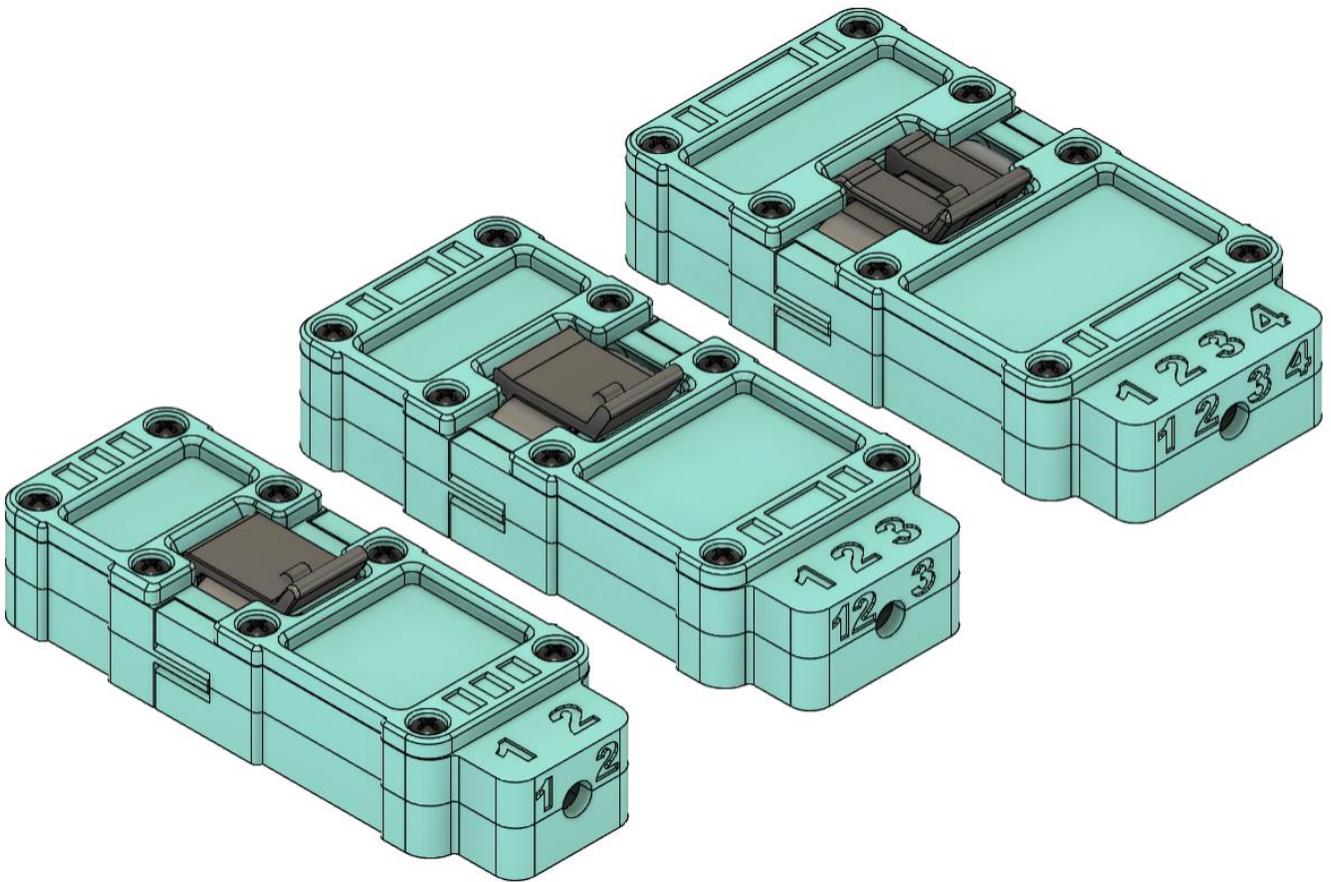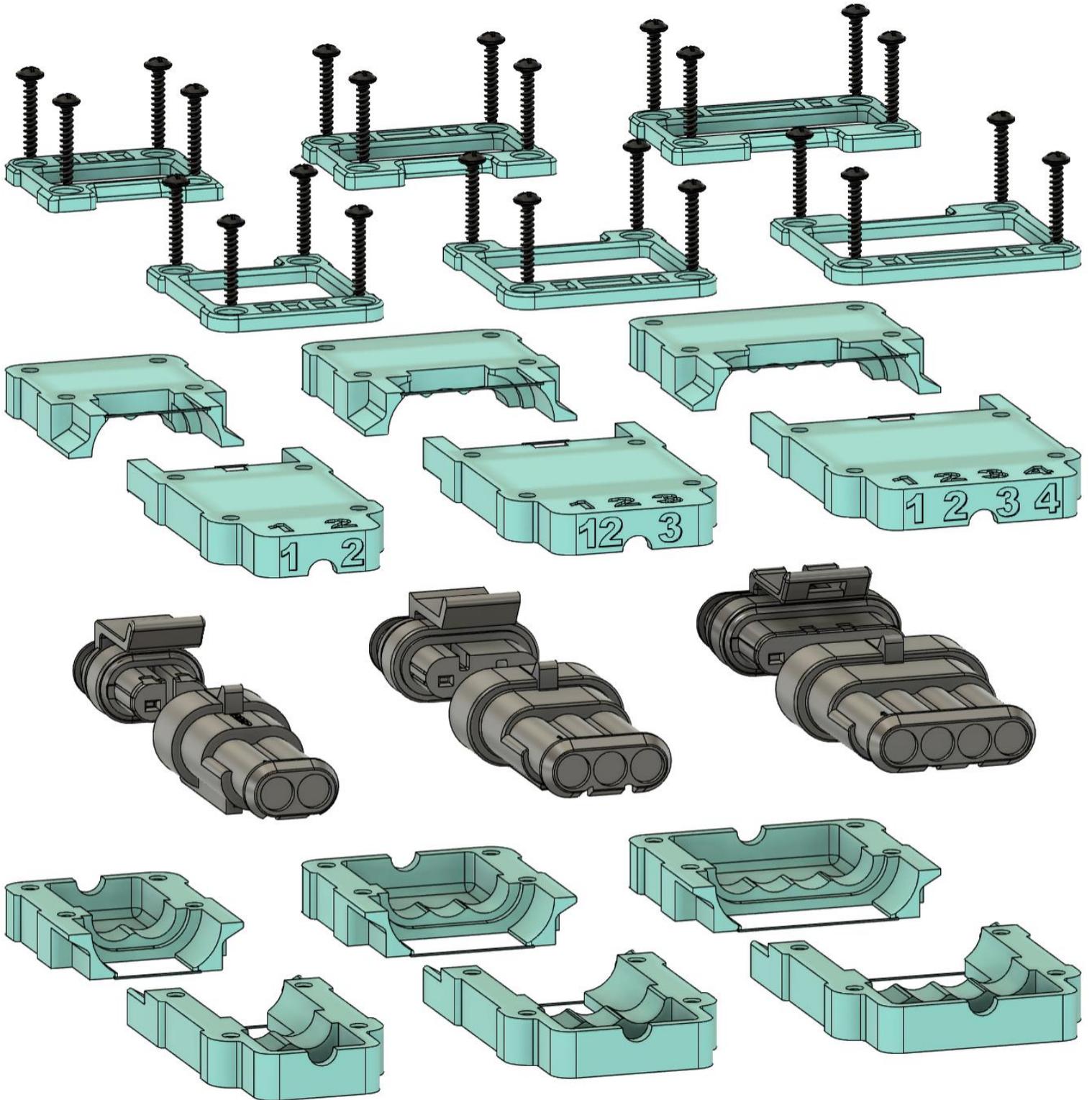# SuperSeal Connectors

Exploded view of assemblies

The screws used are #2 1/2"Long RoundHead Philips Thread-Forming BlackZincPlated screws, McMaster-Carr 92295A113 at a cost of $7.78(50).

AMP Superseal 1.5 Series Connectors

The connectors used in these shells are commonly available automotive connectors. The purpose of the 3D printed shells is to provide extra protection for ruggadized connectors as well as "keying" options. For example, multiple connectors with the same number of conductors, can be keyed so pairs cannot be switched.

These connectors can be difficult to assemble at first, but between the following instructions in this document and plentiful on on-line documents and videos, there is thorough information for guidance.

TE connectivity

AMP SUPERSEAL 1.5 Series Connectors
for the Automotive Industry

AMP SUPERSEAL 1.5 Series Connectors
Cap Housings

Cap Housings (utilizes Tab Contacts)

1 to 6 positions

Technical Features

Contact Finish:
Tin plated, gold plated

Current Carrying Capacity:
14 A max.

Wire Size Range:
0.35 – 2.5 mm²

Extraction Tool:
Part No. 9-1579007-1

Product Specification:
108-20090

Application Specification:
114-20045

AMP SUPERSEAL 1.5 Series Connectors
Plug Housings

Plug Housings (utilizes Receptacle Contacts)

1 to 6 positions

Technical Features

Contact Finish:
Tin plated

Current Carrying Capacity:
14 A max.

Wire Size Range:
0.35 – 2.5 mm²

Insulation Diameter:
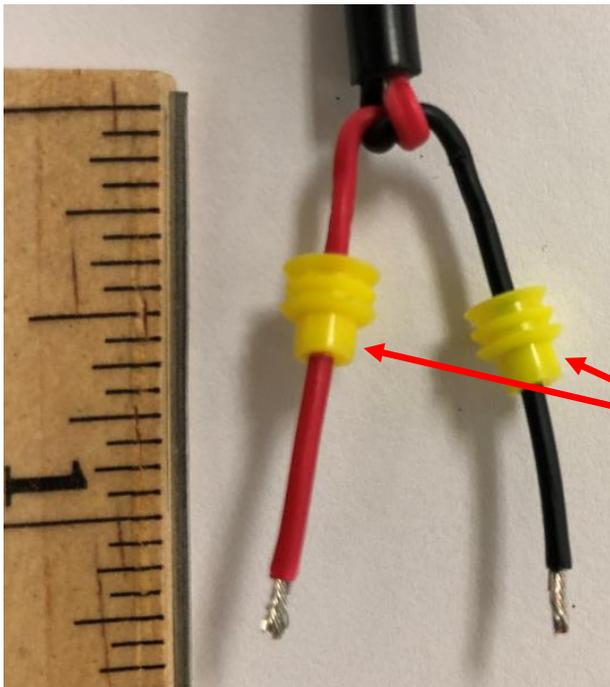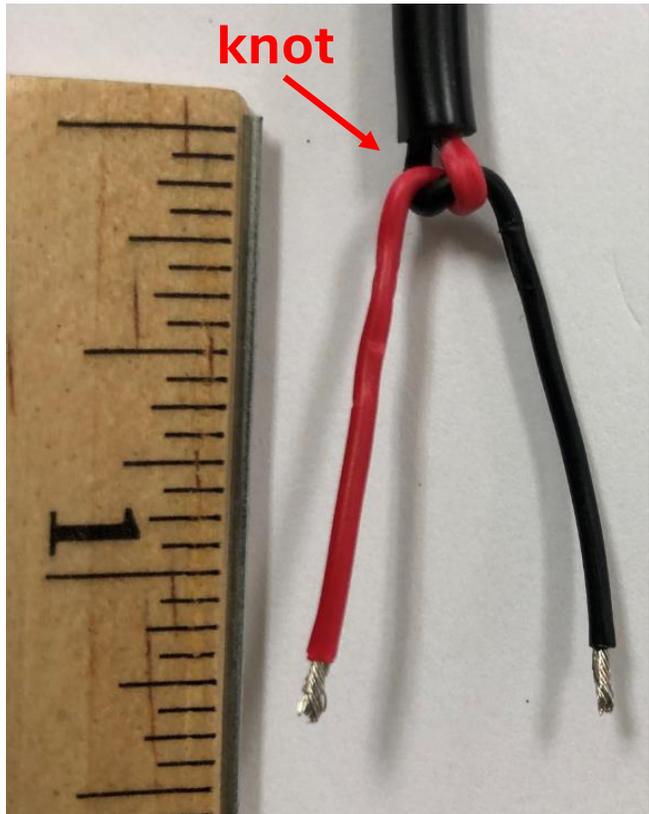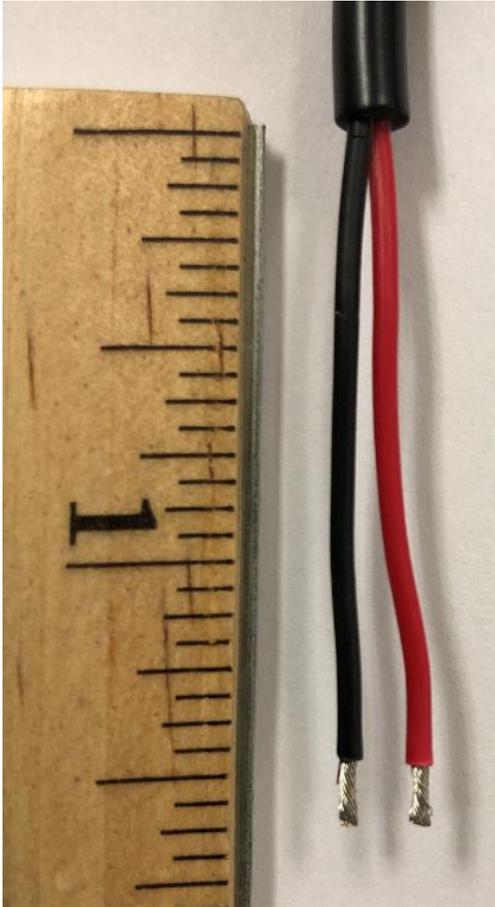1.2 – 3.3 mm FLR

Extraction Tool:
Part No. 9-1579007-1

Product Specification:
108-20090

Application Specification:
114-20045

Installing connectors – preparing cable

1) remove 1.625" of cable outer sheathing and 0.125" of insulation

2) make a tight knot close to the outer cable sheathing

3) place the silicone seals on the conductors

knot

The smaller diameter section points towards the wire ends.

Installing connectors – crimping tab terminals

The terminals have two sections that are crimped differently. The 1st section, which is closest to the pin or socket end, is crimped on the bare wire. The 2nd section, which is larger, is crimped on the insulation.

Crimping wires properly is difficult and it is highly recommended to practice on test wire at first. After about 20 years of crimping, one starts to get the hang of it.

At the end of this document see "Good Crimp Quality" and "Incorrect Crimp Quality".

1) place the bare wire section in the 2.5mm crimper position as shown

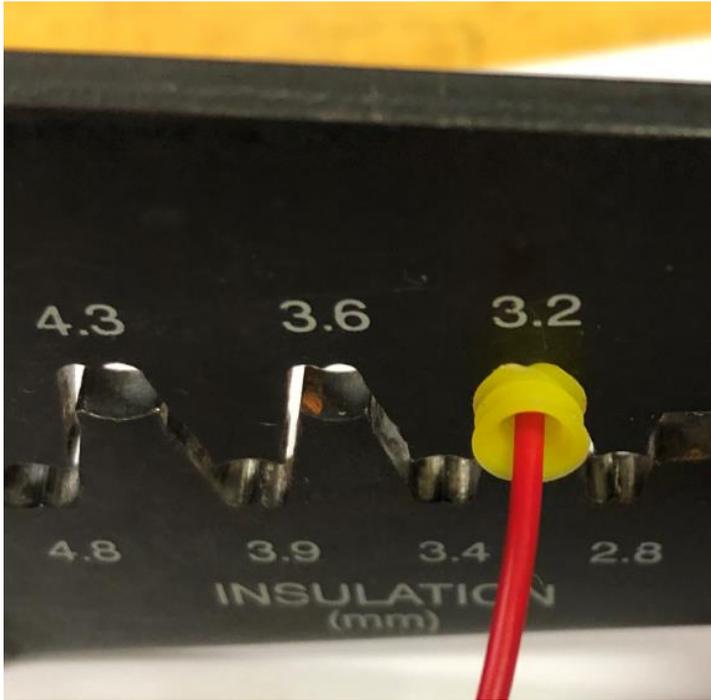2) insert the bare wire into that section

3) squeeze the crimper
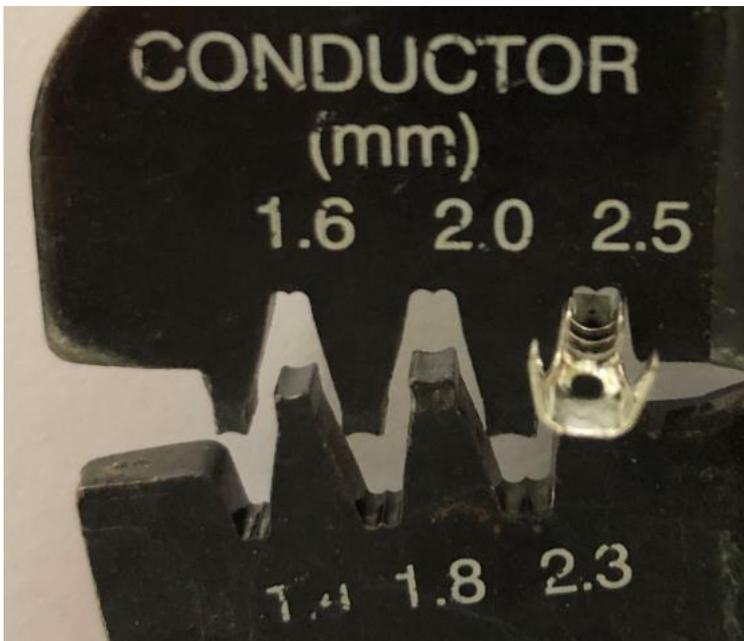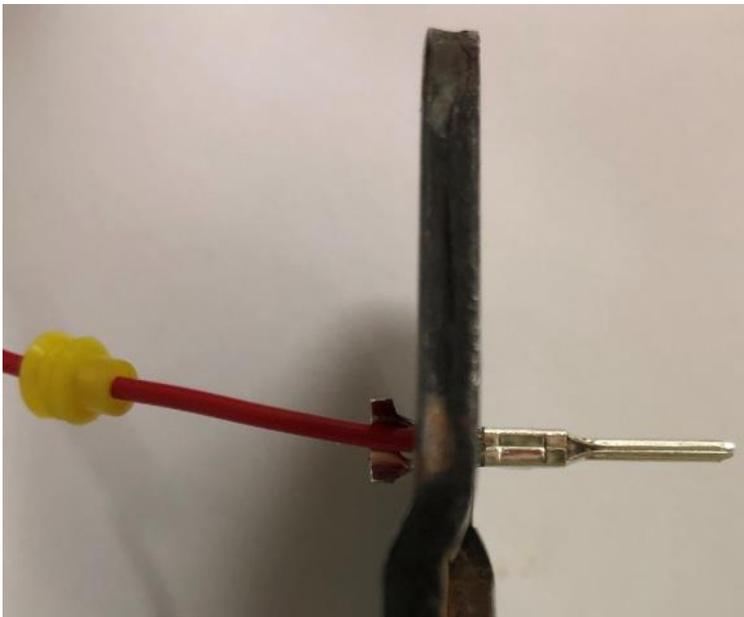
Front view
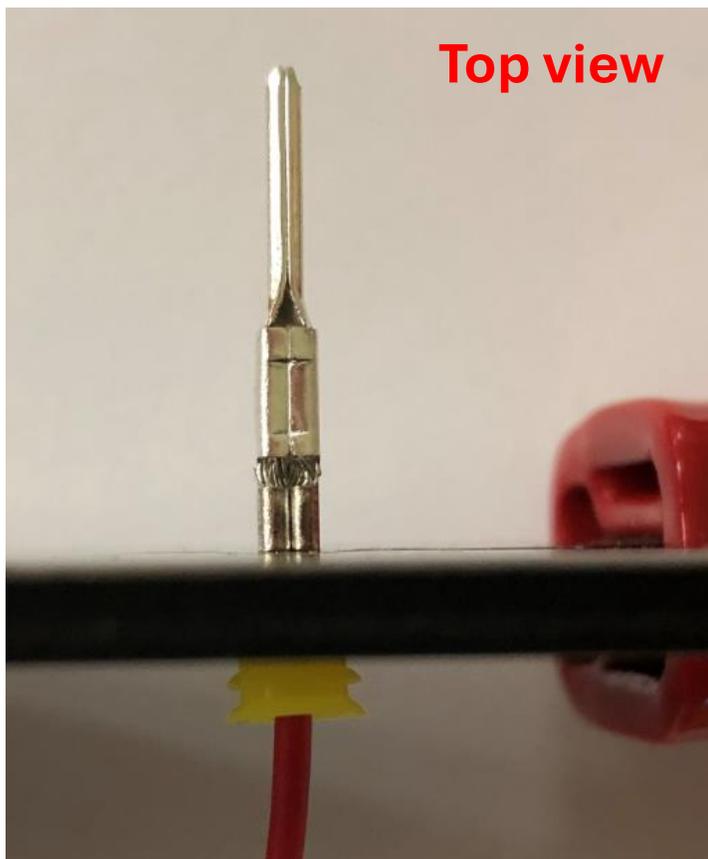

Top view

4) move the silicone seal so that its smaller diameter end is in the larger crimp section

5) place the bare wire section in the 3.2mm crimper position as shown

6) squeeze the crimper

Front view

Result of properly crimped tab terminals

Top view

Installing connectors – inserting terminals into shells

1) insert the terminals into the shell. There should be a click when they lock in place and they should stay in place with a slight tug on a wire. Note the orientation of the tab contact and the cap housing.

2) add a small 2mm wide cable tie on the cable outer sheathing just above the knot

3) place the connector, wires, and cable tie into the lower shell

CAP CONTACT

CAP
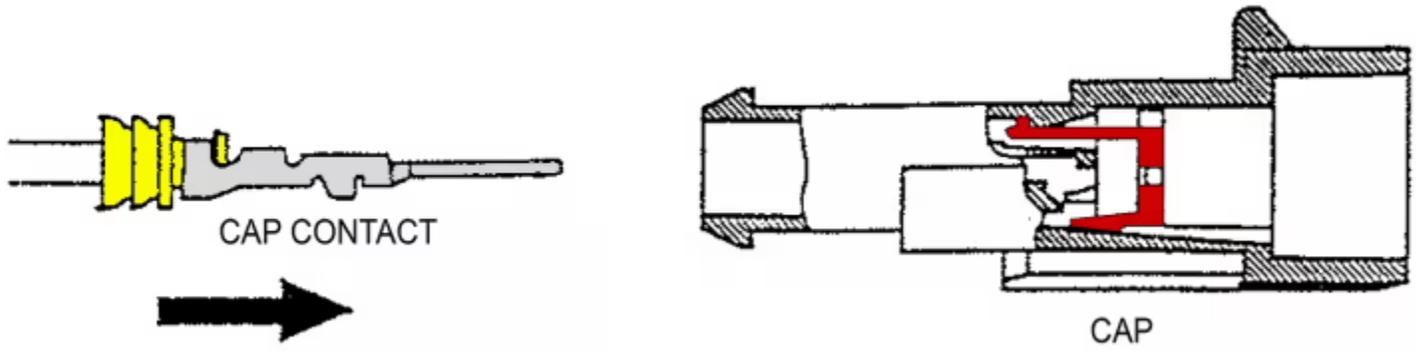
The cable tie should be **in the shell** to prevent the cable from being pulled out.

Cable tie

Installing connectors – adding label
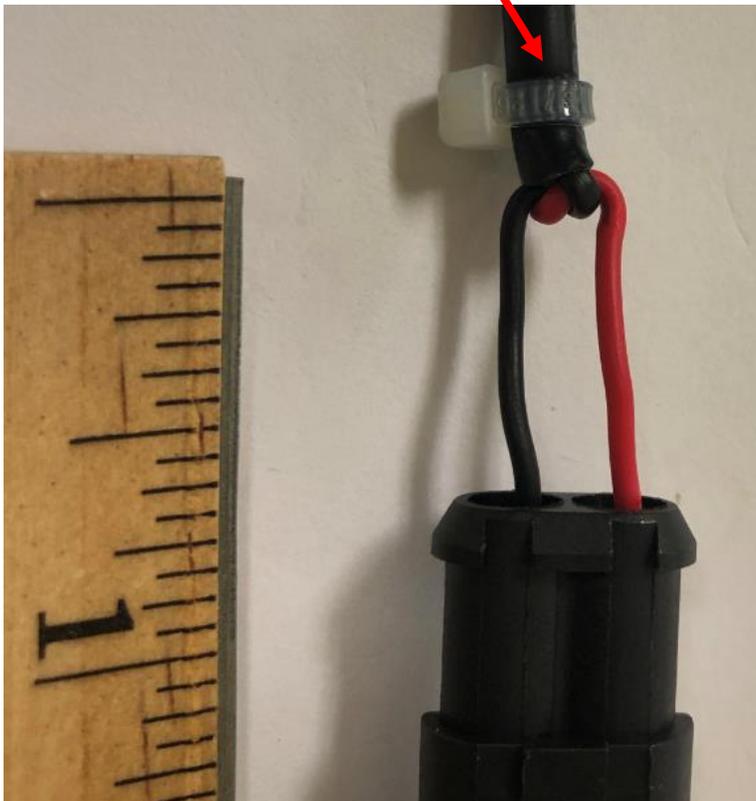
1) for waterproof labels cover both surfaces or the label with tape or apply an acrylic clear spray

2) cut the label to size and add double stick tape to the underside

3) place the top shell over the lower shell and wires

4) attach the label to the top shell without applying pressure

5) place the bezel over the label and adjust the label position as needed

6) press down firmly to ensure the double-stick tape adheres well

7) insert #2 self tapping screws

Installing connectors – crimping recepticle terminals

The previous sections provide instructions for crimping and installing **tab (pin) terminals**. This section is concerned with **socket terminals**.

The crimping method and positions used on the crimper are the same and thus fewer photos will be presented.

Here the **bare wire** is being crimped using the **2.5 position** on the crimper.

Here the **wire insulation and silicone seal** is being crimped using the **3.2 position** on the crimper.
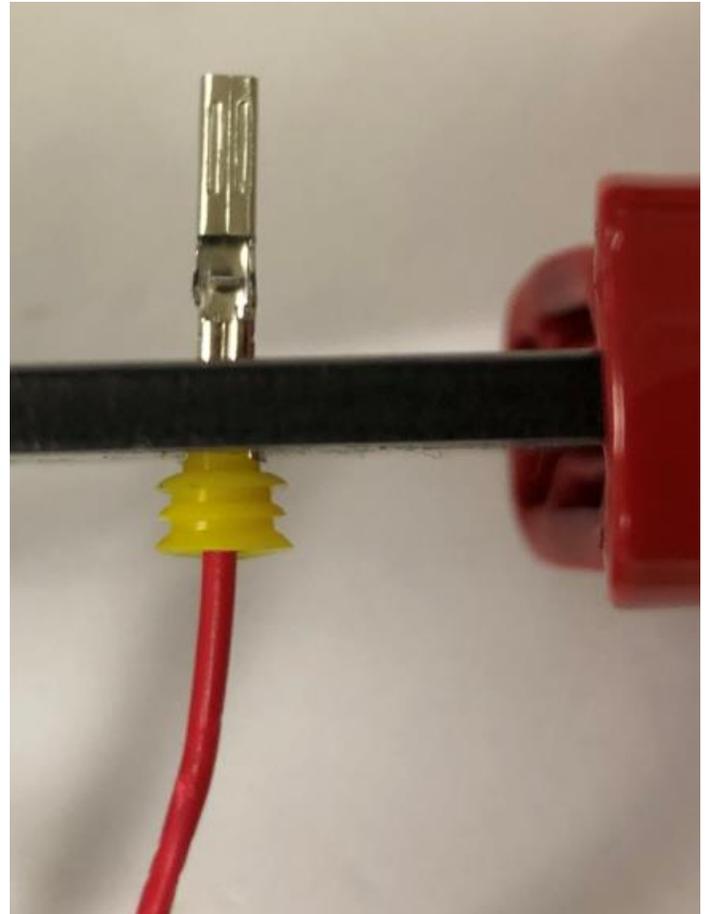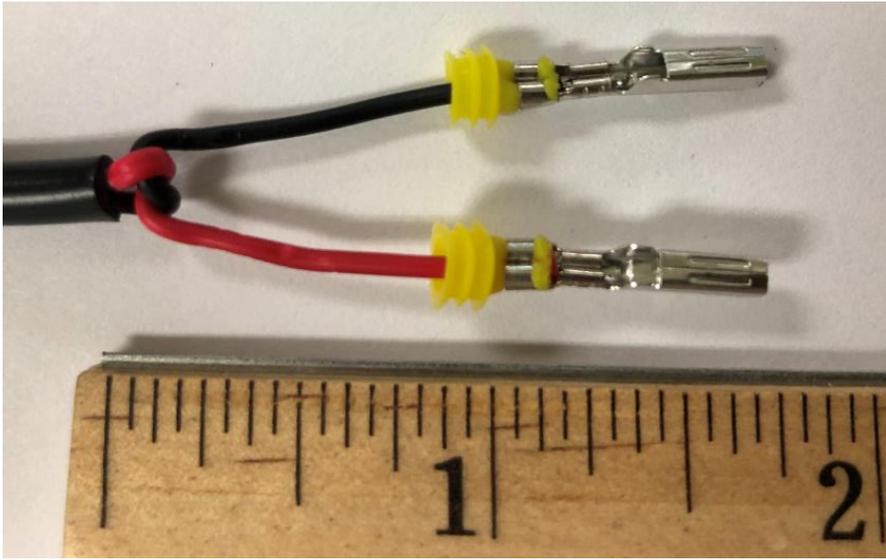
This is the result of the

1) insert the terminals into the shell. There should be a click when they lock in place and they should stay in place with a slight tug on a wire. Note the orientation of the tab contact and the cap housing.
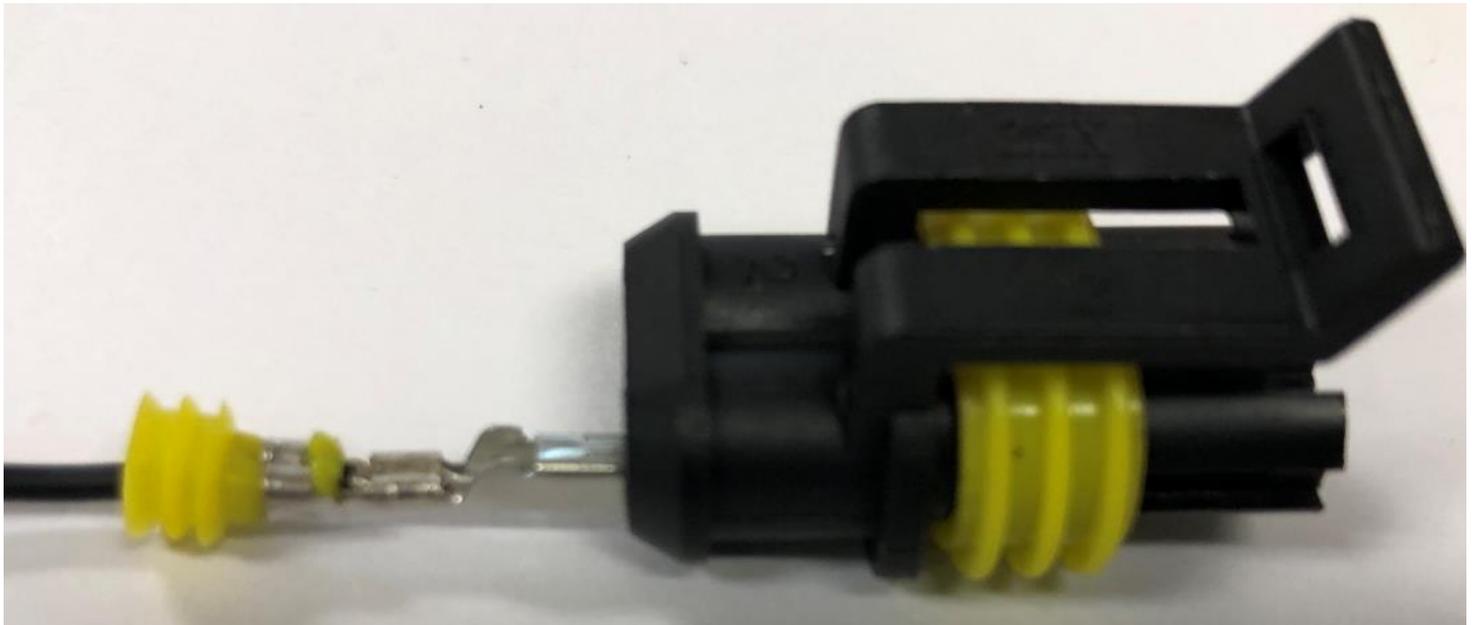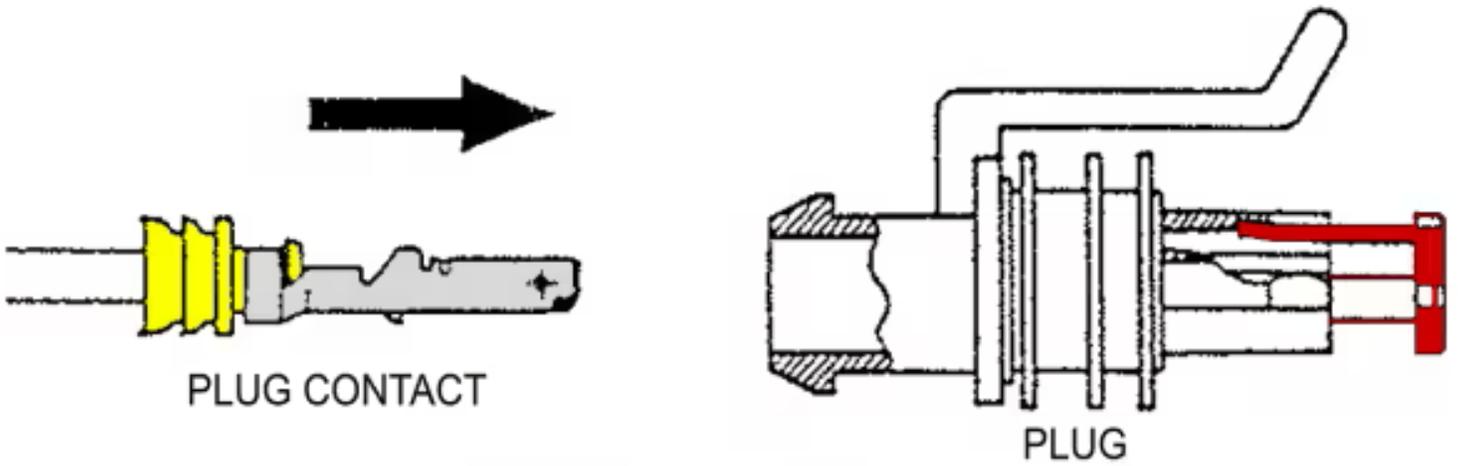
PLUG CONTACT

PLUG

2) Secure a cable tie just above the knot as shown

3) As done with the Cap Housing install the Plug Housing in the proper shell. Ensure the cable tie is inside the shell.

AMP Superseal Connectors – Cap Housings (Tab Contacts)
Digi-Key listings

282104-1

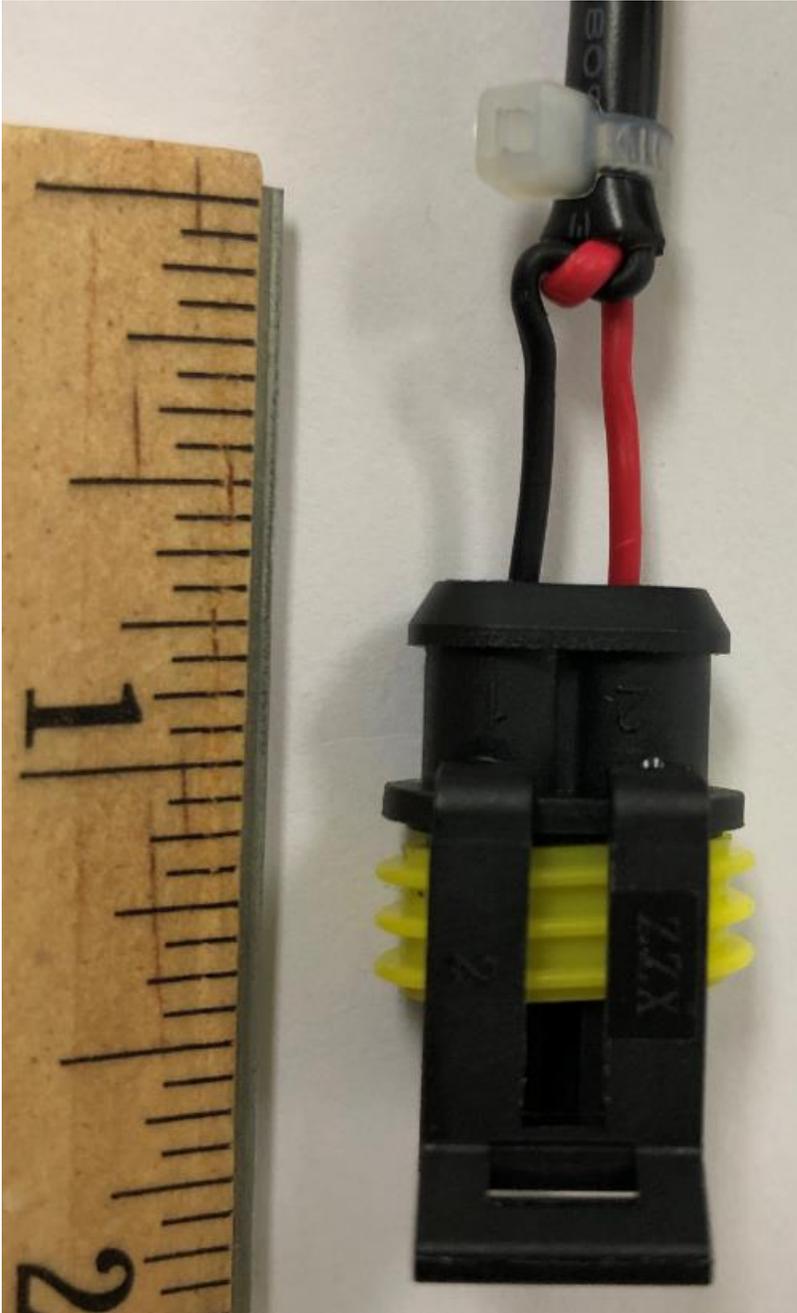|	
DigiKey Part Number	A106363-ND
Manufacturer	**TE Connectivity AMP Connectors**
Manufacturer Product Number	282104-1
Description	CONN RCPT HSG 2POS 6.00MM
Manufacturer Standard Lead Time	18 Weeks
Customer Reference	
Detailed Description	2 Rectangular Connectors - Housings Receptacle Black 0.236" (6.00mm)
Datasheet	**Datasheet**
EDA/CAD Models	**282104-1 Models**

Image shown is a representation only. Exact specifications should be obtained from the product data sheet.

In-Stock: 4,396

Check for Additional Incoming Stock

QUANTITY

[Add to List] [Add to Cart]

All prices are in USD

Bulk

QUANTITY	UNIT PRICE	EXT PRICE
1	$0.82000	$0.82
10	$0.69500	$6.95

282105-1

DigiKey Part Number	A105023-ND
Manufacturer	**TE Connectivity AMP Connectors**
Manufacturer Product Number	282105-1
Description	CONN RCPT HSG 3POS 6.00MM
Manufacturer Standard Lead Time	18 Weeks
Customer Reference	
Detailed Description	3 Rectangular Connectors - Housings Receptacle Black 0.236" (6.00mm)
Datasheet	**Datasheet**
EDA/CAD Models	**282105-1 Models**

Image shown is a representation only. Exact specifications should be obtained from the product data sheet.

In-Stock: 10,451

Check for Additional Incoming Stock

QUANTITY

[Add to List] [Add to Cart]

All prices are in USD

Bulk

QUANTITY	UNIT PRICE	EXT PRICE
1	$1.02000	$1.02
10	$0.86800	$8.68

282106-1

DigiKey Part Number	A123395-ND
Manufacturer	**TE Connectivity AMP Connectors**
Manufacturer Product Number	282106-1
Description	CONN RCPT HSG 4POS 6.00MM
Manufacturer Standard Lead Time	18 Weeks
Customer Reference	
Detailed Description	4 Rectangular Connectors - Housings Receptacle Black 0.236" (6.00mm)
Datasheet	**Datasheet**
EDA/CAD Models	**282106-1 Models**

Image shown is a representation only. Exact specifications should be obtained from the product data sheet.

In-Stock: 4,198

Check for Additional Incoming Stock

QUANTITY

[Add to List] [Add to Cart]

All prices are in USD

Bulk

QUANTITY	UNIT PRICE	EXT PRICE
1	$1.14000	$1.14
10	$0.96700	$9.67

AMP Superseal Connectors – Plug Housings (Receptical Contacts) Digi-Key listings

Dark Mode ⬤ Share

282080-1

DigiKey Part Number	A106529-ND
Manufacturer	TE Connectivity AMP Connectors
Manufacturer Product Number	282080-1
Description	CONN PLUG HSG 2POS 6.00MM
Manufacturer Standard Lead Time	28 Weeks
Customer Reference	
Detailed Description	2 Rectangular Connectors - Housings Plug Black 0.236" (6.00mm)
Datasheet	📄 Datasheet
EDA/CAD Models	282080-1 Models

Image shown is a representation only. Exact specifications should be obtained from the product data sheet.

In-Stock: 11,561

Check for Additional Incoming Stock

QUANTITY

[Add to List] [Add to Cart]

All prices are in USD

Bulk

QUANTITY	UNIT PRICE	EXT PRICE
1	$0.88000	$0.88
10	$0.74400	$7.44

Dark Mode ⬤ Share

282087-1

DigiKey Part Number	A105021-ND
Manufacturer	TE Connectivity AMP Connectors
Manufacturer Product Number	282087-1
Description	CONN PLUG HSG 3POS 6.00MM
Manufacturer Standard Lead Time	18 Weeks
Customer Reference	
Detailed Description	3 Rectangular Connectors - Housings Plug Black 0.236" (6.00mm)
Datasheet	📄 Datasheet
EDA/CAD Models	282087-1 Models

Image shown is a representation only. Exact specifications should be obtained from the product data sheet.

In-Stock: 19,527

Check for Additional Incoming Stock

QUANTITY

[Add to List] [Add to Cart]

All prices are in USD

Bulk

QUANTITY	UNIT PRICE	EXT PRICE
1	$0.69000	$0.69
10	$0.58800	$5.88

Dark Mode ⬤ Share

282088-1

DigiKey Part Number	A123394-ND
Manufacturer	TE Connectivity AMP Connectors
Manufacturer Product Number	282088-1
Description	CONN PLUG HSG 4POS 6.00MM
Manufacturer Standard Lead Time	28 Weeks
Customer Reference	
Detailed Description	4 Rectangular Connectors - Housings Plug Black 0.236" (6.00mm)
Datasheet	📄 Datasheet
EDA/CAD Models	282088-1 Models

Image shown is a representation only. Exact specifications should be obtained from the product data sheet.

In-Stock: 2,939

Check for Additional Incoming Stock

QUANTITY

[Add to List] [Add to Cart]

All prices are in USD

Bulk

QUANTITY	UNIT PRICE	EXT PRICE
1	$1.10000	$1.10
10	$0.93800	$9.38

AMP Superseal Connectors – Tab Contacts for Cap Housings

Mfr Part #		Quantity Available ⓘ		Price — Price by Quantity		Tariff Status ⓘ		Series	
^	v	^	v	^	v	^	v	^	v
282109-1 CONN TAB 15-18AWG CRIMP TIN *TE Connectivity AMP Connectors*		59,504 In Stock		1 : **$0.14000** Cut Tape (CT) 4,000 : **$0.07710** Tape & Reel (TR)		-		Superseal	
282404-1 CONN TAB 20-22AWG CRIMP TIN *TE Connectivity AMP Connectors*		32,933 In Stock		1 : **$0.15000** Cut Tape (CT) 4,000 : **$0.08112** Tape & Reel (TR)		-		Superseal	
282465-1 CONN TAB 13-15AWG CRIMP TIN *TE Connectivity AMP Connectors*		18,783 In Stock		1 : **$0.37000** Cut Tape (CT) 4,000 : **$0.20409** Tape & Reel (TR)		-		Superseal	
282109-3 CONN TAB 15-18AWG CRIMP GOLD *TE Connectivity AMP Connectors*		7,474 In Stock		1 : **$0.68000** Cut Tape (CT) 4,000 : **$0.37935** Tape & Reel (TR)		-		Superseal	

AMP Superseal Connectors – Receptical Contacts for Plug Housings

Mfr Part #		Quantity Available ⓘ		Price — Price by Quantity		Tariff Status ⓘ		Series	
^	v	^	v	^	v	^	v	^	v
282110-1 CONN SOCKET 15-18AWG CRIMP TIN *TE Connectivity AMP Connectors*		101,961 In Stock		1 : **$0.16000** Cut Tape (CT) 4,000 : **$0.08907** Tape & Reel (TR)		-		Superseal	
282466-1 CONN SOCKET 13-15AWG CRIMP TIN *TE Connectivity AMP Connectors*		12,596 In Stock		1 : **$0.17000** Cut Tape (CT) 4,000 : **$0.09552** Tape & Reel (TR)		-		Superseal	
282403-1 CONN SOCKET 20-22AWG CRIMP TIN *TE Connectivity AMP Connectors*		0 In Stock **Check Lead Time**		1 : **$0.13000** Cut Tape (CT) 4,000 : **$0.07021** Tape & Reel (TR)		-		Superseal	

Note that Superseal equivalents are sold as Automotive Electrical Connector sets on Amazon and other sources. The assembled connectors shown in the photos are actually from this set purchased on Amazon.

BOM (Bill Of Materials)

| Line	Qty	Type	Description	Part Num	Price
1	24	screw	#2 1/2"L RoundHead Philips Thread-Forming BlackZincPlated	92295A113	$7.78(50)
2	1	connector	2Pos SuperSeal PlugHousing	282080-1	$0.88(1)
3	1	connector	2Pos SuperSeal CapHousing	282104-1	$0.82(1)
4	1	connector	3Pos SuperSeal PlugHousing	282087-1	$0.69(1)
5	1	connector	3Pos SuperSeal CapHousing	282105-1	$1.02(1)
6	1	connector	4Pos SuperSeal PlugHousing	282088-1	$1.10(1)
7	1	connector	4Pos SuperSeal CapHousing	282106-1	$1.14(1)
8	1	printPLA	Socket2PBezel		
9	1	printPLA	Socket2PShellTop		
10	1	printPLA	Socket2PShellBot		
11	1	printPLA	Plug2PShellBot		
12	1	printPLA	Plug2PShellBezel		
13	1	printPLA	Plug2PShellTop		
14	1	printPLA	Socket3PShellTop		
15	1	printPLA	Socket3PBezel		
16	1	printPLA	Socket3PShellBot		
17	1	printPLA	Plug3PShellTop		
18	1	printPLA	Plug3PShellBot		
19	1	printPLA	Plug3PShellBezel		
20	1	printPLA	Socket4PShellTop		
21	1	printPLA	Socket4PBezel		
22	1	printPLA	Socket4PShellBot		
23	1	printPLA	Plug4PShellBot		
24	1	printPLA	Plug4PShellTop		
25	1	printPLA	Plug4PShellBezel		

AMP Superseal Connectors – Proper terminal Crimping

Good Crimp Quality

F-CRIMP

Bellmouth permissible

Bellmouth must always be present

Cut-off tab present ✓

Crimp barrel closed
Insulation is securely held ✓

OVERLAP CRIMP

Insulation visible

Conductor visible

Locking lances and terminal body not deformed ✓

Crimp legs overlap
Insulation is securely held ✓

WRAP OVER CRIMP

Anvil imprint symmetrical ✓

Crimp legs must pass each other
Insulation is securely held ✓

Correct selection

of wire, terminal and applicator
Crimp barrel is closed, legs support each other, sufficient gap between legs and bottom of crimp, all strands are equally distributed and deformed ✓

AMP Superseal Connectors – Improper terminal Crimping

Incorrect Crimp Quality

Terminal body damaged

Single core crimped on terminal

Terminal twisted

Cut off tab too long

Crimp barrel distorted

F-CRIMP

Crimp legs are not closed

Insulation is pierced

INSULATION CRIMP

OVERLAP CRIMP

Crimp legs do not overlap

Insulation is pierced

WRAP OVER CRIMP

Insulation is not securely held

Insulation is over crimped
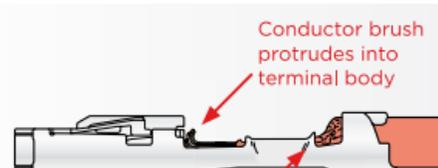
Conductor brush protrudes into terminal body

Insulation inside the wire crimp
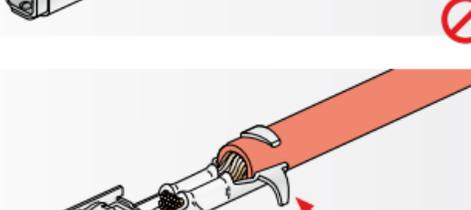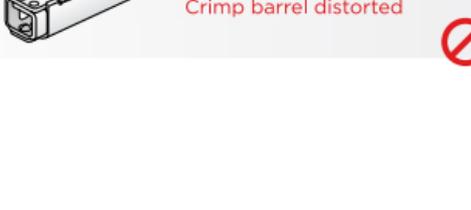
Wire bent
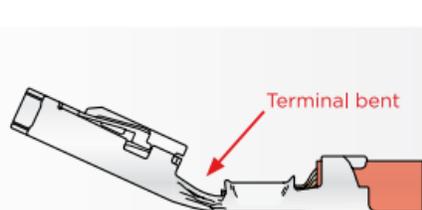
Terminal bent

AMP Superseal Connectors – Tooling and Equipment

If you are willing to spend a few hundred dollars on the manufacturer's crimper or thousands on the automated equipment, such products are available.

Catalog 1654292-2
Revised 06-2016

AMP SUPERSEAL 1.5 Series Connectors
Application Tooling

Images representative of tool type only.

APPLICATION TOOLING AND EQUIPMENT