

General Information

The introduction of EPA07 engines included a new standard for the A06 diagrams (electrical harness assembly diagrams) used to document all new wiring. This standard increases the speed and accuracy of updates to parts information for electrical systems, but comes with some tradeoffs. Previously, harness piece parts were located on the drawing; now, the parts list in the lower right-hand corner of the diagram no longer identifies all of the components that make up the harness. See **Fig. 1**.

This bulletin provides the procedure for locating and determining connectors, wire and cable sizes, terminals, cable seals, terminal locks, and cavity plugs on these A06 drawings. **Figure 2** shows the types of components that may be needed.

Use the worksheet (**Fig. 3**) to ensure all needed parts are identified.

Finding Wire Harness Piece Parts

1. Using PartsPro, select the harness in the parts list, then click the EZWiring Toolbar.
2. The A06 drawing has important information in three locations. See **Fig. 4**. First, find the connector on the drawing.
3. Write down the connector identifier, connector part number, and terminal cavity position, as shown in **Fig. 5**.

NOTE: A dashed silhouette means the connector does not come with the harness.

4. In the upper-left table, match the connector identifier and cavity position to the wire item number. See **Fig. 6**. Write down the wire item number.
5. In the lower-right table, use the wire item number as "REF," to find the wire description, as shown in **Fig. 7**. Write down the wire description, which includes wire type and size.
6. In EZWiring, enter the connector part number to display the connector specification sheet.
7. Find the exact connector in the connector specification sheet, then use the cavity position taken from the A06 drawing to determine the correct connector cavity type, and find the compatible terminals ("TYP TERM" in the sheet). Write the terminal part numbers down. Also write down any cavity plugs, back shells, or terminal locks, listed for the connector. See **Fig. 8**.
8. In EZWiring, enter one of the terminal part numbers to display the terminal specification sheet.
9. Find the range of terminals in the DTNA Item to Supplier Crossover table in the terminal specification sheet, then use the wire size to find the specific terminal part number. See **Fig. 9**.
10. In the Terminal Data Tables within the terminal specification sheet, find the terminal part number listed under the DTNA Item column, and write down the cable seal or seals listed for that terminal. See **Fig. 10**. If more than one cable seal is listed, you must reference the cable seal specification sheet for the specific seal.
11. In EZWiring, enter one of the cable seal part numbers to display the cable seal specification sheet. Within the sheet, in the Cable Seal Data tables, find the cable seal part numbers. Use the color of the existing seal, if possible, to find the correct cable seal. If the color is not available, use the wire size and type to find the correct cable seal part number. See **Fig. 11**. Use **Table 1** and **Table 2** to cross-reference the wire size and type to the correct abbreviation.

> A-Line Cargo 360
 > L-Line Acterra Bullet

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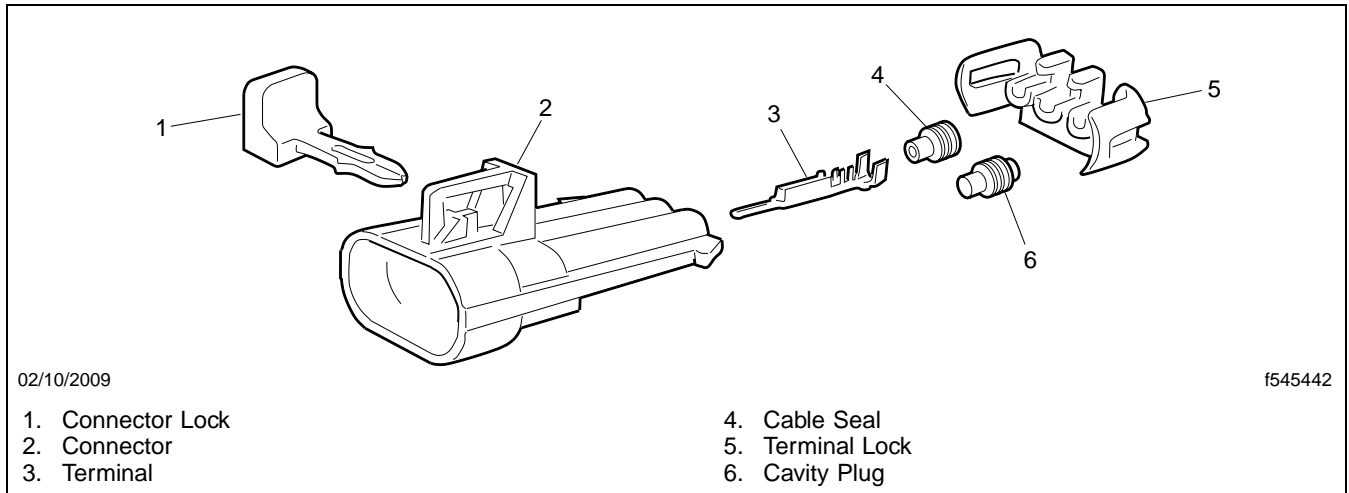


Fig. 2, Connector Parts

Wire Type from A06	Abbreviation	Description
GXL	G	General Purpose, Cross-Linked, Polyolefin-Insulated
SXL	S	Special Purpose, Cross-Linked, Polyolefin-Insulated
TXL	T	Thin Wall, Cross-Linked, Polyolefin-Insulated

Table 2, Abbreviations for Insulation Types

EPA07 Wiring Harness Parts Worksheet

1. A06 Harness Drawing – PartsPro

In the connector and cavity report box:

1a. Connector Part Number:

1b. Connector ID (IDENTIFR):

1c. Cavity Position:

In the upper-left table, match the connector ID and CON CAV POS to WIRE ITEM NO.

1d. Wire Item Number:

In the lower-right table, match WIRE ITEM NO in the REF column to DESCRIPTION

1e. Wire size and type:

2. Connector Specification Sheet – EZ Wiring

First, enter the connector part number into EZ Wiring.

Then, find the full connector part number in the Connector Specification Sheet.

Use the cavity position (1c, above) to find the connector cavity type; listed on the right are the terminal types that can be used in this cavity.

2a. Terminal Types (TYP TERM):

Note other possible parts, if any.

2b. Cavity Plug:

Under HARNESS LEVEL ADDON PARTS:

2c. Terminal Lock (TERM LK):

2d. Back Shell (BKSHL):

3. Terminal Specification Sheet – EZ Wiring

First, enter any of the Terminal Type part numbers (2a, above) into EZ Wiring.

Then, match the wire type and size from 1e (above) to find the exact Terminal Part number.

3a. Terminal Part Number:

If the connector uses cable seals, find the table that matches the terminal part number with a cable seal part number (TYP SEAL).

TIP: Run a search in the sheet for the terminal part number; one of the results should be a table with cable seal matches.

3b. Cable Seal Part Number (TYP SEAL):

4. Cable Seal Specification Sheet – EZ Wiring

If more than one seal is listed, enter the base Cable Seal number into EZ Wiring.

Then, find the seal part numbers (3b, above) in the Cable Seal Data table.

Find the best-fit seal by

- 1) the color of the existing seal, or;
- 2) the size (1e, above) given in the A06 drawing.

Fig. 3, EPA07 Wiring Harness Parts Worksheet

> A-Line Cargo 360
 > L-Line Acterra Bullet

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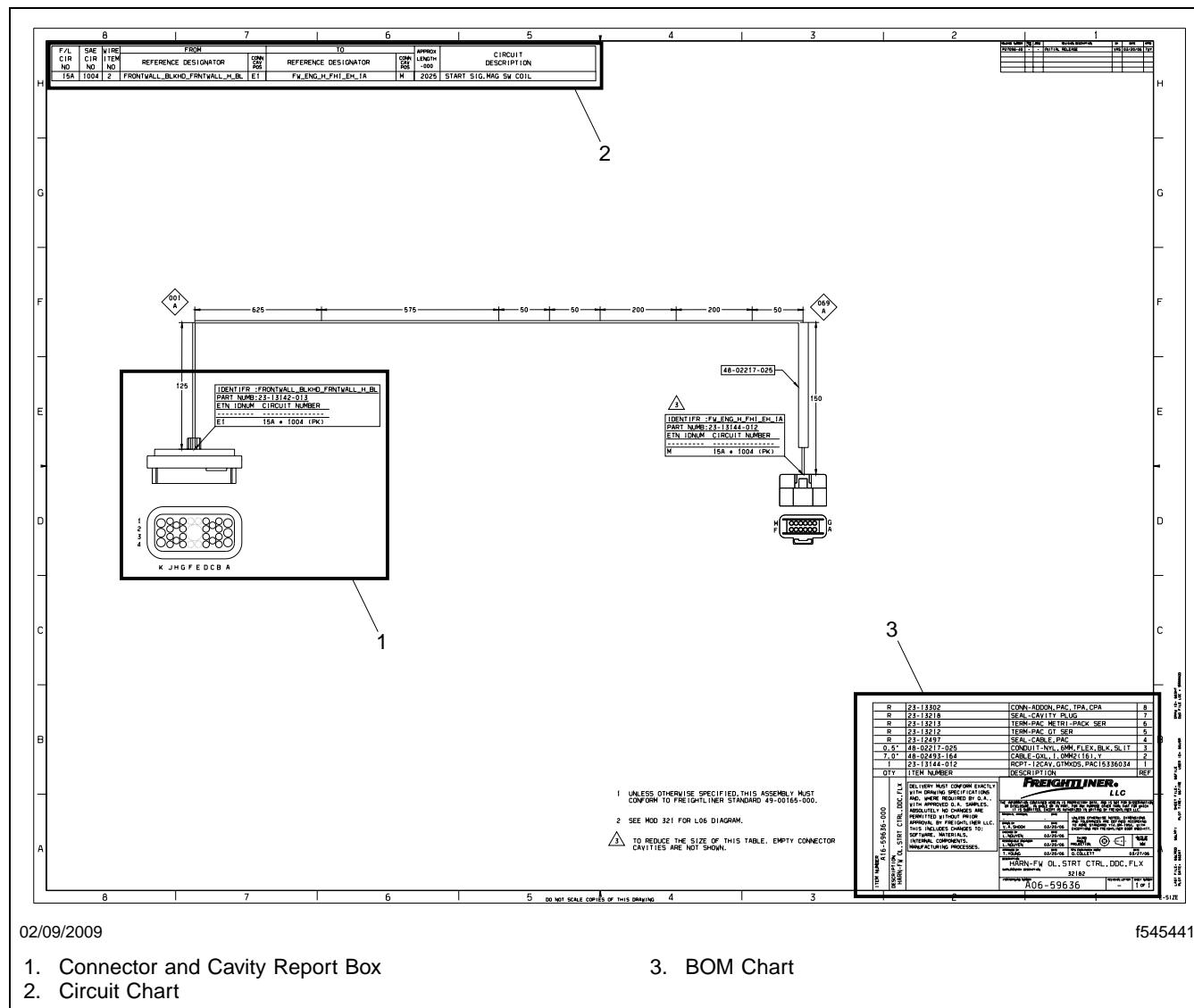


Fig. 4, Sections of the A06 Drawing

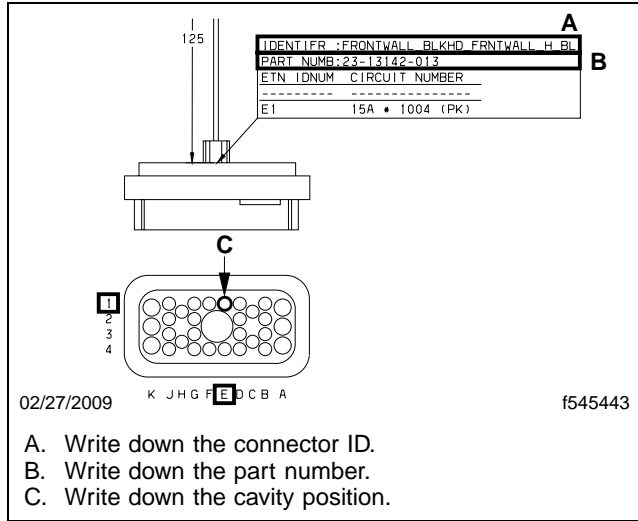


Fig. 5, Connector and Cavity Report Box

8		7			6		5	
F/L CIR NO	SAE CIR NO	WIRE ITEM NO	FROM REFERENCE DESIGNATOR	CONN CAV POS	TO REFERENCE DESIGNATOR	CONN CAV POS	APPROX LENGTH -000	CIRCUIT DESCRIPTION
15A	1004	2	FRONTWALL_BLKHD_FRNTWALL_H_BL	E1	FW_ENG_H_FH1_EH_1A	M	2025	START SIG, MAG SW COIL

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A. Find the connector ID, also known as the reference designator.
B. Find the row including the connector ID and cavity position.
C. Write down the wire item number.

Fig. 6, Circuit Chart

> A-Line Cargo 360
 > L-Line Acterra Bullet

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0.5'	48-02217-025	B	CONDUIT-NYL, 6MM, FLEX, BLK, SLIT	3
7.0'	48-02493-164		CABLE-GXL, 1.0MM2 (16), Y	2
1	23-13144-012		RCPT-12CAV, GTMXDS, PAC15336034	1

QTY	ITEM NUMBER	DESCRIPTION	REF
4	23-13302	CONN-ADDON, PAC, TPA, CPA	8
3	23-13218	SEAL-CAVITY PLUG	7
	23-13213	TERM-PAC METRI-PACK SER	6
	23-13212	TERM-PAC GT SER	5
	23-12497	SEAL-CABLE, PAC	4

LESS OTHERWISE SPECIFIED, THIS ASSEMBLY MUST CONFORM TO FREIGHTLINER STANDARD 49-00165-000.

MOD 321 FOR L06 DIAGRAM.

REDUCE THE SIZE OF THIS TABLE. EMPTY CONNECTOR CAVITIES ARE NOT SHOWN.

FREIGHTLINER LLC

DELIVERY MUST CONFORM EXACTLY WITH DRAWING SPECIFICATIONS AND, WHERE REQUIRED BY O.A., WITH APPROVED O.A. SAMPLES. ABSOLUTELY NO CHANGES ARE PERMITTED WITHOUT PRIOR APPROVAL BY FREIGHTLINER LLC. THIS INCLUDES CHANGES TO: SOFTWARE, MATERIALS, INTERNAL COMPONENTS, MANUFACTURING PROCESSES.

ITEM NUMBER: A16-59636-000
 DESCRIPTION: HARN-FW OL, STRT CTRL, DDC, FLX

DATE: 03/20/06
 BY: Y.A. SHOOK
 APPROVED BY: L. NGUYEN
 DATE: 03/20/06
 BY: L. NGUYEN
 DATE: 03/20/06
 BY: T. YOUNG
 DATE: 03/20/06

DESCRIPTION: HARN-FW OL, STRT CTRL, DDC, FLX
 SUPPLIER DESCRIPTION: 32182
 TYPING NUMBER: A06-59636
 SHEET NUMBER: 1 OF 1

02/10/2009 E-SIZE

- Use the wire item number as the "REF."
- Write down the wire description.

Fig. 7, BOM Chart

23-13142-013						PLUG-30CAV,MPMXDS,PAC12193502							
SERIES		METRI PACK MIXED SEALED (MPMXDS)				SEALED							
CAV	30	GENDER	PLUG	COLOR	GRAY								
MATL	PBT REP	TPA	SEPARATE	CONN TYPE	PASSTHRU								
W/ SHROUD SEAL		CPA											

APPROVED SUPPLIER PART NUMBERS
 PAC12193502

CONNECTOR CAVITIES

Fem MP280S: B1, B2, B3, B4, C1, C4, D1, D2, D3, D4, E1, E4, F1, F4, G1, G2, G3, G4, H1, H4, J1, J2, J3, J4

Fem MP480S: A1, A2, A3, K1, K2, K3

REV: E

1 2 3 4

A
B
C
D
E
F
G
H
J
K

HARNESS LEVEL ADD-ON PARTS

23-13302-600 (PAC12066129) BKSHL (OPTIONAL) E

2X 23-13302-050 (PAC12066050) TERM LK

RELATED ITEMS

MATE TO CONN 23-13142-014 (PAC12193503)

SIMILAR TO CONN 23-13142-008 (PAC15492567)

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- Find the exact connector part number.
- Find the correct connector cavity type using the cavity position from the A06.
- Write down the "TYP TERM" parts numbers.
- Write down the cavity plug, if any.
- Write down add-on parts, if any.

Fig. 8, Connector Specification Sheet

A	23-13213-113	TERM-MALE,MP280,3-5(12-10)	APPROVED SUPPLIER PART NUMBERS PAC12084586
	23-13213-120	TERM-FEM,MP280S,0.5-1(20-16)	APPROVED SUPPLIER PART NUMBERS PAC12077411
	23-13213-121	TERM-FEM,MP280S,2-3(14-12)	APPROVED SUPPLIER PART NUMBERS PAC12129493
	23-13213-122	TERM-FEM,MP280S,3-5(12-10)	APPROVED SUPPLIER PART NUMBERS PAC12077413
	23-13213-130	TERM-MALE,MP280S,0.5-1(20-16)	APPROVED SUPPLIER PART NUMBERS PAC12048159

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- A. Find the range of terminals ("TYP TERM" from the Connector Spec Sheet).
- B. Use the wire gauge and size in mm² (from A06) to find the specific terminal.
- C. Write down the terminal part number.
- D. Supplier part numbers can be used to identify existing parts stock.

Fig. 9, Finding the Terminal—Terminal Specification Sheet, DTNA Item Table

METRI PACK 280 SEALED (MP280S)										
GNDR	MATL	TYP CABLE	TYP SEAL	CBLOD MM	PLATING	SPCL	ADDL FEATURE	DTL REF	DTNA ITEM	
FEM	TBRS	0.5T; 0.5G; 0.8T; 0.8G; 0.8S; 1T; 1G; 1S	23-12497-000 23-12497-002 23-12497-019	1.9-3.1	TIN			E-F	23-13213-120	
FEM	TBRS	2T; 2G; 2S; 3T; 3G; 3S	23-12497-000 23-12497-001 23-12497-002	2.5-4.21	TIN			E-F	23-13213-121	

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- A. Find the terminal part number listed as DTNA Item.
- B. Write down the cable seal part number(s).

Fig. 10, Finding Cable Seals—Terminal Specification Sheet, Terminal Data Tables

MP150S	SI	0.5T; 0.8T	1.6-2.15	W		A	23-12497-018
MP150S	SI	0.5G; 0.5S; 0.8S; 0.8T; 0.8G; 1G; 1T; 2T	2.03-2.85	DKR		A	23-12497-006
MP280S; MP280ST; WP	SI		1.29-1.7	DKR		A	23-12497-003
MP280S; MP280ST; WP	SI	0.5T; 0.8T	1.6-2.15	PRP		A	23-12497-019
MP280S; MP280ST; WP	SI	0.5G; 0.8T; 0.8G; 1T	2.03-2.42	T		A	23-12497-020
MP280S; MP280ST; WP	SI	0.5G; 0.5S; 0.8S; 0.8G; 0.8T; 1G; 1T; 2T	2.03-2.85	G		A	23-12497-002
MP280S; MP280ST; WP	SI	1S; 2G; 3T	2.81-3.49	LTGY		A	23-12497-000
MP280S; MP280ST; WP	SI	2S; 3S; 3G; 5T	3.45-4.3	BL		A	23-12497-001
MP480S; WBS	SI	0.5T; 0.8T	1.6-2.15	Y		A	23-12497-015
MP480S; WBS	SI	0.5S; 0.5G; 0.8G; 0.8T;	2.01-2.85	W		A	23-12497-008

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- A. Find the cable seal part numbers (taken from the Terminal Specification Sheet).
- B. Use the color of the existing seal, if possible, to find the correct cable seal.
- C. Wire size and insulation can also be used to find the correct cable seal.

Fig. 11, Finding Specific Cable Seal Part Numbers