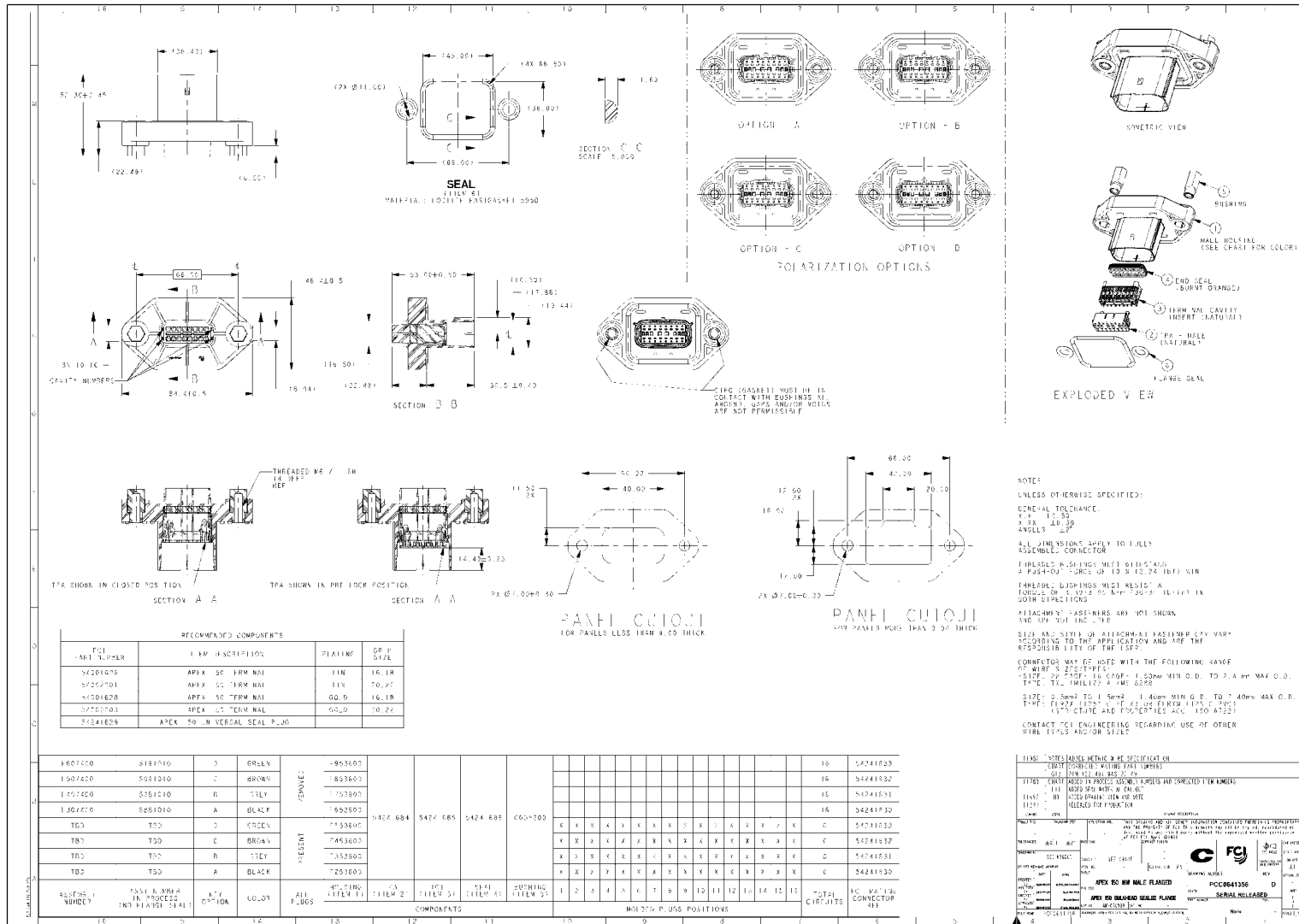


DELPHI PACKARD ELECTRIC SYSTEMS
WARREN, OHIO 44468

																3				2			1		
																DWG STATUS				REVISION HISTORY			AUTH		
																DATE	SYG	REV	CHK	ZONE			APVD	DR	CK
																DRAWN	R	OC	--				SEC002	LB	JOB
																				ATTN: SHEET 1 & 3 ALL PARTS - DWG UPDATED TO LATEST PRINT, REVISED NOTES & CHART					

3					2		1			
DWG STATUS					REVISION HISTORY		AUTH	DR	CK	APVD
DATE	STG	REV	INP	CHG	ZONE					
04AUG	R	01	--	--		ALL PARTS - RELEASED	215207	JJB	VHC	JG
04AUG	R	02	--	--		"DWT B" WAS "DWT 1", ALL PARTS - DWG UPDATED TO LATEST PRINT; REVISED NOTES & CHART	223250	LJB	LR	JCR



DELPHI

DELPHI PACKARD ELECTRIC SYSTEMS
LAWREN, OH

THIS DRAWING IS NOT A PROPRIETARY DESIGN OF
DELPHI AUTOMOTIVE SYSTEM.

		DATE
DR:	DIAZ, JUAN J	04AUI0
APV04:	MEZA, VERONICA	04AUI0
APV06:	GAVALDON, JESUS	05AUI0
APV03:		
APV04:		
APV05:		

DWG TYPE:		PART DRAWING		MATERIAL:		SEE DWG			
STYLE:		N/A		DISTR CODE:		DRAWING NAME:		TAXI ASM CDNN M 15 SLD	
VOLUME (CM3):		N/A		D		DRAWING NUMBER:		13839322	
AutoCAD						SIZE:		A0	
						SCALE:		1 OF 1	
						FRAME NO:		2 OF 2	
						SHEET NO:		R	
						REV:		00	
						N/P:		--	

DELPHI SUPPLIER MUST MEET DELPHI MANUFACTURABILITY SPECIFICATIONS FOR CONNECTION SYSTEM

Delphi Manufacturability Specifications for Connections Systems

Spec No.	Category	Specification Description	Acceptance Criteria
1a	Terminal-Connector	Terminal Insertion Force to Connector	For terminals without wire, the engagement force to fully seat and lock the terminal shall be 12N max. Neither the conductor nor the terminal may buckle during the test. The forward stop must withstand a force greater than the force required to insert the terminal into the cavity.
2a	Terminal-Connector		For terminals with 18AWG wire, the engagement force to fully seat and lock the terminal shall be 20N max. Neither the conductor nor the terminal may buckle during the test. The forward stop must withstand a force greater than the force required to insert the terminal into the cavity.
3a	Terminal-Connector		For terminals with 16AWG wire, the engagement force to fully seat and lock the terminal shall be 30N max. Neither the conductor nor the terminal may buckle during the test. The forward stop must withstand a force greater than the force required to insert the terminal into the cavity.
10a	Terminal-Connector	Terminal retention Force on Connector	Terminal Size Primary Lock only (N Min) With Secondary Lock (N Min)
11a	Terminal-Connector		050 20 30
12a	Terminal-Connector		064 30 60
13a	Terminal-Connector		015 45 70
13a	Terminal-Connector		028 60 100
14a	Terminal-Connector		048 60 100
15a	Terminal-Connector		065 80 120
16a	Terminal-Connector		095/163 80 120
17a	Terminal-Connector		095 100 150
40a	Terminal-Connector	Terminal/Cavity Polarization (do not allow incorrect orientation of terminal or the connector)	For any non symmetric, designs, terminals inserted in any incorrect orientation shall not fit or lock into a connector cavity beyond the isolation rings (grooves) or cable seal at a force 15 times the normal insertion force, 10N, or the column strength of the largest applicable wire size, whichever is greater.
81a	Terminal-Connector	Terminal-Connector Cavity Fit	Female terminal should NOT bend or damage male blades/terminals. Example: Terminals should not move or rotate excessively inside the connector cavity so that damage could occur when making connection.
22a	Terminal-Connector	Unseated Terminals	Design connectors with a feature to detect and/or correct partially seated terminals (like PLR). Unseated terminal condition is created when terminal and/or cable seal is not visible when viewed from a perpendicular side of plugging area and terminal is not fully seated/locked into connector.
30a	Terminal-Connector	Terminal Insertion on Connector with Closed TPA or PLR	<10 mm Wire Size The engagement force to fully seat and lock the terminal shall be 10N max. Alternatively, the terminal shall not be capable of being seated and locked due to interference between the TPA and the terminal.
31a			10 mm Wire Size The engagement force to fully seat and lock the terminal shall be 40N max. Alternatively, the terminal shall not be capable of being seated and locked due to interference between the TPA and the terminal.
32a			>10 mm Wire Size The engagement force to fully seat and lock the terminal shall be 60N max. Alternatively, the terminal shall not be capable of being seated and locked due to interference between the TPA and the terminal.
16	Connector	Connector with mixed terminal designs	Terminal and connector cavity design should avoid ability to insert a terminal (with the same connector) Any incorrect terminal insertion shall not fit or lock into a connector cavity beyond the isolation rings (grooves) or cable seal at a force 15 times the normal insertion force, 10N, or the column strength of the largest applicable wire size, whichever is greater.
26	Connector	Connector Family designs indexing	Connector family design should have an index to differentiate physically between each connector part number within connector family or series.
36	Connector	Open access for wire/terminal assembly	Connector should have open access for terminal/wire assembly. Example: Lever should not be obstructing terminal/wire plugging area.
100	Connector	Connector to Connector Mating Force (with all contacts installed)	70 N Max
110	Connector	Connector to Connector Un-mating Force	110 N Min with locks (levers) enable except CPA
120	Connector	Connector (or Housing) to Connector MTS noted Prevention test	Should not be re-actuated by hand (with all contacts) or by applying 150N
200	Connector	Cavities Terminal Insertion direction	Provide all cavities in the same direction of terminal insertion. If not, terminal and connector cavity should avoid attempt to plug on any incorrect orientation.
210	Connector	Terminal Forward Stop	Must provide a terminal forward stop that supports a force of 50k minimum or the biggest wire size latches.
220	Connector	Access for Electrical test	Provide access on connector for contacts electrical test. Access must locate correct final position and orientation of terminal into connector cavity. If there is particular requirement for electrical test of the connector, supplier must provide all related information to begin.
300	Connector	Housing Insertion Force	24N Max
310	Connector	Housing Retention force	45N Min

400	Connector	Connector Cavity identification	Connector should have cavities identified (starting and end point of cavity rows)
1c	Cavity Plug	Connector Cavity Plug Insertion	Cavity Plug should be assembled with a force of 20N Max by hand or with a manual tool.
10	Locks	PLR detect/connect Unseated Terminals	PLR should detect/requires 3 times more force - than normal, condition -unseated corrects partially seated terminals
100	Locks	PLR/TPA Insertion force (from pre-stage to lock)	60N Max with terminals installed
110	Locks		10N Min without terminals installed
120	Locks	PLR/TPA Insertion force (from insert to lock)	60N Max with all terminals installed
130	Locks	PLR/TPA Extraction force (remove from pre stage)	25N Min
140	Locks		60N Max (with terminals installed in all available cavities) 30N Min
150	Locks	PLR/TPA extraction force (from lock to pre-stage)	10N Min after initial removal
200	Locks	Insertion force PLR/TPA with one or more incorrectly oriented terminals assembled	PLR/TPA should NOT be able to lock when there is one or more terminals assembled with incorrect orientation. Insertion Force should be 15 times the normal force or 40N, whichever ever is greater.
300	Locks	CPA Insertion Force (insert to lock position)	60N Min (w/connectors, un-rated) 20N Max (w/connectors rated (issue the CPA)
310	Locks	CPA Insertion Force (pre-stage to lock position)	60N Min (w/connectors, un-rated) 20N Max (w/connectors rated)
320	Locks	CPA extraction force (lock to pre-stage position)	10N Min 30N Max
330	Locks	CPA extraction force (from pre-stage position)	60N Min
400	Locks	Lever retention Force on pre-stage (shipping position)	Force to maintain on pre-stage (shipping) position, 50N Min
410	Locks	Lever insertion force from pre-stage (shipping) to final stage (lock)	If the Mating Assembly Force is
420	Locks		Then the Mating Contact Area must be at least
430	Locks		Typical Operator Hand Posture During Assembly
420	Locks		322N Non minimum requirement One-finger press
430	Locks		445N 10mm x 20mm Thumb/2 or more fingers press
430	Locks		475N 10mm x 35mm Two thumbs or palm/heel of hand press
1e	General	Components (with positive retention force, like Connector Clips, Cover, etc.) Retention Force	60N Max
2e	General	Components (with positive retention force, like Connector Clips, Cover, etc.) Retention Force	100N Min
3e	General	Connection Wrap Test	Test if connection system 3 times each one with parts inserted and terminals. Strip from a 1/4 distance the conductor to a hard surface, change orientation to expose all parts. The device under test must not show any evidence of deformation, cracks, deformation, etc. that could affect their functionality. This test evaluates the ability of the connection to withstand shock due to dropping on a hard surface.
4e	General	Components (with positive retention force, like Connector Clips, Cover, etc.) Retention Force	Attached parts to connector (Connector seal, secondary locks, PLR, CPA, Matt seal, Cable seal, etc.) should have a contrasting color to the connector.
5e	General	All connection systems parts should be free from defects	Mechanical Performance Exterior Shell be free from detectable cracking, rust, pits, flow deformation, flush and/or other defects, the prior and during usage.
6e	General	Service on Repair	Connection systems components should be serviceable and replaceable without functional damage.
7e	General	Components requiring assembly to connector, TPA, Clip, CPA, Lever, Housing, etc.) shall not be incorrectly assembled (correct orientation by hand or by applying 150N. This is NOT applicable for symmetrical designs.	All components requiring assembly to connector (like Cover, TPA, Clip, CPA, Lever, Housing, etc.) shall not be incorrectly assembled (correct orientation by hand or by applying 150N. This is NOT applicable for symmetrical designs.
1f	Testing	Equipment capability of providing a constant Velocity	50mm/min
2f	Testing	Accuracy of measurement	±0.5%
3f	Testing	Tolerance for all tests	±10%

Notes
USCAR 34 as we used as reference on how to perform each test

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DELPHI PACKARD ELECTRIC SYSTEMS
WARREN, OH
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DELPHI AUTOMOTIVE SYSTEM

DATE	02/01/02
BY: BONILLA, LILIANA	02/01/02
APPROV: BONILLA, LILIANA	02/01/02
APPROV: REYNOSA, JUAN C	03/01/02
APPROV:	
APPROV:	

SUBSTANCES OF CONCERN AND RECYCLED CONTENT PER DELPHI - A 10949000	
MATERIAL: SEE DWG	
DRAWING NAME: TAXI ASM CONN M 1.5 SLD	
DRAWING NUMBER: 13839322	
SIZE: A0	SCALE: NONE
FRAME: 1 OF 1	SHEET NO: 3 OF 3
STG: R	REV: 02
APP: --	

DWG TYPE: PART DRAWING	DISTR CODE: D
STYLE: N/A	
VOLUME (NO): N/A	
AutoCAD	