

APEX connector systems

The APEX family of electrical connection systems incorporates proven technology for harsh environments in automotive, off-highway, and specialty vehicles. These inline connectors are designed for applications where heat, vibration and moisture are a concern.

Superior Design and Construction

These pre-assembled connectors minimize stocking inventory and are very easy to assemble and service. There are both sealed and unsealed versions in many configurations from 2-way to 24-way systems, capable of carrying up to 42 amps.

The **APEX 150** connection systems are the smaller connector, designed for wires sizes from 22 to 16 AWG, and are compatible with USCAR cavity specifications.

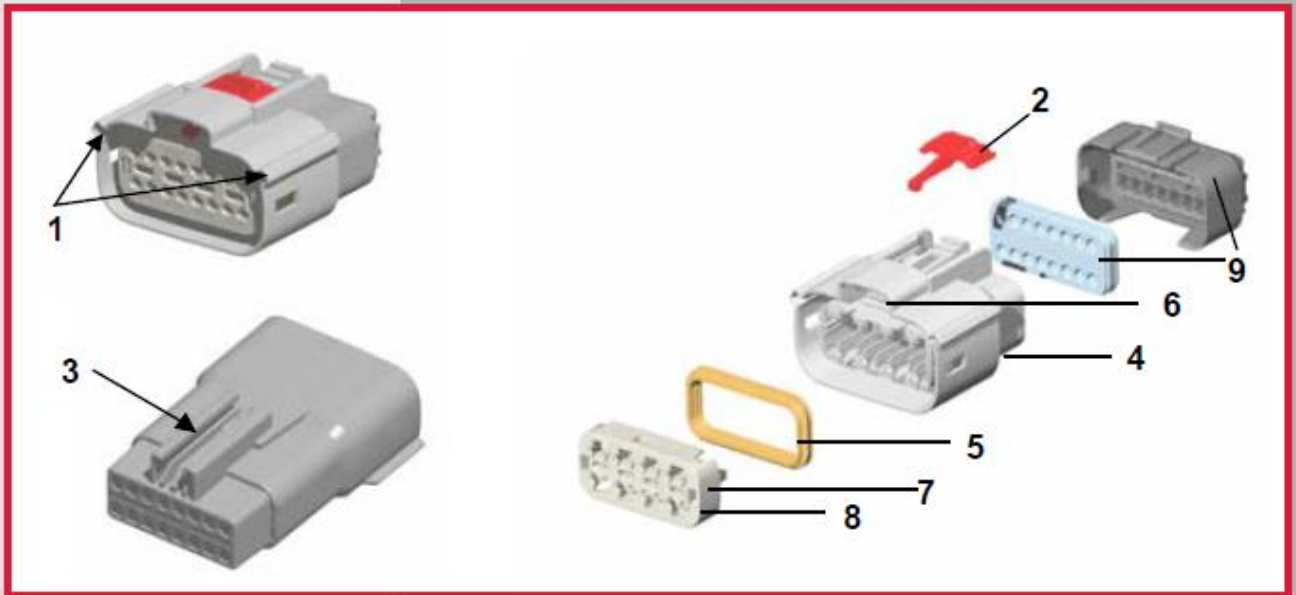
The **APEX 2.8** connection systems offer a wider range of sizes, circuits and options to meet your unique design requirements.

A new **APEX 24-way Hybrid** connection system combines circuits from both the 150 and 2.8 for maximum versatility in a compact package.



APEX 150

Features and Benefits



FEATURE		Benefit
1	Polarization molded-in, up to 4 indexes, scoop proof	Design flexibility
2	Pre-assembled integral Connector Position Assurance, CPA	Ease of assembly
3	Clip slot on male connectors	Flexibility for mounting
4	Plastic is molded with smooth well-rounded corners	Ergonomics for assembly
5	Double shroud design, protected interface seal	Increased durability and handling protection
6	Primary connector lock, audible, tactile, one-hand operation	Reliable and easy to mate
7	Pre-assembled integral Terminal Position Assurance, TPA	Ease of assembly
8	Blade lead-in / probe protection	Durability for service in the field
9	Pre-assembled Rear Mat seal with retainer	Ease of assembly

Performance Characteristics

Temperature Ranges:

Class 3: -40°C to +125°C

Exceeds USCAR2, 20 Performance Specifications

Meets USCAR 21 Crimp Specifications

Current Rating: 25 Amps based on USCAR Specification

Construction

Connector, Mat Seal, Seal Retainer, Interface Seal, TPA and CPA make up the connector assembly

Housing Material: PBT 30% GF

Interface Seal: Silicone

Terminal Compatibility

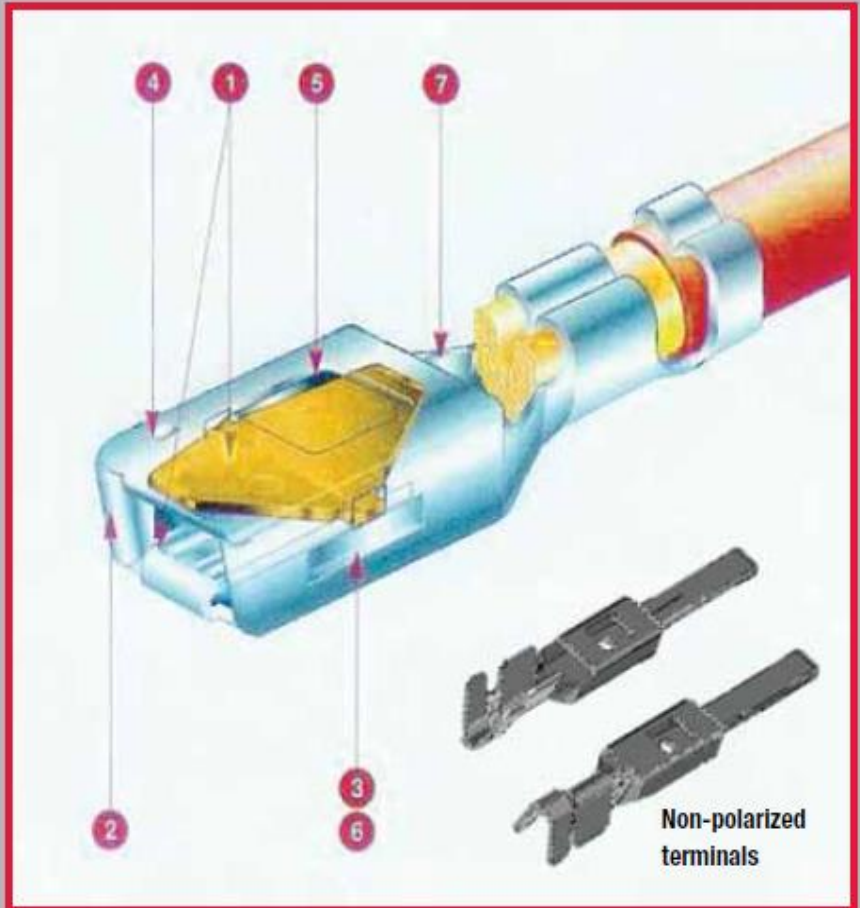
Mat Seal: Silicone

APEX 150

Features and Benefits

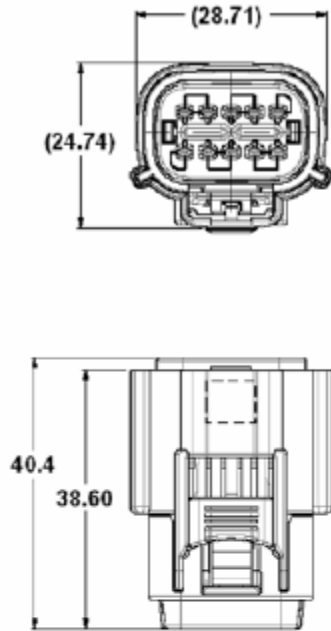
Main Features of APEX terminals

- Two-piece construction with an integrated floating spring made of beryllium copper
 - Terminal designed to have high current carrying capacity
1. Optimized contact function with:
 - Two stable contact lines
 - One contact point with the spring
 2. Fully protected front entry with rounded corners in the four directions:
 - Resistant to probe damage
 - Guides mating blade
 3. Protected contact area with a closed box
 4. Dimples provide overstress protection of the spring
 5. Two symmetrical locking areas:
 - Positive retention achieved in the housing without a vulnerable locking tang
 - Reversibility at 180°
 6. Box material is a highly conductive copper alloy for exceptional current rating.
 7. Coined edges eliminate the potential to tear the rear mat seal.

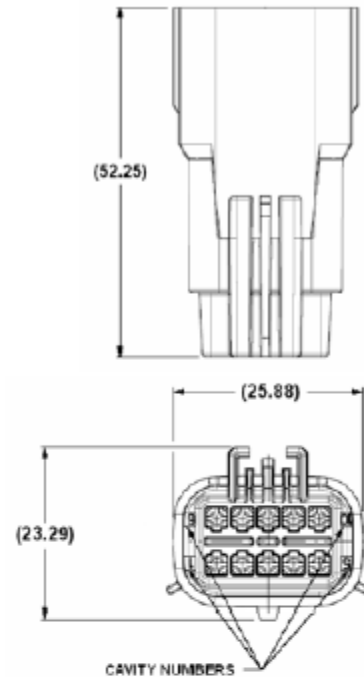


APEX 150 10 Way

FEMALE



MALE



INDEX TYPE	HOUSING COLOR	PLUGGED SEAL POSITIONS (X)										FEMALE ASSEMBLY PART NUMBER	MALE ASSEMBLY PART NUMBER (SLOT 1)	MALE ASSEMBLY PART NUMBER (SLOT 2)
		1	2	3	4	5	6	7	8	9	10			
A	BLACK											54241030	54241000	54241004
B	GREY											54241031	54241001	54241005
C	BROWN											54241032	54241002	54241006
D	GREEN											54241033	54241003	54241007
A	BLACK					X						54241034	54241008	54241010
B	GREY					X						54241035	54241009	54241011
A	BLACK					X	X					54241036	54241012	54241014
B	GREY					X	X					54241037	54241013	54241015

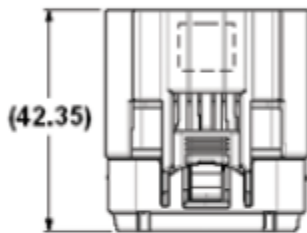
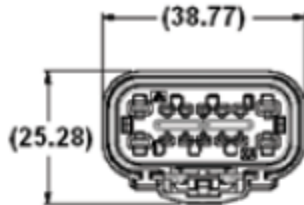
NOTE 1: Assembly part numbers also available without CPA. See sale drawing for part numbers

NOTE 2: See Page 9 for explanation of clip slot type 1 and clip slot type 2.

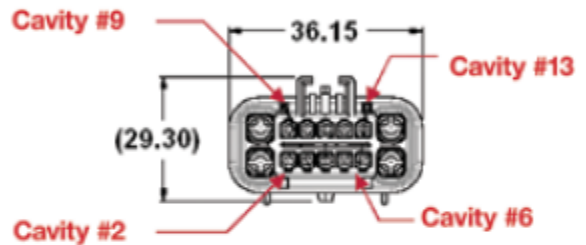
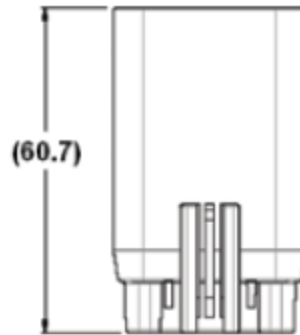
Additional plugged cavity configurations are available upon request.

APEX 150 14 Way Hybrid

FEMALE



MALE



INDEX TYPE	HOUSING COLOR	PLUGGED SEAL POSITIONS (X)														FEMALE ASSEMBLY PART NUMBER	MALE ASSEMBLY PART NUMBER (SLOT 1)	MALE ASSEMBLY PART NUMBER (SLOT 2)
		1	2	3	4	5	6	7	8	9	10	11	12	13	14			
A	BLACK															55251400	54251400	54251404
B	GREY															55251401	54251401	54251405
C	BROWN															55251402	54251402	54251406
D	GREEN															55251403	54251403	54251407
A	BLACK	X												X		55251408	54251412	
B	GREY	X												X		55251409	54251413	
A	BLACK					X										55251410	54251416	54251418
B	GREY					X										55251411	54251417	54251419
A	BLACK	X				X										55251412	54251420	54251422
B	GREY	X				X										55251413	54251421	54251423
A	BLACK	X				X								X		55251414	54251424	54251426
B	GREY	X				X								X		55251415	54251425	54251427
A	BLACK	X				X			X					X		55251416	54251428	54251430
B	GREY	X				X			X					X		55251417	54251429	54251431
E	YELLOW	*	*													55251404		54251408
F	YELLOW			*	*							*	*			55251405		54251409
G	YELLOW	*	*													55251406		54251410
H	YELLOW			*	*								*	*		55251407		54251411

NOTE 1: Assembly part numbers also available without CPA. See sale drawing for part numbers

NOTE 2: See Page 9 for explanation of clip slot type 1 and clip slot type 2.

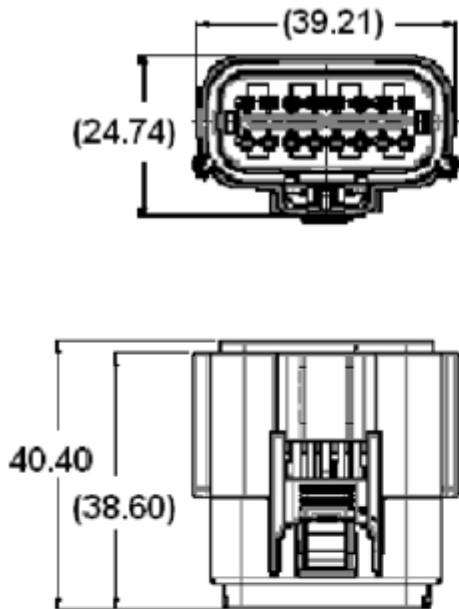
* Shorting bar exists in this position.

Additional plugged cavity configurations are available upon request.

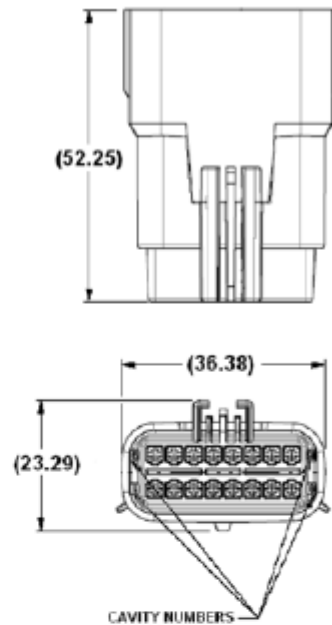
APEX 150

16 Way

FEMALE



MALE

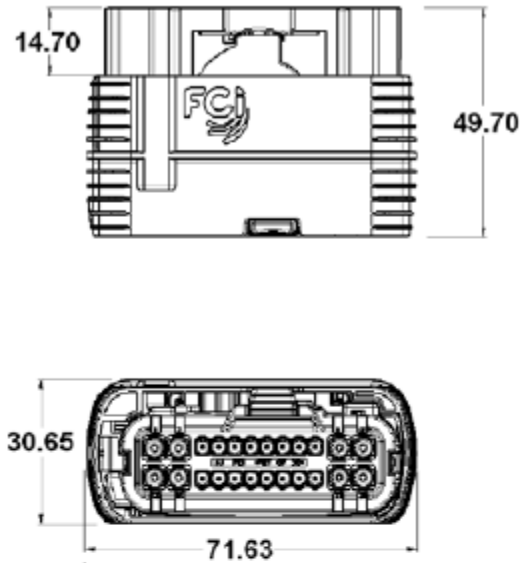


INDEX TYPE	HOUSING COLOR	PLUGGED SEAL POSITIONS (X)																FEMALE ASSEMBLY PART NUMBER	MALE ASSEMBLY PART NUMBER (SLOT 1)	MALE ASSEMBLY PART NUMBER (SLOT 2)
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16			
A	BLACK																	54241630	54241600	54241604
B	GREY																	54241631	54241601	54241605
C	BROWN																	54241632	54241602	54241606
D	GREEN																	54241633	54241603	54241607
A	BLACK								X									54241634	54241608	54241610
B	GREY							X										54241635	54241609	54241611
A	BLACK							X	X									54241636	54241612	54241614
B	GREY							X	X									54241637	54241613	54241615
A	BLACK	X						X	X									54241638	54241616	54241618
B	GREY	X						X	X									54241639	54241617	54241619
A	BLACK	X						X	X							X		54241640	54241620	54241622
B	GREY	X						X	X							X		54241641	54241621	54241623

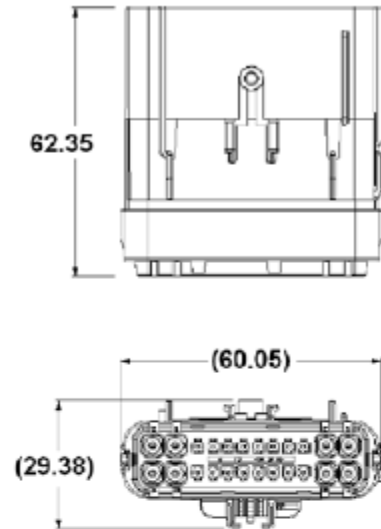
NOTE 1: Assembly part numbers also available without CPA. See sale drawing for part numbers
 NOTE 2: See Page 9 for explanation of clip slot type 1 and clip slot type 2.
 Additional plugged cavity configurations are available upon request.

Sealed 24 Way APEX Hybrid (1.5mm – 2.8mm)

FEMALE



MALE



INDEX TYPE	HOUSING COLOR	FEMALE ASSEMBLY PART NUMBER	MALE ASSEMBLY PART NUMBER
A	BLACK	F934000	F254000
B	GRAY	F044000	F354000
C	BROWN	F144000	F454000
D	GREEN	F244000	F554000

APPLICATION NOTES:

APEX 150 CAVITY DESIGNATIONS: CAVITIES 3,4,5,6,7,8,9,10 and 15,16,17,18,19,20,21,22

APEX 2.8 CAVITY DESIGNATIONS: CAVITIES 1,2,11,12,13,14,23,24

ALLOWABLE WIRE SIZE RANGE FOR 1.5 mm CAVITIES: 22-16 AWG TXL (1.50 mm min. to 2.35 mm max.)

ALLOWABLE WIRE SIZE RANGE FOR 2.8 mm CAVITIES: 18-12 AWG TXL (1.91 mm min. to 3.30 mm max.)

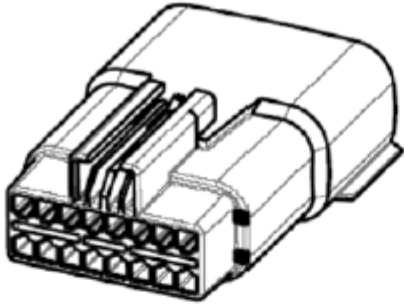
ASSOCIATED COMPONENTS: CAVITY PLUG FOR APEX 150 CAVITIES: 54241629

CAVITY PLUG FOR FEMALE APEX 2.8 CAVITIES: 54240002

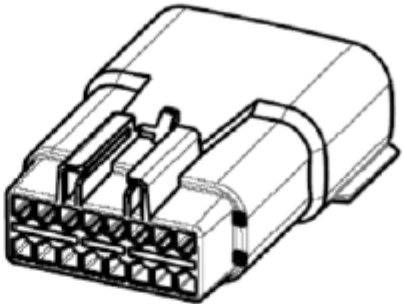
CAVITY PLUG FOR MALE APEX 2.8 CAVITIES: 54240003

FEATURES CHRYSLER TYPE CLIP SLOT

APEX connector clips for type 1 slots only

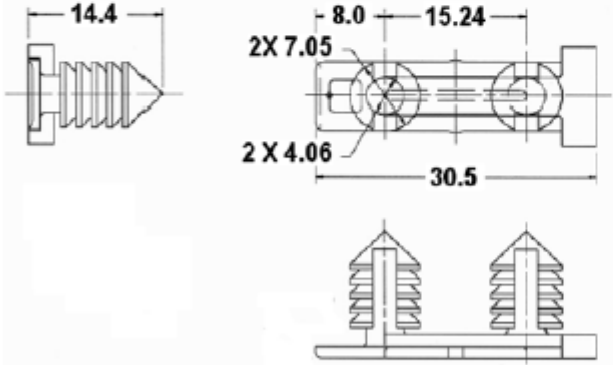


**CLIP SLOT
TYPE 1
(CHRYSLER TYPE)**

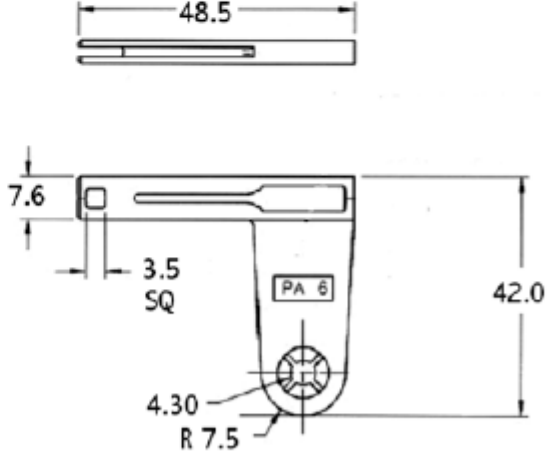


**CLIP SLOT
TYPE 2
(FORD TYPE)**

CLIP SELECTION TYPE 1 (DCX) ONLY



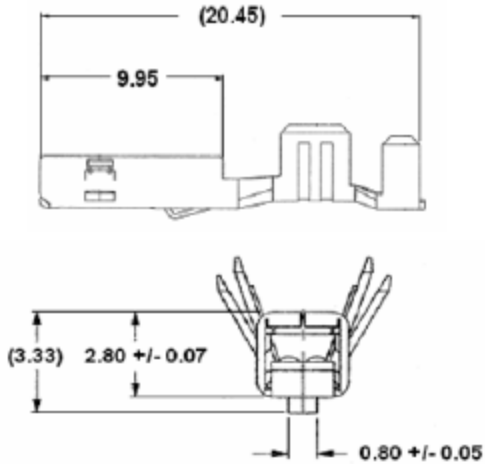
**DOUBLE X-TREE
PART NUMBER: 54200010**



**M5 WELD STUD CLIP
PART NUMBER: 54200002**

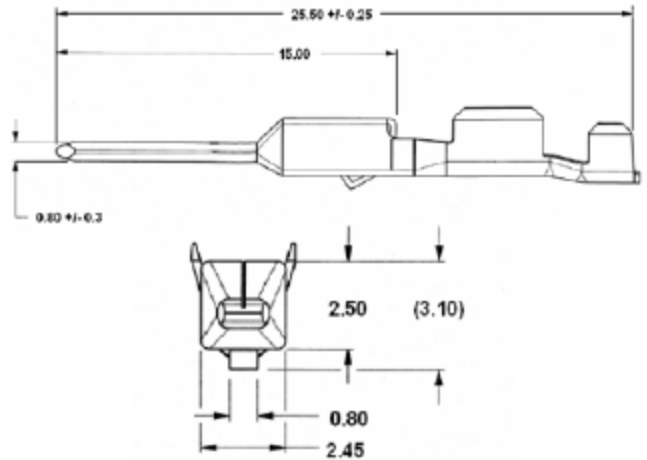
APEX 150 Terminals & Cavity Plug

FEMALE

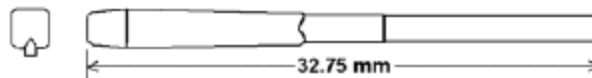


FEMALE TERMINAL PART NUMBER	WIRE GAGE	TERMINAL MATERIAL	TERMINAL PLATING
54002000	20-22	CuSn	Sn
54001625	16-18	CuSn	Sn
54001627	16-18	CuTeSn	NiPdAu
54002002	20-22	CuTeSn	NiPdAu

MALE



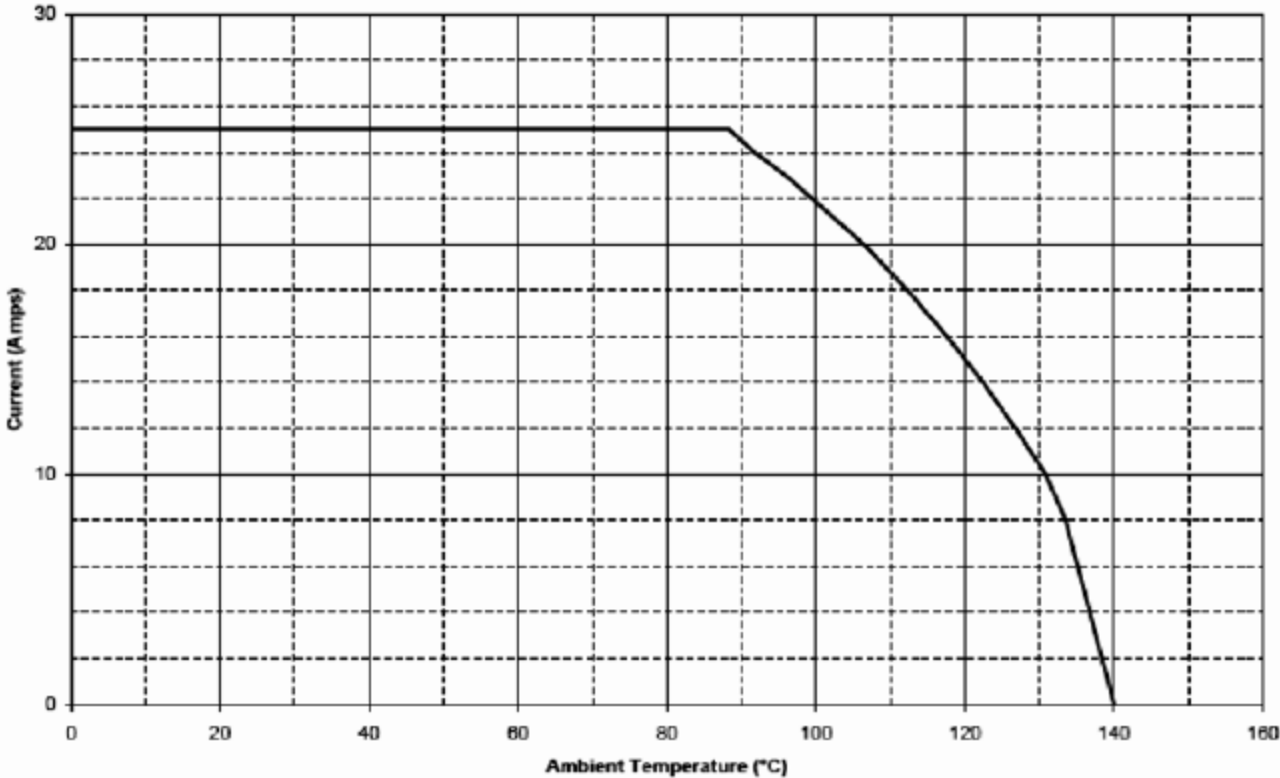
MALE TERMINAL PART NUMBER	WIRE GAGE	TERMINAL MATERIAL	TERMINAL PLATING
54002001	20-22	CuSn	Sn
54001626	16-18	CuSn	Sn
54001628	16-18	CuTeSn	NiPdAu
54002003	20-22	CuTeSn	NiPdAu
MALE TERMINAL FOR SHORTING BAR APPLICATIONS			
54002004	20-22	CuTeSn	NiPdAu
54001629	16-18	CuTeSn	NiPdAu



PART NUMBER	DESCRIPTION
54241629	APEX 150 Cavity Plug

APEX 150 Terminal De-Rating Curve

APEX 150 Current Derating – Discrete Terminals – 16 AWG (1.2mm²) Wire



APEX 150 Hybrid Connector Family (Terminal Replacement)

1 Introduction.

This document applies to the proper procedure and steps required to manually install and replace APEX 2.8™ (2.8mm) and APEX 150™ (1.5mm) terminals in the APEX 150 Hybrid Connector Family.

1.1 Reference

FCI Terminal Drawings:

J54009-CUST	APEX 150 Female Terminal
J54011-CUST	APEX 150 Male Terminal
C15004-CUST	APEX 2.8 Female Terminal
C15005-CUST	APEX 2.8 Male Terminal

FCI Connector Drawings:

K53001
K53002

Required Tools:

Small Needle Nose Pliers
(Recommended: Sears Craftsman #45664)
APEX 150 Service Tool (54241678)
APEX 2.8 Service Tool (5490002)

2 Terminal Insertion Instructions

2.1 Female Terminals

- Make sure TPA is in the "pre-lock" position in the female housing. See figure 1.

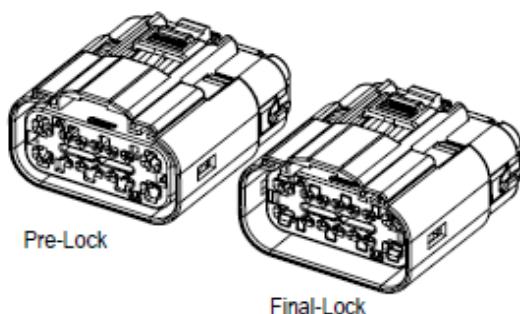


Figure 1

- Orient the female terminals correctly with each terminal position opening in the retainer of female connector assembly as shown in figure 2.
- Carefully insert the terminal into the cavity opening. Only slight force should be needed. If the force to install each terminal seems high or the terminal will not seat – Stop! Remove the terminal, recheck its orientation, verify the cavity does not have a seal plug, and verify the TPA is fully in the pre-lock position.

- When the terminal is correctly installed, there will be a small click and some tactile feedback.

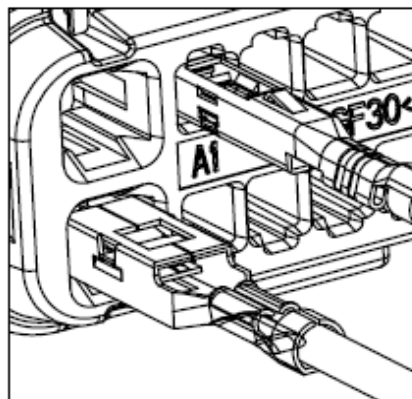


Figure 2

- Once all the terminals are inserted in the correct position, then press the TPA into the "final lock" position as shown in figure 1. If the TPA will not move into the final-lock position, verify that all terminals are fully seated.

2.2 Male Terminals

- Make sure TPA is in the "pre-lock" position in the female housing. See figures 5 and 6.
- Orient the male terminals correctly with each terminal position opening in the male connector assembly as shown in Figure 3.

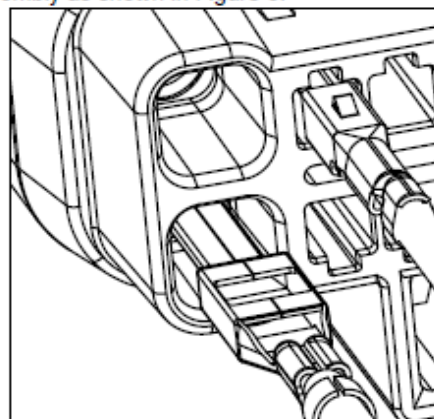


Figure 3

- Carefully insert the terminal into the cavity opening. If the force to install each terminal seems high or the terminal will not seat – Stop! Remove the terminal, recheck its orientation, verify the cavity

APEX 150 Hybrid Connector Family (Terminal Replacement)

does not have a seal plug and verify the TPA is fully in the pre-lock position (Figure 4).

- When the terminal is correctly installed, there will be a small click and some tactile feedback.
- Once all the terminals are inserted in the correct position, then press the TPA into the "final lock" position as shown in figure 5. If the TPA will not move into the final-lock position, verify that all terminals are fully seated.

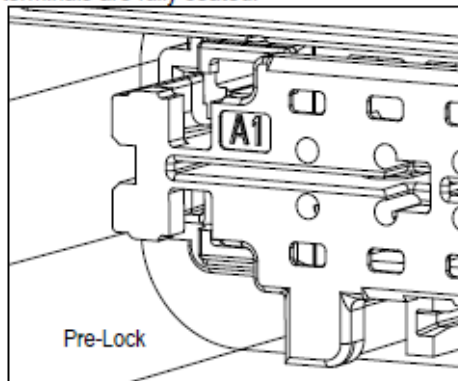


Figure 4

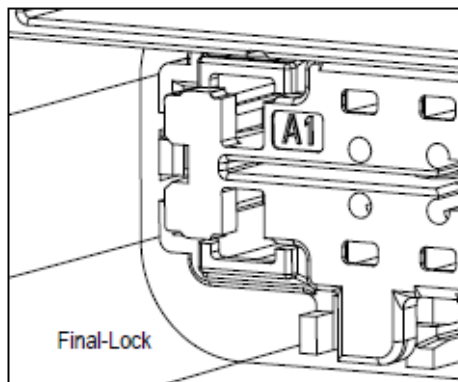


Figure 5

equipped. Tabs may be damaged leading to a failure of the shorting bar function.

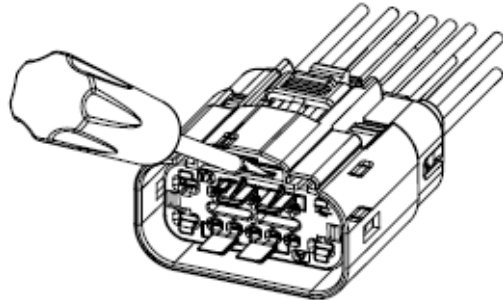


Figure 6

- With the TPA in the "pre-lock" position, insert the tip of the Service Tool into the service port of the terminal in be removed/replaced. (Figure 7). *NOTE: Care should be used so as to not insert the service tool into the terminal opening.*
- Push The Service Tool until resistance is felt. Carefully press harder until the service tool moves slightly further into the connector (this may be accompanied by a small tactile sensation). At this point the selected terminal is ready to be removed.

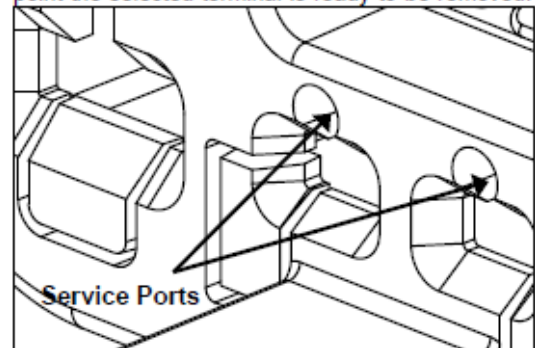


Figure 7

3 Terminal Replacement Instruction

3.1 Female Connector

- Insert a small flat blade screw driver in the slot provided in the TPA and apply pressure to "Bridge" area of connector as shown in figure 6.
- Gently "pry" or pivot the screw driver thus sliding the TPA into the "Pre-Lock" position. **WARNING: Do not grab or grip the Shorting Bar tabs if so**

- While maintaining pressure on the service tool, the selected terminal may be removed from the rear of the connector by pulling it out by the wire. To help maintain seal integrity, if possible, pull the wire at a small angle away from the connector center as shown in Fig 8 (Not required for 2.8mm terminals). *NOTE: Terminal removal should require only a gentle pulling force applied to the wire. If the terminal stays retained or seems "stuck", try reinserting the service tool.*

APEX 150 Hybrid Connector Family (Terminal Replacement)

- To attach a new terminal to the wire see the appropriate APEX Terminal Crimping Guide.

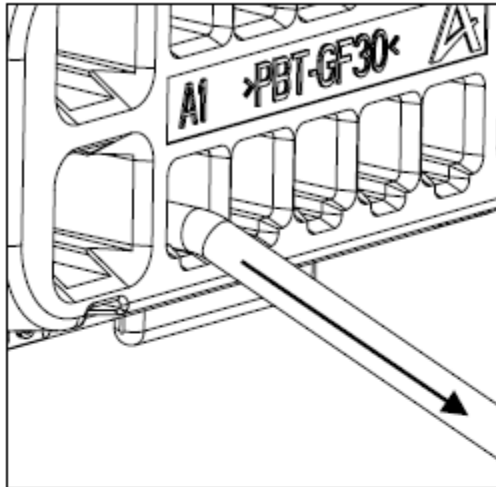


Figure 8

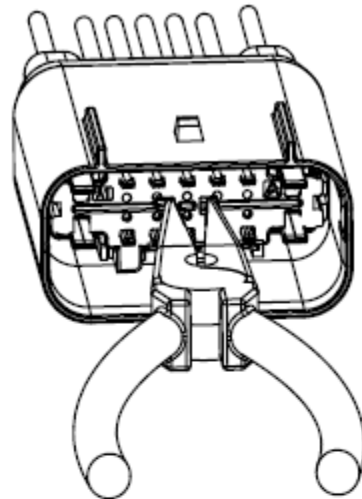
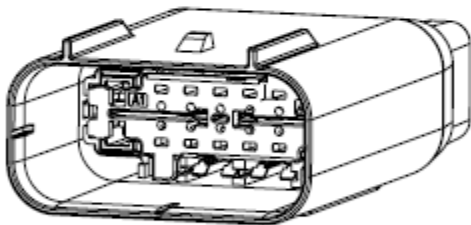


Figure 9

- Push The Service Tool until resistance is felt. Gently press harder until the service tool moves slightly further into the connector (this may be accompanied by a small tactile sensation).

3.1 Male Connector



- Grip the TPA with a pair of serrated needle nose pliers by using the appropriate holes in the center of the TPA (Figure 9).
- Gently pull the TPA into the "Pre-Lock" position. The TPA should not be removed from the connector. **WARNING: Care must be used so the pliers do not slip out of the service holes and damage any exposed terminal blades or pinch the operators hands.**
- With the TPA in the "pre-lock" position, insert the tip of the Service Tool into the service port for the terminal in be removed/replaced. Use care to be sure the service tool stays in the service port track. (Fig 10).

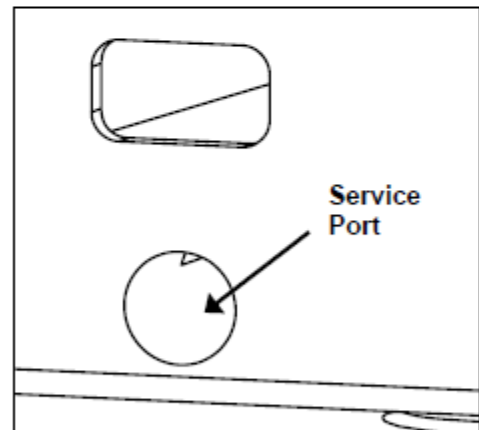


Figure 10

- While maintaining pressure on the service tool, the selected terminal may be removed from the rear of the connector by simply pulling it out by its wire. **NOTE: Terminal removal should require only a gentle pulling force applied to the wire. If the terminal stays retained or seems "stuck", try reinserting the service tool.**

APEX 150 ErgoMate™ Connector Family

1 Introduction

This document applies to the proper procedures and steps required to manually install and replace APEX 2.8™ (2.8mm) and APEX 150™ (1.5mm) terminals in the APEX 150 ErgoMate™ Connector Family. Also, general application suggestions are covered.

1.1 Reference

FCI Terminal Drawings:

J54009-CUST	APEX 150 Female Terminal
J54011-CUST	APEX 150 Male Terminal
C15004-CUST	APEX 2.8 Female Terminal
C15005-CUST	APEX 2.8 Male Terminal

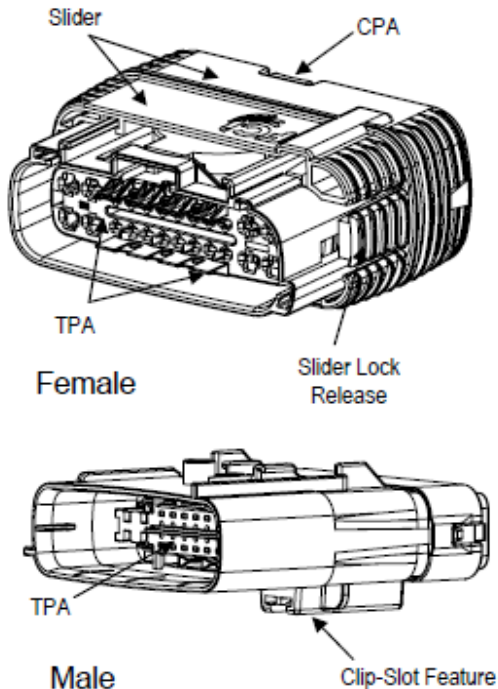
FCI Connector Drawings:

PCC0377483	ErgoMate™ 24 Way Female
PCC0377514	ErgoMate™ 24 Way Male
PCC0529876	ErgoMate™ 24 Way Female for MVM
PCC0529925	ErgoMate™ 24 Way Male for MVM

Recommended Tools:

Small Needle Nose Pliers (Sears Craftsman #45664)
APEX 150 Service Tool (54241678)
APEX 2.8 Service Tool (5400EXT)

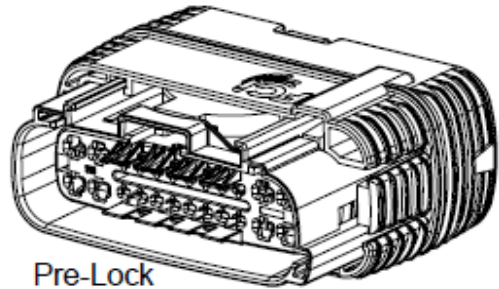
1.2 Terminology



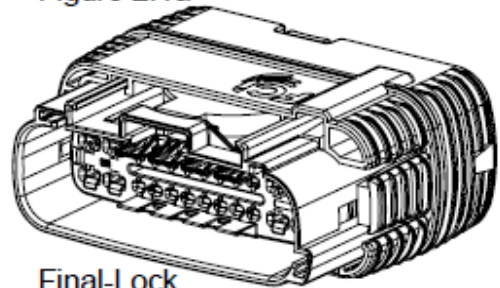
2 Terminal Insertion Instructions

2.1 Female Terminals

- Make sure TPA is in the "pre-lock" position in the female housing. See Figure 2.1a.



Pre-Lock
Figure 2.1a



Final-Lock
Figure 2.1b

- Orient the female terminals correctly with each terminal position opening in the retainer of female connector assembly as shown in figure 2.1c. The APEX 2.8 terminals can

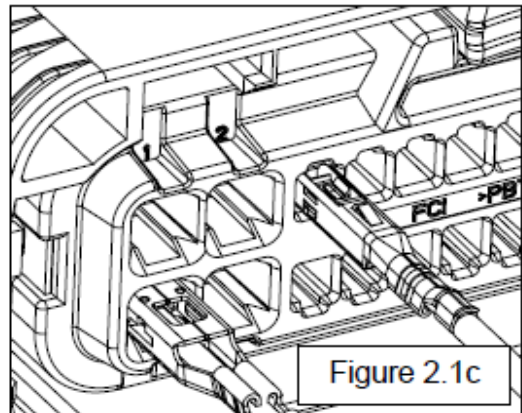


Figure 2.1c

- Carefully insert the terminal into the cavity opening. Only slight force should be needed. If the force to install each terminal seems high or the terminal will not seat – Stop! Remove the terminal, recheck its orientation, verify the

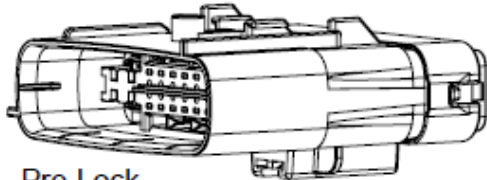
APEX 150 ErgoMate™ Connector Family

cavity does not have a seal plug, and verify the TPA is fully in the pre-lock position.

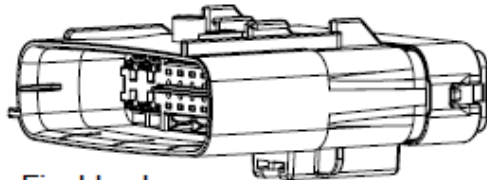
- When the terminal is correctly installed, there will be a small click and some tactile feedback.
- Once all the terminals are inserted in the correct position, then press the TPA into the "final lock" position as shown in figure 2.1b. If the TPA will not move into the final-lock position, verify that all terminals are fully seated.

2.2 Male Terminals

- Make sure TPA is in the "pre-lock" position in the female housing. See figure 2.2a.



Pre-Lock
Figure 2.2a



Final-Lock
Figure 2.2b

- Orient the male terminals correctly with each terminal position opening in the male connector assembly as shown in Figure 2.2c.

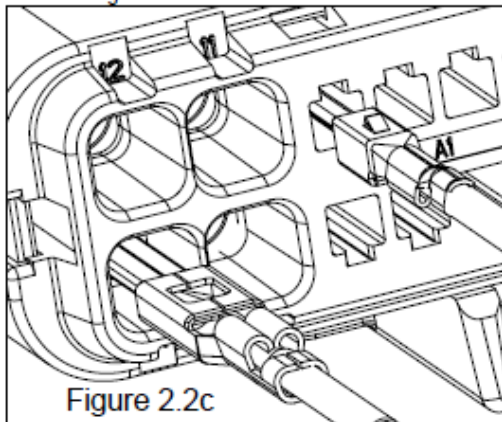


Figure 2.2c

- Carefully insert the terminal into the cavity opening. If the force to install each terminal seems high or the terminal will not seat – Stop! Remove the terminal, recheck its orientation (Figure 2.2c), verify the cavity does not have

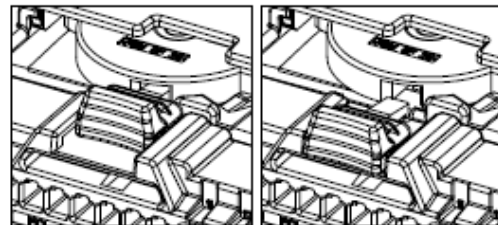
a seal plug and verify the TPA is fully in the pre-lock position (Figure 2.2a).

- When the terminal is correctly installed, there will be a small click and some tactile feedback.
- Once all the terminals are inserted in the correct position, then press the TPA into the "final lock" position as shown in figure 2.2b. If the TPA will not move into the final-lock position, verify that all terminals are fully seated.

3 Mating and Un-mating the ErgoMate™ System

3.1 Un-mating

- Slide the CPA (if so equipped) from the Locked position to the Un-Locked position. Doing so unlocks the Gear/Cam so the system can be disconnected.



CPA Locked

CPA Un-Locked

Figure 3.1a

- Squeeze the Slider lock release in the location shown & then pull the slider axially in the direction shown. (See figure 3.1b).

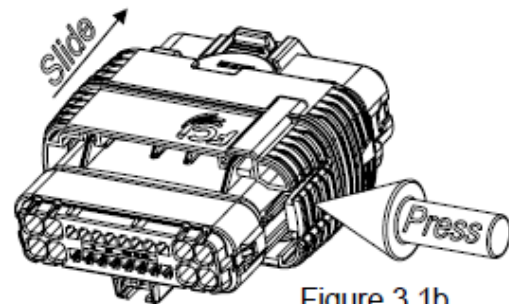


Figure 3.1b

APEX 150 ErgoMate™ Connector Family

3.2 Mating

- Grip the Female Connector by the slider. Engage the male and female connector halves in the proper orientation by sliding the female connector onto the male side. When adequate engagement is achieved, the slider will release from the female connector and begin to slide along the system. (See Figure 3.2a)

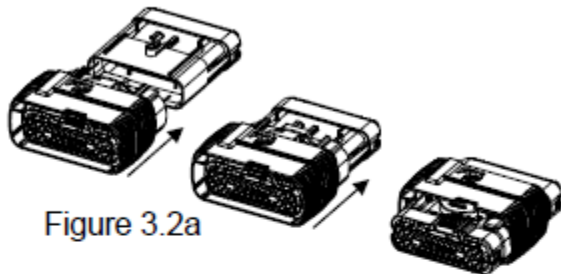


Figure 3.2a

- When the connectors are fully engaged, the CPA can be pushed into the "Locked" position. (See Figure 3.1a)
- The connector system is now fully mated.

4 Servicing and Replacing Terminals

4.1 Female Connector

- Gently pull the TPA into "Pre-Lock" position by gripping the TPA as shown in figure 4.1a. To avoid damaging the TPA, use care to not pull the TPA out of the connector!

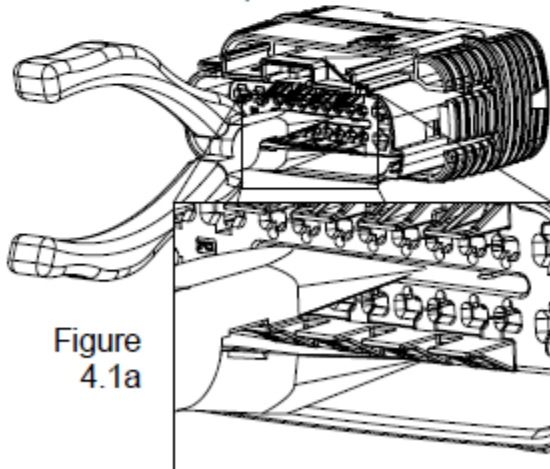


Figure 4.1a

- **WARNING:** Do not grab or grip the Shorting Bar tabs if so equipped (see Figure 4.1b). Tabs may be damaged leading to a failure of the shorting bar function.

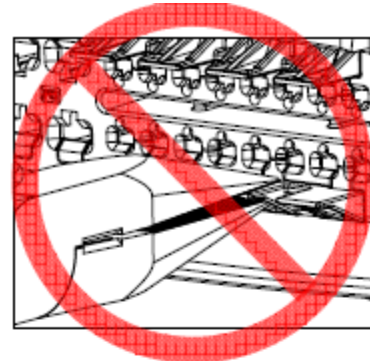


Figure 4.1b

- With the TPA in the "pre-lock" position, insert the tip of the Service Tool into the service port of the terminal to be removed/replaced. (Figure 4.1c). **NOTE:** Care should be used so as to not insert the service tool into the terminal opening.

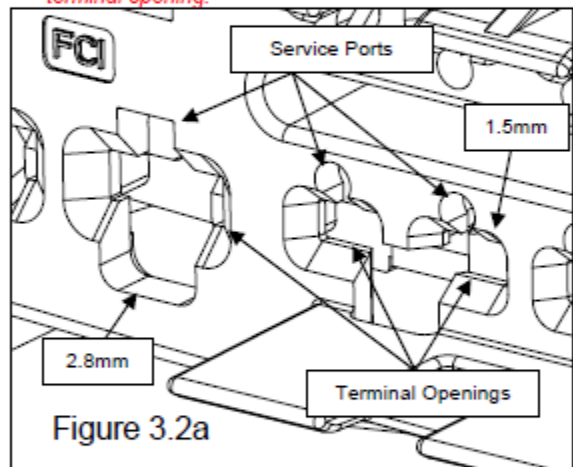
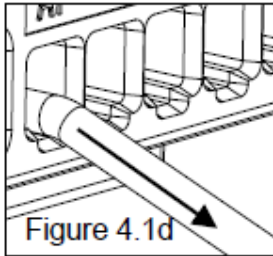


Figure 3.2a

- Push The Service Tool until resistance is felt. Carefully press harder until the service tool moves slightly further into the connector (this may be accompanied by a small tactile sensation). At this point the selected terminal is ready to be removed.
- While maintaining pressure on the service tool, the selected terminal may be removed from the rear of the connector by pulling it out by the wire. To help maintain seal integrity, if possible, pull the wire at a small angle away from the connector center as shown in Figure 4.1d (Not required for 2.8mm terminals). **NOTE:** Terminal removal should require only a gentle pulling force applied to the wire. If the terminal stays retained or seems "stuck", try reinserting the service tool.

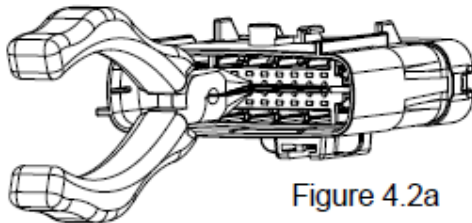
APEX 150 ErgoMate™ Connector Family



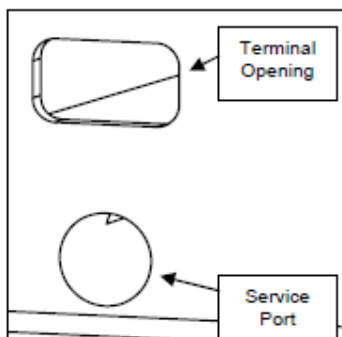
- To attach a new terminal to the wire see the appropriate APEX Terminal Crimping Guide.

4.2 Male Connector

- Grip the TPA with a pair of serrated needle nose pliers by using the center of the rib on the TPA (Figure 4.2a).



- Gently pull the TPA into the "Pre-Lock" position. The TPA should not be removed from the connector. **WARNING:** Care must be used so the pliers do not slip off of the rib and damage any exposed terminal blades or pinch the operator's hands. **NOTE:** Do NOT remove the male TPA from the connector! Doing so may cause permanent damage to the TPA and make replacement effort difficult.
- With the TPA in the "pre-lock" position, insert the tip of the Service Tool into the service port for the terminal in be removed/replaced. (Fig 4.2b).



- Push The Service Tool until resistance is felt. Gently press harder until the service tool moves slightly further into the connector (this may be accompanied by a small tactile sensation).

- While maintaining pressure on the service tool, the selected terminal may be removed from the rear of the connector by simply pulling it out by its wire. **NOTE:** Terminal removal should require only a gentle pulling force applied to the wire. If the terminal stays retained or seems "stuck", try reinserting the service tool.

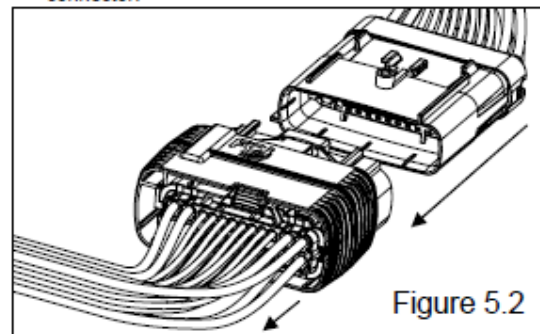
5 Application Guide

5.1 Clearances

- When designing applications and harnesses that utilize ErgoMate™ connectors, care must be used to assure that there is sufficient clearance around the connector to access the CPA and mate and un-mate the connector as described in section 3.

5.2 Special Applications

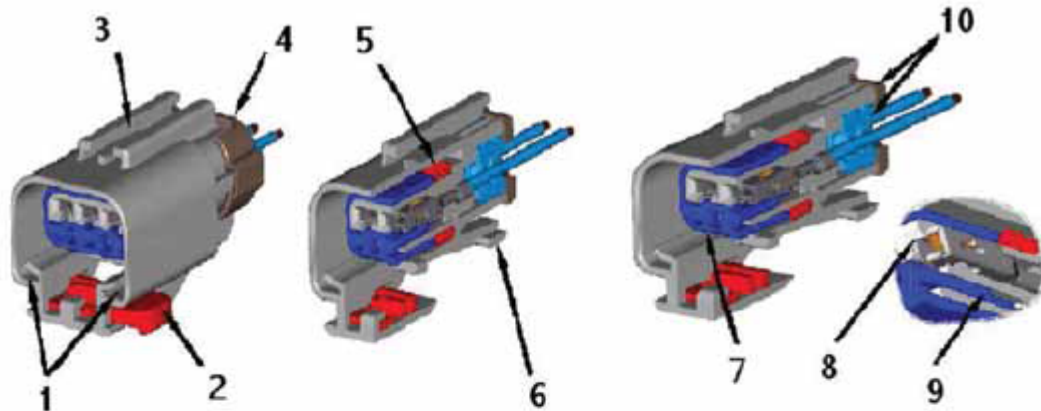
- Female Clip-Slot: The ErgoMate system may be configured with a clip-slot on the female slider in combination with no clip-slot on the male connector. In this configuration, the slider will be fixed and the internal body of the female connector will slide backward (at least 23mm) during the mating process. It will be necessary to dress the wire bundle to the left or the right to assure low mate forces (see example in figure 5.2) and to be sure there is sufficient clearance behind the female connector wire bundle to assure proper mating. In this configuration, single handed mating is possible by simply pushing the male connector into the female connector, however, two hands will be required to un-mate the connector in this case, one to release the female slider lock, and another to pull out the male connector.



5.3 Connector Orientation

- As is true with any sealed connector system used in a wet environment, the "in service" orientation of the connector should have the mating axis of the connector in as horizontal an orientation as possible. This prevents water from pooling in the wire openings.

APEX 2.8mm Features and Benefits



FEATURE		BENEFIT
1	Polarization molded-in, up to 4 indexes (7 on 10-ways), scoop proof	Design flexibility
2	Pre-assembled integral Connector Position Assurance, CPA	Ease of assembly
3	Clip slot on all male and 2-, 10- and 14-way female connectors	Flexibility for mounting
4	Plastic is molded with smooth well-rounded corners	Ergonomics for assembly
5	Double shroud design, protected interface seal	Increased durability
6	Primary connector lock, audible, tactile, one-hand operation	Reliable and easy to mate
7	Pre-assembled integral Terminal Position Assurance, TPA	Ease of assembly
8	Blade lead-in/probe protection	Durability for service in the field
9	Molded-in locking finger	Audible seat and ease of service
10	Pre-assembled Rear Mat seal with retainer	Ease of assembly
11	Available in 2, 3, 4, 5, 6, 10 and 14 cavity configurations—sealed and unsealed	Design flexibility
12	Sealed and Unsealed housings use the same connectors and terminals	Terminal standardization
13	Fewer part number to manage in OEM database	Reduce engineering costs
14	Optional material for Class 4 (-40°C to +150°C) applications	Extreme temperatures
15	No special tools required to service the connector & terminal	Ease of service

Performance Characteristics

Temperature Ranges:
 Class 3: -40°C to +125°C
 Class 4: -40°C to +150°C

Exceeds USCAR-2 Performance Specification

Validated for Diesel Engines Applications

Construction

Connector, Mat Seal, Seal Retainer, Interface Seal, TPA and CPA make up the connector assembly

Housing Material: Nylon 35% GF

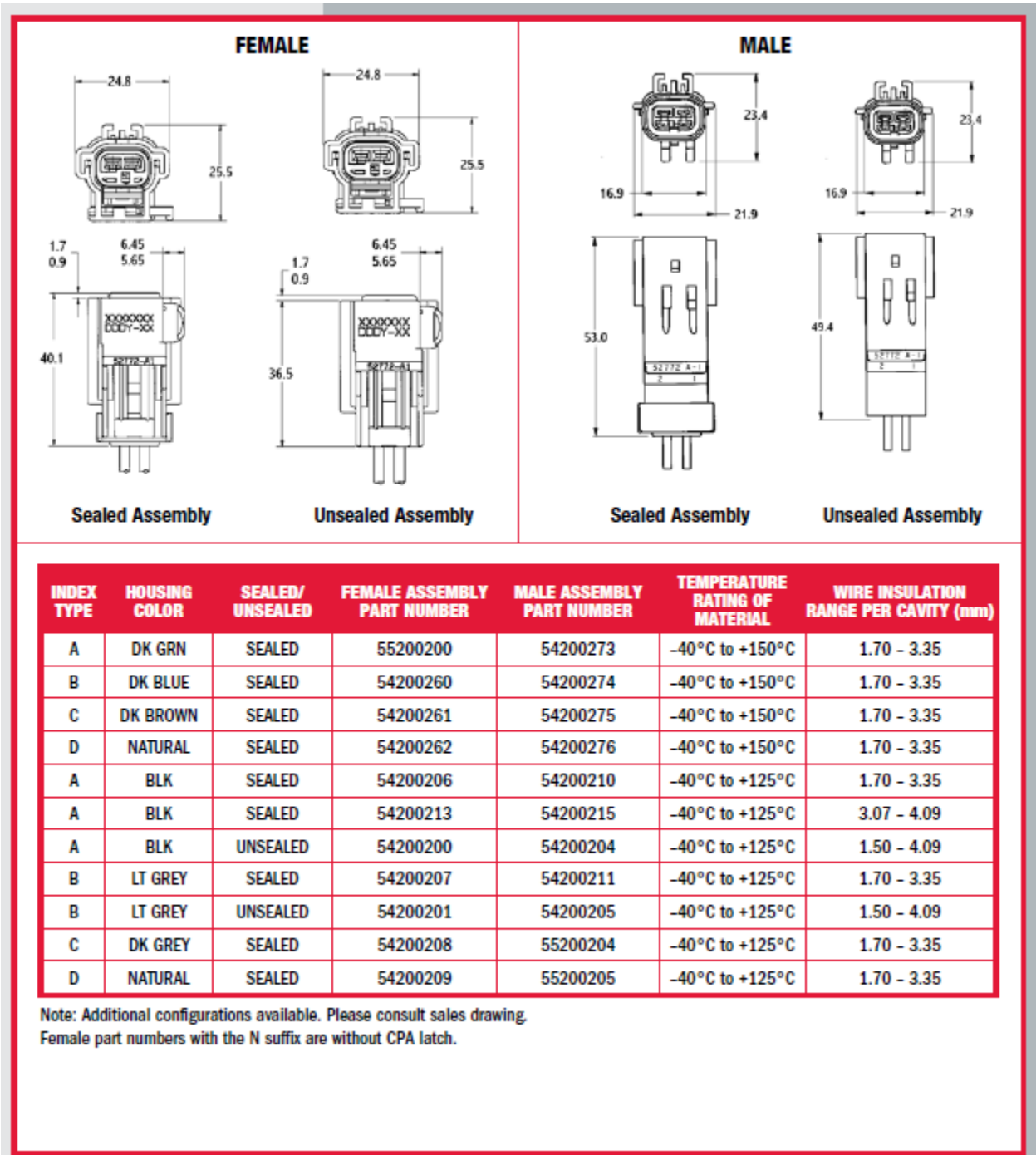
Interface Seal: Silicone

Mat Seal: Silicone

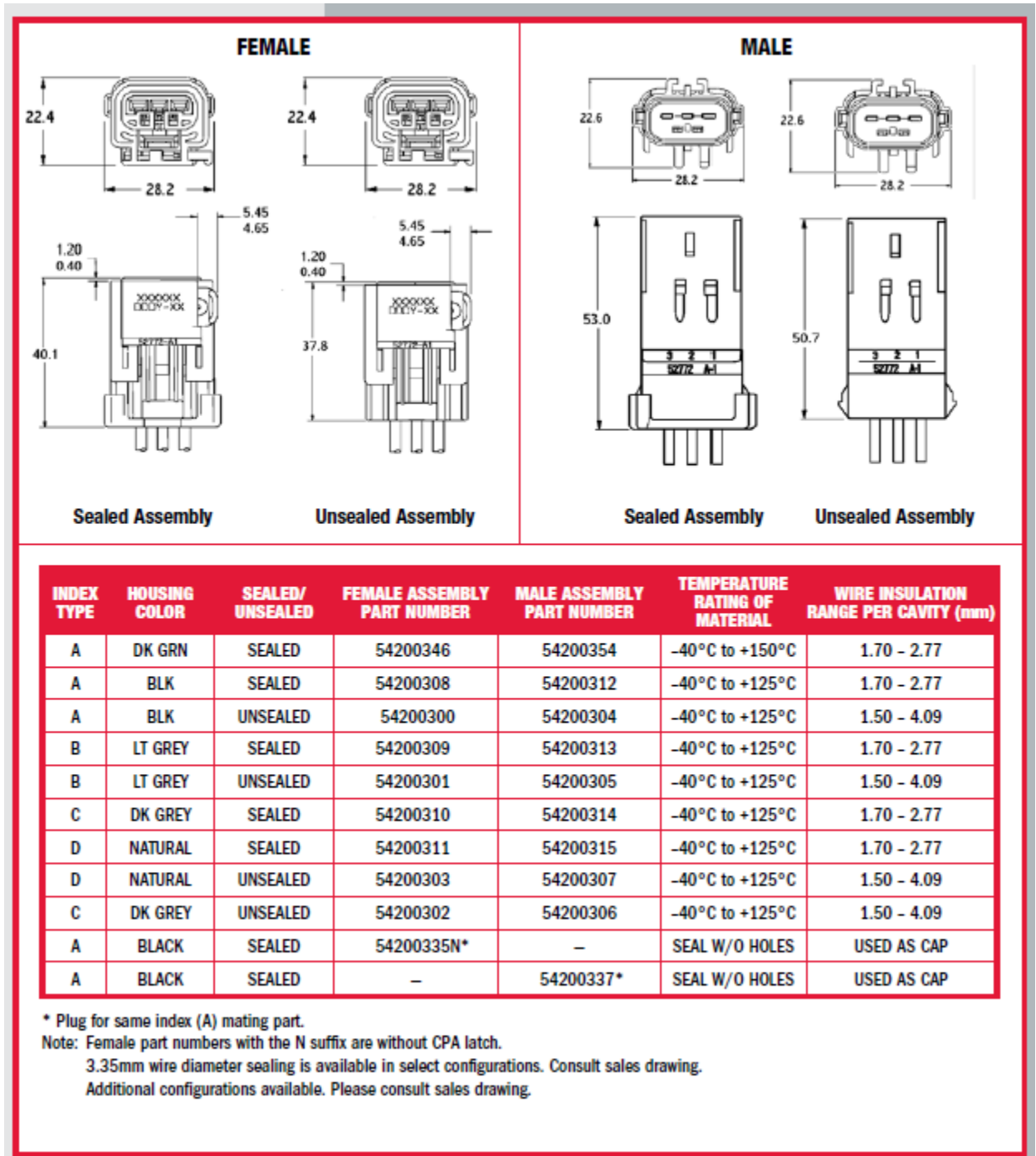
Terminal Compatibility

APEX 2.8: Tin or Gold Plated

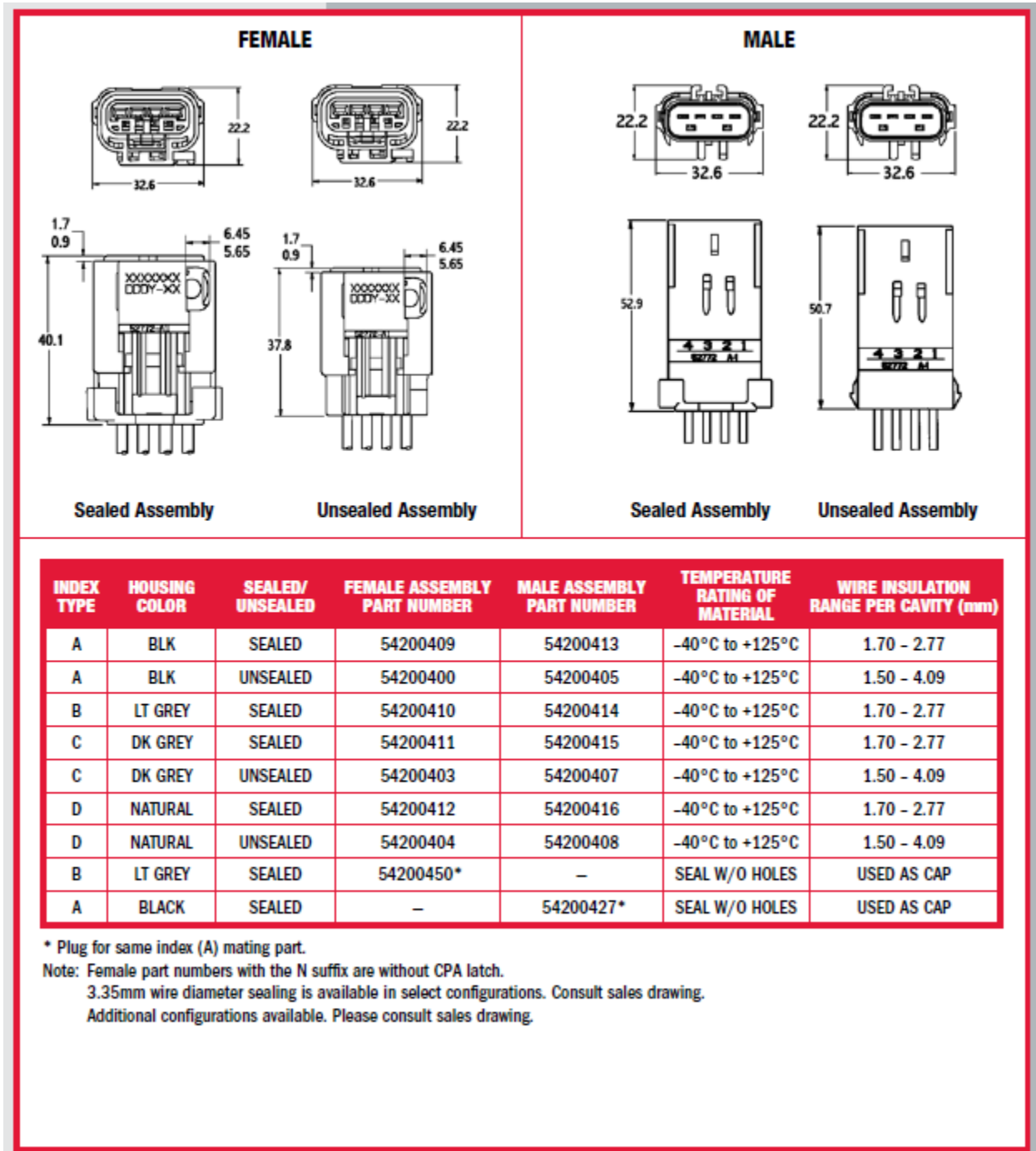
APEX 2.8mm 2 Way



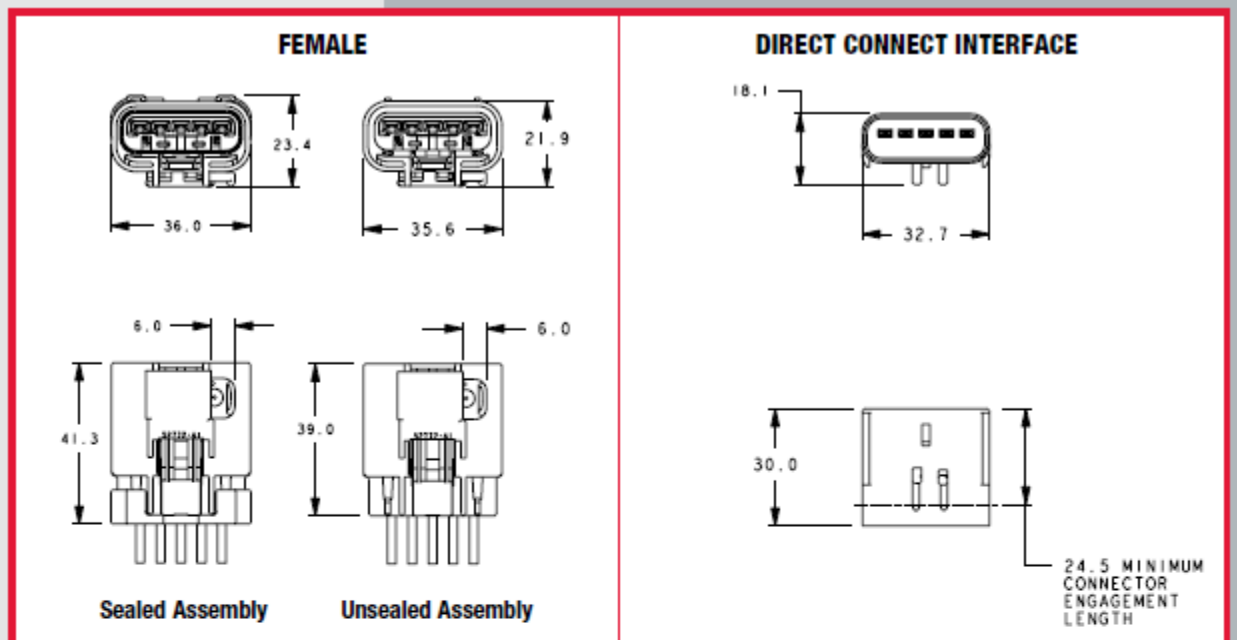
APEX 2.8mm 3 Way



APEX 2.8mm 4 Way






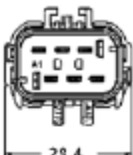
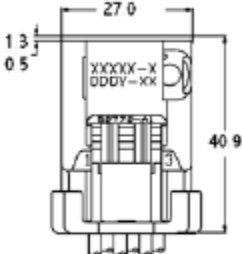
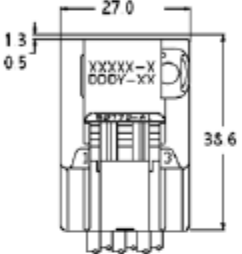
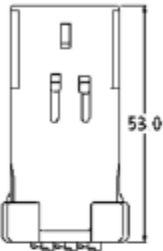
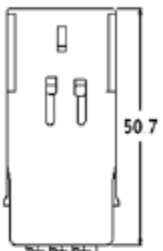
APEX 2.8mm 5 Way



INDEX TYPE	HOUSING COLOR	SEALED/ UNSEALED	FEMALE ASSEMBLY PART NUMBER	MALE ASSEMBLY PART NUMBER	TEMPERATURE RATING OF MATERIAL	WIRE INSULATION RANGE PER CAVITY (mm)
A	BLK	UNSEALED	54200517	DIRECT CONNECT	-40°C to +125°C	1.70 - 3.35
B	LT GREY	UNSEALED	54200518	DIRECT CONNECT	-40°C to +125°C	1.70 - 3.35
C	DK GREY	UNSEALED	54200519	DIRECT CONNECT	-40°C to +125°C	3.07 - 4.09
D	NATURAL	UNSEALED	54200520	DIRECT CONNECT	-40°C to +125°C	1.50 - 4.09
A	BLK	SEALED	54200521	DIRECT CONNECT	-40°C to +125°C	1.70 - 3.35
B	LT GREY	SEALED	54200522	DIRECT CONNECT	-40°C to +125°C	1.50 - 4.09
C	DK GREY	SEALED	54200523	DIRECT CONNECT	-40°C to +125°C	1.70 - 3.35
D	NATURAL	SEALED	54200524	DIRECT CONNECT	-40°C to +125°C	1.50 - 3.35

Note: Female part numbers with the N suffix are without CPA latch.

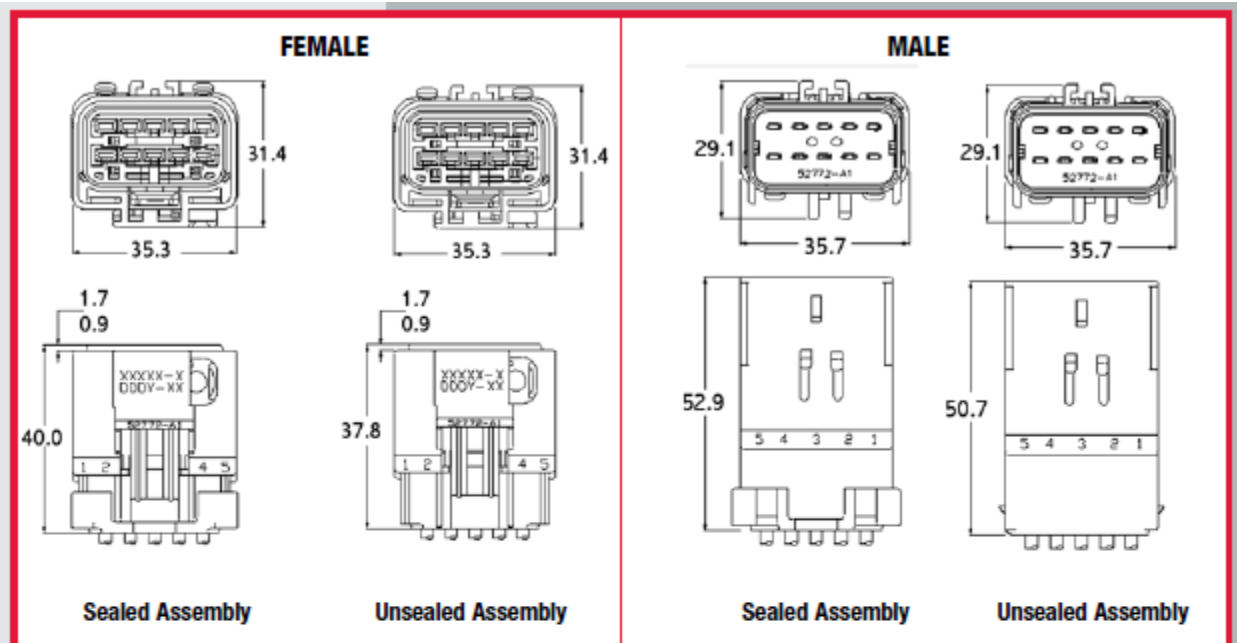
APEX 2.8mm 6 Way

FEMALE		MALE	
			
			
Sealed Assembly	Unsealed Assembly	Sealed Assembly	Unsealed Assembly

INDEX TYPE	HOUSING COLOR	SEALED/ UNSEALED	FEMALE ASSEMBLY PART NUMBER	MALE ASSEMBLY PART NUMBER	TEMPERATURE RATING OF MATERIAL	WIRE INSULATION RANGE PER CAVITY (mm)
A	BLK	SEALED	54200608	54200612	-40°C to +125°C	1.70 - 2.77
A	BLK	UNSEALED	54200600	54200604	-40°C to +125°C	1.50 - 4.09
B	LT GREY	SEALED	54200609	54200613	-40°C to +125°C	1.70 - 2.77
B	LT GREY	UNSEALED	54200646	54200605	-40°C to +125°C	1.50 - 4.09
C	DK GREY	SEALED	54200610	54200614	-40°C to +125°C	1.70 - 2.77
C	DK GREY	UNSEALED	54200602	54200606	-40°C to +125°C	1.50 - 4.09
D	NATURAL	SEALED	54200611	54200615	-40°C to +125°C	1.70 - 2.77
D	NATURAL	UNSEALED	54200603	54200607	-40°C to +125°C	1.50 - 4.09
A	BLACK	SEALED	54000626*	-	SEAL W/O HOLES	USED AS CAP
A	BLACK	SEALED	-	54200663*	SEAL W/O HOLES	USED AS CAP

* Plug for same index (A) mating part.
 Note: Female part numbers with the N suffix are without CPA latch.
 3.35mm wire diameter sealing is available in select configurations. Consult sales drawing.
 Additional configurations available. Please consult sales drawing.

APEX 2.8mm 10 Way



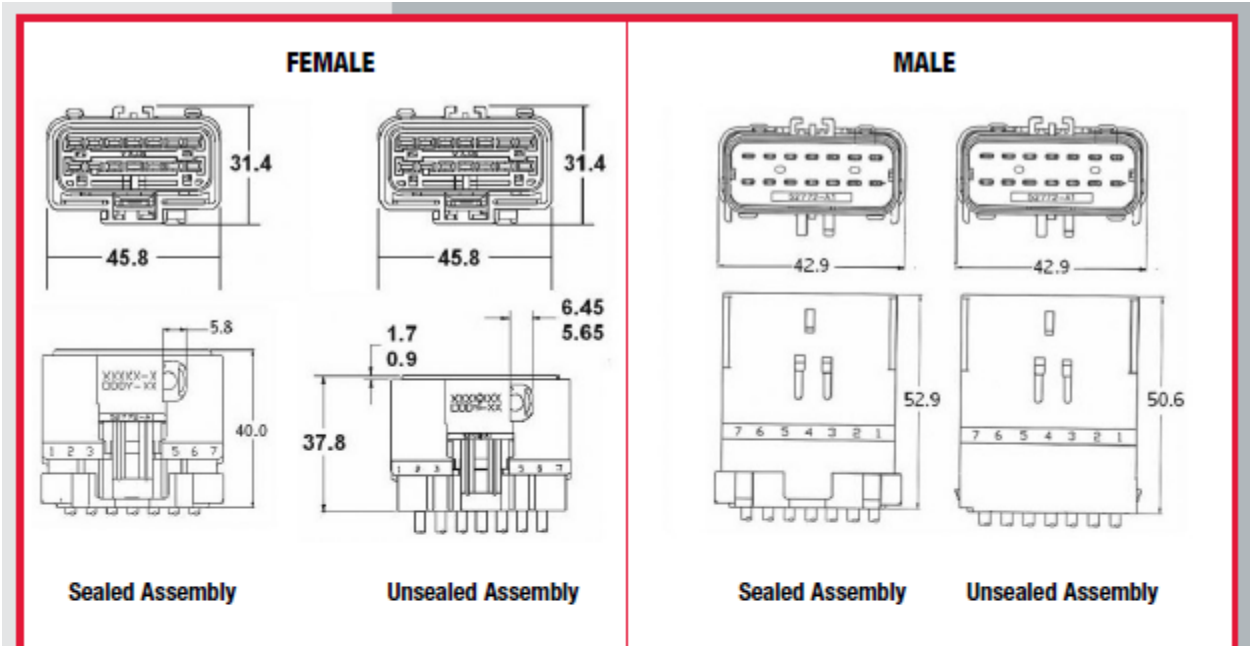
INDEX TYPE	HOUSING COLOR	SEALED/ UNSEALED	FEMALE ASSEMBLY PART NUMBER	MALE ASSEMBLY PART NUMBER	TEMPERATURE RATING OF MATERIAL	WIRE INSULATION RANGE PER CAVITY (mm)
A	BLK	SEALED	54201009	54201016	-40°C to +125°C	1.70 - 3.35
A	BLK	UNSEALED	54201000	54201006	-40°C to +125°C	1.50 - 4.09
B	LT GREY	SEALED	54201010	54201017	-40°C to +125°C	1.70 - 3.35
C	LT GRN	SEALED	54201012	54201018	-40°C to +125°C	1.70 - 3.35
C	LT GRN	UNSEALED	54201002	54201008	-40°C to +125°C	1.50 - 4.09
G	LT BRN	SEALED	54201043	54201042	-40°C to +125°C	1.70 - 3.35
A	BLACK	SEALED	54201051N*	-	SEAL W/O HOLES	USED AS CAP
A	BLACK	SEALED	-	54201058*	SEAL W/O HOLES	USED AS CAP
B	LT GREY	SEALED	-	54201024*	SEAL W/ O HOLES	USED AS CAP
B	LT GREY	UNSEALED	54201001	54201007	-40°C to +125°C	1.50 - 4.09
C	LT GRN	SEALED	-	54201059*	SEAL W/ O HOLES	USED AS CAP

* Plug for same index (A, B or C) mating connector.

Note: Female part numbers with the N suffix are without CPA latch.

Additional configurations available. Please consult sales drawing.

APEX 2.8mm 14 Way

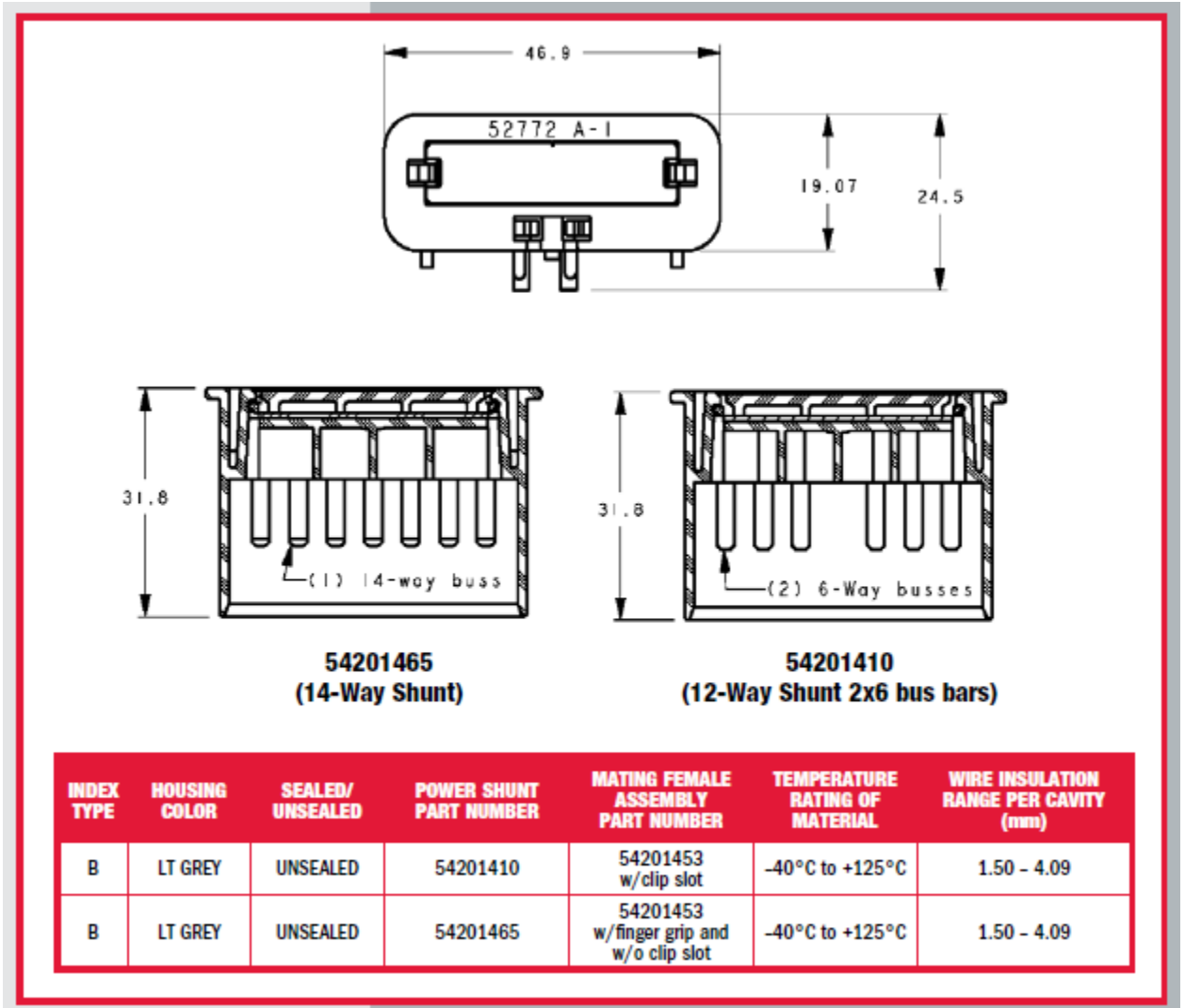


INDEX TYPE	HOUSING COLOR	SEALED/ UNSEALED	FEMALE ASSEMBLY PART NUMBER	MALE ASSEMBLY PART NUMBER	TEMPERATURE RATING OF MATERIAL	WIRE INSULATION RANGE PER CAVITY (mm)
A	BLACK	SEALED	54201411	54201415	-40°C to +125°C	1.70 - 3.35
A	BLACK	UNSEALED	54201442	54201404	-40°C to +125°C	1.50 - 4.09
B	LT GREY	SEALED	54201412	54201416	-40°C to +125°C	1.70 - 3.35
B	LT GREY	UNSEALED	54201453	54201405	-40°C to +125°C	1.50 - 4.09
C	DK GRAY	SEALED	54201413	54201417	-40°C to +125°C	1.70 - 3.35
D	NATURAL	SEALED	54201414	54201418	-40°C to +125°C	1.70 - 3.35
A	BLACK	SEALED	54201445N	-	SEAL W/NO HOLES	USED AS CAP*
A	BLACK	SEALED	-	54201459	SEAL W/NO HOLES	USED AS CAP*
B	LT GREY	SEALED	-	54201462	SEAL W/NO HOLES	USED AS CAP*
B	DK GREY	SEALED	-	54201463	SEAL W/NO HOLES	USED AS CAP*
C	NATURAL	SEALED	-	54201464	SEAL W/NO HOLES	USED AS CAP*

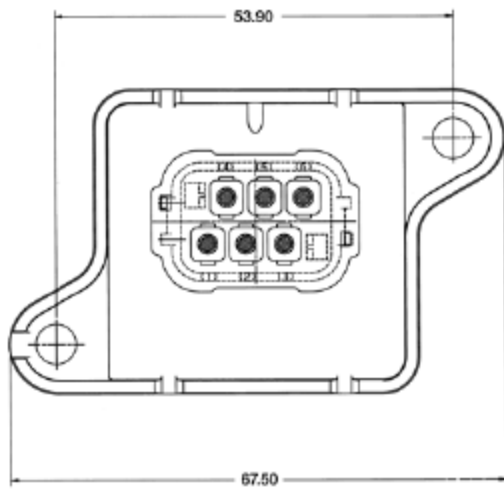
Note: Female part numbers with the N suffix are without CPA latch.

*Cap for corresponding connector index type.

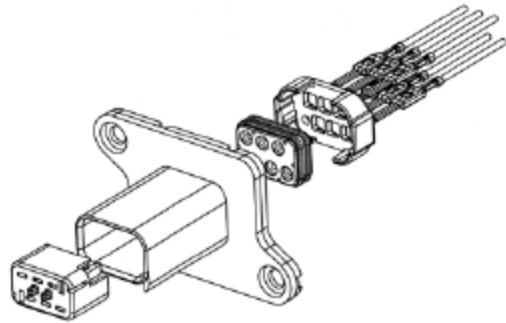
APEX 2.8mm 14 Way Power shunt



APEX 2.8mm 6 Way Male



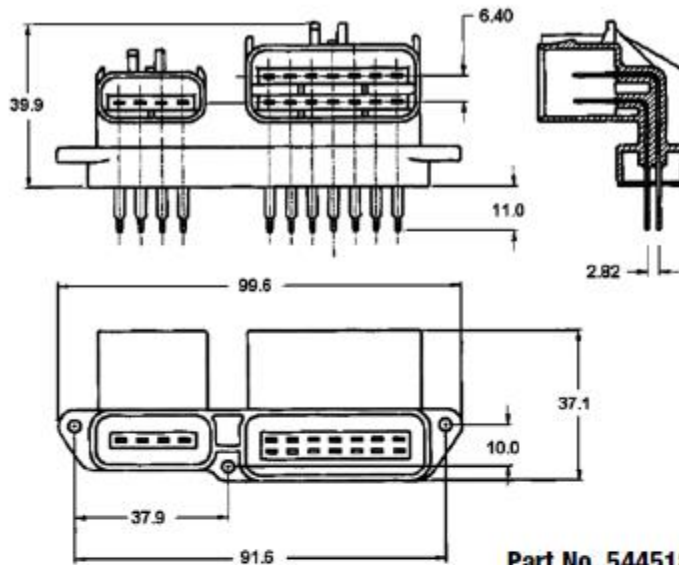
Part No. 54200638 (Pass-Through Connection)



INDEX TYPE	HOUSING COLOR	SEALED/ UNSEALED	MATING FEMALE ASSEMBLY PART NUMBER	TEMPERATURE RATING OF MATERIAL	WIRE INSULATION RANGE PER CAVITY (mm)
A	BLACK	SEALED	54200608	-40°C to +125°C	1.70 - 2.77

Note: Additional sealing configuration available to accommodate larger (3.35mm) wire.

APEX 2.8mm PCB 14+4 Header Connector



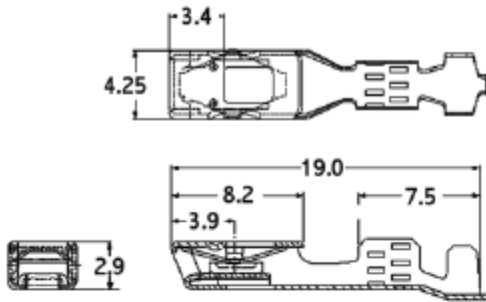
Part No. 54451800 (PCB Header)

INDEX TYPE	HOUSING COLOR	SEALED/ UNSEALED	MATING FEMALE ASSEMBLY PART NUMBER	TEMPERATURE RATING OF MATERIAL	WIRE INSULATION RANGE PER CAVITY (mm)
A	BLACK	SEALED	54200409	-40°C to +125°C	1.70 - 2.77
A	BLACK	SEALED	54201411	-40°C to +125°C	1.70 - 2.77

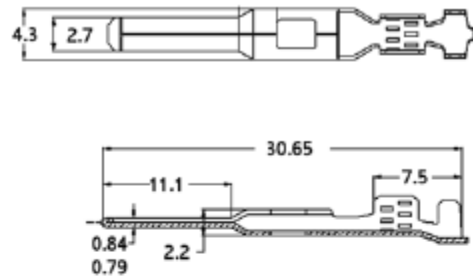


APEX 2.8mm Terminals & Cavity Plugs

FEMALE



MALE



FEMALE TERMINAL PART NUMBER	WIRE GAGE	TERMINAL MATERIAL	TERMINAL PLATING
54002200	22	CuTeSn/CuBe	Sn
54001800	18-20	CuTeSn/CuBe	Sn
54001400	14-16	CuTeSn/CuBe	Sn
54001000	10-12	CuTeSn/CuBe	Sn
54002203	22	CuTeSn/CuBe	NiPdAu
54001803	18-20	CuTeSn/CuBe	NiPdAu
54001403	14-16	CuTeSn/CuBe	NiPdAu
54001003	10-12	CuTeSn/CuBe	NiPdAu

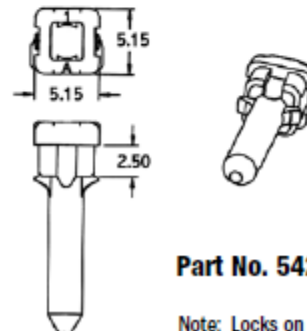
MALE TERMINAL PART NUMBER	WIRE GAGE	TERMINAL MATERIAL	TERMINAL PLATING
54002201	22	CuTeSn	Sn
54001801	18-20	CuTeSn	Sn
54001401	14-16	CuTeSn	Sn
54001001	10-12	CuTeSn	Sn
54002230	22	CuTeSn	NiPdAu
54001818	18-20	CuTeSn	NiPdAu
54001441	14-16	CuTeSn	NiPdAu
54002229	22	CuTeSn	NiAu
54001819	18-20	CuTeSn	NiAu

Note: The Nickel/Palladium/Gold plating is recommended for diesel engine applications.

Nyogel 8917 low friction insertion grease available on female terminal.

NYE 7606 grease available on female terminal for dry circuit applications.

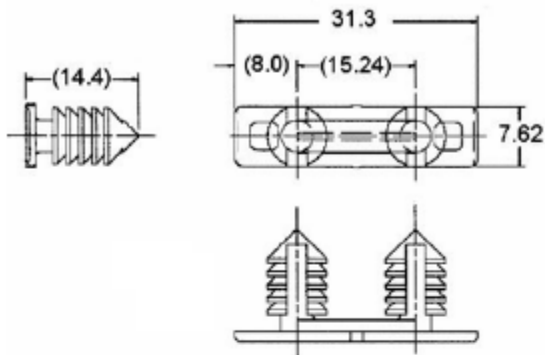
APEX 2.8 mm Cavity Plug



Part No. 54200005

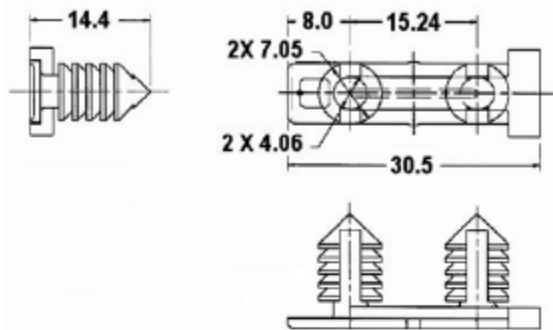
Note: Locks on seal retainers.

APEX 2.8mm Clips



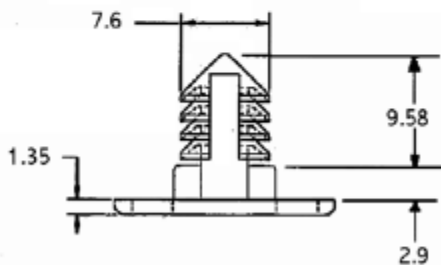
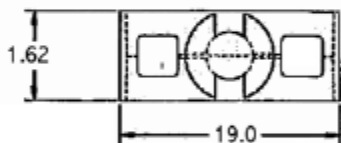
Double X-Tree
Part No. 04707091

Fits both male & female Chrysler type connector clip slot.



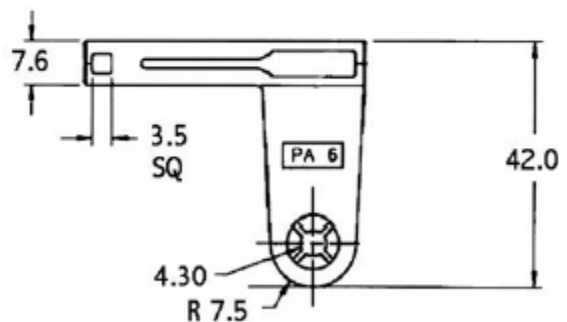
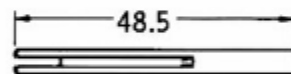
Double X-Tree
Part No. 54200010

Fits male side only Chrysler type connector clip slot.
Provides <200N push through retention.



Single X-Tree Clip
Part No. 4625797

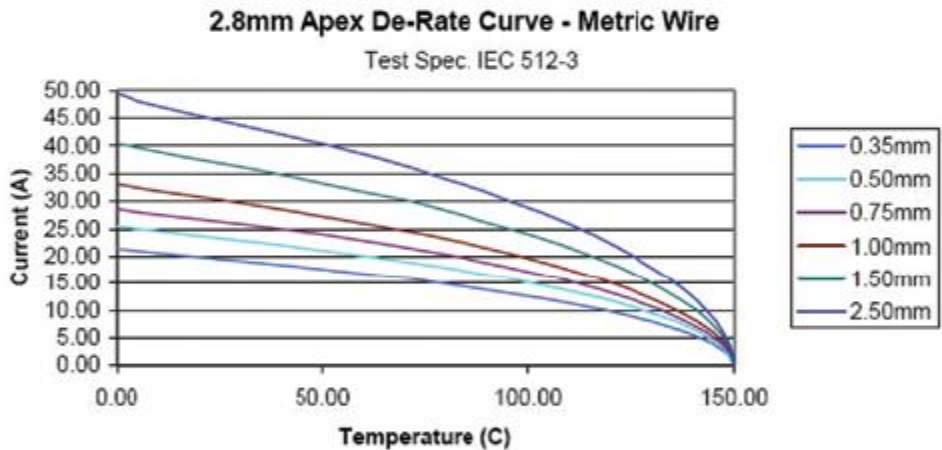
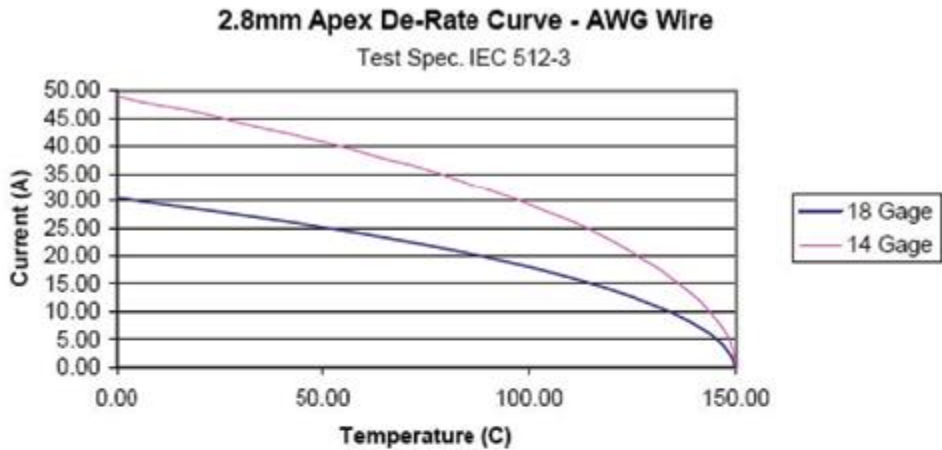
Fits both male & female Chrysler type connector clip slot.



M5 Weld Stud Clip
Part No. 54200002

Fits both male & female Chrysler type connector clip slot.

APEX 2.8mm Terminals De-Rating Curves



GROUP	FCI AUTO PART NO.		WIRE TYPE
	FEMALE	MALE	
14 Gage	54001400	54001401	14 ga. TXL
18 Gage	54001800	54001801	18 ga. TXL
2.5 mm	54001400	54001401	2.5 mm FLRY - B
1.5 mm	54001400	54001401	1.5 mm FLRY - B
1.0 mm	54001800	54001801	1.0 mm FLRY - B
0.75 mm	54001800	54001801	0.75 mm FLRY - B
0.50 mm	54001800	54001801	0.5 mm FLRY - B
0.35 mm	54002200	54002201	0.35 mm FLRY - B

APEX 2.8mm Connector Assy Instructions

FEMALE

- 1 CPA and TPA in pre-staged position



- 2 Insert male terminal through rear mat seal. The grip may be oriented either up or down.



- 3 Seat male terminal into connector cavity. Listen for audible "click."

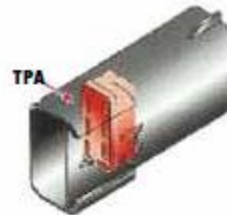


- 4 Push TPA into its locked position.

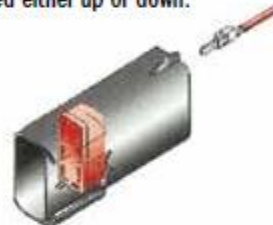


MALE

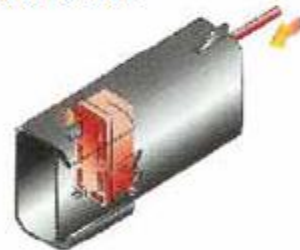
- 1 CPA and TPA in pre-staged position



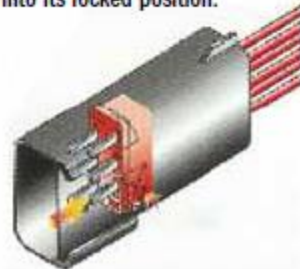
- 2 Insert male terminal through rear mat seal. The grip may be oriented either up or down.



- 3 Seat male terminal into connector cavity. Listen for audible "click."



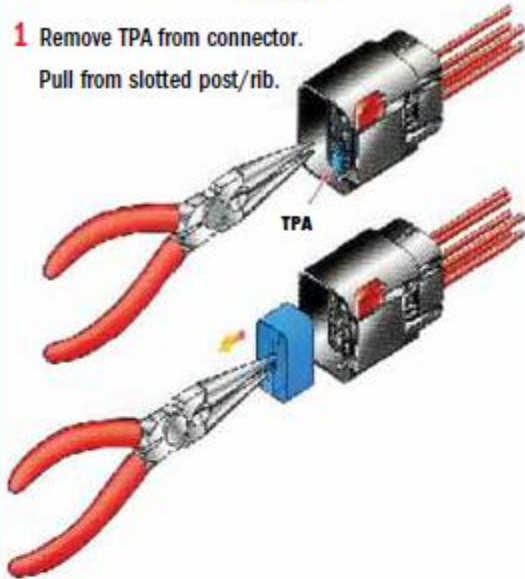
- 4 Push TPA into its locked position.



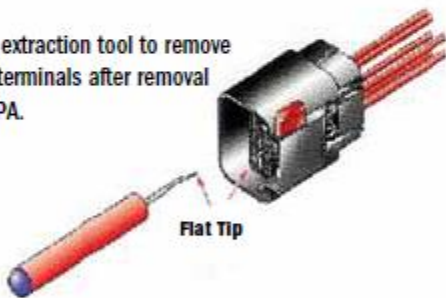
APEX 2.8mm Terminal Extraction Instructions

FEMALE

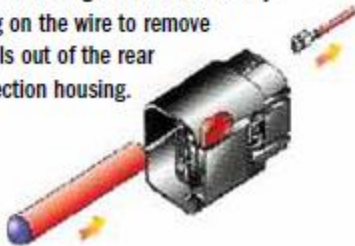
- 1 Remove TPA from connector.
Pull from slotted post/rib.



- 2 Use extraction tool to remove the terminals after removal of TPA.

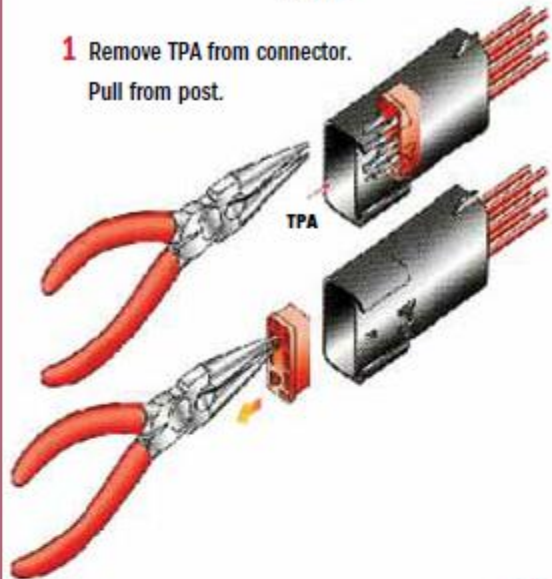


- 3 Slightly lift plastic finger lock in the cavity while pulling on the wire to remove the terminals out of the rear of the connection housing.

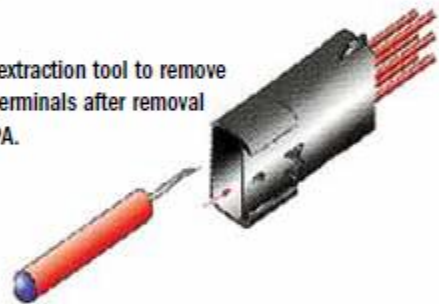


MALE

- 1 Remove TPA from connector.
Pull from post.



- 2 Use extraction tool to remove the terminals after removal of TPA.



- 3 Slightly lift plastic finger lock in the cavity while pulling on the wire to remove the terminals out of the rear of the connection housing.

