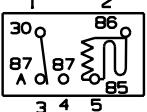
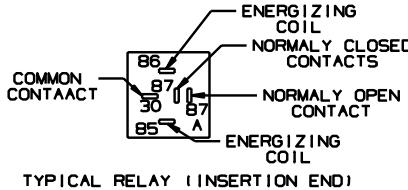
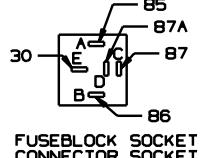
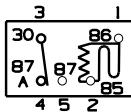
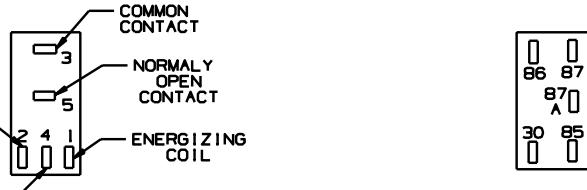
INTERNATIONAL TRUCK AND ENGINE CORPORATION THIS PRINT IS PROVIDED ON A RESTRICTED BASIS AND IS NOT TO BE USED IN ANY WAY DEDIMENTIAL TO THE INTEREST OF INTERNATIONAL TRUCK AND ENGINE CORPORATION.	ELECTRICAL CIRCUIT DIAGRAM	CHAPTER 1																																										
RELAY FUNCTIONS MINIATURE RELAY FUNCTION AND WIRING GUIDE																																												
 <p style="text-align: center;"><b>RELAY SCHEMATIC</b></p>  <p style="text-align: center;"><b>TYPICAL RELAY (INSERTION END)</b></p>																																												
 <p style="text-align: center;"><b>FUSEBLOCK SOCKET CONNECTOR SOCKET CABLE INSERTION END</b></p>  <p style="text-align: center;"><b>FUSEBLOCK SOCKET CONNECTOR SOCKET RELAY INSERTION END</b></p>																																												
<p style="text-align: center;"><b>MICRO RELAY FUNCTION AND WIRING GUIDE</b></p> <p style="text-align: center;"><b>RELAY SCHEMATIC</b></p>   <p style="text-align: center;"><b>TYPICAL RELAY (INSERTION END)</b></p>																																												
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">C/N:</td> <td style="width: 10%;">DATE:</td> <td style="width: 10%;">CHANGE:</td> <td style="width: 10%;">REV:</td> <td style="width: 10%;">REFERENCE:</td> <td style="width: 10%;">DRAWN BY:</td> <td style="width: 10%;">NAME:</td> </tr> <tr> <td>CNA</td> <td>28FEB06</td> <td>CONVERTED FROM SABER</td> <td>C</td> <td>5996BM</td> <td>U00JLH3</td> <td>DRIVE • CONVENTIONAL BUS ELECTRICAL CIRCUIT DIAGRAMS</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>RELEASE NO.:</td> <td>SHEET</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>55806A</td> <td>19JUL02</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>PART NO.:</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>AE08-54425</td> <td>09</td> </tr> </table>			C/N:	DATE:	CHANGE:	REV:	REFERENCE:	DRAWN BY:	NAME:	CNA	28FEB06	CONVERTED FROM SABER	C	5996BM	U00JLH3	DRIVE • CONVENTIONAL BUS ELECTRICAL CIRCUIT DIAGRAMS						RELEASE NO.:	SHEET						55806A	19JUL02						PART NO.:							AE08-54425	09
C/N:	DATE:	CHANGE:	REV:	REFERENCE:	DRAWN BY:	NAME:																																						
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					PART NO.:																																							
					AE08-54425	09																																						

Figure 9 Circuit Number Identification and Location

## 1.10. LAMP BULB CHART, P. 10

INTERNATIONAL TRUCK AND ENGINE CORPORATION THIS PRINT IS PROVIDED ON A RESTRICTED BASIS AND IS NOT TO BE USED IN ANY WAY DEDIMENTAL TO THE INTEREST OF INTERNATIONAL TRUCK AND ENGINE CORPORATION.		ELECTRICAL CIRCUIT DIAGRAM LAMP BULB CHART	CHAPTER 1
<b>BULB APPLICATION</b>		<b>BULB CANDLE POWER OR WATTS</b>	<b>BULB TRACE NUMBER</b>
FOG LIGHTS		121 CANDLE POWER	H355
HEAD LIGHTS			
LOW BEAMS		65 WATTS	9007
HIGH BEAMS		55 WATTS	9007
MISC LIGHTS			
SIDE MARKER		3.8 WATTS	194NA
TURN SIGNAL MARKER (FENDER)		27/8 WATTS	3157
TURN SIGNAL & FRONT MARKER LIGHT		27/8 WATTS	3157NA
<b>CHG</b>	<b>DATE</b>	<b>CHANGE</b>	<b>REV</b>
CNA	28FEB06	CONVERTED FROM SABER	C
			59968M
		TO UG.	U00JAHPC
			RELEASE NO.
			55806A
			DATE
			23APR02
			PART NO.
			AE08-54425
			SHEET
			10

Figure 10 Lamp Bulb Chart

## 2. 12 VOLT POWER DISTRIBUTION AND DATA LINK (CHAPTER 2)

### 2.1. ACCESSORY, P. 1

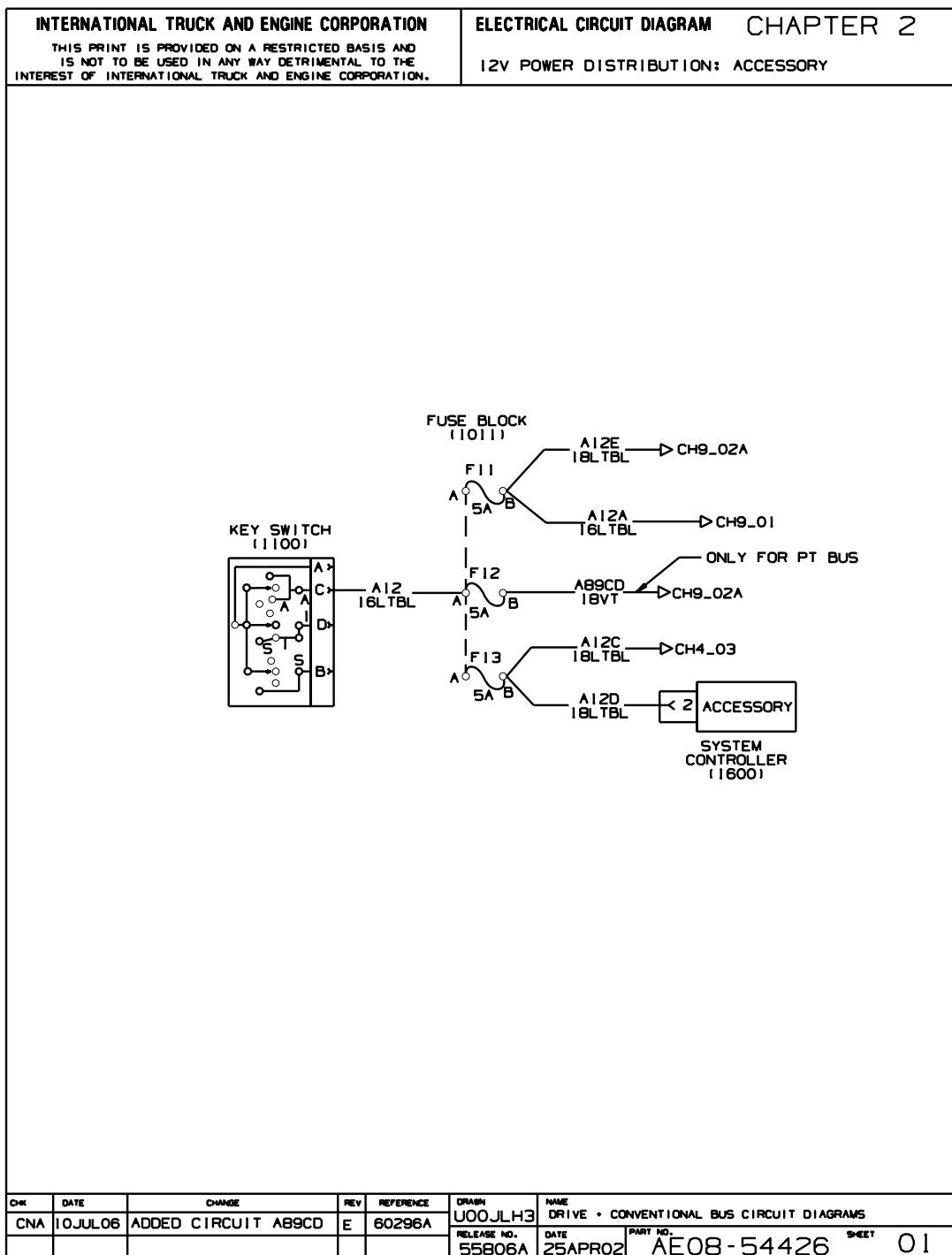


Figure 11 Accessory

## 2.2. BATTERY, P. 2

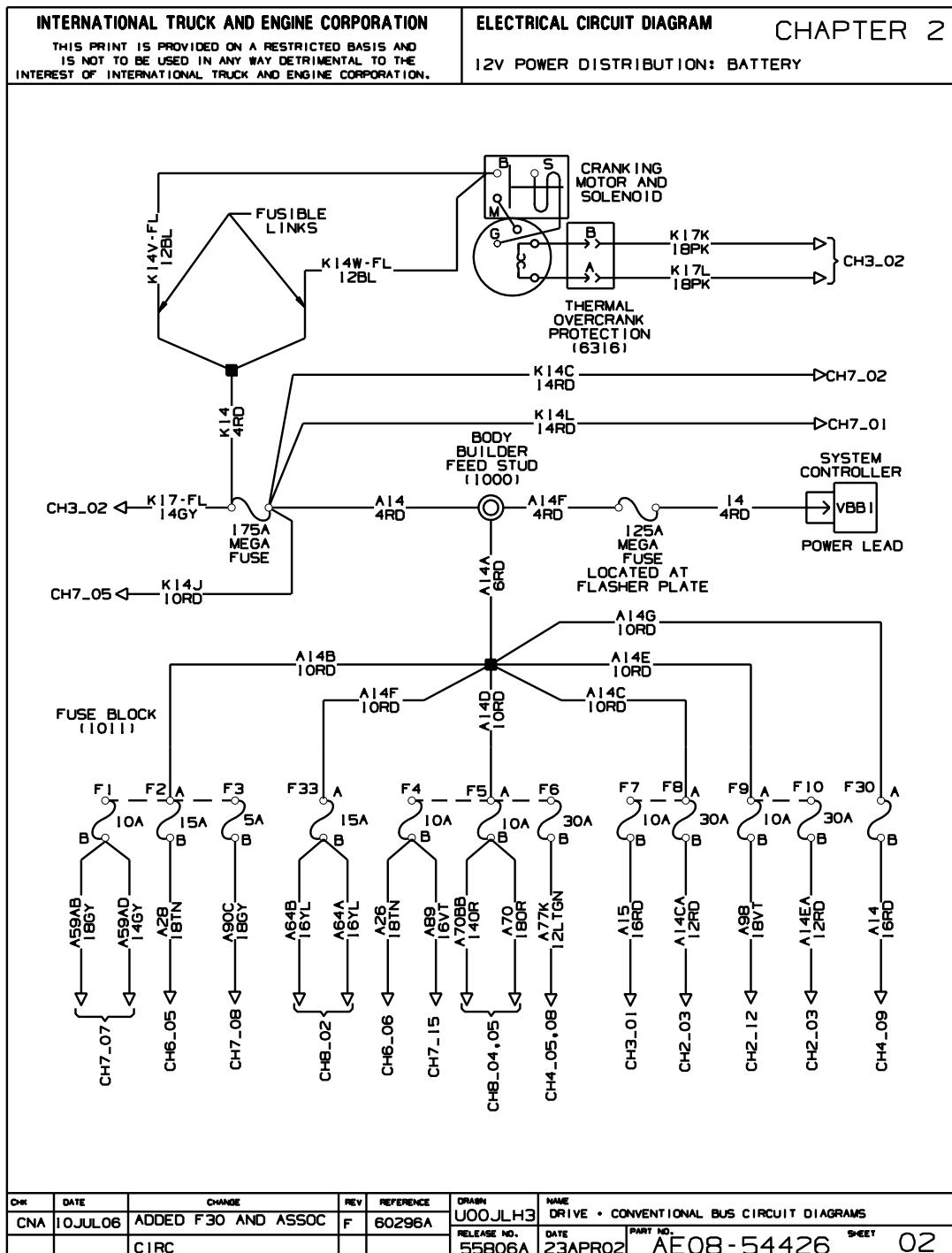


Figure 12 Battery

### 2.3. IGNITION, P. 3

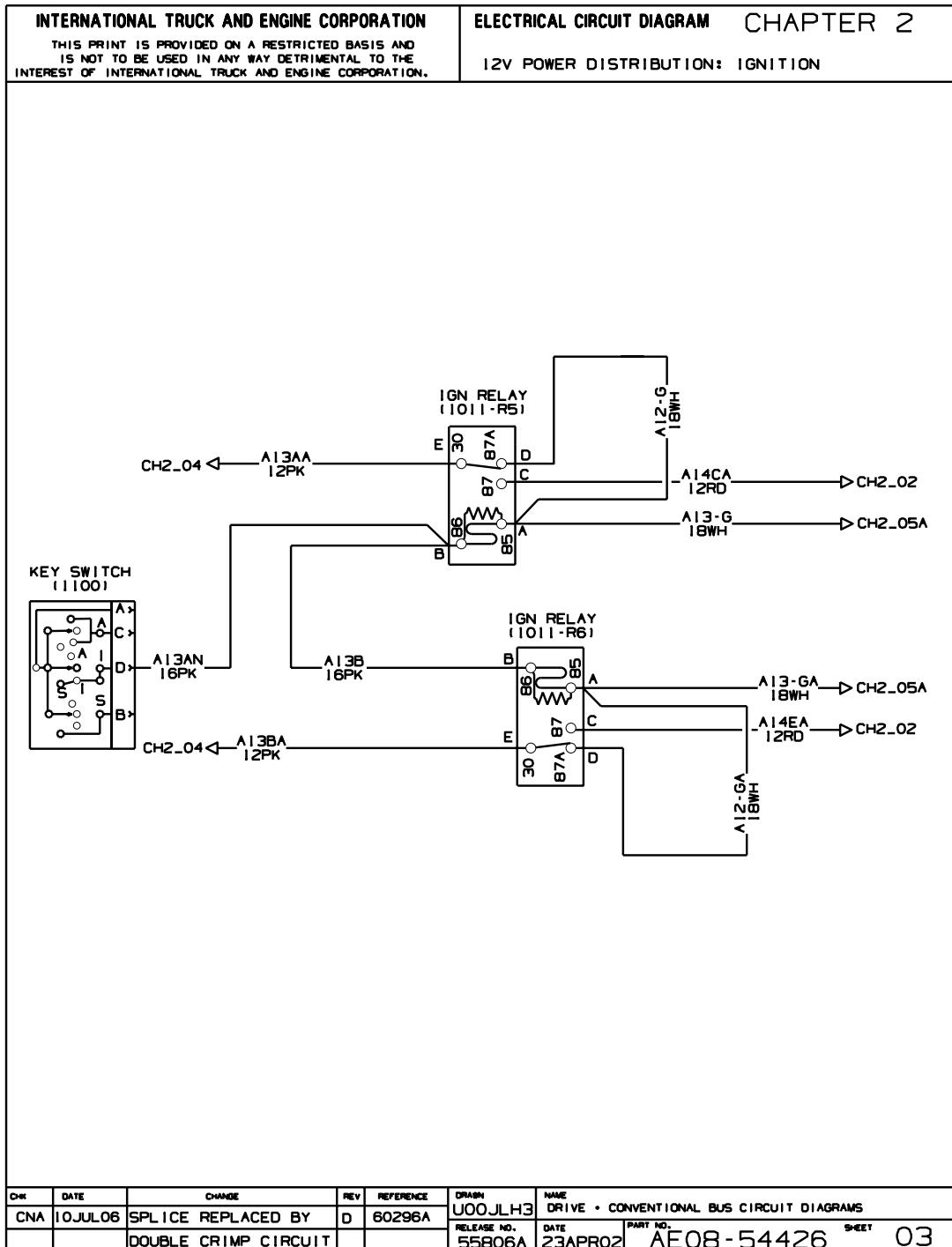
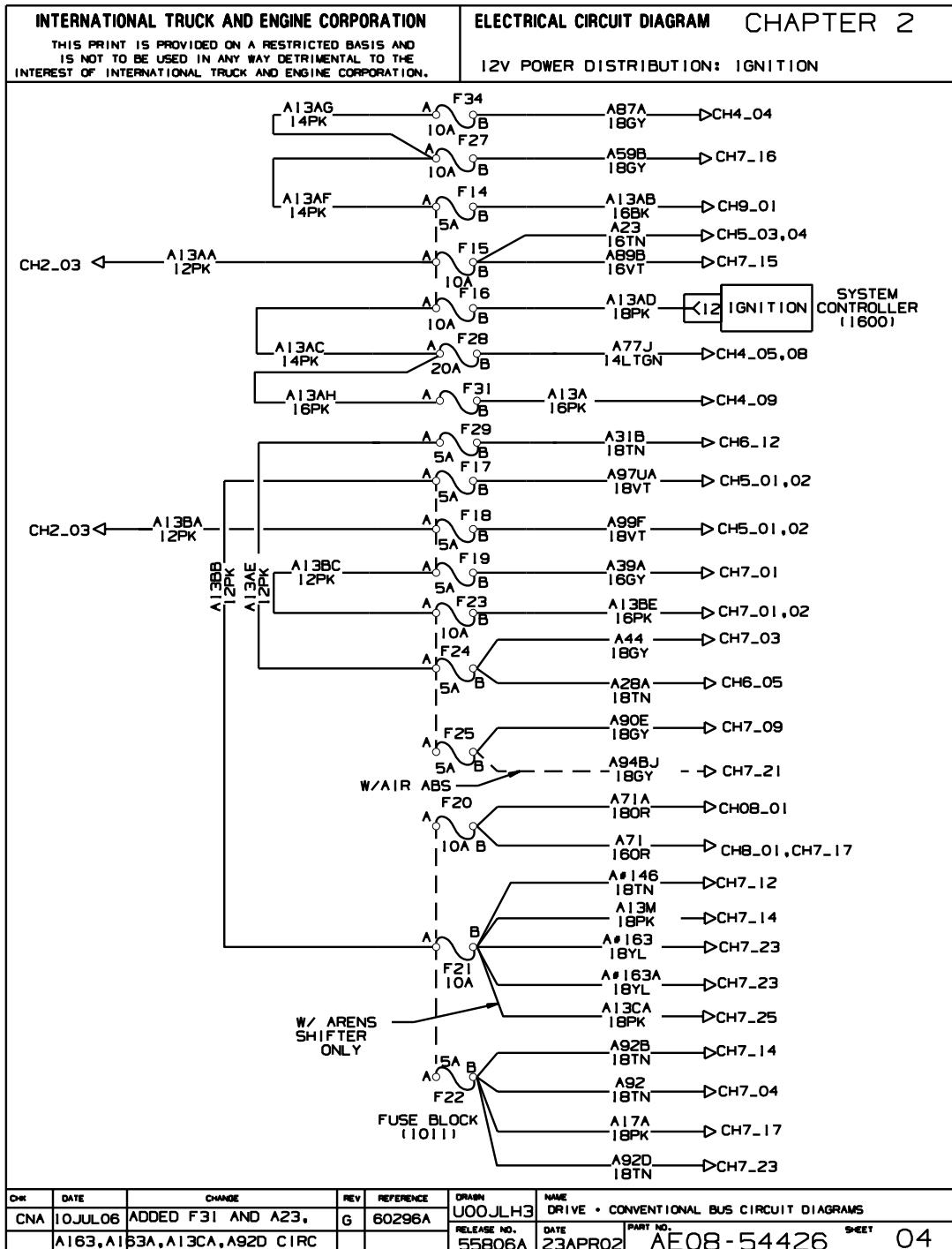


Figure 13 Ignition

## **2.4. IGNITION, P. 4**



**Figure 14 Ignition (Cont.)**

## 2.5. GROUND, P. 5

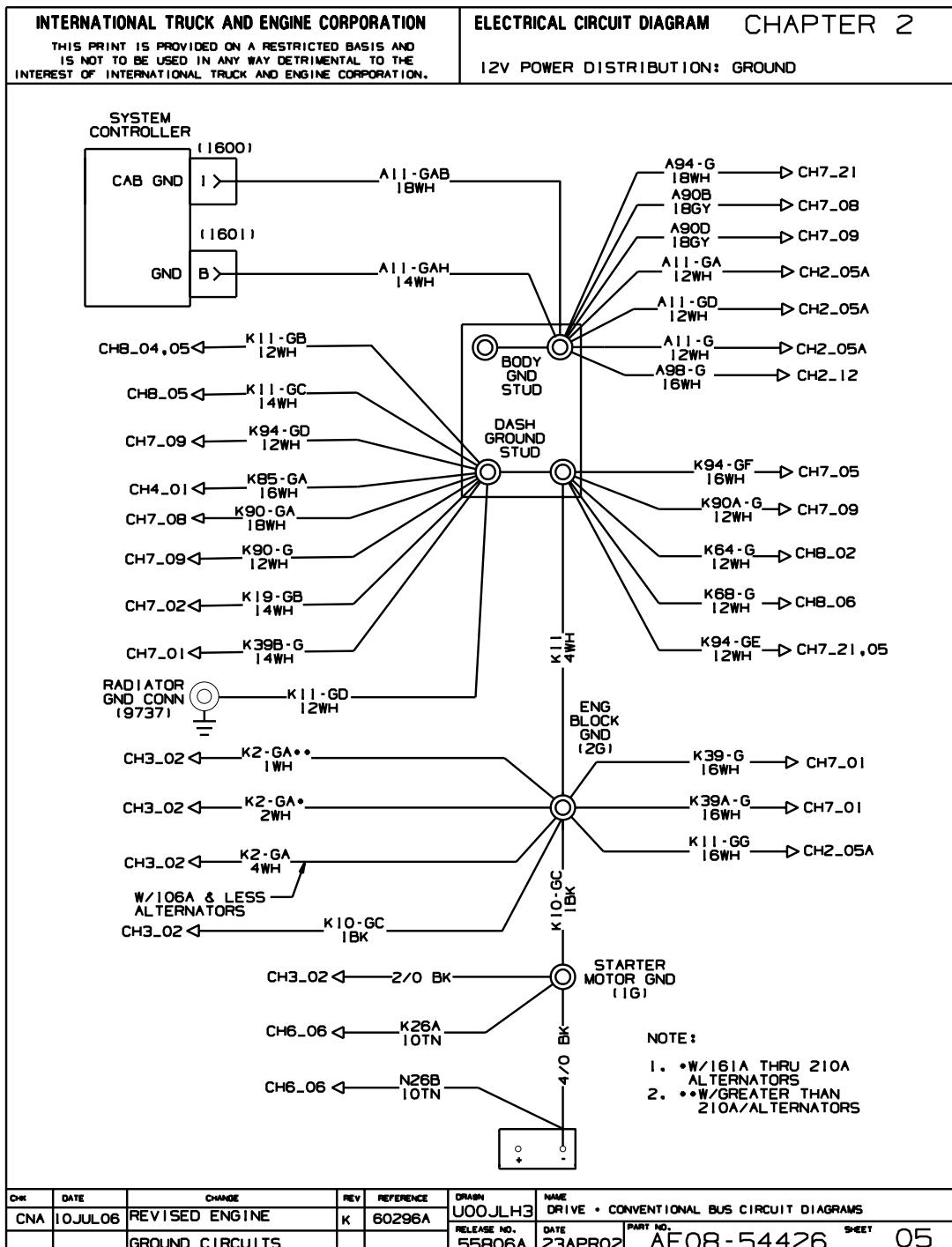


Figure 15 Ground

## 2.6. GROUND, P. 5A

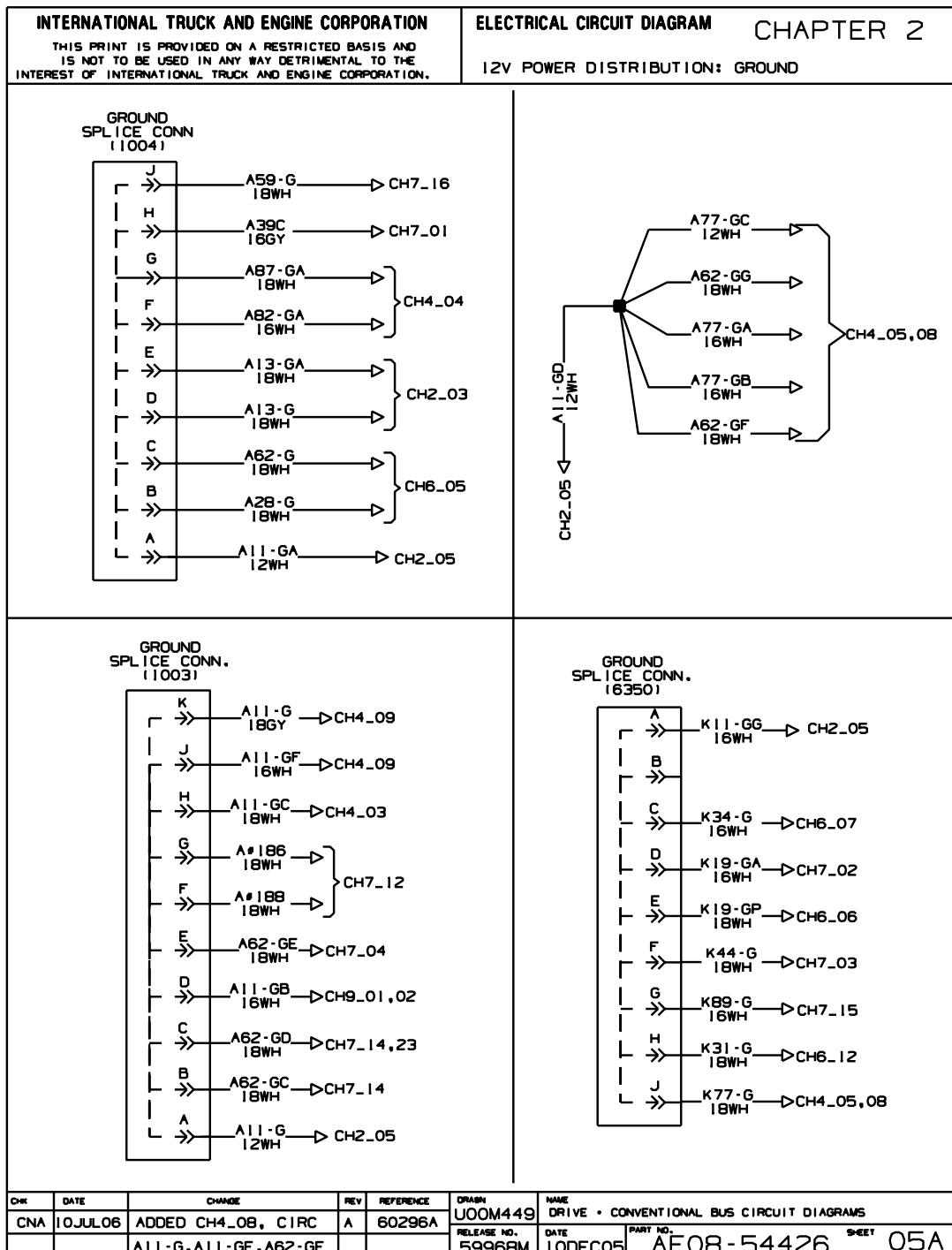


Figure 16 Ground

## 2.7. J1708 DATA LINK DIAGNOSTIC N/AWARE EFFECTS, P. 6

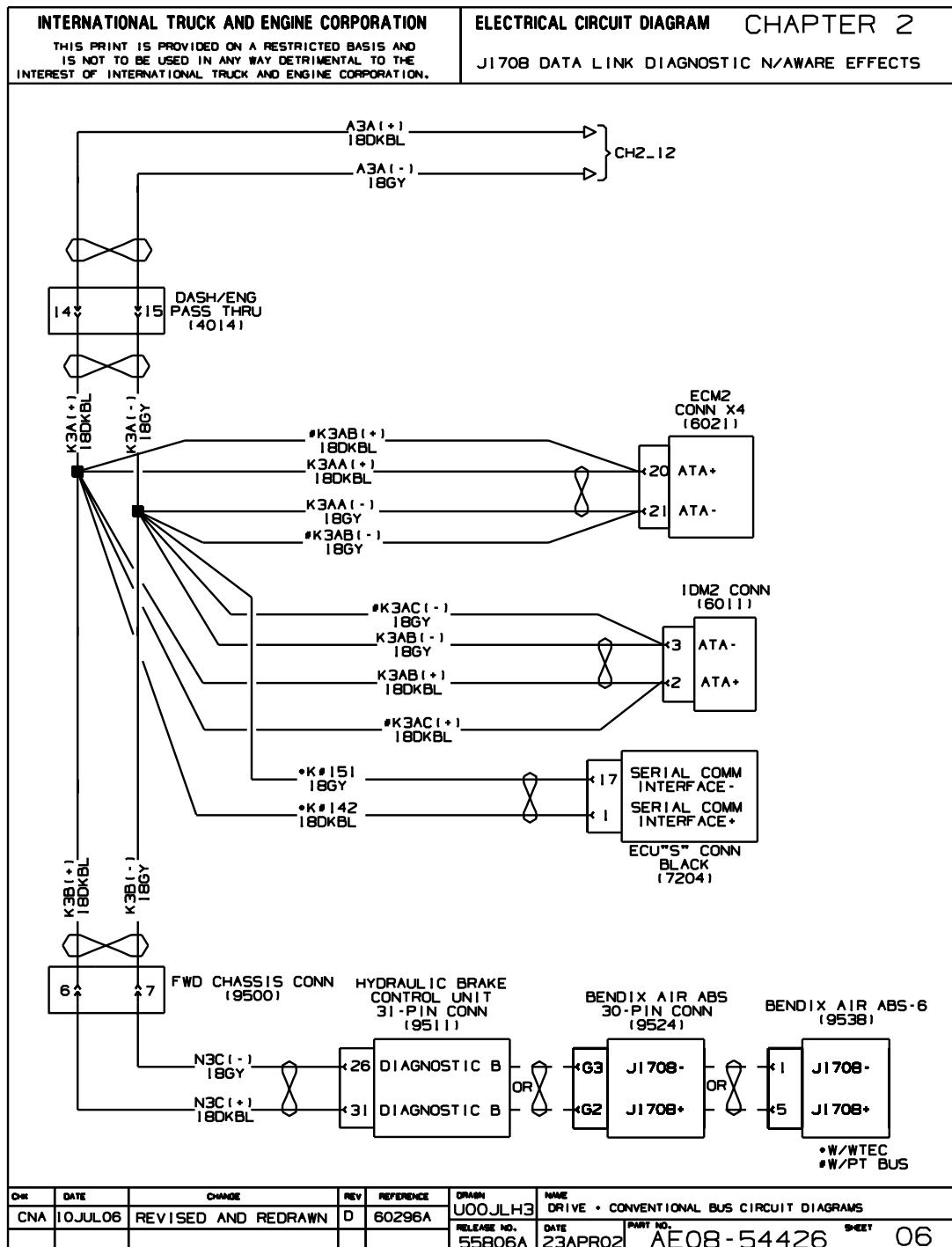


Figure 17 J1708 Data Link Diagnostic N/Aware Effects

## 2.8. J1708 DATA LINK DIAGNOSTIC W/AWARE EFFECTS, P. 7

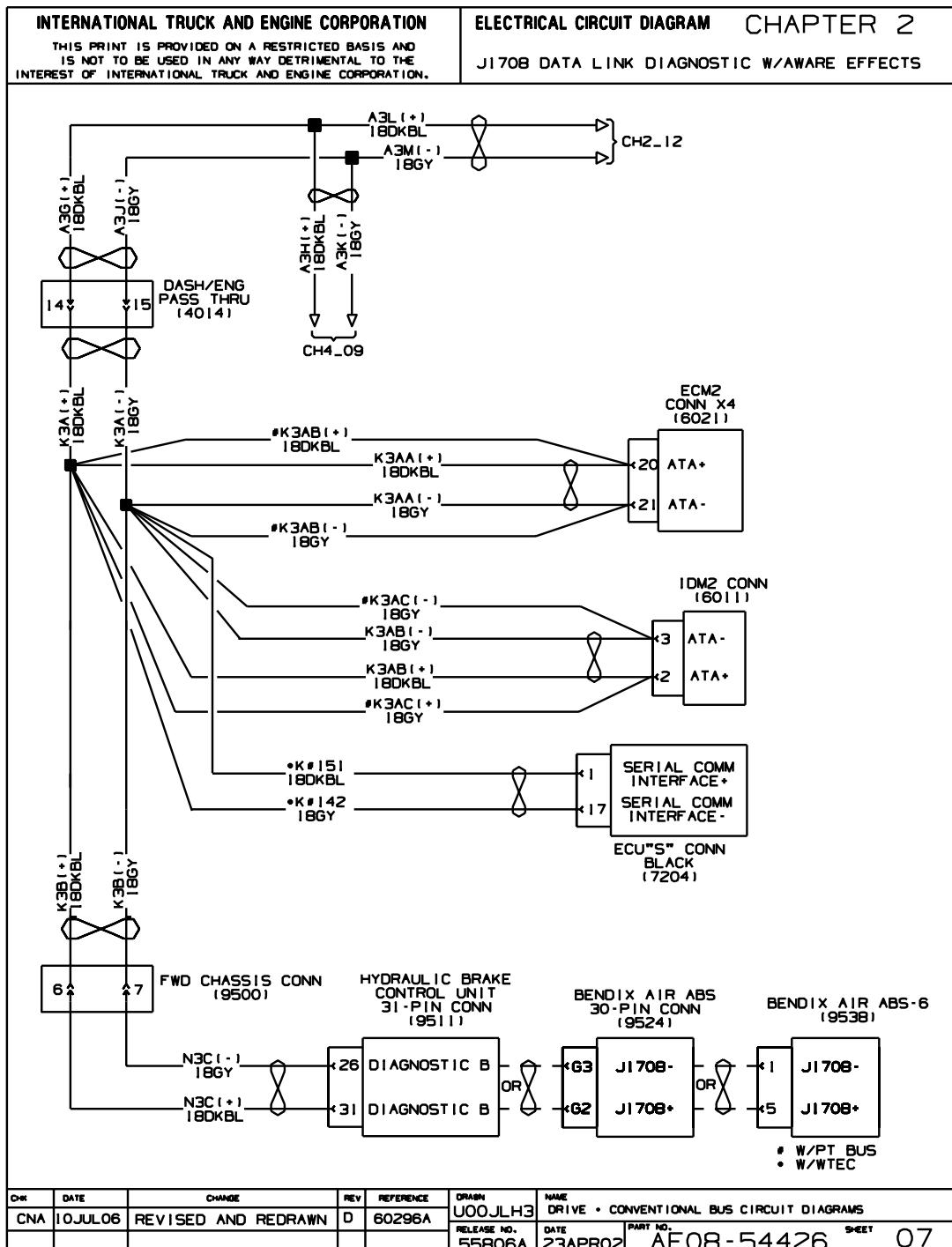


Figure 18 J1708 Data Link Diagnostic W/Aware Effects

## 2.9. J1939 DATA LINK W/WTEC, N/AWARE (CAB), P. 8

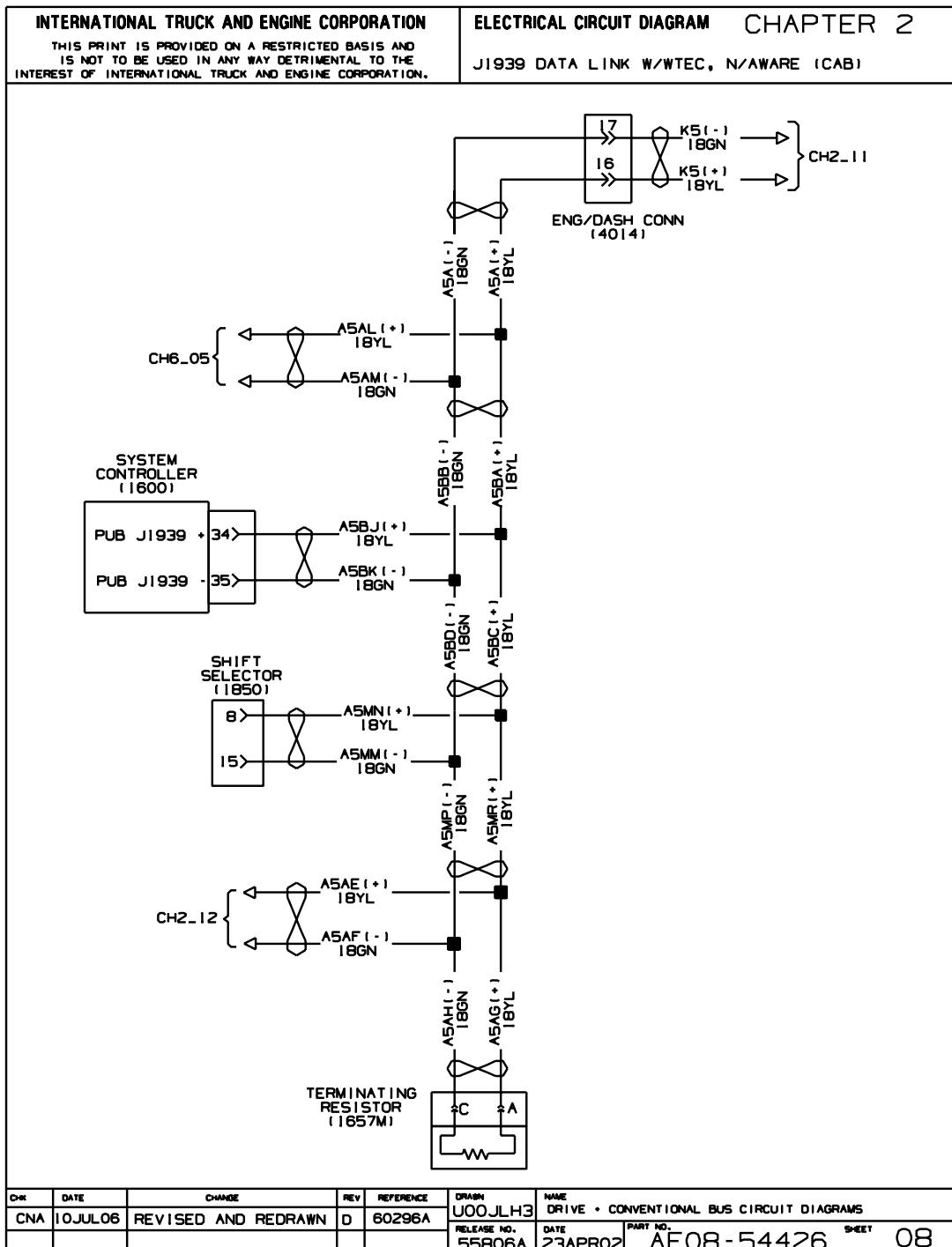


Figure 19 J1939 Data Link W/WTEC, N/Aware (Cab)

## 2.10. J1939 DATA LINK N/WTEC, W/AWARE (CAB), P. 9

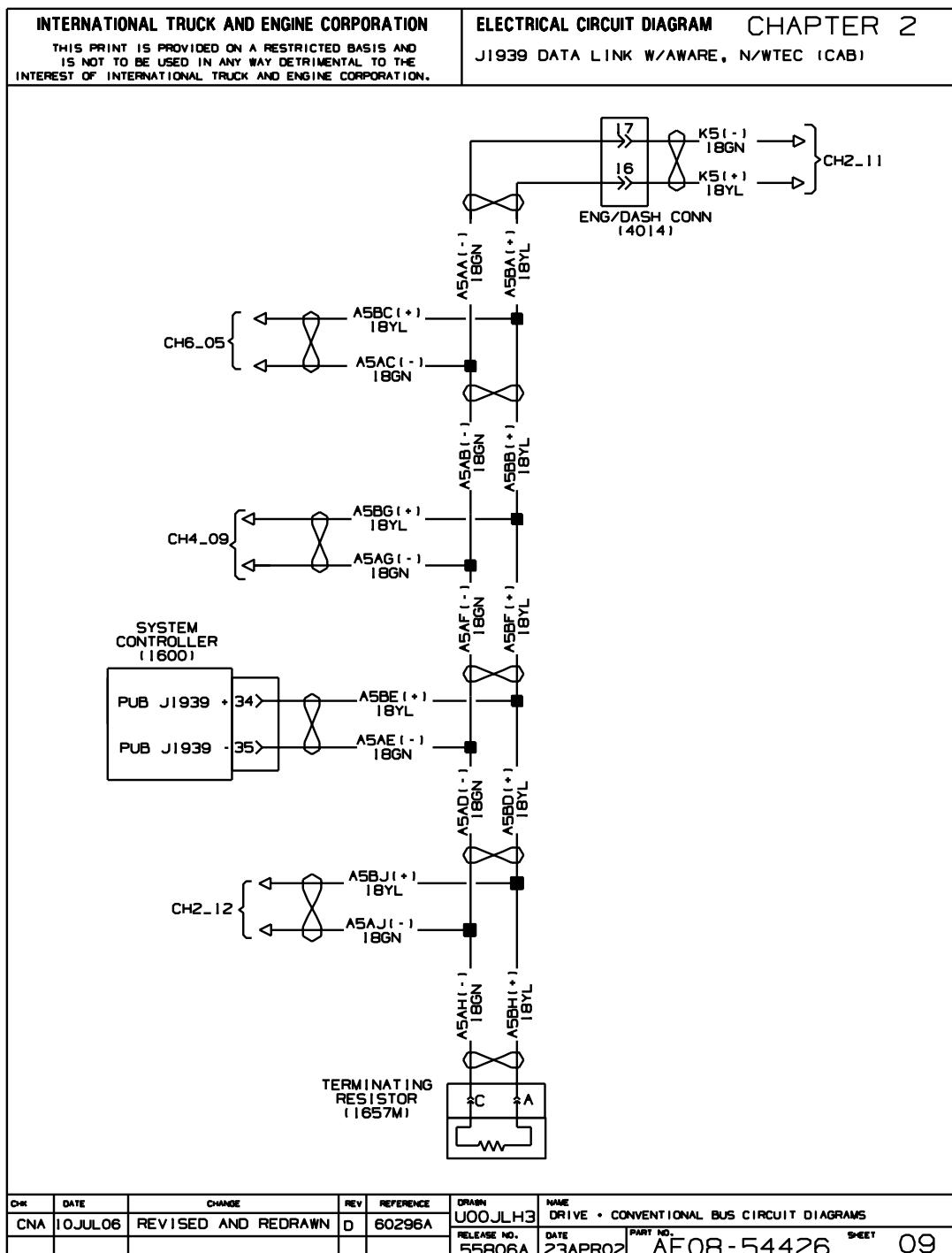


Figure 20 J1939 Data Link N/WTEC, W/Aware (Cab)

## 2.11. J1939 DATA LINK W/WTEC, W/AWARE (CAB), P. 10

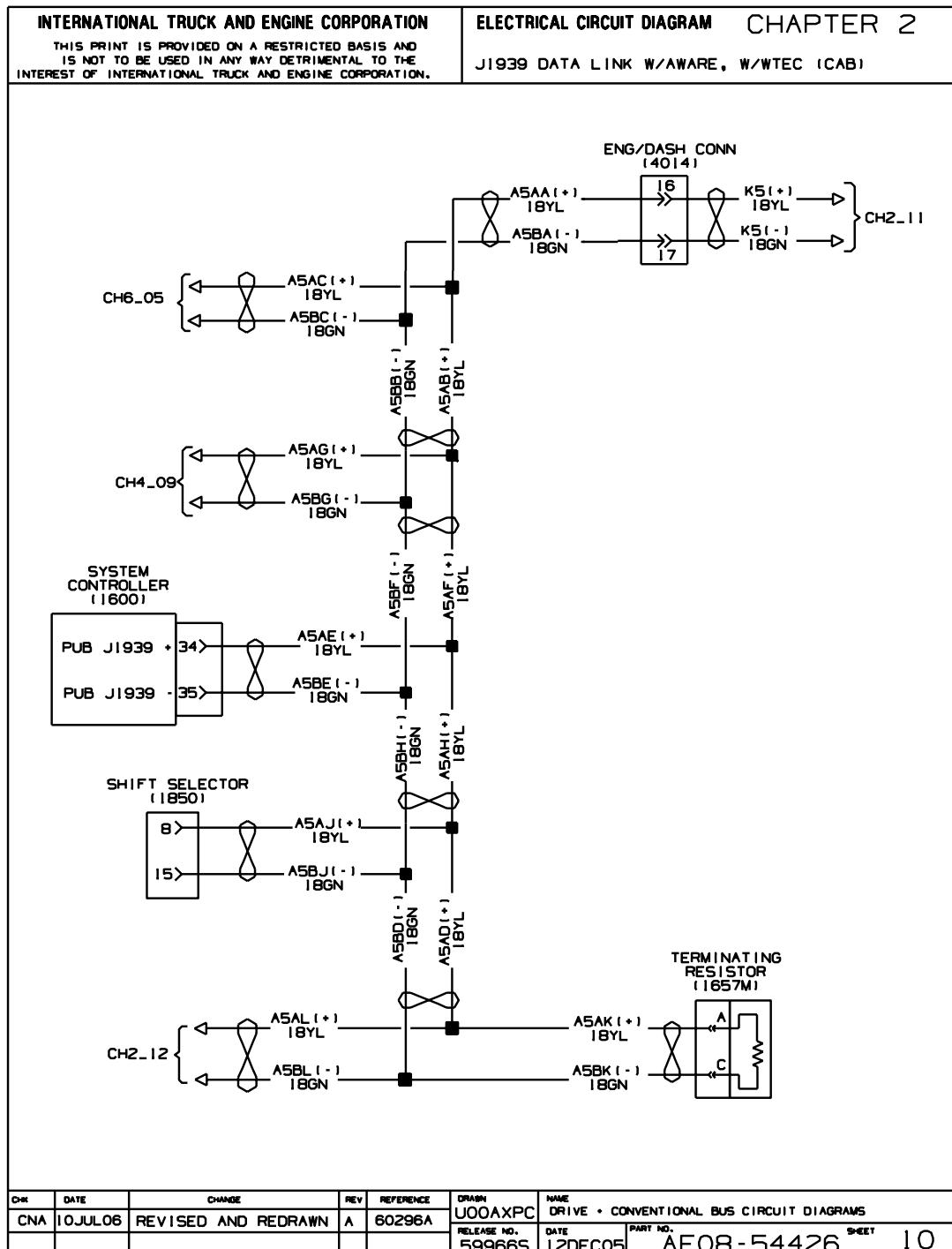


Figure 21 J1939 Data Link W/WTEC, W/Aware (Cab)

## 2.12. J1939 DATALINK (ENGINE), P. 11

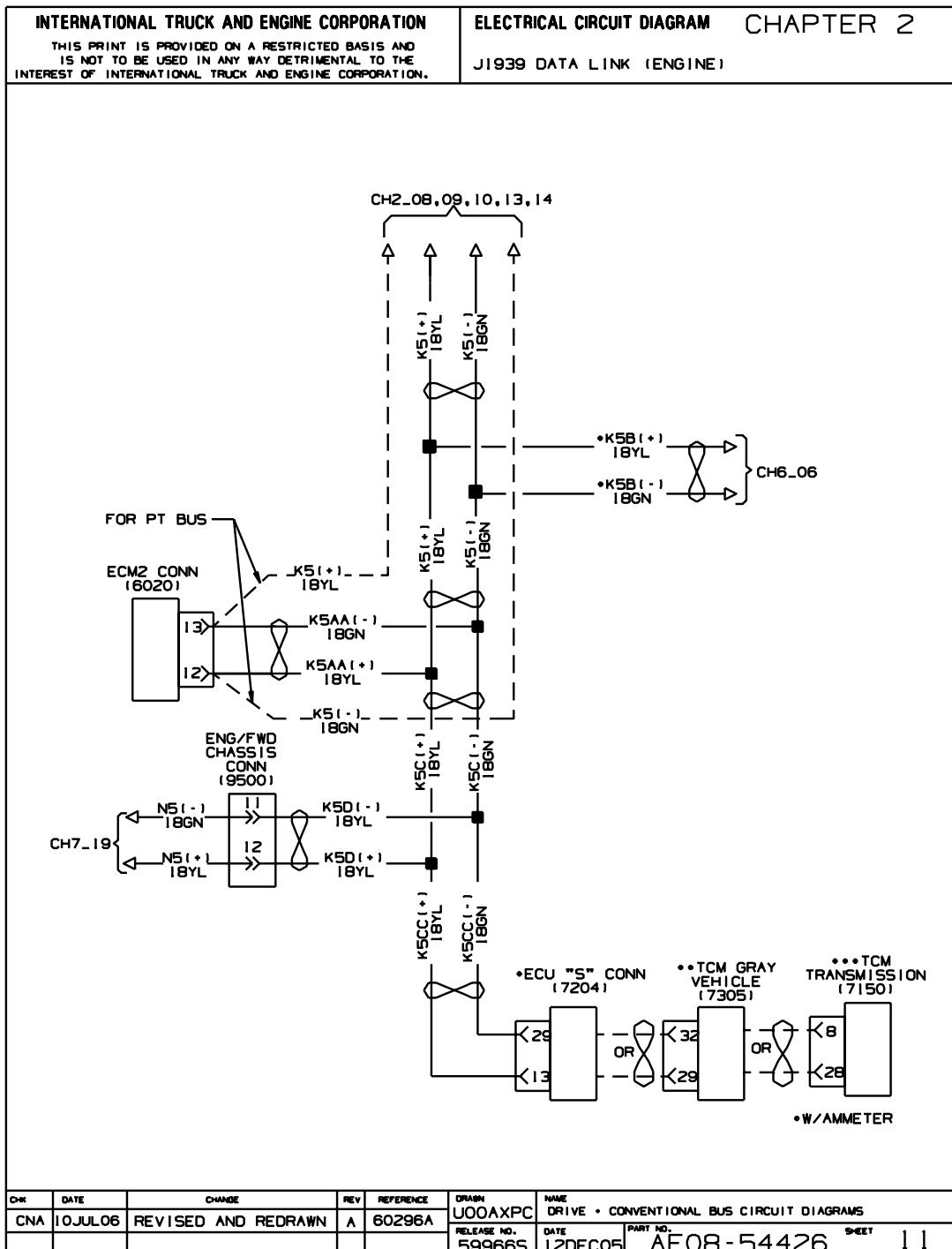


Figure 22 J1939 Datalink (Engine)

## 2.13. DIAGNOSTICS AND PROGRAMMABLE CONNECTOR, P. 12

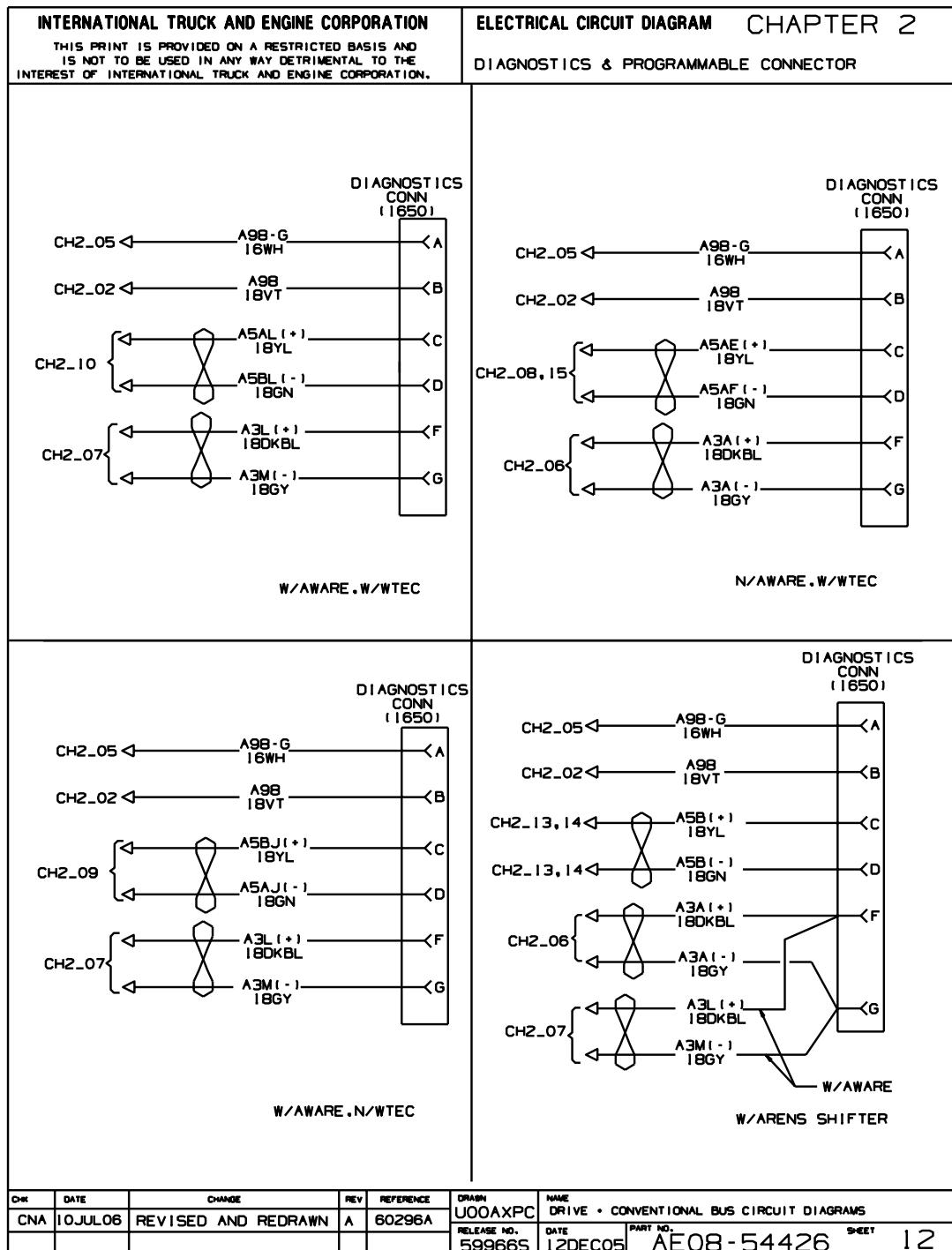


Figure 23 Diagnostics and Programmable Connector

## 2.14. J1939 DATALINK W/ARENS SHIFTER, N/AWARE (CAB), P. 13

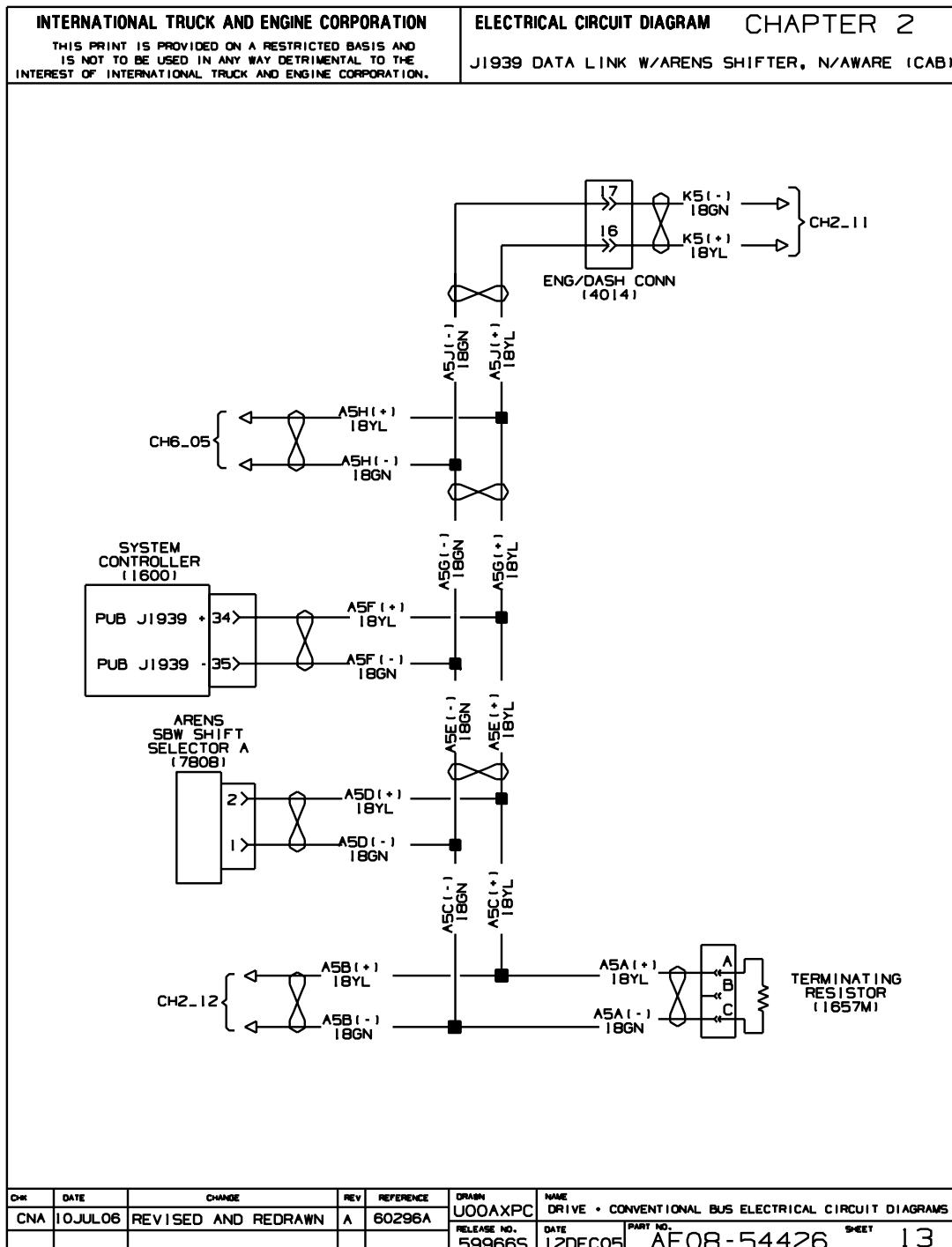


Figure 24 J1939 Datalink W/ARENS Shifter, N/Aware (Cab)

## 2.15. J1939 DATALINK W/ARENS SHIFTER, W/AWARE (CAB), P. 14

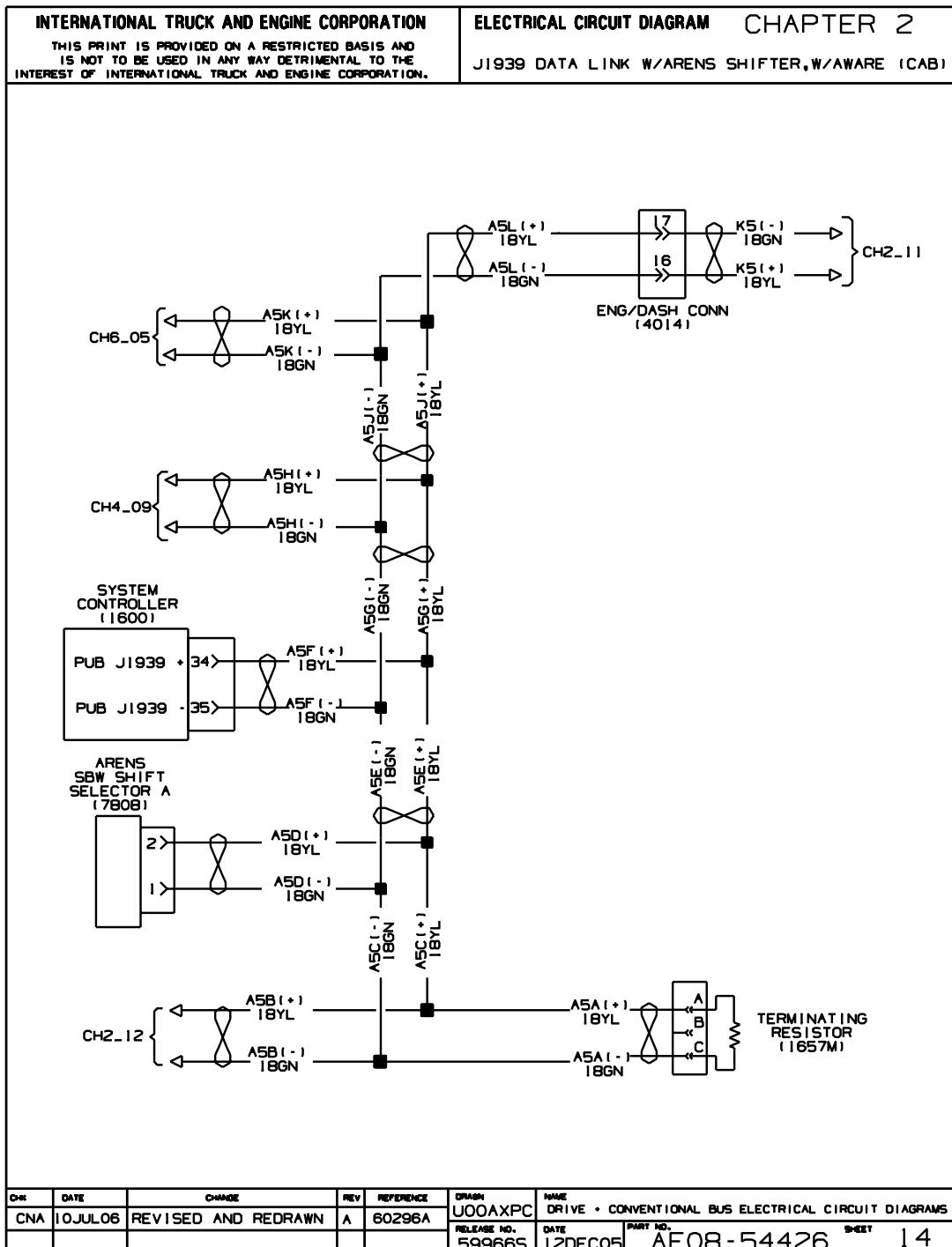
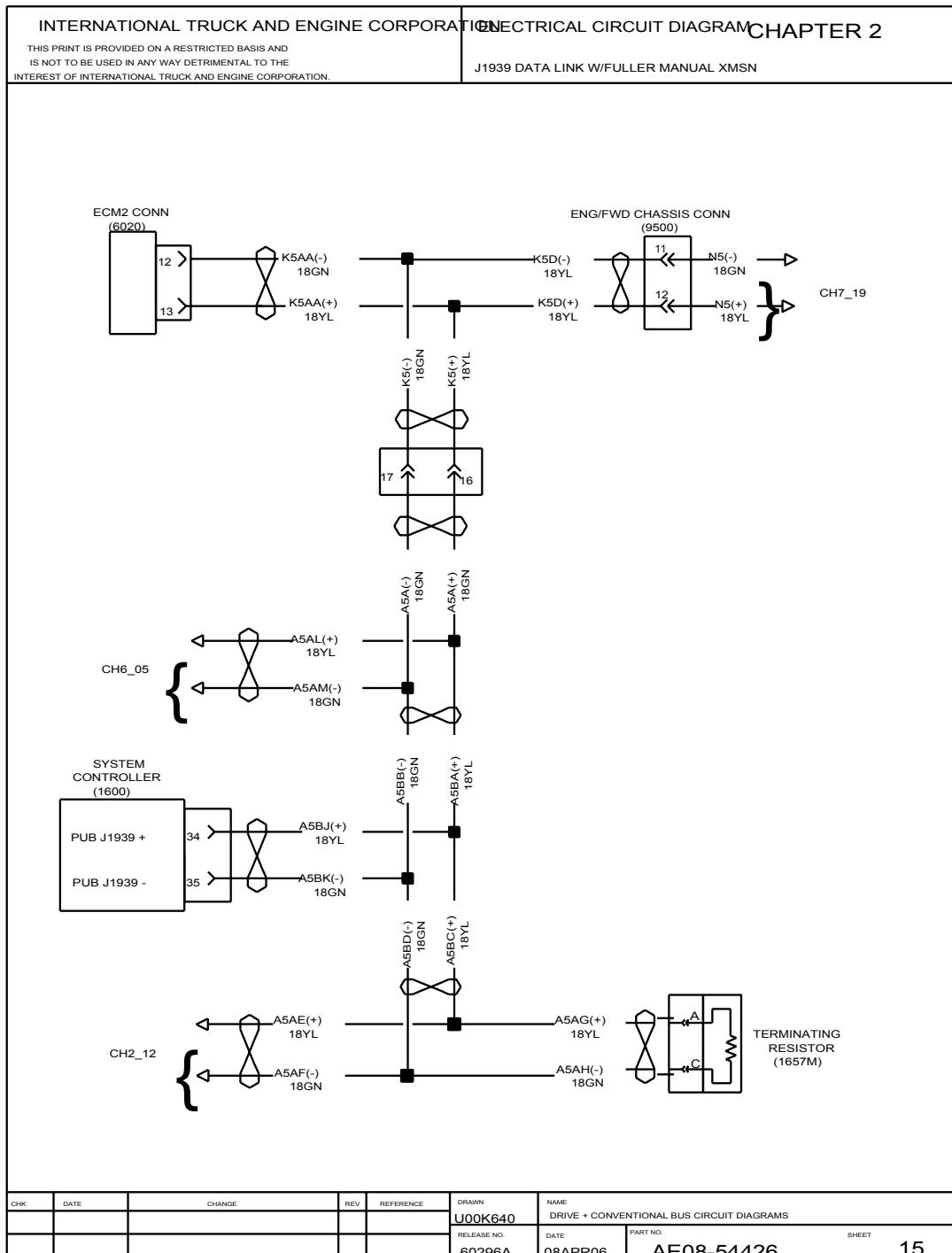


Figure 25 J1939 Datalink W/ARENS Shifter, W/Aware (Cab)

## 2.16. J1939 DATALINK W/FULLER MANUAL TRANSMISSION, P. 15



**Figure 26 J1939 Datalink W/Fuller Manual Transmission**

### 3. 12V CHARGING AND CRANKING SYSTEM (CHAPTER 3)

#### 3.1. KEY SWITCH START CIRCUIT, P. 1

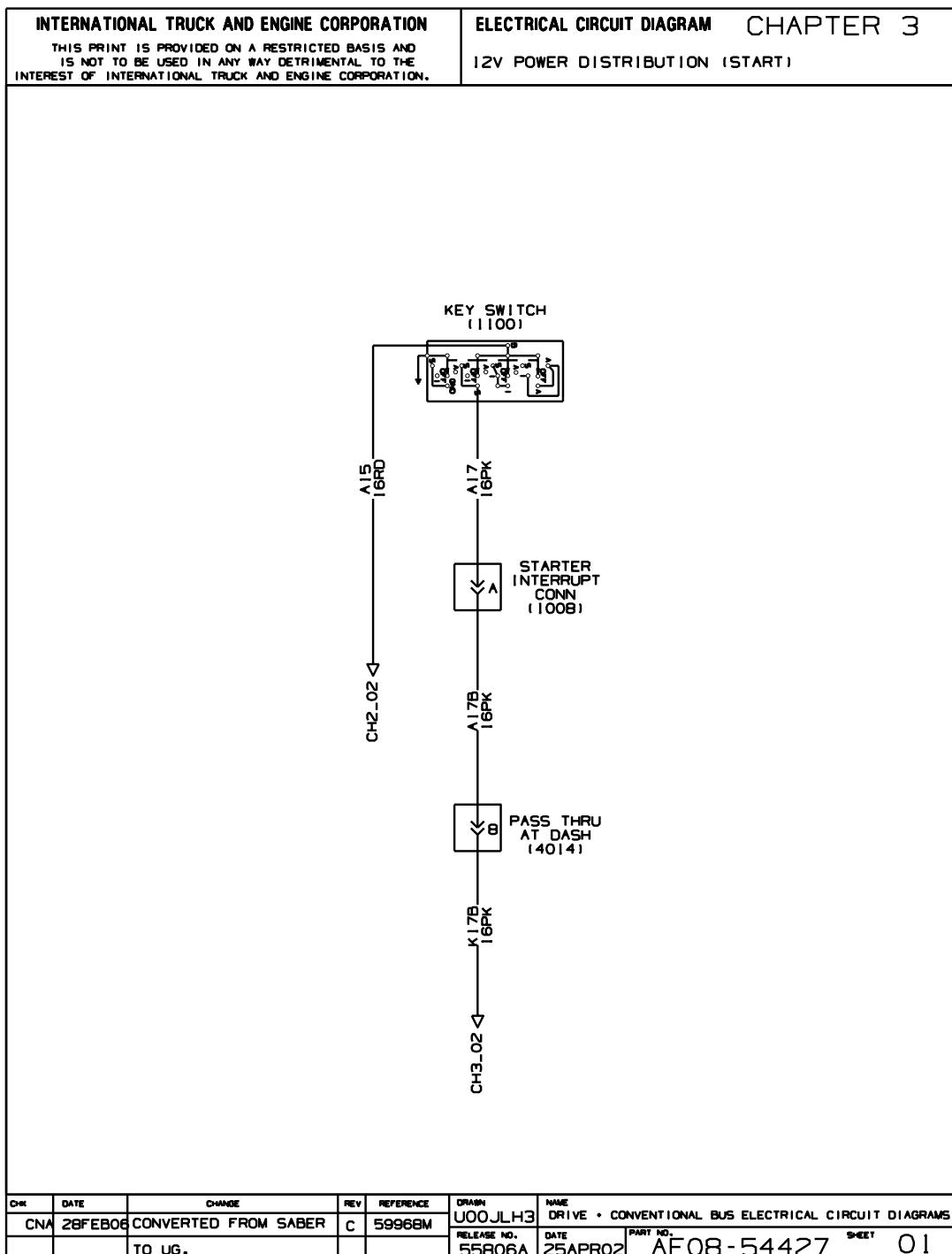


Figure 27 Key Switch Start Circuit

### 3.2. CHARGING AND CRANKING, P. 2

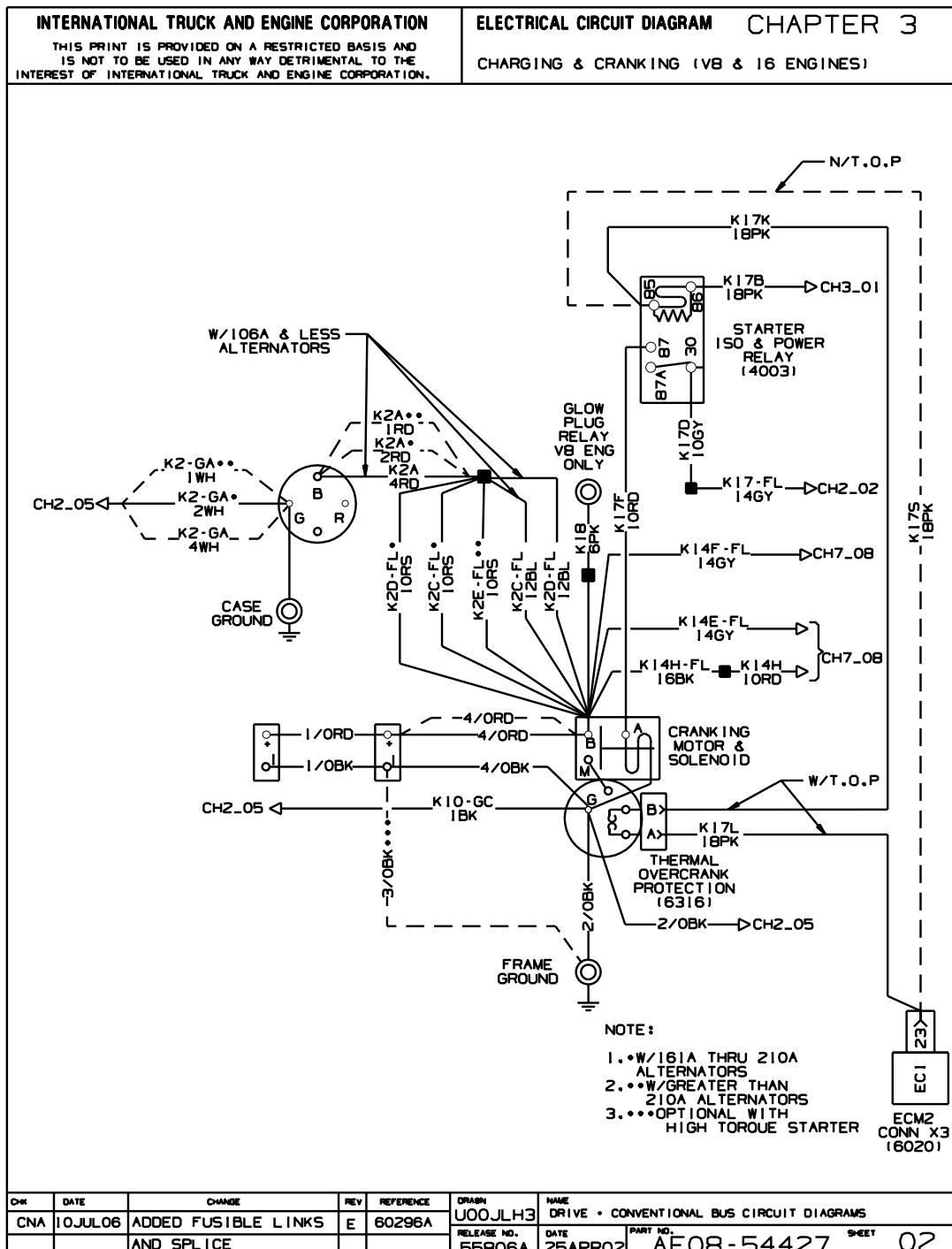


Figure 28 Charging and Cranking

## 4. CAB ACCESSORIES (CHAPTER 4)

### 4.1. HORN, DUAL ELECTRIC, P. 1

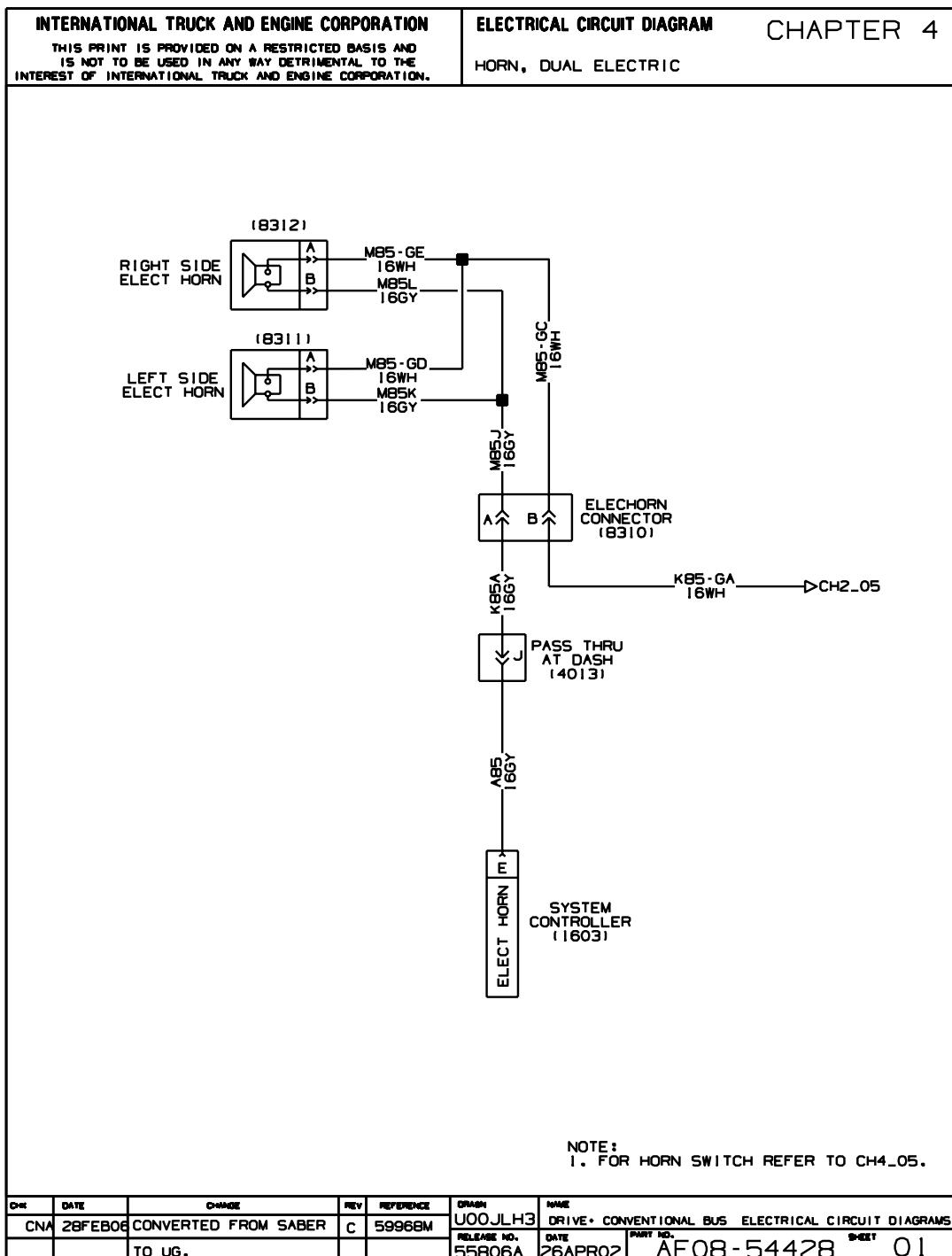


Figure 29 Horn, Dual Electric

## 4.2. STEERING WHEEL SWITCHES, P. 2

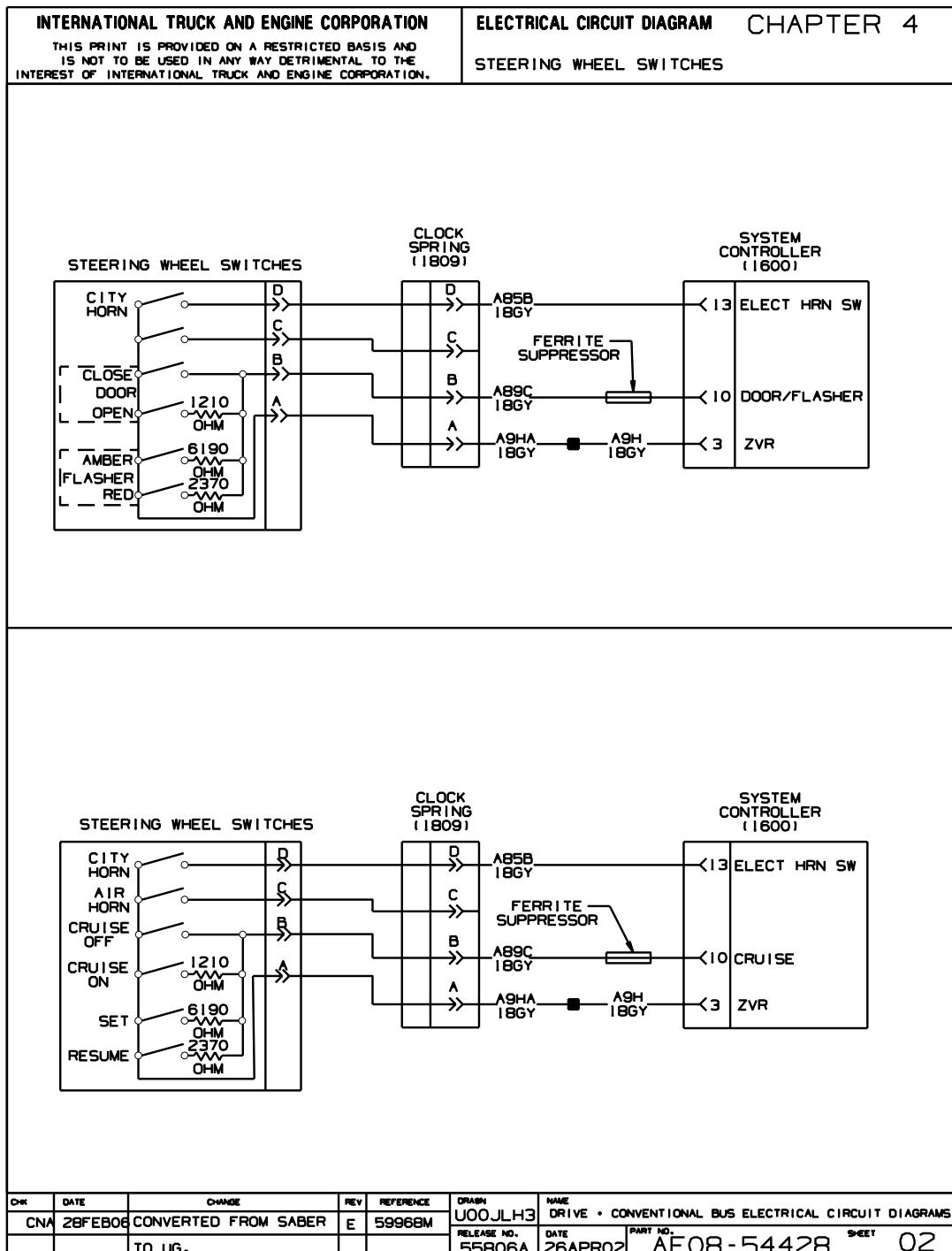


Figure 30 Steering Wheel Switches

### 4.3. SWITCH PACKS, P. 3

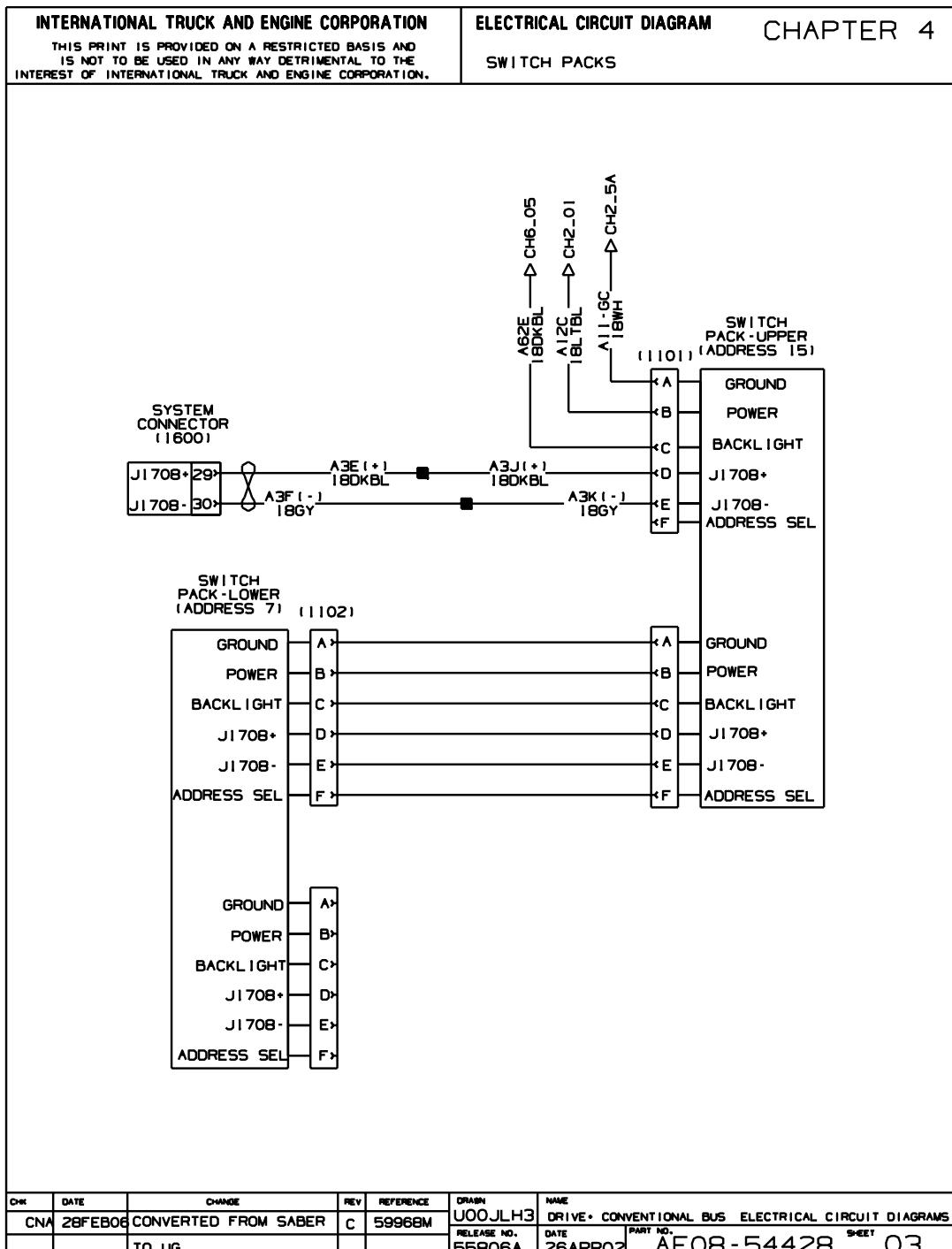
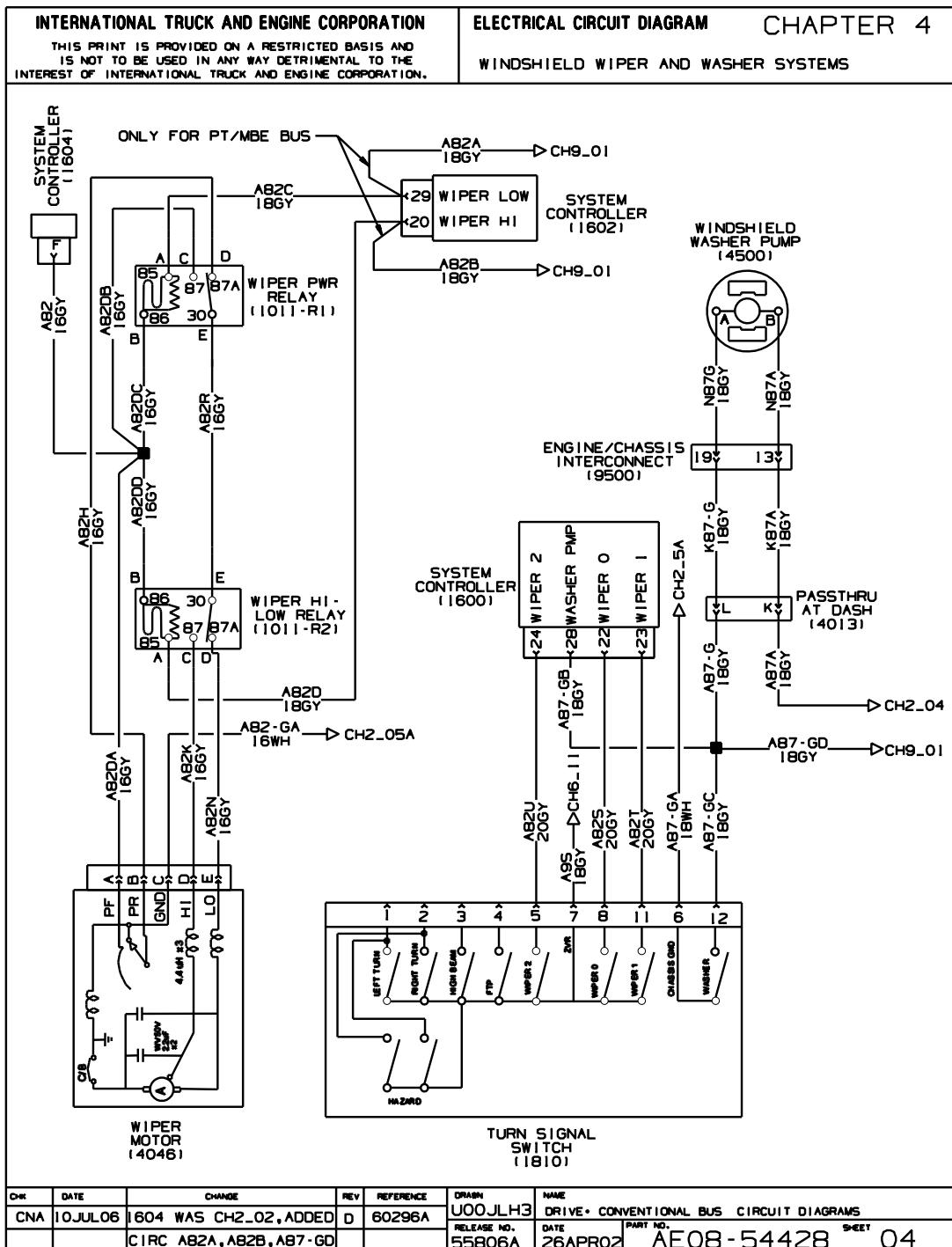


Figure 31 Switch Packs

## **4.4. WINDSHIELD WIPER AND WASHER SYSTEMS, P. 4**



## **Figure 32 Windshield Wiper and Washer Systems**

## 4.5. DRIVER'S AIR CONDITIONING, P. 5

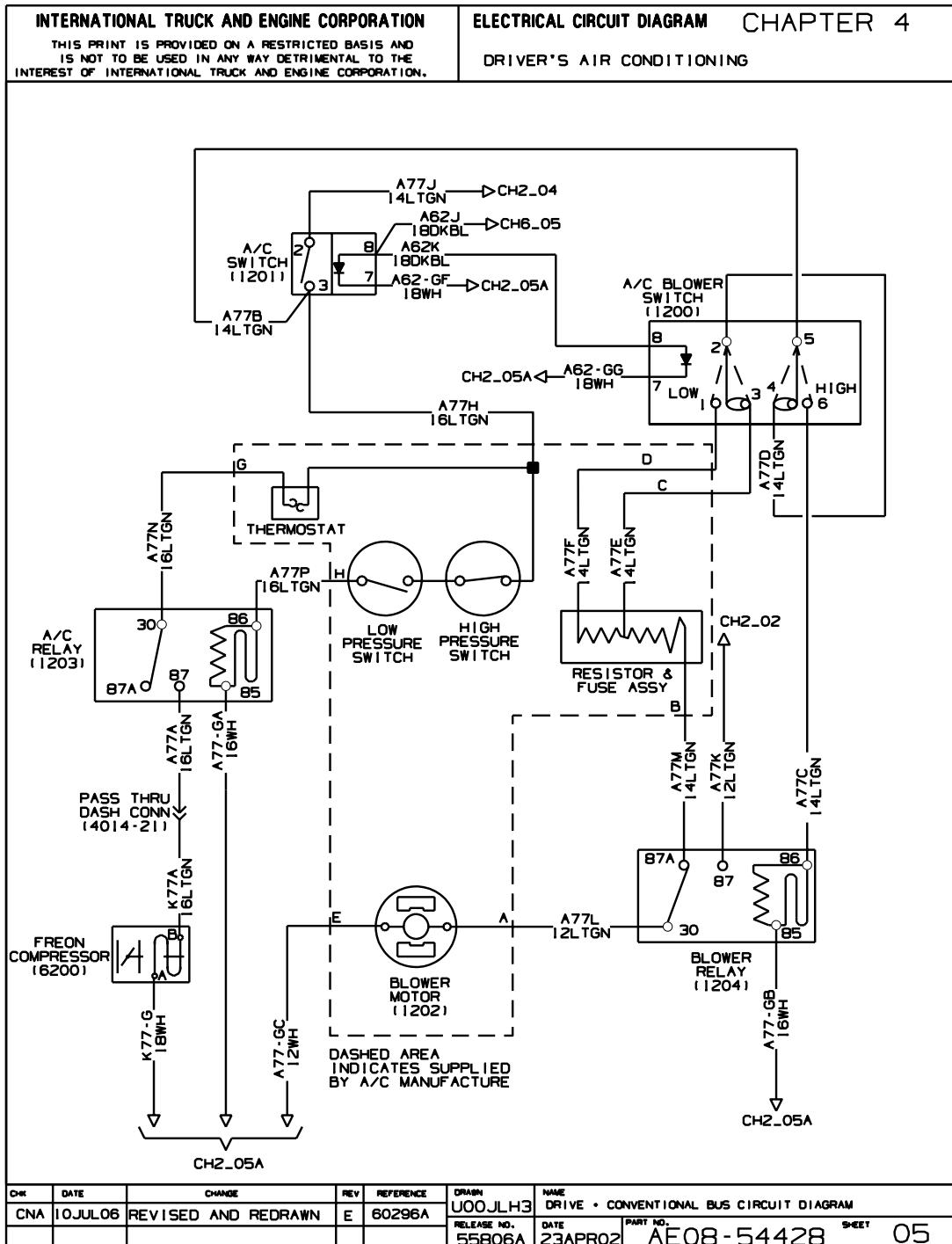
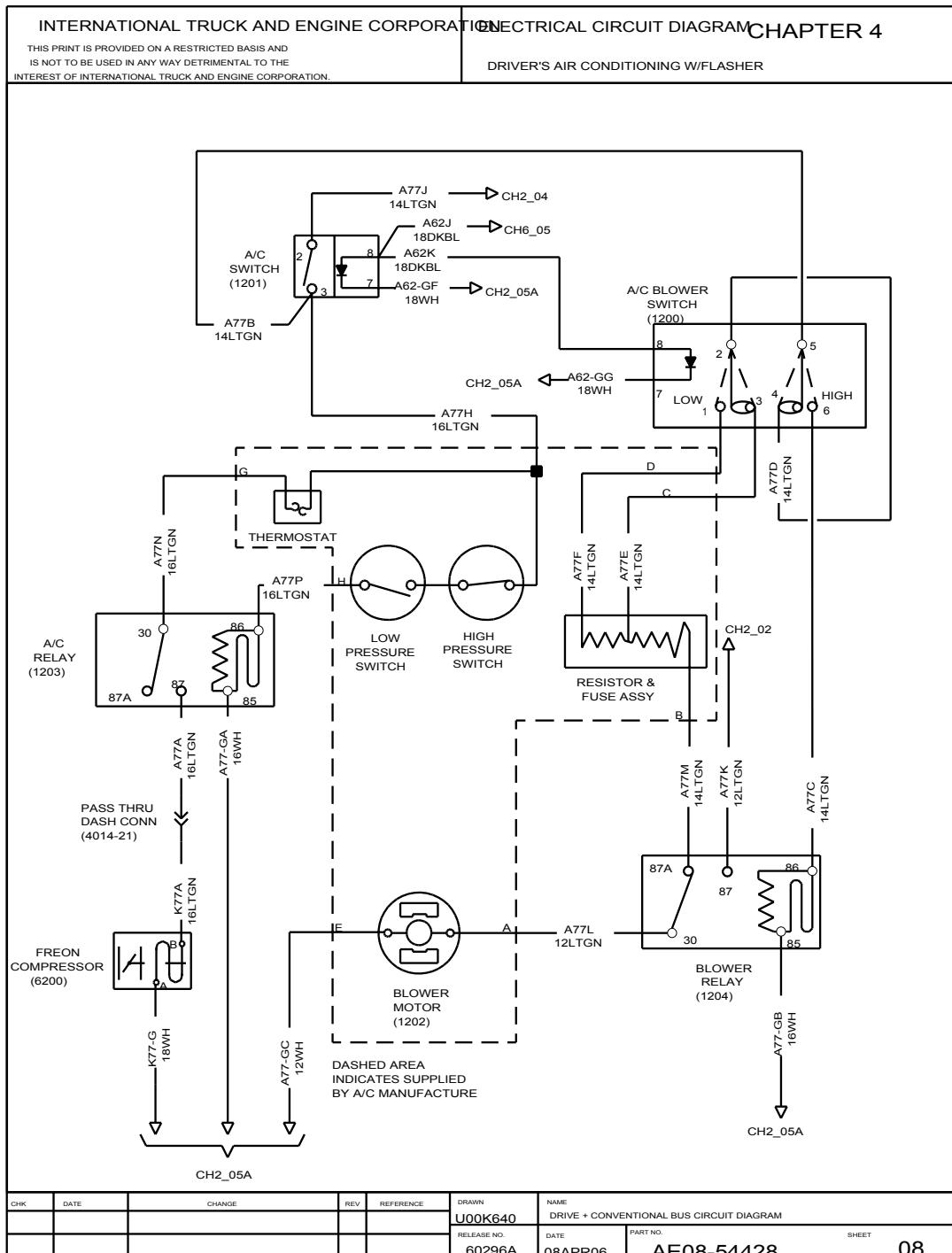


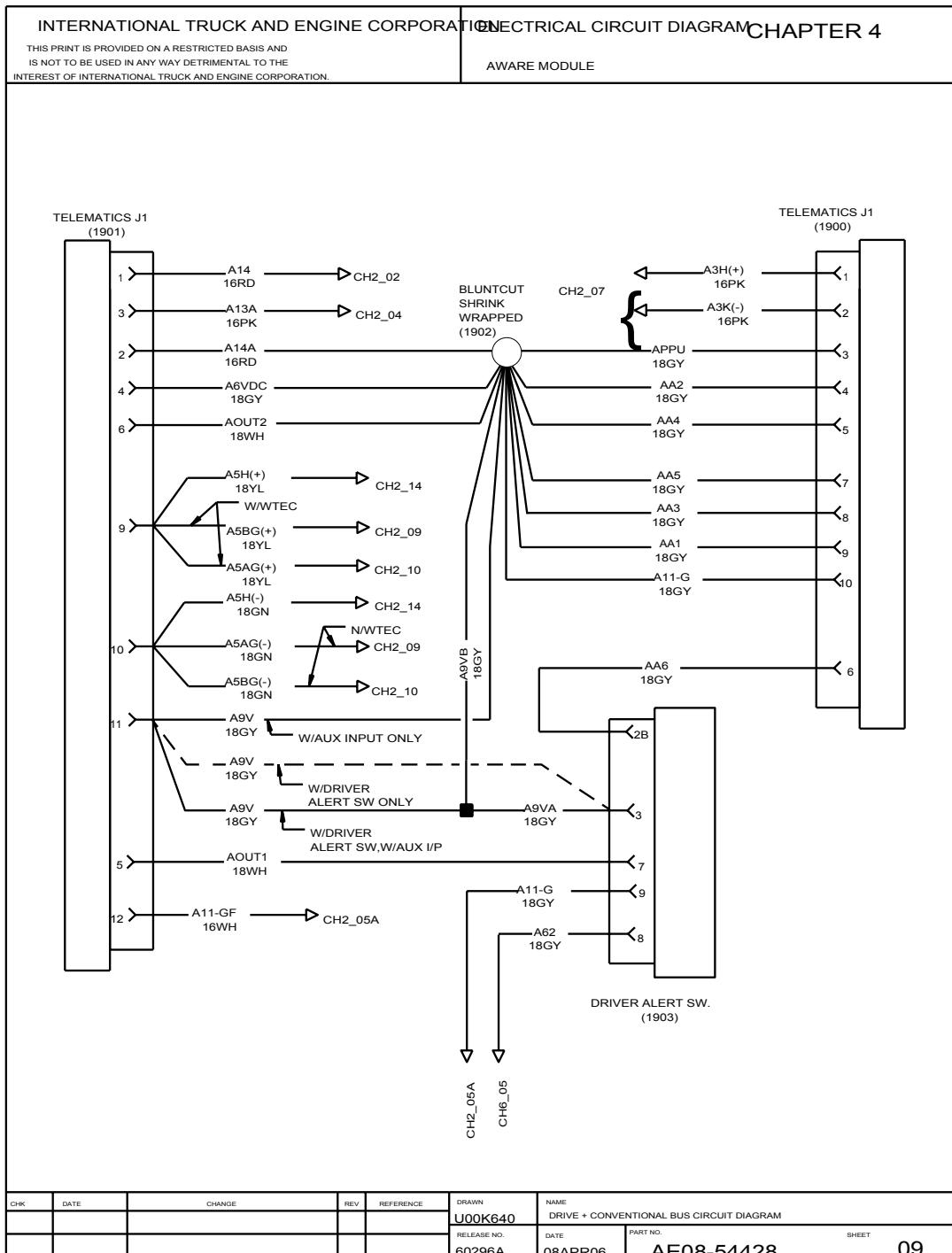
Figure 33 Driver's Air Conditioning

## 4.6. DRIVER'S AIR CONDITIONING WITH FLASHER, P. 8



**Figure 34 Driver's Air Conditioning with Flasher**

## 4.7. AWARE MODULE, P. 9



**Figure 35 Aware Module**

## 4.8. A/C COMPRESSOR CONTROL, P. 10

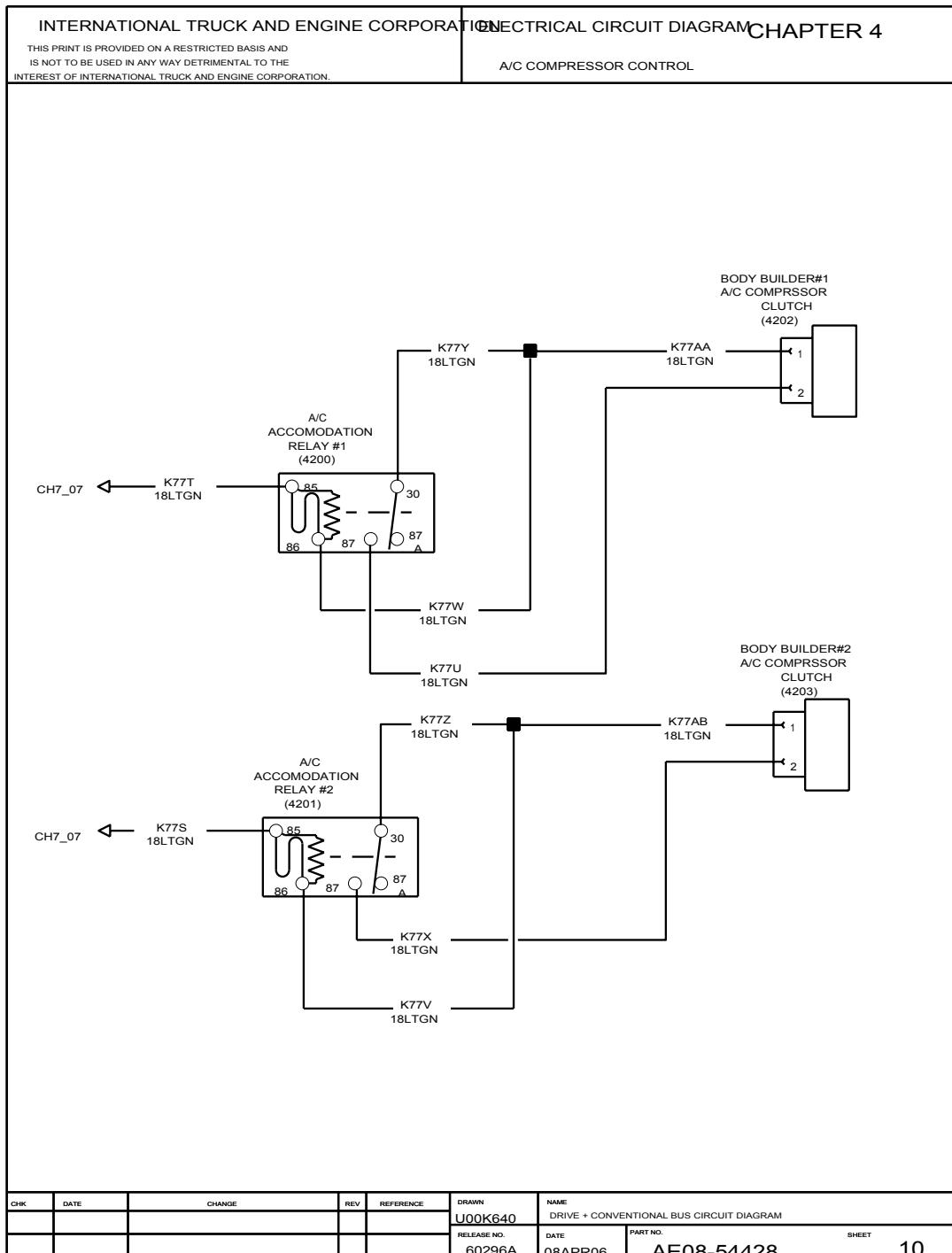


Figure 36 A/C Compressor Control

## 5. ENGINE ELECTRONICS (CHAPTER 5)

### 5.1. ELECTRONIC ENGINE CONTROLS — V8 ENGINE, P. 1

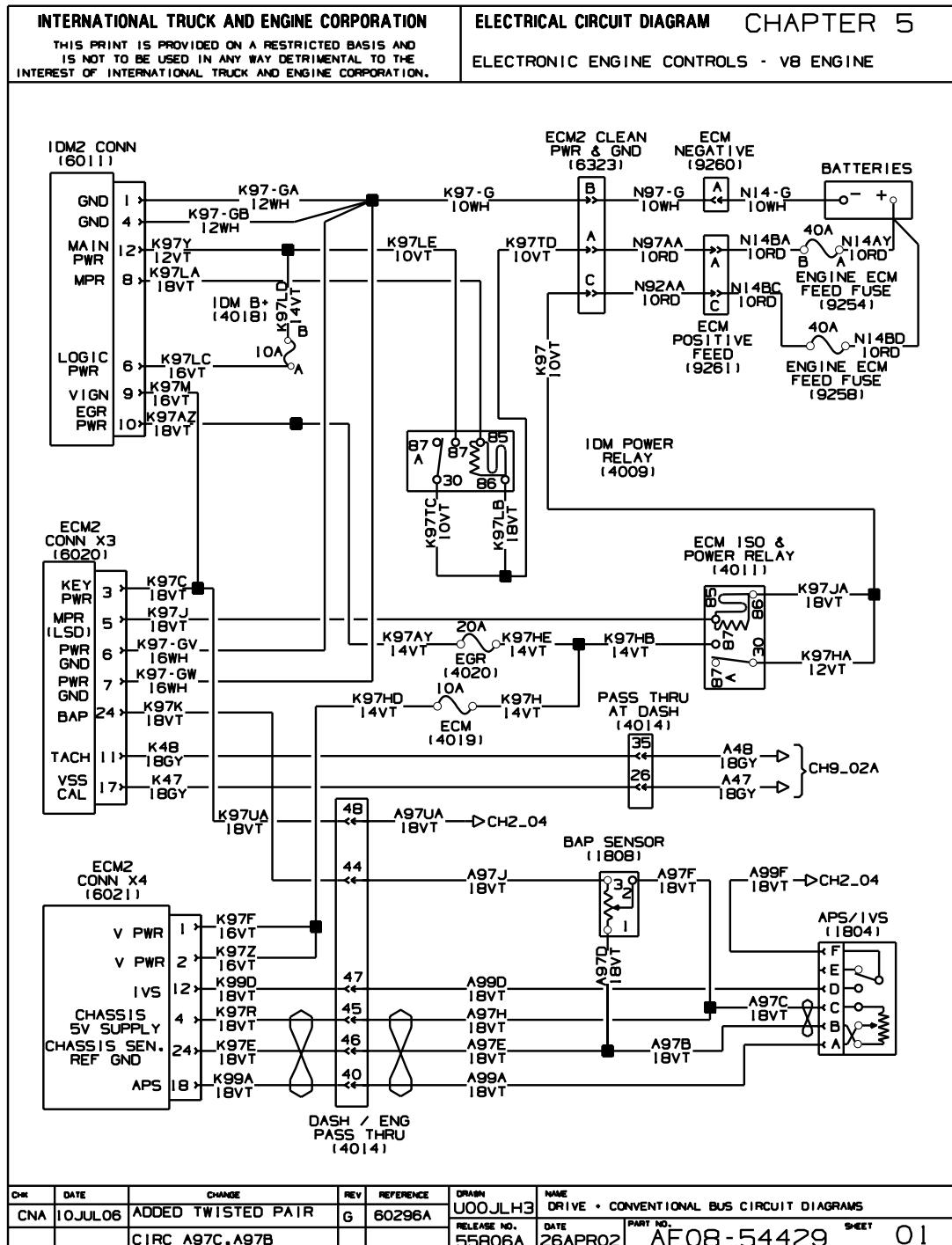


Figure 37 Electronic Engine Controls — V8 Engine

## 5.2. ELECTRONIC ENGINE CONTROLS — I6 ENGINE, P. 2

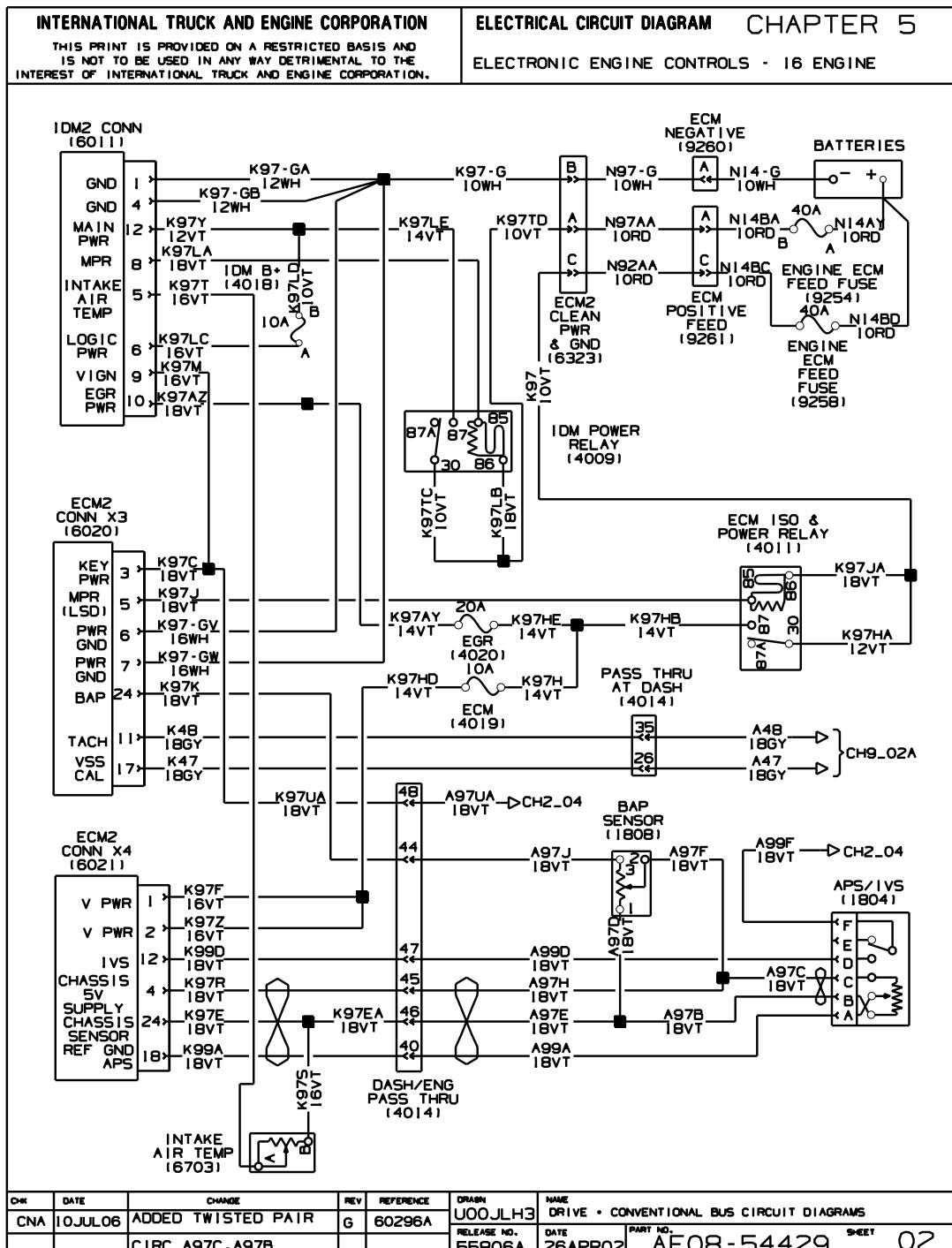


Figure 38 Electronic Engine Controls — I6 Engine

### 5.3. I6 FAN AND SHUTTER WIRING, P. 3

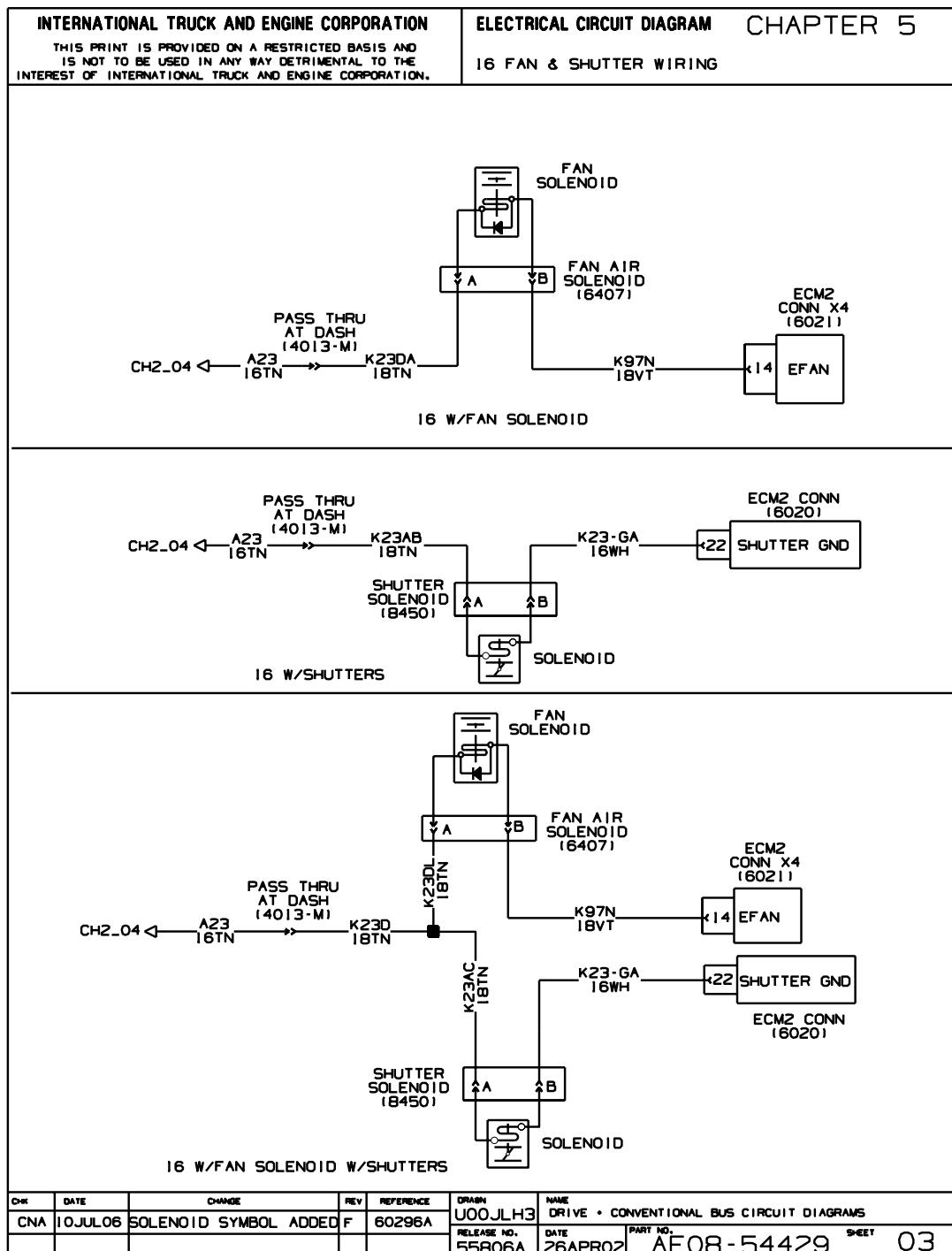


Figure 39 I6 Fan and Shutter Wiring

## 5.4. V8 FAN AND SHUTTER WIRING, P. 4

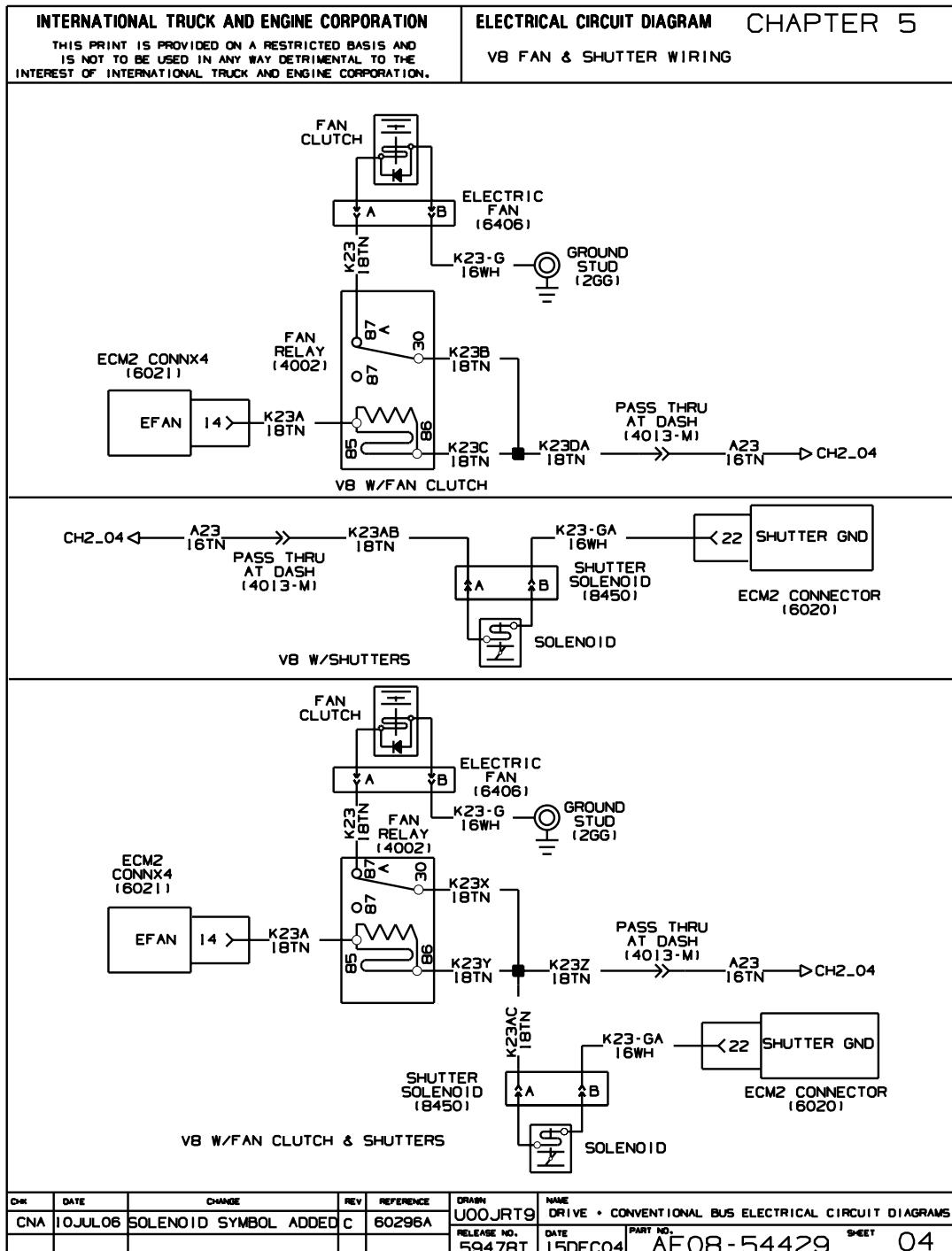
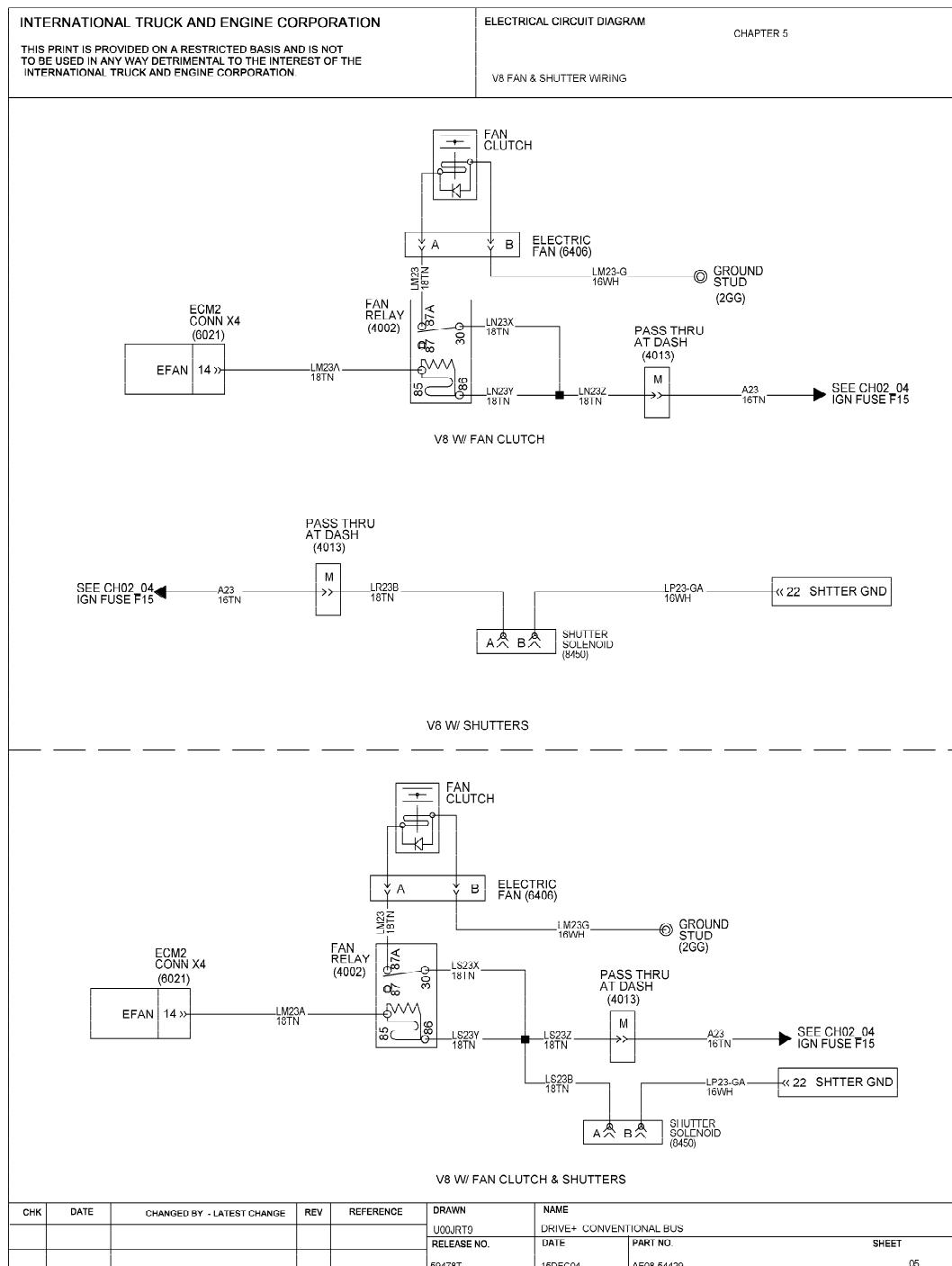


Figure 40 V8 Fan and Shutter Wiring

## 5.5. V8 FAN AND SHUTTER WIRING, P. 5



**Figure 41** V8 Fan and Shutter Wiring

## 6. GAUGES AND WARNING LIGHTS (CHAPTER 6)

### 6.1. IP GAUGES, P. 1

INTERNATIONAL TRUCK AND ENGINE CORPORATION		ELECTRICAL CIRCUIT DIAGRAM CHAPTER 6																																																	
		IP/GAUGES																																																	
INSTRUMENT PANEL GAUGES																																																			
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Figure 42 IP Gauges

## 6.2. WARNING LIGHTS, P. 2

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Figure 43 Warning Lights

### 6.3. WARNING LIGHTS CONTROLLED BY ENGINE, TRANSMISSION, ABS CONTROLLERS, P. 3

<b>INTERNATIONAL TRUCK AND ENGINE CORPORATION</b> <small>THIS PRINT IS PROVIDED ON A RESTRICTED BASIS AND IS NOT TO BE USED IN ANY WAY DEDIMENTIAL TO THE INTEREST OF INTERNATIONAL TRUCK AND ENGINE CORPORATION.</small>	<b>ELECTRICAL CIRCUIT DIAGRAM CHAPTER 6</b> <b>WARNING LIGHTS CONTROLLED BY ENGINE TRANSMISSION, ABS CONTROLLERS</b>																												
<p>THE FOLLOWING WARNING LIGHTS ARE CONTROLLED BY THE ENGINE, TRANSMISSION OR ABS CONTROLLER OVER THE DATA BUS AND DO NOT HAVE INDEPENDENT CIRCUITRY THAT CAN BE OR NEEDS TO BE SHOWN:</p> <p>RANGE INHIBIT</p> <p>ENGINE (YELLOW LED)</p> <p>ENGINE (RED LED)</p> <p>TRAC CTRL</p> <p>CHECK TRANS</p> <p>CHECK ELECTR SYS</p> <p>ABS</p> <p>WAIT TO START</p> <p>PARK (HYD BRK), BRAKE PRESSURE (HYD BRK), BRAKE FLUID (HYD BRK): ALL ON SAME LIGHT</p>																													
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Figure 44 Warning Lights Controlled by Engine, Transmission, ABS Controller

## 6.4. ENG. OIL PRESS. AND TEMP., SPEEDOMETER, TACH., VOLTMETER AND WATER TEMP. GAUGE CIRCUITS, P. 4

<b>INTERNATIONAL TRUCK AND ENGINE CORPORATION</b> <small>THIS PRINT IS PROVIDED ON A RESTRICTED BASIS AND IS NOT TO BE USED IN ANY WAY DETRIMENTAL TO THE INTEREST OF INTERNATIONAL TRUCK AND ENGINE CORPORATION.</small>	<b>ELECTRICAL CIRCUIT DIAGRAM CHAPTER 6</b> <small>ENGINE OIL PRESS &amp; TEMP, SPEEDOMETER, TACH, VOLTMETER &amp; WATER TEMP GAUGE CIRCUITS</small>																																						
<small>REFER TO CONSOLIDATED ENGINE/VEHICLE CONTROLLER DIAGNOSTICS MANUAL EGES-175 (DT466), EGES-190 (V8-AVNY), FOR CIRCUIT DIAGRAMS SHOWING INPUT CIRCUITRY FOR THE FOLLOWING DATALINK DRIVEN SYSTEMS: ENGINE OIL PRESSURE GAUGE ENGINE OIL TEMPERATURE GAUGE SPEEDOMETER GAUGE TACHOMETER GAUGE WATER TEMPERATURE GAUGE</small>																																							
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Figure 45 Eng. Oil Press. and Temp., Speedometer, Tach., Voltmeter and Water Temp. Gauge Circuits

## 6.5. GAUGES AND WARNING LIGHTS — INSTRUMENT CLUSTER, P. 5

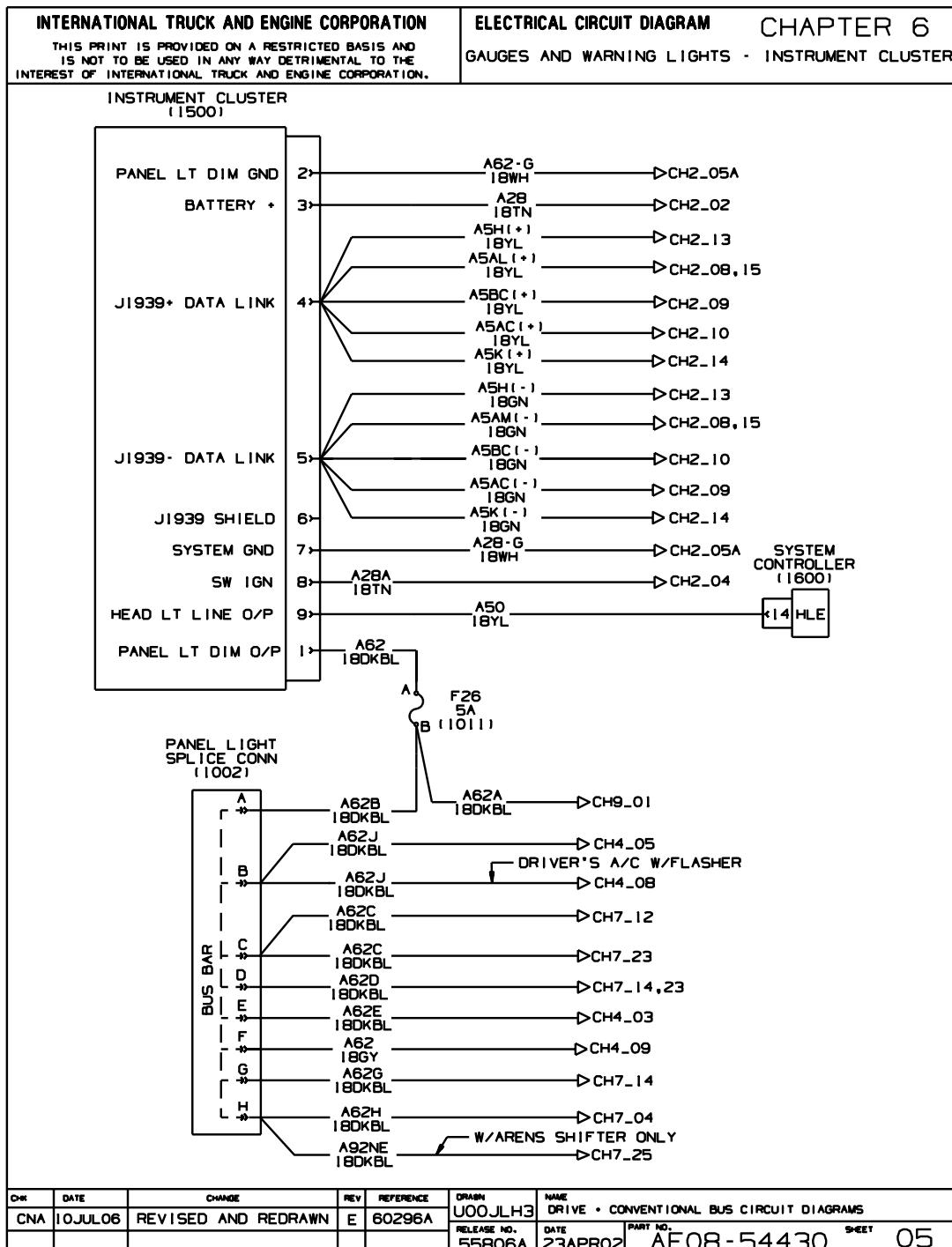


Figure 46 Gauges and Warning Lights — Instrument Cluster

## 6.6. GAUGES AND WARNING LIGHTS — AMMETER, P. 6

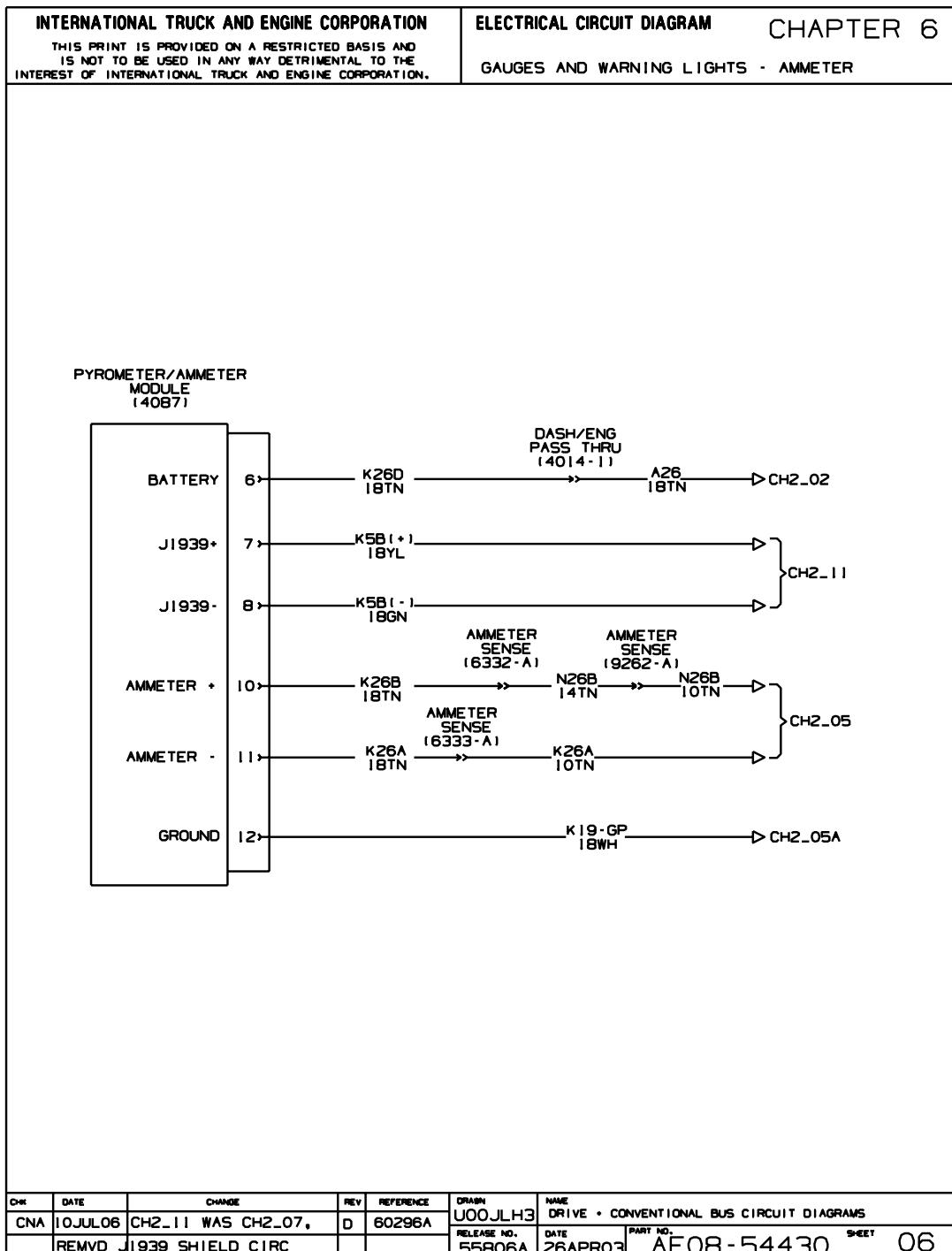


Figure 47 Gauges and Warning Lights — Ammeter

## 6.7. GAUGES AND WARNING LIGHTS — COOLANT TANK LEVEL, P. 7

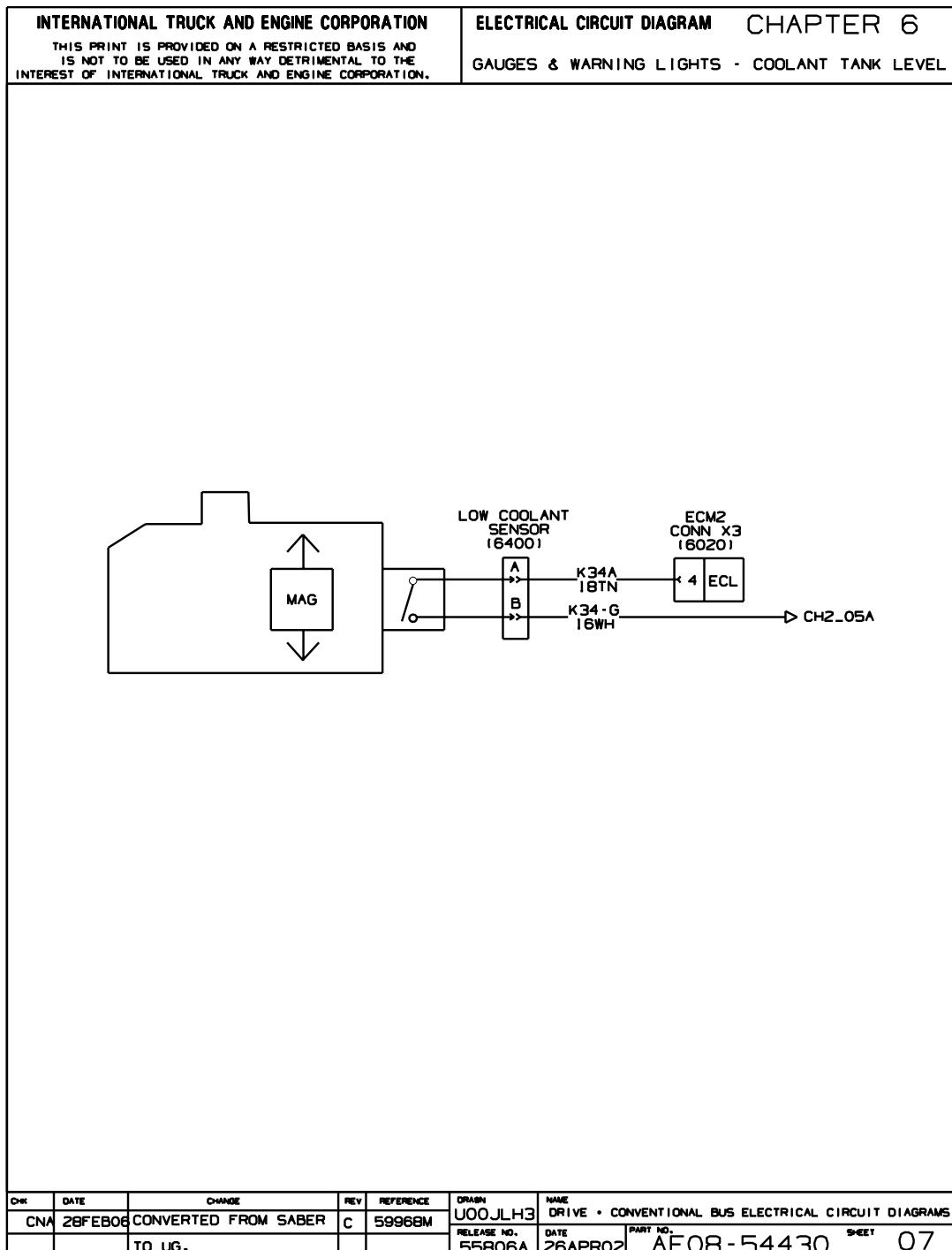


Figure 48 Gauges and Warning Lights — Coolant Tank Level

## 6.8. GAUGES AND WARNING LIGHTS — FUEL GAUGE WITH AIR BRAKE CHASSIS, P. 8

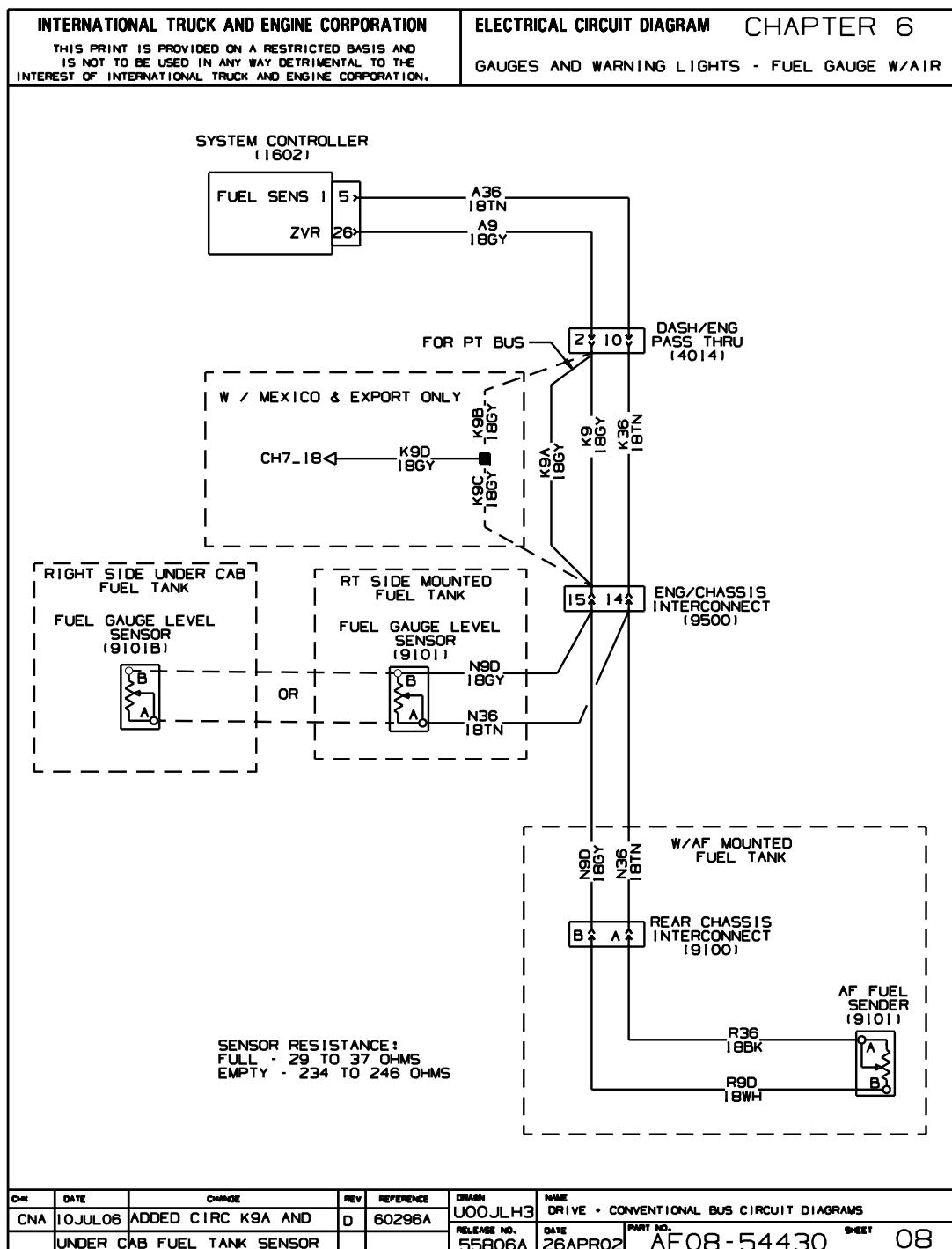
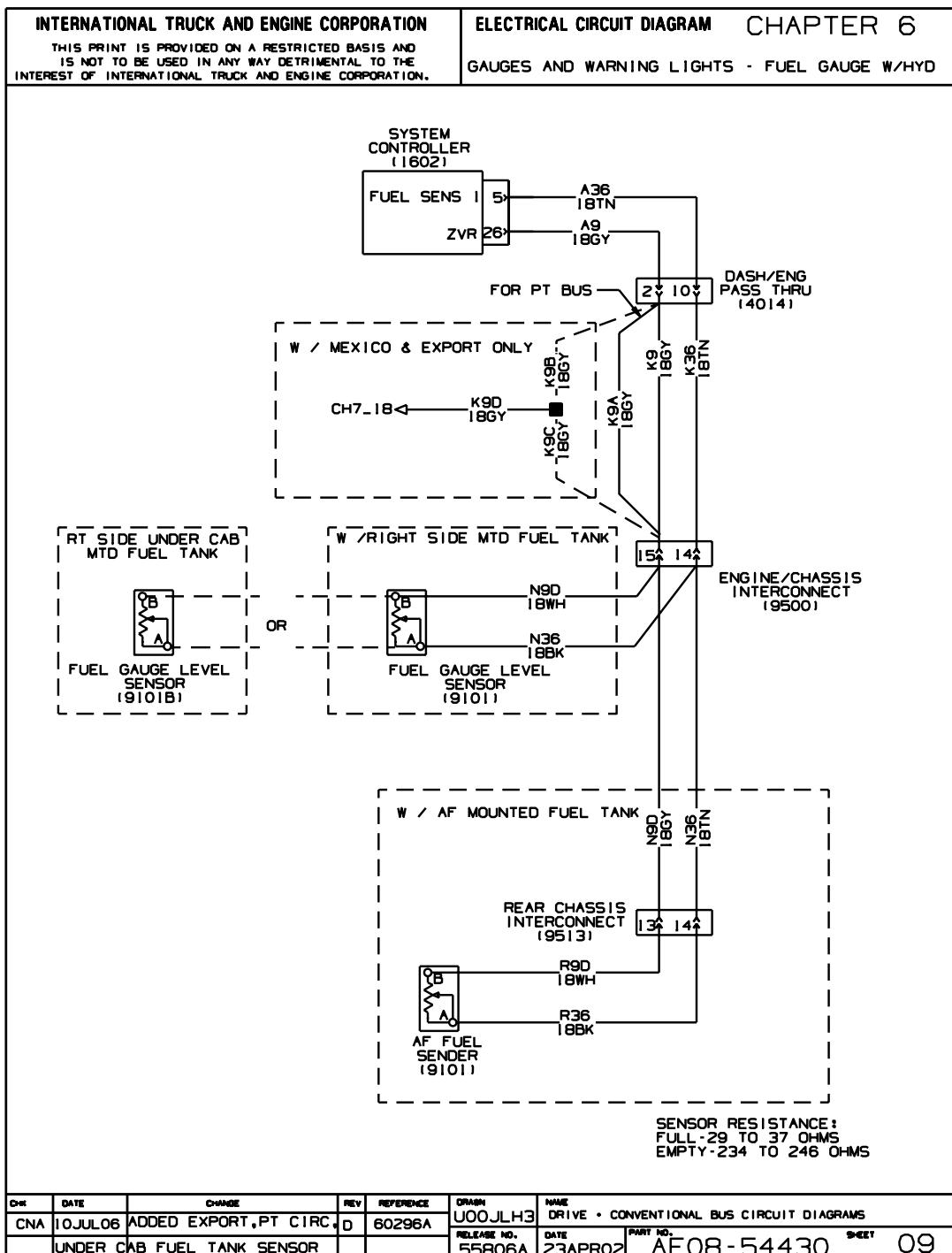


Figure 49 Gauges and Warning Lights — Fuel Gauge with Air Brake Chassis

## **6.9. GAUGES AND WARNING LIGHTS — FUEL GAUGE WITH HYDRAULIC BRAKE CHASSIS, P. 9**



**Figure 50 Gauges and Warning Lights — Fuel Gauge with Hydraulic Brake Chassis**

## 6.10. GAUGES AND WARNING LIGHTS — PARK BRAKE LIGHT, P. 10

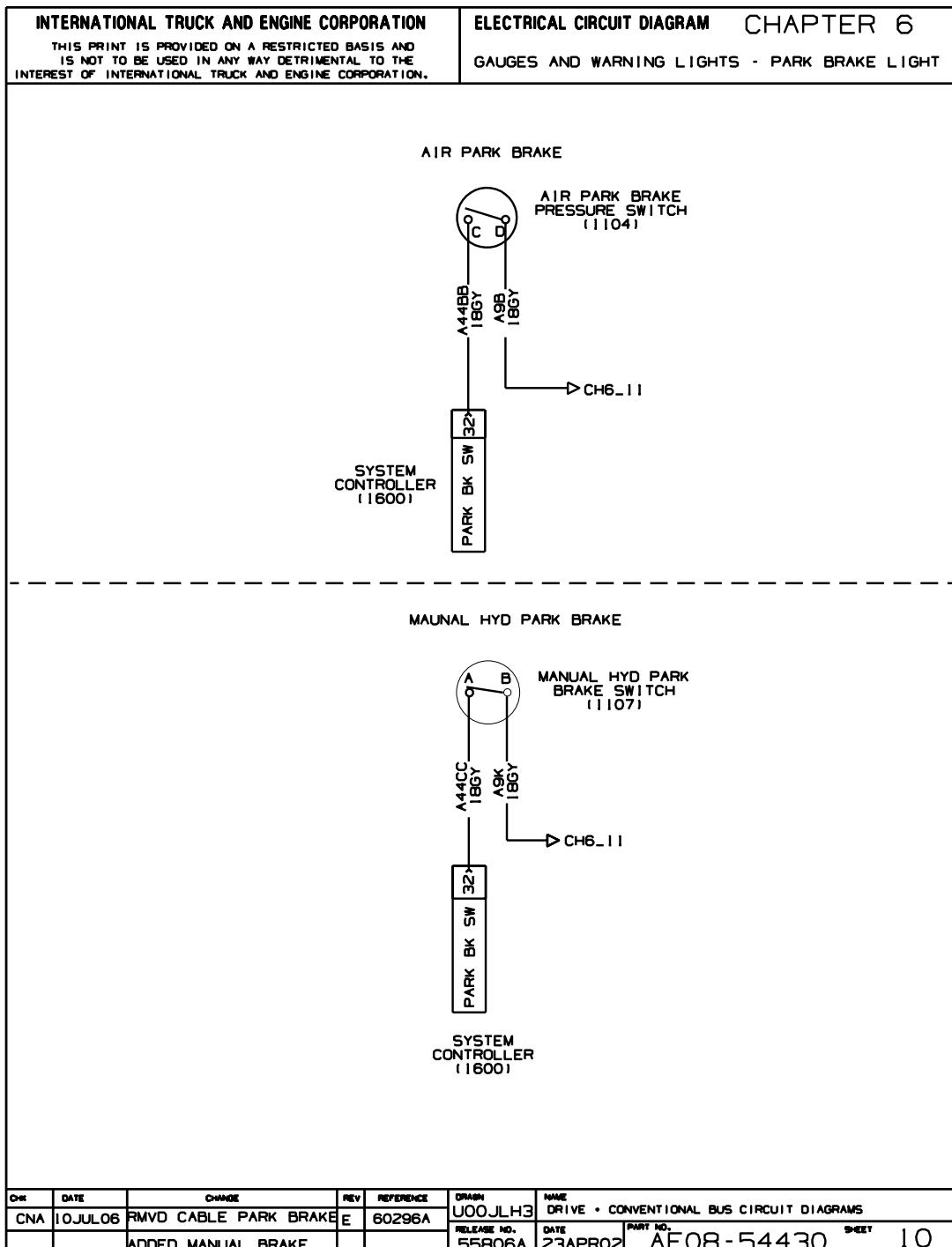
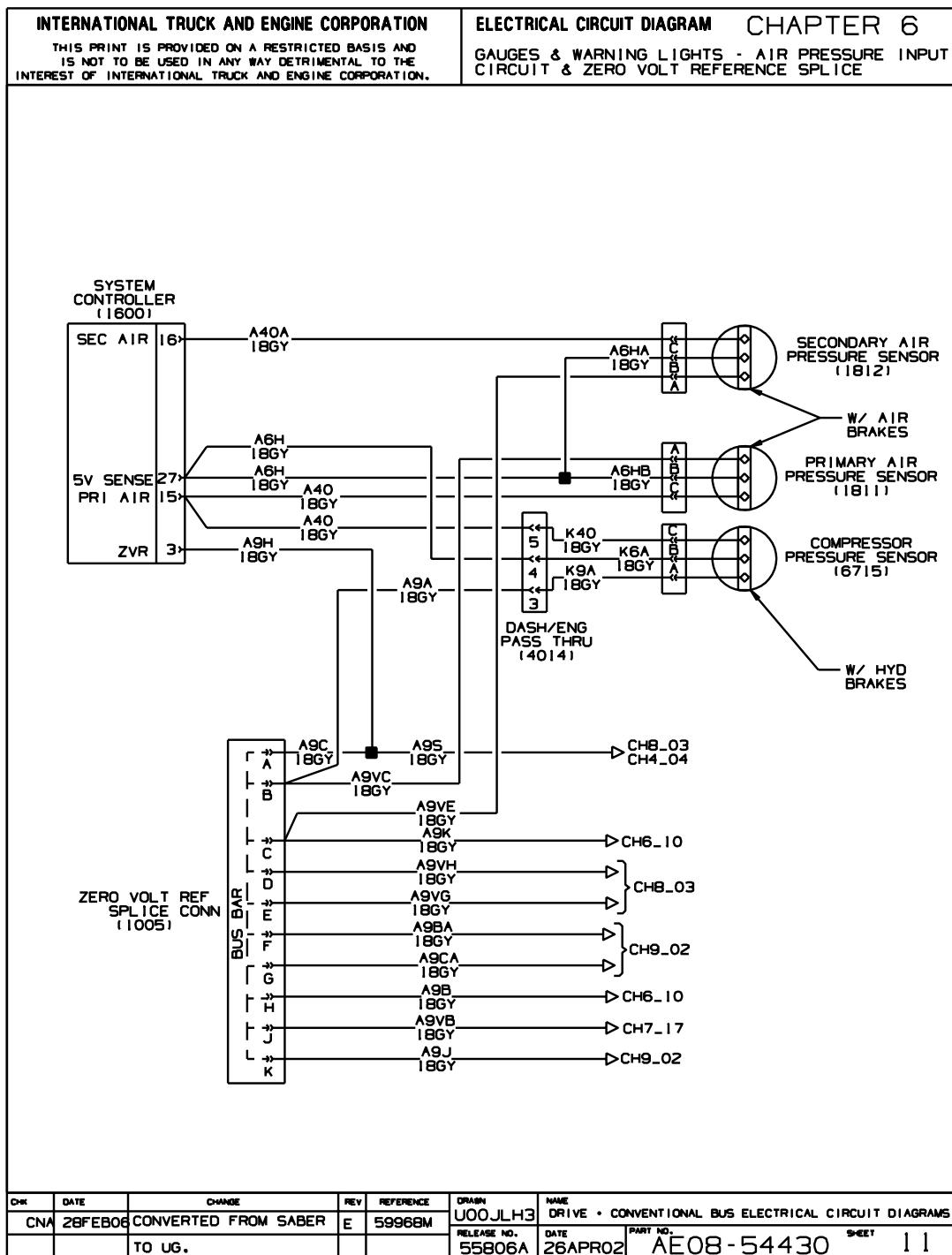


Figure 51 Gauges and Warning Lights — Park Brake Light

## **6.11. GAUGES AND WARNING LIGHTS — AIR PRESSURE INPUT CIRCUIT AND ZERO VOLT REFERENCE SPLICE, P. 11**



**Figure 52 Gauges and Warning Lights — Air Pressure Input Circuit and Zero Volt Reference Splice**

## 6.12. GAUGES AND WARNING LIGHTS — CHANGE TRANSMISSION FILTER LIGHT, P. 12

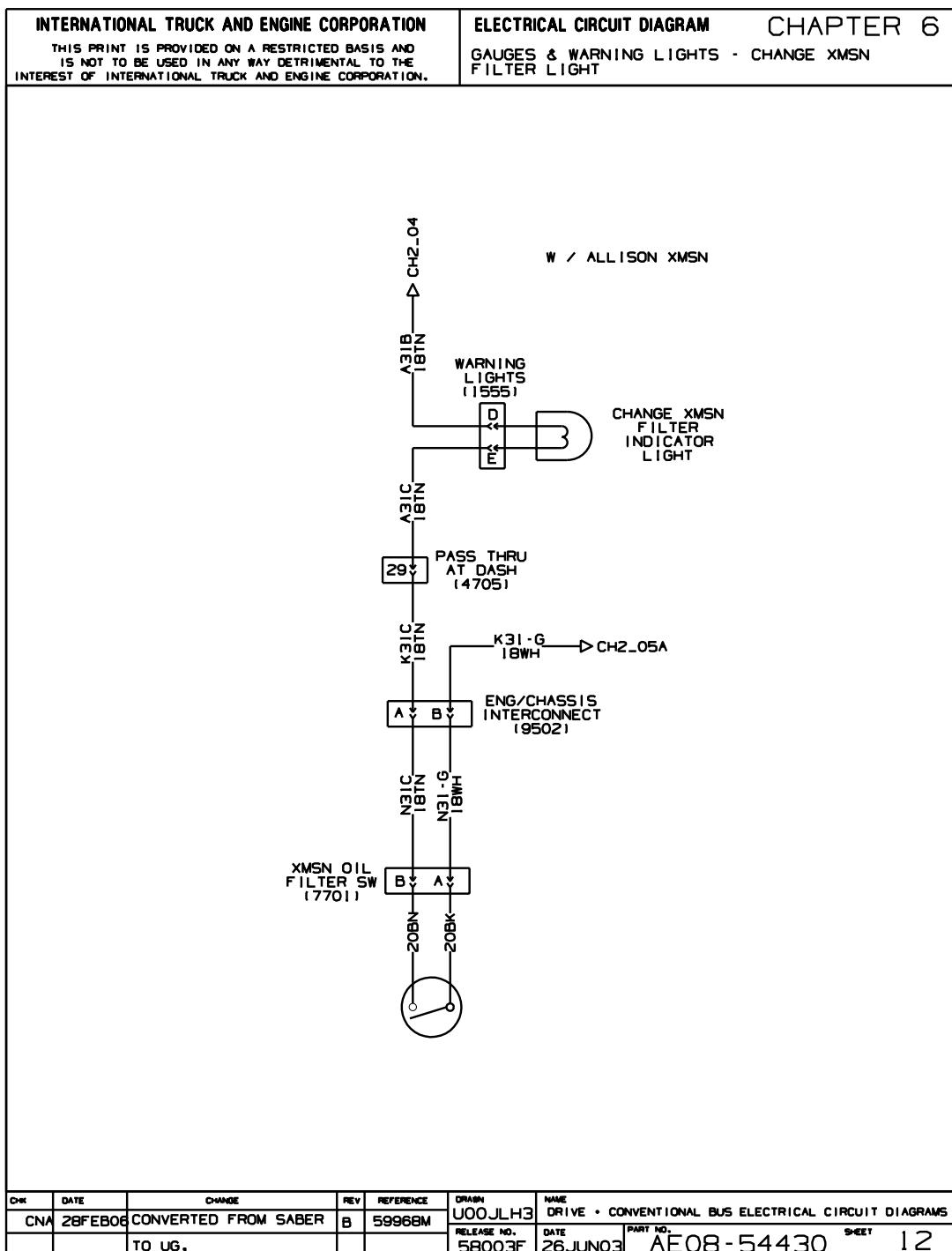


Figure 53 Gauges and Warning Lights — Change Transmission Filter Light

## 7. CHASSIS ACCESSORIES (CHAPTER 7)

### 7.1. AIR DRYER AND DRAIN VALVE, P. 1

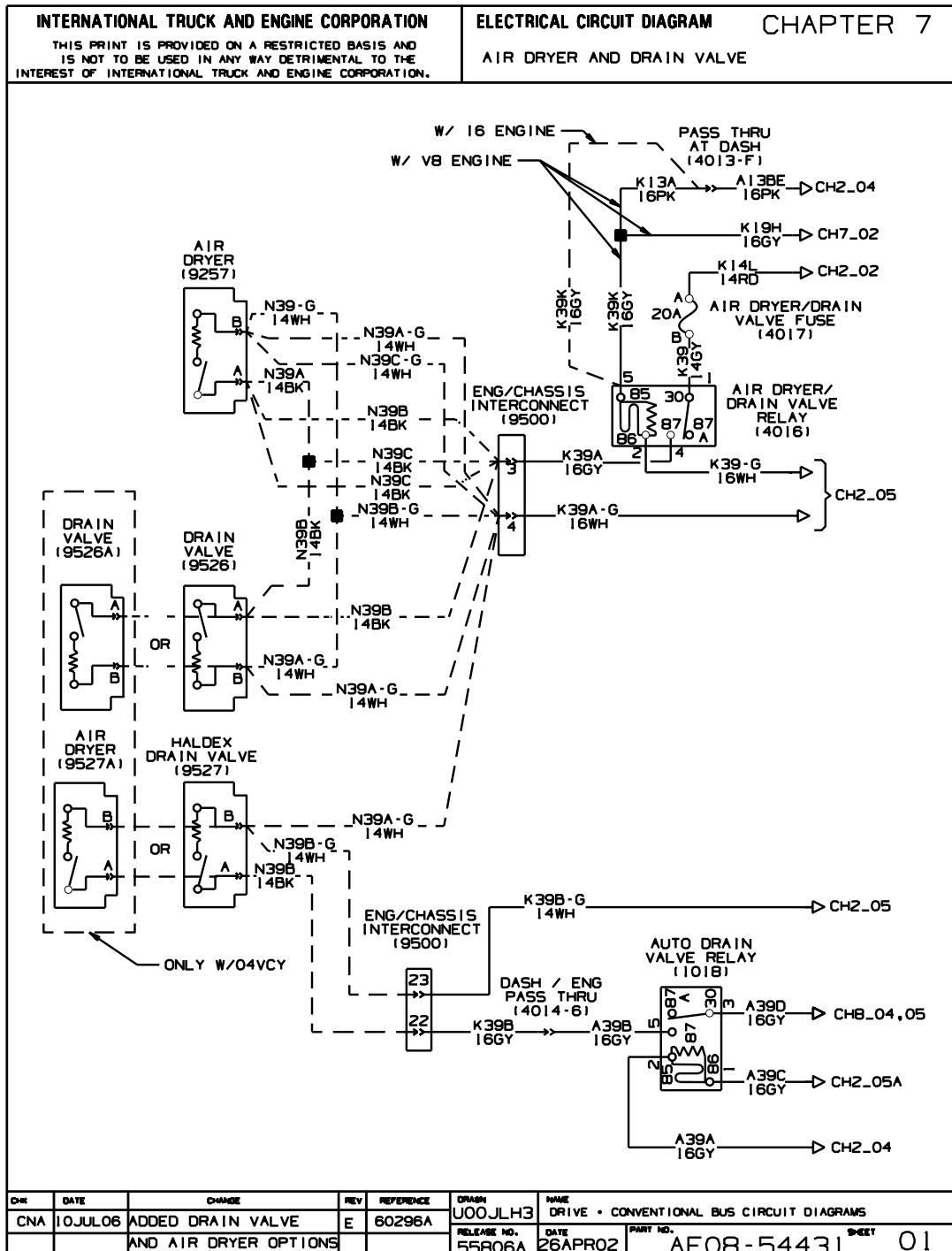


Figure 54 Air Dryer and Drain Valve

## 7.2. FUEL FILTER WIRING SYSTEM, P. 2

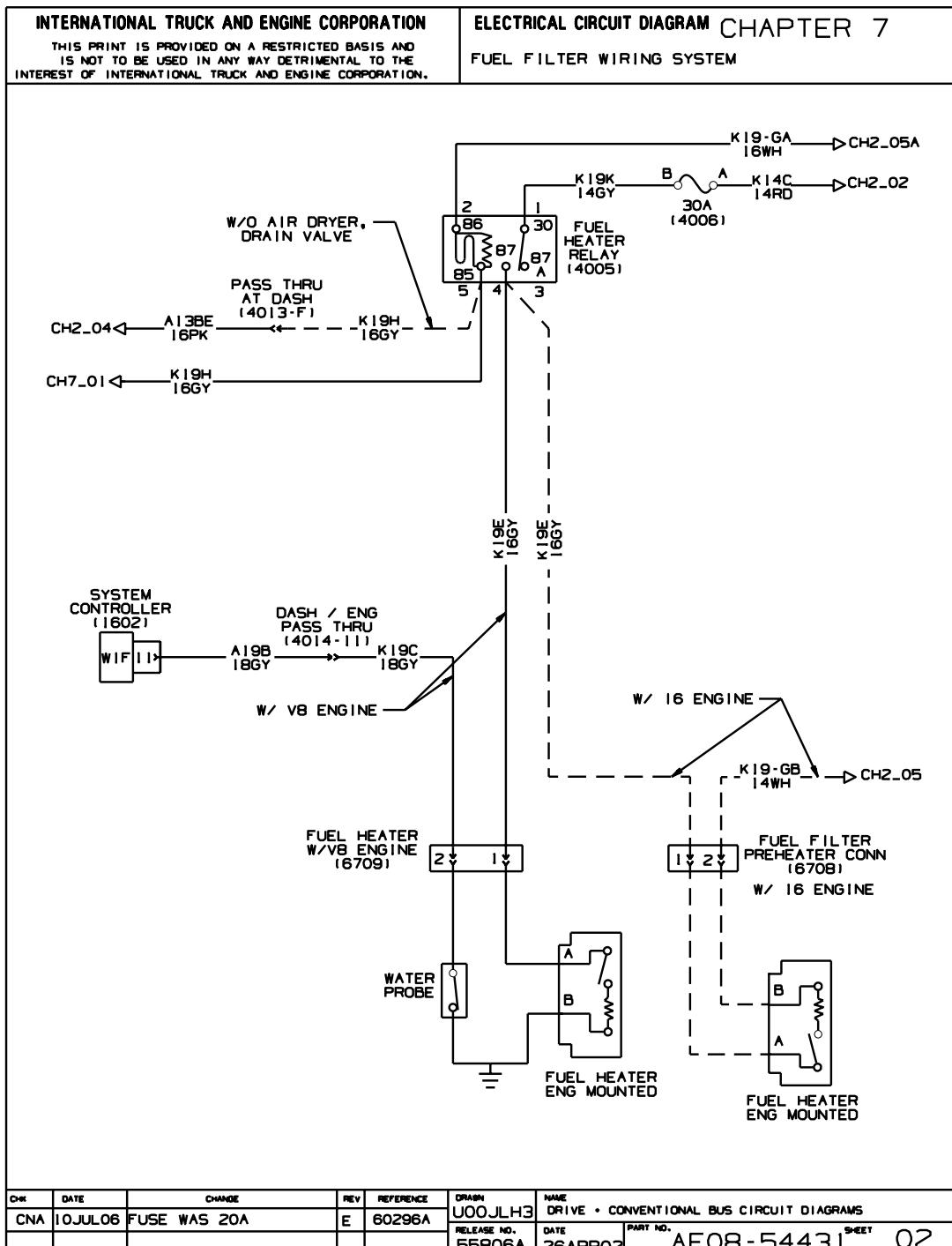


Figure 55 Fuel Filter Wiring System

### 7.3. AIR PARK BRAKE INTERLOCK, P. 3

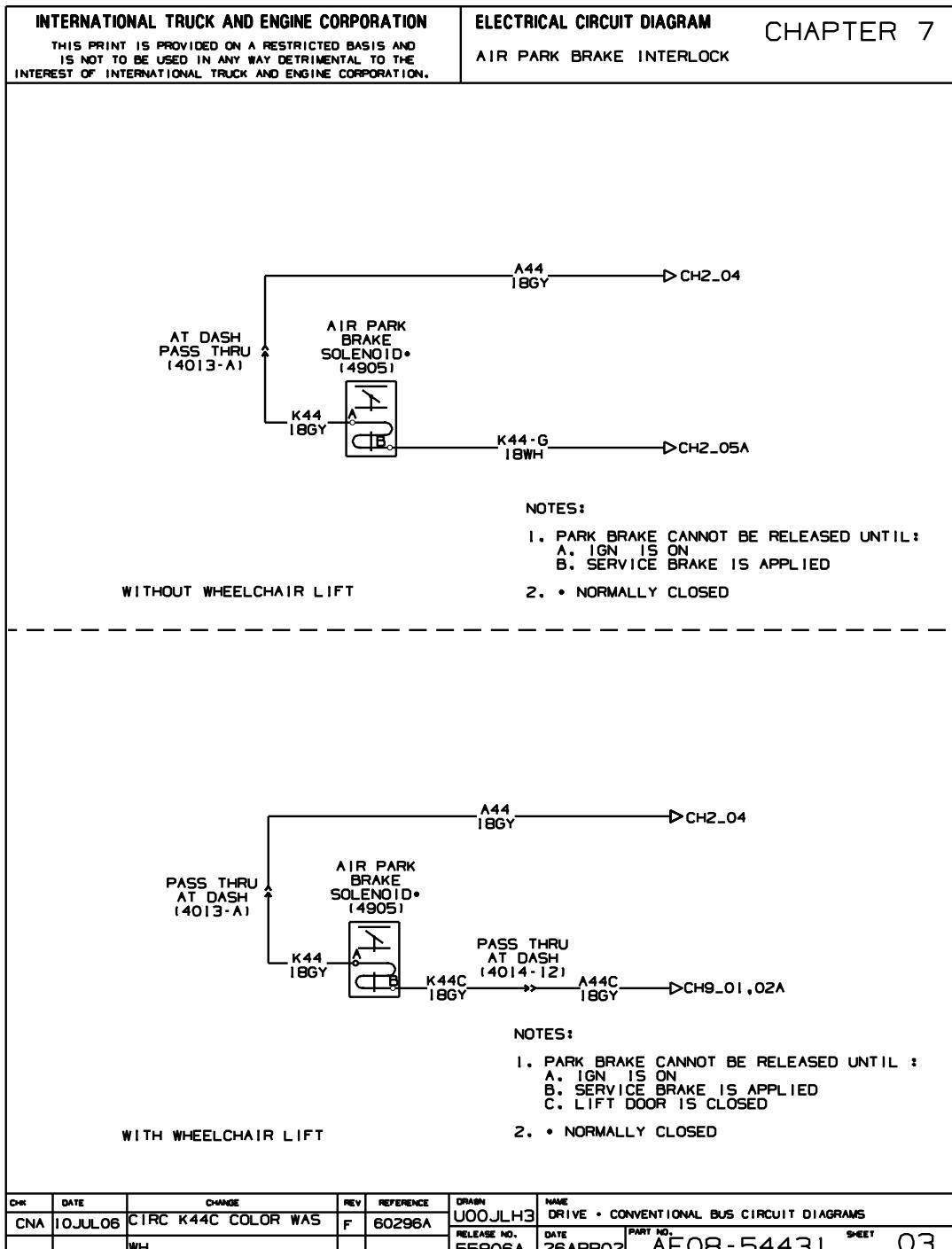


Figure 56 Air Park Brake Interlock

## 7.4. PARK BRAKE / SHIFTER INTERLOCK — WITH LCT TRANSMISSION ONLY, P. 4

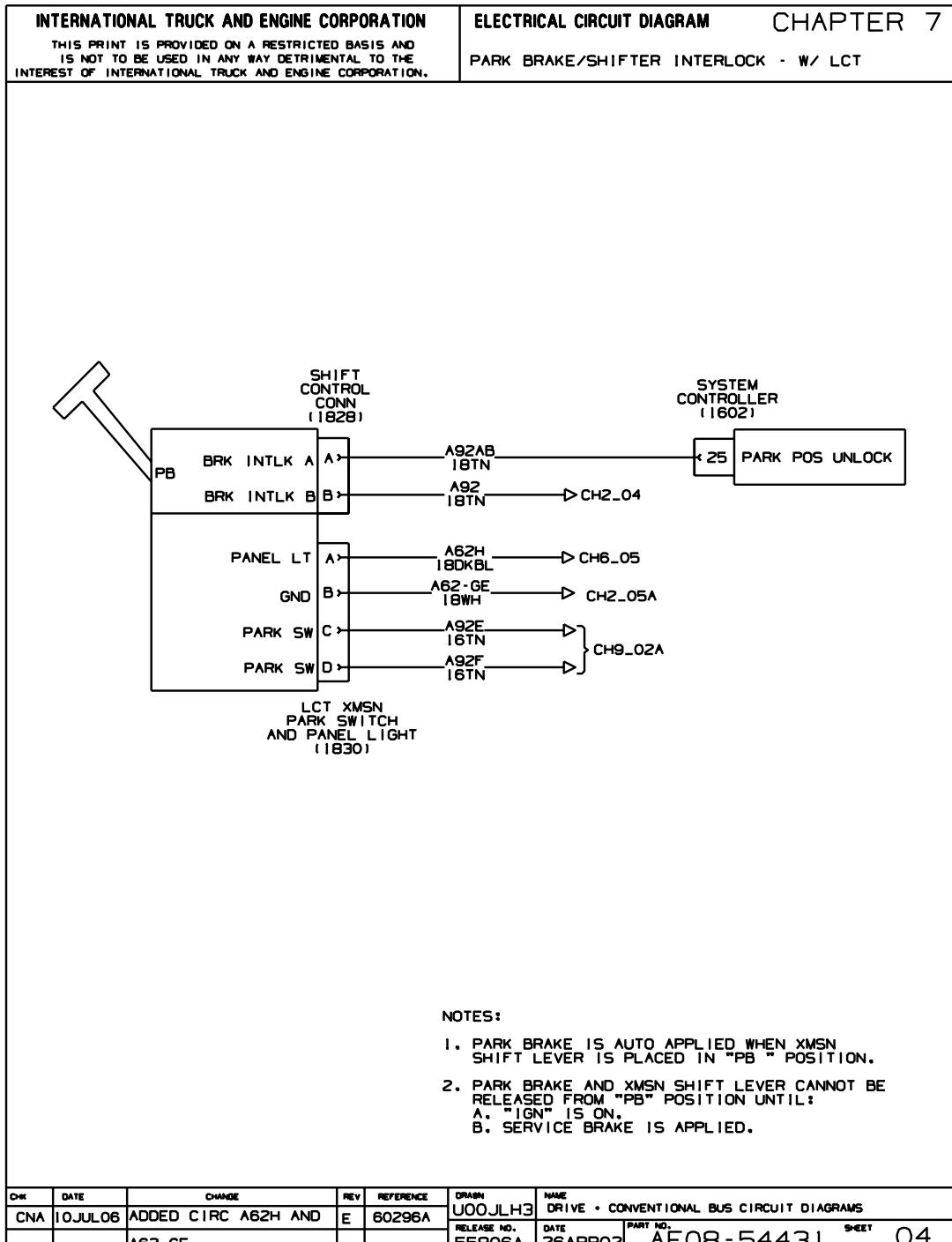


Figure 57 Park Brake / Shifter Interlock — with LCT Transmission Only

## 7.5. ANTILOCK BRAKE SYSTEM (ABS), AIR, P. 5

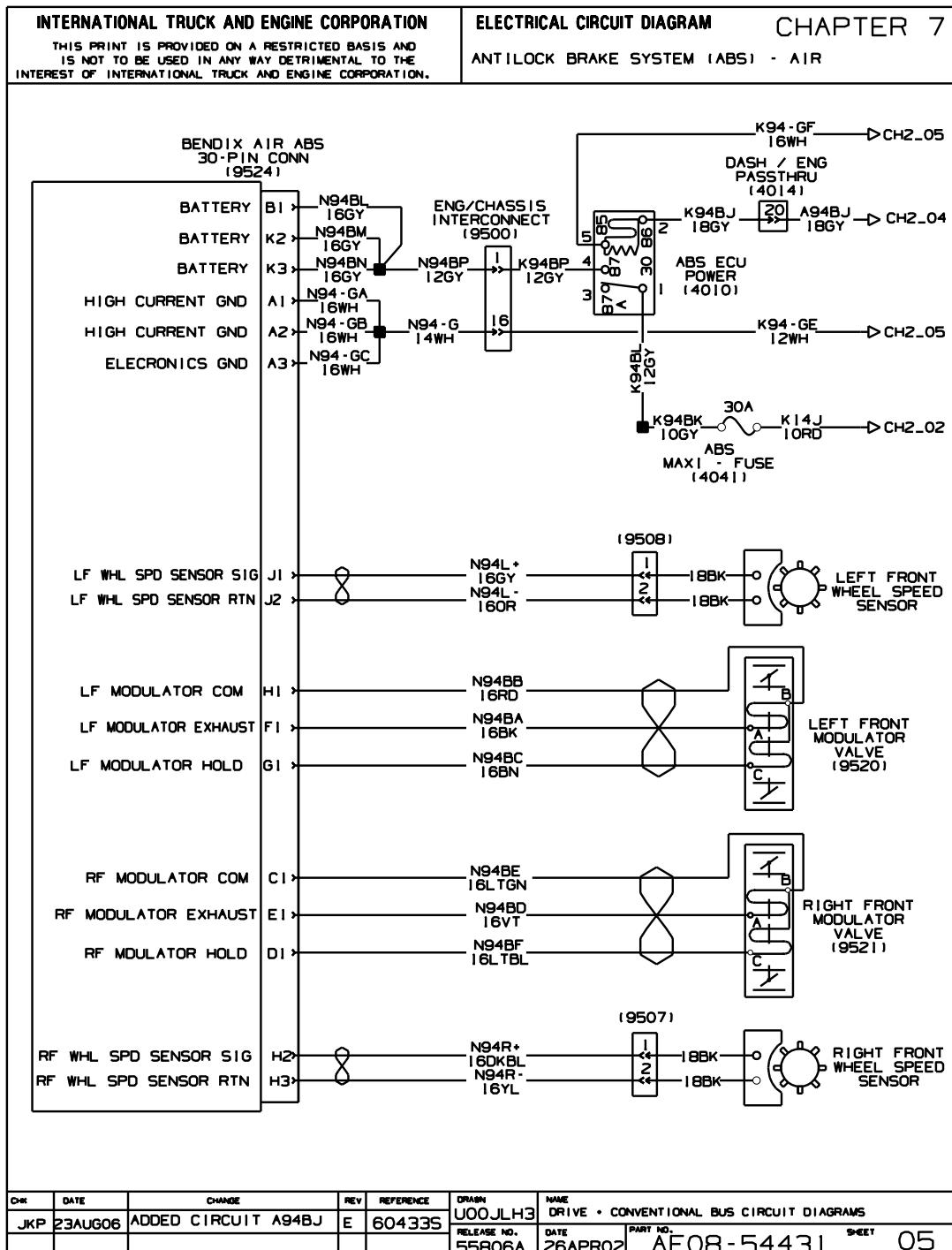


Figure 58 Antilock Brake System (ABS), Air

## 7.6. ANTILOCK BRAKE SYSTEM (ABS), AIR, P. 6

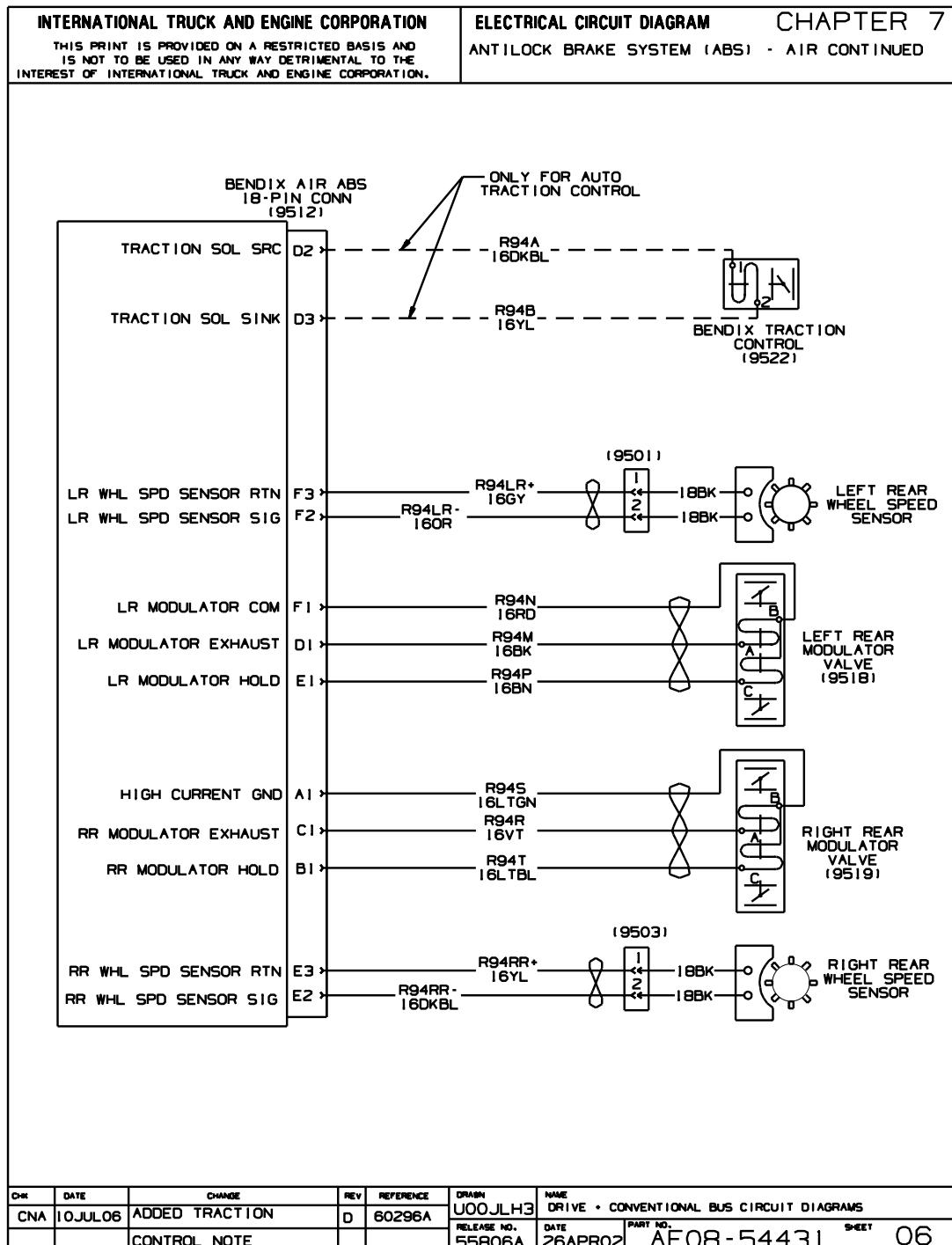


Figure 59 Antilock Brake System (ABS), Air (Cont.)

## 7.7. AIR SOLENOID MODULE, P. 7

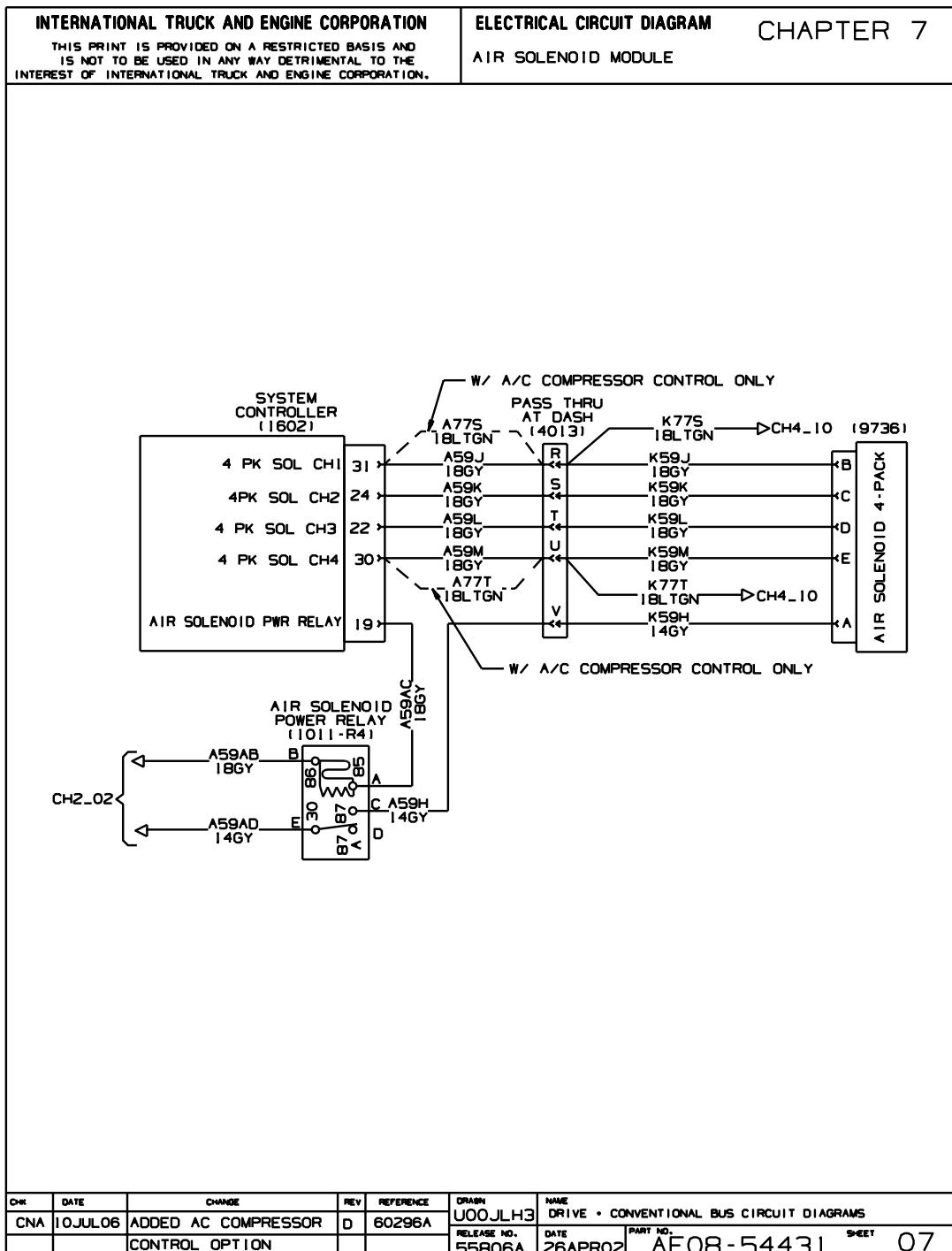


Figure 60 Air Solenoid Module

## 7.8. HYDRAULIC ANTILOCK BRAKES, P. 8

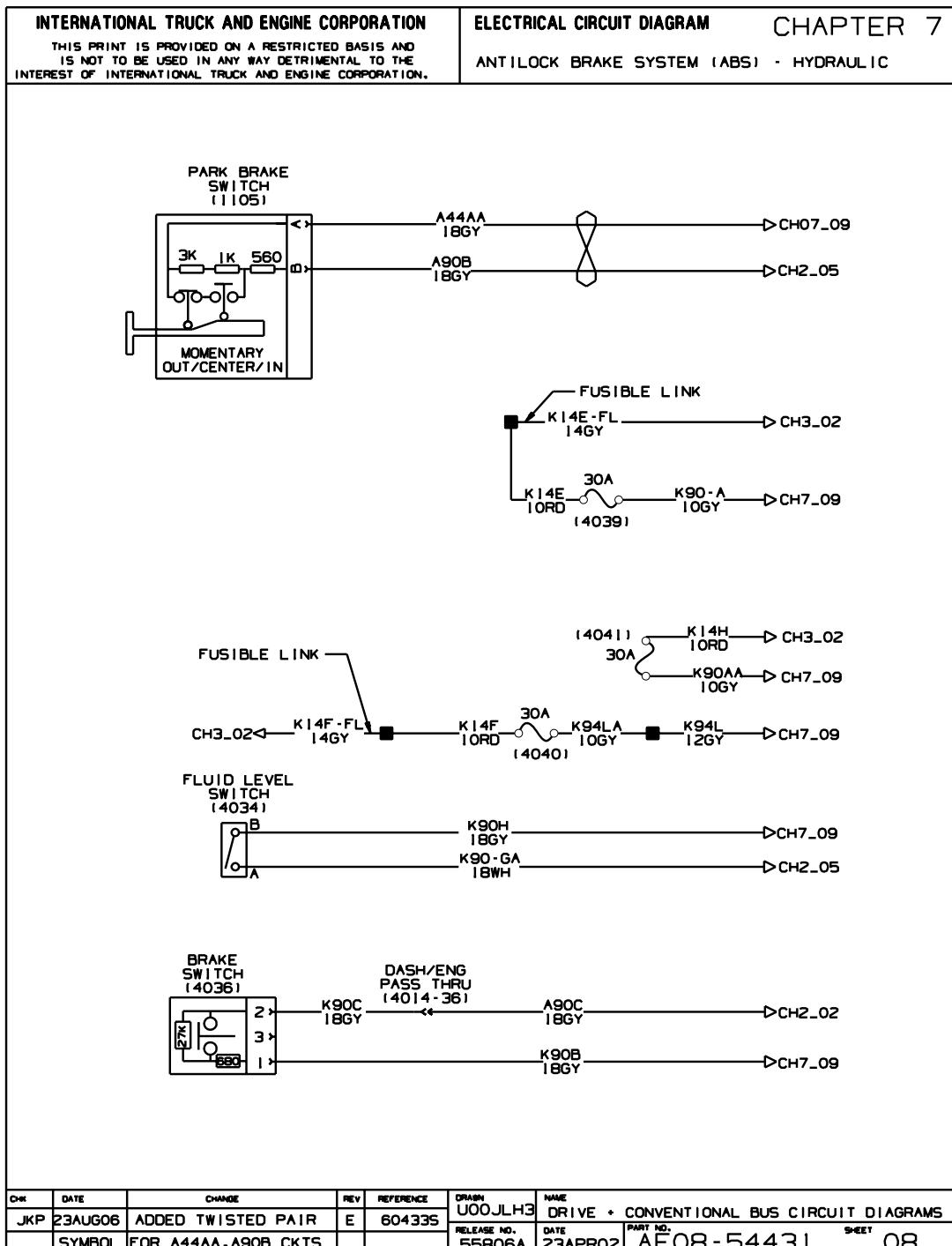


Figure 61 Hydraulic Antilock Brakes

## 7.9. HYDRAULIC ANTILOCK BRAKES, P. 9

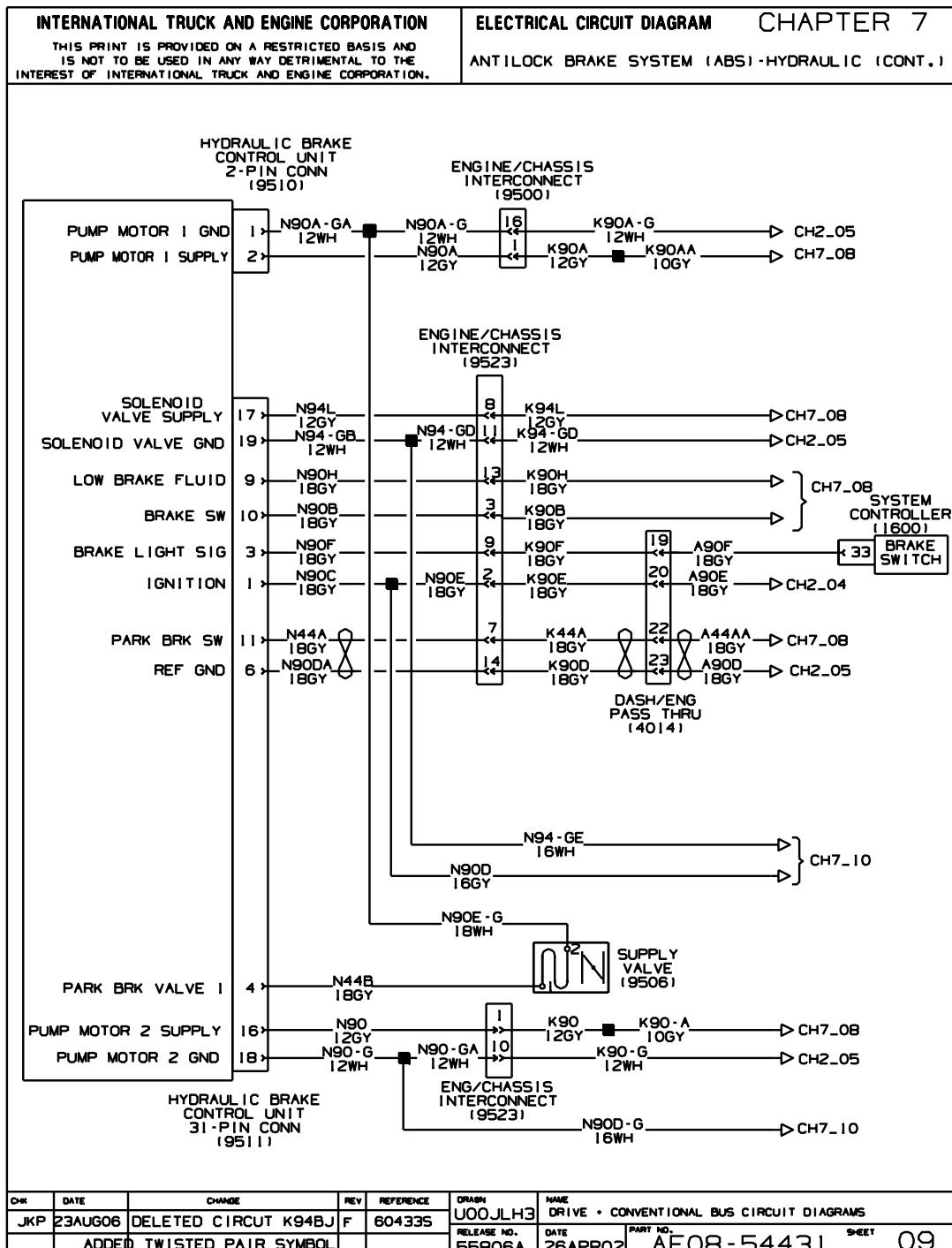


Figure 62 Hydraulic Antilock Brakes (Cont.)

## 7.10. HYDRAULIC ANTILOCK BRAKES, P. 10

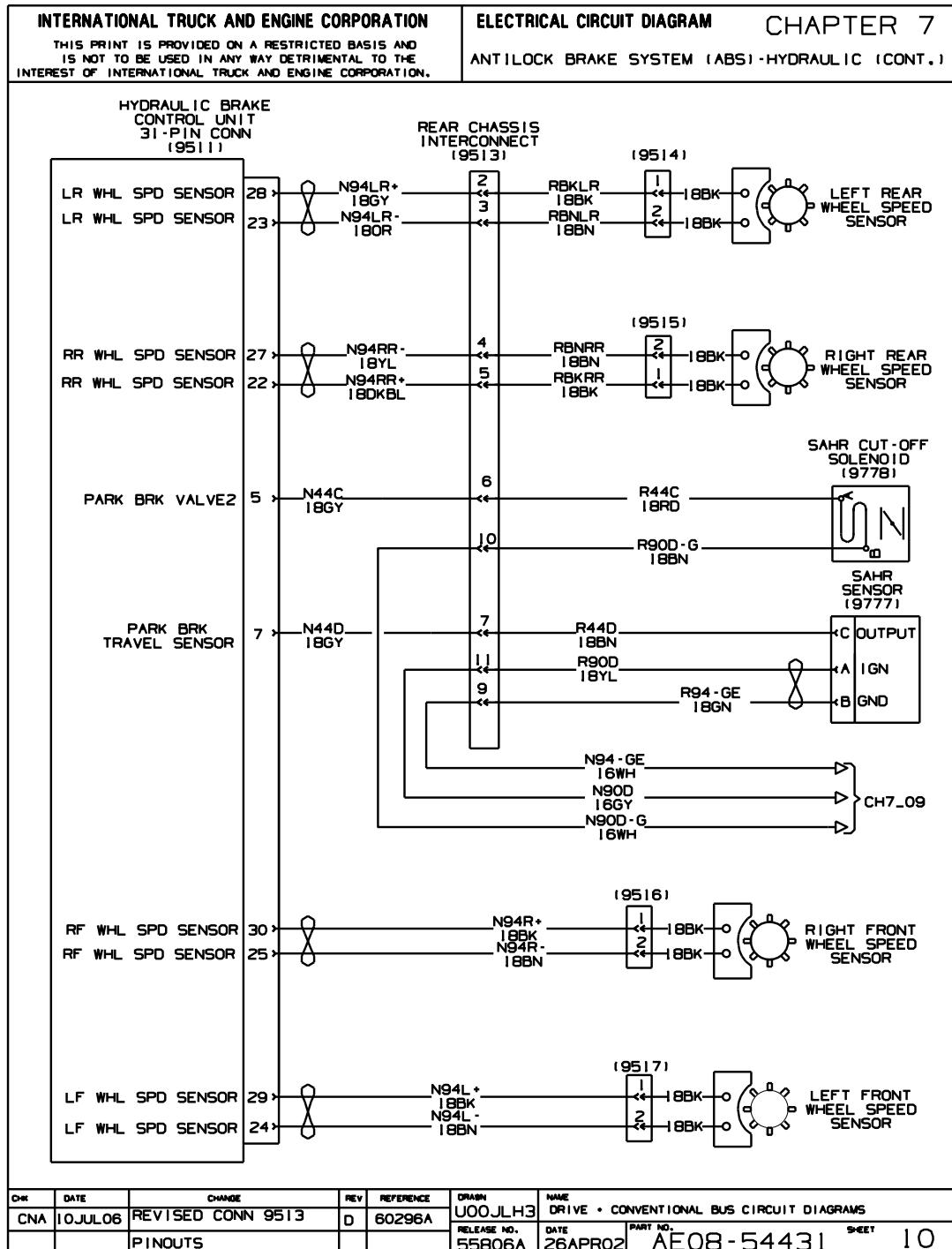


Figure 63 Hydraulic Antilock Brakes (Cont.)

## 7.11. ALLISON WTEC MD TRANSMISSION, P. 11

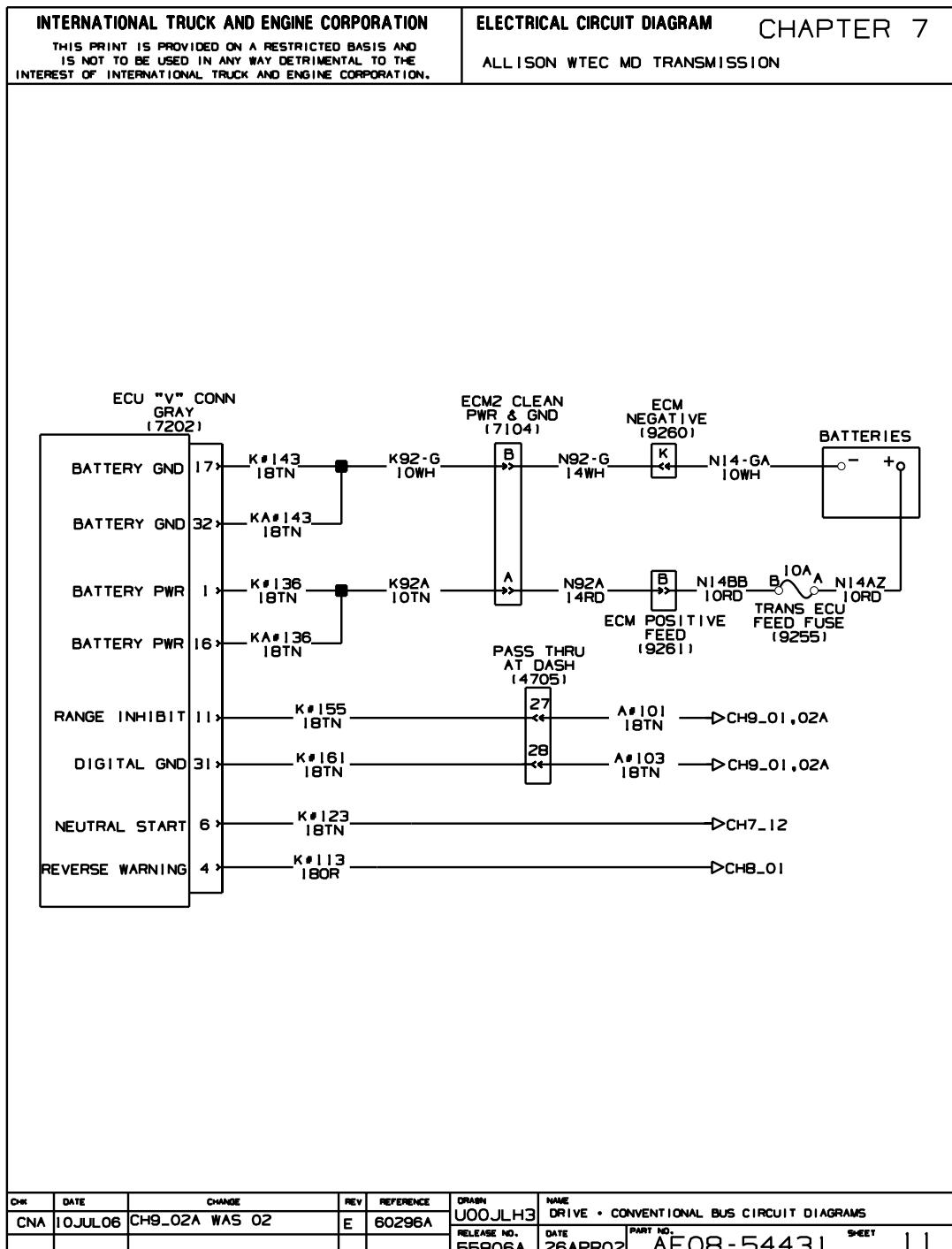


Figure 64 Allison WTEC MD Transmission

## 7.12. ALLISON WTEC MD TRANSMISSION, P. 12

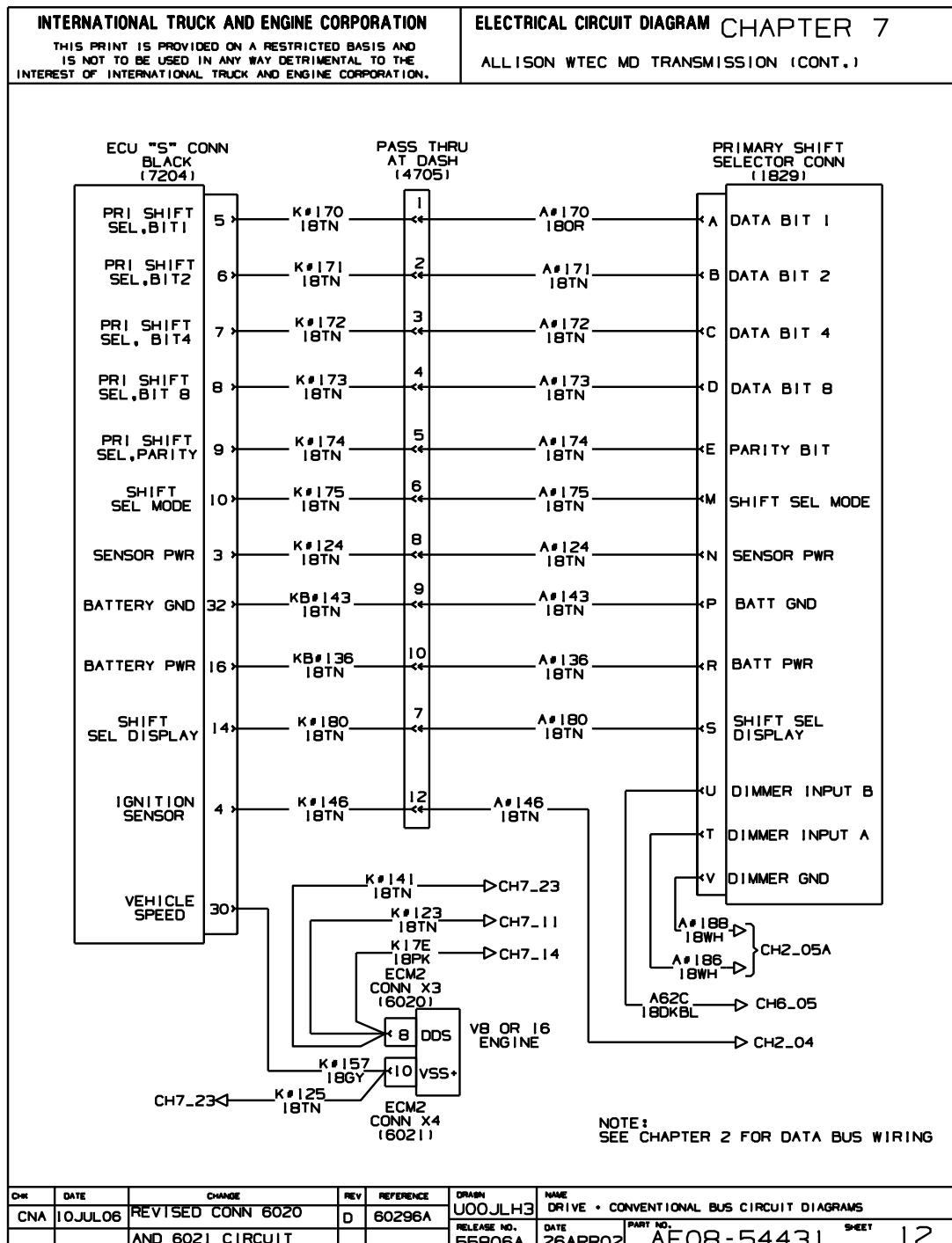


Figure 65 Allison WTEC MD Transmission (Cont.)

### 7.13. ALLISON WTEC MD TRANSMISSION, P. 13

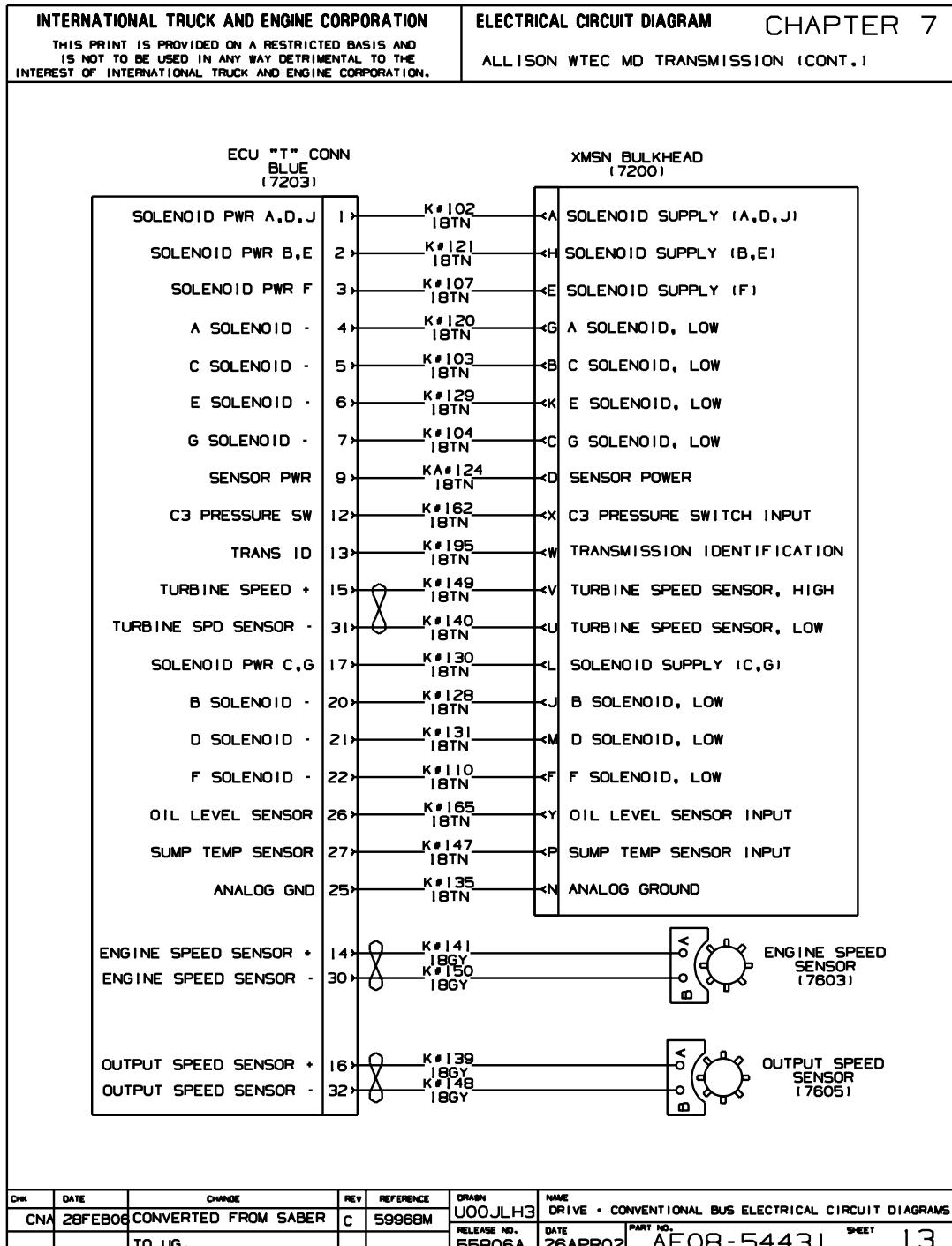


Figure 66 Allison WTEC MD Transmission (Cont.)

## 7.14. ALLISON LCT TRANSMISSION, P. 14

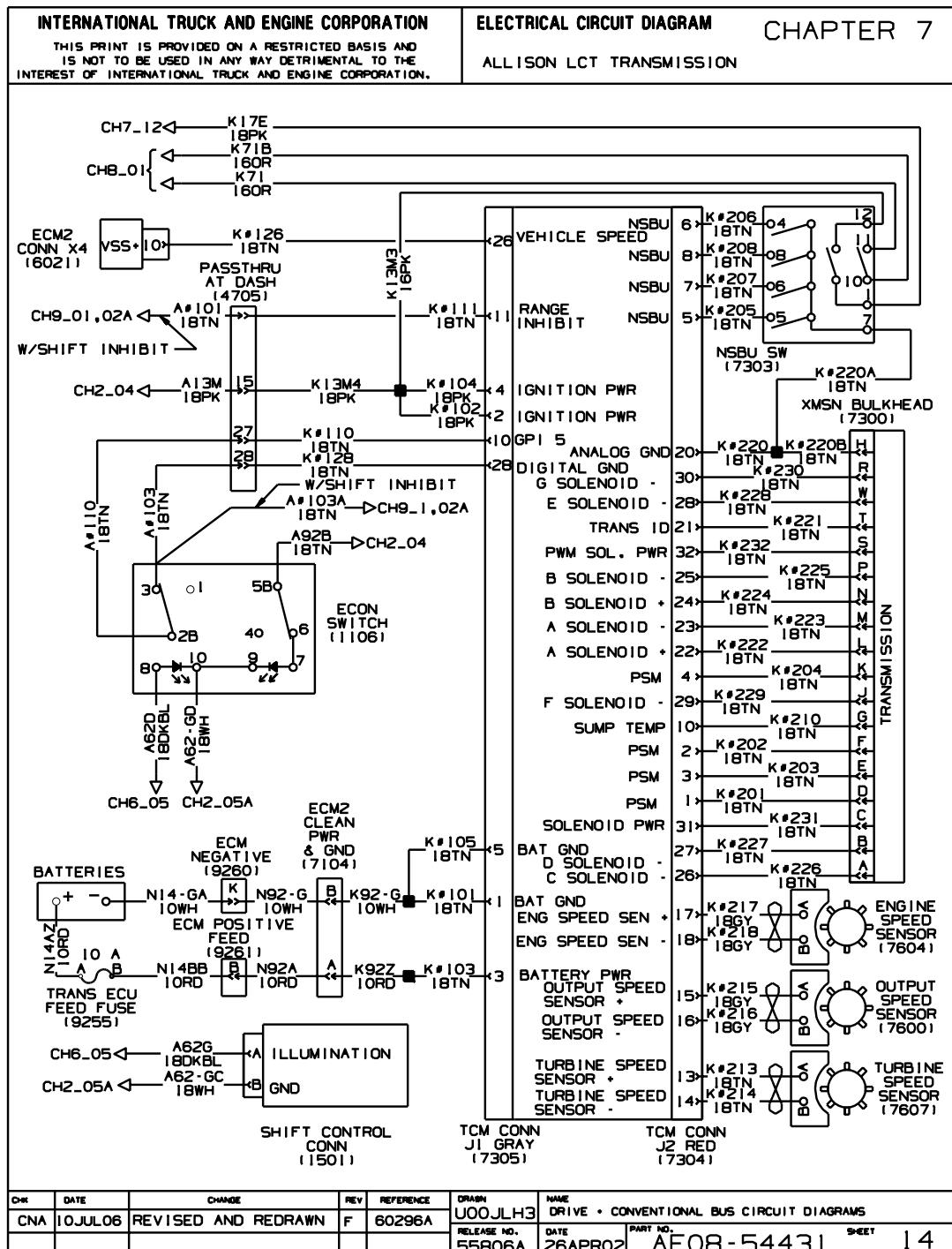


Figure 67 Allison LCT Transmission

## 7.15. CROSSING GATE, P. 15

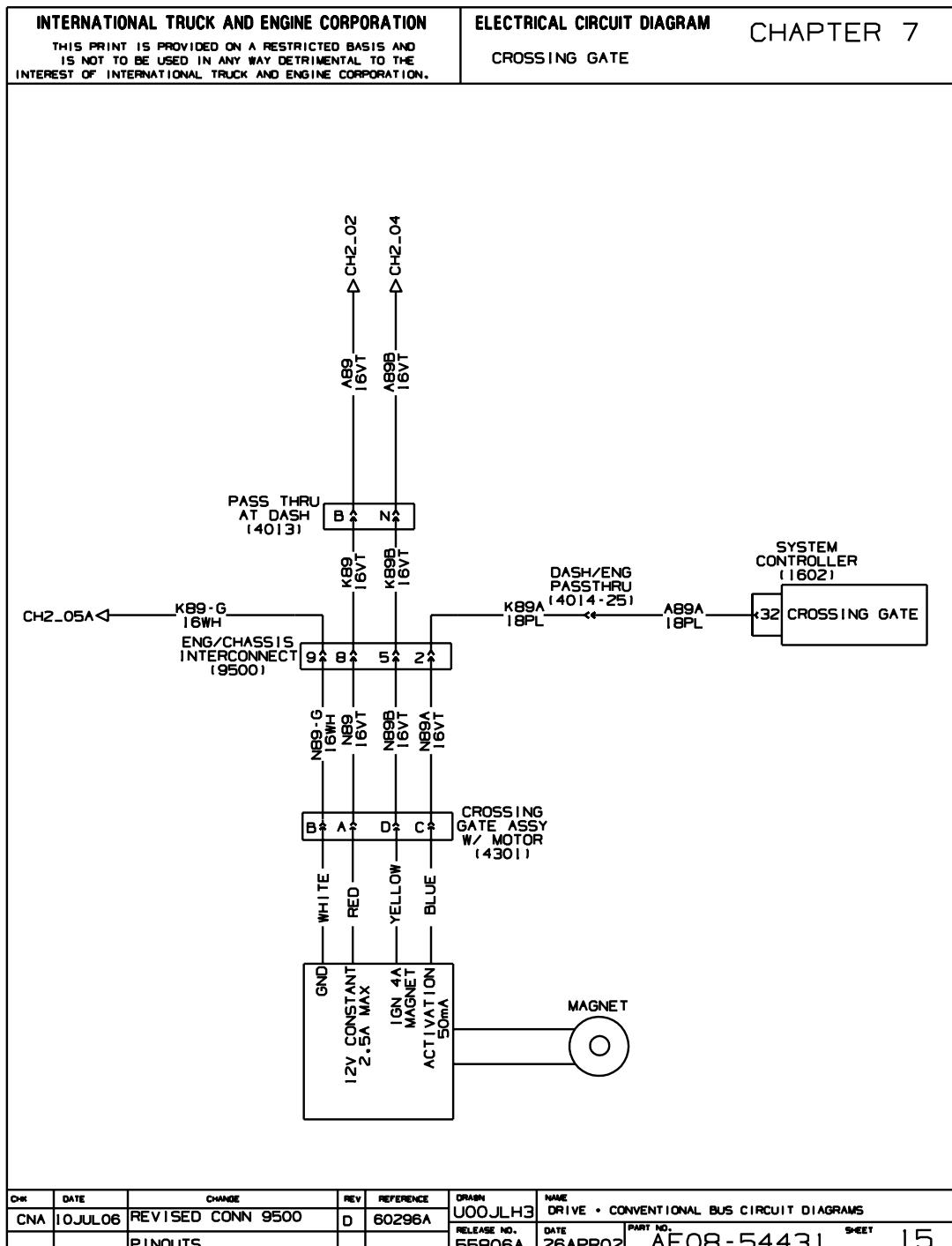


Figure 68 Crossing Gate

## 7.16. BRAKE MONITOR, P. 16

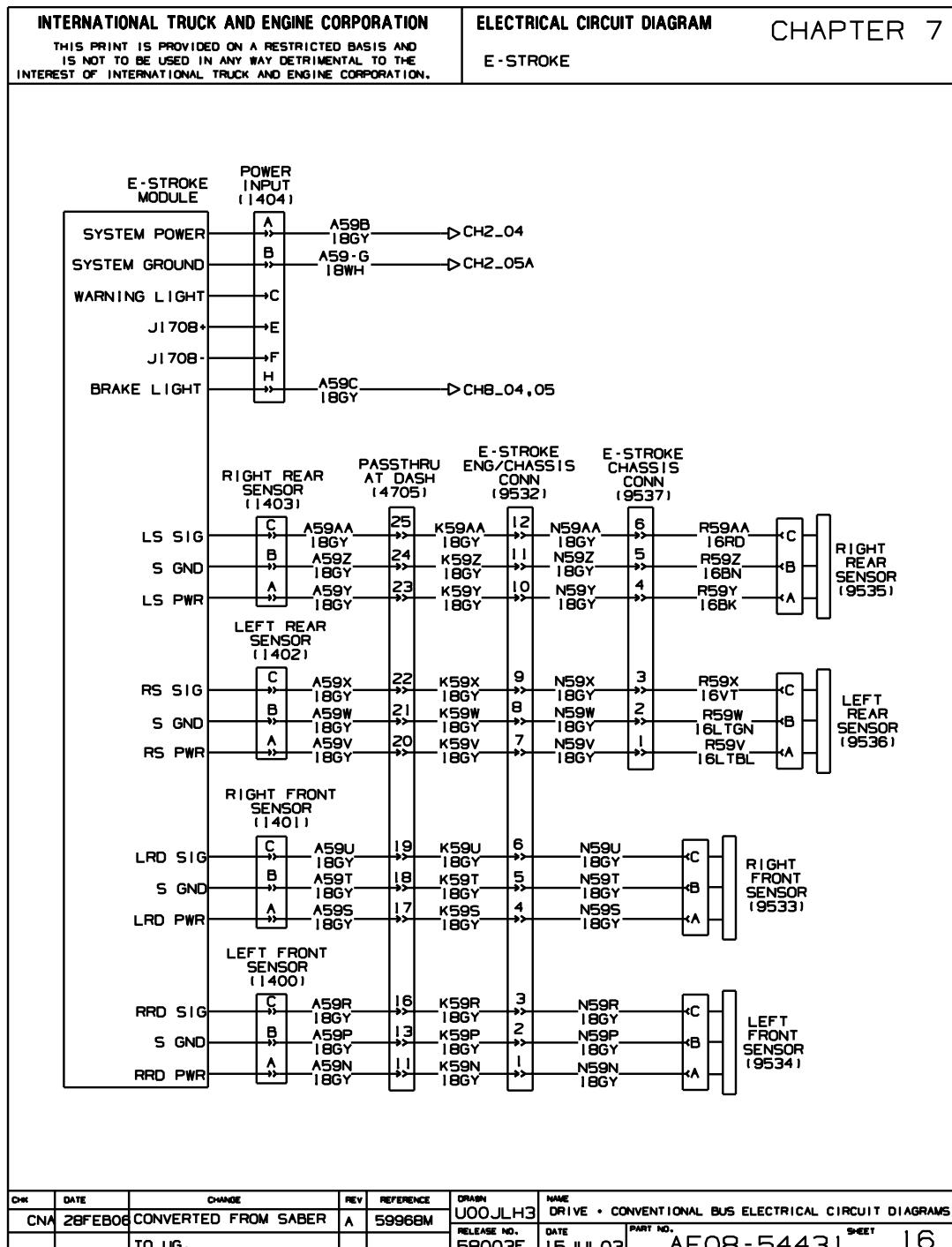
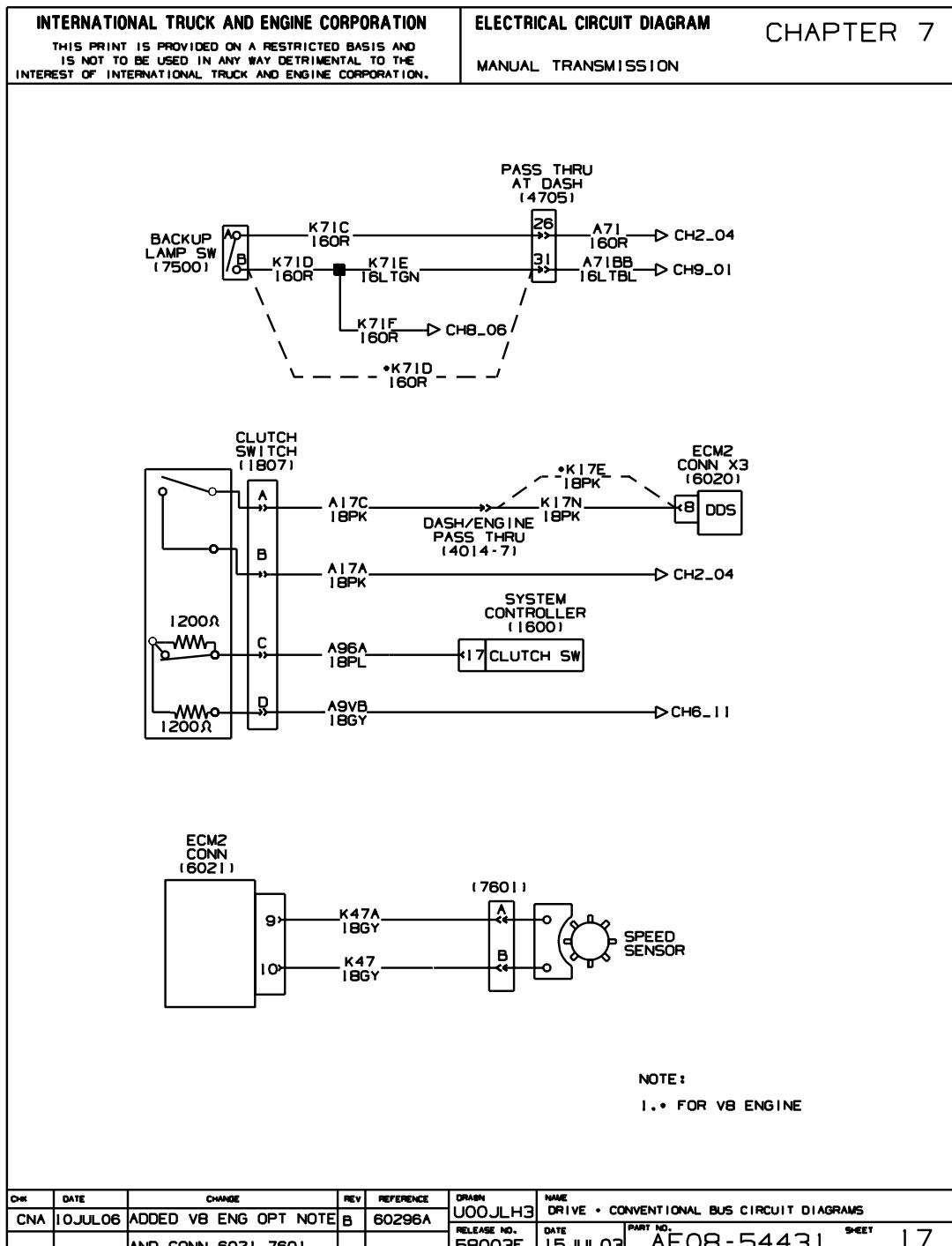


Figure 69 Brake Monitor

## 7.17. MANUAL TRANSMISSION, P. 17



## 7.18. TWO SPEED AXLE, P. 18

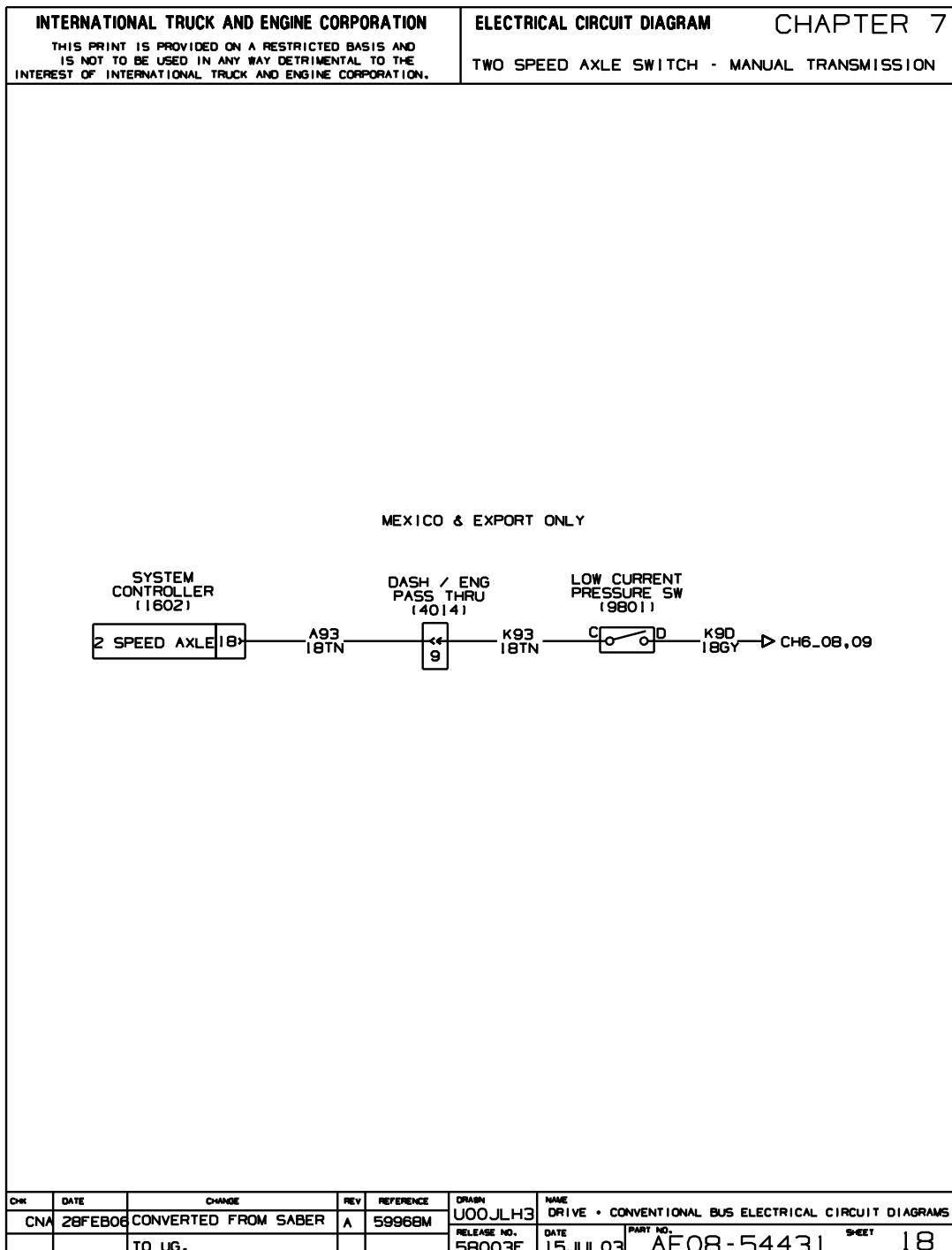


Figure 71 Two Speed Axle

## 7.19. CHASSIS ACCESSORIES W/ABS6 — BENDIX AIR — ECU PIN OUT, P. 19

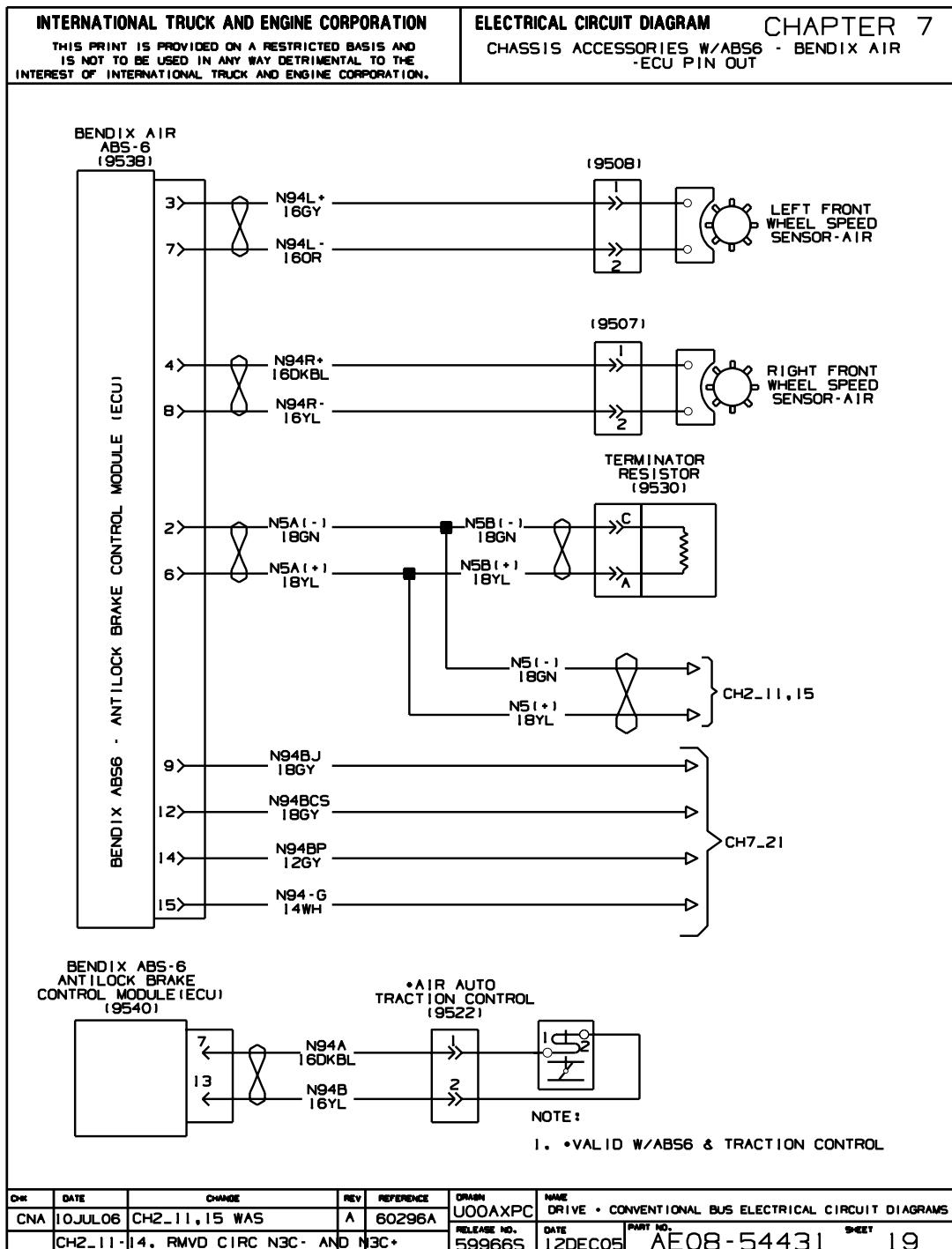


Figure 72 Chassis Accessories W/ABS6 — Bendix Air — ECU Pin Out

## 7.20. CHASSIS ACCESSORIES W/ABS6 — BENDIX AIR — ECU PIN OUT, P. 20

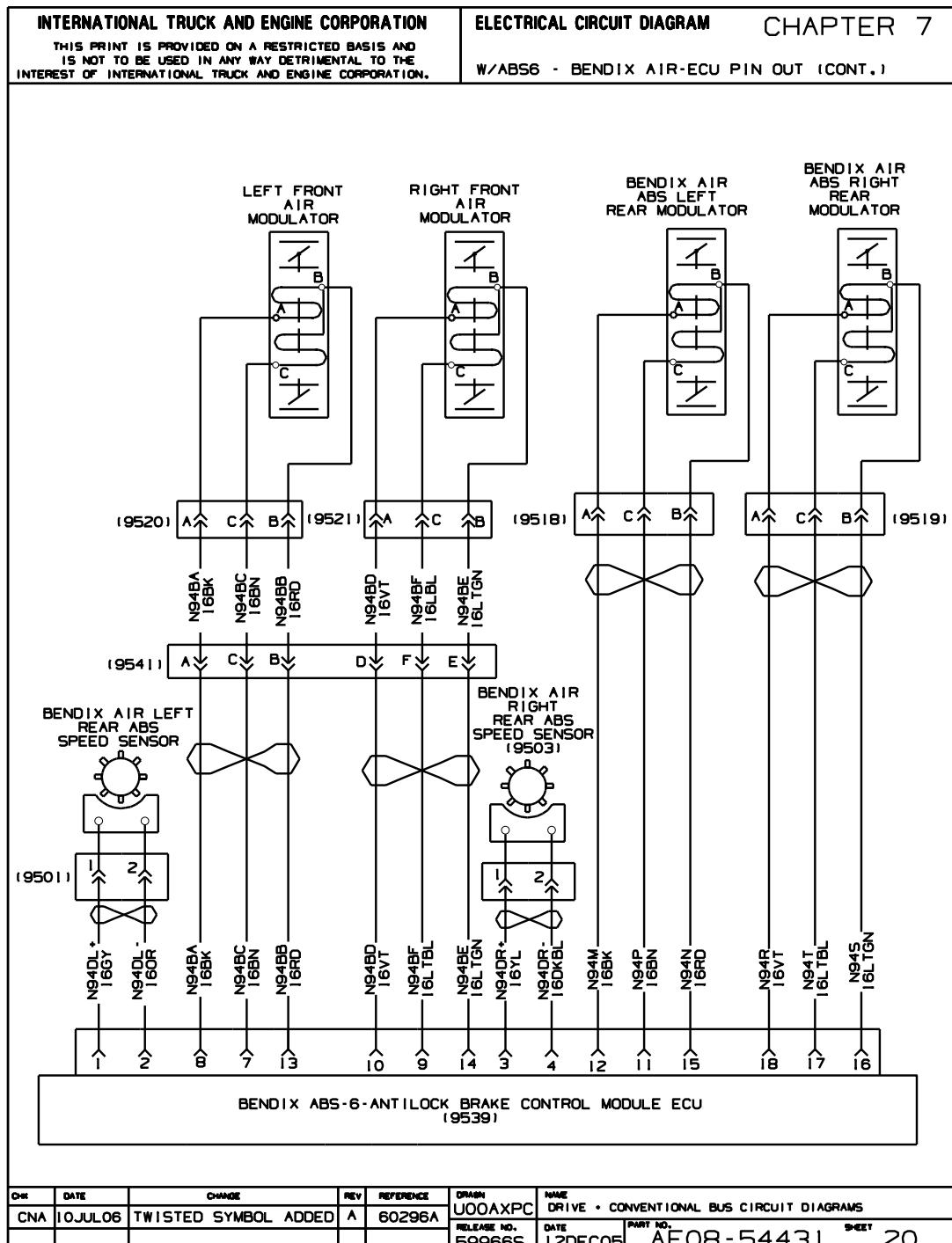


Figure 73 Chassis Accessories W/ABS6 — Bendix Air — ECU Pin Out (Cont.)

## 7.21. CHASSIS ACCESSORIES W/ABS6 — BENDIX AIR ECM POWER, P. 21

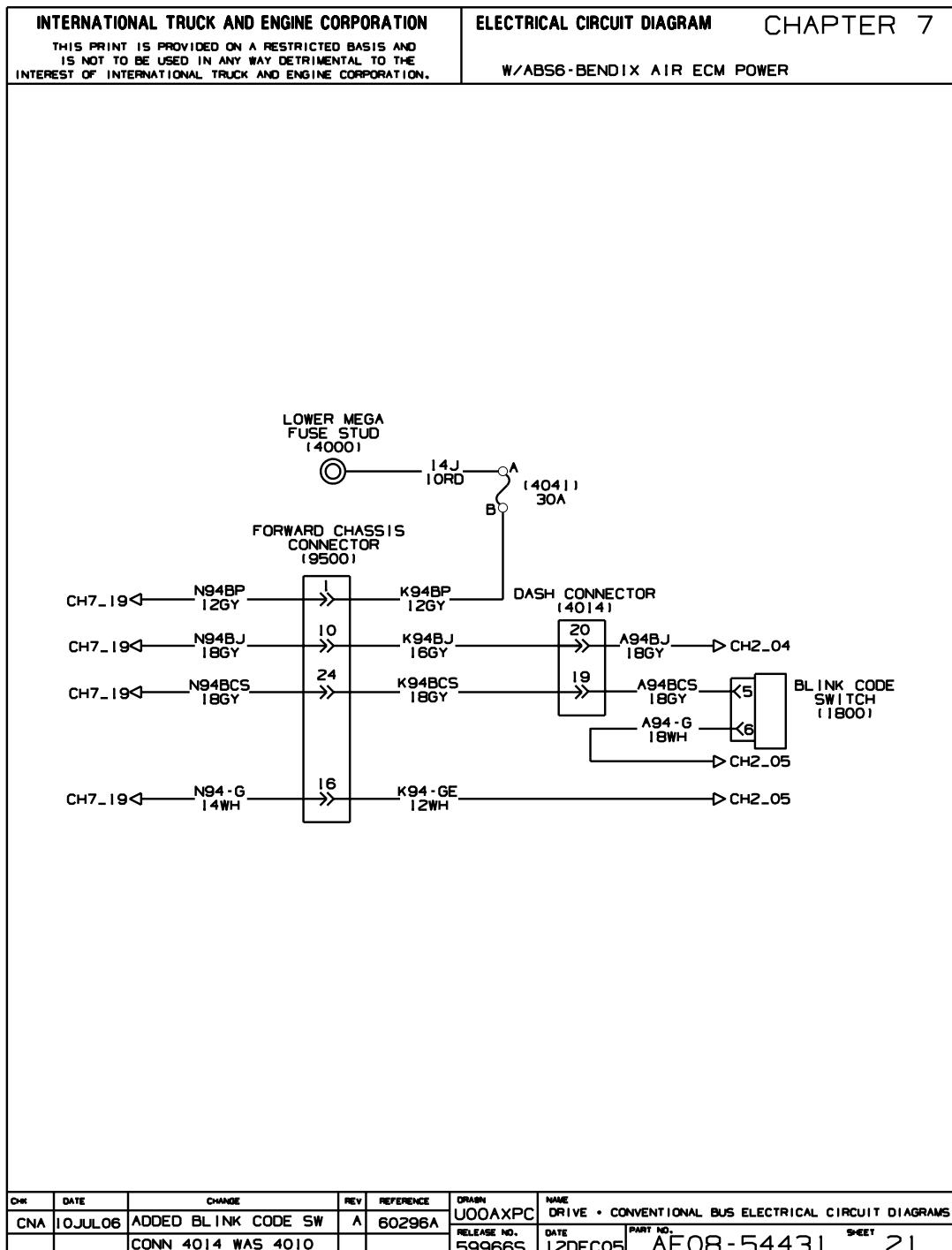


Figure 74 Chassis Accessories W/ABS6 — Bendix Air ECM Power

## 7.22. ALLISON WTEC GEN IV TRANSMISSION, P. 22

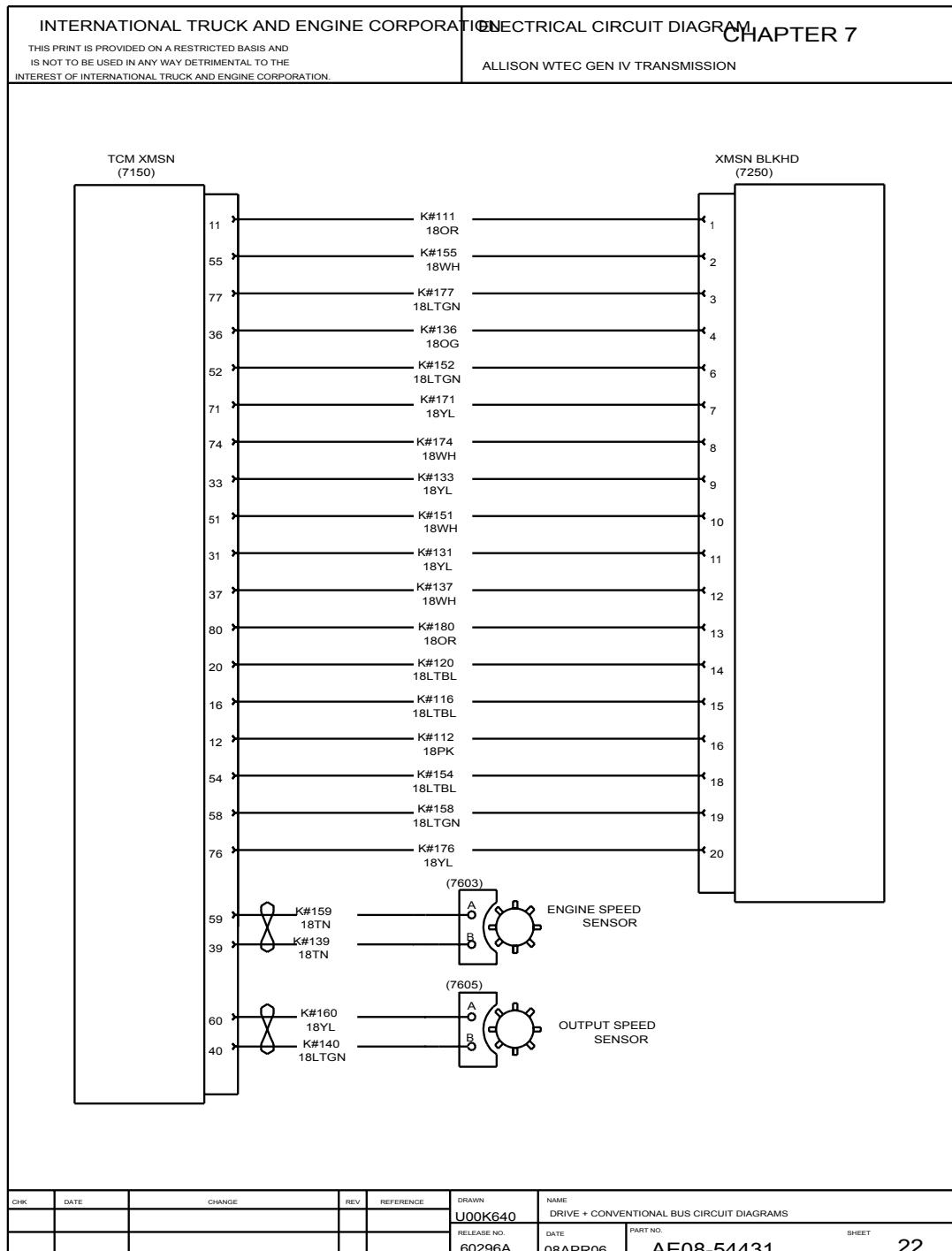


Figure 75 Allison WTEC Gen IV Transmission

## 7.23. WTEC AND LCT GEN IV TRANSMISSION, P. 23

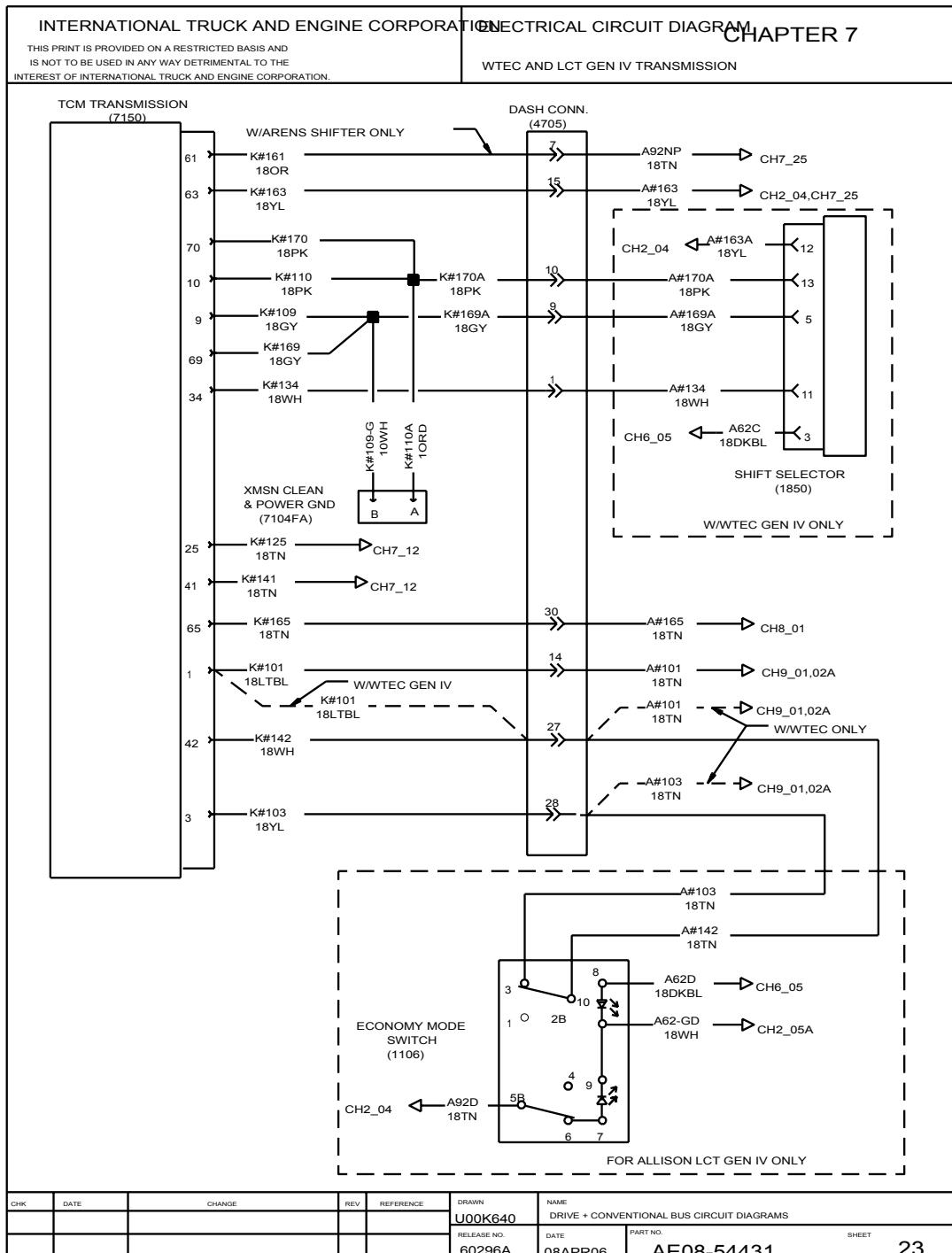
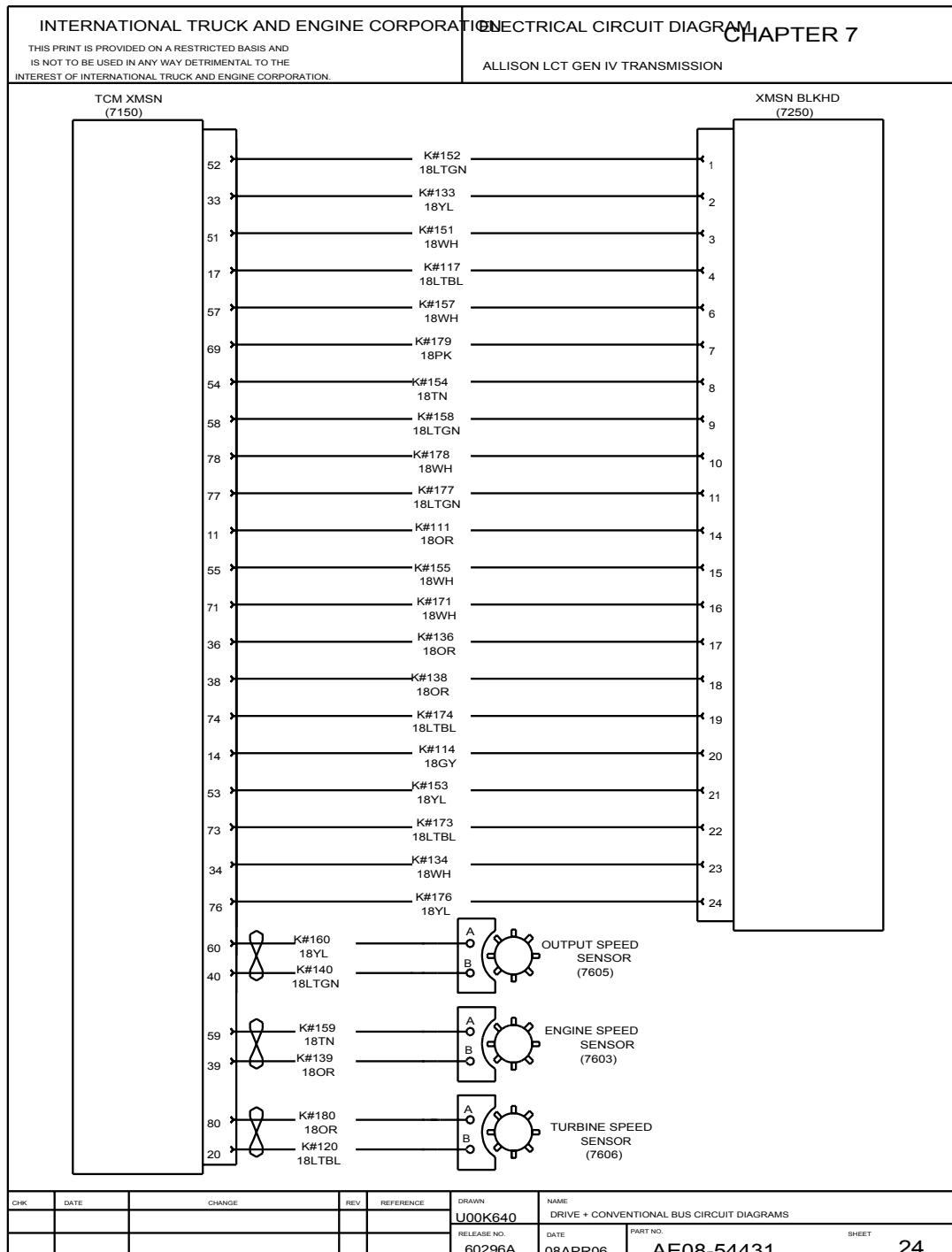


Figure 76 WTEC and LCT Gen IV Transmission

## 7.24. ALLISON LCT GEN IV TRANSMISSION, P. 24



**Figure 77 Allison LCT Gen IV Transmission**

## 7.25. PUSH BUTTON SHIFT SELECTOR (ARENS) W/LCT, P. 25

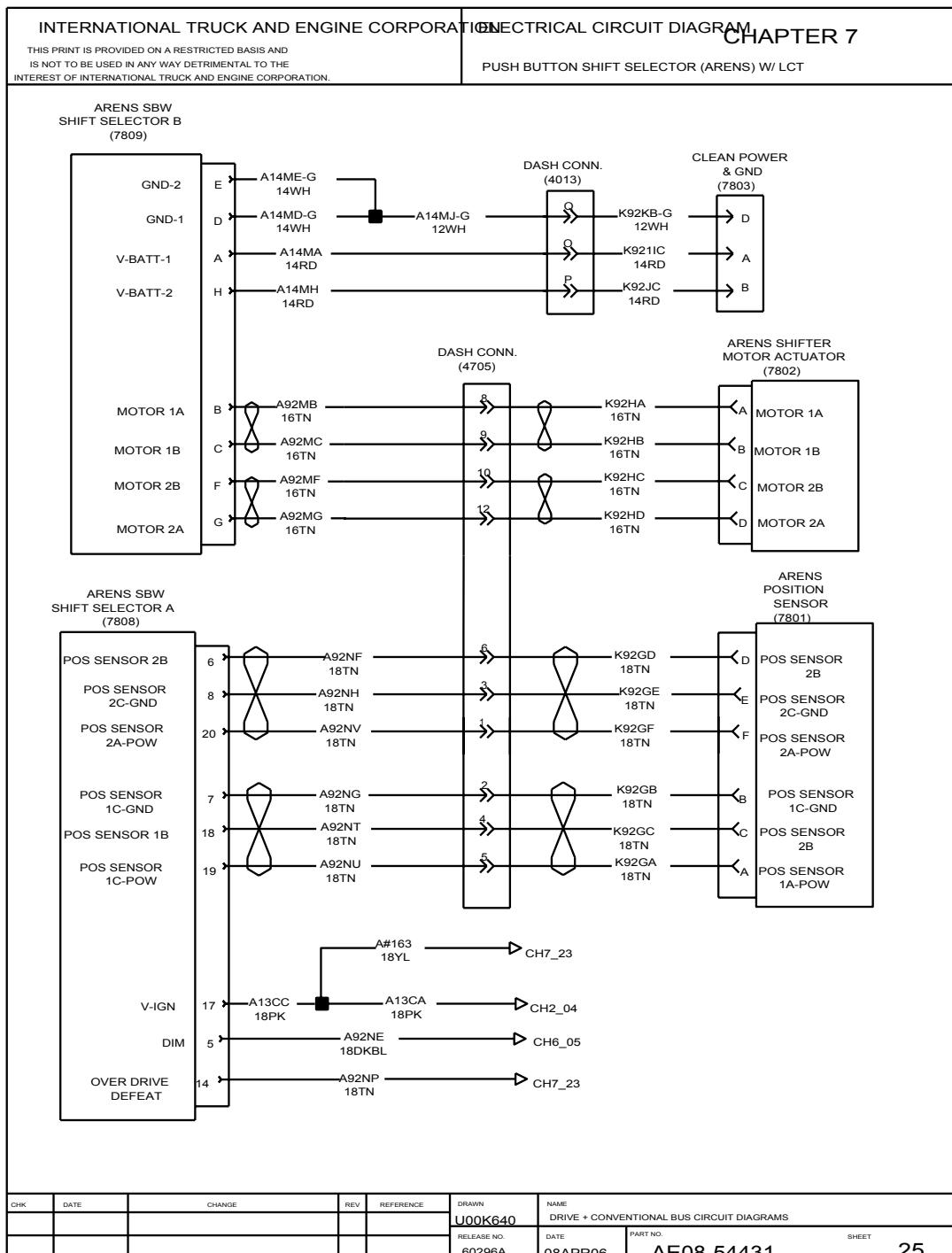


Figure 78 Push Button Shift Selector (ARENS) W/LCT

## 7.26. PUSH BUTTON SHIFT SELECTOR (ARENS) W/LCT, P. 26

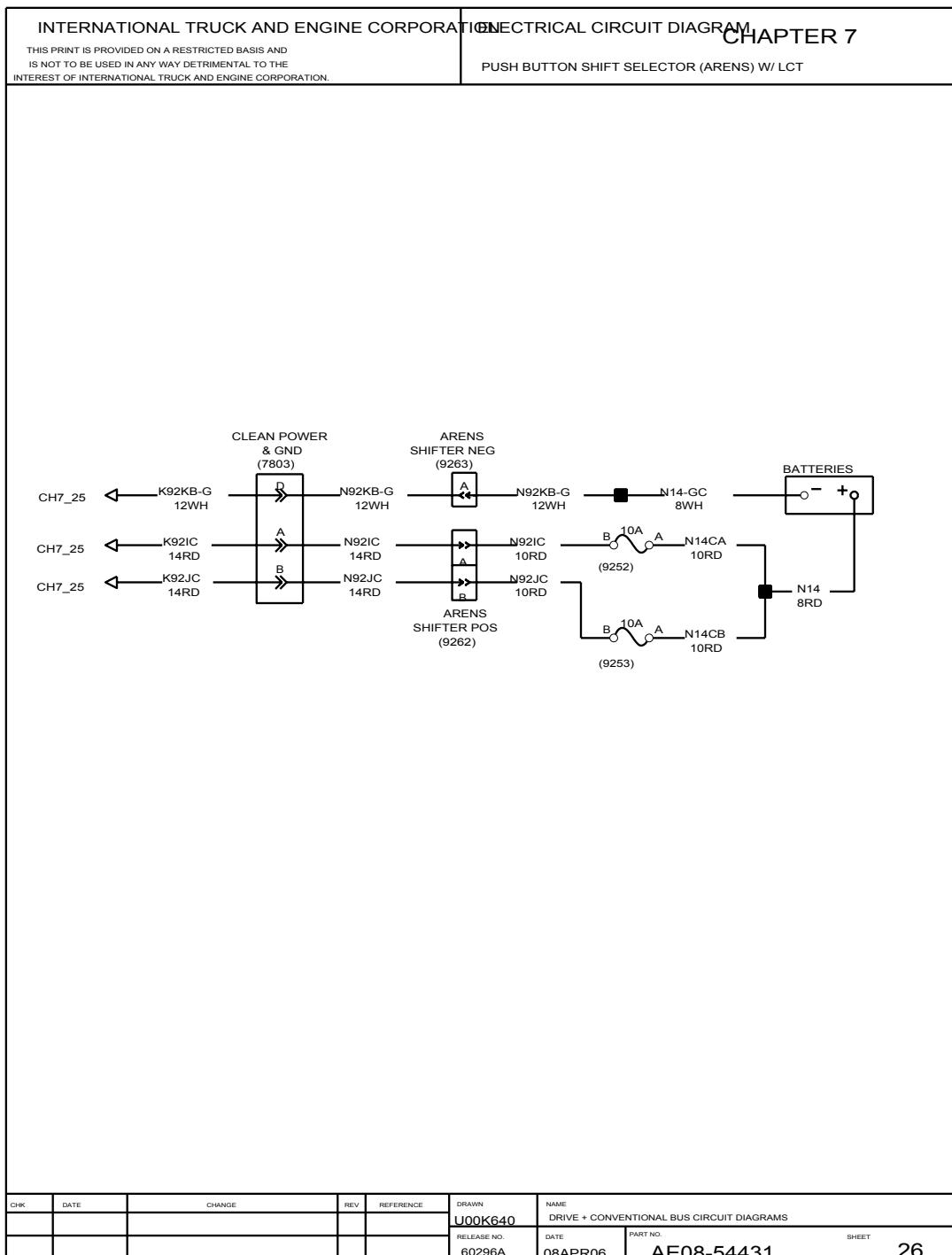
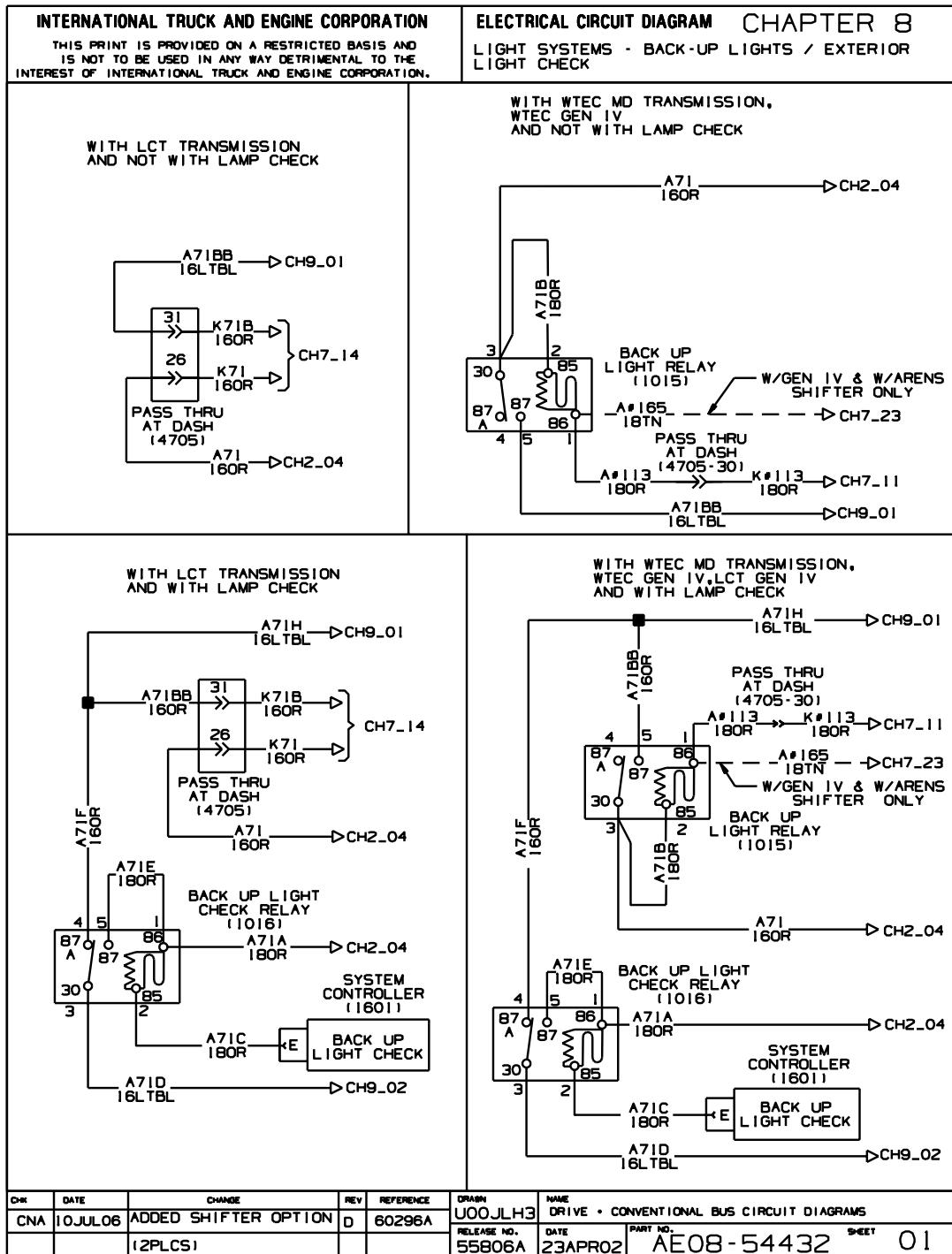


Figure 79 Push Button Shift Selector (ARENS) W/LCT

## 8. LIGHT SYSTEMS (CHAPTER 8)

#### **8.1. BACK-UP LIGHTS / EXTERIOR LIGHT CHECK, P. 1**



## **Figure 80 Back-Up Lights / Exterior Light Check**

## 8.2. FOG LIGHTS, P. 2

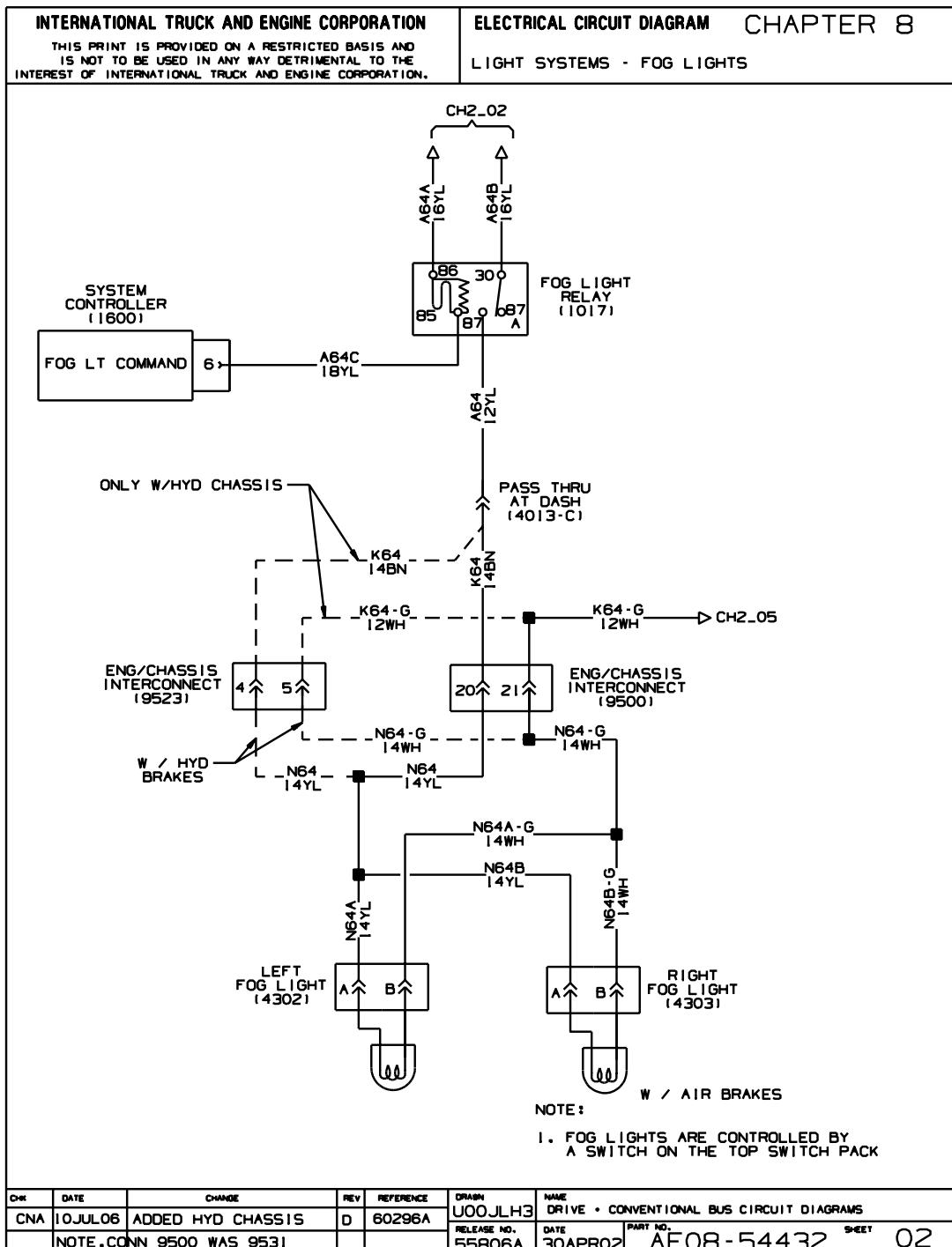


Figure 81 Fog Lights

### 8.3. HIGH BEAM, FLASH TO PASS, TURN SIGNAL, AND AIR BRAKE STOP SWITCHES, P. 3

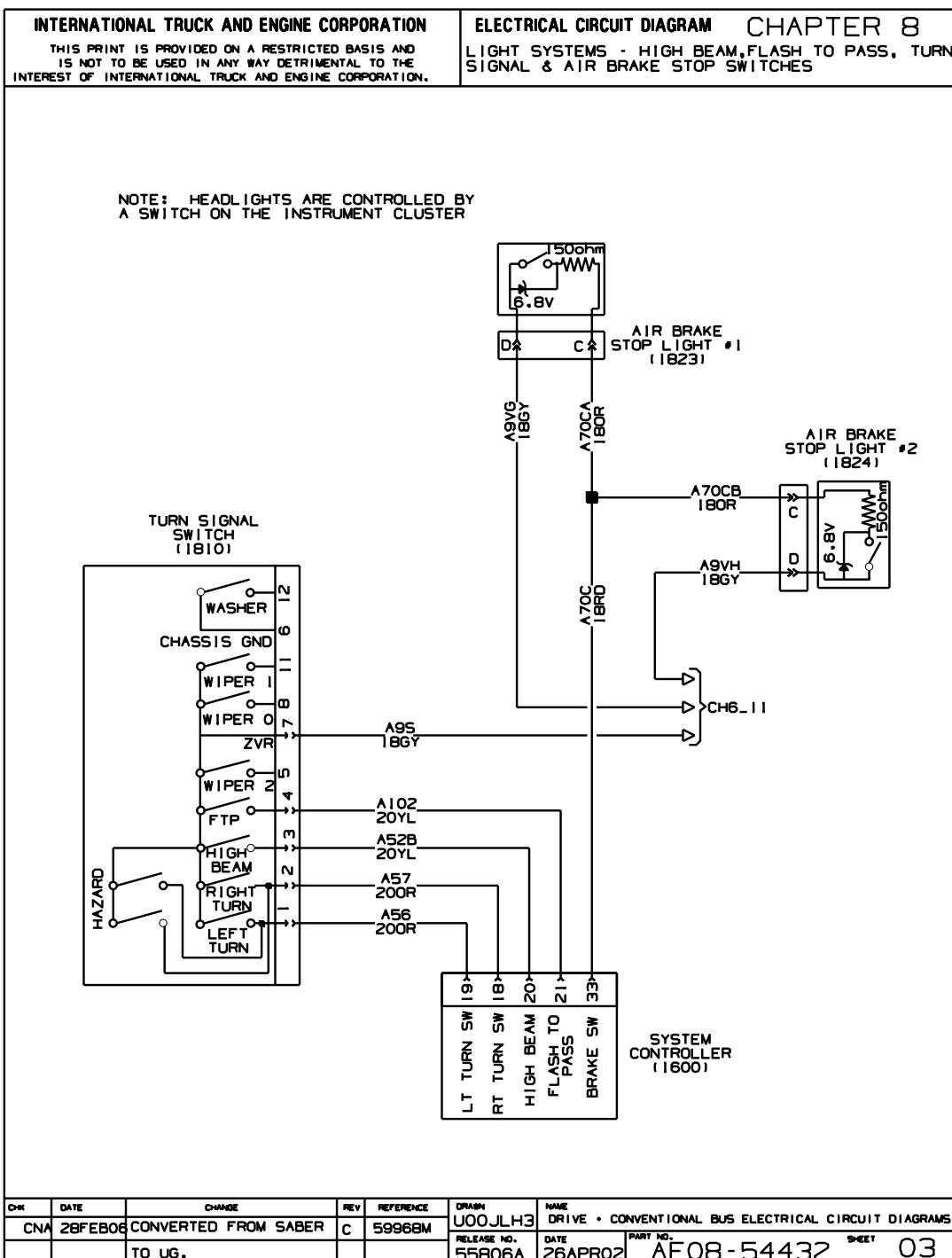


Figure 82 High Beam, Flash to Pass, Turn Signal, and Air Brake Stop Switches

## 8.4. HEADLIGHTS, MARKER, PARK, TURN, AND STOP LIGHT W/CRS, N/FENDER MOUNT LIGHTS, P. 4

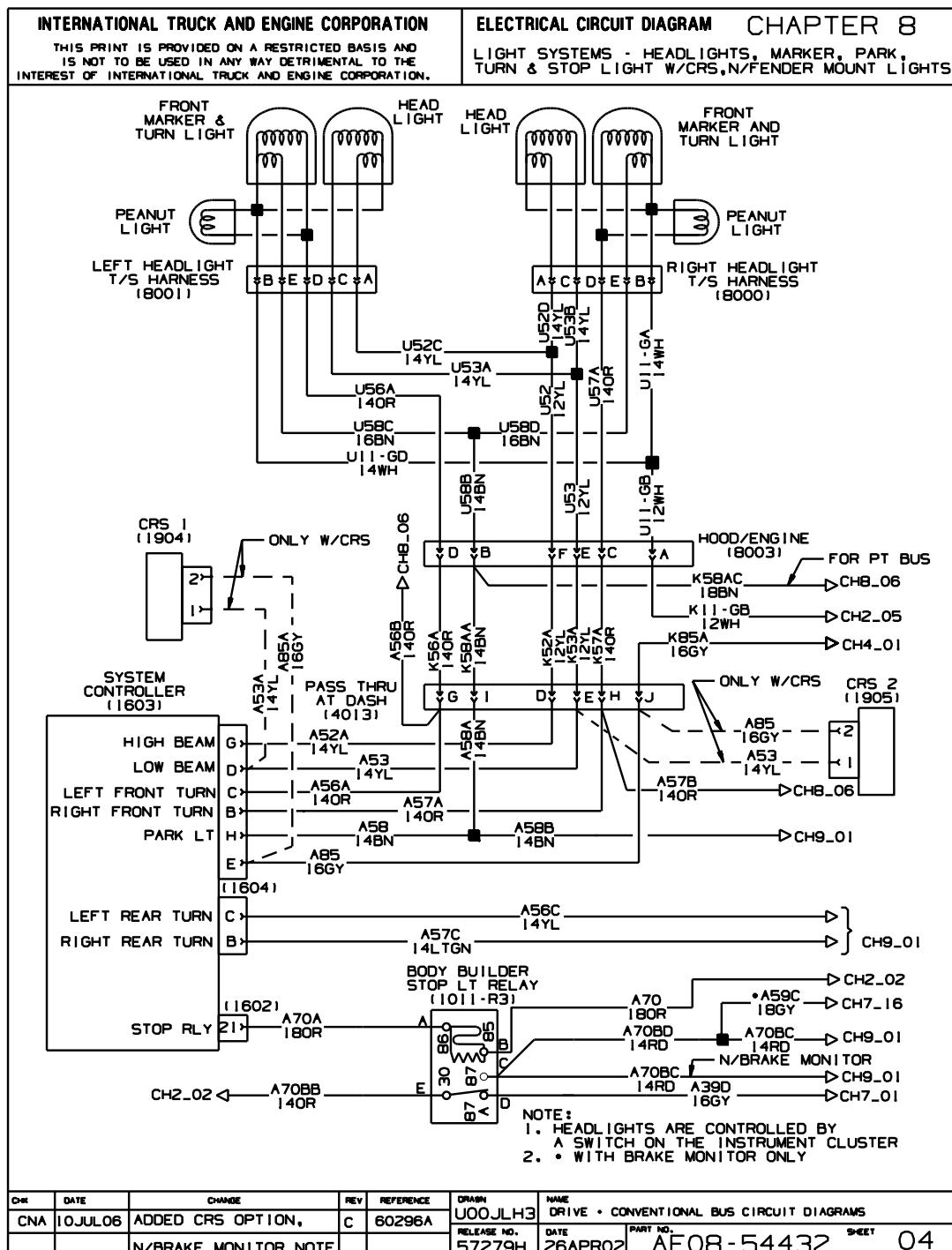


Figure 83 Headlights, Marker, Park, Turn, and Stop Light W/CRS, N/Fender Mount Lights

## 8.5. HEADLIGHTS, MARKER, PARK, TURN, AND STOP LIGHT W/CRS, W/FENDER MOUNT LIGHTS, P. 5

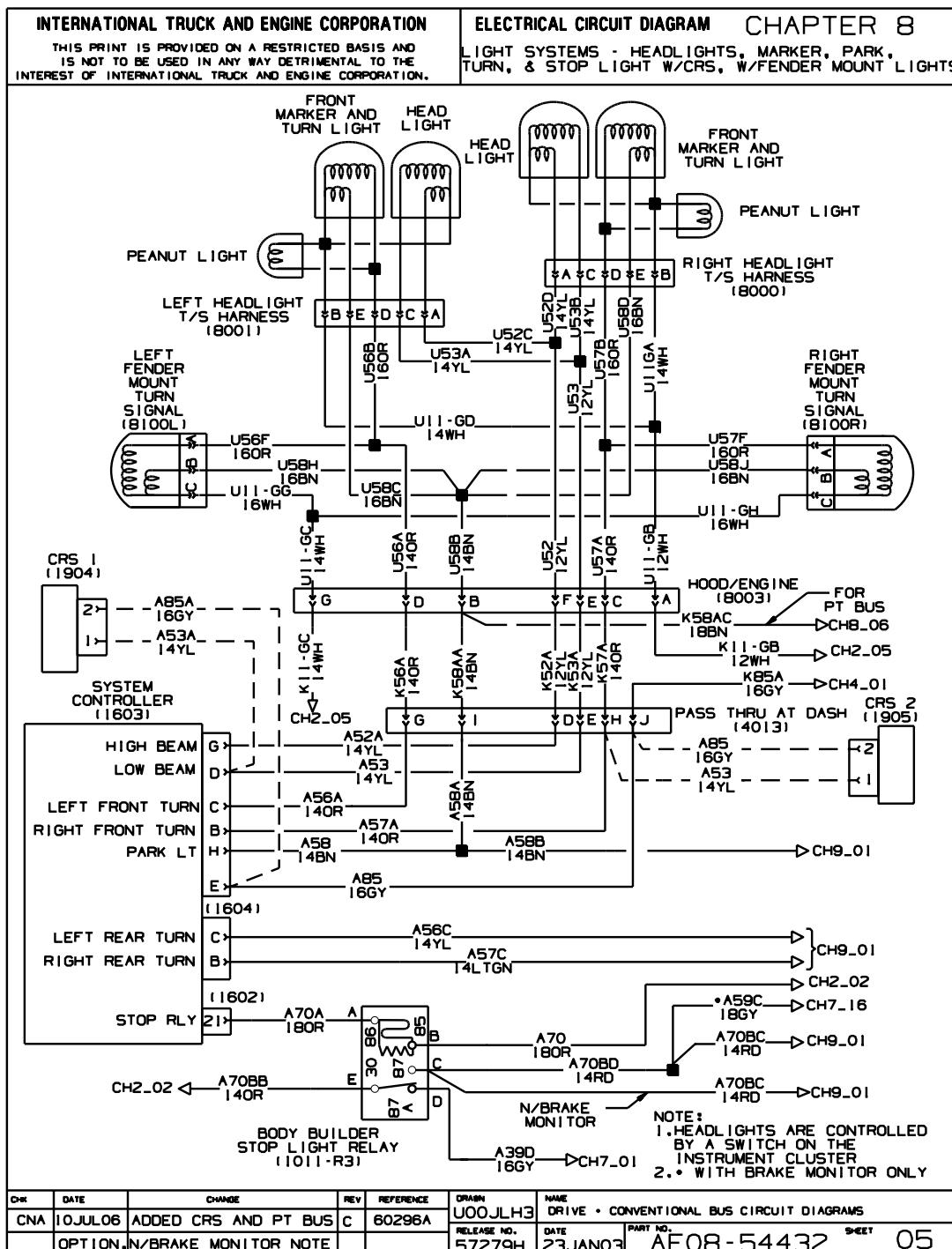
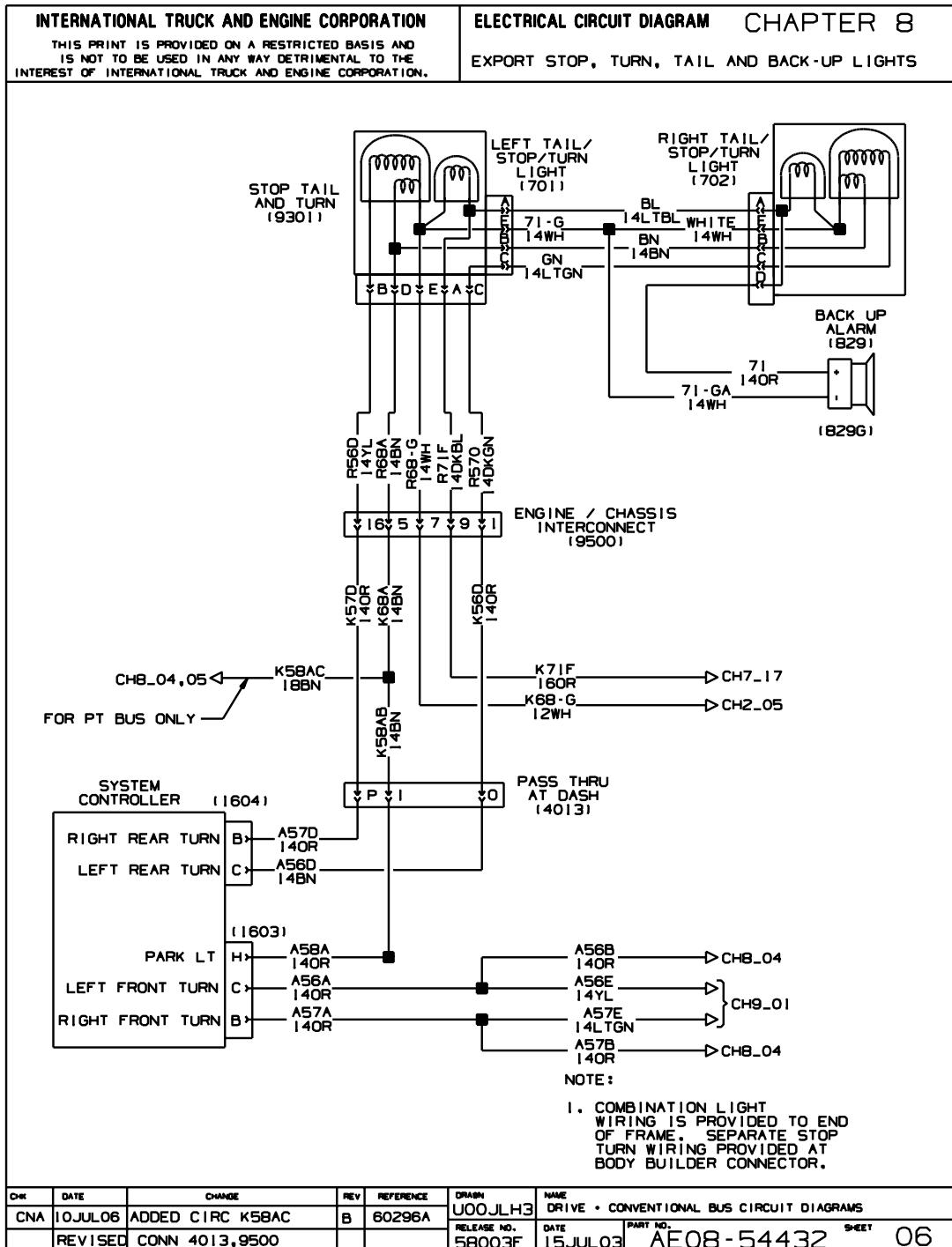


Figure 84 Headlights, Marker, Park, Turn, and Stop Light W/CRS, W/Fender Mount Lights

## **8.6. EXPORT STOP, TURN, TAIL AND BACK-UP LIGHTS, P. 6**



**Figure 85 Export Stop, Turn, Tail, and Back-Up Lights**

## 9. BODY BUILDER CONNECTION DATA (CHAPTER 9)

### 9.1. BODY BUILDER CONNECTION DATA FOR CE MODELS, P. 1

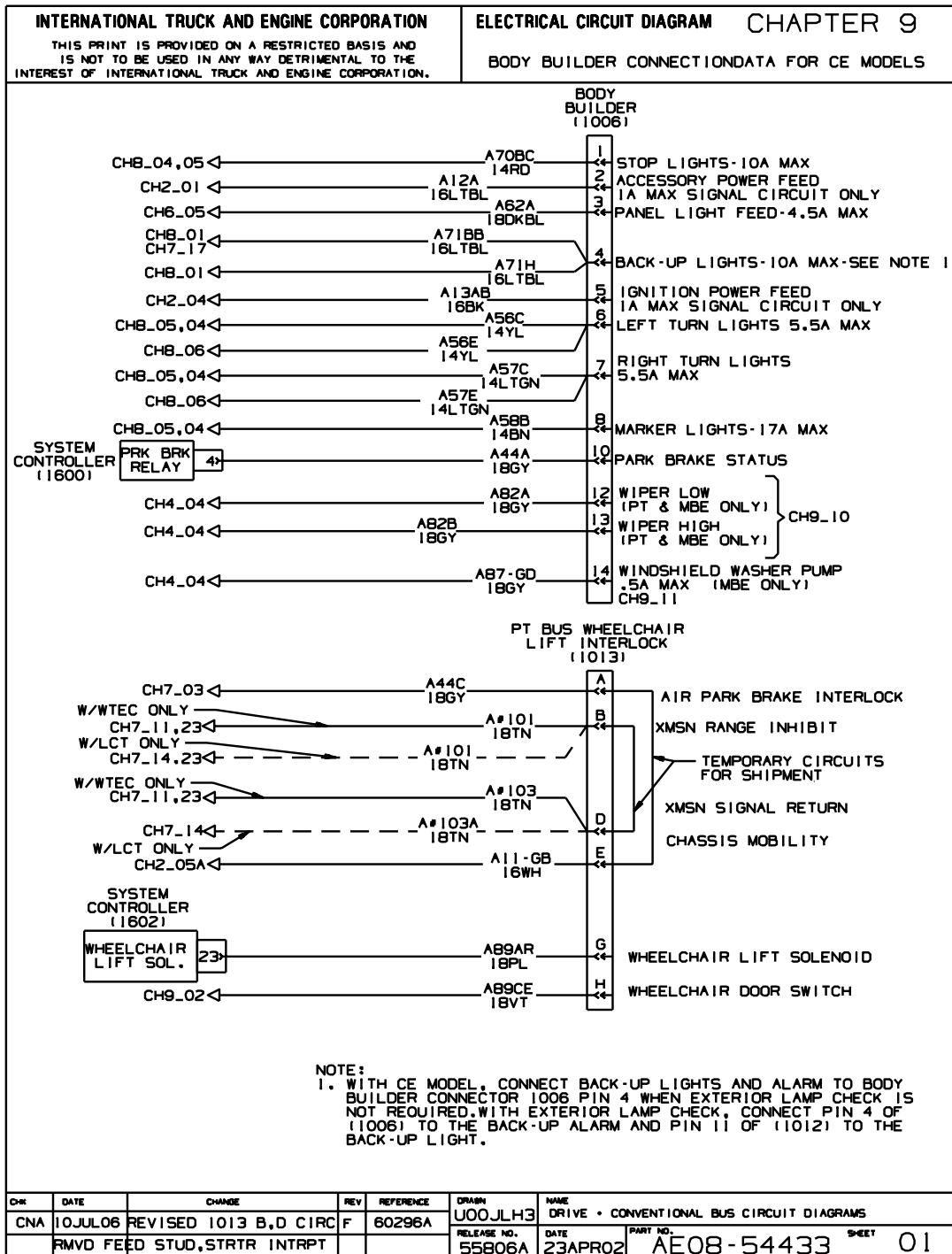


Figure 86 Body Builder Connection Data for CE Models

## 9.2. BODY BUILDER ELECTRICAL CONNECTION DATA FOR CE MODELS, P. 2

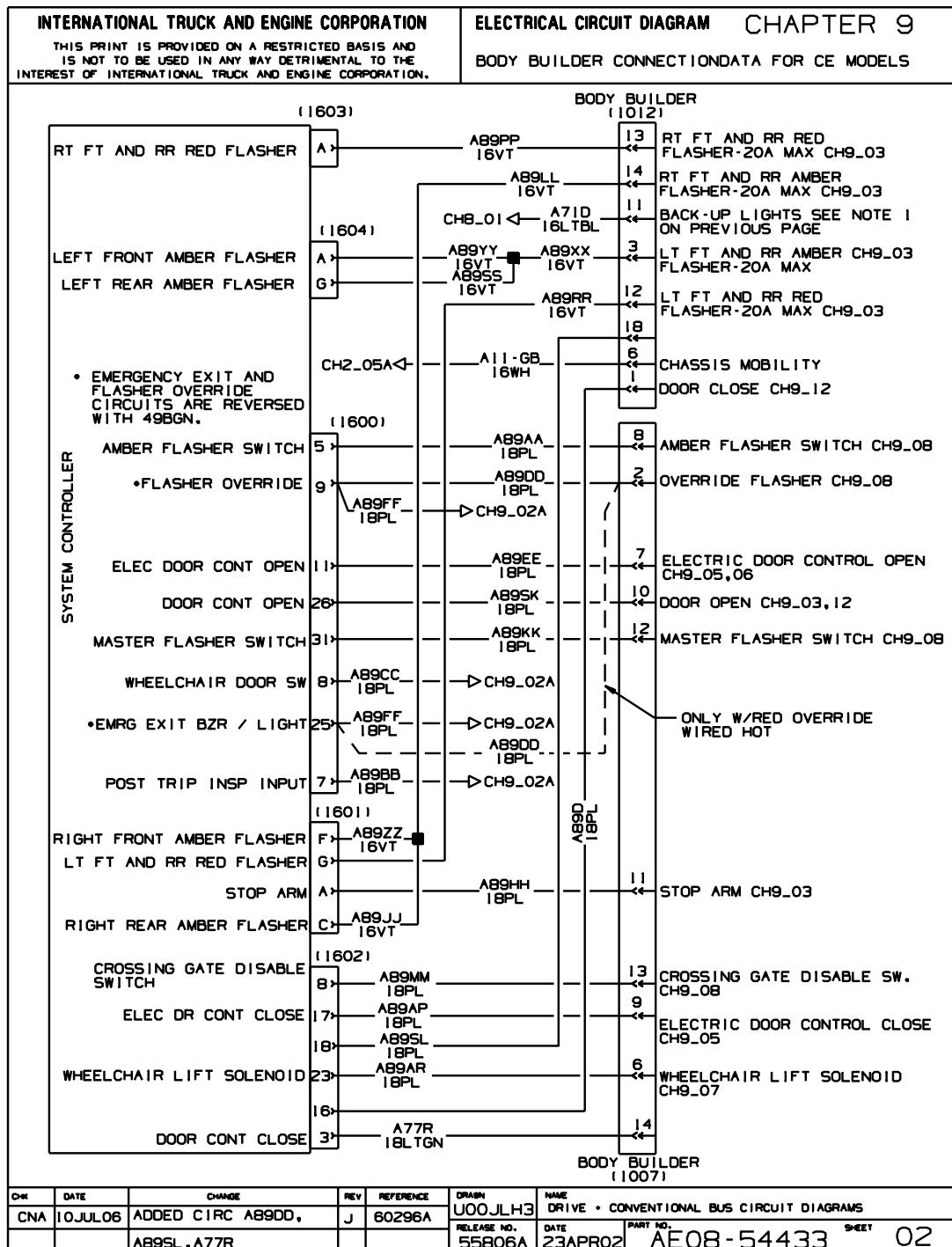


Figure 87 Body Builder Electrical Connection Data for CE Models

### 9.3. BODY BUILDER ELECTRICAL CONNECTION DATA FOR CE MODELS, P. 2A

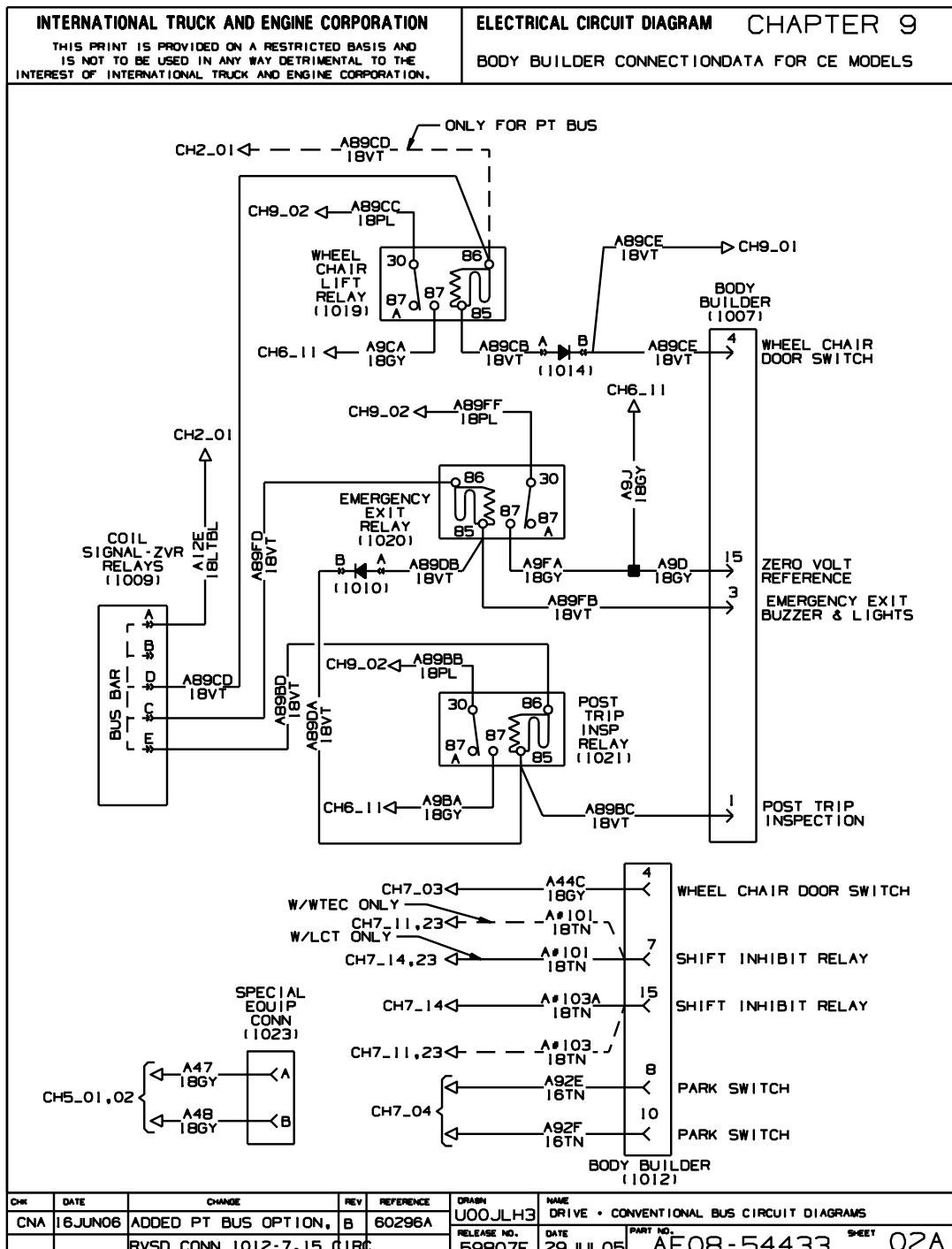


Figure 88 Body Builder Electrical Connection Data for CE Models

#### 9.4. STOP ARM AND RED / AMBER LIGHTS, P. 3

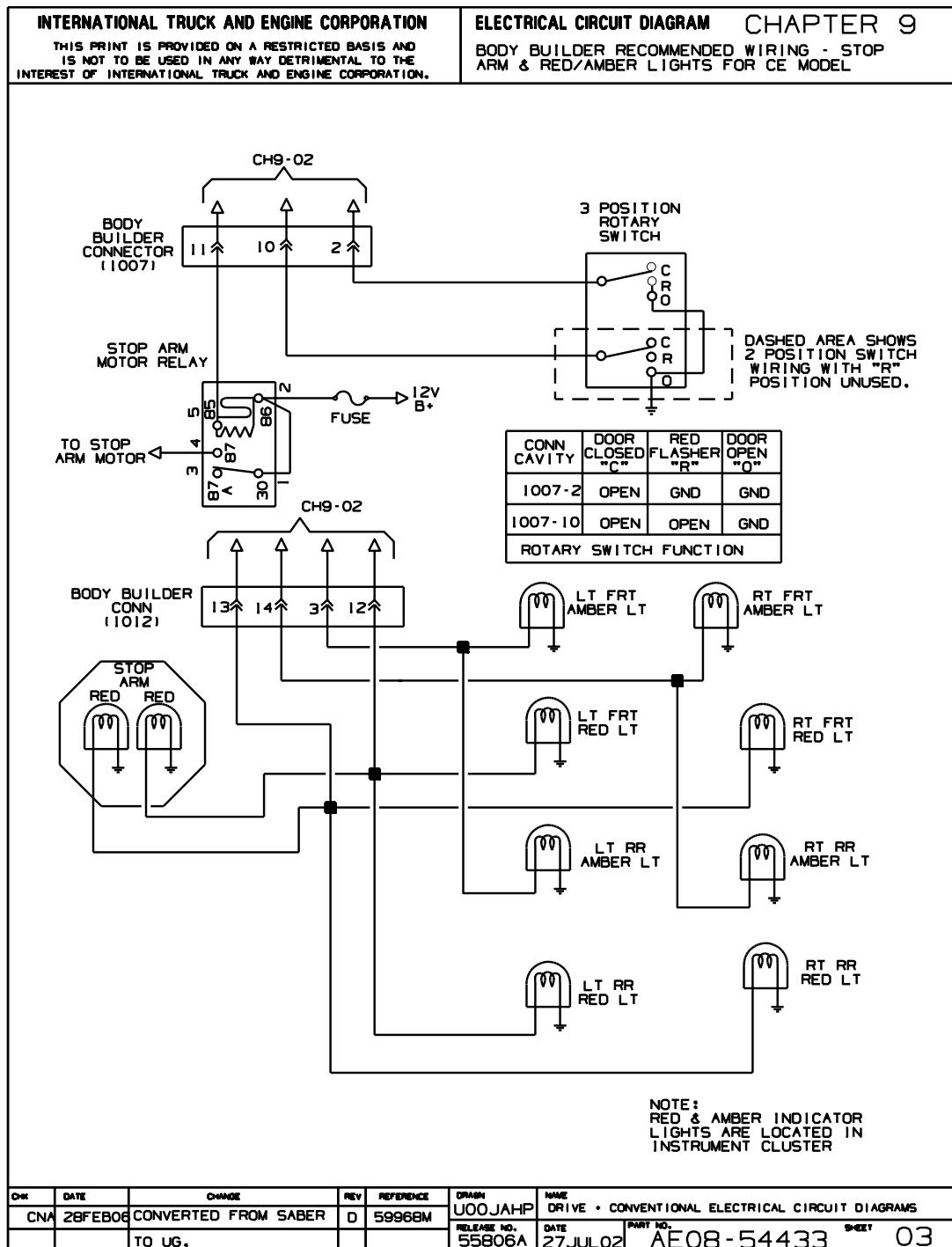


Figure 89 Stop Arm and Red / Amber Lights

## 9.5. EMERGENCY EXIT BUZZER AND POST TRIP INSPECTION, P. 4

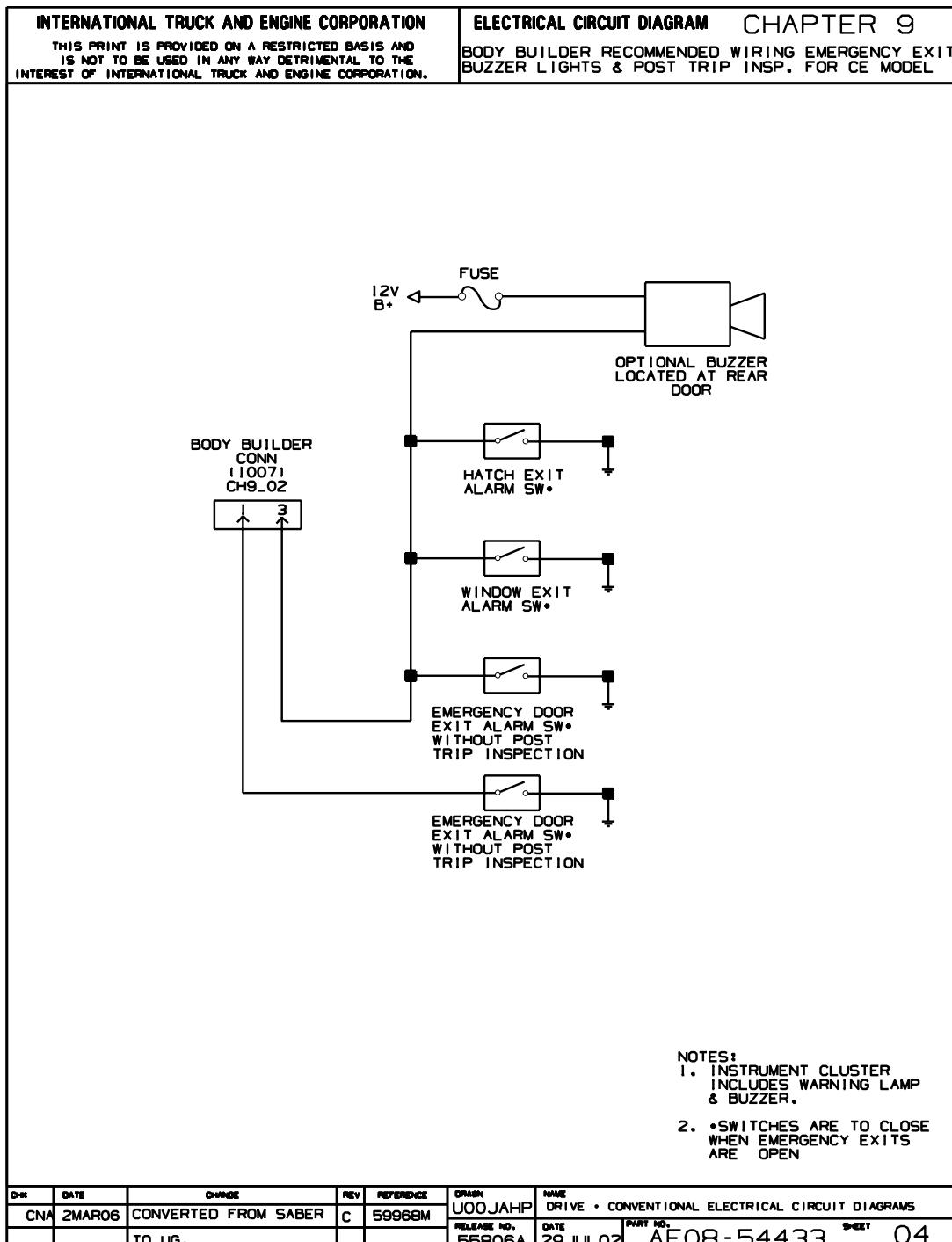
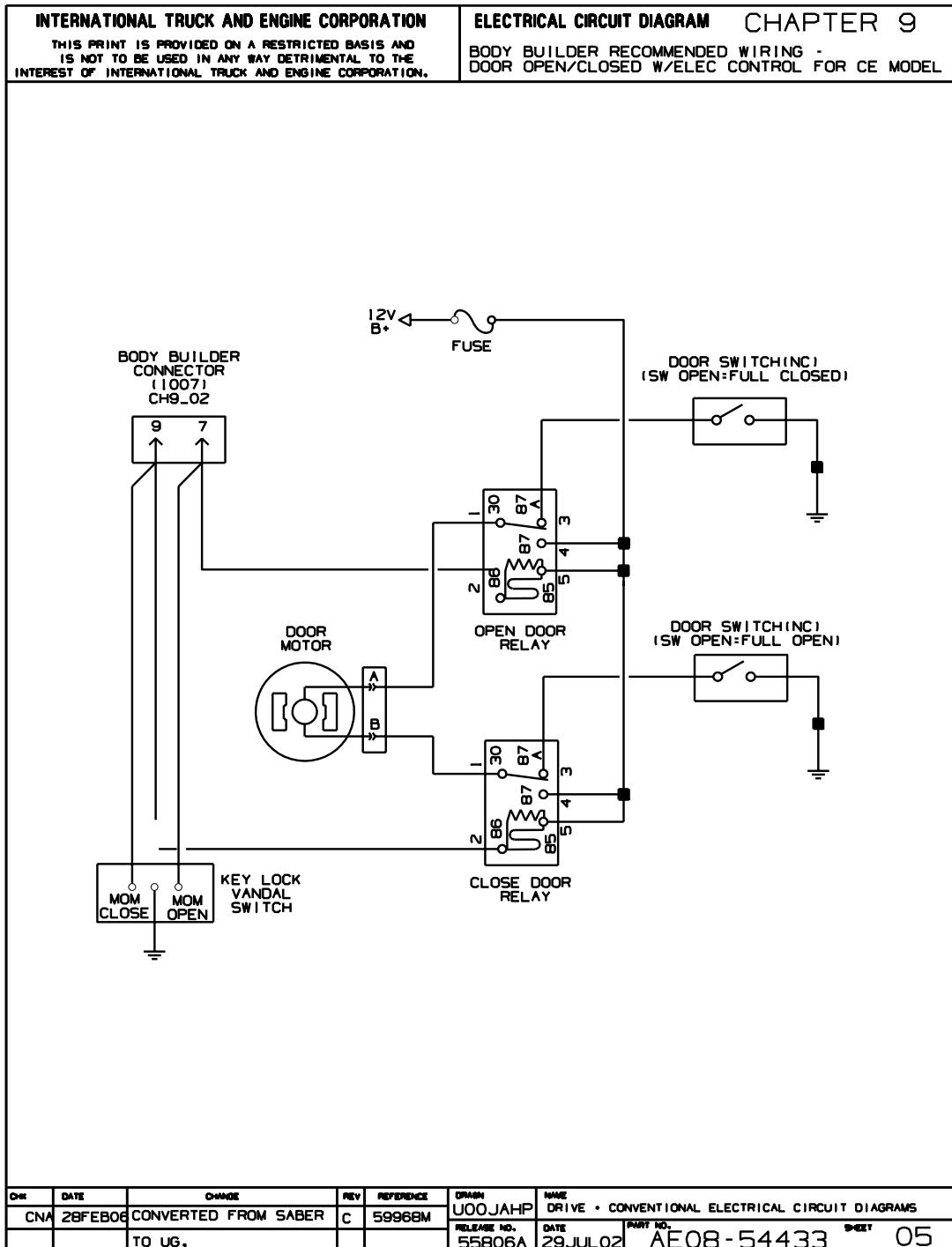


Figure 90 Emergency Exit Buzzer and Post Trip Inspection

## **9.6. DOOR OPEN / CLOSE WITH ELEC. CONTROL, P. 5**



**Figure 91 Door Open / Close with Elec. Control**

## 9.7. DOOR OPEN / CLOSE WITH AIR CONTROL FOR CE MODEL, P. 6

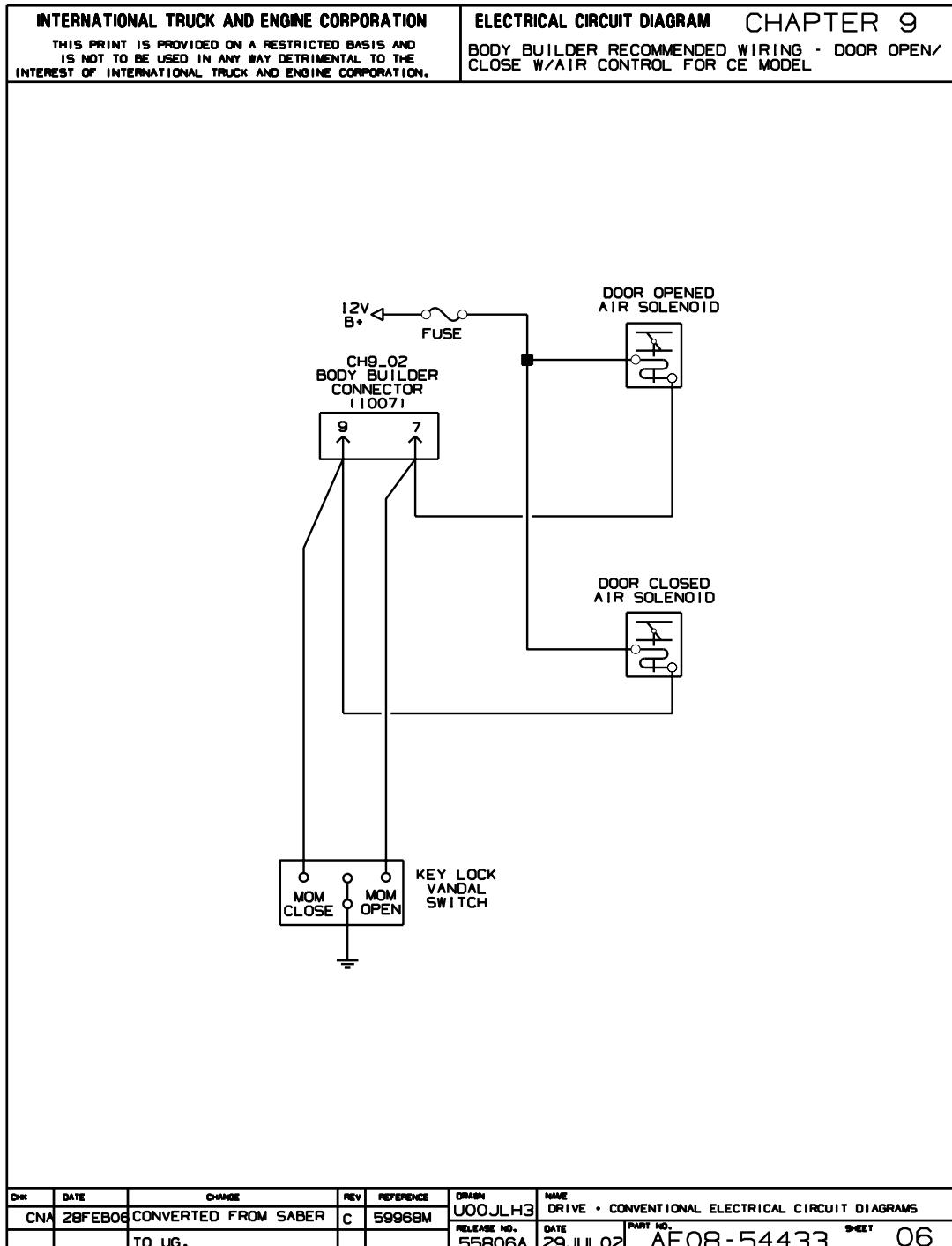


Figure 92 Door Open / Close with Air Control for CE Model

## 9.8. WHEELCHAIR LIFT INTERLOCK, P. 7

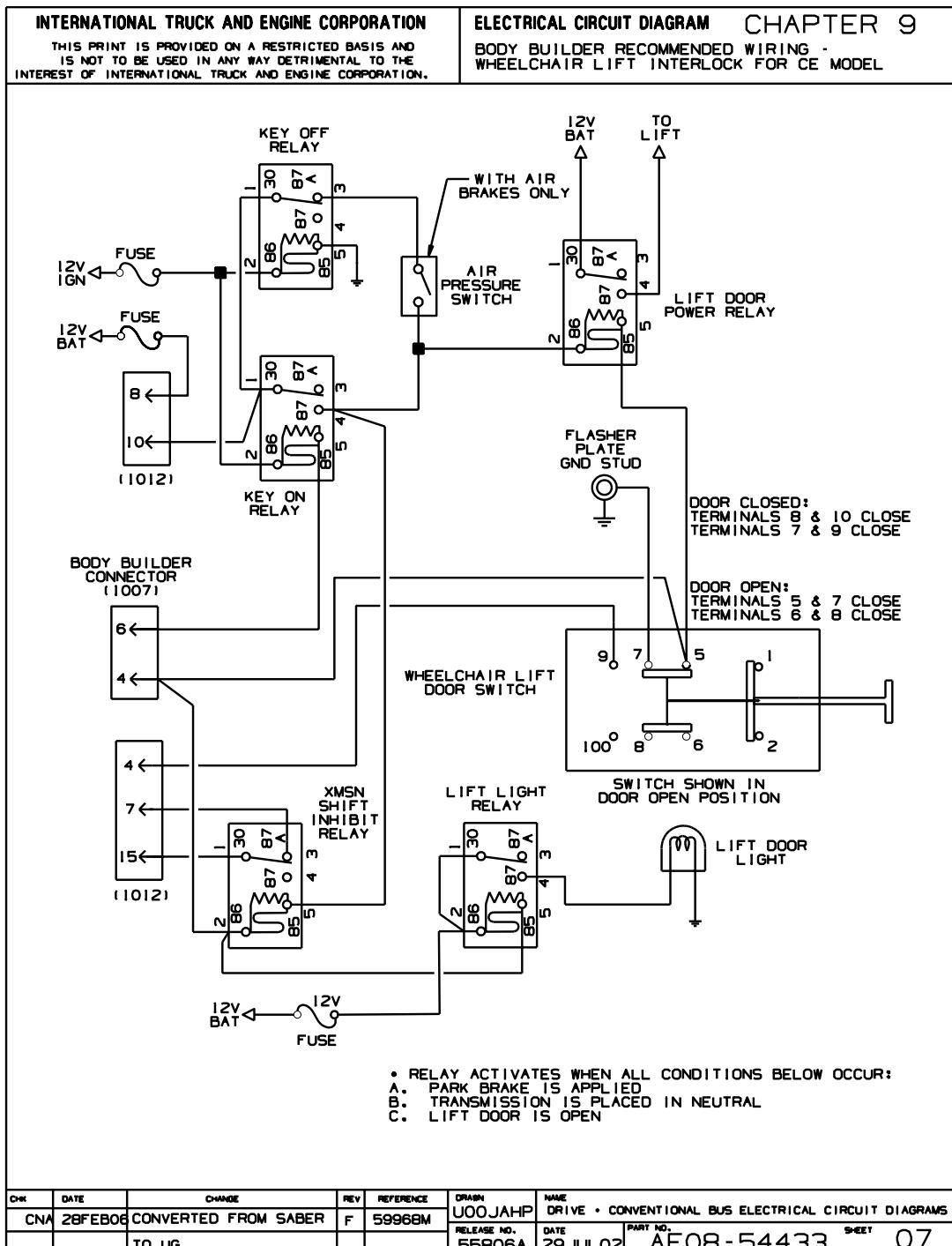


Figure 93 Wheelchair Lift Interlock

## 9.9. FLASHER SWITCHES FOR CE MODEL, P. 8

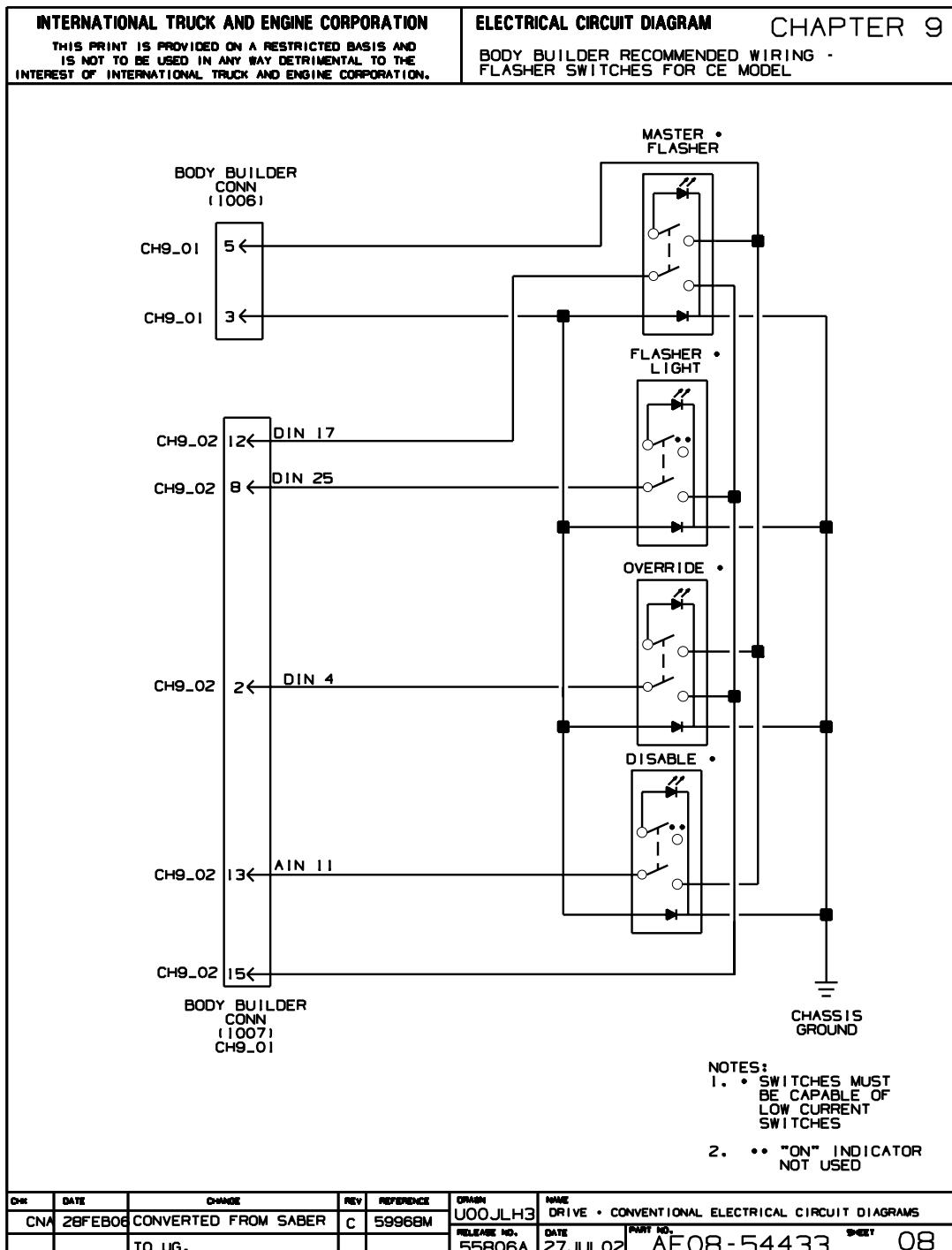
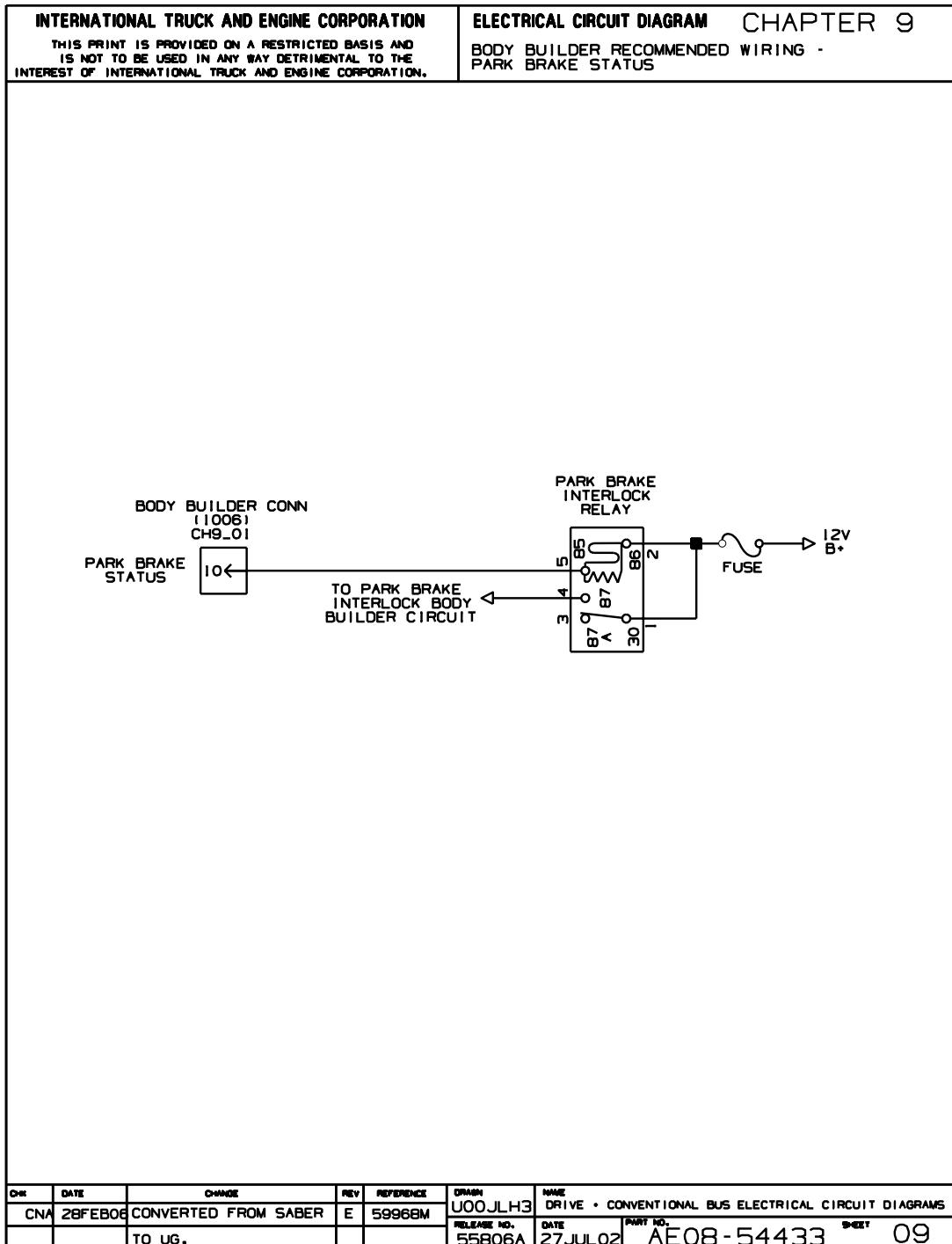


Figure 94 Flasher Switches for CE Model

## **9.10. PARK BRAKE STATUS, P. 9**



**Figure 95 Park Brake Status**

## 9.11. DUAL WIPER MOTORS FOR PT / MEXICO AND EXPORT MODELS, P. 10

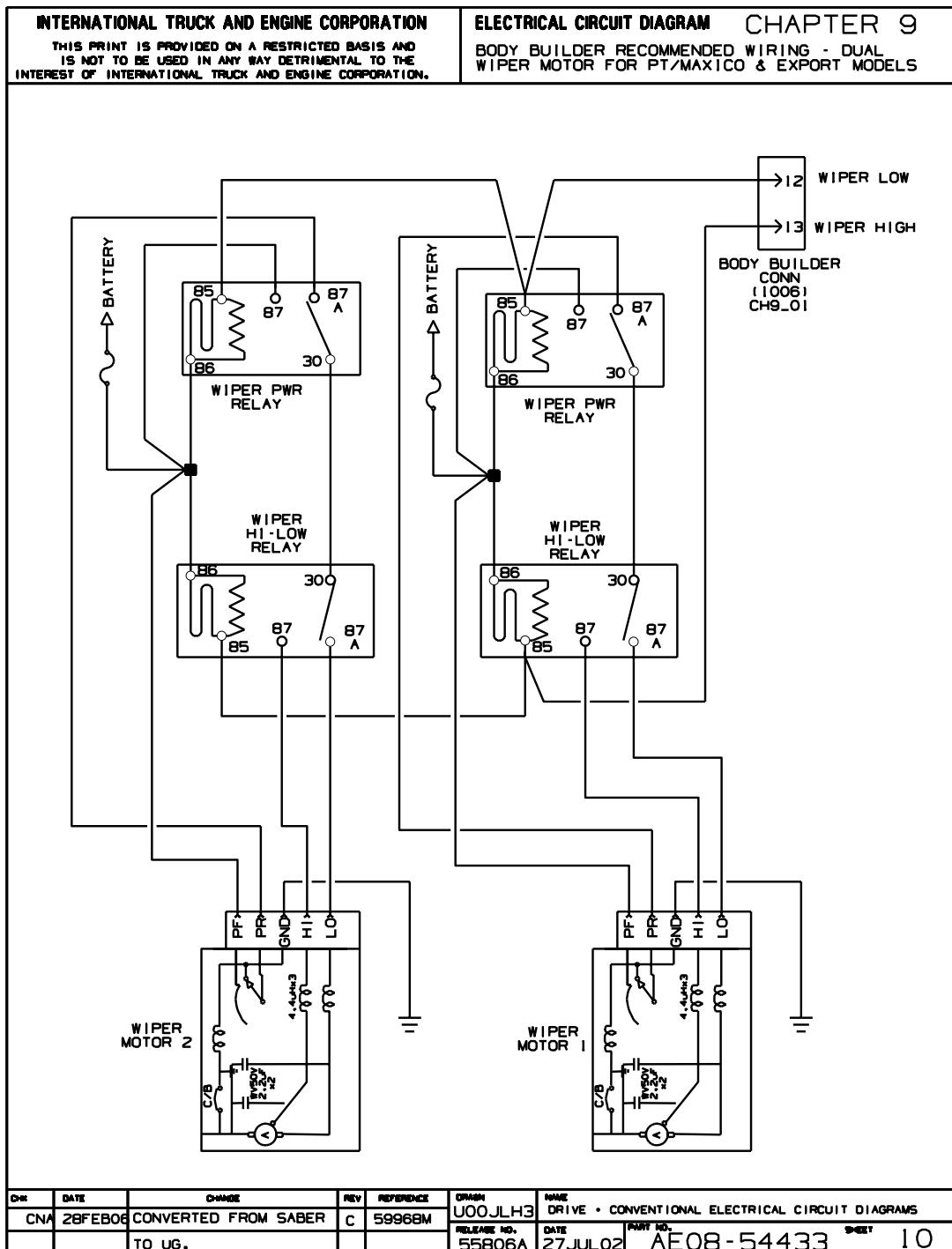


Figure 96 Dual Wiper Motors for PT / Mexico and Export Models

## 9.12. MEXICO AND EXPORT BUS WINDSHIELD WASHER PUMP, P. 11

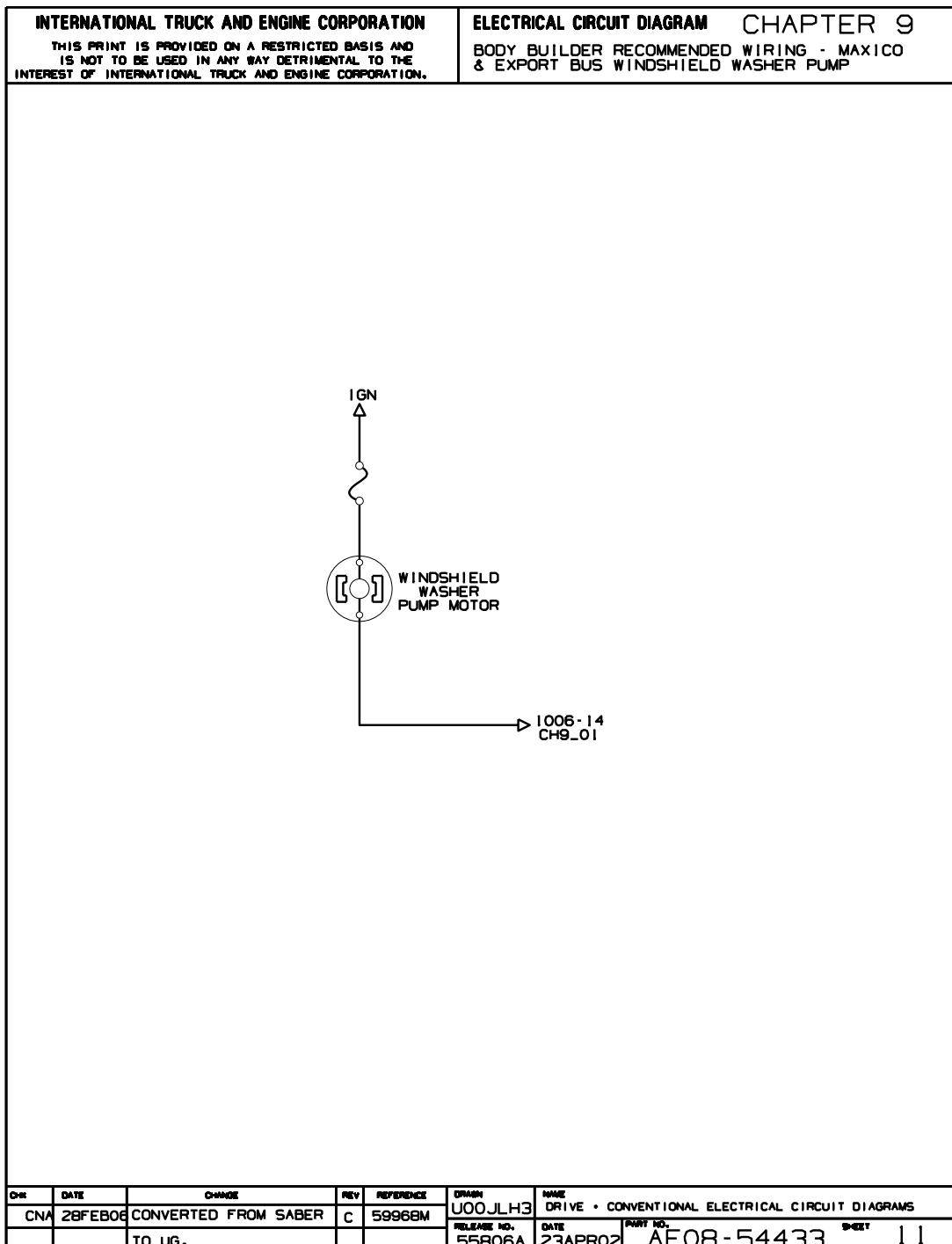


Figure 97 Mexico and Export Bus Windshield Washer Pump

### 9.13. CE BUS REDUNDANT DOOR CONTROLS, P. 12

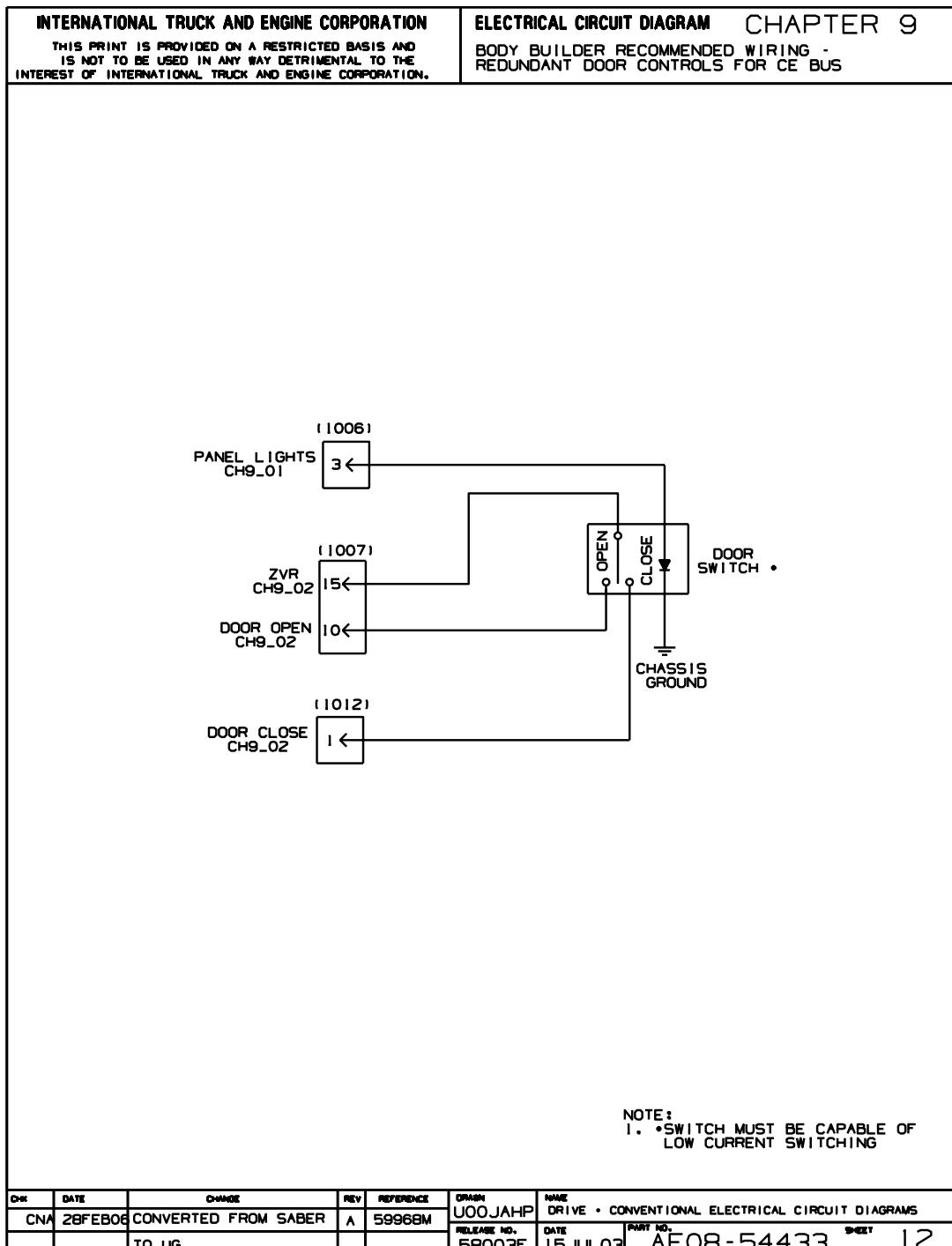


Figure 98 CE Bus Redundant Door Controls

### 9.14. MANUAL DOOR FOR CE BUS, P. 13

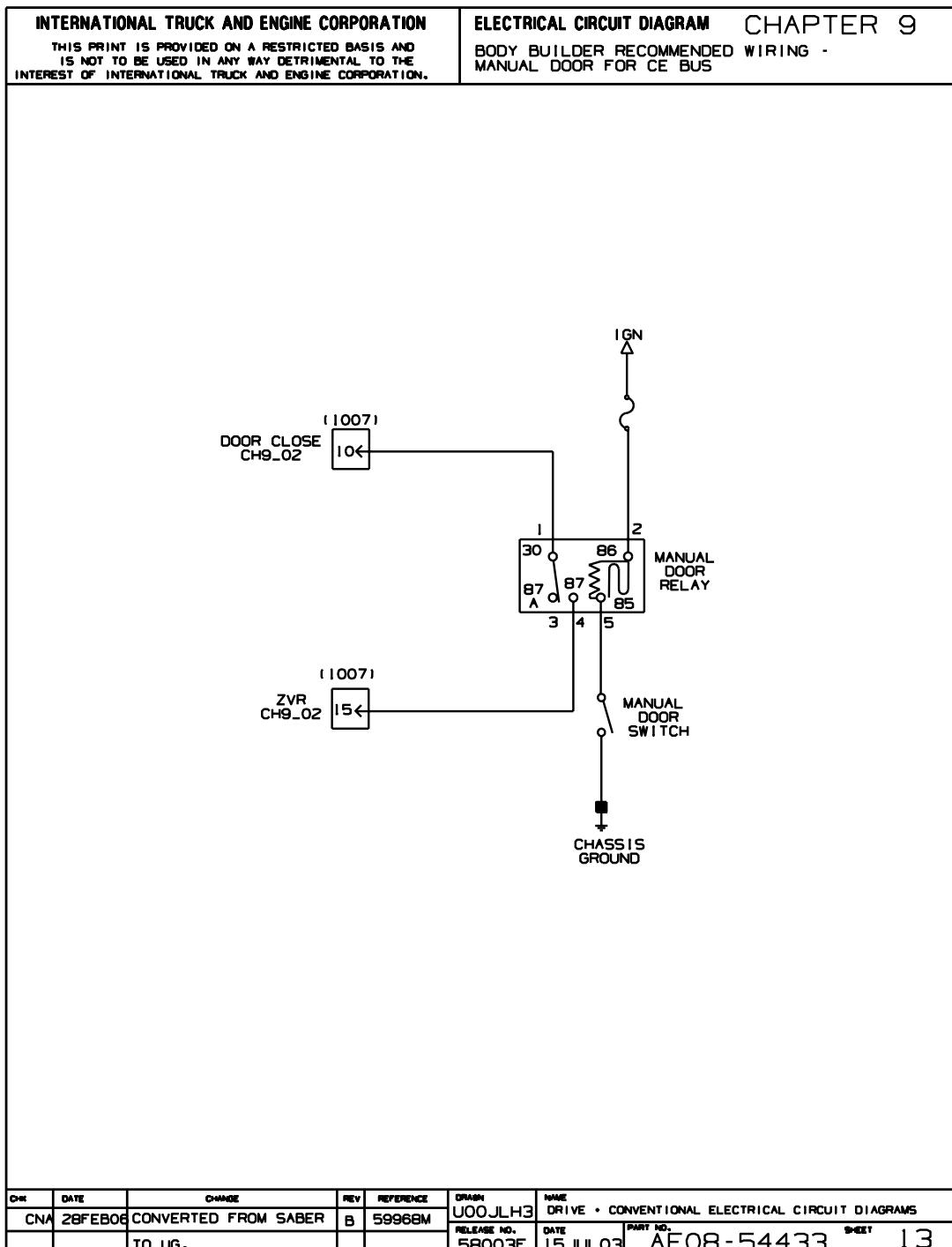


Figure 99 Manual Door for CE Bus