

# AB05 Series Miniature Bayonet Coupling Connectors



## Assembly and Wiring Instructions

### Product Introduction:

**AB05 connectors conform to the Stringent requirements of BS9522 F0017, and US Specification Mil-C-26482, series 1 solder and CECC 75 201 003. These connectors feature 3-pin bayonet coupling or Alternative ‘push-pull’ version in shell sizes 10 and 12 quick release applications. AB05 connectors offer economical lightweight solutions for interconnection needs in commercial and industrial applications. Insulators are polychloroprene and provide excellent solvent and insulation resistance and environmental sealing. Accessories include straight outlets, cable clamps, grommet sealing nuts, general duty adaptors and protective caps.**

## Typical Mating Connectors

### Standard Data

#### Materials

Shell:	Aluminum Alloy
Insulator:	Polychloroprene
Grommet:	Polychloroprene
Contacts:	Brass
Accessory:	Aluminum Alloy

#### Plating Finishes

Shell:	Conductive, Olive Drab over cadmium plate (Alternatives available on request)
Contacts:	Gold over nickel
Accessory:	Conductive, Olive Drab over cadmium plate (Alternatives available on request)

### Environmental Ratings

Shock:	100g
Vibration:	10 to 5000 Hz long endurance, 30- hour at 10g
Acceleration:	50g
Humidity severity:	44 millibars

## 1 Connector Description and Terminology

### Figure 1 Exploded View of a Typical 'Plug' Connector

1. Free Shell – Holds the insert.
2. Grounding Finger - Ensures RFI grounding when connectors are mated.
3. Coupling Nut – Provides cam force
4. Wave Washer – Provides the coupling force when mating and un-mating connectors
5. Skid Washer – Retains the wave Washer.
6. Circlip – Retains the Coupling Nut to the Free Shell.
7. Insert – Retains & Insulates the Contacts.
8. Contacts – Crimped or soldered to the conductors.

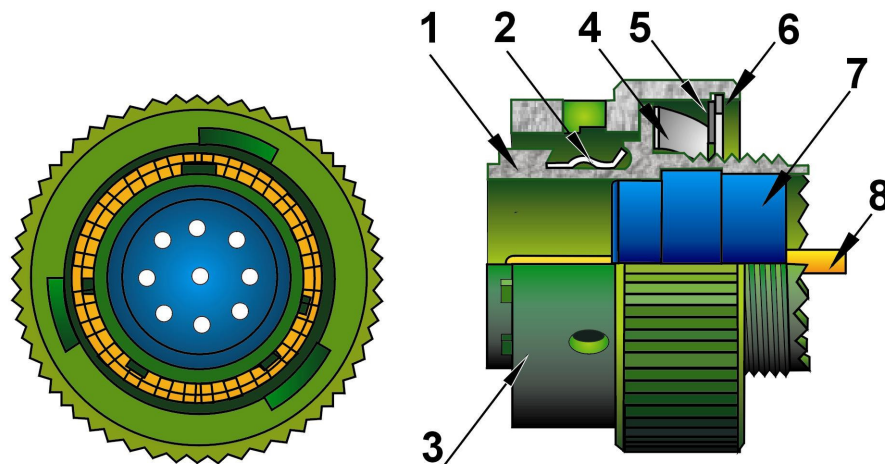
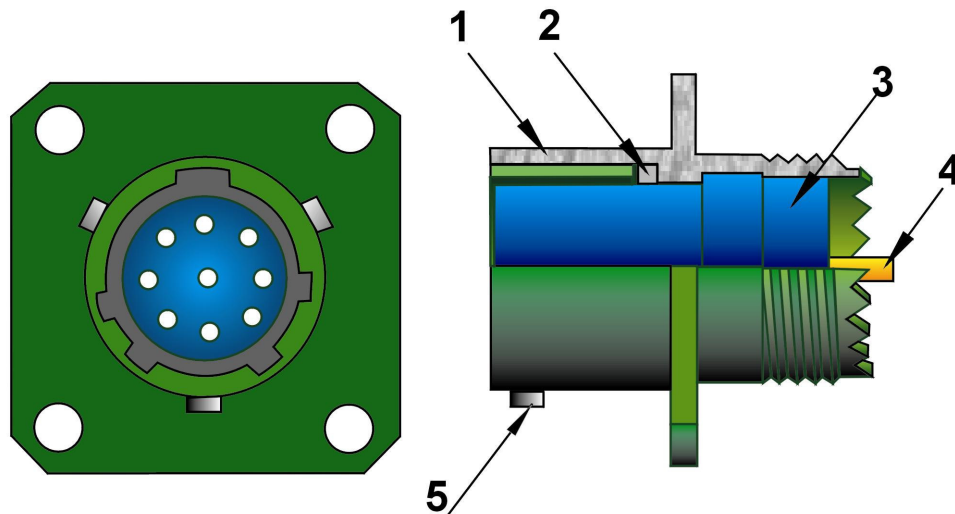


Fig . 1

**Figure 2 Exploded View of a Typical 'Fixed' Connector**

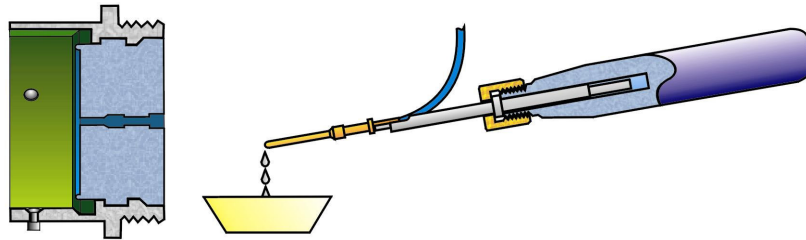
1. Fixed Shell – Holds the Insert.
2. Seating Face Gasket – Seals the connectors when mated.
3. Insert – Retains & Insulates the Contacts.
4. Contacts – Crimped or soldered to the conductors.
5. Bayonet Pins – Provides the method of mating the Connectors together.



**Fig . 2**

## Crimp Contact Insertion

### Lubricate Contact:

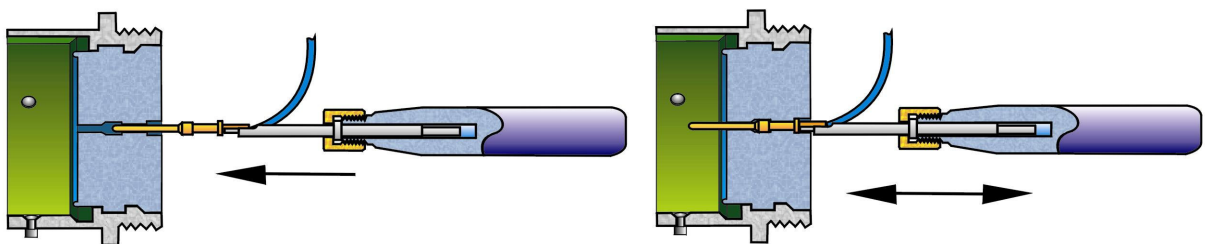


Lubricate contact by dipping the front into solvent such as “Pronatur” or Isopropyl alcohol.

**Important:** When using isopropyl alcohol “Sure Touch” gloves and barrier cream must be worn along with Eye Protection. If contact with eye takes place, seek immediate medical attention.

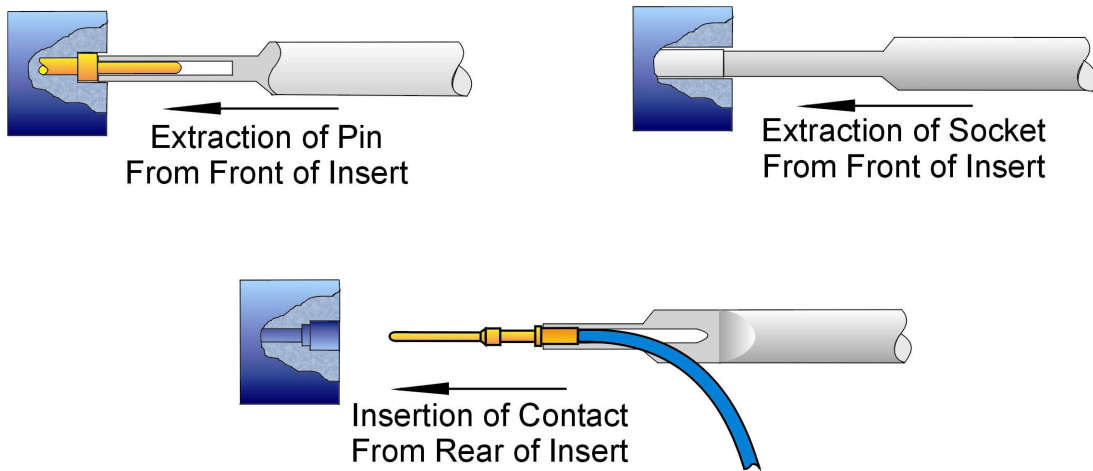
**Note:** Ensure the cap is placed over the spout of the isopropyl alcohol when not in Use. Tin to be returned to the shop store when not in use.

### Installation of Contacts:



Using the prescribed insertion tool (Ref. Page 12), push the contacts into the correct cavity from the rear of the connector as shown above. Exert a steady pressure until the contact locks into place. Move contact back and forth slightly to ensure correct seating.

### Assembly



**Note :-** When using the Insertion and Extraction tool the correct tool configuration (ie. For Pin or Socket Contact) can be achieved by unscrewing the retaining nut and turning the steel tip around.



## **Contact Installation and Assembly:**

### **Crimp Type Contacts: -**

**NB. In some cases customers put the grommet onto the back of the connector, And push the contacts through the grommet and into the connector cavity. This should be avoided whenever possible as this can damage the sealing webs in the grommet.**

**Slide any accessories are to be loaded onto the cable and then push the individual cables through the grommet holes and sealing webs.**

**The cable is then stripped to the required Conductor length and then strip back conductors to the required length.(Ref. Page 10 ).  
The pin or socket contact is then crimped on at the required settings depending on conductor size.**

**The contact is then inserted into the connector (Ref. Page 5)**

**Empty cavities must be filled using contacts.**

**Slide the sealing grommet forward over the back of the contact onto the back face of the insert. Slide the grommet follower forward over the rear of the grommet.**

**Slide the back shell forward and screw onto the rear of the free/fixed connector shell.**

**Tighten the backshell hand tight plus a  $\frac{1}{4}$  of a turn with a suitable Strap Wrench making certain that the serration on the back of the shell and the serrations on the front of the accessories are fully mated. (Ref. AB Spec.581)**

**If used slide the cable clamp forward and screw onto the rear of the Back Shell.**

**Perform a continuity check to ensure all wires are properly terminated. Label as required.**



### **Solder Type Contacts:-**

Slide any accessories onto the cable in the correct order and then push the individual cables through the grommet holes and sealing webs.

The cable is then stripped to the required Conductor length (Ref. Page 10)  
This is then soldered into the contact solder bucket. – See crimp Information.

Slide the sealing grommet forward over the back of the contact onto the back face of the insert. Slide the grommet follower forward over the rear of the grommet.

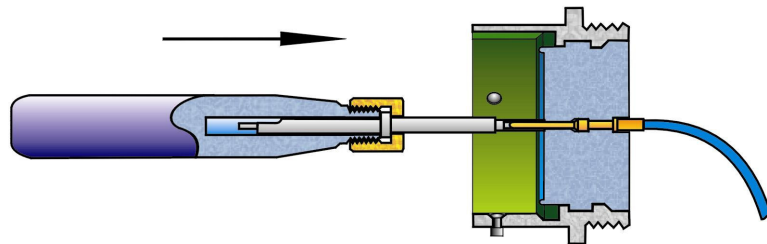
Slide the back shell forward and screw onto the rear of the free/fixed connector shell.

Tighten the backshell hand tight plus a  $\frac{1}{4}$  of a turn with a suitable Strap Wrench making certain that the serration on the back of the shell and the serrations on the front of the accessories are fully mated. (Ref. AB Spec.581)

If used slide the cable clamp forward and screw onto the rear of the Back Shell.

Perform a continuity check to ensure all wires are properly terminated. Label as required.

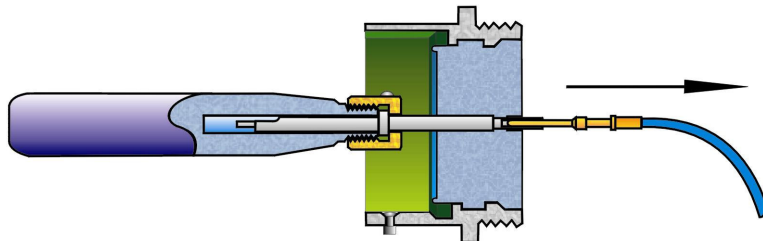
**Extraction of Contacts:**



Slacken any backshells as required.

Pull back loose backshells over cable and select the appropriate tool ( Ref. Page 11)

Working from the front face of the connector, place the tool into the socket contact or over the pin contact. See figure above.

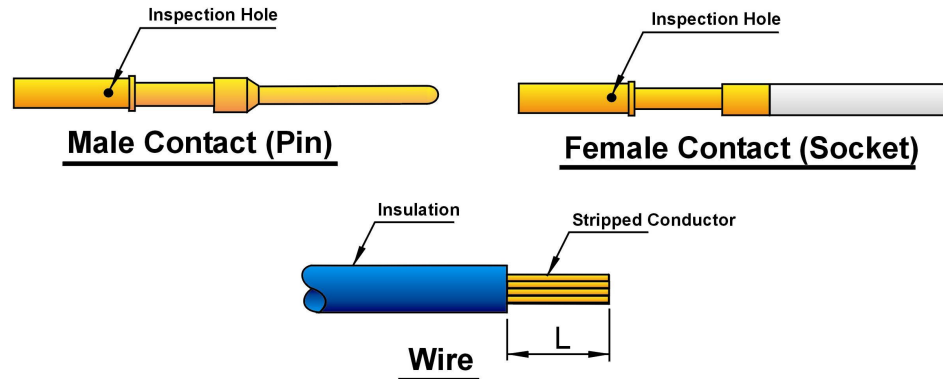


Apply an even pressure and push the contact out of the rear of the connector.

The operation is complete when the shoulder of the tool rests against the insulator face.

Remove tool and repeat as required.

**Figure 2 . Stripping and Crimping Operation:**



Strip individual conductors according to table below.

Contact Size	Shell Size	Typical Crimp Contact Part Number		Dimension 'L' Conductor Strip Length
		Part Number	Pin / Socket	
20	08 - 18	05-20-110-0-00-GM	Pin	5 mm
20	20 - 24	05-20-111-0-00-GM	Pin	5 mm
16	08 - 18	05-16-112-0-00-GM	Pin	5 mm
20	08 - 18	05-20-112-0-00-GM	Pin	5 mm
20	20 - 24	05-20-113-0-00-GM	Pin	5 mm
20	08 - 18	05-20-114-0-00-GM	Pin	5 mm
20	20 - 24	05-20-115-0-00-GM	Pin	5 mm
20	08 - 18	05-151-20-00-00-0	Socket	5 mm
20	08 - 18	05-103-20-00-00-0	Socket	5 mm
20	20 - 24	05-152-20-00-00-0	Socket	5 mm
16	08 - 18	05-103-16-00-00-0	Socket	5 mm
20	08 - 18	05-104-20-00-00-0	Socket	5 mm
20	20 - 24	05-153-20-00-00-0	Socket	5 mm
20	20 - 24	05-154-20-00-00-0	Socket	5 mm
20	08 - 18	05-156-20-00-00-0	Socket	5 mm

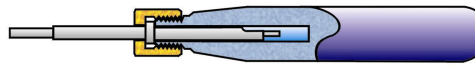
After Stripping, leave the end of the insulation clean and square. Should the lay of the strands be disturbed, return it by a light twist.

**Important:** A stripped conductor with 'nicked' or cut strands is not acceptable. Ensure the conductor is clean before assembly into the contact.

## Assembly and Crimp Tools

### Contacts and assembly tools

Insertion and Extraction Tool



Part Number AB06-0042-0-0000-15

Crimp Tool



Part Number M22520/1-01

Crimp Positioner



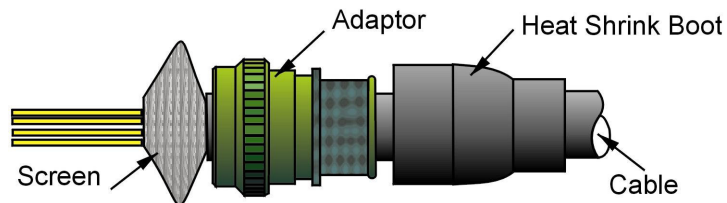
Part Number:- Size 20 Pin & Socket = ABBTH1A  
Size 16 Pin & Socket = ABBTP1251

**Termination procedure for Screening Heat shrink Adaptor:-**

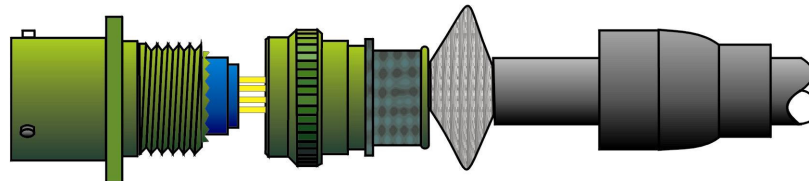
Stainless steel securing bands ( Ref. Page 16-18 ) that concentrically close to mechanically grip and electrically terminate the overall shield on the connector backshell,(RFI / Heat shrink)

**Procedure for a fixed or free connector with AB05-002\*\* accessory**

Slide heat shrink boot over cable .  
 Cut the outer cable insulation back as required.  
 Pull back screen exposing the individual wires.

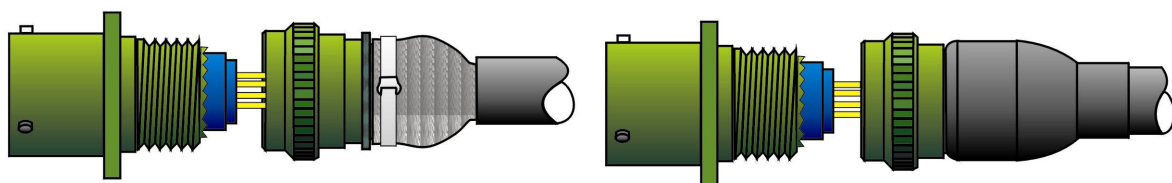


Push the wires through the grommet.  
 Prepare the cable, Crimp on and insert into the connector OR Solder to the Contacts already in the connector and slide grommet onto back face of insert.



Slide the adaptor over the screen and slide Screen Braid over the back of adaptor and Terminate braid to the adaptor, using a securing band or similar.  
 ( Ref Page 16-18 )

Slide heat shrink boot over the screen and heat shrink into position on the adaptor.



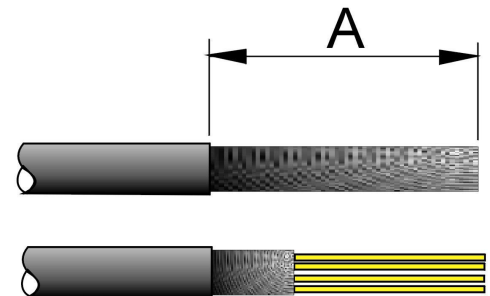
Tighten the backshell hand tight plus a 1/4 of a turn with a suitable Strap Wrench making certain that the serration on the back of the shell and the serrations on the front of the accessories are fully mated. (Ref. AB Spec.581)

The same procedure applies to the for 90° assembly AB05 003\*\*

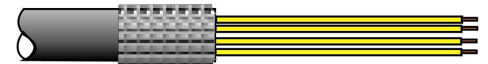
**AB05-0029 Internally Screened CableType C**

- Strip PVC sheath back to Dim A, this will expose the Braid, which is to be trimmed to within 19.8 mm (0.75”) of the PVC Sheath and the remainder folded back.

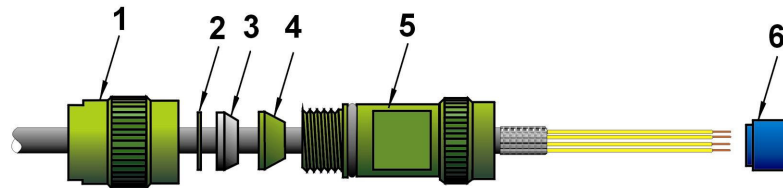
Shell Size	Dimension A
08	34.93 (1.375”)
10	36.51 (1.437”)
12 - 14	41,27 (1.625”)
16 - 20	44.45 (1.750”)
22 -24	49.21 (1.937”)



- Fold back Braid and Strip 5.3 mm (0.210”) To 6.1 mm (0.240”) of insulation from each wire and tin ends.



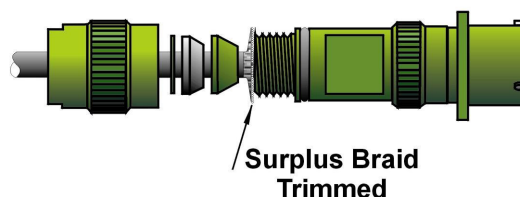
- Slide onto the cable:- (1) Nut; (2) Washer;(3) Gasket; (4) Braid Clamp; (5) Clamp Body;(6) Grommet.



- Insert individual wires into grommet. Slide grommet back as far as possible. Insert Tinned Ends into contacts and solder. Slide Grommet over contacts pushing firmly against rear of connector insert.



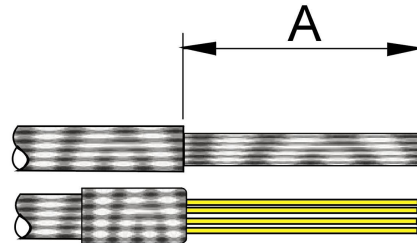
- Screw clamp body onto Connector. Fold braid at right angles to cable and slide forward Braid Clamp. Smooth down and trim surplus Braid. Slide up Gasket Washer and Screw on Nut. (Ref page 8 ) For tightening of backshell.



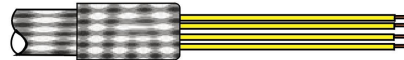
**Ab05-0030 Externally Screened Cable Type B and Q**

- Strip outer Braid and Internal PVC Sheath Of Cable back to Dim A and Trim the Inner Braid to within 19.8 mm of the Outer Braid and fold back.

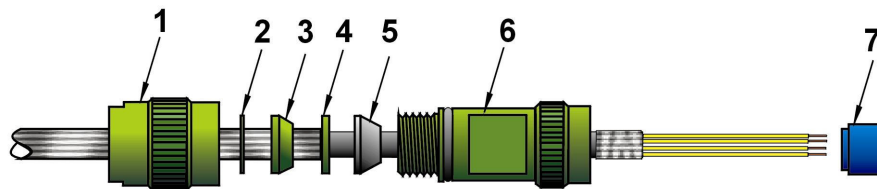
Shell Size	Dimension A
08	33.93 (1.312")
10	34.93 (1.375")
12 - 14	39.70 (1.563")
16 - 20	42.85 (1.687")
22 - 24	49.21 (1.875")



- Strip 5.3 mm (0.210" to 6.1 mm (0.240") of Insulation from each wire and Tin Ends.



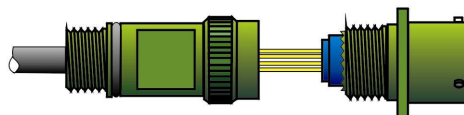
- Slide onto the cable :- (1) Nut; (2) Washer;(3) Male Braid Clamp. Pull back braid as far as possible .Slide on item (4) Female Braid Clamp;(5) Gasket; (6) Clamp Body; (7) Grommet.



- Insert individual wires onto Grommet. Slide grommet back as far as possible. Insert Tinned ends into contacts and solder.



Slide Grommet over Contacts pushing firmly against rear of Connector insert.

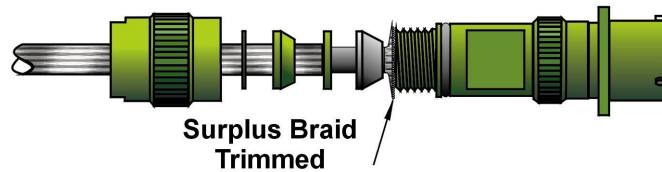




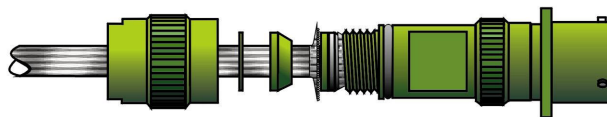
**5. Screw clamp body onto Connector.**

(Ref Page 8) For Tightening of backshell

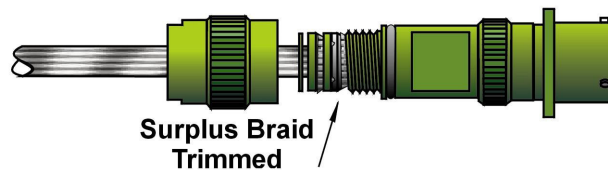
Slide up gasket and Female Braid Clamp. Push Braid up to Female Braid Clamp



**6. Fold End of Braid at right angles.**



- 7. Push up Male Braid Clamp and smooth down and trim surplus Braid.**  
Slide up Washer and Screw on Nut.  
(Ref Page 8) For Tightening of backshell



## APPENDIX C. Steel Band Termination Assembly Process

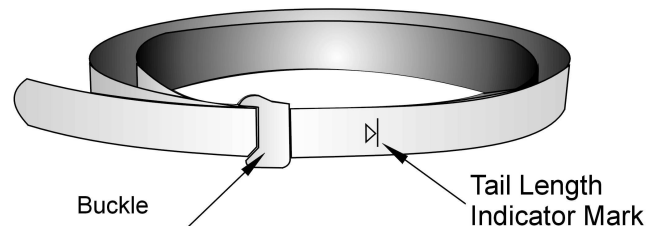
Hand Banding Tool - AB Part Number – ABB600058

Prepare the band in the following manner: **IMPORTANT:** Due to the connector / adaptor circumference, it may be necessary to prepare the band around the cable retention area.

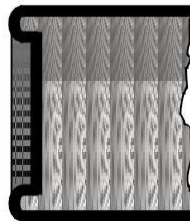
Roll band through the buckle slot twice.

Pull on band until mark ( > | ) is within approximately 6.4mm of the buckle slot , the band may be tightened further if desired.

**Note:** Prepared band should have mark ( > | ) visible where approximately shown.



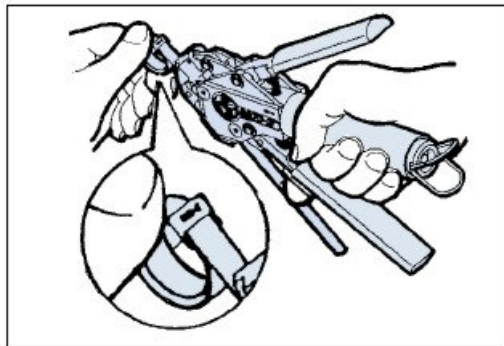
Also Fold one end of the braid inside itself by approximately 10 mm As shown below, this provides a clean edge without sharp sections.



### Hand Banding Tool Step 1

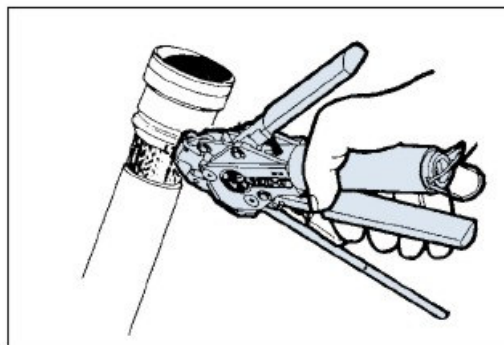
Squeeze gripper release lever and insert band into the front end of the opening of the tool.

**Important:** The straight leg of looped band is to be installed with the circular portion of looped band facing downward towards the black handle.



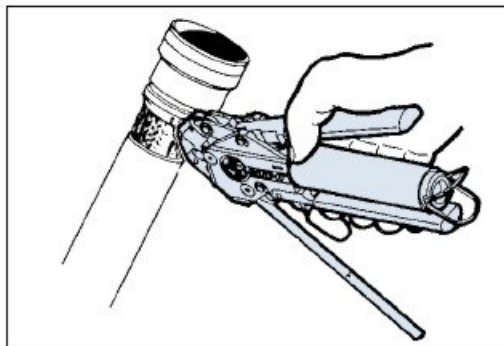
### Hand Banding Tool Step 2

Aligning the band and the tool with the shield termination area, squeeze black, pull-up handle repeatedly until it locks against the tool body. (This indicates the band is compressed to the pre-calibrated tension).



### Hand Banding Tool Step 3

Complete the clamping process by squeezing the white cut-off handle.



### Hand Banding Tool Step 4

Remove excess band from the tool and inspect shield termination.

## APPENDIX E .Trouble Shooting

These are typical problems that may occur if the procedure is not adhered to.

Symptom	Common Cause	Solutions
Contact heights in connector are not level	There is an amount of movement that is acceptable for contact position. Otherwise attempting to push the contact into the insulator without lubrication is the most likely cause.	Use the recommended lubricant when inserting the contacts. If the contact is moved up and down, after insertion, it should be obvious by “feel” that the contact is seated correctly
Contacts are twisted out towards connector shell.	Over tightening Backshells or excessive friction between grommet and follower, caused by thick wall insulation cables.	Tighten Backshell to specified torque values. Use lubrication between grommet and follower. Use correct size cables for grommet.
Connector uncouples during use	Connectors not fully coupled.	Fully align bayonet pins with sighting holes in coupling nut. An audible “snap” should be heard.
Poor Crimp performance, e.g. low pull out forces.	Incorrect crimp tool setting or conductors cut during stripping process.	Use the correct calibrated tools and settings. Adjust depth on stripping tools so that the conductors are not cut, only insulation.
Contacts short to shell or another contact.	<ol style="list-style-type: none"> <li>1. Foreign bodies between Insert and grommet.</li> <li>2. Water ingress.</li> <li>3. Conductive lubricant used to insert contacts</li> </ol>	<ol style="list-style-type: none"> <li>1. Check for pieces of swarf or conductor strands on connector face.</li> <li>2. Tighten connector to specified torque values.</li> <li>3. Do not use conductive sleeve lubricants.</li> </ol>
Water ingress to backshell.	<ol style="list-style-type: none"> <li>1. No grommet.</li> <li>2. Incorrect cable for grommet.</li> <li>3. Slack Backshells.</li> <li>4. Contacts pushed through grommet after crimping.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check for grommet.</li> <li>2. Build up insulation thickness to fit grommet using heat-shrink.</li> <li>3. Tighten Backshells to specified torque value.</li> <li>4. Insert cables through grommet before crimping.</li> </ol>

## Trouble Shooting

<b>Band-it” strap will not hold screen.</b>	<b>Strap only wrapped around once before tightening.</b>	<b>Wrap strap twice around back shell before tightening.</b>
<b>Poor screen continuity.</b>	<ol style="list-style-type: none"> <li><b>1. Incorrect use of “band-it strap.</b></li> <li><b>2. Slack Backshells.</b></li> </ol>	<ol style="list-style-type: none"> <li><b>1. As above.</b></li> <li><b>2. Tighten Backshells to specified torque value.</b></li> </ol>
<b>Contacts push back when connector is mated.</b>	<b>Use of a sleeve lubricant when inserting contacts.</b>	<b>Use the recommended lubricant (solvent) when inserting the contact as this evaporates after use: also some sleeve lubricants are conductive.</b>
<b>Connectors will not couple.</b>	<b>Attempting to couple wrong orientation connector</b>	<b>Ensure connector is correct orientation before mating. Connector alignment dots are coloured to indicate orientation.</b>
<b>Cannot tighten Backshell to free connectors.</b>	<b>Free connector difficult to grip due to coupling nut spinning.</b>	<b>Mate free connector with receptacle before tightening backshell.</b>

## APPENDIX F Contact Addresses

### AB Connectors Ltd.

#### UK

AB Connectors Ltd  
Abercynon  
Mountain Ash  
Mid – Glamorgan  
South Wales  
CF 45 4SF  
Tel: 01443 740331  
Fax: 01443 741676  
Website:  
[www.ttabconnectors.com](http://www.ttabconnectors.com)  
Email: [websales@ttabconnectors.com](mailto:websales@ttabconnectors.com)

#### USA

AB Connectors Division  
Business US 70 East  
Smithfield  
NC27577  
Tel: 919 934 5181  
Fax: 919 934 5186

#### Email:

[abconnectors@abautomotiveusa.com](mailto:abconnectors@abautomotiveusa.com)

### Tooling

#### UK

Glenair Miles Roystone  
40 Lower Oakham Way  
Oakham Business Park  
Mansfield  
Notts.  
NG18 5BY  
Tel: 01623 638100  
ax: 01623 638111

#### USA

Daniels Manufacturing Corp.  
526 Thorpe Road  
Orlando  
FL32824-8133  
Tel: 407 855 6181  
Fax: 407 855 6884

### Lubricant

#### UK

Orapi Ltd  
Unit 1  
Rosse Street  
Bradford  
BD8 9AS  
Tel: 01274 822000  
Fax: 01274 822002

#### Canada

Orapi North America Ltd.  
165 Bates  
Montreal  
Quebec  
H3S 1A1  
Tel (1): 514 735 3272  
(2): 1 800 361 3105