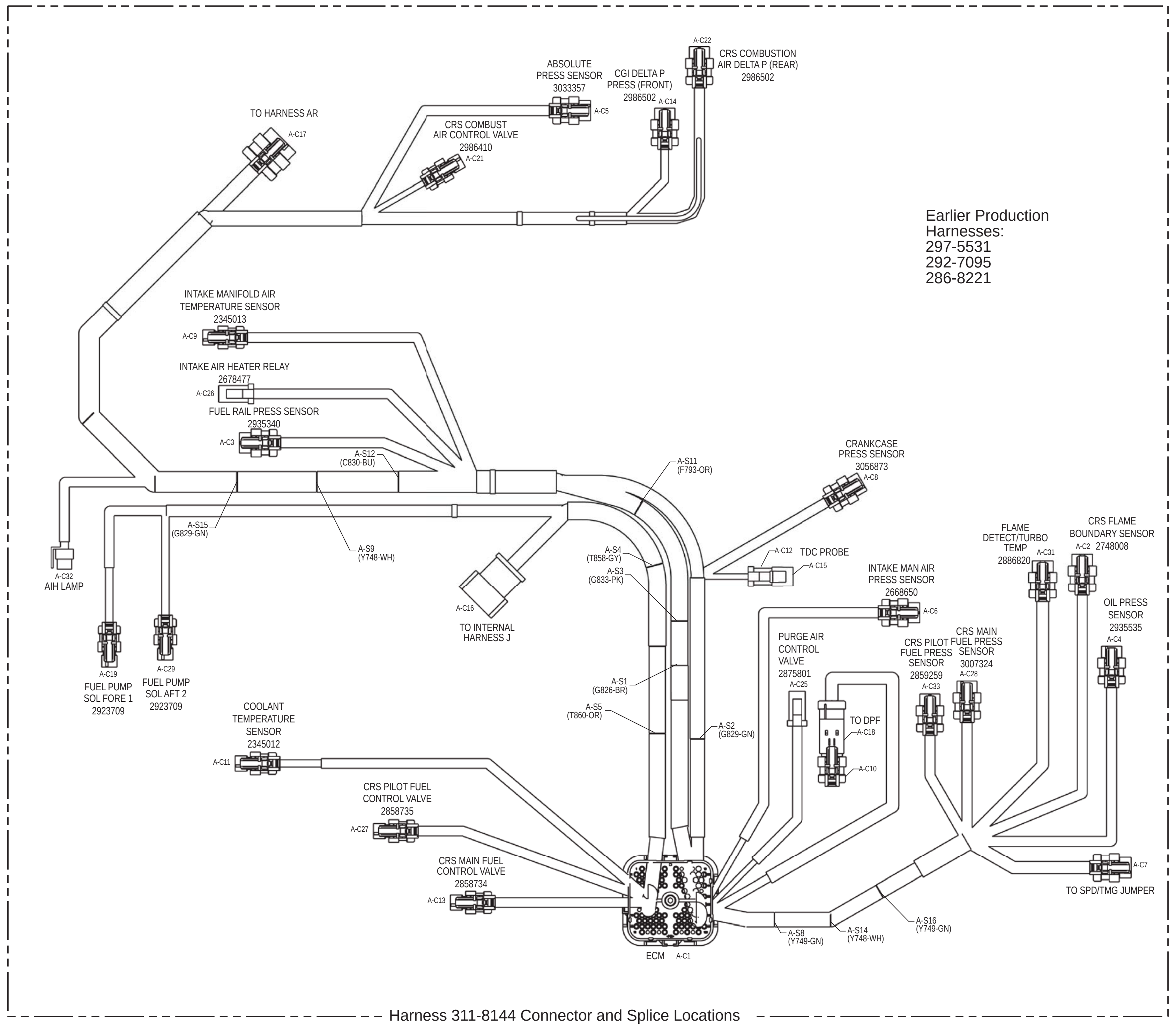
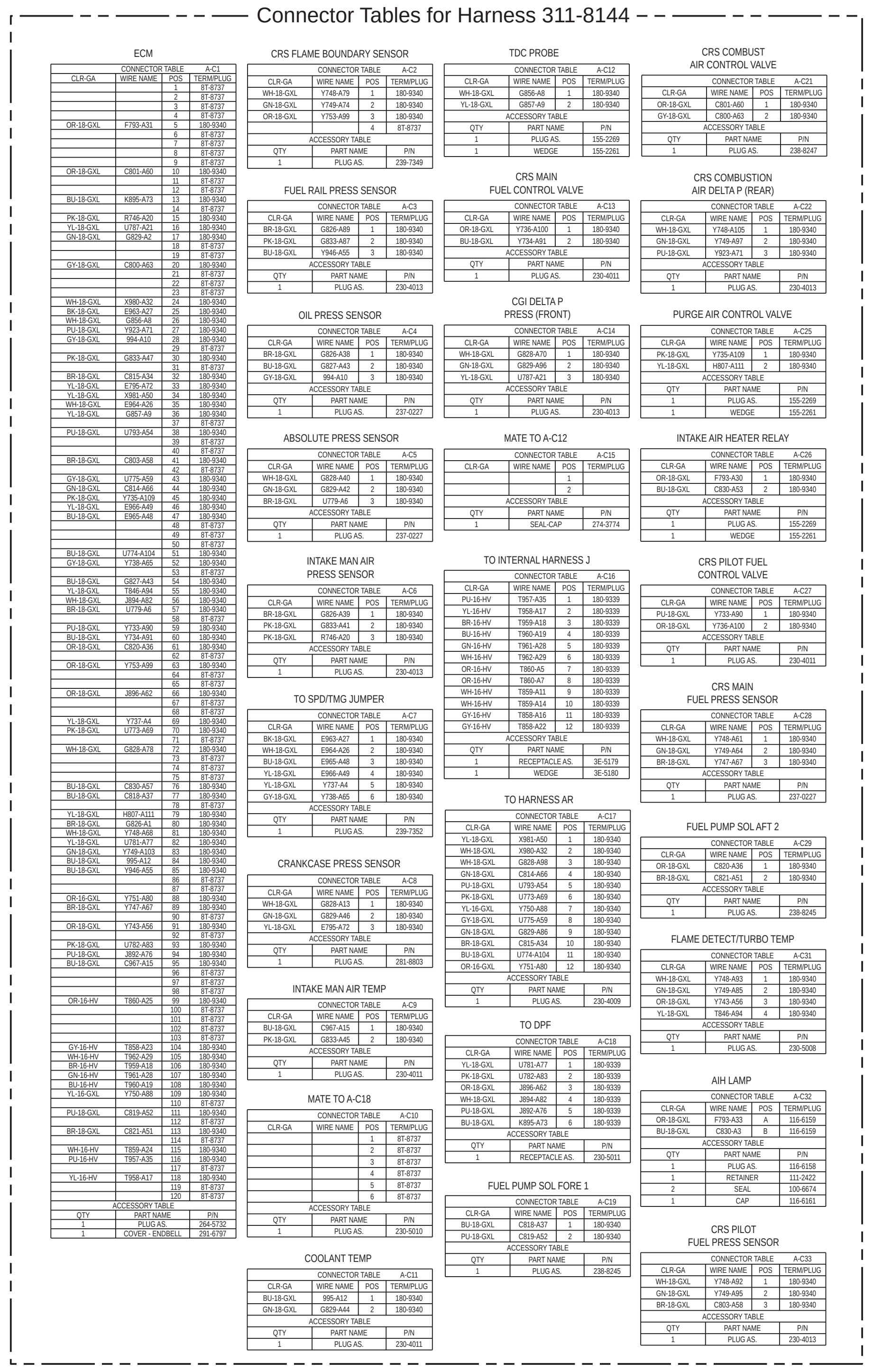
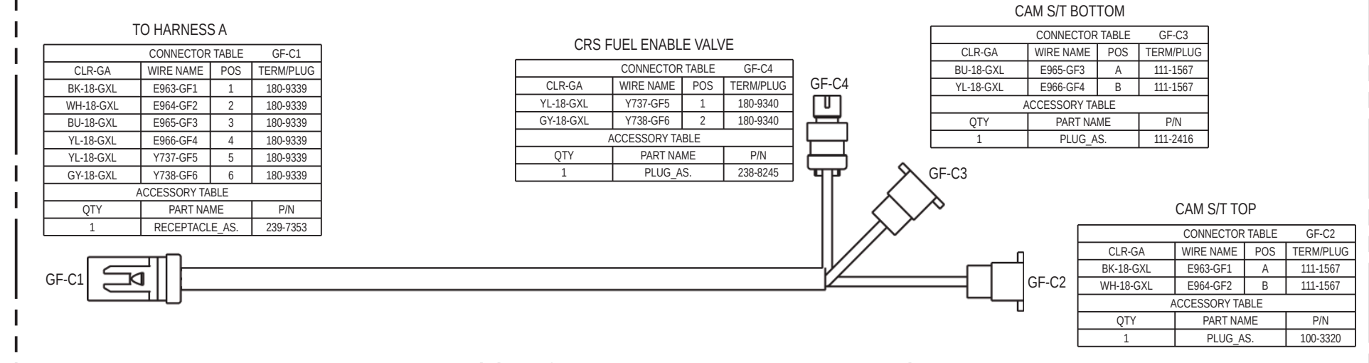


Earlier Production
Harnesses:
297-5531
292-7095
286-8221

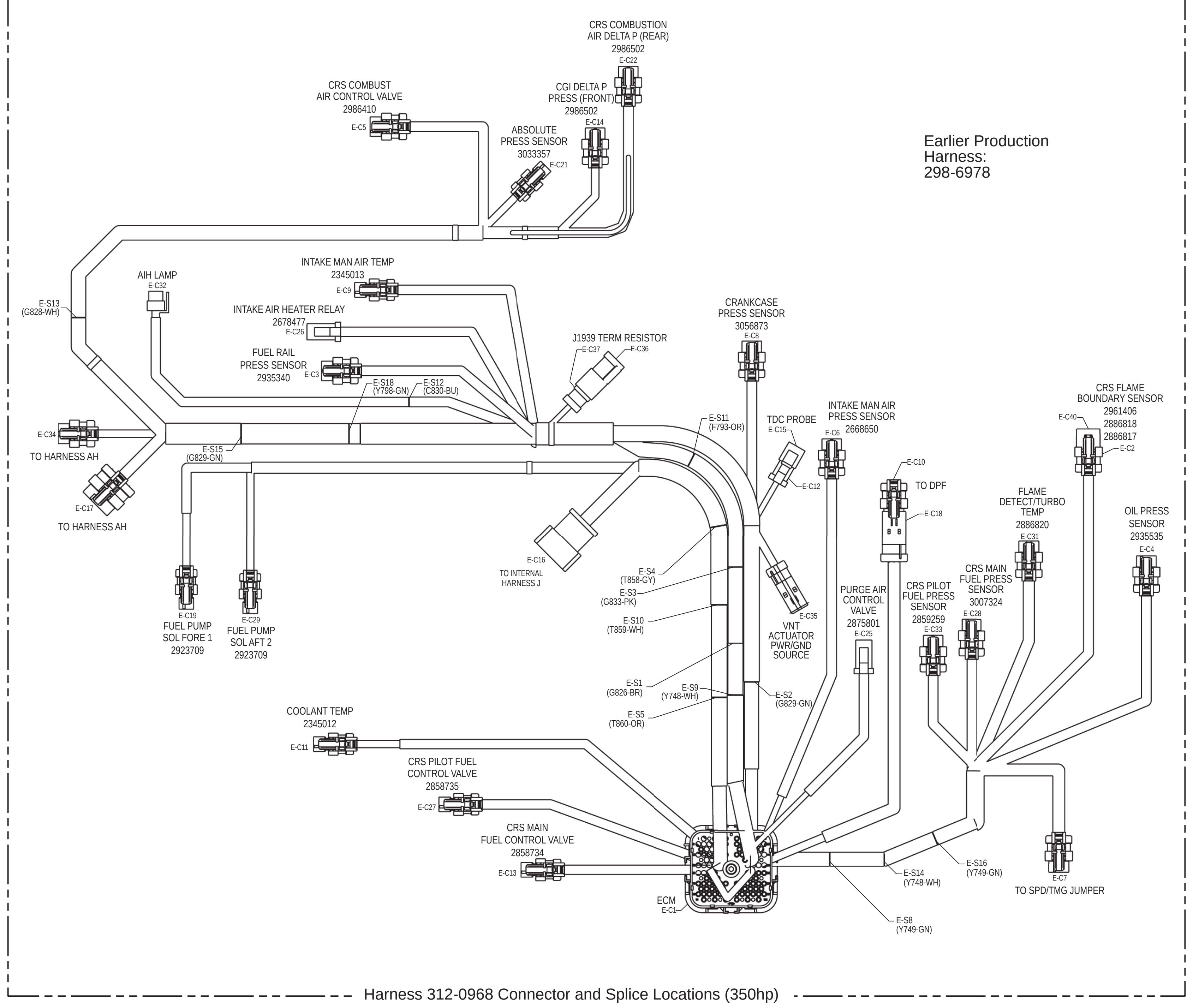
Harness 311-8144 Connector and Splice Locations

Connector Tables for Harness 311-8144





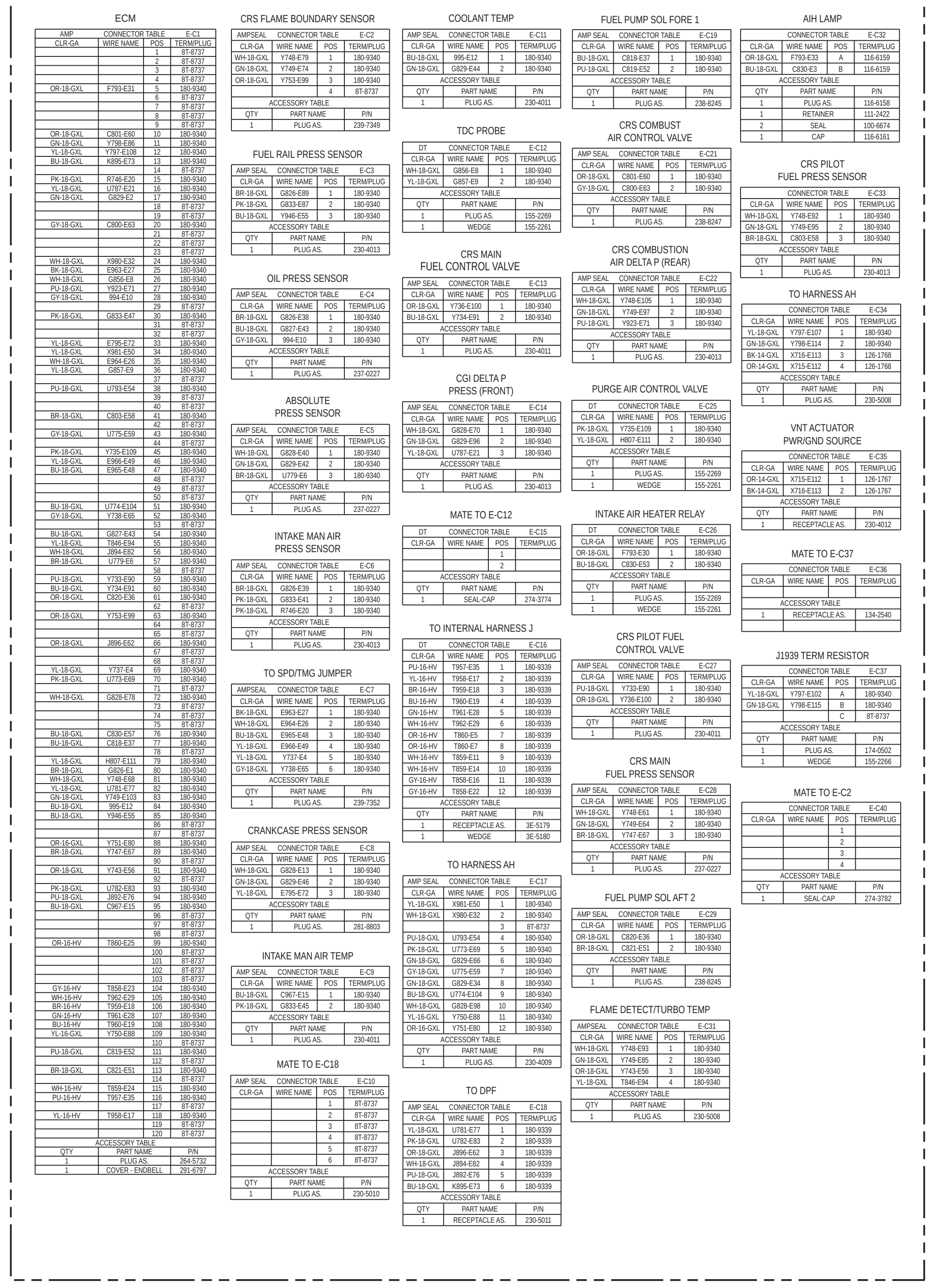
Connector Tables for Harness 312-8344 and 311-8151



Earlier Production
Harness:
298-6978

Harness 312-0968 Connector and Splice Locations (350hp)

Connector Tables for Harness 312-0968 (350hp)



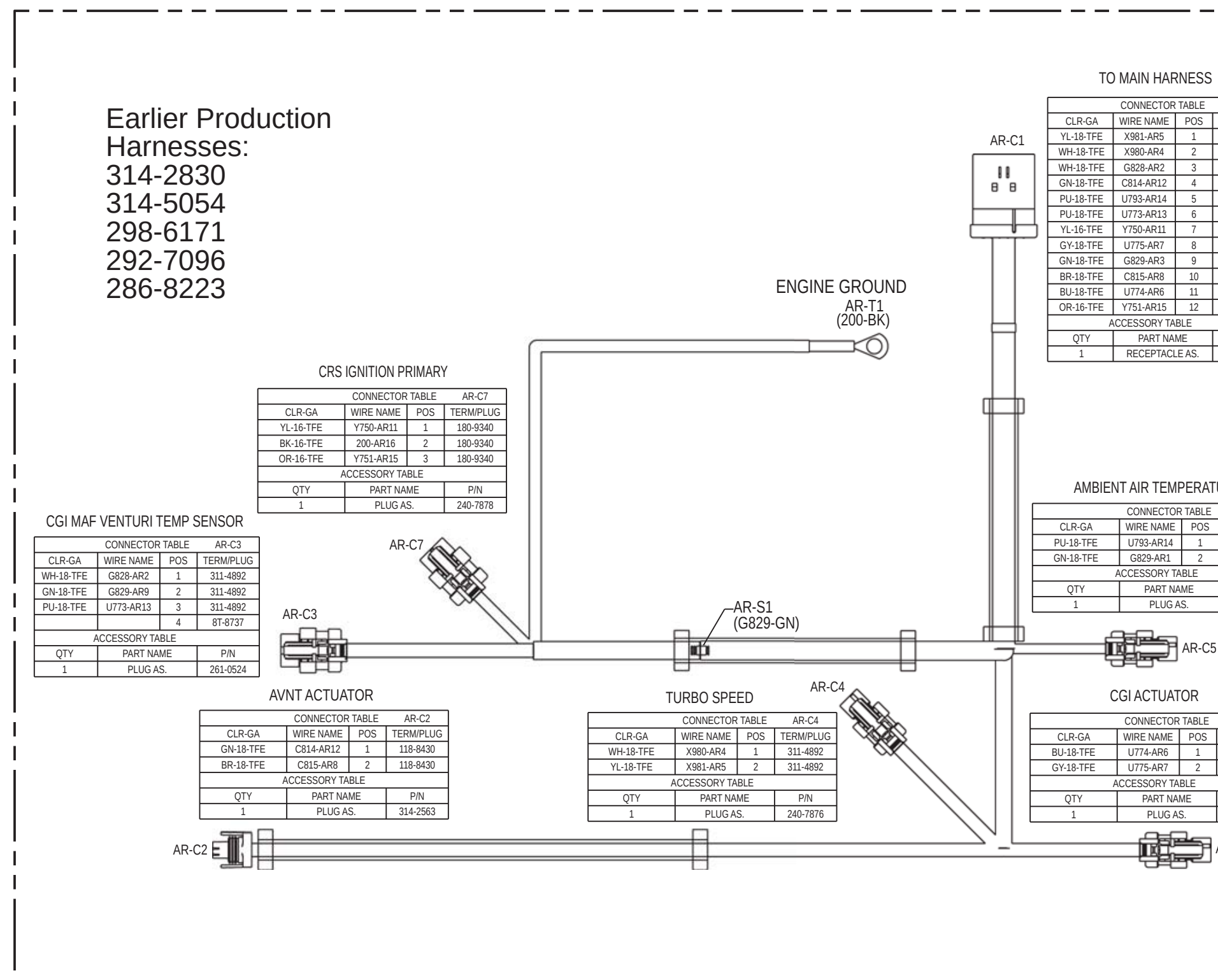
CATERPILLAR®

RENR7944-04
April 2009

Schematic

C-7 On-Highway Engine Electrical System

C7S300-UP

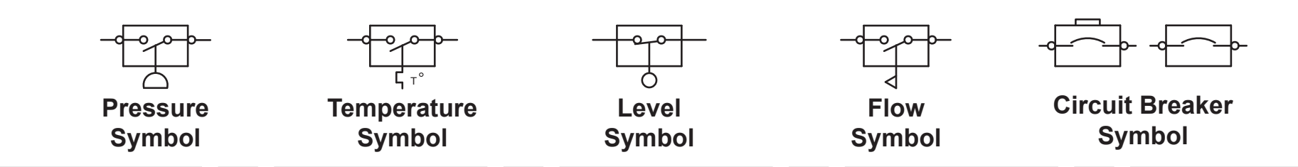


Earlier Production
Harnesses:
314-2830
314-5054
298-6171
292-7096
286-8223

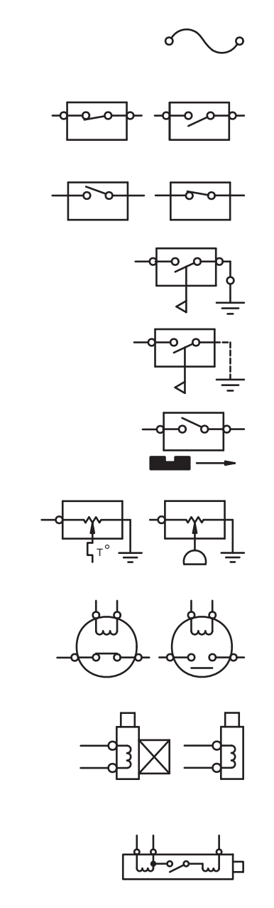
Harness 311-8146 Connector Locations

Harness And Wire Electrical Schematic Symbols

Symbols



Symbols and Definitions



Fuse: A component in an electrical circuit that will open the circuit if too much current flows through it.

Switch (Normally Open): A switch that will close at a specified point (temp, press, etc.). The circle indicates that the component has screw terminals and a wire can be disconnected from it.

Switch (Normally Closed): A switch that will open at a specified point (temp, press, etc.). No circle indicates that the wire cannot be disconnected from the component.

Ground (Wired): This indicates that the component is connected to a grounded wire. The grounded wire is fastened to the machine.

Ground (Case): This indicates that the component does not have a wire connected to ground. It is grounded by being fastened to the machine.

Reed Switch: A switch whose contacts are controlled by a magnet. A magnet closes the contacts of a normally open reed switch; it opens the contacts of a normally closed reed switch.

Sender: A component that is used with a temperature or pressure gauge. The sender measures the temperature or pressure. Its resistance changes to give an indication to the gauge of the temperature or pressure.

Relay (Magnetic Switch): A relay is an electrical component that is activated by electricity. It has a coil that makes an electromagnet when current flows through it. The electromagnet can open or close the switch part of the relay.

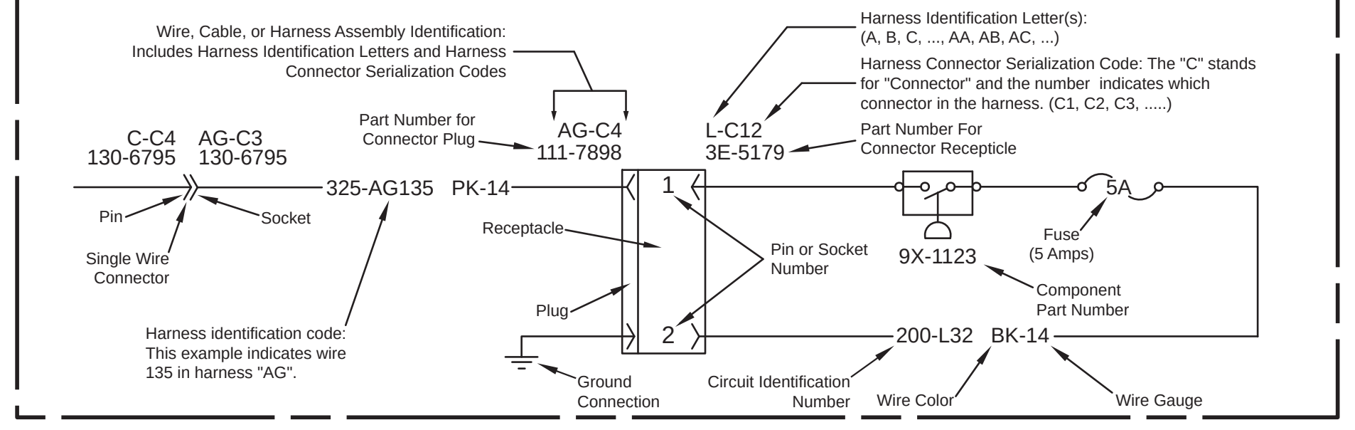
Solenoid: A solenoid is an electrical component that is activated by electricity. It has a coil that makes an electromagnet when current flows through it. The electromagnet can open or close a valve or move a piece of metal that can do work.

Magnetic Latch Solenoid: A magnetic latch solenoid is an electrical component that is activated by electricity and held latched by a permanent magnet. It has two coils (latch and unlatch) that make electromagnet when current flows through them. It also has an internal switch that places the latch coil circuit open at the time the coil latches.

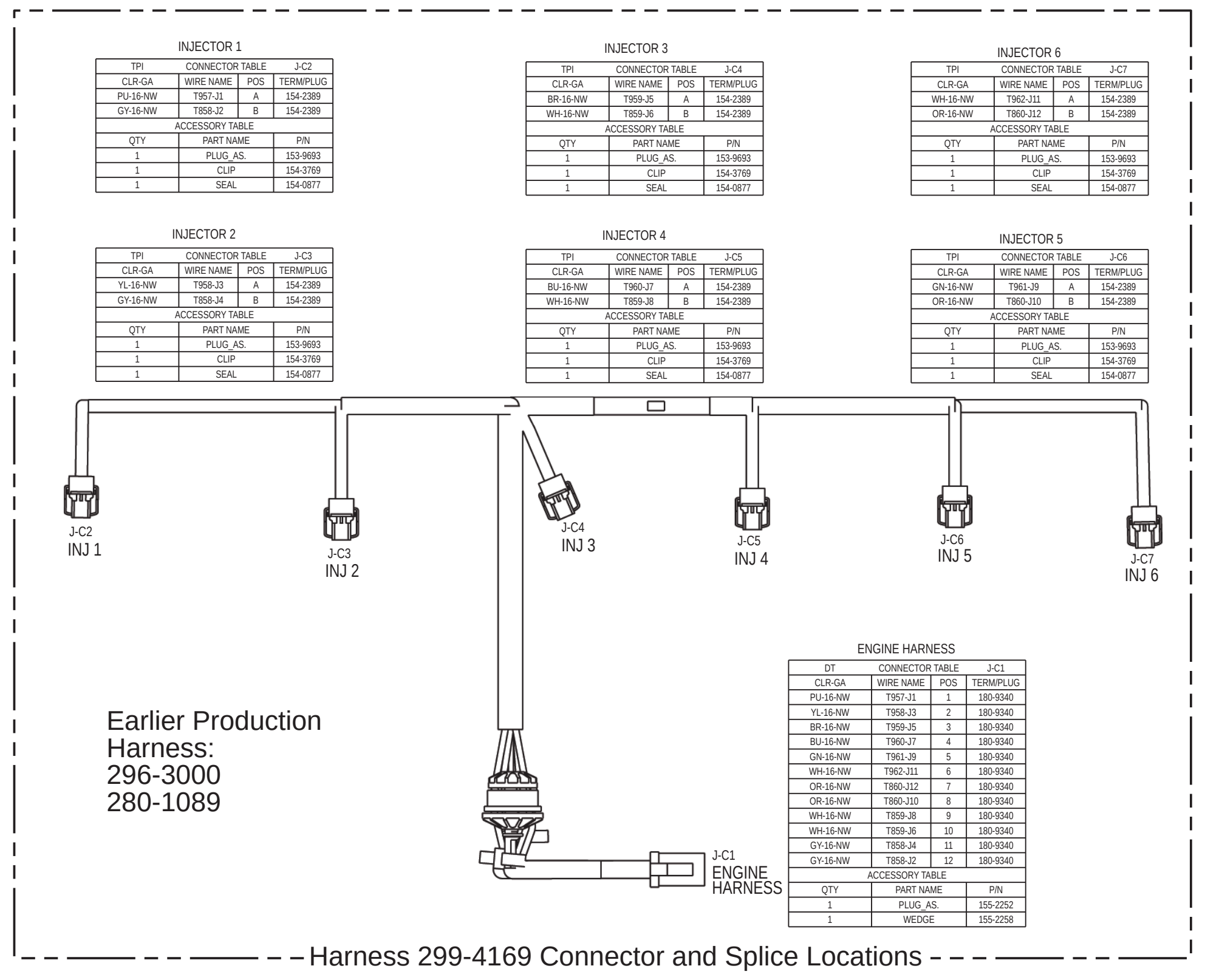
Harness and Wire Symbols

Deutsch connector: Typical representation of a Deutsch connector. The plug contains all sockets and the receptacle contains all pins.

Sure-Seal connector: Typical representation of a Sure-Seal connector. The plug and receptacle contain both pins and sockets.

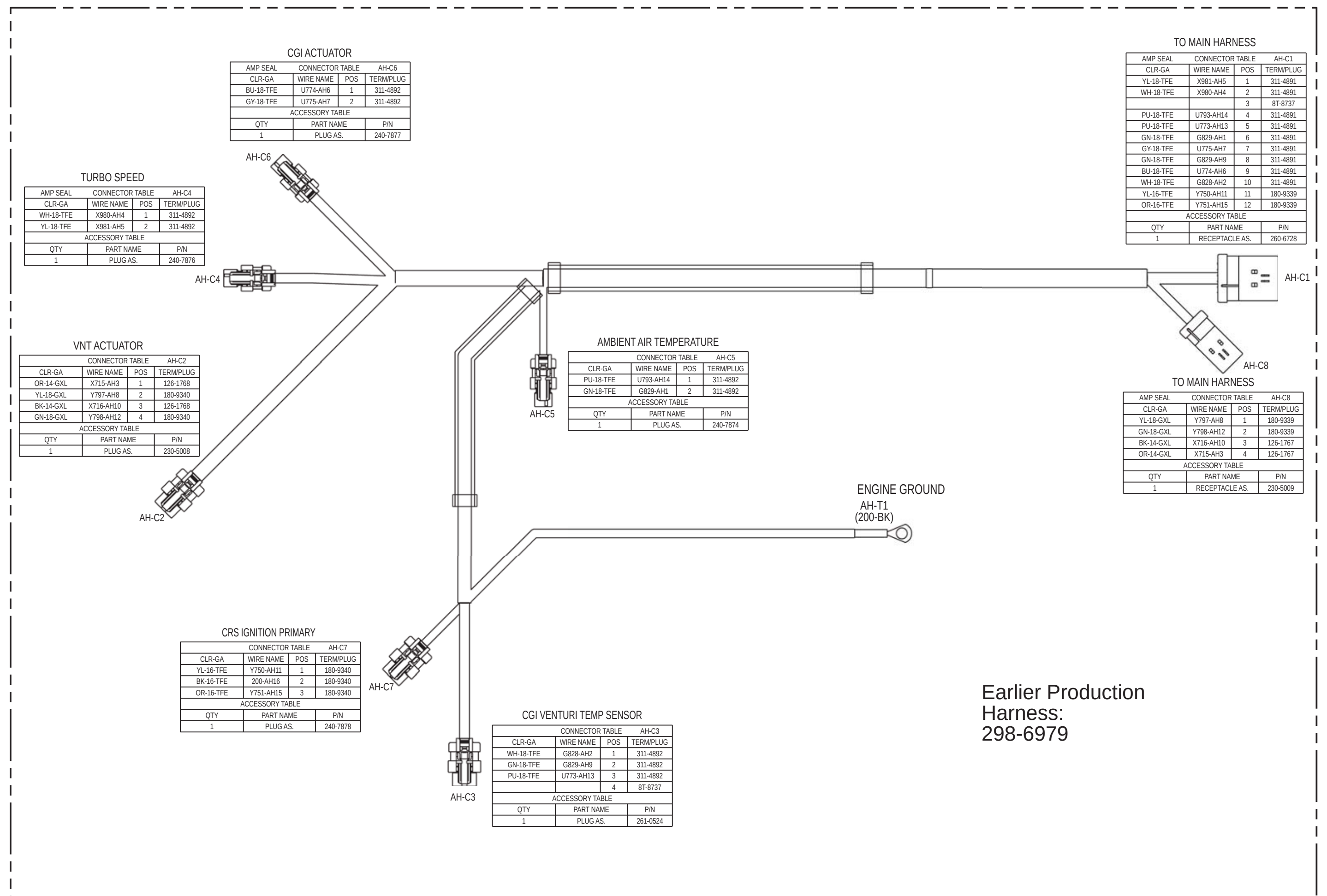


Printed in U.S.A.



Earlier Production
Harness:
296-3000
280-1089

Harness 299-4169 Connector and Splice Locations



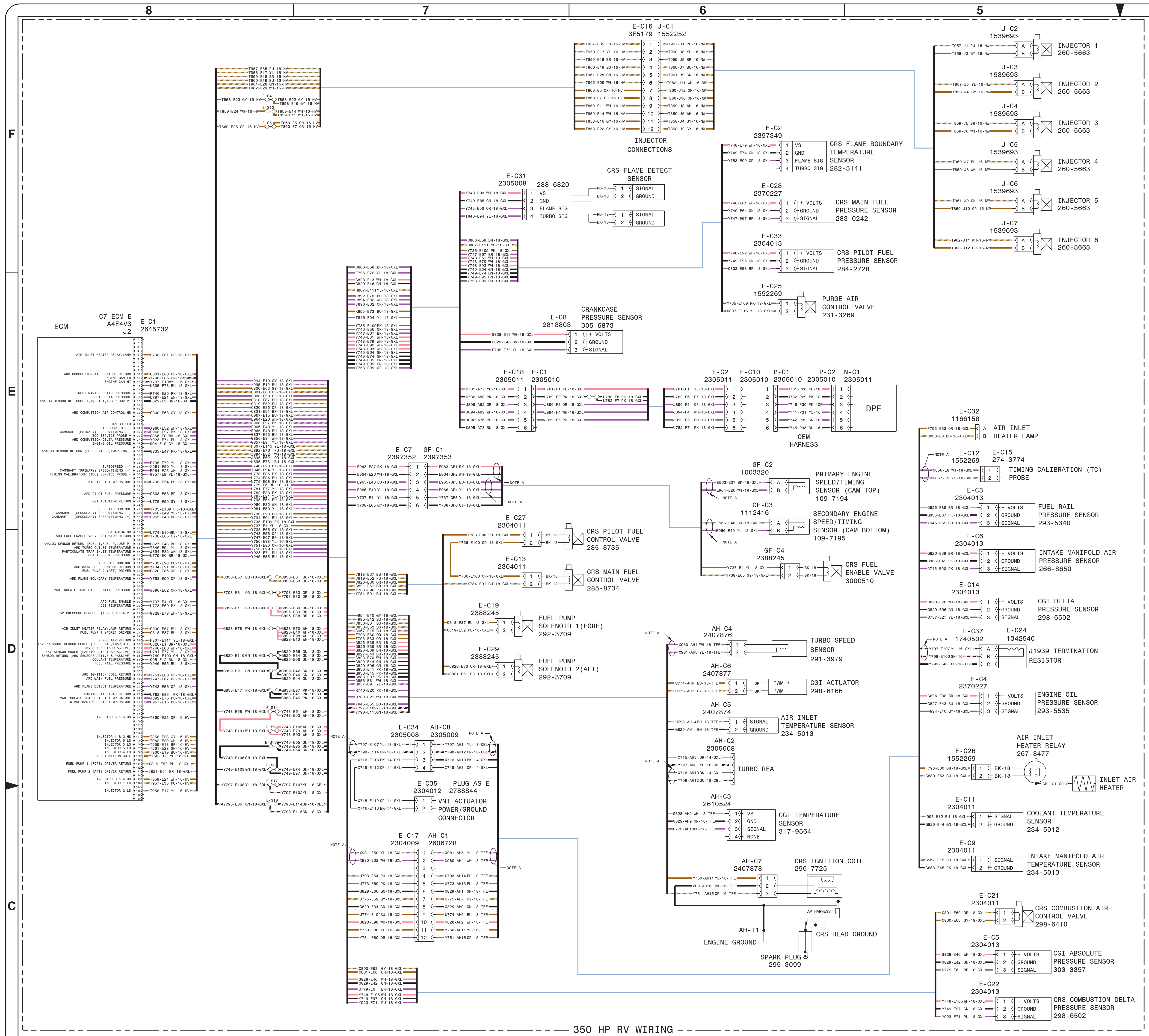
Earlier Production
Harness:
298-6979

Harness 312-0969 Connector Locations (350hp)

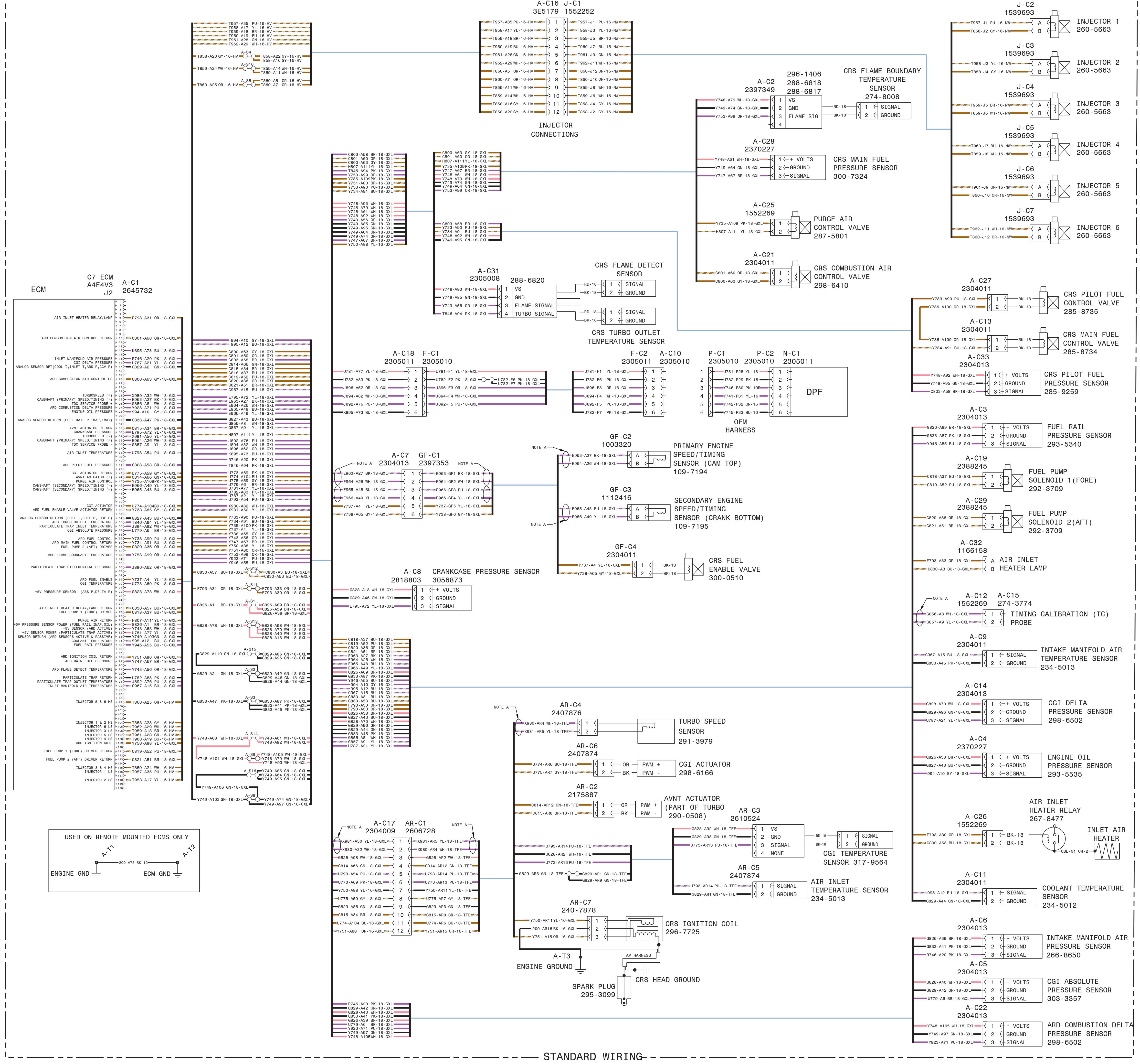
RENR7944-04

30 Page, (Dimensions: 39 inches x 24 inches)

RENR7944-04
30 Page, (Dimensions: 39 inches x 28 inches)

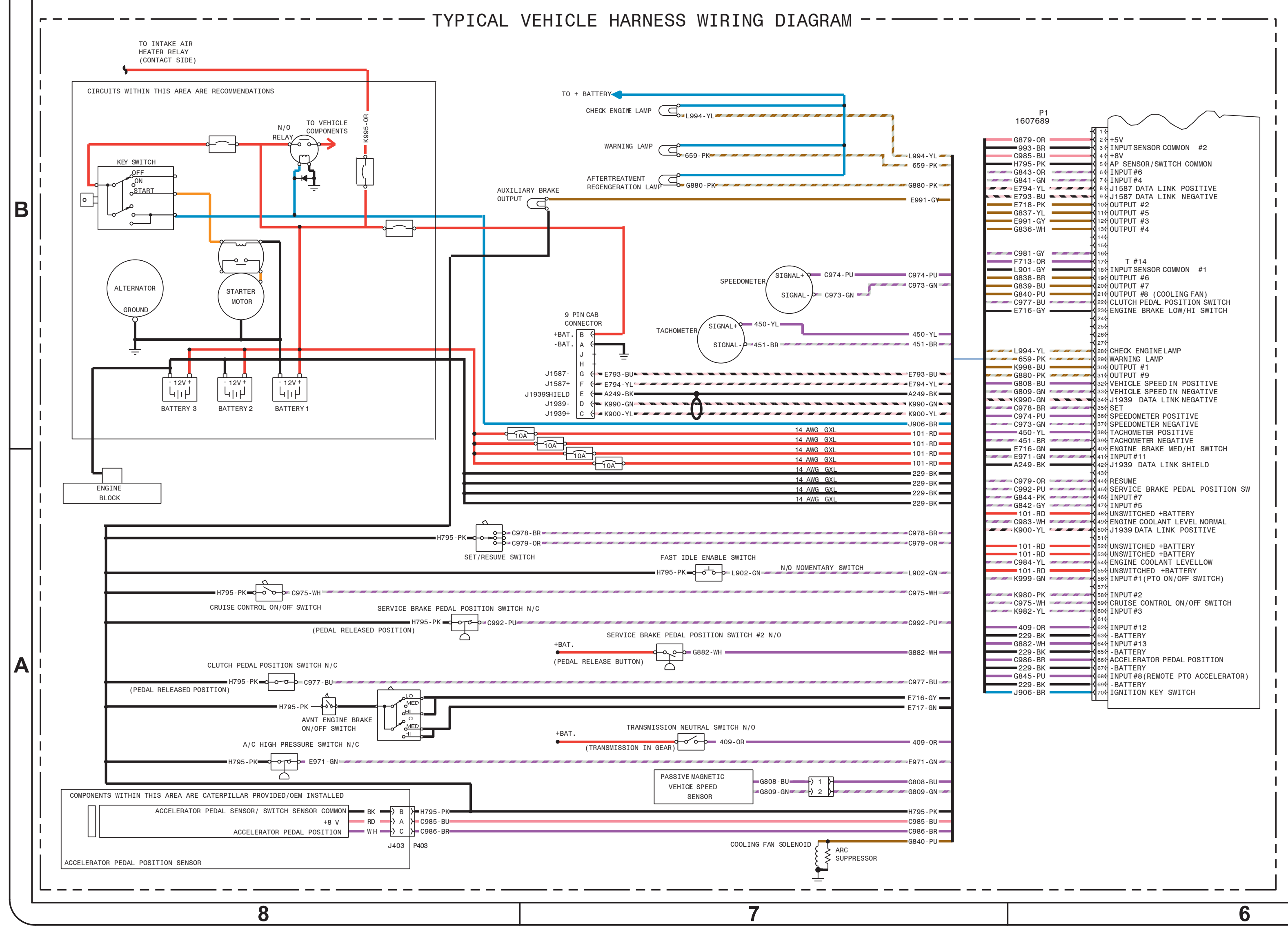


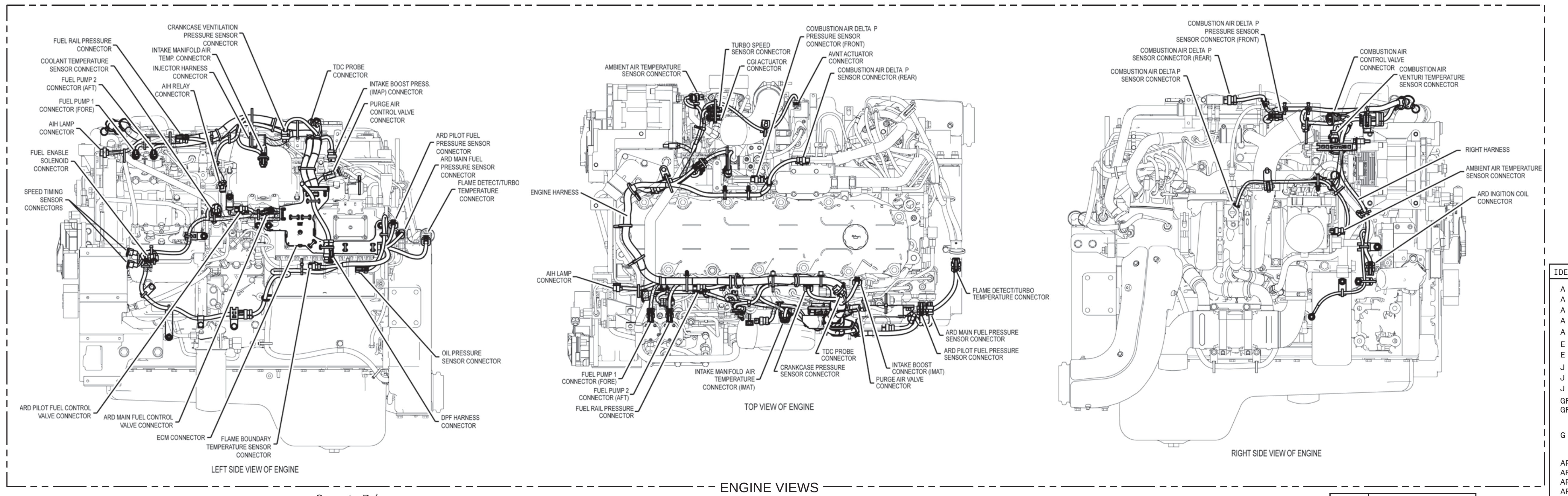
350 HP RV WIRING



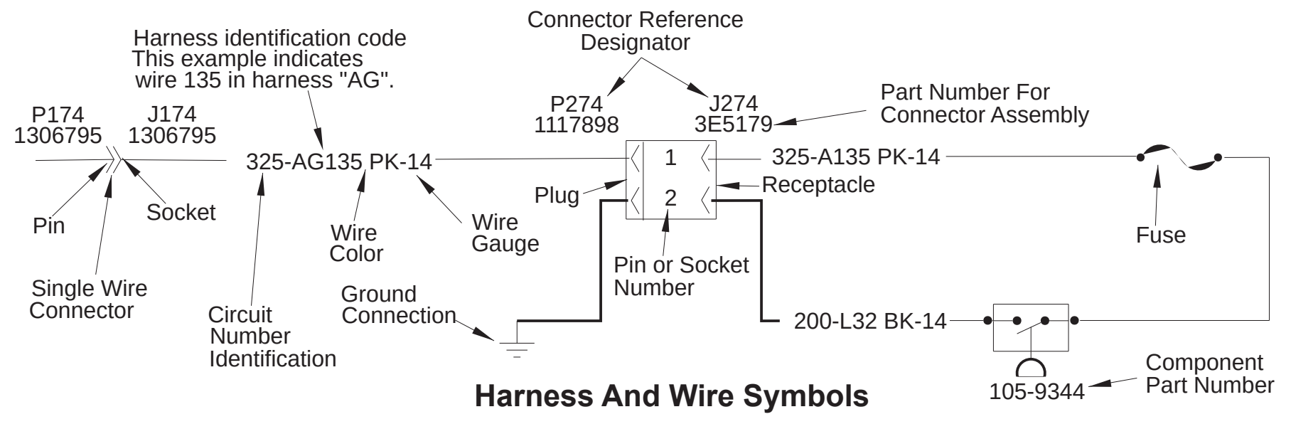
STANDARD WIRING

TYPICAL VEHICLE HARNESS WIRING DIAGRAM





ENGINE VIEWS



Harness And Wire Symbols

COLOR ABBREVIATIONS	
ABBREV	**COLOR**
RD	RED
WH	WHITE
OR	ORANGE
YL	YELLOW
PK	PINK
BK	BLACK
GY	GRAY
PU	PURPLE
BR	BROWN
GN	GREEN
BU	BLUE

🟥	(+) BATTERY
🟦	(+) BATTERY SWITCHED
🟧	STARTING CIRCUIT
⬛	(-) BATTERY / SENSOR RETURN
▬	SENSOR / ACTUATOR SUPPLY
🟪	SIGNAL (POSITIVE) FROM ECM
▨	SIGNAL (RETURN) FROM ECM
🟫	CONTROL (POSITIVE) FROM ECM
▨	CONTROL (RETURN) FROM ECM
▨	J1939 DATA LINK
▬	HIGHWAYS

Related Electrical Service Manuals

Title	Form Number
Troubleshooting	RENR9342
Systems Operation / Testing and Adjusting	RENR9818

NOTE A: MUST BE TWISTED TOGETHER AT LEAST 1 TURN PER 25mm.
NOTE B: TURBO SPEED JUMPER NOT NECESSARY ON ALL ENGINES.
DASHED FONT INDICATES AN ATTACHMENT COMPONENT OR HARNESS.

IDENT	LOCATION	PART NUMBER	CHG	HARNESS DESCRIPTION
A	E-4	311-8144	00	MAIN ENGINE HARNESS
A	E-4	312-0967	00	EXTENDED MAIN ENGINE HARNESS
A	E-4	297-5531	03	MAIN ENGINE HARNESS (EARLY PRODUCTION)
A		292-7095	01	MAIN ENGINE HARNESS (EARLY PRODUCTION)
A		286-8221	01	MAIN ENGINE HARNESS (EARLY PRODUCTION)
E	E-8	312-0968	00	350HP RV MAIN ENGINE HARNESS
E	E-8	298-6978	01	350HP RV MAIN ENGINE HARNESS (EARLY PROD)
J	F-2	299-4169	01	INTERNAL ENGINE HARNESS
J	F-2	296-3000	01	INTERNAL ENGINE HARNESS (EARLY PRODUCTION)
J	F-2	280-1089	00	INTERNAL ENGINE HARNESS (EARLY PRODUCTION)
GF	E-3	311-8151	00	SPEED/TIMING JUMPER
GF	E-3	312-8344	00	SHORTENED SPEED/TIMING JUMPER
				CABLE ASSEMBLIES
G	C-1	305-1487	01	INLET AIR HEATER CABLE
				AFTERTREATMENT REGENERATION DEVICE
AR	C-3	311-8146	00	STD RIGHT HARNESS
AR	C-3	314-2830	00	BBCV RIGHT HARNESS
AR	C-3	314-5054	00	BBFE RIGHT HARNESS
AR	C-3	298-6171	02	STD RIGHT HARNESS (EARLY PRODUCTION)
AR		292-7096	00	STD RIGHT HARNESS (EARLY PRODUCTION)
AR	C-3	286-8223	00	STD RIGHT HARNESS (EARLY PRODUCTION)
AH	C-7	312-0969	00	350 HP RV RIGHT HARNESS
AH	C-7	298-6979	00	350 HP RV RIGHT HARNESS (EARLY PROD)
F	E-3	317-7681	00	DPF JUMPER HARNESS
P	E-2		00	OEM 6 PIN TO 8 PIN JUMPER

SYMBOL	DESCRIPTION
┿	CIRCUIT CONNECTED
┼	CIRCUIT NOT CONNECTED
⏚	ELECTRICAL CONNECTION TO MACHINE STRUCTURE
⏚	INTERNAL ELECTRICAL CONNECTION TO SURFACE OF COMPONENT
→)—	CONNECTOR
H#	CIRCUIT GROUPING DESIGNATION
- - -	ATCH WIRE, CABLE, COMPONENT
○-○	CIRCUIT CONNECTED
○	SPLICE
●	BLADE, SPADE, RING OR SCREW TERMINAL

ACRONYM	DESCRIPTION
ARD	AFTERTREATMENT REGENERATION DEVICE
CGI	CLEAN GAS INDUCTION
CCV	CRANKCASE VENTILATION
IMAP	INTAKE MANIFOLD AIR PRESSURE
AVNT	AXLE VARIABLE NOZZLE TURBINE
DAVNT	DUEL AXLE VARIABLE NOZZLE TURBINE

THIS SCHEMATIC IS FOR THE C7 (2007) ON HIGHWAY ENGINE:
Standard, Ford, FCCC RV, & Remote Mounted ECM
PART NUMBER: 270-9415, CHANGE: 09, VERSION: -

Components are shown installed on a fully operable machine.

Refer to the appropriate Service Manual for Troubleshooting, Specifications and Systems Operations.