

ATD Series Connector APPLICATION SPECIFICATION

FOREWORD


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Revision		A	B	C	D
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	Signature/签名				
	Date/日期	2025-06-05			
R&D Checked 检查	Name/姓名	Orion.Li			
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	Date/日期				

Note: Fundamental modifications, compared with the previous edition, are indicated by a vertical line in the right margin.

MODIFICATIONS

REVISION	DATE	LOC.	DESCRIPTION
A	2025-06-05		First Issue

	Document type: Application Specification	Ref ECN #:	Form No. F-0030-C
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1 SCOPE

This specification covers the requirements for application of ATD series connector system.

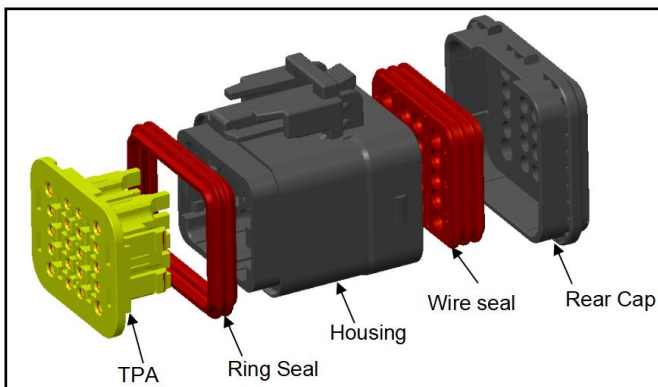
2 PRODUCT DESCRIPTION

The ATD Series provides versatile wire-to-wire connectors featuring multiple cavities and high sealing ratings of IP67, IP68, and IP6K9K (when including rear shells), suitable for agricultural machinery, buses, construction equipment, and trucks.

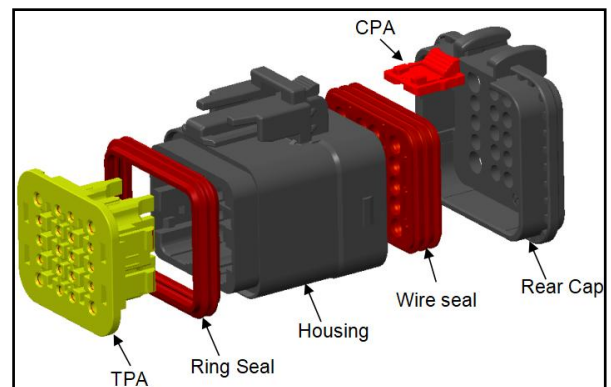
These connectors include integrated contact Position Assurance (TPA), Connector Position Assurance (CPA), which simplify assembly, installation, and repair by minimizing the need for additional components or specialized tools.

As a hybrid system, these connectors facilitate the simultaneous transmission of power and signals within one unit. Their compact design offers increased flexibility for wire harness designers, enabling efficient space use without sacrificing functionality.

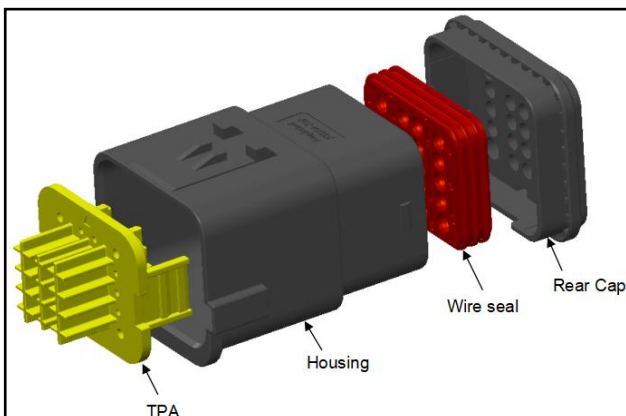
20 POS Plug (WITHOUT CPA):



20 POS Plug (WITH CPA):



20 POS Receptacle:



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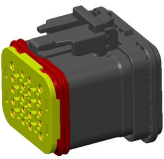
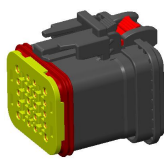
2.1 Receptacle

Part number	ATD04-20Px
Picture	

Note: “*” stands for Key A,B,C,D.

Key-A Color: Black; Key-B Color: Grey; Key-C Color: Green; Key-D Color: Blue;

2.2 Plug

Part number	ATD06-20Sx0	ATD06-20Sx1
Picture		

Note: “x” stands for Key A,B,C,D.

Key-A Color: Black; Key-B Color: Grey; Key-C Color: Green; Key-D Color: Blue;

2.3 Drawings

Product part numbers for customer drawings are available from www.amphenol-sine.com
Information contained in the customer drawing takes priority.

Receptacle Drawings

Product Drawing	Description
ATD04-20P*	20 POSITION,RECEPTACLE, PIN, ATD

Plug Drawings

Product Drawing	Description
ATD06-20S*0	20 POSITION, PLUG, SOCKET, ATD, W/O CPA
ATD06-20S*1	20 POSITION, PLUG, SOCKET, ATD, WITH CPA

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3 Requirements

3.1 Safety

Do not stack product shipping containers too high to avoid bending or deformation of the containers.

3.2 Storage

3.2.1 Ultraviolet ray

Prolonged exposure to UV light may cause deterioration of the chemical components used in product materials.

3.2.2 Shelf life

The product should be kept in the shipping container until it is ready for use to prevent parts from becoming deformed. This product should be used on a first-in, first-out basis to avoid storage deterioration that may adversely affect performance.

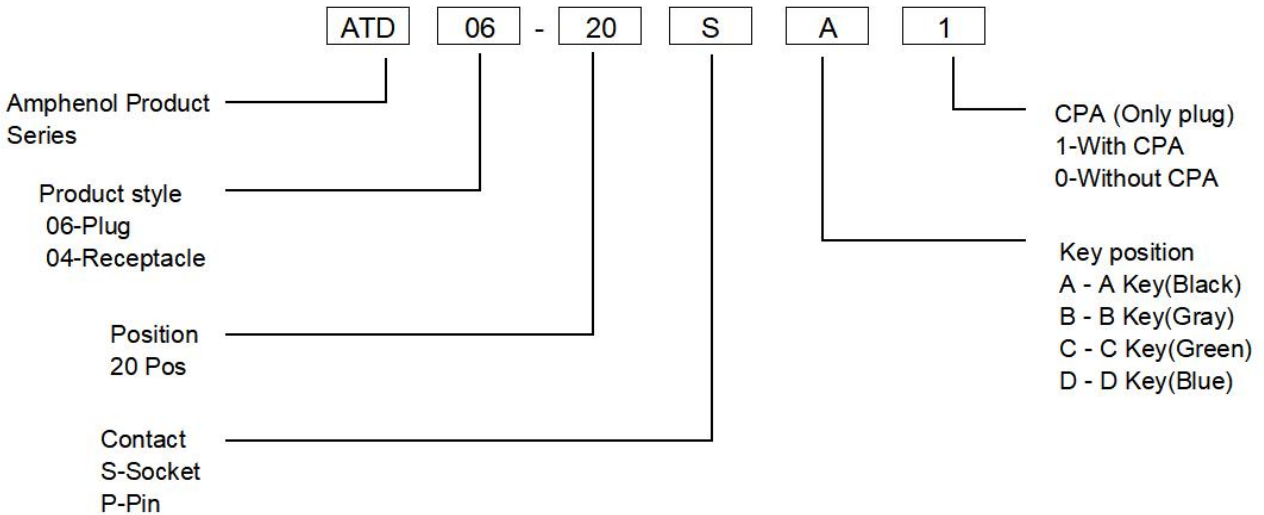
3.2.3 Chemical contact

Do not store products near any of the chemicals listed below, as they may cause stress corrosion cracking of the material.

Acids Alkalis Amines Ammonia Carbonates Chloroform Citrates Methylene Chlorine
 Methyl Ethyl Ketone Nitrites Phenol (Aqueous) Phosphates Sulfur Nitrites Sulfur Compounds
 Tartrates Methylene Chlorine

3.3 Characteristics

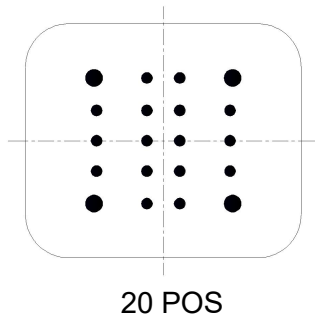
3.3.1 Part number system



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3.3.2 Pin Arrangements

For detail Pin arrangement see product drawing.



● :Contact Size 16

● :Contact Size 20

3.3.3 Materials

Part	Material
Housing	Thermoplastic, Black/Gray/Green/Blue
Rear Cap	Thermoplastic, Black/Gray/Green/Blue
TPA	Thermoplastic, Yellow
CPA	Thermoplastic, Red
Ring Seal	Silicone Rubber, Red
Wire seal	Silicone Rubber, Red
Contact	Copper Alloy

3.3.4 Sealing Range

SIZE	Wire Range AWG[mm ²]	Min Insulation OD	Max Insulation OD
16	14-20 AWG (2.5-0.5mm ²)	1.35 mm (.053 in)	3.05 mm (.120 in)
20	16-22 AWG (1.5-0.5mm ²)	1.35 mm (.053 in)	2.20 mm (.094 in)

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4 Procedure

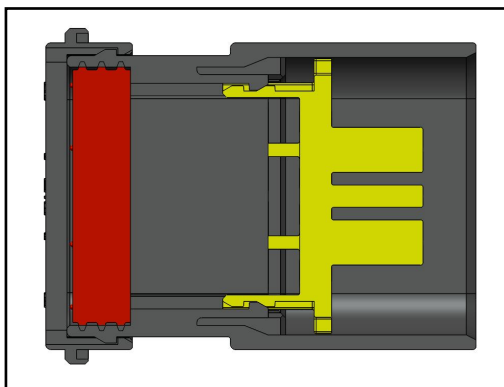
4.1 Contact Insertion

1. contacts can only be inserted when the TPA is in the pre-lock position. If the TPA is in the final lock position, it needs to be pulled back to the pre-lock position before inserting the contact.
2. Confirm the configuration of the connector, Pins are used on receptacle connector, and Sockets for plug connector.
3. Grasp the crimped contact at approximately 25.4mm[1.00] behind the contact barrel. Hold the connector with the back cover facing forward.
4. Push the contact directly into the seal until there is a click. A slight pull on the wire will confirm that it is properly locked in place.

4.2 Receptacle assembly contact:

Step 1

Verify that the plug TPA is in the pre-installed position, as shown in the figure below.



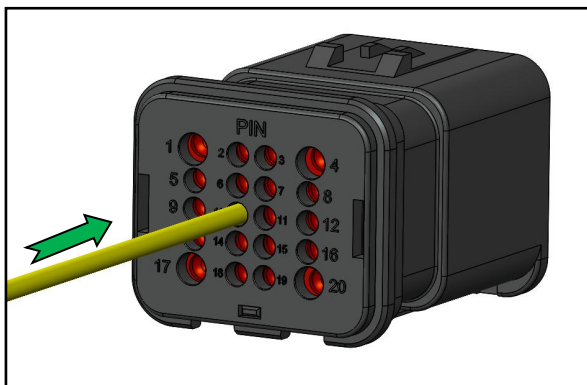
Step 2

If the TPA is in the final lock position, it needs to be pulled back to the pre-lock position before



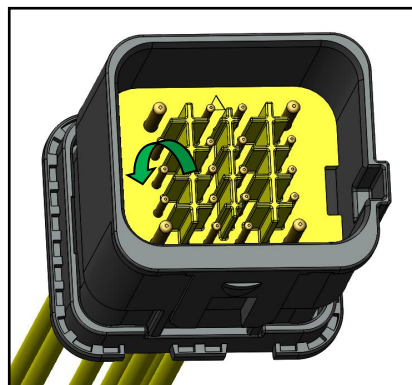
Step 3

Push contact straight into connector until a positive stop is felt. A slight tug will confirm that it is properly locked in position.



Step 4

Press the TPA down to the secondary lock position.



Note: The outer diameter of the wire insulation must meet the wire sealing range specified in the connector drawing.

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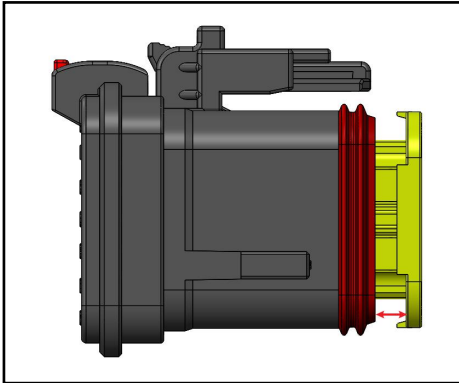
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4.3 Plug assembly contact:

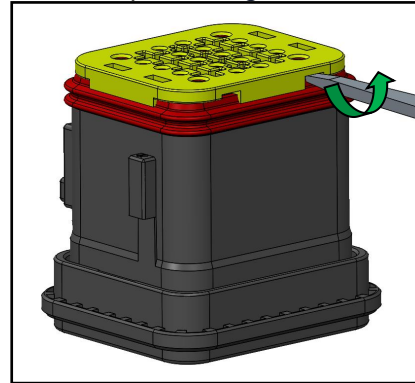
Step 1

Verify that the plug TPA is in the pre-installed position, as shown in the figure below.



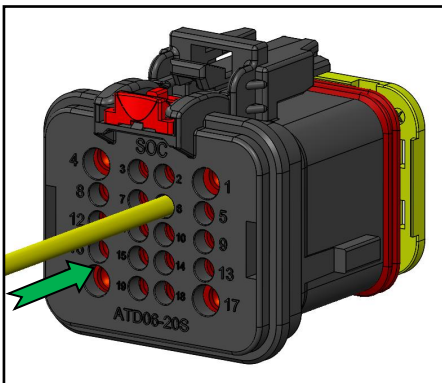
Step 2

If the TPA is in the final lock position, it needs to be pulled back to the pre-lock position before proceeding to the next step inserting the contact.



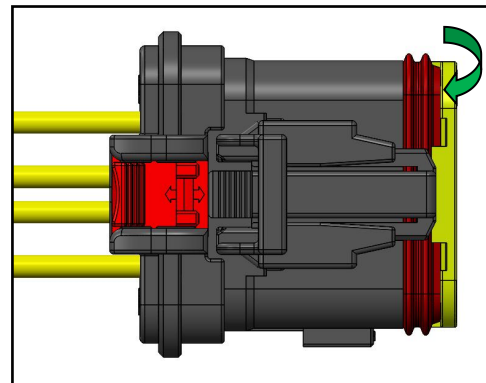
Step 3

Push contact straight into connector until a positive stop is felt. A slight tug will confirm that it



Step 4

Press the TPA down to the secondary lock position.



Note: The outer diameter of the wire insulation must meet the wire sealing range specified in the connector drawing.

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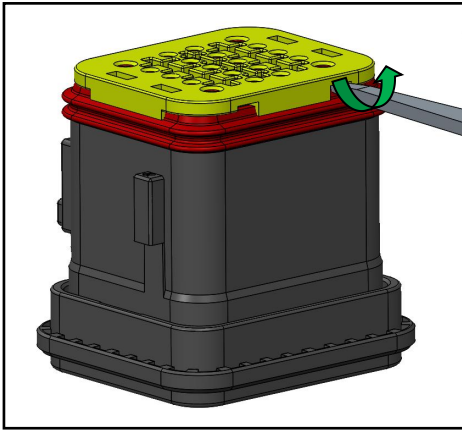
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4.4 Remove the contact

Plug:

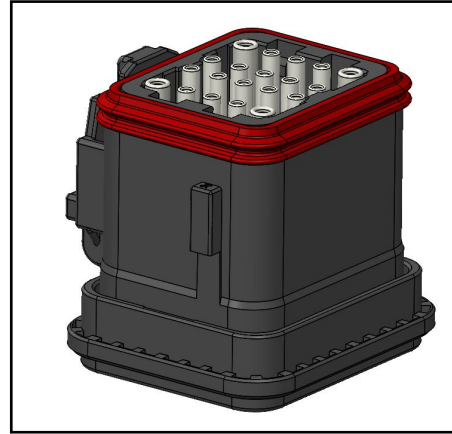
Step 1

First, pull it back to the pre-lock position to unlock it. This step ensures that the contact is no longer securely held in place by the TPA.



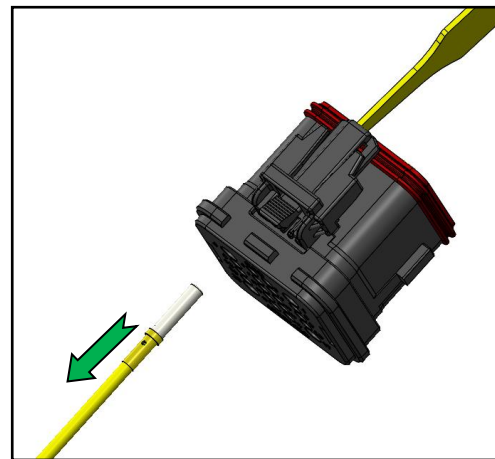
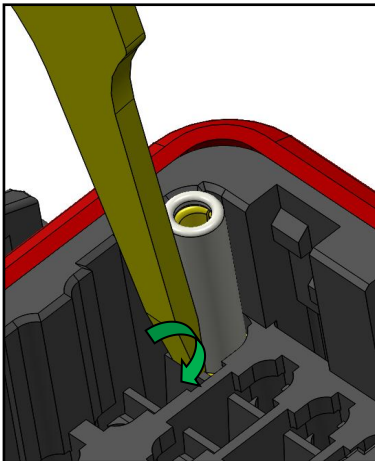
Step 2

Next, using a greater angle, pry the TPA to completely separate it from the housing, inserting the contact.



Step 3

Use the tool to lift the lock, finger and gently pull the wire until the cable can be pulled out to stop lifting the latch.



Note: The operation must be performed carefully to avoid applying excessive force when lifting the flexible arm, as this may result in fracture of the plastic locking finger, requiring housing replacement.

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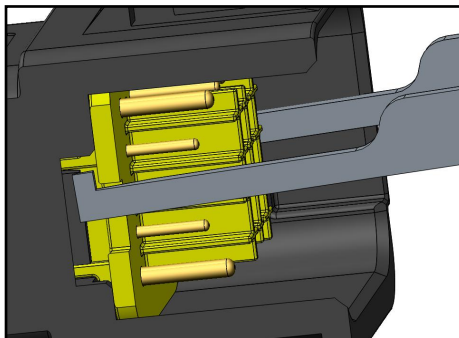
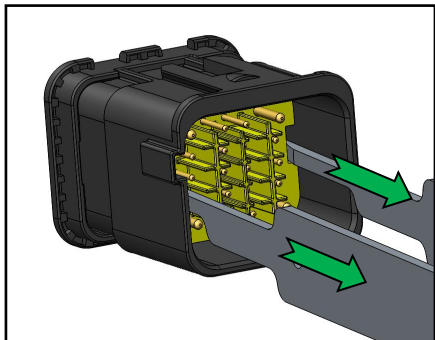
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Receptacle:

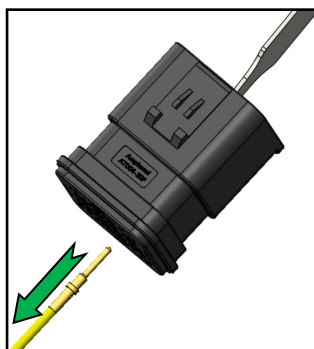
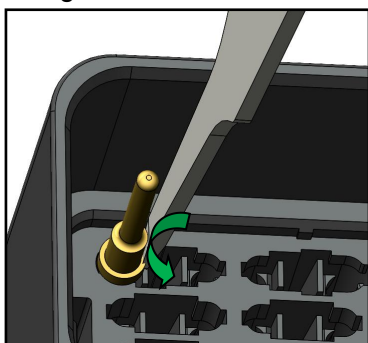
Step 1

Using dual hook tools, engage both sides of the TPA and extract it from the connector housing.



Step 2

Use the tool to lift the lock, finger and gently pull the wire until the cable can be pulled out to stop lifting the latch.



Note: To remove the socket TPA, use the recommended tool. Do not use needle-nose pliers. If improper removal causes TPA damage, contact the supplier for replacement.

The operation must be performed carefully to avoid applying excessive force when lifting the flexible arm, as this may result in fracture of the plastic locking finger, requiring housing replacement.

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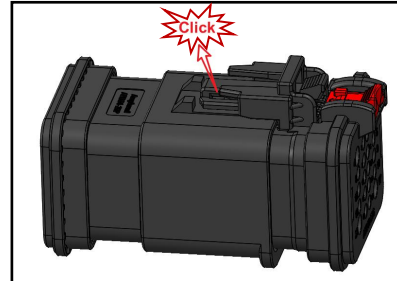
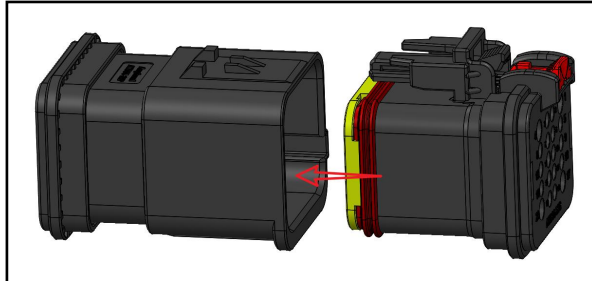
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4.5 Connector Mating and Disconnecting

4.5.1 Connector mating

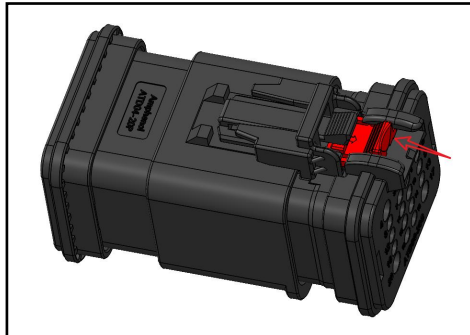
Step 1

Align and slowly insert the socket connector and plug connector with matching keying in both horizontal and vertical directions. An audible click confirms that they are properly engaged.



Step 2

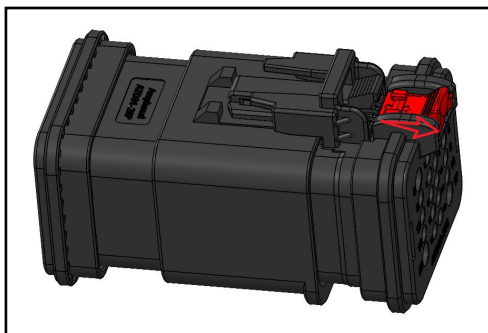
Verify that the connector's latches are fully engaged, then push the CPA inward until it is securely seated.



4.5.2 Connector unmating

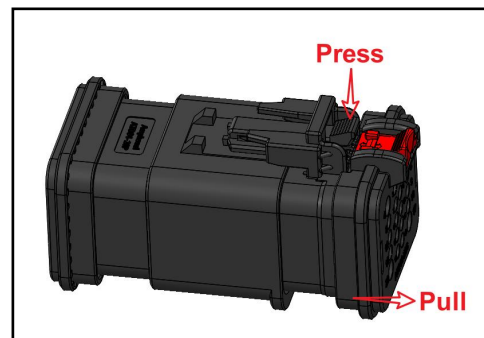
Step 1

Pull out the CPA.



Step 2

Press the tail of the plug connector's latch and gently pull out the connector.





Note: After disassembly, the sealing ring on the plug connector housing may become dislodged or deformed. It will automatically reseat into its original position during reconnection with the socket connector.

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5 Accessory

5.1 Extraction tools:

Part Number	Picture	Description
ATRT-100		Wedge lock Extraction Tool
ATRT-200		Contact and Wedge lock Extraction Tool

5.2 Sealing Plugs

To maintain the integrity of the seal, any unused cavities must be filled with appropriate sized sealing plugs.

Part Number	Picture	Description	Material	Color
AT13-217-1605		Sealing Plug, Size 16	Thermoplastic	Grey
ATM13-217-2005		Sealing Plug, Size 20	Thermoplastic	Grey

Installing and removing sealing plugs

Align the larger end of the sealing plug vertically with the seal port. Insert slowly until an audible click is heard, then stop insertion. Slightly pull back to confirm the sealing plug is properly seated.

For sealing plug removal, refer to the terminal removal procedure. First remove the TPA from the connector, then use a tool to depress the connector's locking clip. Pull the sealing plug to extract it.



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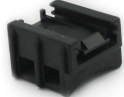





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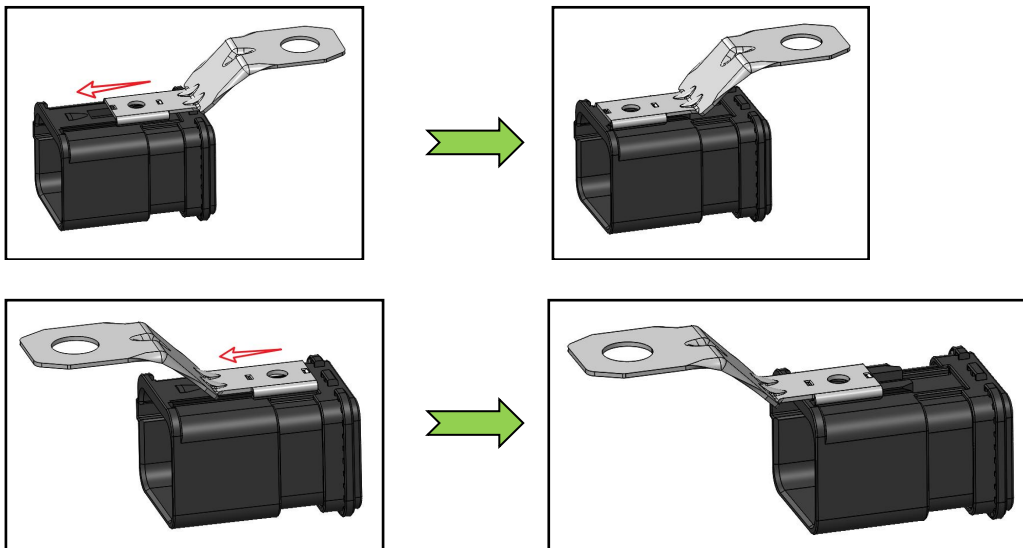
5.3 MOUNTING CLIPS

Mounting clips are installed on the receptacle to mount the connector. To meet design needs, the clips are available for several configurations and in plastic, stainless steel, or steel with zinc plating.

Part Number	Picture	Mounting Hole (mm)	Remark
AT11-VCLIP		/	THERMOPLASTIC
AT11-026-0205		5.08	THERMOPLASTIC
AT11-030-0205		/	THERMOPLASTIC
AT11-310-0205		/	THERMOPLASTIC
AT27-008-1200		11	STAINLESS STEEL
AT27-017-1200		8.2	STAINLESS STEEL
AT27-003-1200		11	STAINLESS STEEL
AT27-004-1200		13	STEEL-ZINC PLATED
AT27-005-1200		13	STAINLESS STEEL
AT27-010-1200		7	STAINLESS STEEL

Example of installation usage


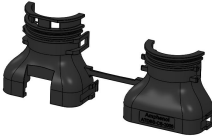

The mounting clip can be pushed into place with a firm force from either side to complete installation.



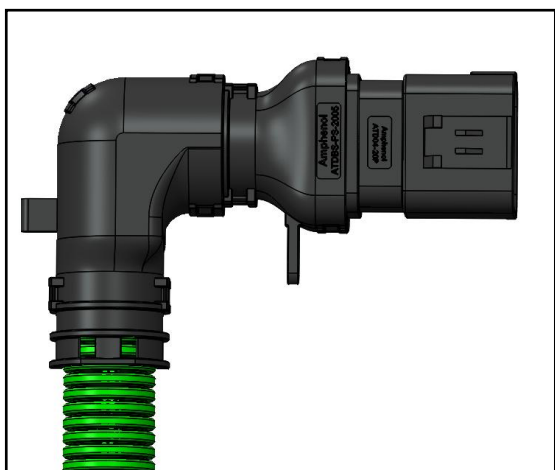
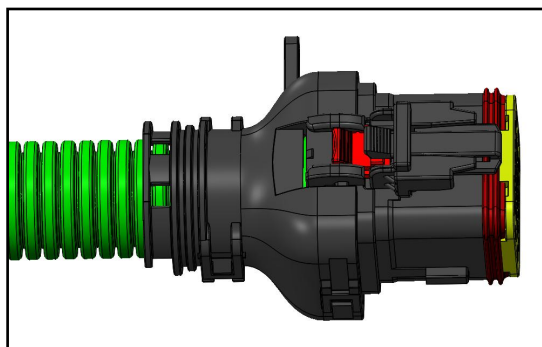
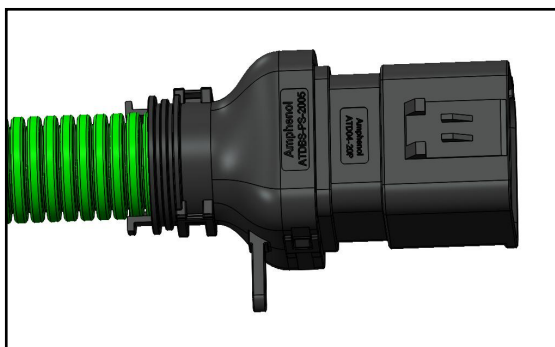
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5.4 BACKSHELLS

To provide protection for the rear end of the connector, eliminate cable stress, and also offer the connection functionality of corrugated tubing.

BACKSHELL P/N	Picture	CORRUGATED TUBE SIZE	TYPE	APPLICABLE CONNECTOR
ATDBS-PS-2005		NW17&UFW17	180°	ATD 20POS PLUG&RECEP
ATDBS-CS-2005		NW17&UFW17	180°	ATD 20POS PLUG
ATDBS-RA-2005		NW17&UFW17	90°	ATD 20POS PLUG&RECEP (Mount behind the 180° backshells.)

Installation effect drawing

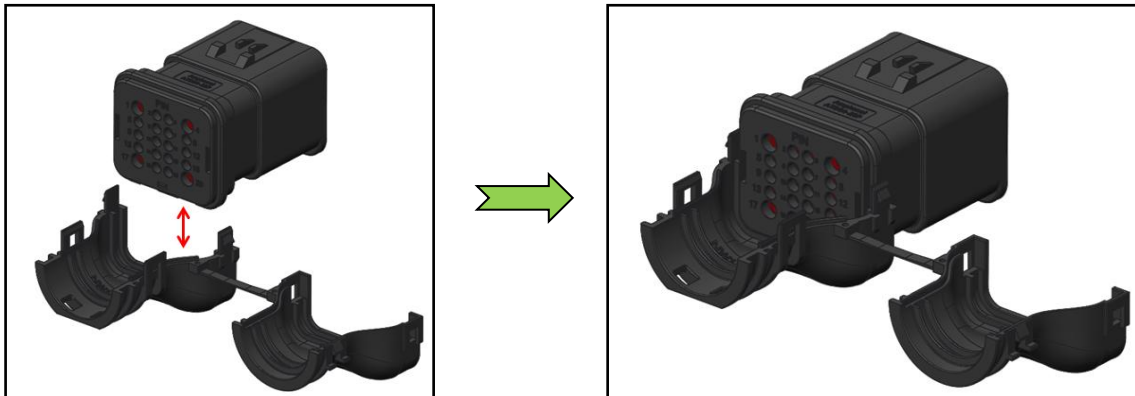


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180 ° Backshells assemble

Step 1

Align and install the straight backshell.



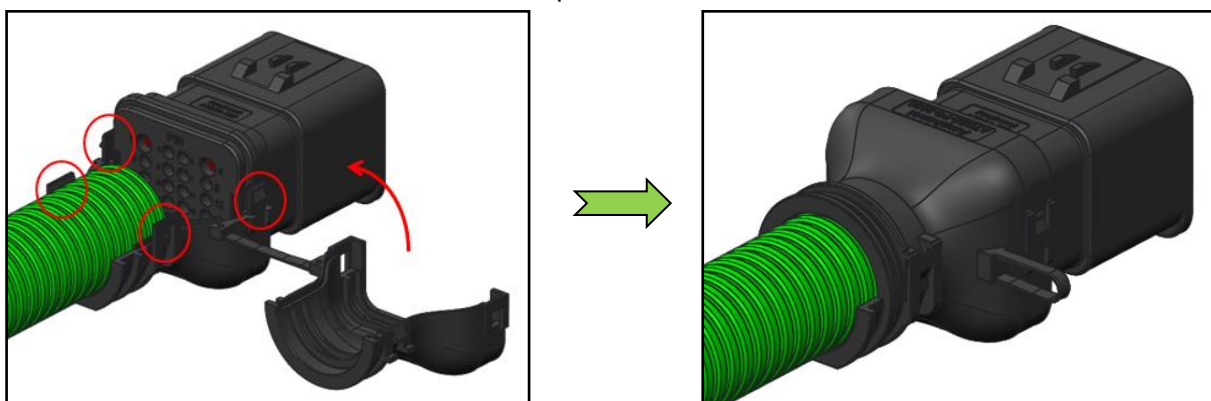
Step 2

Install the corrugated tube.



Step 3

Close the backshell and ensure the four snap are locked.



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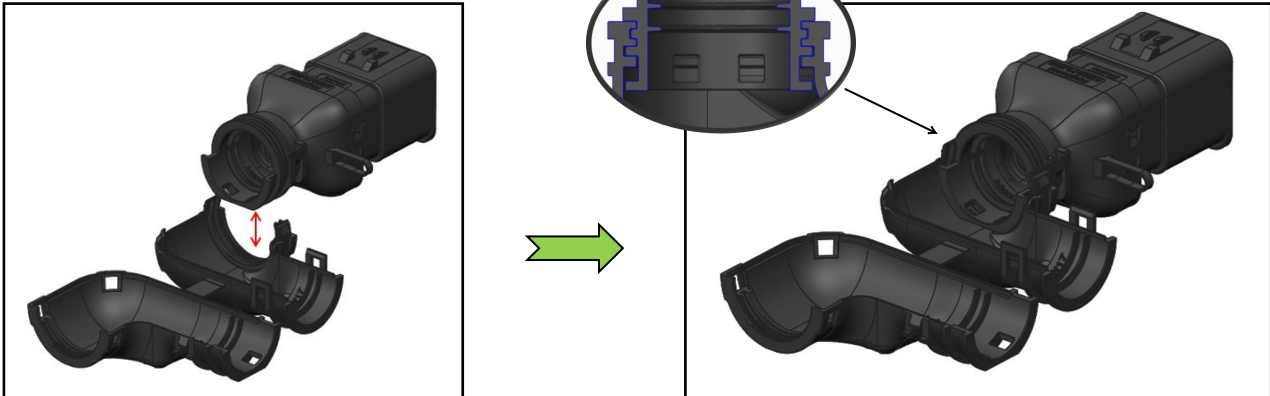
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90 ° Backshells assemble

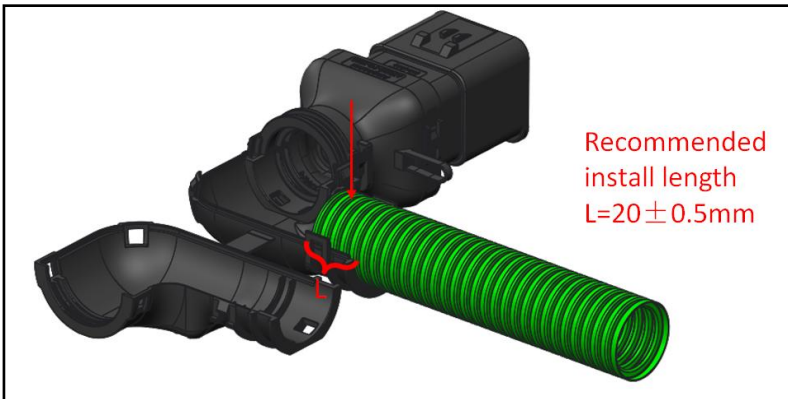
Step 1

Align and install the 90° backshell.



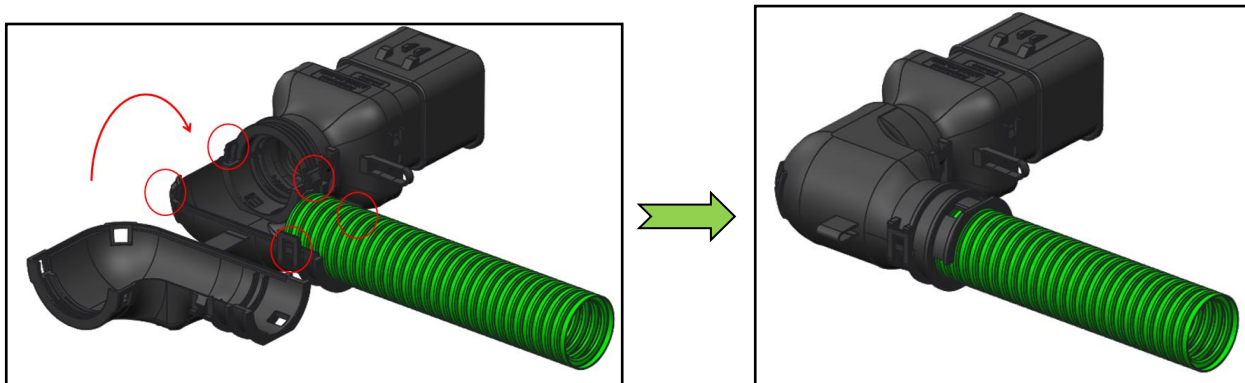
Step 2

Close the backshell and ensure the five snap are locked.



Step 3

Close the backshell and ensure the five snap are locked.



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