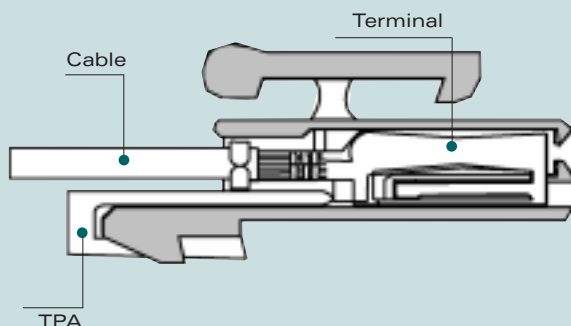
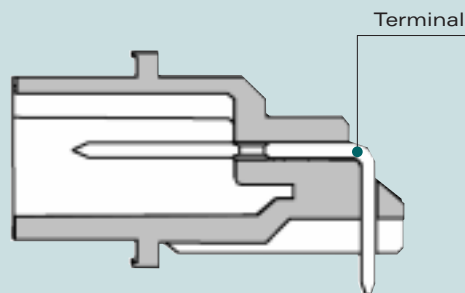




## Cross Sectional View



Female Connector

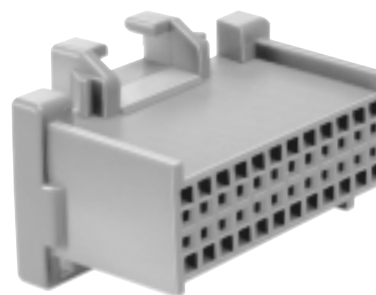


Male Header Connector Assembly

TPA-A  
(Terminal Position Assurance)

TPA-B  
(Terminal Position Assurance)

Female Terminal



Female Connector

### MICRO-PACK FEMALE TERMINALS UNSEALED

Part #	Cable Range (mm <sup>2</sup> )	Material	Plating
12146448	1.0-0.80	Copper Nickel Alloy	Tin
12146447	0.50-0.35	Copper Nickel Alloy	Tin

Nickel/Gold plating available.

### MICRO-PACK FEMALE CONNECTORS UNSEALED

# Cavities	Connector	Color	Material	TPA-A	TPA-B
6way: 6	12064993	Black	PBT	12066170	—
10way: 4	12066189	Natural	PBT	12059160	—
: 6	12064993	Black	PBT	12066170	—
12way: 12	12064799	Black	PBT 30% GF	12064822	12064823
13way: 4	12066189	Natural	PBT	12059160	—
: 9	12066130	Natural	PBT	12064986	—
15way: 6	12064978	Gray	PBT	12066170	—
: 9	12064980	Black	PBT	12064986	—
16way: 16	12110259	Green	PBT 30% GF	12048344	12048345
20way: 10	12047531	Black	PA66 HS IM	Button Lock	—
: 10	12065785	Gray	PBT	Button Lock	—
24way: 24	12110088	Lt. Gray	PBT 30% GF	12047900	12047901
32way: 32	12110113	Dk. Red	PBT 30% GF	12045889	12045890

# Cavities	Connector	Color	Material	TPA-A	TPA-B
32way: 32	12110207	Lt. Blue	PBT 30% GF	12045889	12045890
40way: 16	12084945	Gray	PBT 30% GF	12048344	12048345
: 24	12110088	Lt. Gray	PBT 30% GF	12047900	12047901
48way: 24	12110244	Pink	PBT 30% GF	12047900	12047901
: 24	12110206	Lt. Blue	PBT 30% GF	12047900	12047901
56way: 24	12110206	Lt. Blue	PBT 30% GF	12047900	12047901
: 32	12110207	Lt. Blue	PBT 30% GF	12045889	12045890
64way: 16	12084945	Gray	PBT 30% GF	12048344	12048345
: 24	12110088	Lt. Gray	PBT 30% GF	12047900	12047901
: 24	12110244	Pink	PBT 30% GF	12047900	12047901
<b>Mixed</b>					
32way: 8	15357040	Md. Gray	PA66 HS IM	15324332	—
: 24	12110088	Lt. Gray	PBT 30% GF	12047900	12047901

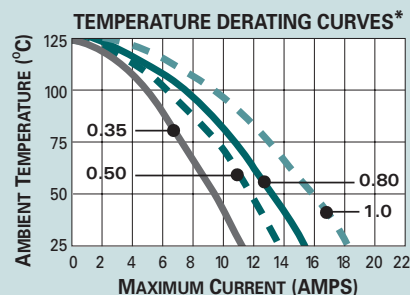
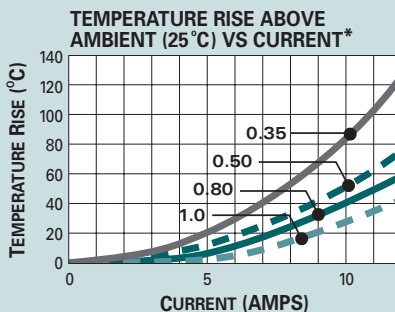
<http://delphi.com/products/connect>



### Unsealed System Application Information

CABLE RANGE (mm<sup>2</sup>): ..... 0.35-1.0  
 CURRENT RANGE (AMPS): ..... 0-5  
 TEMP RANGE °C: ..... -40 to 85  
 RESISTANCE: ..... <10mΩ@20mV  
 VOLTAGE DROP: ..... <10.0mV/amp  
 CENTERLINE SPACING (mm): ..... 3.0  
 TERMINAL DIAMETER (mm): ..... 1.0

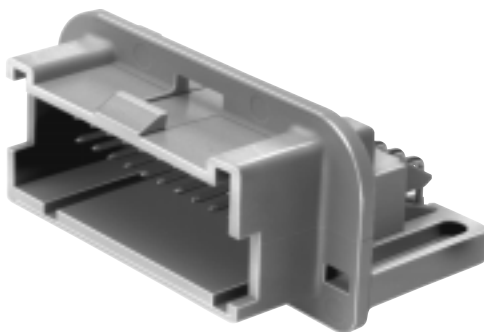
#### MICRO-PACK 100 TERMINALS-Tin Plated



\*The test data are based on single circuits in free space and were generated using a "Lumped Resistance" model. This model does not account for all of the variables that would be present in an actual application. For actual product performance, contact your regional support representative at the number listed below.



CPA  
(Connector Position Assurance)



Male Header Connector Assembly

#### SECTION NOTES:

- Contact your regional support representative at the number listed below.
- Due to rigid tolerances of connector cavities, it is critical to meet all crimp dimensions as specified.
- Different color and connector indexing features are also available.
- Low profile and right angle TPAs also available.

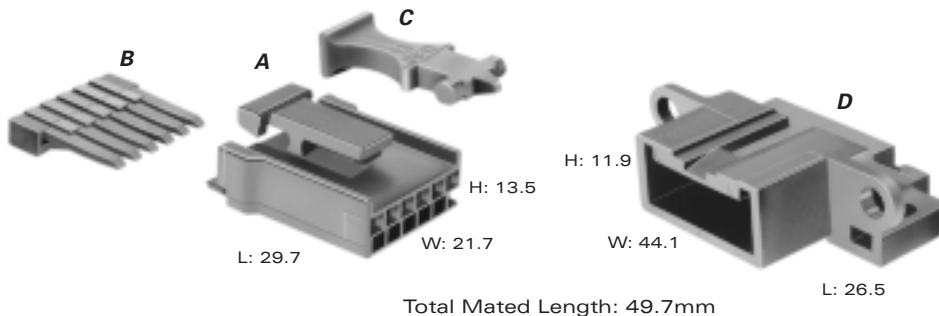
#### MICRO-PACK MALE HEADER CONNECTOR ASSEMBLIES UNSEALED

# Pins	Connector	Color	Material
6	12065870	Black	PBT 30% GF
10	12065647	Black	PBT 30% GF
12	12064798	Black	PBT 30% GF
13	12066307	Black	PBT 30% GF
15	12059915	Black	PBT 30% GF
16	12110261	Green	PBT 30% GF
20*	12089852	Gray	PBT 30% GF
24	12092886	Gray	PBT 30% GF

# Pins	Connector	Color	Material
32*	12129340	Dk. Red	PBT 30% GF
32*	12110323	Lt. Blue	PBT 30% GF
40	12191050	Gray	PBT 30% GF
48	12191140	Natural	PBT 30% GF
56*	12110209	Lt. Blue	PBT 30% GF
64	12160861	Black	PBT 30% GF
<b>Mixed</b>			
32	15357042	Gray	PBT 30% GF

Terminals included in connector assembly.  
\* Gold plating available.

<http://delphi.com/products/connect>

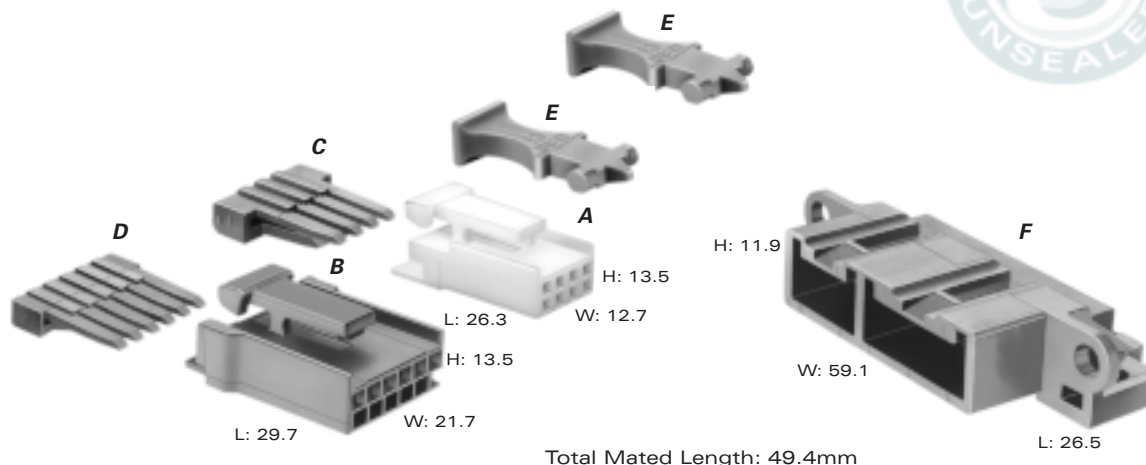


**A** **PART NO: 12064993**  
 DESCRIPTION: Connector 6F  
 SIZE: 29.7L x 13.5H x 21.7W  
 COLOR: Black  
 MATERIAL: PBT  
 TERMINALS: See Page 170

**D** **PART NO: 12065870**  
 DESCRIPTION: Connector Assembly 6M  
 SIZE: 26.5L x 11.9H x 44.1W  
 COLOR: Black  
 MATERIAL: PBT 30% GF

**B** **PART NO: 12066170**  
 DESCRIPTION: TPA  
 COLOR: Red  
 MATERIAL: PA6

**C** **PART NO: 12064989**  
 DESCRIPTION: CPA  
 COLOR: Orange  
 MATERIAL: PP



**A PART NO: 12066189**

DESCRIPTION: Connector 4F  
 SIZE: 26.3L x 13.5H x 12.7W  
 COLOR: Natural  
 MATERIAL: PBT  
 TERMINALS: See Page 170

**F PART NO: 12065647**

DESCRIPTION: Connector Assembly 10M  
 SIZE: 26.5L x 11.9H x 59.1W  
 COLOR: Black  
 MATERIAL: PBT 30% GF

**B PART NO: 12064993**

DESCRIPTION: Connector 6F  
 SIZE: 29.7L x 13.5H x 21.7W  
 COLOR: Black  
 MATERIAL: PBT  
 TERMINALS: See Page 170

**C PART NO: 12059160**

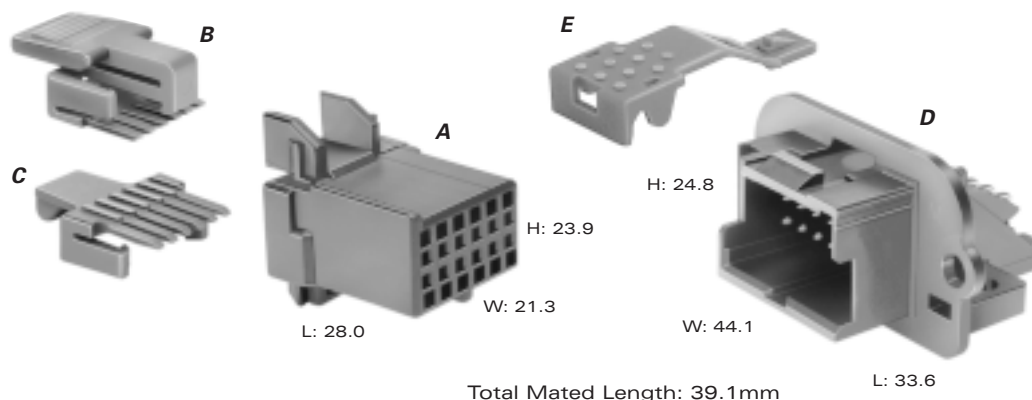
DESCRIPTION: TPA  
 COLOR: Red  
 MATERIAL: PA6

**D PART NO: 12066170**

DESCRIPTION: TPA  
 COLOR: Red  
 MATERIAL: PA6

**E PART NO: 12064989**

DESCRIPTION: CPA  
 NUMBER REQ: 2  
 COLOR: Orange  
 MATERIAL: PP



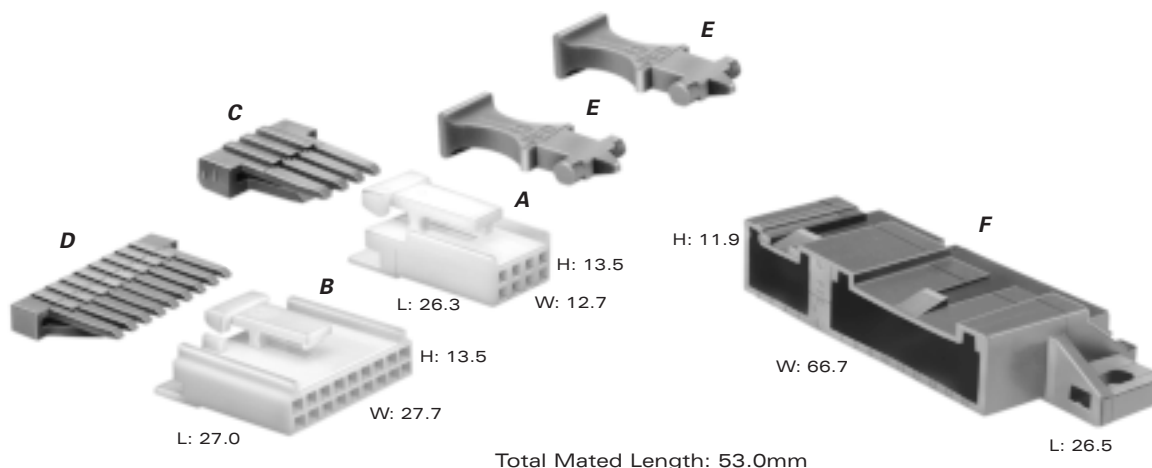
**A PART NO: 12064799**  
 DESCRIPTION: Connector 12F  
 SIZE: 28.0L x 23.9H x 21.3W  
 COLOR: Black  
 MATERIAL: PBT 30% GF  
 TERMINALS: See Page 170

**B PART NO: 12064822**  
 DESCRIPTION: TPA  
 COLOR: Blue  
 MATERIAL: PA6

**C PART NO: 12064823**  
 DESCRIPTION: TPA  
 COLOR: Blue  
 MATERIAL: PA6

**D PART NO: 12064798**  
 DESCRIPTION: Connector Assembly 12M  
 SIZE: 33.6L x 24.8H x 44.1W  
 COLOR: Black  
 MATERIAL: PBT 30% GF

**E PART NO: 12077899**  
 DESCRIPTION: CPA  
 COLOR: Orange  
 MATERIAL: PP



### A PART NO: 12066189

DESCRIPTION: Connector 4F  
 SIZE: 26.3L x 13.5H x 12.7W  
 COLOR: Natural  
 MATERIAL: PBT  
 TERMINAL: See Page 170

### F PART NO: 12066307

DESCRIPTION: Connector Assembly 13M  
 SIZE: 26.5L x 11.9H x 66.7W  
 COLOR: Black  
 MATERIAL: PBT 30% GF

### B PART NO: 12066130

DESCRIPTION: Connector 9F  
 SIZE: 27.0L x 13.5H x 27.7W  
 COLOR: Natural  
 MATERIAL: PBT  
 TERMINALS: See Page 170

### C PART NO: 12059160

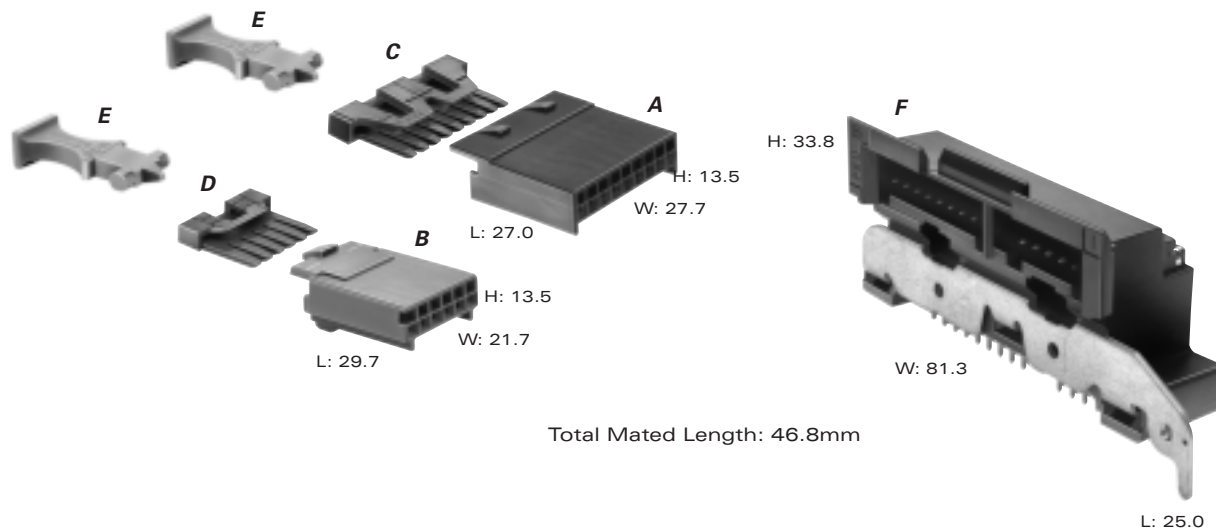
DESCRIPTION: TPA  
 COLOR: Natural  
 MATERIAL: PA6

### D PART NO: 12064986

DESCRIPTION: TPA  
 COLOR: Red  
 MATERIAL: PA6

### E PART NO: 12064989

DESCRIPTION: CPA  
 NUMBER REQ: 2  
 COLOR: Orange  
 MATERIAL: PP



**A PART NO: 12064980**  
 DESCRIPTION: Connector 9F  
 SIZE: 27.0L x 13.5H x 27.7W  
 COLOR: Black  
 MATERIAL: PBT  
 TERMINALS: See Page 170

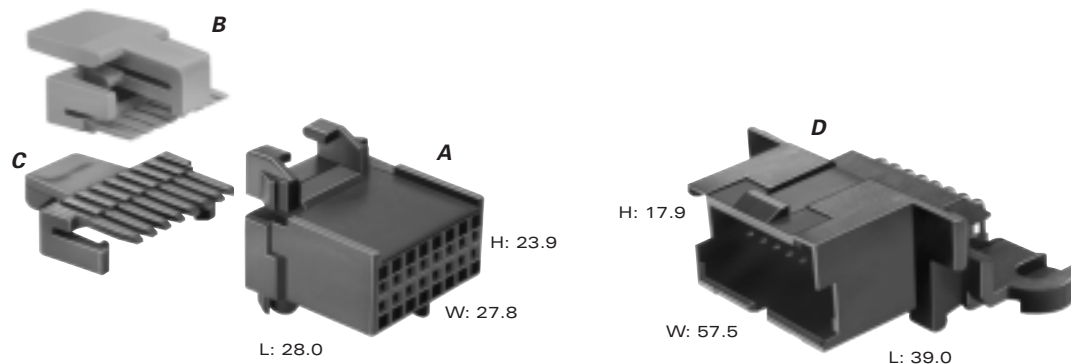
**F PART NO: 12059915**  
 DESCRIPTION: Connector Assembly 15M  
 SIZE: 25.0L x 33.8H x 81.3W  
 COLOR: Black  
 MATERIAL: PBT 30% GF

**B PART NO: 12064978**  
 DESCRIPTION: Connector 6F  
 SIZE: 29.7L x 13.5H x 21.7W  
 COLOR: Gray  
 MATERIAL: PBT  
 TERMINALS: See Page 170

**C PART NO: 12064986**  
 DESCRIPTION: TPA  
 COLOR: Red  
 MATERIAL: PA6

**D PART NO: 12066170**  
 DESCRIPTION: TPA  
 COLOR: Red  
 MATERIAL: PA6

**E PART NO: 12064989**  
 DESCRIPTION: CPA  
 NUMBER REQ: 2  
 COLOR: Orange  
 MATERIAL: PP



Total Mated Length: 60.4mm

**A** PART NO: 12110259\* (Green)  
12084944\* (Black)  
12084945\* (Gray)

DESCRIPTION: Connector 16F  
SIZE: 28.0L x 23.9H x 27.8W  
MATERIAL: PBT 30% GF  
TERMINALS: See Page 170  
\*DIFFERENT INDEXING FEATURE.

**D** PART NO: 12110261\* (Green)  
12084948\* (Black)  
12084949\* (Gray)

DESCRIPTION: Connector Assembly 16M  
SIZE: 39.0L x 17.9H x 57.5W  
MATERIAL: PBT 30% GF  
\*DIFFERENT INDEXING FEATURE.

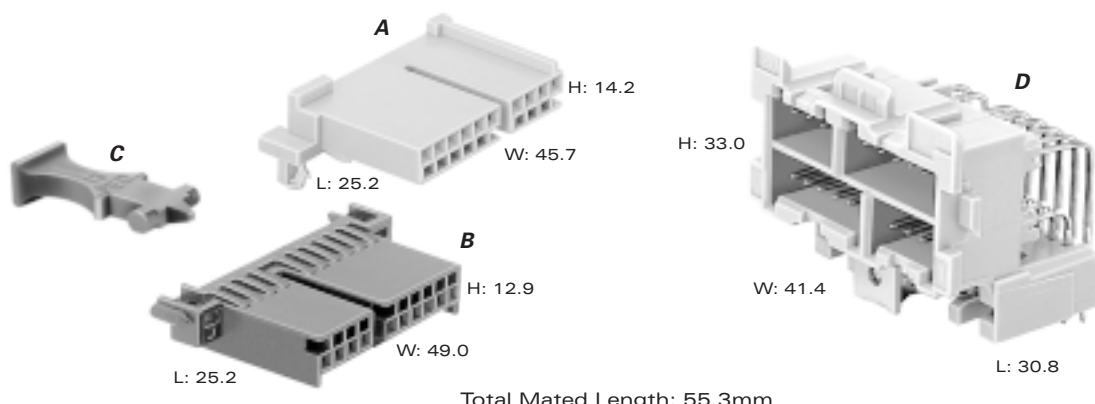
**B** PART NO: 12048344

DESCRIPTION: TPA  
COLOR: Blue  
MATERIAL: PA6

**C** PART NO: 12048345

DESCRIPTION: TPA  
COLOR: Blue  
MATERIAL: PA6



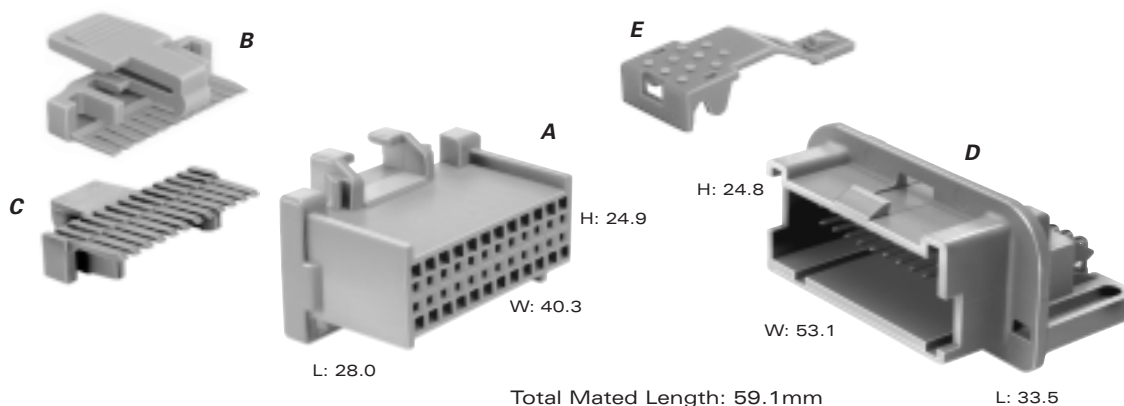


**A** PART NO: **12065785**  
 DESCRIPTION: Connector 10F - with Button Lock  
 SIZE: 25.2L x 14.2H x 45.7W  
 COLOR: Gray  
 MATERIAL: PBT  
 TERMINALS: See Page 170

**D** PART NO: **12089852**  
 DESCRIPTION: Connector Assembly 20M  
 SIZE: 30.8L x 33.0H x 41.4W  
 COLOR: Gray  
 MATERIAL: PBT 30% GF

**B** PART NO: **12047531**  
 DESCRIPTION: Connector 10F - with Button Lock  
 SIZE: 25.2L x 12.9H x 49.0W  
 COLOR: Black  
 MATERIAL: PA66 HS IM  
 TERMINALS: See Page 170

**C** PART NO: **12064989**  
 DESCRIPTION: CPA  
 COLOR: Orange  
 MATERIAL: PP



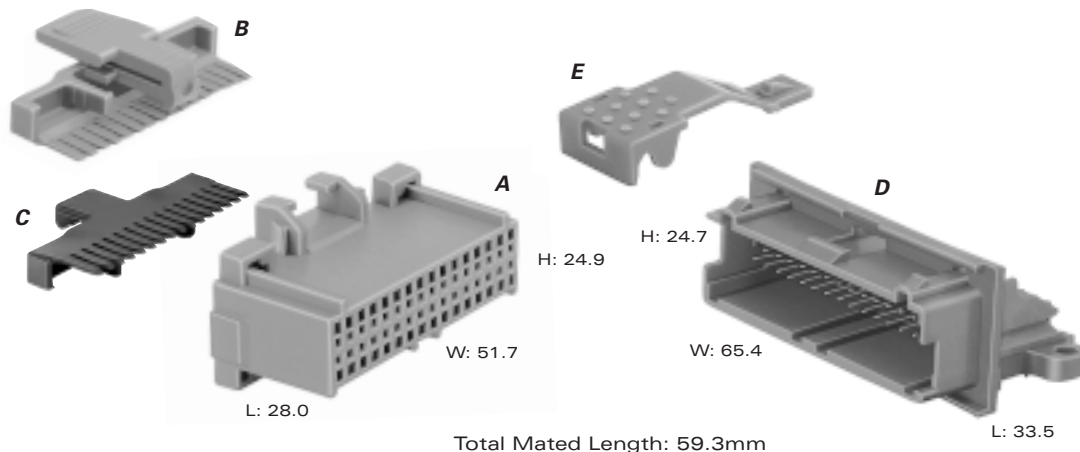
**A PART NO: 12110088**  
 DESCRIPTION: Connector 24F  
 SIZE: 28.0L x 24.9H x 40.3W  
 COLOR: Lt. Gray  
 MATERIAL: PBT 30% GF  
 TERMINALS: See Page 170

**B PART NO: 12047900**  
 DESCRIPTION: TPA  
 COLOR: Blue  
 MATERIAL: PA6

**C PART NO: 12047901**  
 DESCRIPTION: TPA  
 COLOR: Blue  
 MATERIAL: PA6

**D PART NO: 12092886**  
 DESCRIPTION: Connector Assembly 24M  
 SIZE: 33.5L x 24.8H x 53.1W  
 COLOR: Gray  
 MATERIAL: PBT 30% GF

**E PART NO: 12077899**  
 DESCRIPTION: CPA  
 COLOR: Orange  
 MATERIAL: PP



**A** PART NO: 12110113\* (Dk. Red)  
12110114\* (White)  
12110115\* (Dk. Blue)  
12110112\* (Tan)

DESCRIPTION: Connector 32F  
SIZE: 28.0L x 24.9H x 51.7W  
MATERIAL: PBT 30% GF  
TERMINALS: See Page 170  
\*DIFFERENT INDEXING FEATURE.

**B** PART NO: 12045889

DESCRIPTION: TPA  
COLOR: Blue  
MATERIAL: PA6

**C** PART NO: 12045890

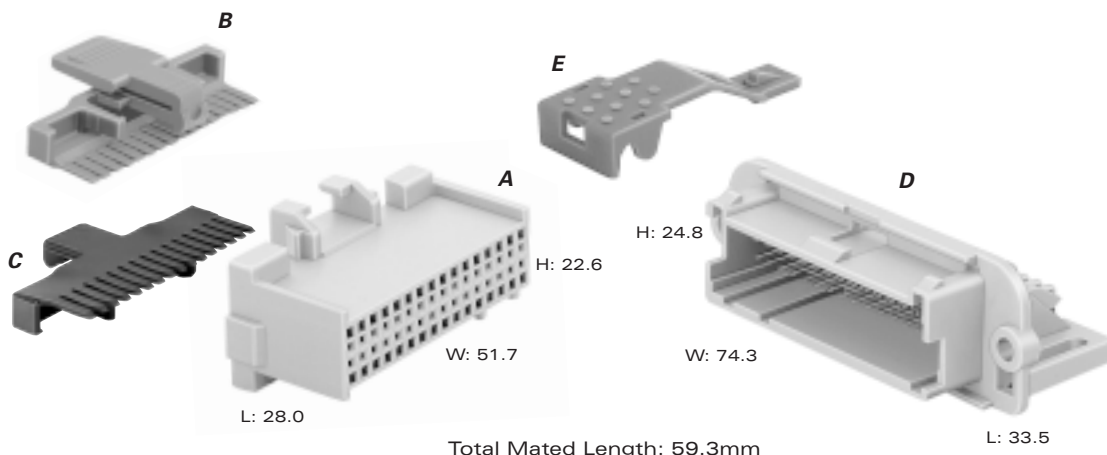
DESCRIPTION: TPA  
COLOR: Md. Gray  
MATERIAL: PA6

**D** PART NO: 12129340\* (Dk. Red)  
12129341\* (Natural)  
12129342\* (Dk. Blue)  
12129369\* (Tan)

DESCRIPTION: Connector Assembly 32M  
SIZE: 33.5L x 24.7H x 65.4W  
MATERIAL: PBT 30% GF  
\*DIFFERENT INDEXING FEATURE.

**E** PART NO: 12077899

DESCRIPTION: CPA  
COLOR: Orange  
MATERIAL: PP



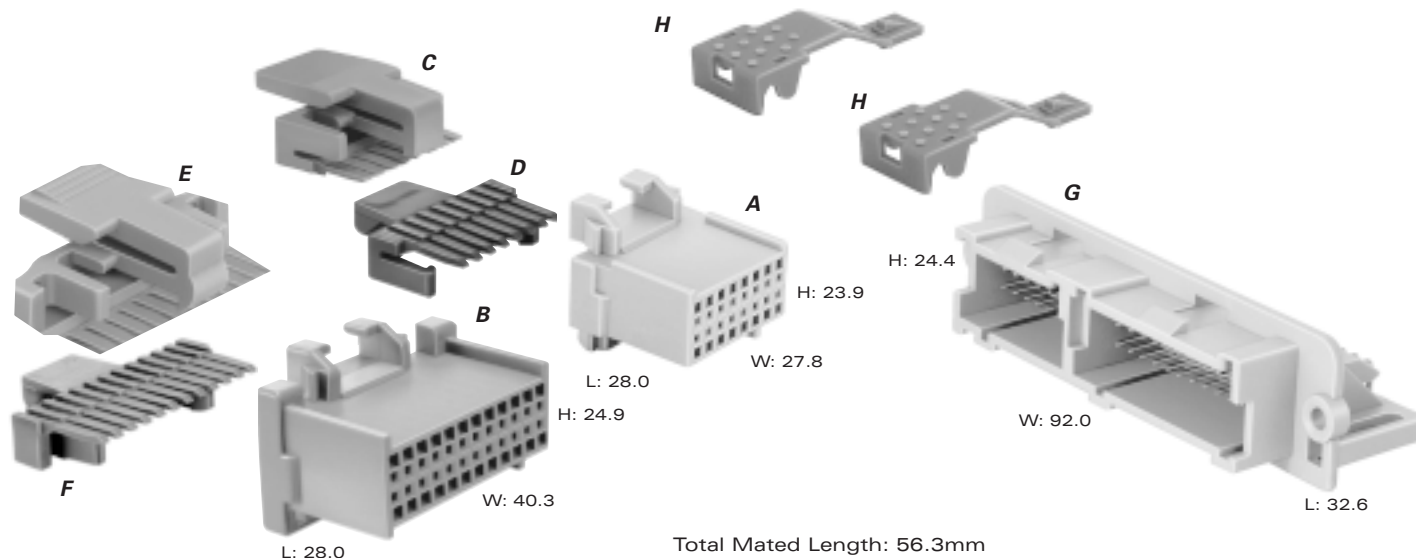
**A PART NO: 12110207**  
 DESCRIPTION: Connector 32F  
 SIZE: 28.0L x 22.6H x 51.7W  
 COLOR: Lt. Blue  
 MATERIAL: PBT 30% GF  
 TERMINALS: See Page 170

**B PART NO: 12045889**  
 DESCRIPTION: TPA  
 COLOR: Blue  
 MATERIAL: PA6

**C PART NO: 12045890**  
 DESCRIPTION: TPA  
 COLOR: Md. Gray  
 MATERIAL: PA6

**D PART NO: 12110323**  
 DESCRIPTION: Connector Assembly 32M  
 SIZE: 33.5L x 24.8H x 74.3W  
 COLOR: Lt. Blue  
 MATERIAL: PBT 30% GF

**E PART NO: 12077899**  
 DESCRIPTION: CPA  
 COLOR: Orange  
 MATERIAL: PP



**A PART NO: 12084945**  
 DESCRIPTION: Connector 16F  
 SIZE: 28.0L x 23.9H x 27.8W  
 COLOR: Gray  
 MATERIAL: PBT 30% GF  
 TERMINALS: See Page 170

**B PART NO: 12110088**  
 DESCRIPTION: Connector 24F  
 SIZE: 28.0L x 24.9H x 40.3W  
 COLOR: Lt. Gray  
 MATERIAL: PBT 30% GF  
 TERMINALS: See Page 170

**C PART NO: 12048344**  
 DESCRIPTION: TPA  
 COLOR: Blue  
 MATERIAL: PA6

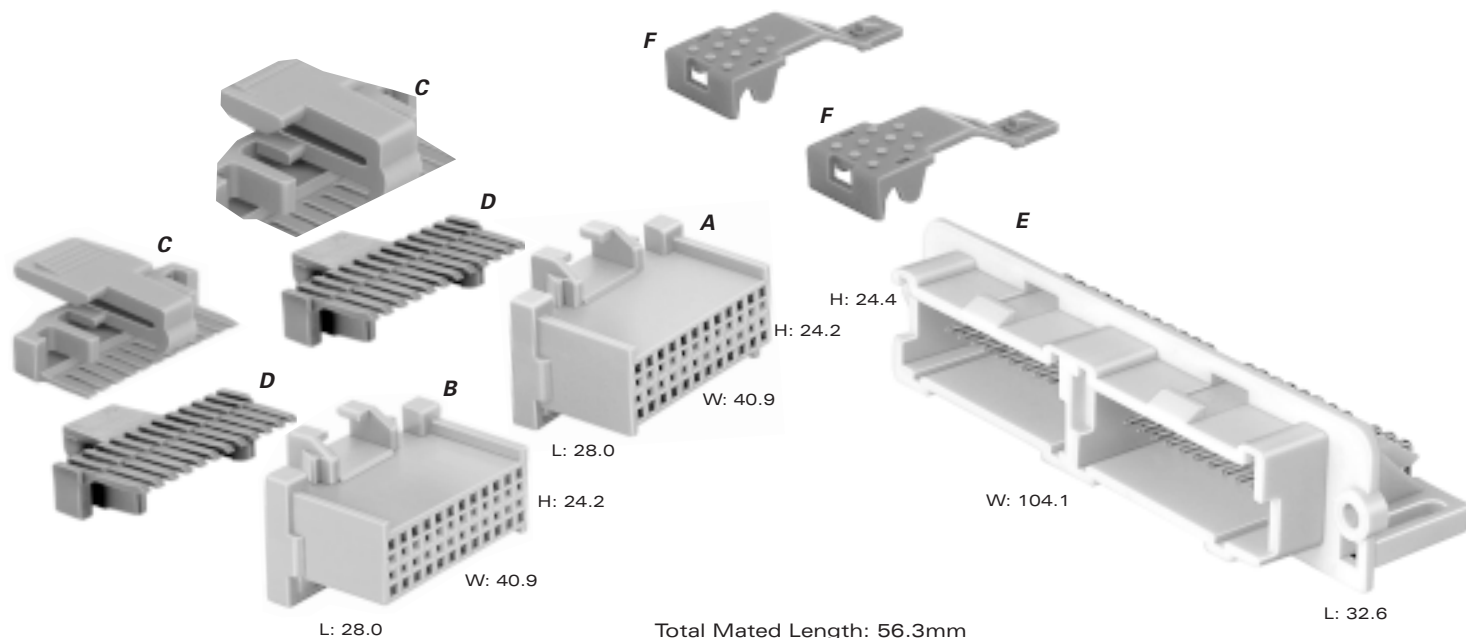
**D PART NO: 12048345**  
 DESCRIPTION: TPA  
 COLOR: Blue  
 MATERIAL: PA6

**E PART NO: 12047900**  
 DESCRIPTION: TPA  
 COLOR: Blue  
 MATERIAL: PA6

**F PART NO: 12047901**  
 DESCRIPTION: TPA  
 COLOR: Blue  
 MATERIAL: PA6

**G PART NO: 12191050**  
 DESCRIPTION: Connector Assembly 40M  
 SIZE: 32.6L x 24.4H x 92.0W  
 COLOR: Gray  
 MATERIAL: PBT 30% GF

**H PART NO: 12077899**  
 DESCRIPTION: CPA  
 NUMBER REQ: 2  
 COLOR: Orange  
 MATERIAL: PP



**A PART NO: 12110244**  
 DESCRIPTION: Connector 24F  
 SIZE: 28.0L x 24.2H x 40.9W  
 COLOR: Pink  
 MATERIAL: PBT 30% GF  
 TERMINALS: See Page 170

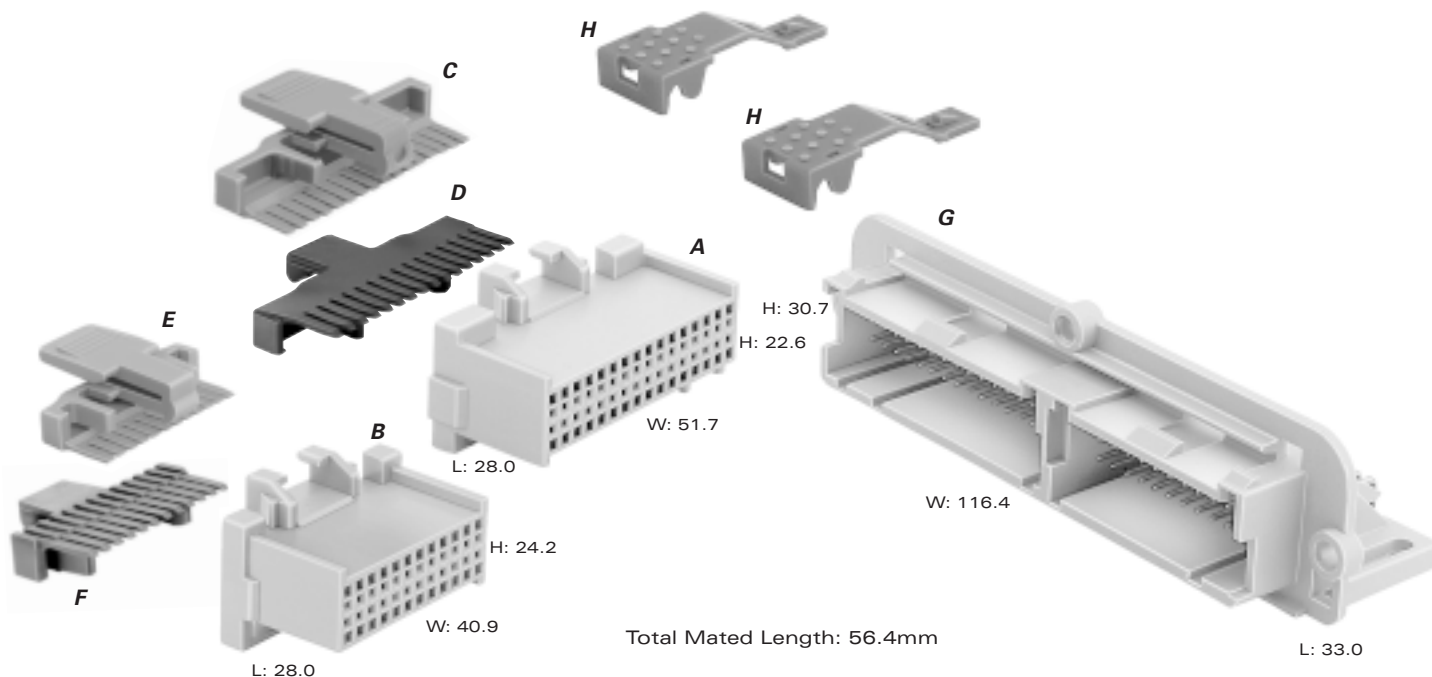
**E PART NO: 12191140**  
 DESCRIPTION: Connector Assembly 48M  
 SIZE: 32.6L x 24.4H x 104.1W  
 COLOR: Natural  
 MATERIAL: PBT 30% GF

**B PART NO: 12110206**  
 DESCRIPTION: Connector 24F  
 SIZE: 28.0L x 24.2H x 40.9W  
 COLOR: Lt. Blue  
 MATERIAL: PBT 30% GF  
 TERMINALS: See Page 170

**F PART NO: 12077899**  
 DESCRIPTION: CPA  
 NUMBER REQ: 2  
 COLOR: Orange  
 MATERIAL: PP

**C PART NO: 12047900**  
 DESCRIPTION: TPA  
 NUMBER REQ: 2  
 COLOR: Blue  
 MATERIAL: PA6

**D PART NO: 12047901**  
 DESCRIPTION: TPA  
 NUMBER REQ: 2  
 COLOR: Blue  
 MATERIAL: PA6



**A PART NO:** 12110207\* (Lt. Blue)  
12110245\* (Pink)  
12160779\* (Brown)

DESCRIPTION: Connector 32F  
SIZE: 28.0L x 22.6H x 51.7W  
MATERIAL: PBT 30% GF  
TERMINALS: See Page 170  
\*DIFFERENT INDEXING FEATURE.

**G PART NO:** 12110209\* (Lt. Blue)  
12110241\* (Pink)  
12160777\* (Brown)

DESCRIPTION: Connector Assembly 56M  
SIZE: 33.0L x 30.7H x 116.4W  
COLOR: Lt. Blue  
MATERIAL: PBT 30% GF  
\*DIFFERENT INDEXING FEATURE.

**B PART NO:** 12110206\* (Lt. Blue)  
12110244\* (Pink)  
12160778\* (Brown)

DESCRIPTION: Connector 24F  
SIZE: 28.0L x 24.2H x 40.9W  
MATERIAL: PBT 30% GF  
TERMINALS: See Page 170  
\*DIFFERENT INDEXING FEATURE.

**H PART NO:** 12077899

DESCRIPTION: CPA  
NUMBER REQ: 2  
COLOR: Orange  
MATERIAL: PP

**C PART NO:** 12045889

DESCRIPTION: TPA  
COLOR: Blue  
MATERIAL: PA6

**D PART NO:** 12045890

DESCRIPTION: TPA  
COLOR: Md. Gray  
MATERIAL: PA6

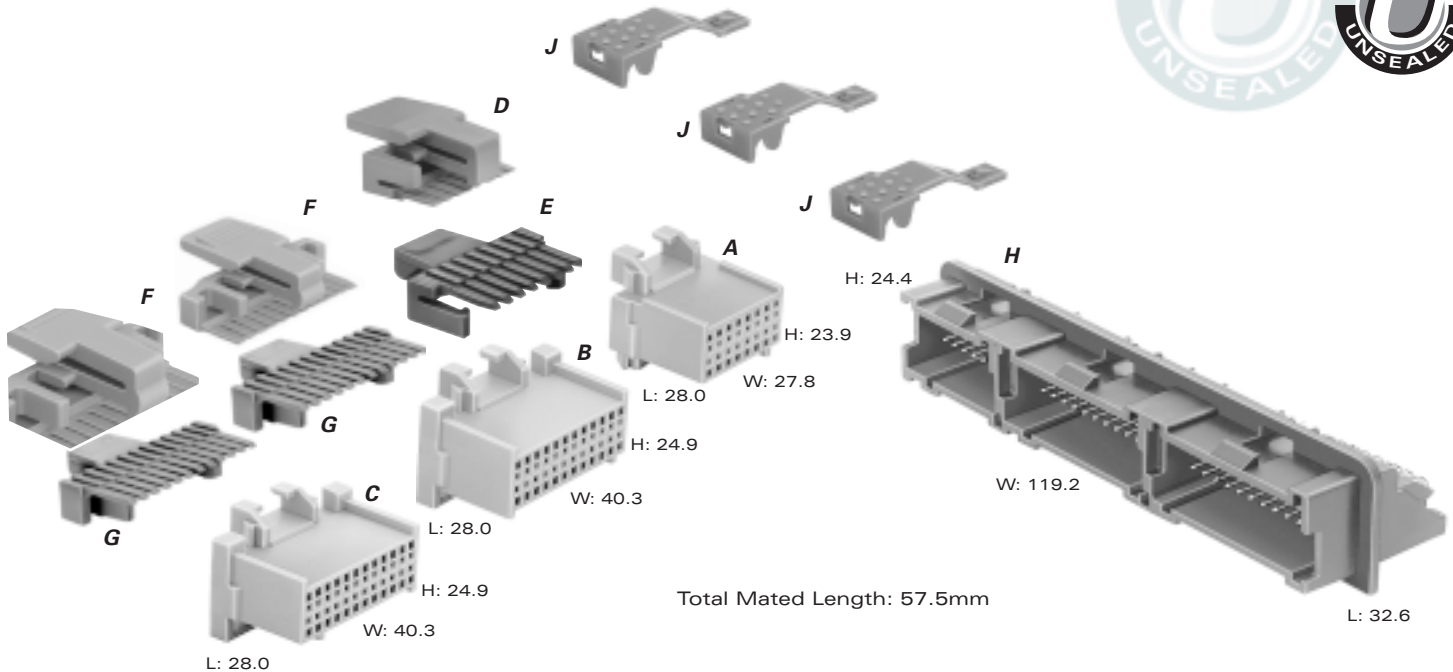
**E PART NO:** 12047900

DESCRIPTION: TPA  
COLOR: Blue  
MATERIAL: PA6

**F PART NO:** 12047901

DESCRIPTION: TPA  
COLOR: Blue  
MATERIAL: PA6





**A PART NO: 12084945\* (Gray)  
12191375\* (Purple)**

DESCRIPTION: Connector 16F  
SIZE: 28.0L x 23.9H x 27.8W  
COLOR: Gray  
MATERIAL: PBT 30% GF  
TERMINALS: See Page 170  
\*DIFFERENT INDEXING FEATURE.

**H PART NO: 12160861\* (Black)  
12191293\* (Dk. Blue)**

DESCRIPTION: Connector Assembly 64M  
SIZE: 32.6L x 24.4H x 119.2W  
MATERIAL: PBT 30% GF  
\*DIFFERENT INDEXING FEATURE.

**B PART NO: 12110088\* (Lt. Gray)  
12110206\* (Lt. Blue)**

DESCRIPTION: Connector 24F  
SIZE: 28.0L x 24.9H x 40.3W  
MATERIAL: PBT 30% GF  
TERMINALS: See Page 170  
\*DIFFERENT INDEXING FEATURE.

**J PART NO: 12077899**

DESCRIPTION: CPA  
NUMBER REQ: 3  
COLOR: Orange  
MATERIAL: PP

**C PART NO: 12110244\* (Pink)  
12160778\* (Brown)**

DESCRIPTION: Connector 24F  
SIZE: 28.0L x 24.9H x 40.3W  
MATERIAL: PBT 30% GF  
TERMINALS: See Page 170  
\*DIFFERENT INDEXING FEATURE.

**D PART NO: 12048344**

DESCRIPTION: TPA  
COLOR: Blue  
MATERIAL: PA6

**E PART NO: 12048345**

DESCRIPTION: TPA  
COLOR: Blue  
MATERIAL: PA6

**F PART NO: 12047900**

DESCRIPTION: TPA  
NUMBER REQ: 2  
COLOR: Blue  
MATERIAL: PA6

**G PART NO: 12047901**

DESCRIPTION: TPA  
NUMBER REQ: 2  
COLOR: Blue  
MATERIAL: PA6

<http://delphi.com/products/connect>