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## AMPSEAL 16 Connectors

### AMPSEAL 16 Connector Overview

The AMPSEAL 16 connector system is targeted for off-road, heavy duty industrial, recreational and agricultural applications. This wire-to-wire and wire-to-device connector line was designed to meet the rigorous demands of an industry that requires the highest standards in performance.

AMPSEAL 16 receptacle and pin housings offer a one-piece approach and come fully assembled.



### APPLICABLE PRODUCT DOCUMENTATION

Additional documentation is available for assistance with AMPSEAL 16 products. The following TE Connectivity document numbers may be helpful:

1654281-2 (Catalog Section)

108-2184 (Product Specification)

114-13065 (Application Specification)

114-13045 (Application Specification, Contacts)

408-8623 (Instruction Sheet)

501-708 (Qualification Test Report)

### AMPSEAL 16 CONNECTOR PERFORMANCE SPECIFICATIONS

<b>Current:</b>	Up to 13 amps
<b>Temperature:</b>	Operating at temperatures -40°C to +125°C
<b>Durability:</b>	See <i>note</i> . 50 cycles.
<b>Insulation Resistance:</b>	20 megohms minimum. SAE J2030 6.3. Insulation resistance at 1000 volts DC adjacent terminals measured after 60 seconds or until stabilization occurs.
<b>Immersion:</b>	IP67 rating
<b>Random Vibration:</b>	No discontinuities. See <i>note</i> . EIA-364-28 Subject mated specimens to 21 G's rms between 25 to 2000 Hz. Twenty hours in each of three mutually perpendicular planes.
<b>Voltage:</b>	250 volts DC

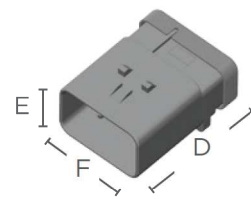
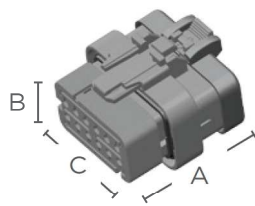
Note: Shall meet visual requirements, show no physical damage, and meet requirements of additional tests as specified in Product Qualification and Requalification Test Sequence in Figure 3 of TE product document 108-2184.

## AMPSEAL 16 Connectors

### MATERIAL SPECIFICATIONS

<b>Wire Seal:</b>	Silicone rubber
<b>Plug Peripheral Seal:</b>	Silicone rubber
<b>Housing</b>	15% Glass filled thermoplastic
<b>CPA:</b>	15% Glass filled thermoplastic
<b>PLR:</b>	15% Glass filled thermoplastic

### DIMENSIONS



**AMPSEAL 16 Receptacle Housing**

**AMPSEAL 16 Cap**

Cavity	Overall Length A	Overall Height B	Overall Width C	Overall Length D	Overall Height E	Overall Width F
2	1.45 (36.75)	.93 (23.5)	.80 (20.33)	1.87 (47.55)	.75 (18.93)	.77 (19.60)
3	1.45 (36.80)	.93 (23.5)	.98 (24.83)	1.87 (47.55)	.75 (19.15)	.95 (24.10)
4	1.44 (36.70)	1.06 (26.8)	1.00 (25.33)	1.87 (47.55)	.88 (22.45)	.97 (24.60)
6	1.44 (36.60)	1.22 (31.0)	1.00 (25.33)	1.87 (47.55)	1.05 (26.65)	.97 (24.60)
8	1.45 (36.80)	1.24 (31.5)	1.15 (29.33)	1.87 (47.55)	1.05 (26.65)	1.13 (28.60)
12	1.45 (36.80)	1.24 (31.5)	1.51 (38.33)	1.87 (47.55)	1.05 (26.65)	1.48 (37.60)

Dimensions are for reference only.

### CONFIGURATIONS



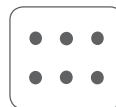
**2 Positions**  
2 size 16



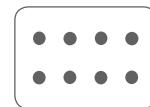
**3 Positions**  
3 size 16



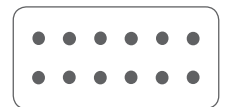
**4 Positions**  
4 size 16



**6 Positions**  
6 size 16



**8 Positions**  
8 size 16



**12 Positions**  
12 size 16

## AMPSEAL 16 Connectors

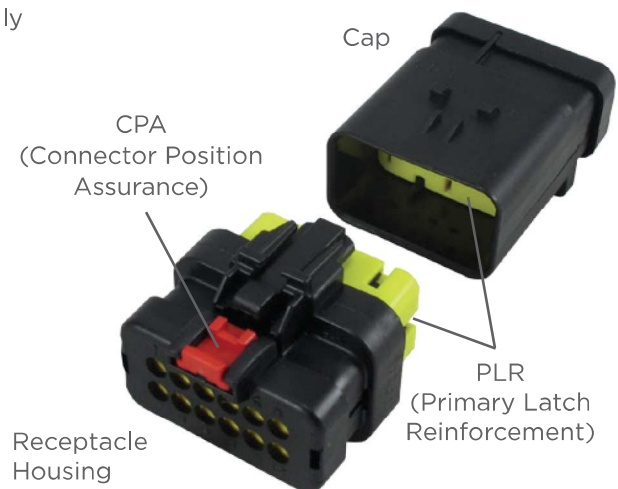
### ORDERING INFORMATION

Position	PLR Color	Keying	Receptacle Housing		Cap	
			Standard Dia. Seal	Standard Dia. Seal	Reduced Dia. Seal	Reduced Dia. Seal
2	Red	Key A	776427-1	776428-1	776522-1	776534-1
	Gray	Key B	776427-2	776428-2	776522-2	776534-2
	Yellow	Key C	776427-3	776428-3	776522-3	776534-3
	Green	Key D	776427-4	776428-4	776522-4	776534-4
3	Red	Key A	776429-1	776430-1	776523-1	776535-1
	Gray	Key B	776429-2	776430-2	776523-2	776535-2
	Yellow	Key C	776429-3	776430-3	776523-3	776535-3
	Green	Key D	776429-4	776430-4	776523-4	776535-4
4	Red	Key A	776487-1	776488-1	776524-1	776536-1
	Gray	Key B	776487-2	776488-2	776524-2	776536-2
	Yellow	Key C	776487-3	776488-3	776524-3	776536-3
	Green	Key D	776487-4	776488-4	776524-4	776536-4
6	Red	Key A	776433-1	776434-1	776531-1	776537-1
	Gray	Key B	776433-2	776434-2	776531-2	776537-2
	Yellow	Key C	776433-3	776434-3	776531-3	776537-3
8	Red	Key A	776494-1	776495-1	776532-1	776538-1
	Gray	Key B	776494-2	776495-2	776532-2	776538-2
	Yellow	Key C	776494-3	776495-3	776532-3	776538-3
	Green	Key D	776494-4	776495-4	776532-4	776538-4
12	Red	Key A	776437-1	776438-1	776533-1	776539-1
	Gray	Key B	776437-2	776438-2	776533-2	776539-2
	Yellow	Key C	776437-3	776438-3	776533-3	776539-3
	Green	Key D	776437-4	776438-4	776533-4	776539-4

Receptacle housing and cap PLR colors are mechanically keyed to mate only with identical colors.

Part Number Suffix:

- 1 = A key (**red PLR**)
- 2 = B key (**gray PLR**)
- 3 = C key (**yellow PLR**)
- 4 = D key (**green PLR**)



## AMPSEAL 16 Connectors

### WIRE SEALING RANGE

The wire sealing range is the recommended outside diameter of the wire insulation required to maintain an environmental seal in the rear connector cavities.

Contact Size	Standard Seal	Reduced Diameter Seal
HDSF 16 14-20 AWG (2.0-0.5mm <sup>2</sup> )	.086-.144 (2.18-3.67)	.051-.100 (1.30-2.54)

### Accessories

Backshells and mounting clips are accessory items available for use with AMPSEAL 16 connectors. These accessories cover design requirements by assisting with mounting, providing additional protection, and offering increased aesthetics.

### BACKSHELLS



#### Part Numbers

Number of Positions	Conduit Size	Standard Straight	Standard 90°	Low Profile 90° Rec. Housing	Low Profile 90° Pin Housing
2	NC08/NW7.5	2035047-1 <sup>†</sup>	2035048-1 <sup>†</sup>	2035366-1	2098436-1
	NC12/NW10	-	2035048-5 <sup>†</sup>	2035366-3	2098436-3
3	NC08/NW7.5	2035047-2 <sup>†</sup>	2035048-2 <sup>†</sup>	2035366-2	2098436-2
	NC12/NW10	-	2035048-6 <sup>†</sup>	2035366-4	2098436-4
4	NC08/NW7.5	2035047-3 <sup>†</sup>	2035048-3 <sup>†</sup>	2035366-7	2098436-7
	NC12/NW10	2035047-5 <sup>†</sup>	2035048-7 <sup>†</sup>	2035366-9	2098436-9
	NC16/NW13	-	-	1-2035366-1	1-2098436-1
6	NC08/NW7.5	2035047-4 <sup>†</sup>	-	2035366-8	2098436-8
	NC12/NW10	2035047-6 <sup>†</sup>	-	1-2035366-0	1-2098436-0
	NC16/NW13	-	-	1-2035366-2	1-2098436-2
8	NC12/NW10	2035047-7 <sup>†</sup>	-	-	-
	NC16/NW13	2035047-9 <sup>†</sup>	2035047-9 <sup>†</sup>	-	-
12	NC12/NW10	2035047-8 <sup>†</sup>	-	-	-
	NC16/NW13	1-2035047-0 <sup>†</sup>	-	-	-
	NC20/NW17	1-2035047-1 <sup>†</sup>	-	-	-

<sup>†</sup> = Backshell available only with latch window. Can be used for cap assembly if desired.

## AMPSEAL 16 Connectors

### BACKSHELLS - NEXT GENERATION

Number of Positions	Conduit Size	Plug Part Numbers		Cap Part Numbers	
		Straight Backshell Part Number	90° Adapter Part Number	Straight Backshell Part Number	90° Adapter Part Number
2	Smooth	2292797-1	2292849-1	2292860-1	2292849-1
	NC12/NW10	2292797-2	2292849-2	2292860-2	2292849-2
	NC08/NW7.5	2292797-3	2292849-3	2292860-3	2292849-3
3	Smooth	2292798-1	2292849-1	2292861-1	2292849-1
	NC12/NW10	2292798-2	2292849-2	2292861-2	2292849-2
	NC08/NW7.5	2292798-3	2292849-3	2292861-3	2292849-3
4	Smooth	2292799-1	2292850-1	2292862-1	2292850-1
	NC16/NW13	2292799-2	2292850-2	2292862-2	2292850-2
	NC12/NW10	2292799-3	2292850-3	2292862-3	2292850-3
6	Smooth	2292800-1	2292850-1	2292863-1	2292850-1
	NC16/NW13	2292800-2	2292850-2	2292863-2	2292850-2
	NC12/NW10	2292800-3	2292850-3	2292863-3	2292850-3
8	Smooth	2292801-1	2292851-1	2292864-1	2292851-1
	NC20/NW17	2292801-2	2292851-2	2292864-2	2292851-2
	NC16/NW13	2292801-3	2292851-3	2292864-3	2292851-3
12	Smooth	2292802-1	2292851-1	2292865-1	2292851-1
	NC16/NW13	2292802-2	2292851-2	2292865-2	2292851-2
	NC12/NW10	2292802-3	2292851-3	2292865-3	2292851-3

Note: Expected availability December 2015, contact your representative

### MOUNTING CLIPS



Part Number	Description
1924487-1	Mounting clip without anti-rotational feature
1924487-2	Mounting clip with anti-rotational feature

## AMPSEAL 16 Connectors

### AMPSEAL 16 Hybrid Lever Overview

The AMPSEAL 16 hybrid lever is a sealed connector system that features a lever slide mechanism for mating and a slide in mounting clip. The mix of 24 size 16 and 4 size 12 terminals creates design flexibility for use in various vehicle applications.



The tool-less mounting design, environmental protection, and temporary panel retention latches (which temporarily hold the connector in place for one person mounting through the panel) all reduce application cost and assembly time.

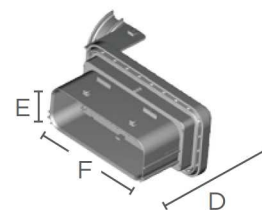
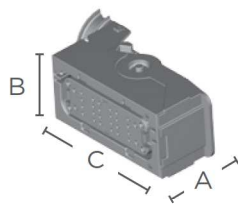
### APPLICABLE PRODUCT DOCUMENTATION

Additional documentation is available for assistance with the AMPSEAL 16 hybrid lever product. The following TE Connectivity document numbers may be helpful:

108-32036 (Product Specification)  
114-32117 (Application Specification)

501-32026 (Qualification Test Report)

### DIMENSIONS



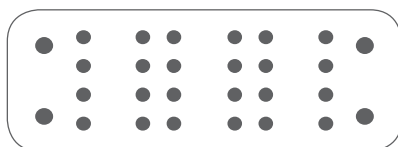
**AMPSEAL 16 Hybrid Lever Receptacle Housing**

**AMPSEAL 16 Hybrid Lever Cap**

Cavity	Overall Length	Overall Height	Overall Width	Overall Length	Overall Height	Overall Width
	A	B	C	D	E	F
28	2.08 (52.95)	1.82 (46.25)	4.59 (116.5)	2.86 (72.75)	1.91 (48.45)	4.38 (111.25)

Dimensions are for reference only.

### CONFIGURATION



**28 Positions**

24 size 16, 4 size 12

## AMPSEAL 16 Connectors

### ORDERING INFORMATION

Position	Keying	Plug Housing	Cap Housing
28	Key A	2138839-1	2138846-1
	Key B	2138839-2	2138846-2

### Accessories

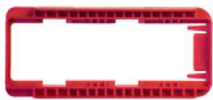
Wire covers and mounting clips are accessory items available for use with AMPSEAL 16 hybrid lever connectors. These accessories cover design requirements by assisting with mounting and providing wire strain relief.

### WIRE COVER



Part Number	Description
2138853-1	Wire cover for 28 position AMPSEAL 16 hybrid lever

### MOUNTING CLIPS



Part Number	Description
2138852-1	Mounting clip, 5 mm panel
2138852-2	Mounting clip, 4 mm panel
2138852-3	Mounting clip, 3 mm panel

## AMPSEAL 16 Connectors

### Contacts

AMPSEAL 16 and AMPSEAL 16 hybrid lever connectors commonly use the HDSF size 16 contact system. The contacts are round, stamped & formed contacts with dual beam sockets.

### HDSF 16 CONTACT PERFORMANCE SPECIFICATIONS

#### Durability

SAE J2030 6.11, 50 cycles. See *note*.

#### Current Rating

Up to 13 amps, consult TE product document 108-2184.

#### Contact Retention

IEC 512-8, Test 51a. Apply axial load of 111 N to contacts at a maximum rate of 10 N per second (or 50mm per minute) and hold for 10 seconds. Contacts shall not dislodge.

#### Crimp Tensile Strength

USCAR 21 @ 50mm/min

Wire Gauge	Tensile Strength
18 AWG	90 N Min
16 AWG	120 N Min
14 AWG	180 N Min

#### Voltage Drop

Contact Size	Test Current Amps	Voltage Drop (millivolts max)
18	8	100
16	10	100
14	13	100

Note: Shall meet visual requirements, show no physical damage, and meet requirements of additional tests as specified in the Product Qualification and Requalification Test Sequence in Figure 3 of TE product document 108-2184. USCAR is a trademark.



## AMPSEAL 16 Connectors

### HDSF 16 STAMPED & FORMED CONTACTS FOR AMPSEAL 16 CONNECTORS

Size	Pin Part Numbers				Wire Size AWG (mm <sup>2</sup> )	Insulation Diameter (mm)	Wire Insulation Support	Finish
	Strip Form	Package Quantity	Loose Piece	Package Quantity				
HDSF 16	1924463-1	4000	1924579-1	1000	18-20 (0.8-0.5)	.107-.05 (2.72-1.27)	yes	Gold
	1924463-3	4000	1924579-3	1000				Nickel
	776349-1	4000	-	-	18-20 (0.8-0.5)	.131-.089 (3.33-2.26)	yes	Gold
	776349-3	4000	-	-				Nickel
	638078-1	4000	776300-1	1000	14-18 (2.0-0.8)	.131-.089 (3.33-2.26)	yes	Gold
	638078-3	4000	776300-2	1000				Nickel
	638112-1	4000	776298-1	1000	14-18 (2.0-0.8)	.155-0.077 (3.94-1.96)	no	Gold
	638112-3	4000	776298-2	1000				Nickel
	2098250-1	4000	-	-	18 (1.5-0.8)	.118-.065 (3.00-1.65)	yes	Gold
	2098250-3	4000	-	-				Nickel
	2098252-1	4000	-	-	14 (2.0-1.5)	.128-.083 (3.25-2.10)	yes	Gold
	2098252-3	4000	-	-				Nickel

Size	Receptacle Part Numbers				Wire Size AWG (mm <sup>2</sup> )	Insulation Diameter (mm)	Wire Insulation Support	Finish
	Strip Form	Package Quantity	Loose Piece	Package Quantity				
HDSF 16	1924464-1	4000	1924580-1	1000	18-20 (0.8-0.5)	.107-.05 (2.72-1.27)	yes	Gold
	1924464-2	4000	1924580-2	1000				Nickel
	776493-1	4000	-	-	18-20 (0.8-0.5)	.131-.089 (3.33-2.26)	yes	Gold
	776493-2	4000	-	-				Nickel
	776492-1	4000	776299-1	1000	14-18 (2.0-0.8)	.131-.089 (3.33-2.26)	yes	Gold
	776492-2	4000	776299-2	1000				Nickel
	776491-1	4000	776297-1	1000	14-18 (2.0-0.8)	.155-.077 (3.94-1.96)	no	Gold
	776491-2	4000	776297-2	1000				Nickel
	2098251-1	4000	-	-	18 (1.5-0.8)	.118-.065 (3.00-1.65)	yes	Gold
	2098251-2	4000	-	-				Nickel
	2098253-1	4000	-	-	14 (2.0-1.5)	.128-.083 (3.25-2.10)	yes	Gold
	2098253-2	4000	-	-				Nickel

## AMPSEAL 16 Connectors

### SEALING PLUGS

Open cavities provide pathways for contaminants to enter the connectors. To maintain seal integrity, any unused cavity must be filled with the appropriate size sealing plug.



Color	Part Number	Contact Size	Wire Gauge Range	Description
Yellow	776363-1	Size 16	16-20 AWG	PBT, used with AMPSEAL 16 (standard diameter cavities)
White	776364-1	Size 20	16-20 AWG	PBT, used with AMPSEAL 16 (reduced diameter cavities)

### Tooling

Tools are specific to the contact style. To create a proper crimp and achieve the highest performance specifications, contacts must be crimped with the recommended tooling.

### HAND TOOLS FOR HDSF 16 CONTACTS



PRO-CRIMPER III



CERTI-CRIMP II

Pin Strip Form	Pin Loose Piece	Socket Strip Form	Socket Loose Piece	Tool P/N	Description
1924463-1 1924463-3	1924579-1 1924579-3	1924464-1 1924464-2	1924580-1 1924580-2	2119118-1	PRO-CRIMPER III hand tool and die set assembly
638078-1 638078-3 776349-1 776349-3	776300-1 776300-2	776492-1 776492-2 776493-1 776493-2	776299-1 776299-2	91337-1	PRO-CRIMPER III hand tool and die set assembly
638112-1 638112-3	776298-1 776298-2	776491-1 776491-2	776297-1 776297-2	2217753-1	CERTI-CRIMP II straight action hand tool

Note: Base PRO-CRIMPER III tool part number with -2 suffix is the part number for the die set, which can be ordered separately

## AMPSEAL 16 Connectors

### AUTOMATED TOOLING FOR HDSF 16 CONTACTS



OCEAN end  
feed applicator



OCEAN side  
feed applicator

Pin Strip Form	Socket Strip Form	Applicator P/N	Description
1924463-1 1924463-3	1924464-1 1924464-2	2151962-1	OCEAN end feed applicator with mechanical feed
		2151962-2	OCEAN end feed applicator with pneumatic feed
638078-1 638078-3 776349-1 776349-3	776492-1 776492-2 776493-1 776493-2	2151731-1	OCEAN end feed applicator with mechanical feed
		2151731-2	OCEAN end feed applicator with pneumatic feed
638112-1 638112-3	776491-1 776491-2	2151239-1	OCEAN end feed applicator with mechanical feed
		2151239-2	OCEAN end feed applicator with pneumatic feed
2098250-1 2098250-3	2098251-1 2098251-2	2151617-1	OCEAN end feed applicator with mechanical feed
		2151617-2	OCEAN end feed applicator with pneumatic feed
2098252-1 2098252-3	2098253-1 2098253-2	1530207-1	OCEAN side feed applicator that crops the terminal strip, for use in lead-maker
		1530207-2	OCEAN side feed applicator that crops the terminal strip, for use in bench press
		1530207-6	OCEAN side feed applicator that does not crop the terminal strip, for use in lead-maker

Note: Applicators with additional feed styles are available, contact your representative

### EXTRACTION TOOL FOR HDSF 16 CONTACTS

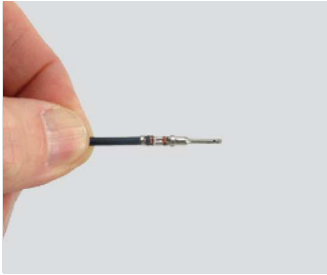


Part Number	Description
776106-1	Contact extraction tool for HDSF 16 contacts

## AMPSEAL 16 Connectors

### How To Instructions

#### CONTACT INSERTION



**Step 1:**  
Grasp crimped contact approximately one inch behind the contact barrel.



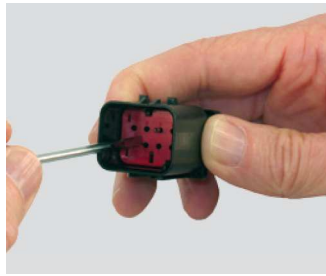
**Step 2:**  
Verify the PLR is in the pre-staged position, unlocked.



**Step 3:**  
Align the contact with the desired circuit cavity at the rear of the housing assembly.



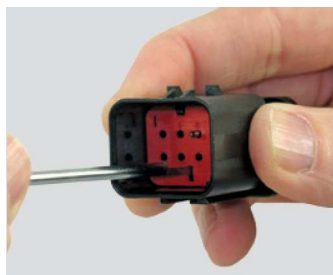
**Step 4:**  
Push the contact straight into the connector cavity until the contact retention finger returns to its normal position behind the retention shoulder on the contact. A slight tug will verify the contact is locked in place.



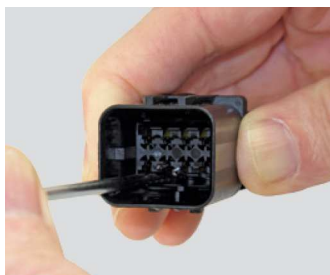
**Step 5:**  
When all of the required contacts have been inserted, push the PLR into the fully locked position.

## AMPSEAL 16 Connectors

### CONTACT REMOVAL



**Step 1:**  
Insert the removal tool into the PLR extraction slot and pull until the PLR is completely removed from the housing.



**Step 2:**  
Insert the tool into the contact cavity and deflect the contact retention finger.



**Step 3:**  
Gently pull the wire until the contact is free from the housing.