


# SEALED ELECTRICAL SYSTEM

DO IT ONCE. DO IT RIGHT.



- SEALED CRIMP CONNECTORS
- SEALED CRYSTAL CLEAR™ CONNECTORS
- SEALED CRIMP & SOLDER CONNECTORS
- SEALED SOLDER CONNECTORS
- SEALED MULTIPLE WIRE CONNECTORS
- SEALED HEAT SHRINK TUBING
- SEALED SOLDER SYSTEM FOR BATTERY TERMINALS
- COPPER LUGS
- INSTALLATION TOOLS

NSPA - PIONEER, INNOVATOR AND MANUFACTURER OF HEAT SHRINK TERMINALS

▶ **1980**  
NSPA provides maintenance trays and packaged fasteners for distributors calling on maintenance and repair facilities



▶ **1982**  
Began assembly of Sealed Crimp Connectors (24 AWG - 8 AWG)



▶ **1987**  
Began assembly of Sealed Solder Butt Connectors (24 AWG - 10 AWG), Patent Issued in 1989



▶ **1990**  
Introduced Sealed Solder System for Battery Terminals (6 AWG - 4/0 AWG)



▶ **1991**  
Began assembly of Sealed Solder Terminals - Rings, Spades, Slip-Ons (24 AWG - 10 AWG), Patent Issued in 1992



▶ **1999**  
Began assembly of Sealed Crimp & Solder Butt Connectors (24 AWG - 10 AWG), Patent Issued in 2004 & 2005



▶ **2001**  
Began assembly of Sealed Crimp & Solder Terminals - Rings, Spades, Spring Spades, Slip-Ons (24 AWG - 10 AWG), Patent Issued in 2003



▶ **2005**  
Introduced innovative Step Down Butt Connector



▶ **2007**  
Patent Issued for Sealed Multiple Wire Connectors



▶ **2010**  
Introduced Sealed Crystal Clear Butt Connectors



▶ **2015**  
Introduced Long Neck Ring Terminals & Lead Free Connectors



▶ **2015**  
Patent issued on Sealed Crystal Clear Connectors, Introduced Rings/Spades/Slip-Ons



▶ **2016**  
Introduced Battery Copper Lugs



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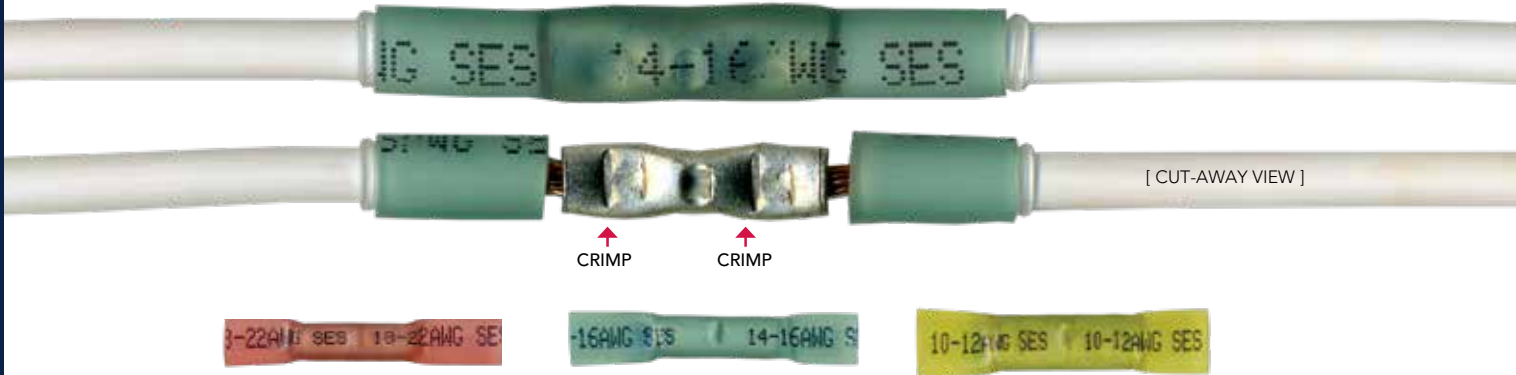
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# NSPA'S SEALED ELECTRICAL SYSTEM

## Sealed Crimp Connectors



Crimped for Mechanical Reliability • Sealed for Maximum Durability

## Sealed Crimp Connectors - Specialty

### Nylon Heat Shrink Butt Connectors



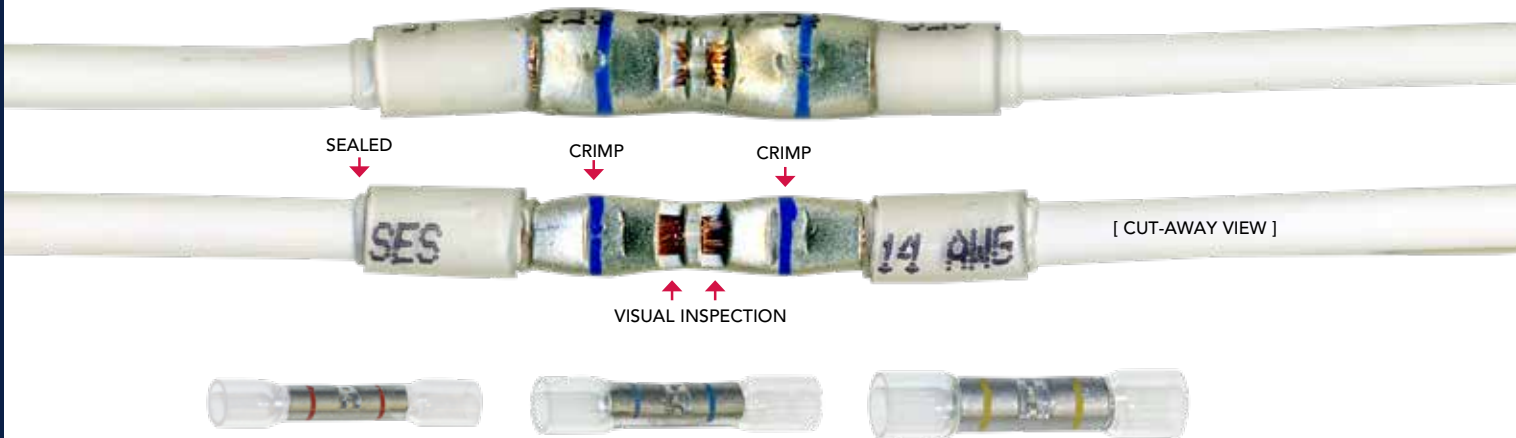
Nylon Heat Shrink Tubing is Very Rigid with High Abrasion Rating

### Old School Heat Shrink Butt Connectors



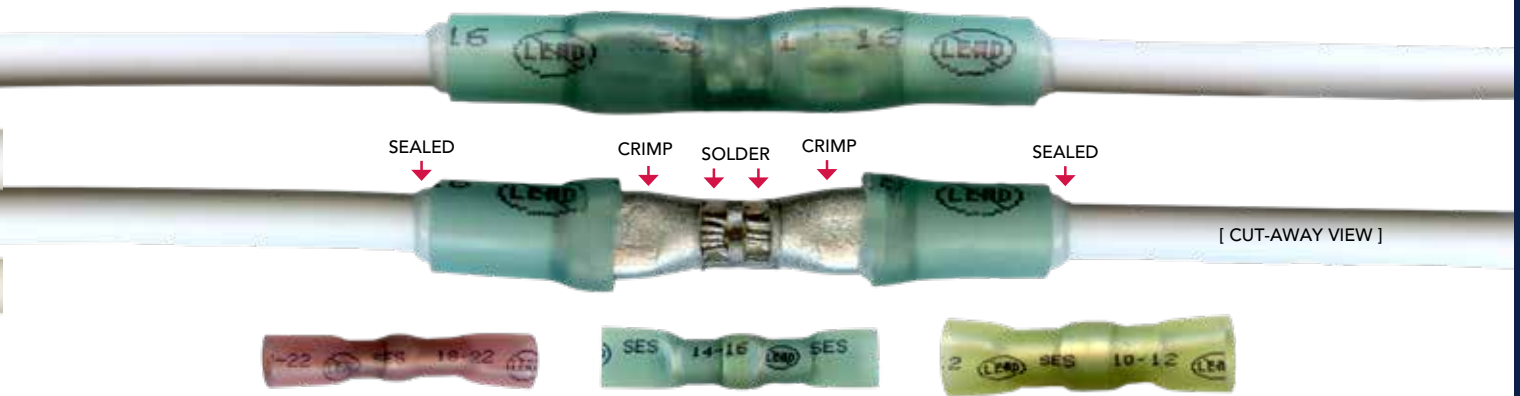
Clear, Flexible Adhesive-Lined Heat Shrink Tubing • Nylon Insulated Butt Connectors

## Sealed Crystal Clear Connectors



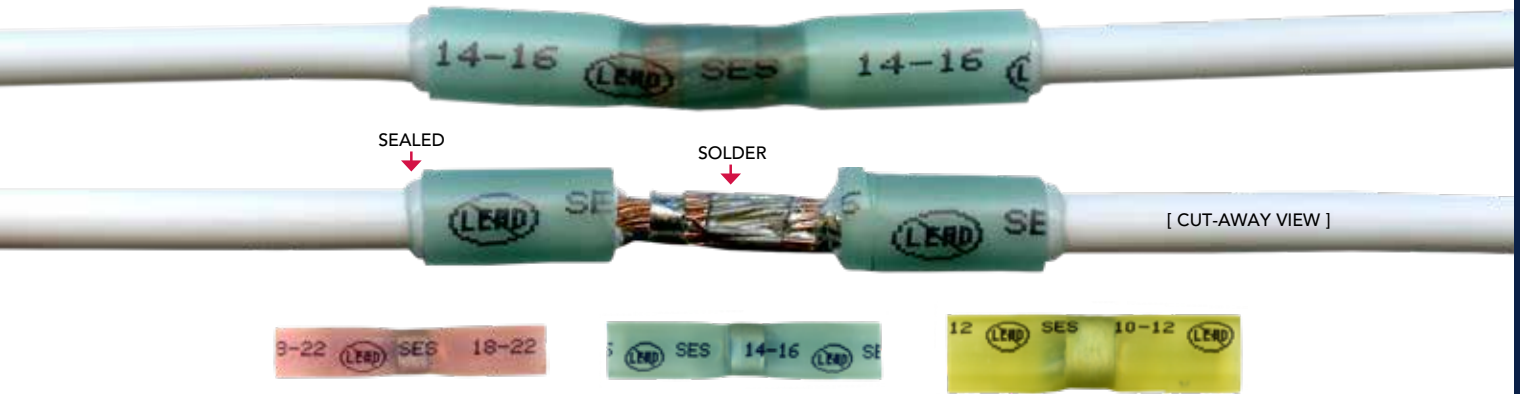
- Provides Optimal Visual Assurance - Termination Installed Correctly
- Crystal Clear Adhesive-Lined Tubing Allows Indisputable Inspection of Wire's Condition
- Window Butt Connector Assures Wire Is Stripped Proper Length and Fully Inserted
- Color Stripes Indicate Wire Size, Where to Position Crimp Tool, and Match Crimp Nest on Installation Tool

## Sealed Crimp & Solder Connectors - Lead-Free



Crimped for Mechanical Reliability • Soldered for Strength & Conductivity • Sealed for Maximum Durability

## Sealed Solder Connectors - Lead-Free



Soldered for Strength & Conductivity • Sealed for Maximum Durability

## Sealed Multiple Wire Connectors

**In-Line Connector** - Join Two Wires to One Wire

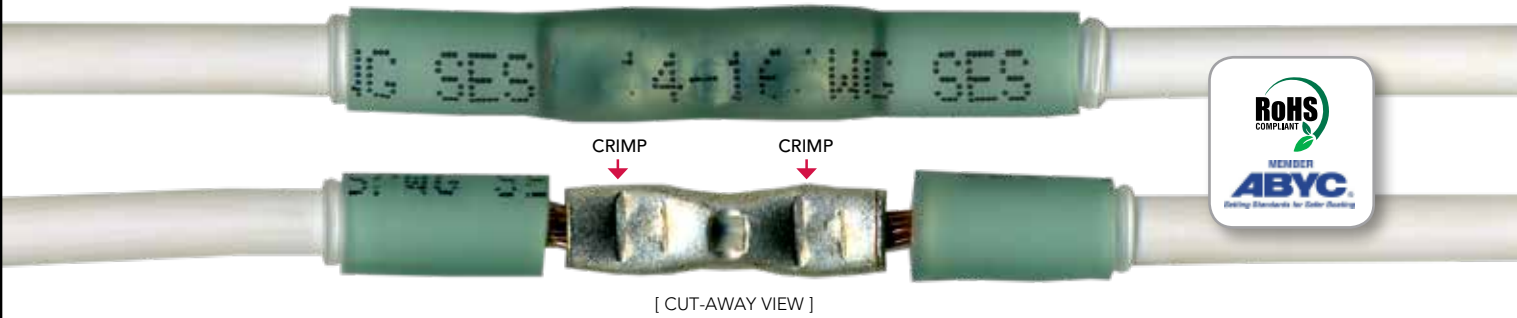


**Closed-End Connector** - Join Two to Four Wires



# Sealed Crimp Connectors

Our Sealed Crimp Connector product line is the finest line of "crimp-and-seal" connectors on the market today. The use of only the finest components, and an expanded product selection place Sealed Crimp Connectors squarely at the top of the class.



[ CUT-AWAY VIEW ]

## Differences between Butted, Brazed & Seamless Connectors

### BRAZED SEAM



NSPA

### BUTTED SEAM



OTHERS

### BUTTED SEAM CONNECTORS

Formed when metal is stamped, rolled, and butted to create the connector barrel. Should only be used with stranded wire and must be crimped in the proper place to avoid opening the seam.

### BRAZED SEAM CONNECTORS

Formed much like a butted seam, except the seam is brazed together with a solder alloy. May be used with solid or stranded wire and can be crimped on any side of the barrel without opening the seam.

### SEAMLESS CONNECTORS

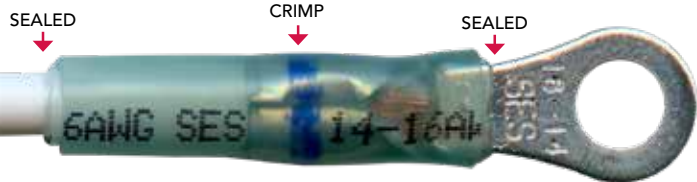
Generally only available for a butt connector or splice. The barrel is created from one seamless piece of copper. This eliminates problem of the barrel opening. May be used with solid or stranded wire.

### Brazed Seam & Seamless Connector Advantages

- Better wire contact
- Superior tensile strength
- Less voltage drop
- Prevents wiring failures
- Increases current flow
- Reduces equipment downtime

## Sealed Crimp Connectors - LONG NECK RINGS, SPADES, SLIP-ONS & BULLETS

Our Sealed Long Neck Terminals are designed to ensure a proper seal and has a 45° barrel to allow installer to see that the wire is fully inserted.



### Inferior Terminals



- Never designed to be insulated with heat shrink tubing
- Often a poor seal or tubing impedes stud hole

### Our Long Neck Terminals



- Long neck designed to be insulated with heat shrink tubing
- Long neck ensures proper seal • Unique to NSPA

### No Visual Inspection

CAN'T SEE WIRE



- Traditional barrel, user can't see that the wire is fully inserted so unsure if wire is crimped to barrel

### Visual Inspection

CAN SEE WIRE



- 45° barrel allows installer to see wire is fully inserted and wire is crimped to barrel
- 45° barrel ensures wire is stripped proper length

### Inferior Contact



- Other heat shrink ring terminals aren't designed to be stacked .. tubing impedes electrical contact

### Superior Contact



- Long neck allows ring terminals to be stacked with maximum contact

# Sealed Crimp Connectors

BUTT CONNECTORS					
Part #	Wire Gauge	Color	Description	Type	Seam
KS5-20	24-22 AWG	Clear	Standard	Standard	Seamless
KS5-16	22-18 AWG	Red	Standard	Standard	Seamless
KS5-14	16-14 AWG	Blue	Standard	Standard	Seamless
KS5-10	12-10 AWG	Yellow	Standard	Standard	Seamless
KS5-08	8 AWG	Pink	Standard	Standard	Seamless

"OLD SCHOOL" BUTT CONNECTORS					
Part #	Wire Gauge	Color	Description	Type	Seam
KS5-16-CLN	22-18 AWG	Red	Nylon Insulation w/clear adhesive tubing		Seamless
KS5-14-CLN	16-14 AWG	Blue	Nylon Insulation w/clear adhesive tubing		Seamless
KS5-10-CLN	10-12 AWG	Yellow	Nylon Insulation w/clear adhesive tubing		Seamless

WINDOW BUTT CONNECTORS					
Part #	Wire Gauge	Color	Description	Type	Seam
KS55-16	22-18 AWG	Red	Window with Wire Stop	Window	Seamless
KS55-14	16-14 AWG	Blue	Window with Wire Stop	Window	Seamless
KS55-10	10-12 AWG	Yellow	Window with Wire Stop	Window	Seamless

STEP-DOWN BUTT CONNECTORS					
Part #	Wire Gauge	Color	Description	Type	Seam
KS56-20	24-22 to 22-18 AWG	Red	Window with Wire Stop	Tapered Step-down	Seamless
KS56-16	22-18 to 16-14 AWG	Blue	Window with Wire Stop	Tapered Step-down	Seamless
KS56-14	16-14 to 12-10 AWG	Yellow	Window with Wire Stop	Tapered Step-down	Seamless
KS56-10	12-10 to 8 AWG	Pink	Window with Wire Stop	Tapered Step-down	Seamless

LONG NECK RING TERMINALS					
Part #	Wire Gauge	Stripe Color	Description	Type	Seam
KS116-06L	22-18 AWG	Red	#6 Stud	Long Neck	Brazed
KS116-08L	22-18 AWG	Red	#8 Stud	Long Neck	Brazed
KS116-10L	22-18 AWG	Red	#10 Stud	Long Neck	Brazed
KS116-14L	22-18 AWG	Red	1/4" Stud	Long Neck	Brazed
KS116-516L	22-18 AWG	Red	5/16" Stud	Long Neck	Brazed
KS116-38L	22-18 AWG	Red	3/8" Stud	Long Neck	Brazed
KS114-06L	16-14 AWG	Blue	#6 Stud	Long Neck	Brazed
KS114-08L	16-14 AWG	Blue	#8 Stud	Long Neck	Brazed
KS114-10L	16-14 AWG	Blue	#10 Stud	Long Neck	Brazed
KS114-14L	16-14 AWG	Blue	1/4" Stud	Long Neck	Brazed
KS114-516L	16-14 AWG	Blue	5/16" Stud	Long Neck	Brazed
KS114-38L	16-14 AWG	Blue	3/8" Stud	Long Neck	Brazed
KS110-06L	12-10 AWG	Yellow	#6 Stud	Long Neck	Brazed
KS110-08L	12-10 AWG	Yellow	#8 Stud	Long Neck	Brazed
KS110-10L	12-10 AWG	Yellow	#10 Stud	Long Neck	Brazed
KS110-14L	12-10 AWG	Yellow	1/4" Stud	Long Neck	Brazed
KS110-516L	12-10 AWG	Yellow	5/16" Stud	Long Neck	Brazed
KS110-38L	12-10 AWG	Yellow	3/8" Stud	Long Neck	Brazed
KS110-38WL	12-10 AWG	Yellow	3/8" Stud, Wide pad	Long Neck	Brazed
KS110-12L	12-10 AWG	Yellow	1/2" Stud	Long Neck	Brazed

LUG STYLE RING TERMINALS					
Part #	Wire Gauge	Color	Description	Type	Seam
KS108L-10	8 AWG	Pink	#10 Stud	Lug Style	Seamless
KS108L-14	8 AWG	Pink	1/4" Stud	Lug Style	Seamless
KS108L-516	8 AWG	Pink	5/16" Stud	Lug Style	Seamless
KS108L-38	8 AWG	Pink	3/8" Stud	Lug Style	Seamless
KS108L-12	8 AWG	Pink	1/2" Stud	Lug Style	Seamless



Please visit [www.nspa.com/ul\\_csa\\_listing.html](http://www.nspa.com/ul_csa_listing.html) for a complete list of UL parts. See page 65 for material specifications.

## Features & Benefits

- Translucent, adhesive-lined polyolefin tubing is a durable insulator that provides a seal that keeps out moisture and contaminants, and prevents wire corrosion.
- Conforms to automotive manufacturers' specifications for wiring repairs, necessary for maintaining electrical warranties.
- Seamless butt connectors & brazed seam rings and spades prevent opening of connector barrel.
- Color-coded tubing with wire gauge imprint provides easy identification of the correct part for the job.
- A selection of almost 200 types of connectors ensures the right part for every application.
- 105°C Maximum operating temperature.

# Sealed Crimp Connectors



RING TERMINALS					
Part #	Wire Gauge	Color	Description	Type	Seam
KS120-04	24-22 AWG	Clear	#4 Stud	Standard	Butted
KS120-06	24-22 AWG	Clear	#6 Stud	Standard	Butted
KS116-06	22-18 AWG	Red	#6 Stud	Standard	Brazed
KS116-08	22-18 AWG	Red	#8 Stud	Standard	Brazed
KS116-10	22-18 AWG	Red	#10 Stud	Standard	Brazed
KS116-14	22-18 AWG	Red	1/4" Stud	Standard	Brazed
KS116-516	22-18 AWG	Red	5/16" Stud	Standard	Brazed
KS116-38	22-18 AWG	Red	3/8" Stud	Standard	Brazed
KS114-06	16-14 AWG	Blue	#6 Stud	Standard	Brazed
KS114-08	16-14 AWG	Blue	#8 Stud	Standard	Brazed
KS114-10	16-14 AWG	Blue	#10 Stud	Standard	Brazed
KS114-14	16-14 AWG	Blue	1/4" Stud	Standard	Brazed
KS114-516	16-14 AWG	Blue	5/16" Stud	Standard	Brazed
KS114-38	16-14 AWG	Blue	3/8" Stud	Standard	Brazed
KS110-06	12-10 AWG	Yellow	#6 Stud	Standard	Brazed
KS110-08	12-10 AWG	Yellow	#8 Stud	Standard	Brazed
KS110-10	12-10 AWG	Yellow	#10 Stud	Standard	Brazed
KS110-14	12-10 AWG	Yellow	1/4" Stud	Standard	Brazed
KS110-516	12-10 AWG	Yellow	5/16" Stud	Standard	Brazed
KS110-38	12-10 AWG	Yellow	3/8" Stud	Standard	Brazed
KS110-12	12-10 AWG	Yellow	1/2" Stud	Standard	Brazed
KS108-10	8 AWG	Pink	#10 Stud	Standard	Brazed
KS108-14	8 AWG	Pink	1/4" Stud	Standard	Brazed
KS108-516	8 AWG	Pink	5/16" Stud	Standard	Brazed
KS108-38	8 AWG	Pink	3/8" Stud	Standard	Brazed
KS108-12	8 AWG	Pink	1/2" Stud	Standard	Brazed

LONG NECK SPADE TERMINALS					
Part #	Wire Gauge	Stripe Color	Description	Type	Seam
KS216-06L	22-18 AWG	Red	#6 Stud	Long Neck	Brazed
KS216-10L	22-18 AWG	Red	#8-10 Stud	Long Neck	Brazed
KS214-06L	16-14 AWG	Blue	#6 Stud	Long Neck	Brazed
KS214-10L	16-14 AWG	Blue	#8-10 Stud	Long Neck	Brazed
KS210-10L	12-10 AWG	Yellow	#8-10 Stud	Long Neck	Brazed
KS210-14L	12-10 AWG	Yellow	1/4" Stud	Long Neck	Brazed

SPADE TERMINALS					
Part #	Wire Gauge	Color	Description	Type	Seam
KS220-04	24-22 AWG	Clear	#4 Stud	Standard	Butted
KS220-06	24-22 AWG	Clear	#6 Stud	Standard	Butted
KS216-06	22-18 AWG	Red	#6 Stud	Standard	Brazed
KS216-08	22-18 AWG	Red	#8 Stud	Standard	Brazed
KS216-10	22-18 AWG	Red	#10 Stud	Standard	Brazed
KS214-06	16-14 AWG	Blue	#6 Stud	Standard	Brazed
KS214-08	16-14 AWG	Blue	#8 Stud	Standard	Brazed
KS214-10	16-14 AWG	Blue	#10 Stud	Standard	Brazed
KS210-06	12-10 AWG	Yellow	#6 Stud	Standard	Brazed
KS210-08	12-10 AWG	Yellow	#8 Stud	Standard	Brazed
KS210-10	12-10 AWG	Yellow	#10 Stud	Standard	Brazed
KS210-14	12-10 AWG	Yellow	1/4" Stud	Standard	Brazed



Please visit [www.nspa.com/ul\\_csa\\_listing.html](http://www.nspa.com/ul_csa_listing.html) for a complete list of UL parts. See page 65 for material specifications.

## Grab-N-Go Jars



KS5-16-JAR  
1 Item • 100 Pieces



KS5-14-JAR  
1 Item • 100 Pieces



KS5-10-JAR  
1 Item • 60 Pieces



KS5-16-JAR-LG  
1 Item • 300 Pieces



KS5-14-JAR-LG  
1 Item • 250 Pieces



KS5-10-JAR-LG  
1 Item • 150 Pieces



# Sealed Crimp Connectors

CAPTIVE - SPADE TERMINALS					
Part #	Wire Gauge	Color	Description	Type	Seam
KS316-06	22-18 AWG	Red	#6 Stud	Flanged Spade	Brazed
KS316-08	22-18 AWG	Red	#8 Stud	Flanged Spade	Brazed
KS316-10	22-18 AWG	Red	#10 Stud	Flanged Spade	Brazed
KS314-06	16-14 AWG	Blue	#6 Stud	Flanged Spade	Brazed
KS314-08	16-14 AWG	Blue	#8 Stud	Flanged Spade	Brazed
KS314-10	16-14 AWG	Blue	#10 Stud	Flanged Spade	Brazed
KS310-06	12-10 AWG	Yellow	#6 Stud	Flanged Spade	Brazed
KS310-08	12-10 AWG	Yellow	#8 Stud	Flanged Spade	Brazed
KS310-10	12-10 AWG	Yellow	#10 Stud	Flanged Spade	Brazed
KS316S-06	22-18 AWG	Red	#6 Stud	Spring Spade	Butted
KS316S-08	22-18 AWG	Red	#8 Stud	Spring Spade	Butted
KS316S-10	22-18 AWG	Red	#10 Stud	Spring Spade	Butted
KS314S-06	16-14 AWG	Blue	#6 Stud	Spring Spade	Butted
KS314S-08	16-14 AWG	Blue	#8 Stud	Spring Spade	Butted
KS314S-10	16-14 AWG	Blue	#10 Stud	Spring Spade	Butted
KS314S-14	16-14 AWG	Blue	1/4" Stud	Spring Spade	Butted
KS310S-06	12-10 AWG	Yellow	#6 Stud	Spring Spade	Butted
KS310S-08	12-10 AWG	Yellow	#8 Stud	Spring Spade	Butted
KS310S-10	12-10 AWG	Yellow	#10 Stud	Spring Spade	Butted

3-WAY & 4-WAY BUTT CONNECTORS					
Part #	Wire Gauge	Color	Description	Type	Seam
KS53-16	22-18 AWG	Red	Standard	Three-way	Brazed
KS53-14	16-14 AWG	Blue	Standard	Three-way	Brazed
KS53-10	12-10 AWG	Yellow	Standard	Three-way	Brazed
KS54-16	22-18 AWG	Red	Standard	Four-way	Brazed
KS54-14	16-14 AWG	Blue	Standard	Four-way	Brazed
KS54-10	12-10 AWG	Yellow	Standard	Four-way	Brazed

MULTI-STUD TERMINALS					
Part #	Wire Gauge	Color	Description	Type	Seam
KS116-MS	22-18 AWG	Red	#6, 8, & 10 Stud	Standard	Brazed
KS114-MS	16-14 AWG	Blue	#6, 8, & 10 Stud	Standard	Brazed
KS110-MS	12-10 AWG	Yellow	#6, 8, & 10 Stud	Standard	Brazed

HOOK TERMINALS					
Part #	Wire Gauge	Color	Description	Type	Seam
KS414-10	16-14 AWG	Blue	#10 stud	Standard	Brazed

FLANGED SPADE



SPRING SPADE



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See page 65 for material specifications.

## Suggested UL Tool:



T-R-50

Ratcheting Crimp Tool  
See page 56 for details.

## Mini Assortments



ASST-KS-9000  
3 Items • 60 Pieces

## Starter Assortments



ASST-KS-5000  
12 Items • 120 Pieces



ASST-KS-5005  
12 Items • 120 Pieces  
Long Neck Version

## Maintenance Assortments



ASST-KS-1000  
20 Items • 210 Pieces



ASST-KS-1005  
20 Items • 210 Pieces  
Long Neck Version

# Sealed Long Neck & Slip-On Crimp Connectors



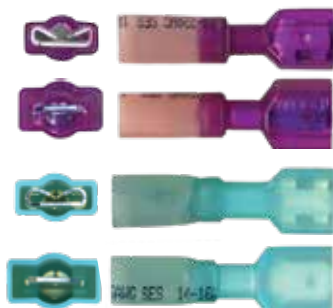
## LONG NECK SLIP-ON CONNECTORS

Part #	Wire Gauge	Color	Description	Type	Seam
KS6-18-250FL	22-18 AWG	Red	Female .250" Tab	Long Neck	Butted & Copper Sleeve
KS6-18-250FFL	22-18 AWG	Red	Female .250" Tab	Fully Insulated	Butted & Copper Sleeve
KS6-18-250ML	22-18 AWG	Red	Male .250" Tab	Long Neck	Butted & Copper Sleeve
KS6-14-250FL	16-14 AWG	Blue	Female .250" Tab	Long Neck	Butted & Copper Sleeve
KS6-14-250FFL	16-14 AWG	Blue	Female .250" Tab	Fully Insulated	Butted & Copper Sleeve
KS6-14-250ML	16-14 AWG	Blue	Male .250" Tab	Long Neck	Butted & Copper Sleeve
KS6-10-250FL	12-10 AWG	Yellow	Female .250" Tab	Long Neck	Butted & Copper Sleeve
KS6-10-250FFL	12-10 AWG	Yellow	Female .250" Tab	Fully Insulated	Butted & Copper Sleeve
KS6-10-250ML	12-10 AWG	Yellow	Male .250" Tab	Long Neck	Butted & Copper Sleeve

## SLIP-ON CONNECTORS

Part #	Wire Gauge	Color	Description	Type	Seam
KS6-18-110F	22-18 AWG	Red	Female .110" Tab	Standard	Butted & Copper Sleeve
KS6-18-110M	22-18 AWG	Red	Male .110" Tab	Standard	Butted & Copper Sleeve
KS6-18-187F	22-18 AWG	Red	Female .187" Tab	Standard	Butted & Copper Sleeve
KS6-18-187M	22-18 AWG	Red	Male .187" Tab	Standard	Butted & Copper Sleeve
KS6-18-250F	22-18 AWG	Red	Female .250" Tab	Standard	Butted & Copper Sleeve
KS6-18-250M	22-18 AWG	Red	Male .250" Tab	Standard	Butted & Copper Sleeve
KS6-14-110F	16-14 AWG	Blue	Female .110" Tab	Standard	Butted & Copper Sleeve
KS6-14-110M	16-14 AWG	Blue	Male .110" Tab	Standard	Butted & Copper Sleeve
KS6-14-187F	16-14 AWG	Blue	Female .187" Tab	Standard	Butted & Copper Sleeve
KS6-14-187M	16-14 AWG	Blue	Male .187" Tab	Standard	Butted & Copper Sleeve
KS6-14-250F	16-14 AWG	Blue	Female .250" Tab	Standard	Butted & Copper Sleeve
KS6-14-250M	16-14 AWG	Blue	Male .250" Tab	Standard	Butted & Copper Sleeve
KS6-10-250F	12-10 AWG	Yellow	Female .250" Tab	Standard	Butted & Copper Sleeve
KS6-10-250M	12-10 AWG	Yellow	Male .250" Tab	Standard	Butted & Copper Sleeve

## 2 HUMP - KS66 & 61 SERIES



## 3M 2 HUMP - KS67 SERIES



## MOLEX 1 HUMP - KS60 SERIES



## 2 HUMP - KS69 SERIES



## FULLY-INSULATED SLIP-ON CONNECTORS

Part #	Wire Gauge	Color	Description	Type	Seam
KS66-18-110F	22-18 AWG	Red	Female .110" Tab	2 Hump	Butted
KS66-18-187F	22-18 AWG	Red	Female .187" Tab	2 Hump	Butted
KS66-18-187M	22-18 AWG	Red	Male .187" Tab	2 Hump	Butted
KS66-18-250F	22-18 AWG	Red	Female .250" Tab	2 Hump	Butted
KS66-18-250M	22-18 AWG	Red	Male .250" Tab	2 Hump	Butted
KS66-14-110F	16-14 AWG	Blue	Female .110" Tab	2 Hump	Butted
KS66-14-187F	16-14 AWG	Blue	Female .187" Tab	2 Hump	Butted
KS66-14-187M	16-14 AWG	Blue	Male .187" Tab	2 Hump	Butted
KS66-14-250F	16-14 AWG	Blue	Female .250" Tab	2 Hump	Butted
KS66-14-250M	16-14 AWG	Blue	Male .250" Tab	2 Hump	Butted
KS66-10-250F	12-10 AWG	Yellow	Female .250" Tab	2 Hump	Butted
KS66-10-250M	12-10 AWG	Yellow	Male .250" Tab	2 Hump	Butted
KS61-18-250F	22-18 AWG	Red	Female .250" Tab	2 Hump	Butted
KS61-18-250M	22-18 AWG	Red	Male .250" Tab	2 Hump	Butted
KS61-14-250F	16-14 AWG	Blue	Female .250" Tab	2 Hump	Butted
KS61-14-250M	16-14 AWG	Blue	Male .250" Tab	2 Hump	Butted
KS61-10-250F	12-10 AWG	Yellow	Female .250" Tab	2 Hump	Butted
KS61-10-250M	12-10 AWG	Yellow	Male .250" Tab	2 Hump	Butted
KS67-18-250F	22-18 AWG	Red	Female .250" Tab	3M 2 Hump	Butted
KS67-18-250M	22-18 AWG	Red	Male .250" Tab	3M 2 Hump	Butted
KS67-14-250F	16-14 AWG	Blue	Female .250" Tab	3M 2 Hump	Butted
KS67-14-250M	16-14 AWG	Blue	Male .250" Tab	3M 2 Hump	Butted
KS67-10-250F	12-10 AWG	Yellow	Female .250" Tab	3M 2 Hump	Butted
KS67-10-250M	12-10 AWG	Yellow	Male .250" Tab	3M 2 Hump	Butted
KS60-18-250F	22-18 AWG	Red	Female .250" Tab	Molex 1 Hump	Butted
KS60-18-250M	22-18 AWG	Red	Male .250" Tab	Molex 1 Hump	Butted
KS60-14-250F	16-14 AWG	Blue	Female .250" Tab	Molex 1 Hump	Butted
KS60-14-250M	16-14 AWG	Blue	Male .250" Tab	Molex 1 Hump	Butted
KS60-10-250F	12-10 AWG	Yellow	Female .250" Tab	Molex 1 Hump	Butted
KS60-10-250M	12-10 AWG	Yellow	Male .250" Tab	Molex 1 Hump	Butted
KS69-18-250F	22-18 AWG	Red	Female .250" Tab	2 Hump	Butted & Copper Sleeve
KS69-18-250M	22-18 AWG	Red	Male .250" Tab	2 Hump	Butted & Copper Sleeve
KS69-14-250F	16-14 AWG	Blue	Female .250" Tab	2 Hump	Butted & Copper Sleeve
KS69-14-250M	16-14 AWG	Blue	Male .250" Tab	2 Hump	Butted & Copper Sleeve
KS69-10-250F	12-10 AWG	Yellow	Female .250" Tab	2 Hump	Butted & Copper Sleeve
KS69-10-250M	12-10 AWG	Yellow	Male .250" Tab	2 Hump	Butted & Copper Sleeve



Please visit [www.nspa.com/ul\\_csa\\_listing.html](http://www.nspa.com/ul_csa_listing.html) for a complete list of UL parts. See page 65 for material specifications.

# Sealed Bullet Plugs & Receptacles

LONG NECK BULLET PLUGS					
Part #	Wire Gauge	Color	Description	Type	Seam
KS7-18-15ML	22-18 AWG	Red	.157" Plug	Long Neck	Butted & Copper Sleeve
KS7-18-18ML	22-18 AWG	Red	.180" Plug	Long Neck	Butted & Copper Sleeve
KS7-14-15ML	16-14 AWG	Blue	.157" Plug	Long Neck	Butted & Copper Sleeve
KS7-14-18ML	16-14 AWG	Blue	.180" Plug	Long Neck	Butted & Copper Sleeve
KS7-10-15ML	12-10 AWG	Yellow	.157" Plug	Long Neck	Butted & Copper Sleeve
KS7-10-18ML	12-10 AWG	Yellow	.180" Plug	Long Neck	Butted & Copper Sleeve

LONG NECK BULLET RECEPTACLES					
Part #	Wire Gauge	Color	Description	Type	Seam
KS7-18-15FFL	22-18 AWG	Red	.157" Receptacle	Long Neck	Butted & Copper Sleeve
KS7-18-18FFL	22-18 AWG	Red	.180" Receptacle	Long Neck	Butted & Copper Sleeve
KS7-14-15FFL	16-14 AWG	Blue	.157" Receptacle	Long Neck	Butted & Copper Sleeve
KS7-14-18FFL	16-14 AWG	Blue	.180" Receptacle	Long Neck	Butted & Copper Sleeve
KS7-10-15FFL	12-10 AWG	Yellow	.157" Receptacle	Long Neck	Butted & Copper Sleeve
KS7-10-18FFL	12-10 AWG	Yellow	.180" Receptacle	Long Neck	Butted & Copper Sleeve

BULLET PLUGS					
Part #	Wire Gauge	Color	Description	Type	Seam
KS7-18-15M	22-18 AWG	Red	.157" Plug	Standard	Butted & Copper Sleeve
KS7-18-18M	22-18 AWG	Red	.180" Plug	Standard	Butted & Copper Sleeve
KS7-14-15M	16-14 AWG	Blue	.157" Plug	Standard	Butted & Copper Sleeve
KS7-14-18M	16-14 AWG	Blue	.180" Plug	Standard	Butted & Copper Sleeve
KS7-14-195M	16-14 AWG	Blue	.195" Plug	Standard	Butted & Copper Sleeve

BULLET RECEPTACLES					
Part #	Wire Gauge	Color	Description	Type	Seam
KS7-18-15F	22-18 AWG	Red	.157" Receptacle	Standard	Butted & Copper Sleeve
KS7-18-18F	22-18 AWG	Red	.180" Receptacle	Standard	Butted & Copper Sleeve
KS7-14-15F	16-14 AWG	Blue	.157" Receptacle	Standard	Butted & Copper Sleeve
KS7-14-18F	16-14 AWG	Blue	.180" Receptacle	Standard	Butted & Copper Sleeve
KS7-14-195F	16-14 AWG	Blue	.195" Receptacle	Standard	Butted & Copper Sleeve

FLAG TERMINALS			
Part #	Wire Gauge	Color	Description
KS68-18-250F	22-18 AWG	Red	Female .250" Tab
KS68-14-250F	16-14 AWG	Blue	Female .250" Tab



Please visit [www.nspa.com/ul\\_csa\\_listing.html](http://www.nspa.com/ul_csa_listing.html) for a complete list of UL parts. See page 65 for material specifications.

## Suggested Tool:



**T-R-40**

Ratcheting Crimp Tool  
See page 54 for details.

## Suggested Tool:

**T-MTC-20**  
Self-Igniting  
Butane Torch

See page 49 for  
more heat tools.



# Sealed Nylon Crimp Butt Connectors

Our Sealed Nylon Crimp Connectors are insulated with nylon heat shrink tubing.

BUTT CONNECTORS					
Part #	Wire Gauge	Color	Description	Type	Seam
NS5-16	22-18 AWG	Red	Standard	Standard	Seamless
NS5-14	16-14 AWG	Blue	Standard	Standard	Seamless
NS5-10	12-10 AWG	Yellow	Standard	Standard	Seamless

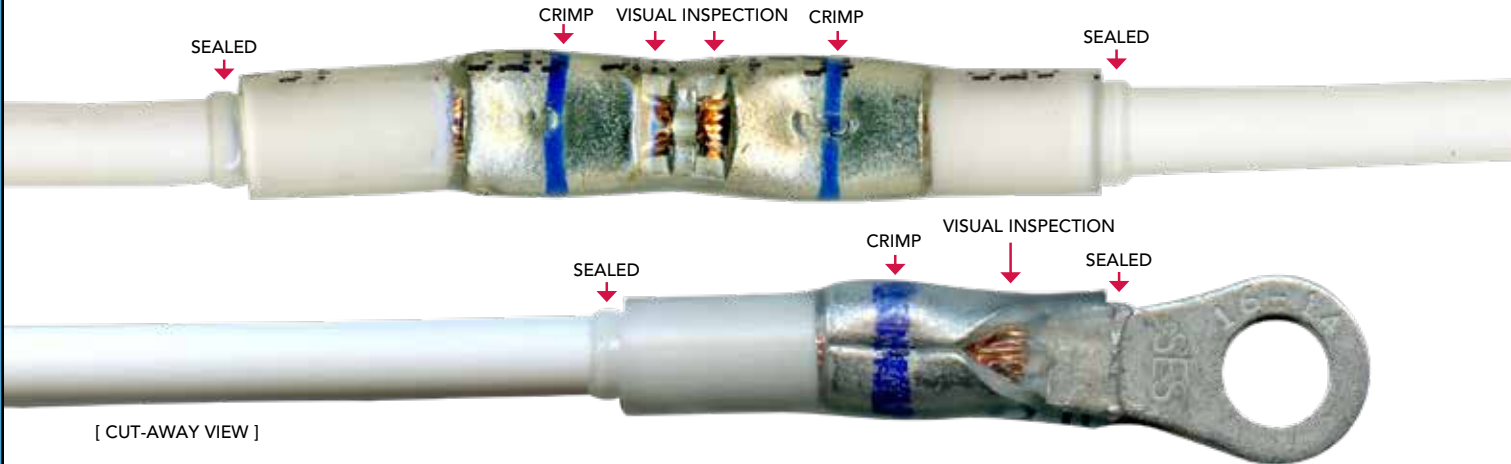


# Sealed Crystal Clear Connectors

Sealed Crystal Clear Connectors are designed to provide optimal visual assurance that the termination is installed properly and offers visual inspection of the wire condition over the life of the termination.



## Take the Guesswork Out of Crimping!



## The Components

### Window Butt Connectors:



- Window in center of connector assures that wire is fully seated and that the wire is being crimped to the connector
- Color-coded stripes identify wire gauge size to be used with connector
- Color-coded stripes also indicate/guide where to position crimp nest to install properly
- Seamless barrel butt connectors ensure superior crimp performance
- Wire-stop in butt connectors prevents over-insertion of wire

### 45° Ring Terminal



- 45° barrel assures that wire is seated properly and wire is being crimped to terminal
- 45° barrel angle allows tubing to adhere to it and provides stronger seal
- Long neck ring terminal provides ideal seal & allows ring terminal to be stacked
- Color-coded stripes identify wire gauge size to be used with connector
- Color-coded stripes also indicate/guide where to position crimp nest to install properly
- Brazed seam barrel ensures superior crimp performance
- Serrations in crimp barrel provide strong mechanical termination



Longer neck allows stacking without impeding current flow

### CRYSTAL CLEAR™ Adhesive-Lined Heat Shrink Tubing:



- Crystal Clear™ tubing provides optimal clarity for visual inspection
- Adhesive-Lined tubing ensures a waterproof seal
- Wire gauge imprint simplifies wire size identification

**Standard connectors do not allow the installer to see the wire which can result in the following problems:**



- 1) Wire stripped too short, which can result in crimping the end of the wire (poor termination)
- 2) Wire is not fully seated to connector, which can result in a poor termination

# Sealed Crystal Clear Connectors

## BUTT CONNECTORS

Part #	Wire Gauge	Color Stripe	Description	Type	Seam
OS55-16	22-18 AWG	Red	Butt Connector	Window with Wire Stop	Seamless
OS55-14	16-14 AWG	Blue	Butt Connector	Window with Wire Stop	Seamless
OS55-10	12-10 AWG	Yellow	Butt Connector	Window with Wire Stop	Seamless



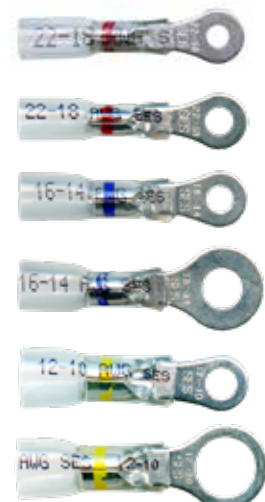
## STEP-DOWN CONNECTORS

Part #	Wire Gauge	Color Stripe	Description	Type	Seam
OS56-20	24-22 AWG to 22-18 AWG	White / Red	Tapered Step-down	Window with Wire Stop	Seamless
OS56-16	22-18 AWG to 16-14 AWG	Red / Blue	Tapered Step-down	Window with Wire Stop	Seamless
OS56-14	16-14 AWG to 12-10 AWG	Blue / Yellow	Tapered Step-down	Window with Wire Stop	Seamless
OS56-10	12-10 AWG to 8 AWG	Yellow / Red	Tapered Step-down	Window with Wire Stop	Seamless



## RING TERMINALS

Part #	Wire Gauge	Color Stripe	Stud	Thickness	Type	Seam
OS116-06	22-18 AWG	Red	#6 Stud	.80mm/.032"	Long Neck	Brazed
OS116-08	22-18 AWG	Red	#8 Stud	.80mm/.032"	Long Neck	Brazed
OS116-10	22-18 AWG	Red	#10 Stud	.80mm/.032"	Long Neck	Brazed
OS116-14	22-18 AWG	Red	1/4" Stud	.80mm/.032"	Long Neck	Brazed
OS116-516	22-18 AWG	Red	5/16" Stud	.80mm/.032"	Long Neck	Brazed
OS116-38	22-18 AWG	Red	3/8" Stud	.80mm/.032"	Long Neck	Brazed
OS114-06	16-14 AWG	Blue	#6 Stud	.80mm/.032"	Long Neck	Brazed
OS114-08	16-14 AWG	Blue	#8 Stud	.80mm/.032"	Long Neck	Brazed
OS114-10	16-14 AWG	Blue	#10 Stud	.80mm/.032"	Long Neck	Brazed
OS114-14	16-14 AWG	Blue	1/4" Stud	.80mm/.032"	Long Neck	Brazed
OS114-516	16-14 AWG	Blue	5/16" Stud	.80mm/.032"	Long Neck	Brazed
OS114-38	16-14 AWG	Blue	3/8" Stud	.80mm/.032"	Long Neck	Brazed
OS110-06	12-10 AWG	Yellow	#6 Stud	1.0mm/.040"	Long Neck	Brazed
OS110-08	12-10 AWG	Yellow	#8 Stud	1.0mm/.040"	Long Neck	Brazed
OS110-10	12-10 AWG	Yellow	#10 Stud	1.0mm/.040"	Long Neck	Brazed
OS110-14	12-10 AWG	Yellow	1/4" Stud	1.0mm/.040"	Long Neck	Brazed
OS110-516	12-10 AWG	Yellow	5/16" Stud	1.0mm/.040"	Long Neck	Brazed
OS110-38	12-10 AWG	Yellow	3/8" Stud	1.0mm/.040"	Long Neck	Brazed
OS110-38W	12-10 AWG	Yellow	3/8" Stud, Wide pad	1.0mm/.040"	Long Neck	Brazed
OS110-12	12-10 AWG	Yellow	1/2" Stud	1.0mm/.040"	Long Neck	Brazed



## SPADE TERMINALS

Part #	Wire Gauge	Color Stripe	Stud	Thickness	Type	Seam
OS216-06	22-18 AWG	Red	#6 Stud	.80mm/.032"	Long Neck	Brazed
OS216-10	22-18 AWG	Red	#8 - #10 Stud	.80mm/.032"	Long Neck	Brazed
OS214-06	16-14 AWG	Blue	#6 Stud	.80mm/.032"	Long Neck	Brazed
OS214-10	16-14 AWG	Blue	#8 - #10 Stud	.80mm/.032"	Long Neck	Brazed
OS210-10	12-10 AWG	Yellow	#8 - #10 Stud	1.0mm/.040"	Long Neck	Brazed
OS210-14	12-10 AWG	Yellow	1/4" Stud	1.0mm/.040"	Long Neck	Brazed



US Patent Protected • Rated for 105° C (221° F). See page 65 for material specifications.

### Grab-N-Go Jars



**OS55-16-JAR**

1 Item • 100 Pieces



**OS55-14-JAR**

1 Item • 100 Pieces



**OS55-10-JAR**

1 Item • 60 Pieces



**OS55-16-JAR-LG**

1 Item • 300 Pieces



**OS55-14-JAR-LG**

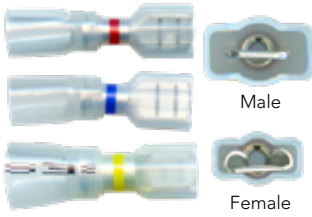
1 Item • 250 Pieces



**OS55-10-JAR-LG**

1 Item • 150 Pieces

# Sealed Crystal Clear Connectors



## FULLY-INSULATED SLIP-ON CONNECTORS

Part #	Wire Gauge	Color Stripe	Tab Size & Thickness	Seam
OS69-18-250F	22-18 AWG	Red	Female .250" Tab x .032" (.80mm)	Butted & Copper Sleeve
OS69-18-250M	22-18 AWG	Red	Male .250" Tab x .032" (.80mm)	Butted & Copper Sleeve
OS69-14-250F	16-14 AWG	Blue	Female .250" Tab x .032" (.80mm)	Butted & Copper Sleeve
OS69-14-250M	16-14 AWG	Blue	Male .250" Tab x .032" (.80mm)	Butted & Copper Sleeve
OS69-10-250F	12-10 AWG	Yellow	Female .250" Tab x .032" (.80mm)	Butted & Copper Sleeve
OS69-10-250M	12-10 AWG	Yellow	Male .250" Tab x .032" (.80mm)	Butted & Copper Sleeve

## SLIP-ON CONNECTORS

Part #	Wire Gauge	Color Stripe	Tab Size & Thickness	Type	Seam
OS6-18-250F	22-18 AWG	Red	Female .250" Tab	Long Neck	Butted & Copper Sleeve
OS6-18-250FF	22-18 AWG	Red	Female .250" Tab	Fully Insul. Long Neck	Butted & Copper Sleeve
OS6-18-250M	22-18 AWG	Red	Male .250" Tab	Long Neck	Butted & Copper Sleeve
OS6-14-250F	16-14 AWG	Blue	Female .250" Tab	Long Neck	Butted & Copper Sleeve
OS6-14-250FF	16-14 AWG	Blue	Female .250" Tab	Fully Insul. Long Neck	Butted & Copper Sleeve
OS6-14-250M	16-14 AWG	Blue	Male .250" Tab	Long Neck	Butted & Copper Sleeve
OS6-10-250F	12-10 AWG	Yellow	Female .250" Tab	Long Neck	Butted & Copper Sleeve
OS6-10-250FF	12-10 AWG	Yellow	Female .250" Tab	Fully Insul. Long Neck	Butted & Copper Sleeve
OS6-10-250M	12-10 AWG	Yellow	Male .250" Tab	Long Neck	Butted & Copper Sleeve

## BULLET PLUGS

Part #	Wire Gauge	Color Stripe	Description	Type	Seam
OS7-18-15M	22-18 AWG	Red	.157" Plug	Long Neck	Butted & Copper Sleeve
OS7-18-18M	22-18 AWG	Red	.180" Plug	Long Neck	Butted & Copper Sleeve
OS7-14-15M	16-14 AWG	Blue	.157" Plug	Long Neck	Butted & Copper Sleeve
OS7-14-18M	16-14 AWG	Blue	.180" Plug	Long Neck	Butted & Copper Sleeve
OS7-10-15M	12-10 AWG	Yellow	.157" Plug	Long Neck	Butted & Copper Sleeve
OS7-10-18M	12-10 AWG	Yellow	.180" Plug	Long Neck	Butted & Copper Sleeve

## BULLET RECEPTACLES

Part #	Wire Gauge	Color Stripe	Description	Type	Seam
OS7-18-15FF	22-18 AWG	Red	.157" Receptacle	Long Neck	Butted & Copper Sleeve
OS7-18-18FF	22-18 AWG	Red	.180" Receptacle	Long Neck	Butted & Copper Sleeve
OS7-14-15FF	16-14 AWG	Blue	.157" Receptacle	Long Neck	Butted & Copper Sleeve
OS7-14-18FF	16-14 AWG	Blue	.180" Receptacle	Long Neck	Butted & Copper Sleeve
OS7-10-15FF	12-10 AWG	Yellow	.157" Receptacle	Long Neck	Butted & Copper Sleeve
OS7-10-18FF	12-10 AWG	Yellow	.180" Receptacle	Long Neck	Butted & Copper Sleeve

See page 65 for material specifications.

## Suggested Tool:



### T-R-50

Ratcheting Crimp Tool  
See page 56 for details.

### Mini Assortments



**ASST-OS-9000**  
3 Items • 60 Pieces

### Starter Assortments



**ASST-OS-5000**  
12 Items • 120 Pieces

### Maintenance Assortments

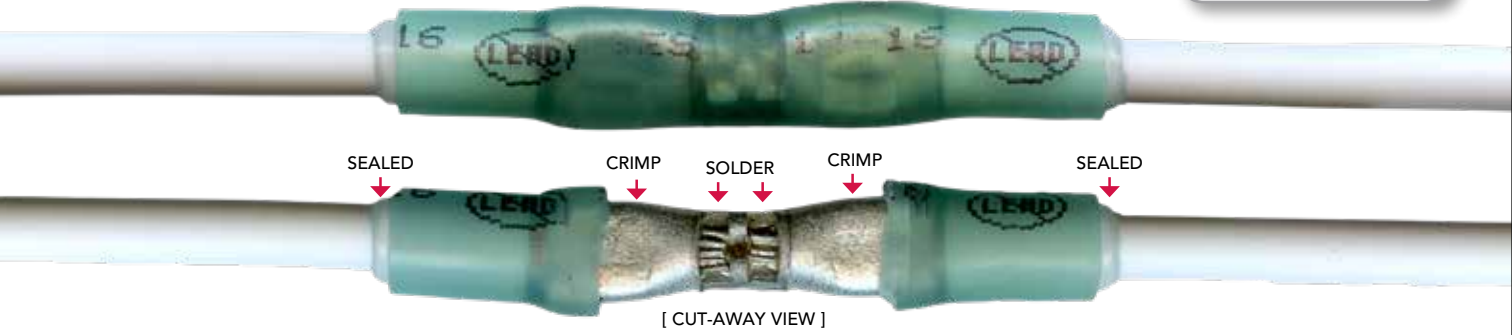


**ASST-OS-1000**  
20 Items • 210 Pieces

# Sealed Crimp & Solder Connectors - Lead Free

Sealed Crimp & Solder Connectors are crimped for mechanical reliability, soldered for superior strength and conductivity, and sealed for maximum durability. When there is no margin for error, choose SEALED CRIMP & SOLDER CONNECTORS...

## The Ultimate Electrical Connection Just Got Better!



### Lead Free Solder is Stronger

- Lead free solder has greater surface tension
- Solder stays in place which provides greater tensile strength than other solder sleeves
- New solder much less likely to run out of the tubing
- Solder sleeves pre-fluxed to clean metals & provide a quality solder termination

#### Original Solder Alloy

ORIGINAL SOLDER CAN BECOME RUNNY



#### New & Improved Lead Free Solder Alloy

NEW SOLDER HAS GREATER SURFACE TENSION = LESS RUNNY



### Installs Faster - New lead free solder has lower melt temperature (138°C vs 145°C)

### No Hazardous Metals

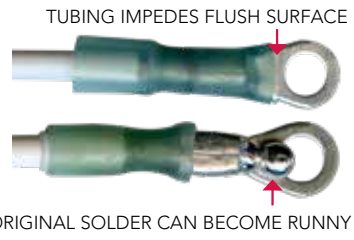
- New solder sleeves are Tin & Bismuth alloy
- Other solder sleeves contain both Lead & Cadmium
- New solder - RoHS compliant
- Better for the environment



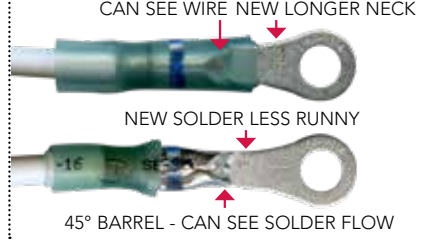
### New Ring Terminal Design

- 45° barrel allows installer to see wire is fully inserted and wire is crimped to terminal
- 45° barrel ensures wire is stripped the proper length
- Longer neck ensures a strong seal and allows multiple terminals to be stacked
- Traditional ring terminals were not designed to be insulated with heat shrink tubing, which often results with the tubing impeding contact between the screw & terminal

#### Original Terminal



#### New & Improved Lead Free Terminal



#### Grab-N-Go Jars



# Sealed Crimp & Solder Connectors - Lead Free



## BUTT CONNECTORS

Part #	Wire Gauge	Color Tubing	Description	Type	Seam
MLF5-20	24-22 AWG	Clear	Butt Connector	Window with Wire Stop	Seamless
MLF5-16	22-18 AWG	Red	Butt Connector	Window with Wire Stop	Seamless
MLF5-14	16-14 AWG	Blue	Butt Connector	Window with Wire Stop	Seamless
MLF5-10	12-10 AWG	Yellow	Butt Connector	Window with Wire Stop	Seamless

## STEP-DOWN BUTT CONNECTORS

Part #	Wire Gauge	Color Tubing	Description	Type	Seam
MLF56-20	24-22 AWG to 22-18 AWG	Red	Tapered Step-down	Window with Wire Stop	Seamless
MLF56-16	22-18 AWG to 16-14 AWG	Blue	Tapered Step-down	Window with Wire Stop	Seamless
MLF56-14	16-14 AWG to 12-10 AWG	Yellow	Tapered Step-down	Window with Wire Stop	Seamless
MLF56-10	12-10 AWG to 8 AWG	Pink	Tapered Step-down	Window with Wire Stop	Seamless

## LONG NECK RING TERMINALS

Part #	Wire Gauge	Color Tubing	Description	Type	Seam
MLF116-06L	22-18 AWG	Red	#6 Stud	Long Neck	Brazed
MLF116-08L	22-18 AWG	Red	#8 Stud	Long Neck	Brazed
MLF116-10L	22-18 AWG	Red	#10 Stud	Long Neck	Brazed
MLF116-14L	22-18 AWG	Red	1/4" Stud	Long Neck	Brazed
MLF116-516L	22-18 AWG	Red	5/16" Stud	Long Neck	Brazed
MLF116-38L	22-18 AWG	Red	3/8" Stud	Long Neck	Brazed
MLF114-06L	16-14 AWG	Blue	#6 Stud	Long Neck	Brazed
MLF114-08L	16-14 AWG	Blue	#8 Stud	Long Neck	Brazed
MLF114-10L	16-14 AWG	Blue	#10 Stud	Long Neck	Brazed
MLF114-14L	16-14 AWG	Blue	1/4" Stud	Long Neck	Brazed
MLF114-516L	16-14 AWG	Blue	5/16" Stud	Long Neck	Brazed
MLF114-38L	16-14 AWG	Blue	3/8" Stud	Long Neck	Brazed
MLF110-06L	12-10 AWG	Yellow	#6 Stud	Long Neck	Brazed
MLF110-08L	12-10 AWG	Yellow	#8 Stud	Long Neck	Brazed
MLF110-10L	12-10 AWG	Yellow	#10 Stud	Long Neck	Brazed
MLF110-14L	12-10 AWG	Yellow	1/4" Stud	Long Neck	Brazed
MLF110-516L	12-10 AWG	Yellow	5/16" Stud	Long Neck	Brazed
MLF110-38L	12-10 AWG	Yellow	3/8" Stud	Long Neck	Brazed
MLF110-38WL	12-10 AWG	Yellow	3/8" Stud, Wide	Long Neck	Brazed
MLF110-12L	12-10 AWG	Yellow	1/2" Stud	Long Neck	Brazed

## SPADE TERMINALS

Part #	Wire Gauge	Color Tubing	Description	Type	Seam
MLF216-06L	22-18 AWG	Red	#6 Stud	Long Neck	Brazed
MLF216-08	22-18 AWG	Red	#8 Stud	Standard	Brazed
MLF216-10L	22-18 AWG	Red	#10 Stud	Long Neck	Brazed
MLF214-06L	16-14 AWG	Blue	#6 Stud	Long Neck	Brazed
MLF214-08	16-14 AWG	Blue	#8 Stud	Standard	Brazed
MLF214-10L	16-14 AWG	Blue	#10 Stud	Long Neck	Brazed
MLF210-06	12-10 AWG	Yellow	#6 Stud	Standard	Brazed
MLF210-08	12-10 AWG	Yellow	#8 Stud	Standard	Brazed
MLF210-10L	12-10 AWG	Yellow	#10 Stud	Long Neck	Brazed
MLF210-14L	12-10 AWG	Yellow	1/4" Stud	Long Neck	Brazed
MLF316S-06	22-18 AWG	Red	#6 Stud	Spring Spade	Butted
MLF316S-08	22-18 AWG	Red	#8 Stud	Spring Spade	Butted
MLF316S-10	22-18 AWG	Red	#10 Stud	Spring Spade	Butted
MLF314S-06	16-14 AWG	Blue	#6 Stud	Spring Spade	Butted
MLF314S-08	16-14 AWG	Blue	#8 Stud	Spring Spade	Butted
MLF314S-10	16-14 AWG	Blue	#10 Stud	Spring Spade	Butted
MLF310S-06	12-10 AWG	Yellow	#6 Stud	Spring Spade	Butted
MLF310S-08	12-10 AWG	Yellow	#8 Stud	Spring Spade	Butted
MLF310S-10	12-10 AWG	Yellow	#10 Stud	Spring Spade	Butted



Please visit [www.nspa.com/ul\\_csa\\_listing.html](http://www.nspa.com/ul_csa_listing.html) for a complete list of UL parts. See page 65 for material specifications.

### Mini Assortments



**ASST-MLF-9000**  
3 Items • 60 Pieces

### Starter Assortments



**ASST-MLF-5000**  
12 Items • 75 Pieces

### Maintenance Assortments



**ASST-MLF-1000**  
20 Items • 245 Pieces



# Sealed Crimp & Solder Connectors - Lead Free

LONG NECK SLIP-ON CONNECTORS					
Part #	Wire Gauge	Color Tubing	Description	Type	Seam
MLF6-18-250FL	22-18 AWG	Red	Female .250" Tab	Long Neck	Butted & Copper Sleeve
MLF6-18-250FFL	22-18 AWG	Red	Female .250" Tab	Fully Insulated	Butted & Copper Sleeve
MLF6-18-250ML	22-18 AWG	Red	Male .250" Tab	Long Neck	Butted & Copper Sleeve
MLF6-14-250FL	16-14 AWG	Blue	Female .250" Tab	Long Neck	Butted & Copper Sleeve
MLF6-14-250FFL	16-14 AWG	Blue	Female .250" Tab	Fully Insulated	Butted & Copper Sleeve
MLF6-14-250ML	16-14 AWG	Blue	Male .250" Tab	Long Neck	Butted & Copper Sleeve
MLF6-10-250FL	12-10 AWG	Yellow	Female .250" Tab	Long Neck	Butted & Copper Sleeve
MLF6-10-250FFL	12-10 AWG	Yellow	Female .250" Tab	Fully Insulated	Butted & Copper Sleeve
MLF6-10-250ML	12-10 AWG	Yellow	Male .250" Tab	Long Neck	Butted & Copper Sleeve

SLIP-ON CONNECTORS					
Part #	Wire Gauge	Color Tubing	Description	Type	Seam
MLF6-18-250F	22-18 AWG	Red	Female .250" Tab	Standard	Butted & Copper Sleeve
MLF6-18-250FF	22-18 AWG	Red	Female .250" Tab	Fully Insulated	Butted & Copper Sleeve
MLF6-18-250M	22-18 AWG	Red	Male .250" Tab	Standard	Butted & Copper Sleeve
MLF6-14-250F	16-14 AWG	Blue	Female .250" Tab	Standard	Butted & Copper Sleeve
MLF6-14-250FF	16-14 AWG	Blue	Female .250" Tab	Fully Insulated	Butted & Copper Sleeve
MLF6-14-250M	16-14 AWG	Blue	Male .250" Tab	Standard	Butted & Copper Sleeve
MLF6-10-250F	12-10 AWG	Yellow	Female .250" Tab	Standard	Butted & Copper Sleeve
MLF6-10-250FF	12-10 AWG	Yellow	Female .250" Tab	Fully Insulated	Butted & Copper Sleeve
MLF6-10-250M	12-10 AWG	Yellow	Male .250" Tab	Standard	Butted & Copper Sleeve

LONG NECK BULLET PLUGS					
Part #	Wire Gauge	Color	Description	Type	Seam
MLF7-18-15ML	22-18 AWG	Red	.157" Plug	Long Neck	Butted & Copper Sleeve
MLF7-18-18ML	22-18 AWG	Red	.180" Plug	Long Neck	Butted & Copper Sleeve
MLF7-14-15ML	16-14 AWG	Blue	.157" Plug	Long Neck	Butted & Copper Sleeve
MLF7-14-18ML	16-14 AWG	Blue	.180" Plug	Long Neck	Butted & Copper Sleeve
MLF7-10-15ML	12-10 AWG	Yellow	.157" Plug	Long Neck	Butted & Copper Sleeve
MLF7-10-18ML	12-10 AWG	Yellow	.180" Plug	Long Neck	Butted & Copper Sleeve

LONG NECK BULLET RECEPTACLES					
Part #	Wire Gauge	Color	Description	Type	Seam
MLF7-18-15FFL	22-18 AWG	Red	.157" Receptacle	Long Neck	Butted & Copper Sleeve
MLF7-18-18FFL	22-18 AWG	Red	.180" Receptacle	Long Neck	Butted & Copper Sleeve
MLF7-14-15FFL	16-14 AWG	Blue	.157" Receptacle	Long Neck	Butted & Copper Sleeve
MLF7-14-18FFL	16-14 AWG	Blue	.180" Receptacle	Long Neck	Butted & Copper Sleeve
MLF7-10-15FFL	12-10 AWG	Yellow	.157" Receptacle	Long Neck	Butted & Copper Sleeve
MLF7-10-18FFL	12-10 AWG	Yellow	.180" Receptacle	Long Neck	Butted & Copper Sleeve



Please visit [www.nspa.com/ul\\_csa\\_listing.html](http://www.nspa.com/ul_csa_listing.html) for a complete list of UL parts.  
See page 65 for material specifications.

US Patent Protected



### Suggested Tool:

#### T-MTC-51B

Self-Igniting Super Blaster Torch  
See page 50 for details.

### Suggested UL Tool:



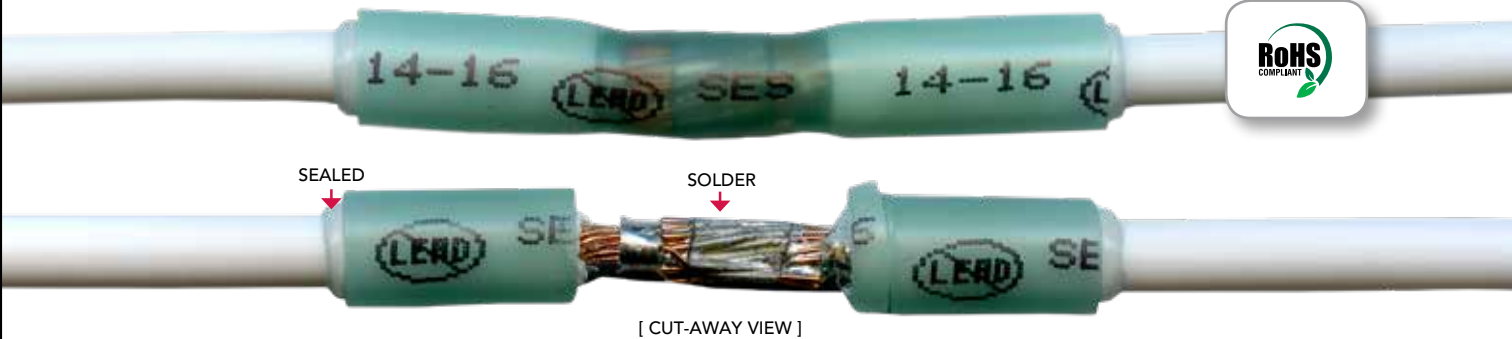
#### T-R-50

Ratcheting Crimp Tool  
See page 56 for details.

# Sealed Solder Connectors - Lead Free

Sealed Solder Connectors provide a high quality, sealed solder connection that takes the guesswork out of soldering. Soldered terminations provide superior tensile strength and conductivity. DON'T SETTLE FOR ANY CONNECTOR ... DEMAND SEALED SOLDER CONNECTORS!

## Sealing and Soldering Just Got Better!



### Lead Free Solder is Stronger

- Lead free solder has greater surface tension
- Solder stays in place which provides greater tensile strength than other solder sleeves
- New solder much less likely to run out of the tubing
- Solder sleeves pre-fluxed to clean metals & provide a quality solder termination

#### Original Solder Alloy



ORIGINAL SOLDER CAN BECOME RUNNY

#### New & Improved Lead Free Solder Alloy



NEW SOLDER HAS GREATER SURFACE TENSION = LESS RUNNY

### Installs Faster

- New lead free solder has lower melt temperature (138°C vs 145°C)

### No Hazardous Metals

- New solder sleeves are Tin & Bismuth alloy
- Other solder sleeves contain both Lead & Cadmium
- New solder - RoHS compliant
- Better for the environment

NO LEAD SYMBOL



### Reduce recurring electrical problems

#### PROBLEMS:

Corrosion on wire causes voltage drop.



Cannot see whether terminal is properly installed.

Wire pulled loose due to strain or vibration.



Standard terminal thickness (Red & Blue)



.032" thickness

#### SOLUTIONS:

Adhesive-lined tubing prevents corrosion on the wire.



Translucent tubing allows visual inspection of installation.

Solder termination provides maximum tensile strength & conductivity



Thicker terminals - 33% more copper



.040" thickness

#### Grab-N-Go Jars



ELF5-16-JAR  
1 Item • 100 Pieces



ELF5-14-JAR  
1 Item • 100 Pieces



ELF5-10-JAR  
1 Item • 60 Pieces



ELF5-16-JAR-LG  
1 Item • 300 Pieces



ELF5-14-JAR-LG  
1 Item • 250 Pieces



ELF5-10-JAR-LG  
1 Item • 150 Pieces

**BUTT CONNECTORS**

Part	Wire Gauge	Color	Description
ELF5-20	24-22 AWG	Clear	Butt Connector
ELF5-16	22-18 AWG	Red	Butt Connector
ELF5-14	16-14 AWG	Blue	Butt Connector
ELF5-10	12-10 AWG	Yellow	Butt Connector
ELF5-08	8 AWG	Pink	Butt Connector



**RING TERMINALS**

Part	Wire Gauge	Color	Description
ELF120-02X	24-22 AWG	Clear	#2 Stud
ELF120-04X	24-22 AWG	Clear	#4 Stud
ELF120-06X	24-22 AWG	Clear	#6 Stud
ELF116-06X	22-18 AWG	Red	#6 Stud
ELF116-08X	22-18 AWG	Red	#8 Stud
ELF116-10X	22-18 AWG	Red	#10 Stud
ELF116-14X	22-18 AWG	Red	1/4" Stud
ELF116-516X	22-18 AWG	Red	5/16" Stud
ELF116-38X	22-18 AWG	Red	3/8" Stud
ELF114-06X	16-14 AWG	Blue	#6 Stud
ELF114-08X	16-14 AWG	Blue	#8 Stud
ELF114-10X	16-14 AWG	Blue	#10 Stud
ELF114-14X	16-14 AWG	Blue	1/4" Stud
ELF114-516X	16-14 AWG	Blue	5/16" Stud
ELF114-38X	16-14 AWG	Blue	3/8" Stud
ELF110-10X	12-10 AWG	Yellow	#10 Stud
ELF110-14X	12-10 AWG	Yellow	1/4" Stud
ELF110-516X	12-10 AWG	Yellow	5/16" Stud
ELF110-38X	12-10 AWG	Yellow	3/8" Stud
ELF110-12X	12-10 AWG	Yellow	1/2" Stud



**SPADE TERMINALS**

Part	Wire Gauge	Color	Description
ELF220-02X	24-22 AWG	Clear	#2 Stud
ELF220-04X	24-22 AWG	Clear	#4 Stud
ELF220-06X	24-22 AWG	Clear	#6 Stud
ELF216-10X	22-18 AWG	Red	#8-10 Stud
ELF214-10X	16-14 AWG	Blue	#8-10 Stud
ELF210-10X	12-10 AWG	Yellow	#8-10 Stud



**SLIP-ON CONNECTORS**


Part	Wire Gauge	Color	Description
ELF6-18F	22-18 AWG	Red	.250" Female
ELF6-18M	22-18 AWG	Red	.250" Male
ELF6-14F	16-14 AWG	Blue	.250" Female
ELF6-14M	16-14 AWG	Blue	.250" Male
ELF6-10F	12-10 AWG	Yellow	.250" Female
ELF6-10M	12-10 AWG	Yellow	.250" Male



**FULLY INSULATED SLIP-ON CONNECTORS**

Part	Wire Gauge	Color	Description
ELF6-18FF	22-18 AWG	Red	.250" Fully Insulated Female
ELF6-14FF	16-14 AWG	Blue	.250" Fully Insulated Female
ELF6-10FF	12-10 AWG	Yellow	.250" Fully Insulated Female



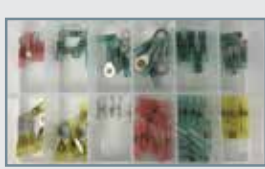
 Please visit [www.nspa.com/ul\\_csa\\_listing.html](http://www.nspa.com/ul_csa_listing.html) for a complete list of UL/CSA Listings. See page 65 for material specifications. USA Patent Products

**Mini Assortments**



**ASST-ELF-9000**  
4 Items • 65 Pieces

**Starter Assortments**



**ASST-ELF-5000**  
12 Items • 70 Pieces

**Maintenance Assortments**



**ASST-ELF-1000**  
20 Items • 320 Pieces

**Suggested Tool:**

**T-MTC-20**  
Self-Igniting  
Butane Torch

See page 49 for more heat tools.



# Sealed Multiple Wire Connectors

## In-line Butt Connectors - Join Two Wires to One Wire ...



Tubing has an active adhesive that seals between multiple wires

Color dash on tubing indicates the wire gauge for the connector



Color stripes on the connector indicate which crimp die to use and to provide alignment for tool to crimp center of barrel



HL57-20



HL57-16



HL57-14



HL57-10

### BUTT CONNECTORS

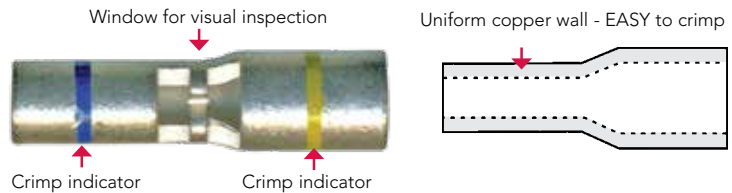
Part #	Wire Gauge	Tubing Color	Color Stripe On Connector	Wire	Crimp Die (Insulated)
HL57-20	24-22 AWG	Clear / White Dashes	Side 1: White	One 24-22 AWG	White (24-22 AWG)
			Side 2: Red	Two 24-22 AWG	Red (22-18 AWG)
HL57-16	22-18 AWG	Clear / Red Dashes	Side 1: Red	One 22-18 AWG	Red (22-18 AWG)
			Side 2: Blue	Two 22-18 AWG	Blue (16-14 AWG)
HL57-14	16-14 AWG	Clear / Blue Dashes	Side 1: Blue	One 16-14 AWG	Blue (16-14 AWG)
			Side 2: Yellow	Two 16-14 AWG	Yellow (12-10 AWG)
HL57-10	12-10 AWG	Clear / Yellow Dashes	Side 1: Yellow	One 12-10 AWG	Yellow (12-10 AWG)
			Side 2: Red	Two 12-10 AWG	Red (8 AWG)

US Patent Protected

## The In-line Butt Connector Components

### NSPA version

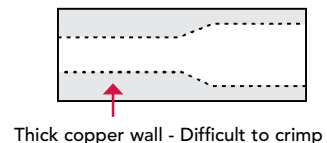
The barrel has two stripes - one on each end - to indicate where to crimp the connector. Plus, the stripe matches the crimp die that needs to be used. **easy to crimp & provides strong crimp termination!**



The inside AND the outside diameter of the connector is varied which means that both sides will make a sound mechanical crimp.

### Other's Step Down Connector

The outside diameter of the butt connector is the same on both ends and only the inside diameter is adjusted for the different wire gauge. This means that the side for the smaller wire has a much thicker wall than normal and is extremely difficult to crimp. **ALMOST IMPOSSIBLE TO CRIMP PROPERLY & WIRE CAN EASILY PULL OUT!!**



Thick copper wall - Difficult to crimp

### ADDITIONAL FEATURES OF THE NSPA STEP DOWN BUTT CONNECTOR

- Seamless butt connectors provide superior crimp performance
- Window in butt connectors allows for visual inspection to ensure all wires are fully inserted
- Butt connectors have crimp indicators where the installation tool should be positioned to crimp connector
- Wire-stop in butt connector prevents over-insertion of the wires

### THE HEAT SHRINK TUBING

- High adhesive-flow polyolefin tubing to seal multiple wires
- Color-coded dash on tubing to indicate the wire gauge for the connector
- Clear tubing to allow for visual inspection
- 4 to 1 Shrink Ratio



# Sealed Multiple Wire Connectors

## Closed-End Connectors - Join Two to Four Wires ...

Closed-end connectors are crimped here.

In environments where corrosion and/or vibration are a problem, the closed-end connector can be used to replace wire nuts and other similar connectors.

Tubing has an active adhesive that seals multiple wires and eliminates wire pull-out



CLOSED END CONNECTORS		
Part #	Connector Wire Range	Tubing Color
HL8-22-14	22-14 AWG	Clear / Blue Dashes
HL8-18-10	18-10 AWG	Clear / Yellow Dashes

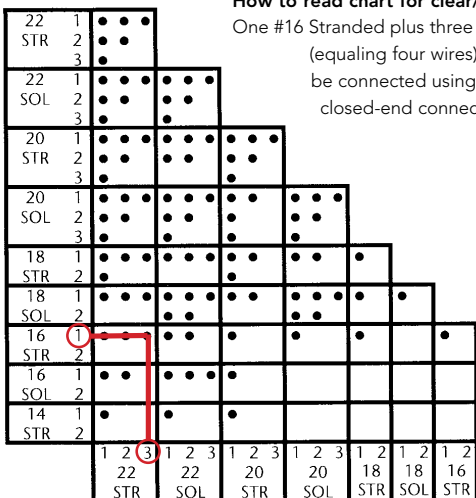
US Patent Protected

### UP TO FOUR WIRES

Part Description: Connector  
 Tubing Color: Clear / Blue Dashes  
 Wire Range: 22-14 AWG



**How to read chart for clear/blue dashes:**  
 One #16 Stranded plus three #22 Stranded (equaling four wires) can be connected using this closed-end connector

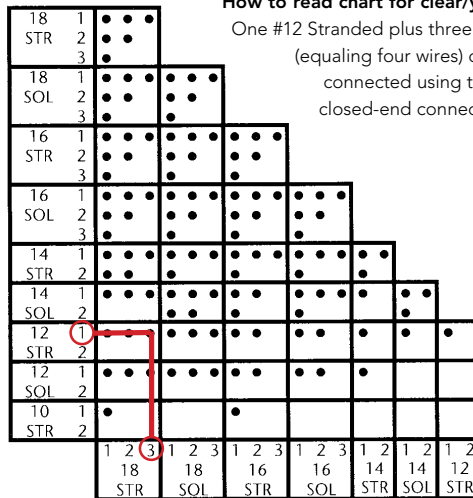


### UP TO FOUR WIRES

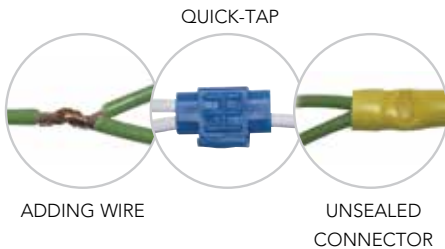
Part Description: Connector  
 Tubing Color: Clear / Yellow Dashes  
 Wire Range: 18-10 AWG



**How to read chart for clear/yellow dashes:**  
 One #12 Stranded plus three #18 Stranded (equaling four wires) can be connected using this closed-end connector



### EXISTING PROBLEMS WITH TRADITIONAL IN-LINE CONNECTORS



ADDING WIRE

UNSEALED CONNECTOR

### EXISTING PROBLEMS WITH TRADITIONAL CLOSED-END CONNECTORS



WIRE NUT

END-CAP

### Mini Assortments



**ASST-HL-9000**  
 6 Items • 28 Pieces

### Starter Assortments



**ASST-HL-5000**  
 6 Items • 55 Pieces

### Suggested UL Tool:



**T-R-50**  
 Ratcheting Crimp Tool  
 See page 56 for details.



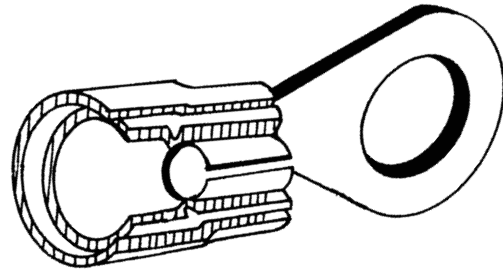
Please visit [www.nspa.com/ul\\_csa\\_listing.html](http://www.nspa.com/ul_csa_listing.html) for a complete list of UL parts. See page 65 for material specifications.

# Wire Terminals - Nylon Insulated

## THREE PIECE FUNNEL ENTRY DESIGN - RINGS & SPADES

Color coded insulation for easy wire size identification.

- Constructed of pure annealed copper in one burr-free piece with electro-tin plating for maximum corrosion resistance.
- The metal sleeve has a built-in funnel entry design to eliminate wire strand hang-up and position the wire correctly.
- Nylon color coded insulation for easy wire identification.



### BUTT CONNECTORS

Part #	Wire Gauge	Color	Seam
WTN-5-16	22-18 AWG	Red	Seamless
WTN-5-14	16-14 AWG	Blue	Seamless
WTN-5-10	12-10 AWG	Yellow	Seamless
WTN-5-8	8 AWG	Pink	Seamless

### DOUBLE CRIMP BUTT CONNECTORS

Part #	Wire Gauge	Color	Seam
WTN-58-16	22-18 AWG	Red	Butted & Funnel Sleeve
WTN-58-14	16-14 AWG	Blue	Butted & Funnel Sleeve
WTN-58-10	12-10 AWG	Yellow	Butted & Funnel Sleeve

### SILICONE-FILLED BUTT CONNECTORS

Part #	Wire Gauge	Color	Seam
WTN-57-16	22-18 AWG	Red	Butted & Funnel Sleeve
WTN-57-14	16-14 AWG	Blue	Butted & Funnel Sleeve
WTN-57-10	12-10 AWG	Yellow	Butted & Funnel Sleeve

### 3M NYLON BUTT CONNECTORS

Part #	Wire Gauge	Color	Seam
WTN-3M-5-16	22-18 AWG	Red	Seamless
WTN-3M-5-14	16-14 AWG	Blue	Seamless
WTN-3M-5-10	12-10 AWG	Yellow	Seamless

### THREE-WAY BUTT CONNECTORS

Part #	Wire Gauge	Color	Seam
WTN-53-16	22-18 AWG	Red	Butted & Funnel Sleeve
WTN-53-14	16-14 AWG	Blue	Butted & Funnel Sleeve
WTN-53-10	12-10 AWG	Yellow	Butted & Funnel Sleeve

### FOUR-WAY BUTT CONNECTORS

Part #	Wire Gauge	Color	Seam
WTN-54-16	22-18 AWG	Red	Butted & Funnel Sleeve
WTN-54-14	16-14 AWG	Blue	Butted & Funnel Sleeve
WTN-54-10	12-10 AWG	Yellow	Butted & Funnel Sleeve

### RING TERMINALS

Part #	Wire Gauge	Color	Description	Seam
WTN-116-06	22-18 AWG	Red	#6 Stud	Butted & Funnel Sleeve
WTN-116-08	22-18 AWG	Red	#8 Stud	Butted & Funnel Sleeve
WTN-116-10	22-18 AWG	Red	#10 Stud	Butted & Funnel Sleeve
WTN-116-14	22-18 AWG	Red	1/4" Stud	Butted & Funnel Sleeve
WTN-116-38	22-18 AWG	Red	3/8" Stud	Butted & Funnel Sleeve
WTN-114-04	16-14 AWG	Blue	#4 Stud	Butted & Funnel Sleeve
WTN-114-06	16-14 AWG	Blue	#6 Stud	Butted & Funnel Sleeve
WTN-114-08	16-14 AWG	Blue	#8 Stud	Butted & Funnel Sleeve
WTN-114-10	16-14 AWG	Blue	#10 Stud	Butted & Funnel Sleeve
WTN-114-14	16-14 AWG	Blue	1/4" Stud	Butted & Funnel Sleeve
WTN-114-516	16-14 AWG	Blue	5/16" Stud	Butted & Funnel Sleeve
WTN-114-38	16-14 AWG	Blue	3/8" Stud	Butted & Funnel Sleeve
WTN-110-08	12-10 AWG	Yellow	#8 Stud	Butted & Funnel Sleeve
WTN-110-10	12-10 AWG	Yellow	#10 Stud	Butted & Funnel Sleeve
WTN-110-14	12-10 AWG	Yellow	1/4" Stud	Butted & Funnel Sleeve
WTN-110-516	12-10 AWG	Yellow	5/16" Stud	Butted & Funnel Sleeve
WTN-110-38	12-10 AWG	Yellow	3/8" Stud	Butted & Funnel Sleeve
WTN-110-12	12-10 AWG	Yellow	1/2" Stud	Butted & Funnel Sleeve

# Wire Terminals - Nylon Insulated

SPADE TERMINALS				
Part #	Wire Gauge	Color	Description	Seam
WTN-216-06	22-18 AWG	Red	#6 Stud	Butted & Funnel Sleeve
WTN-216-08	22-18 AWG	Red	#8 Stud	Butted & Funnel Sleeve
WTN-216-10	22-18 AWG	Red	#10 Stud	Butted & Funnel Sleeve
WTN-214-06	16-14 AWG	Blue	#6 Stud	Butted & Funnel Sleeve
WTN-214-08	16-14 AWG	Blue	#8 Stud	Butted & Funnel Sleeve
WTN-214-10	16-14 AWG	Blue	#10 Stud	Butted & Funnel Sleeve
WTN-210-06	12-10 AWG	Yellow	#6 Stud	Butted & Funnel Sleeve
WTN-210-08	12-10 AWG	Yellow	#8 Stud	Butted & Funnel Sleeve
WTN-210-10	12-10 AWG	Yellow	#10 Stud	Butted & Funnel Sleeve



FLANGED SPADE TERMINALS				
Part #	Wire Gauge	Color	Description	Seam
WTN-316-06	22-18 AWG	Red	#6 Stud	Butted & Funnel Sleeve
WTN-316-08	22-18 AWG	Red	#8 Stud	Butted & Funnel Sleeve
WTN-316-10	22-18 AWG	Red	#10 Stud	Butted & Funnel Sleeve
WTN-314-06	16-14 AWG	Blue	#6 Stud	Butted & Funnel Sleeve
WTN-314-08	16-14 AWG	Blue	#8 Stud	Butted & Funnel Sleeve
WTN-314-10	16-14 AWG	Blue	#10 Stud	Butted & Funnel Sleeve
WTN-310-06	12-10 AWG	Yellow	#6 Stud	Butted & Funnel Sleeve
WTN-310-08	12-10 AWG	Yellow	#8 Stud	Butted & Funnel Sleeve
WTN-310-10	12-10 AWG	Yellow	#10 Stud	Butted & Funnel Sleeve



SPRING SPADE TERMINALS				
Part #	Wire Gauge	Color	Description	Seam
WTN-316S-06	22-18 AWG	Red	#6 Stud	Butted & Funnel Sleeve
WTN-316S-08	22-18 AWG	Red	#8 Stud	Butted & Funnel Sleeve
WTN-316S-10	22-18 AWG	Red	#10 Stud	Butted & Funnel Sleeve
WTN-314S-06	16-14 AWG	Blue	#6 Stud	Butted & Funnel Sleeve
WTN-314S-08	16-14 AWG	Blue	#8 Stud	Butted & Funnel Sleeve
WTN-314S-10	16-14 AWG	Blue	#10 Stud	Butted & Funnel Sleeve
WTN-310S-06	12-10 AWG	Yellow	#6 Stud	Butted & Funnel Sleeve
WTN-310S-08	12-10 AWG	Yellow	#8 Stud	Butted & Funnel Sleeve
WTN-310S-10	12-10 AWG	Yellow	#10 Stud	Butted & Funnel Sleeve



HOOK TERMINALS				
Part #	Wire Gauge	Color	Description	Seam
WTN-416-06	22-18 AWG	Red	#6 Stud	Butted & Funnel Sleeve
WTN-416-10	22-18 AWG	Red	#10 Stud	Butted & Funnel Sleeve
WTN-414-06	16-14 AWG	Blue	#6 Stud	Butted & Funnel Sleeve
WTN-414-10	16-14 AWG	Blue	#10 Stud	Butted & Funnel Sleeve
WTN-410-10	12-10 AWG	Yellow	#10 Stud	Butted & Funnel Sleeve



## Mini Assortments



**ASST-WTN-9000**  
3 Items • 90 Pieces

## Starter Assortments



**ASST-WTN-5000**  
12 Items • 200 Pieces



**ASST-WTN-5000-R**  
12 Items • 190 Pieces  
22-18 AWG Only



**ASST-WTN-5000-B**  
12 Items • 195 Pieces  
16-14 AWG Only



**ASST-WTN-5000-Y**  
12 Items • 125 Pieces  
12-10 AWG Only

# Wire Terminals - Nylon Insulated



FEMALE SLIP-ONS				
Part #	Wire Gauge	Color	Description	Seam
WTN-6-18-187F	22-18 AWG	Red	.187" Tab	Butted & Funnel Sleeve
WTN-6-18-250F	22-18 AWG	Red	.250" Tab	Butted & Funnel Sleeve
WTN-6-14-187F	16-14 AWG	Blue	.187" Tab	Butted & Funnel Sleeve
WTN-6-14-250F	16-14 AWG	Blue	.250" Tab	Butted & Funnel Sleeve
WTN-6-10-250F	12-10 AWG	Yellow	.250" Tab	Butted & Funnel Sleeve



MALE SLIP-ONS				
Part #	Wire Gauge	Color	Description	Seam
WTN-6-18-187M	22-18 AWG	Red	.187" Tab	Butted & Funnel Sleeve
WTN-6-18-250M	22-18 AWG	Red	.250" Tab	Butted & Funnel Sleeve
WTN-6-14-250M	16-14 AWG	Blue	.250" Tab	Butted & Funnel Sleeve
WTN-6-14-187M	16-14 AWG	Blue	.187" Tab	Butted & Funnel Sleeve
WTN-6-10-250M	12-10 AWG	Yellow	.250" Tab	Butted & Funnel Sleeve



FLAG STYLE FULLY INSULATED SLIP-ON CONNECTORS				
Part #	Wire Gauge	Color	Description	Note
WTN-68-18-250F	22-18 AWG	Red	.250" Tab	Special Crimp Die Required - T-DIE-3F. See page 57.
WTN-68-14-250F	16-14 AWG	Blue	.250" Tab	Special Crimp Die Required - T-DIE-3F. See page 57.



PIGGY BACK				
Part #	Wire Gauge	Color	Description	Seam
WTS-9-116	22-18 AWG	Red	.250" Tab	Butted & Funnel Sleeve
WTS-9-114	16-14 AWG	Blue	.250" Tab	Butted & Funnel Sleeve

2 HUMPS - WTN66 SERIES



FULLY INSULATED NYLON SLIP-ON CONNECTORS					
Part #	Wire Gauge	Color	Description	Type	Seam
WTN-66-18-250M	22-18 AWG	Red	Male .250" Tab	2 Hump	Butted
WTN-66-18-250F	22-18 AWG	Red	Female .250" Tab	2 Hump	Butted
WTN-66-14-250M	16-14 AWG	Blue	Male .250" Tab	2 Hump	Butted
WTN-66-14-250F	16-14 AWG	Blue	Female .250" Tab	2 Hump	Butted
WTN-66-10-250M	12-10 AWG	Yellow	Male .250" Tab	2 Hump	Butted
WTN-66-10-250F	12-10 AWG	Yellow	Female .250" Tab	2 Hump	Butted

3M 2 HUMPS - WTN67 SERIES



3M FULLY INSULATED NYLON SLIP-ON CONNECTORS					
Part #	Wire Gauge	Color	Description	Type	Seam
WTN-67-18-250M	22-18 AWG	Red	Male .250" Tab	3M 2 Hump	Butted
WTN-67-18-250F	22-18 AWG	Red	Female .250" Tab	3M 2 Hump	Butted
WTN-67-14-250M	16-14 AWG	Blue	Male .250" Tab	3M 2 Hump	Butted
WTN-67-14-250F	16-14 AWG	Blue	Female .250" Tab	3M 2 Hump	Butted
WTN-67-10-250M	12-10 AWG	Yellow	Male .250" Tab	3M 2 Hump	Butted
WTN-67-10-250F	12-10 AWG	Yellow	Female .250" Tab	3M 2 Hump	Butted

MOLEX 1 HUMPS - WTN60 SERIES

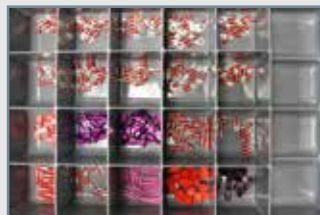


MOLEX-ETC FULLY INSULATED NYLON SLIP-ON CONNECTORS					
Part #	Wire Gauge	Color	Description	Type	Seam
WTN-60-18-250M	22-18 AWG	Red	Male .250" Tab	Molex 1 Hump	Butted
WTN-60-18-250F	22-18 AWG	Red	Female .250" Tab	Molex 1 Hump	Butted
WTN-60-14-250M	16-14 AWG	Blue	Male .250" Tab	Molex 1 Hump	Butted
WTN-60-14-250F	16-14 AWG	Blue	Female .250" Tab	Molex 1 Hump	Butted
WTN-60-10-250M	12-10 AWG	Yellow	Male .250" Tab	Molex 1 Hump	Butted
WTN-60-10-250F	12-10 AWG	Yellow	Female .250" Tab	Molex 1 Hump	Butted

Maintenance Assortments



**ASST-WTN-1000**  
21 Items • 435 Pieces



**ASST-WTN-1000-R**  
20 Items • 300 Pieces  
22-18 AWG Only

T-R-50 Tool Dies:



**T-DIE-4C**  
Insulated Terminals - Double Crimp  
See page 57 for details.



**T-DIE-3F**  
Insulated Flag Terminals  
See page 57 for details.



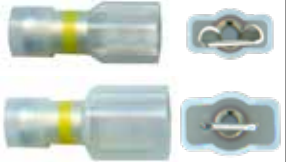
# Wire Terminals - Nylon Insulated

## 2 HUMP - WTN61 SERIES

FULLY INSULATED NYLON SLIP-ON CONNECTORS					
Part #	Wire Gauge	Color	Description	Type	Seam
WTN-61-18-187M	22-18 AWG	Red	Male .187" Tab	2 Hump	Butted
WTN-61-18-187F	22-18 AWG	Red	Female .187" Tab	2 Hump	Butted
WTN-61-18-250M	22-18 AWG	Red	Male .250" Tab	2 Hump	Butted
WTN-61-18-250F	22-18 AWG	Red	Female .250" Tab	2 Hump	Butted
WTN-61-14-187M	16-14 AWG	Blue	Male .187" Tab	2 Hump	Butted
WTN-61-14-187F	16-14 AWG	Blue	Female .187" Tab	2 Hump	Butted
WTN-61-14-250M	16-14 AWG	Blue	Male .250" Tab	2 Hump	Butted
WTN-61-14-250F	16-14 AWG	Blue	Female .250" Tab	2 Hump	Butted
WTN-61-10-250M	12-10 AWG	Yellow	Male .250" Tab	2 Hump	Butted
WTN-61-10-250F	12-10 AWG	Yellow	Female .250" Tab	2 Hump	Butted



FULLY-INSULATED NYLON SLIP-ON CONNECTORS					
Part #	Wire Gauge	Color	Description	Type	Seam
WTN-69-18-250M	22-18 AWG	Red	Male .250" Tab	2 Hump	Butted & Funnel Sleeve
WTN-69-18-250F	22-18 AWG	Red	Female .250" Tab	2 Hump	Butted & Funnel Sleeve
WTN-69-14-250M	16-14 AWG	Blue	Male .250" Tab	2 Hump	Butted & Funnel Sleeve
WTN-69-14-250F	16-14 AWG	Blue	Female .250" Tab	2 Hump	Butted & Funnel Sleeve
WTN-69-10-250M	12-10 AWG	Yellow	Male .250" Tab	2 Hump	Butted & Funnel Sleeve
WTN-69-10-250F	12-10 AWG	Yellow	Female .250" Tab	2 Hump	Butted & Funnel Sleeve



BULLET PLUGS				
Part #	Wire Gauge	Color	Description	Seam
WTN-7-18-15M	22-18 AWG	Red	.157" Plug	Butted & Funnel Sleeve
WTN-7-18-18M	22-18 AWG	Red	.180" Plug	Butted & Funnel Sleeve
WTN-7-14-15M	16-14 AWG	Blue	.157" Plug	Butted & Funnel Sleeve
WTN-7-14-18M	16-14 AWG	Blue	.180" Plug	Butted & Funnel Sleeve



BULLET PLUG RECEPTACLES				
Part #	Wire Gauge	Color	Description	Seam
WTN-7-18-15F	22-18 AWG	Red	.157" Receptacle	Butted & Funnel Sleeve
WTN-7-18-18F	22-18 AWG	Red	.180" Receptacle	Butted & Funnel Sleeve
WTN-7-14-15F	16-14 AWG	Blue	.157" Receptacle	Butted & Funnel Sleeve
WTN-7-14-18F	16-14 AWG	Blue	.180" Receptacle	Butted & Funnel Sleeve
WTN-7-14-195F	16-14 AWG	Blue	.195" Receptacle	Butted & Funnel Sleeve



CLOSED-END CONNECTORS				
Part #	Wire Gauge	Color	Description	Seam
WTN-8-22-14	22-14 AWG	Clear		Seamless
WTN-8-18-10	18-10 AWG	Clear		Seamless



### Maintenance Assortments



**ASST-WTN-1000-B**  
20 Items • 300 Pieces  
16-14 AWG Only



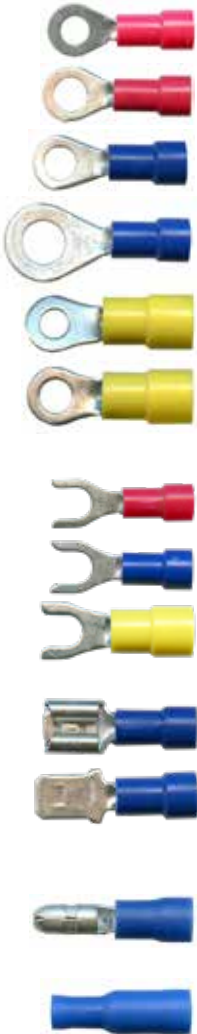
**ASST-WTN-1000-Y**  
20 Items • 275 Pieces  
12-10 AWG Only

### Suggested Tool:



**T-R-25**  
Crimping Tool - Double Crimp  
See page 58 for details.

# Wire Terminals - Vinyl/PVC Insulated



## BUTT CONNECTORS

Part #	Wire Gauge	Color	Seam
WTV-5-16	22-18 AWG	Red	Butted
WTV-5-14	16-14 AWG	Blue	Butted
WTV-5-10	12-10 AWG	Yellow	Butted

## STEP DOWN BUTT CONNECTORS

Part #	Wire Gauge	Color	Seam
WTV-56-20	26-24 AWG to 22-18 AWG	Red	Seamless with Window
WTV-56-16	22-18 AWG to 16-14 AWG	Blue	Seamless with Window
WTV-56-14	16-14 AWG to 12-10 AWG	Yellow	Seamless with Window
WTV-56-10	12-10 AWG to 8 AWG	Pink	Seamless with Window

## RINGS

Part #	Wire Gauge	Color	Description	Seam
WTV-116-06	22-18 AWG	Red	#6 Stud	Butted
WTV-116-08	22-18 AWG	Red	#8 Stud	Butted
WTV-116-10	22-18 AWG	Red	#10 Stud	Butted
WTV-116-14	22-18 AWG	Red	1/4" Stud	Butted
WTV-114-06	16-14 AWG	Blue	#6 Stud	Butted
WTV-114-08	16-14 AWG	Blue	#8 Stud	Butted
WTV-114-10	16-14 AWG	Blue	#10 Stud	Butted
WTV-114-14	16-14 AWG	Blue	1/4" Stud	Butted
WTV-114-516	16-14 AWG	Blue	5/16" Stud	Butted
WTV-114-38	16-14 AWG	Blue	3/8" Stud	Butted
WTV-110-08	12-10 AWG	Yellow	#8 Stud	Butted
WTV-110-10	12-10 AWG	Yellow	#10 Stud	Butted
WTV-110-12	12-10 AWG	Yellow	1/2" Stud	Butted
WTV-110-14	12-10 AWG	Yellow	1/4" Stud	Butted
WTV-110-516	12-10 AWG	Yellow	5/16" Stud	Butted
WTV-110-38	12-10 AWG	Yellow	3/8" Stud	Butted

## SPADES

Part #	Wire Gauge	Color	Description	Seam
WTV-216-10	22-18 AWG	Red	#10 Stud	Butted
WTV-214-10	16-14 AWG	Blue	#10 Stud	Butted
WTV-210-10	12-10 AWG	Yellow	#10 Stud	Butted

## SLIP ON CONNECTORS

Part #	Wire Gauge	Color	Tab Width	Seam
WTV-6-18-250F	22-18 AWG	Red	Female .250" Tab	Butted
WTV-6-18-250M	22-18 AWG	Red	Male .250" Tab	Butted
WTV-6-14-250F	16-14 AWG	Blue	Female .250" Tab	Butted
WTV-6-14-250M	16-14 AWG	Blue	Male .250" Tab	Butted
WTV-6-10-250F	12-10 AWG	Yellow	Female .250" Tab	Butted
WTV-6-10-250M	12-10 AWG	Yellow	Male .250" Tab	Butted

## BULLET PLUGS

Part #	Wire Gauge	Color	Bullet Diameter	Seam
WTV-7-14-15M	16-14 AWG	Blue	.157" Plug	Butted

## BULLET RECEPTACLES

Part #	Wire Gauge	Color	Bullet Diameter	Seam
WTV-7-14-15F	16-14 AWG	Blue	.157" Receptacle	Butted

Suggested Tool:



T-R-15

Stripping & Crimping Tool  
See page 53 for details.

# Wire Terminals - High Temperature Non-Insulated

- Nickel-Plated Steel
- Rated for temperatures up to 482°C (900°F)

## BUTT CONNECTORS

Part #	Wire Gauge
WTHT-5-16	22-18 AWG
WTHT-5-14	16-14 AWG
WTHT-5-10	12-10 AWG

## RINGS

Part #	Wire Gauge	Description
WTHT-116-06	22-18 AWG	#6 Stud
WTHT-116-08	22-18 AWG	#8 Stud
WTHT-116-10	22-18 AWG	#10 Stud
WTHT-116-14	22-18 AWG	1/4" Stud
WTHT-116-516	22-18 AWG	5/16" Stud
WTHT-116-38	22-18 AWG	3/8" Stud
WTHT-114-06	16-14 AWG	#6 Stud
WTHT-114-08	16-14 AWG	#8 Stud
WTHT-114-10	16-14 AWG	#10 Stud
WTHT-114-14	16-14 AWG	1/4" Stud
WTHT-114-516	16-14 AWG	5/16" Stud
WTHT-114-38	16-14 AWG	3/8" Stud
WTHT-110-08	12-10 AWG	#8 Stud
WTHT-110-10	12-10 AWG	#10 Stud
WTHT-110-14	12-10 AWG	1/4" Stud
WTHT-110-516	12-10 AWG	5/16" Stud
WTHT-110-38	12-10 AWG	3/8" Stud
WTHT-108-14	8 AWG	1/4" Stud

## SPADES

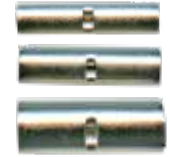
Part #	Wire Gauge	Description
WTHT-216-10	22-18 AWG	#10 Stud
WTHT-214-10	16-14 AWG	#10 Stud
WTHT-210-10	12-10 AWG	#10 Stud

## SLIP-ON CONNECTORS

Part #	Wire Gauge	Description
WTHT-6-18-250F	22-18 AWG	Female .250" Tab
WTHT-6-18-250M	22-18 AWG	Male .250" Tab
WTHT-6-14-250F	16-14 AWG	Female .250" Tab
WTHT-6-14-250M	16-14 AWG	Male .250" Tab
WTHT-6-10-250F	12-10 AWG	Female .250" Tab
WTHT-6-10-250M	12-10 AWG	Male .250" Tab

## FLAGS

Part #	Wire Gauge	Description
WTHT-68-14-250F	16-14 AWG	Female .250" Tab
WTHT-68-10-250F	12-10 AWG	Female .250" Tab



## Starter Assortments



### ASST-WTHT-5000

12 Items • 135 Pieces

# Wire Terminals - Non-Insulated Butt Connectors



NON INSULATED BUTT CONNECTORS				
Part #	Wire Gauge	Description	Type	Seam
K55-20-BP	24-22 AWG	Non-Insulated	Window with Wire Stop	Seamless
K55-16-BP	22-18 AWG	Non-Insulated	Standard	Seamless
K55-14-BP	16-14 AWG	Non-Insulated	Standard	Seamless
K55-10-BP	12-10 AWG	Non-Insulated	Standard	Seamless

Part #	Wire Gauge	Description	Type	Seam
WTU-5-08	8 AWG	Non-Insulated	Standard	Seamless

Part #	Wire Gauge	Stripe	Description	Seam
ML5-16-R-BP	22-18 AWG	Red	Window with Wire Stop	Seamless
ML5-14-R-BP	16-14 AWG	Blue	Window with Wire Stop	Seamless
ML5-10-R-BP	12-10 AWG	Yellow	Window with Wire Stop	Seamless

Part #	Wire Gauge	Stripe	Description	Seam
ML56-20-BP	26-24 AWG to 22-18 AWG	White/Red	Tapered Step-down	Seamless
ML56-16-BP	22-18 AWG to 16-14 AWG	Red/Blue	Tapered Step-down	Seamless
ML56-14-BP	16-14 AWG to 12-10 AWG	Blue/Yellow	Tapered Step-down	Seamless
ML56-10-BP	12-10 AWG to 8 AWG	Yellow/Red	Tapered Step-down	Seamless

## Non-Insulated Long Neck Ring & Spade Terminals

- Color stripes indicate which wire size to use • Stripes provide guide where to position crimp nest
- Brazed seam barrels - Seam will not open • Electro Tin-Plated for corrosion resistance



LONG-NECK RING TERMINALS				
Part #	Wire Gauge	Description	Stripe Color	Seam
WTU-116-06LC-PK	22-18 AWG	#6 Stud	Red	Brazed
WTU-116-08LC-PK	22-18 AWG	#8 Stud	Red	Brazed
WTU-116-10LC-PK	22-18 AWG	#10 Stud	Red	Brazed
WTU-116-14LC-PK	22-18 AWG	1/4" Stud	Red	Brazed
WTU-116-516LC-PK	22-18 AWG	5/16" Stud	Red	Brazed
WTU-116-38LC-PK	22-18 AWG	3/8" Stud	Red	Brazed
WTU-114-06LC-PK	16-14 AWG	#6 Stud	Blue	Brazed
WTU-114-08LC-PK	16-14 AWG	#8 Stud	Blue	Brazed
WTU-114-10LC-PK	16-14 AWG	#10 Stud	Blue	Brazed
WTU-114-14LC-PK	16-14 AWG	1/4" Stud	Blue	Brazed
WTU-114-516LC-PK	16-14 AWG	5/16" Stud	Blue	Brazed
WTU-114-38LC-PK	16-14 AWG	3/8" Stud	Blue	Brazed
WTU-110-06LC-PK	12-10 AWG	#6 Stud	Yellow	Brazed
WTU-110-08LC-PK	12-10 AWG	#8 Stud	Yellow	Brazed
WTU-110-10LC-PK	12-10 AWG	#10 Stud	Yellow	Brazed
WTU-110-14LC-PK	12-10 AWG	1/4" Stud	Yellow	Brazed
WTU-110-516LC-PK	12-10 AWG	5/16" Stud	Yellow	Brazed
WTU-110-38LC-PK	12-10 AWG	3/8" Stud	Yellow	Brazed
WTU-110-38WLC-PK	12-10 AWG	3/8" Stud Wide	Yellow	Brazed
WTU-110-12LC-PK	12-10 AWG	1/2" Stud	Yellow	Brazed

LONG-NECK SPADE TERMINALS				
Part #	Wire Gauge	Description		
WTU-216-06LC-PK	22-18 AWG	#6 Stud	Red	Brazed
WTU-216-10LC-PK	22-18 AWG	#8-10 Stud	Red	Brazed
WTU-214-06LC-PK	16-14 AWG	#6 Stud	Blue	Brazed
WTU-214-10LC-PK	16-14 AWG	#8-10 Stud	Blue	Brazed
WTU-210-10LC-PK	12-10 AWG	#8-10 Stud	Yellow	Brazed
WTU-210-14LC-PK	12-10 AWG	#1/4" Stud	Yellow	Brazed

For other sizes & styles of Non-Insulated Terminals, please contact [orders@nspa.com](mailto:orders@nspa.com). Only available in bulk quantities.

8 AWG - 2 AWG Non-Insulated Terminals are located on page 45.

# Wire Nuts & Specialty Connectors

WIRE NUTS					
Part #	Wire Gauge	Wire Combination Minimum	Approved Maximum	Voltage	Color
WN-1	16-22	1 #20 with 1 #22	2 #16	300	Gray
WN-2	16-22	3 #22	3 #16	300	Blue
WN-3	14-22	3 #20	4 #16 with 1#20	600	Orange
WN-4	10-18	1 #14 with 1 #18	4 #14	600	Yellow
WN-5	10-18	1 #12 with 2 #18	2 #10 with 2#12	600	Red

WINGED WIRE NUTS					
Part #	Wire Range	Wire Combination Minimum	Approved Maximum	Voltage	Color
WN-6	10-18	2 #18	3 #12	600	Yellow
WN-7	10-18	2 #14	5 #12	600	Red
WN-8	8-18	2 #12	3 #10 with 1 #8	600	Green
WN-9	6-14	3 #12	1 #6 with 2 #8	600	Blue

For high temperature applications over 105°C

PORCELAIN WIRE NUTS		
Part #	Description	Voltage
WNHT-1	Max 1 #18 with 2 #16	300
WNHT-2	Max 2 #16 with 2 #18	300
WNHT-3	Max 4, #16	300

## INSTANT AUTO-ELECTRIC CONNECTORS

- Use on stranded or solid wire for inline, pigtail and tap splices
- No special tools required use only a standard pair of pliers

INSTANT TAP CONNECTOR				
Part #	Wire Range	Description	Tap Run	Color
WTS-90-18	22-18 AWG	General Purpose	18-22	Red
WTS-90-16	16-14 AWG	General Purpose	14-18	White
WTS-90-14	16-14 AWG	General Purpose	14-18	Blue
WTS-90-10	12-10 AWG	Heavy Duty	10-12	Yellow

FEMALE T-TAP CONNECTORS			
Part #	Wire Range	Description	Color
WTS-90-51	18-22 AWG	.250" Tab	Red
WTS-90-52	16-14 AWG	.250" Tab	Blue
WTS-90-53	12-10 AWG	.250" Tab	Yellow

Use with male .250" wire terminals.

FUSE TAPS		
Part #	Wire Range	Description
WTS-9-0003	Blade Fuse Tap	Male .250" Tab
WTS-9-0004	Minifuse Tap, Male .187"	Male .187" Tab

## SELF-STRIPPING INSULATION DISPLACEMENT CONNECTORS

- Copper wire pigtail connections of 2 or 3 wires
- Protects solid or stranded contact against corrosion in damp conditions • Gel filled

DISPLACEMENT CONNECTOR		
Part #	Wire Range	Color
WTS-90-75	22-14 AWG	Blue/Clear



# Heat Shrink Tubing Product Offering

## HST 100 SERIES

### THIN WALL HEAT SHRINK TUBING

**Shrink Ratio:** 2 to 1

A flexible, general purpose tubing for use where an adhesive seal is not needed. Conforms well to irregular shapes.

- Insulation and strain relief for wire terminals
- Color-coding of electrical harnesses
- Wire bundling

**Stocked Colors:** Black, Clear, Red, Blue, Green, White & Yellow

**Standard Cut Lengths:** Bulk, 100', 4', 12", 6"

**Pre-Shrink ID:** 3/64", 1/16", 3/32", 1/8", 3/16", 1/4", 3/8", 1/2", 3/4", 1", 1 1/2", 2", 3", 4"

## HST 200 SERIES

### FLEXIBLE ADHESIVE-LINED

**Shrink Ratio:** 3 to 1

A flame-retardant tubing (except clear) with an internal layer of thermo-plastic adhesive which provides a barrier against contaminants. Still highly flexible for conforming to irregular shapes.

- Environmental protection for electronic components
- Protection of automobile, marine and truck wire splices and harness breakouts
- Adhesive-lining provides a barrier against contaminants

**Stocked Colors:** Black, Clear & Red  
- Blue, Green, White & Yellow in some ID's  
**Standard Cut Lengths:** 48", 12", 6"  
**Pre-Shrink ID:** 1/8", 3/16", 1/4", 3/8", 1/2", 3/4", 1"

## HST 300 SERIES

### TINTED, SEMI-RIGID ADHESIVE-LINED

**Shrink Ratio:** Exceeds 3 to 1

Our tinted, semi-rigid adhesive-lined heat shrink tubing is the clear choice for insulating and color-coding small gauge wire connections. This tubing offers several distinct advantages:

- Tubing is tinted for color-coding, but is also translucent to allow the installer to view the underlying material
- Wire gauge imprint for ease of wire identification both before and after installation
- Adhesive-lining provides a barrier against contaminants

**Stocked Colors:** Clear, Red, Blue & Yellow  
**Standard Cut Lengths:** 48", 12", 6"  
**Pre-Shrink ID:** 0.125", 0.245", 0.360"

## 390 SERIES

### CRYSTAL CLEAR™ ADHESIVE-LINED HEAT SHRINK TUBING

**Shrink Ratio:** Exceeds 3 to 1

Our Crystal Clear™ tubing is a semi-rigid, adhesive-lined heat shrink tubing designed for smaller wire gauge sizes.

- Crystal Clear™ tubing provides optimal clarity for visual inspection
- Wire gauge imprint simplifies wire size identification
- Adhesive-lining provides a barrier against contaminants

**Stocked Colors:** Crystal Clear™

**Standard Cut Lengths:** 6"

**Pre-Shrink ID:** 0.176", 0.250", 0.365"

## 400 SERIES

### SEMI-RIGID ADHESIVE-LINED

**Shrink Ratio:** Exceeds 2 1/2 to 1

A semi-rigid tubing with a co-extruded integral adhesive lining. Provides a tough protective and insulating barrier.

- Easy removability
- Electrical wire splices, breakouts, connections and solder joints
- End-sealing of electrical cables and rigid tubings
- Adhesive-lining provides a barrier against contaminants

**Stocked Colors:** Black, Brown, Gray, White, Red, Blue & Yellow

**Standard Cut Lengths:** 48", 12", 6"

**Pre-Shrink ID:** 1/8", 3/16", 1/4", 3/8", 1/2", 3/4", 1"

## HST 540 SERIES

### SPECIALTY TUBING: HIGH ADHESIVE FLOW

**Shrink Ratio:** 4 to 1

All-weather, heat shrinkable, dual-wall, polyolefin tubing for automotive wire harnesses.

- Very active adhesive
- Excellent for sealing multiple wires
- Puncture resistant and provides superior strain relief
- Semi-Rigid
- Active adhesive provides a barrier against contaminants

**Stocked Colors:** Clear  
**Standard Cut Lengths:** 48", 12", 6"  
**Pre-Shrink ID:** 0.22", 0.30", 0.35", 0.45", 0.70"

## HST 680 SERIES

### SPECIALTY TUBING: HIGH SHRINK RATIO

**Shrink Ratio:** Approximately 6 to 1

High ratio heat shrink tubing accommodates extreme size differences between cables, connectors & substrates.

- Excellent for sealing multiple wires
- Puncture resistant and provides superior strain relief
- Flame retardant
- Active adhesive provides a barrier against contaminants

**Stocked Colors:** Black

**Standard Cut Lengths:** 48", 12", 6"

**Pre-Shrink ID:** 0.75", 1.3", 1.75", 2.0", 2.75", 3.5", 4.7"

## HST 700 SERIES

### MEDIUM-WALL

**Shrink Ratio:** 3 to 1

Medium-wall heat shrink tubing designed to provide reliable performance for electrical splices, connections and terminations, as well as mechanical and environmental protection.

- Battery splices and terminals
- Any connections in harsh conditions
- Adhesive-lining provides a barrier against contaminants

**Stocked Colors:** Black & Red

**Standard Cut Lengths:** 48", 12", 6"

**Pre-Shrink ID:** 0.40", 0.80", 1.10", 1.30", 1.50", 1.70", 2.0", 3.0", 4.30"

## HST 800 & 850 SERIES

### HEAVY WALL

**Shrink Ratio:** 3 to 1

A sturdy, heavy wall tubing with excellent insulating, abrasion-resisting, and strain-relieving properties. The thermo-plastic adhesive provides superior environmental protection.

- Battery splices and terminals
- Direct Burial or submersible
- Meets UL486D
- Any connection in harsh conditions
- Adhesive-lining provides a barrier against contaminants

**Stocked Colors:** Black & Red  
**Standard Cut Lengths:** 48", 12", 6", 2", 1 1/2"

**Pre-Shrink ID:** 0.30", 0.35", 0.40", 0.50", 0.75", 0.80", 1.1", 1.5", 2.0", 3.0", 4.5", 6.0", 7.0"

SPECIAL CUT LENGTHS AVAILABLE IN BULK QUANTITIES

# Thin Wall Heat Shrink Tubing (NO Adhesive)



## HST100 Series

Shrink Ratio: 2 to 1

A flexible, general purpose tubing for use where an adhesive seal is not needed. Conforms well to irregular shapes.

- Insulation and strain relief for wire terminals • Color-coding of electrical harnesses • Wire bundling • Self-extinguish (except clear)
- Excellent resistance to solvents, acids and alkalis
- Good resistance to fuel and oil

Specs	UL	CSA	Material	Shrink Temp.	Continuous Oper. Temp.	Flammability
SAE-AMS-DTL-23053/5 Formerly, MIL-DTL-23053/5 Class 1 (Colors) Class 2 (Clear)	E39100 600V 125°C (257°F)	LR38227 600V 125°C (257°F)	Polyolefin	100°C (212°F)	-55°C to 135°C (-67°F to 275°F)	Self-extinguish UL224 (except clear)

### LARGE CARDBOARD SPOOLS

Pre-Shrink ID	Rec ID	Wire Range	Colors	Part Number	Spool Length
3/64"	0.023"	0.024"-0.038"	Ⓑ	HST100B-BULK	1,000 FT
1/16"	0.031"	0.033"-0.050"	Ⓑ	HST101B-BULK	1,000 FT
3/32"	0.046"	0.048"-0.075"	Ⓑ ⒷL Ⓒ Ⓔ Ⓡ Ⓜ Ⓨ	HST102(XX)-BULK	500 FT
1/8"	0.062"	22-18 AWG	Ⓑ ⒷL Ⓒ Ⓔ Ⓡ Ⓜ Ⓨ	HST103(XX)-BULK	500 FT
3/16"	0.093"	16-12 AWG	Ⓑ ⒷL Ⓒ Ⓔ Ⓡ Ⓜ Ⓨ	HST104(XX)-BULK	250 FT
1/4"	0.125"	12-10 AWG	Ⓑ ⒷL Ⓒ Ⓔ Ⓡ Ⓜ Ⓨ	HST105(XX)-BULK	200 FT
3/8"	0.187"	8 AWG	Ⓑ ⒷL Ⓒ Ⓔ Ⓡ Ⓜ Ⓨ	HST106(XX)-BULK	200 FT
1/2"	0.250"	6-4 AWG	Ⓑ ⒷL Ⓒ Ⓔ Ⓡ Ⓜ Ⓨ	HST107(XX)-BULK	200 FT
3/4"	0.375"	2-2/0 AWG	Ⓑ ⒷL Ⓒ Ⓔ Ⓡ Ⓜ Ⓨ	HST108(XX)-BULK	200 FT
1"	0.500"	2/0 AWG-300 MCM	Ⓑ ⒷL Ⓒ Ⓔ Ⓡ Ⓜ Ⓨ	HST109(XX)-BULK	100 FT
1.5"	0.750"	350-750 MCM	Ⓑ	HST110B-BULK	100 FT
2"	1.000"	1.05"-1.6"	Ⓑ	HST111B-BULK	100 FT
3"	1.500"	1.58"-2.4"	Ⓑ	HST112B-BULK	50 FT
4"	2.000"	2.14"-3.2"	Ⓑ	HST113B-BULK	50 FT



When ordering replace the (XX) with the following color codes in the part number: Ⓑ Black ⒷL Blue Ⓒ Clear Ⓔ Green Ⓡ Red Ⓜ White Ⓨ Yellow

### SPECIAL CUT LENGTHS AVAILABLE IN BULK QUANTITIES

### SMALL CARDBOARD SPOOLS

Pre-Shrink ID	Rec ID	Wire Range	Colors	Part Number	Spool Length
3/64"	0.023"	0.024"-0.038"	Ⓑ	HST100B-100F	100 FT
1/16"	0.031"	0.033"-0.050"	Ⓑ	HST101B-100F	100 FT
3/32"	0.046"	0.048"-0.075"	Ⓑ ⒷL Ⓒ Ⓔ Ⓡ Ⓜ Ⓨ	HST102(XX)-100F	100 FT
1/8"	0.062"	22-18 AWG	Ⓑ ⒷL Ⓒ Ⓔ Ⓡ Ⓜ Ⓨ	HST103(XX)-100F	100 FT
3/16"	0.093"	16-12 AWG	Ⓑ ⒷL Ⓒ Ⓔ Ⓡ Ⓜ Ⓨ	HST104(XX)-100F	100 FT
1/4"	0.125"	12-10 AWG	Ⓑ ⒷL Ⓒ Ⓔ Ⓡ Ⓜ Ⓨ	HST105(XX)-100F	100 FT
3/8"	0.187"	8 AWG	Ⓑ ⒷL Ⓒ Ⓔ Ⓡ Ⓜ Ⓨ	HST106(XX)-100F	100 FT
1/2"	0.250"	6-4 AWG	Ⓑ ⒷL Ⓒ Ⓔ Ⓡ Ⓜ Ⓨ	HST107(XX)-100F	100 FT
3/4"	0.375"	2-2/0 AWG	Ⓑ ⒷL Ⓒ Ⓔ Ⓡ Ⓜ Ⓨ	HST108(XX)-50F	50 FT
1"	0.500"	2/0AWG-300 MCM	Ⓑ ⒷL Ⓒ Ⓔ Ⓡ Ⓜ Ⓨ	HST109(XX)-50F	50 FT

When ordering replace the (XX) with the following color codes in the part number: Ⓑ Black ⒷL Blue Ⓒ Clear Ⓔ Green Ⓡ Red Ⓜ White Ⓨ Yellow



# Thin Wall Heat Shrink Tubing (NO Adhesive)

## HST100 Series

Shrink Ratio: 2 to 1

A flexible, general purpose tubing for use where an adhesive seal is not needed. Conforms well to irregular shapes.

- Insulation and strain relief for wire terminals • Color-coding of electrical harnesses • Wire bundling • Self-extinguish (except clear)
- Excellent resistance to solvents, acids and alkalis
- Good resistance to fuel and oil

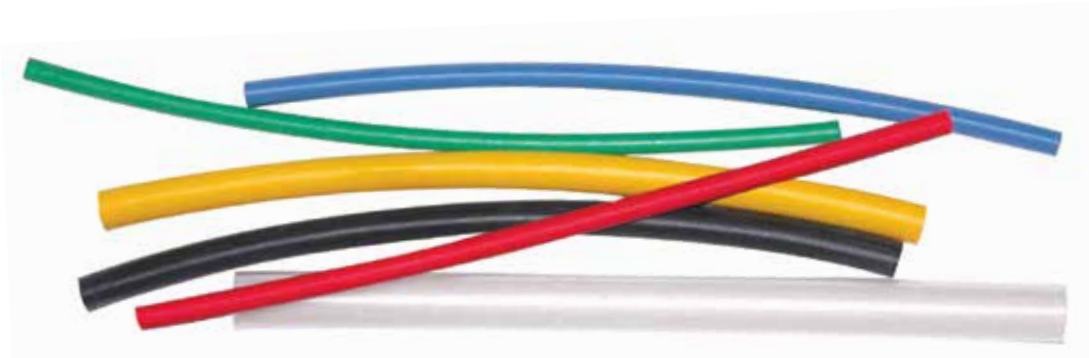


Specs	UL	CSA	Material	Shrink Temp.	Continuous Oper. Temp.	Flammability
SAE-AMS-DTL-23053/5 Formerly, MIL-DTL-23053/5 Class 1 (Colors) Class 2 (Clear)	E39100 600V 125°C (257°F)	LR38227 600V 125°C (257°F)	Polyolefin	100°C (212°F)	-55°C to 135°C (-67°F to 275°F)	Self-extinguish UL224 (except clear)

CUT LENGTHS				6 INCH		12 INCH		48 INCH	
Pre-Shrink ID	Rec ID	Wire Range	Colors	Part Numbers	Pkg. Qty.	Part Numbers	Pkg. Qty.	Part Numbers	Pkg. Qty.
3/64"	0.023"	0.024"-0.038"	Ⓑ	HST100B-6	10	HST100B-12	10	HST100B-48	4
1/16"	0.031"	0.033"-0.050"	Ⓑ	HST101B-6	10	HST101B-12	10	HST101B-48	4
3/32"	0.046"	0.048"-0.075"	Ⓑ ⒷL Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	HST102(XX)-6	10	HST102(XX)-12	10	HST102(XX)-48	4
1/8"	0.062"	22-18 AWG	Ⓑ ⒷL Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	HST103(XX)-6	10	HST103(XX)-12	10	HST103(XX)-48	4
3/16"	0.093"	16-12 AWG	Ⓑ ⒷL Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	HST104(XX)-6	10	HST104(XX)-12	10	HST104(XX)-48	4
1/4"	0.125"	12-10 AWG	Ⓑ ⒷL Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	HST105(XX)-6	10	HST105(XX)-12	10	HST105(XX)-48	4
3/8"	0.187"	8 AWG	Ⓑ ⒷL Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	HST106(XX)-6	10	HST106(XX)-12	10	HST106(XX)-48	4
1/2"	0.250"	6-4 AWG	Ⓑ ⒷL Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	HST107(XX)-6	10	HST107(XX)-12	10	HST107(XX)-48	4
3/4"	0.375"	2-2/0 AWG	Ⓑ ⒷL Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	HST108(XX)-6	10	HST108(XX)-12	10	HST108(XX)-48	4
1"	0.500"	2/0 AWG-300 MCM	Ⓑ ⒷL Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	HST109(XX)-6	10	HST109(XX)-12	10	HST109(XX)-48	4
1.5"	0.750"	350-750 MCM	Ⓑ	HST110B-6	10	HST110B-12	10	HST110B-48	4
2"	1.000"	1.05"-1.6"	Ⓑ	HST111B-6	10	HST111B-12	10	HST111B-48	4
3"	1.500"	1.58"-2.4"	Ⓑ	HST112B-6	10	HST112B-12	10	HST112B-48	4
4"	2.000"	2.10"-3.2"	Ⓑ	HST113B-6	10	HST113B-12	10	HST113B-48	4

When ordering replace the (XX) with the following color codes in the part number: Ⓑ Black ⒷL Blue Ⓒ Clear Ⓓ Green Ⓔ Red Ⓕ White Ⓖ Yellow

### SPECIAL CUT LENGTHS AVAILABLE IN BULK QUANTITIES



#### Starter Assortments



**ASST-HST-5000**  
9 Items • 88 Pieces

#### Maintenance Assortments



**ASST-HST-1000**  
9 Items • 125 Pieces



**ASST-HST-1030**  
25 Items • 191 Pieces  
Thin Wall, Dual Wall & Heavy Wall



# Economy Thin Wall Heat Shrink Tubing (NO Adhesive)

## HST180 Series

Shrink Ratio: 2 to 1

A flexible, general purpose tubing for use where an adhesive seal is not needed. Conforms well to irregular shapes.

- Insulation and strain relief for wire terminals
- Color-coding of electrical harnesses
- Wire bundling • Self-extinguish

UL Listed	Material	Shrink Temp.	Continuous Oper. Temp.	Flammability
600V rating	Polyolefin	110°C (230°F)	-55°C - 135°C (-67°F - 275°F)	Yes (VW-1)

### SMALL CARDBOARD SPOOLS

Pre-Shrink ID	Rec ID	Wire Range	Colors	Part Number	Spool Length	Bulk Part #	Spool Length
1/16"	0.026"	0.033"-0.050"	Ⓑ	HST181B-100F	100 FT	HST181B-BULK	656 FT
3/32"	0.039"	0.048"-0.075"	Ⓑ	HST182B-100F	100 FT	HST182B-BULK	656 FT
1/8"	0.059"	22-18 AWG	Ⓑ	HST183B-100F	100 FT	HST183B-BULK	656 FT
3/16"	0.091"	16-12 AWG	Ⓑ Ⓡ	HST184(XX)-100F	100 FT	HST184(XX)-BULK	328 FT
1/4"	0.118"	12-10 AWG	Ⓑ Ⓑ	HST185(XX)-100F	100 FT	HST185(XX)-BULK	328 FT
3/8"	0.117"	8 AWG	Ⓑ Ⓜ	HST186(XX)-100F	100 FT	HST186(XX)-BULK	328 FT
1/2"	0.236"	6-4 AWG	Ⓑ	HST187B-100F	100 FT	HST187B-BULK	328 FT
3/4"	0.354"	2-2/0 AWG	Ⓑ	HST188B-50F	50 FT	HST188B-BULK	328 FT
1"	0.492"	2/0 AWG-300 MCM	Ⓑ	HST189B-50F	50 FT	HST189B-BULK	164 FT



When ordering replace the (XX) with the following color codes in the part number: Ⓑ Black Ⓡ Red Ⓑ Blue Ⓜ Yellow

### SPECIAL CUT LENGTHS AVAILABLE IN BULK QUANTITIES

CUT LENGTHS				6 INCH		12 INCH		48 INCH	
Pre-Shrink ID	Rec ID	Wire Range	Colors	Part Numbers	Pkg. Qty.	Part Numbers	Pkg. Qty.	Part Numbers	Pkg. Qty.
1/16"	0.026"	0.033"-0.050"	Ⓑ	HST181B-6	10	HST181B-12	10	HST181B-48	10
3/32"	0.039"	0.048"-0.075"	Ⓑ	HST182B-6	10	HST182B-12	10	HST182B-48	10
1/8"	0.059"	22-18 AWG	Ⓑ	HST183B-6	10	HST183B-12	10	HST183B-48	10
3/16"	0.091"	16-12 AWG	Ⓑ Ⓡ	HST184(XX)-6	10	HST184(XX)-12	10	HST184(XX)-48	10
1/4"	0.118"	12-10 AWG	Ⓑ Ⓑ	HST185(XX)-6	10	HST185(XX)-12	10	HST185(XX)-48	10
3/8"	0.117"	8 AWG	Ⓑ Ⓜ	HST186(XX)-6	10	HST186(XX)-12	10	HST186(XX)-48	10
1/2"	0.236"	6-4 AWG	Ⓑ	HST187B-6	10	HST187B-12	10	HST187B-48	10
3/4"	0.354"	2-2/0 AWG	Ⓑ	HST188B-6	10	HST188B-12	10	HST188B-48	10
1"	0.492"	2/0 AWG-300 MCM	Ⓑ	HST189B-6	10	HST189B-12	10	HST189B-48	10

When ordering replace the (XX) with the following color codes in the part number: Ⓑ Black Ⓡ Red Ⓑ Blue Ⓜ Yellow

### SPECIAL CUT LENGTHS AVAILABLE IN BULK QUANTITIES



# Flexible Adhesive-Lined Heat Shrink Tubing



## HST200 Series

Shrink Ratio: 3 to 1

A flame-retardant tubing (except clear) with an internal layer of thermo-plastic adhesive which provides a barrier against contaminants. Still highly flexible for conforming to irregular shapes.

- Environmental protection for electronic components
- Protection of automobile, marine and truck wire splices and harness breakouts
- Adhesive-lining provides a barrier against contaminants
- Excellent resistance to acids and alkalis
- Good resistance to fuel, oil and solvents

UL	CSA	Material	Shrink Temp.	Continuous Oper. Temp.	Flammability
E157227 Except Clear	LR38227	Polyolefin	121°C (250°F)	-55°C to 110°C (-67°F to 230°F)	Self-Extinguish UL224 (except clear)

CUT LENGTHS				6 INCH		12 INCH		48 INCH	
Pre-Shrink ID	Rec ID	Wire Range	Colors	Part Numbers	Pkg. Qty.	Part Numbers	Pkg. Qty.	Part Numbers	Pkg. Qty.
1/8"	0.040"	24-18 AWG	Ⓟ Ⓢ Ⓡ	HST203(X)-6	8	HST203(X)-12	4	HST203(X)-48	4
3/16"	0.062"	22-12 AWG	Ⓟ Ⓢ Ⓡ	HST204(X)-6	8	HST204(X)-12	4	HST204(X)-48	4
1/4"	0.080"	20-10 AWG	Ⓟ Ⓢ Ⓡ Ⓦ Ⓨ	HST205(X)-6	8	HST205(X)-12	4	HST205(X)-48	4
3/8"	0.120"	12-8 AWG	Ⓟ Ⓢ Ⓡ Ⓛ ⓖ Ⓦ Ⓨ	HST206(XX)-6	8	HST206(XX)-12	4	HST206(XX)-48	4
1/2"	0.160"	10-4 AWG	Ⓟ Ⓢ Ⓡ Ⓦ Ⓨ	HST207(X)-6	8	HST207(X)-12	4	HST207(X)-48	4
3/4"	0.250"	6-2/0 AWG	Ⓟ Ⓢ Ⓡ Ⓛ ⓖ Ⓦ Ⓨ	HST208(XX)-6	8	HST208(XX)-12	4	HST208(XX)-48	4
1"	0.320"	4 AWG-300 MCM	Ⓟ Ⓢ Ⓡ Ⓛ ⓖ Ⓦ Ⓨ	HST209(XX)-6	8	HST209(XX)-12	4	HST209(XX)-48	4
1.50"	0.510"	2/0 AWG-750 MCM	Ⓟ	HST211B-6	8	HST211B-12	4	HST211B-48	4

When ordering replace the (XX) with the following color codes in the part number: Ⓟ Black Ⓢ Clear Ⓡ Red Ⓛ Blue Ⓨ Yellow ⓖ Green Ⓦ White

### SPECIAL CUT LENGTHS AVAILABLE IN BULK QUANTITIES

NEW

NEW

NEW

NEW

#### Starter Assortments



ASST-HST-5005  
18 Items • 48 Pieces



ASST-HST-5010  
14 Items • 34 Pieces

#### Maintenance Assortments



ASST-HST-1005  
18 Items • 120 Pieces



ASST-HST-1030  
25 Items • 191 Pieces  
Thin Wall, Dual Wall & Heavy Wall

# Tinted Semi-Rigid Adhesive-Lined Heat Shrink Tubing

## HST300 Series - Tinted, Adhesive-Lined Polyolefin Tubing

Shrink Ratio: Exceeds 3 to 1

Our tinted, semi-rigid adhesive-lined heat shrink tubing is the clear choice for insulating and color-coding small gauge wire connections. This tubing offers several distinct advantages:

- Tubing is tinted for color-coding, but is also translucent to allow the installer to view the underlying material
- Wire gauge imprint for ease of wire identification both before and after installation
- Adhesive-lining provides a barrier against contaminants
- Excellent resistance to acids and alkalis
- Good resistance to fuel, oil and solvents



Specs	UL	CSA	Material	ShrinkTemp.	Continuous Oper. Temp.	Flammability
SAE-AMS-DTL-23053/4 Formerly, MIL-DTL-23053/4, Class 1	E157227	LR38227	Polyolefin	135°C (275°F)	-55°C to 110°C (-67°F to 230°F)	Non-Flame Retardant

TINTED COLORS WITH WIRE GAUGE IMPRINT									
CUT LENGTHS				6 INCH		12 INCH		48 INCH	
Pre-Shrink ID	Rec ID	Wire Range	Colors	Part Numbers	Pkg Qty	Part Numbers	Pkg Qty	Part Numbers	Pkg Qty
0.125"	0.028"	24-22 AWG	Ⓢ	HST303C-6	8	HST303C-12	4	HST303C-48	4
0.245"	0.045"	22-18 AWG	Ⓡ	HST304R-6	8	HST304R-12	4	HST304R-48	4
0.245"	0.080"	16-14 AWG	Ⓟ	HST305BL-6	8	HST305BL-12	4	HST305BL-48	4
0.360"	0.100"	12-10 AWG	Ⓨ	HST306Y-6	8	HST306Y-12	4	HST306Y-48	4



## HST390 Series - Crystal Clear™ Adhesive-Lined Heat Shrink Tubing

Shrink Ratio: Exceeds 3 to 1

- Crystal Clear™ tubing provides optimal clarity for visual inspection.
- Adhesive-lined tubing ensures a watertight seal.
- Wire gauge imprint simplifies wire size identification.



Material	ShrinkTemp.	Continuous Oper. Temp.	Flammability
Cross-linked ionic polymer	100°C (212°F)	-55°C to 125°C (-67°F to 257°F)	Passed FMVSS 302 test

CRYSTAL CLEAR™ TUBING						
Pre-Shrink ID	Rec ID	Wire Gauge	Color	Length	Part Numbers	Pkg Qty
0.176"	0.045"	22-18 AWG	Crystal Clear™	6"	HST394C-6	8
0.250"	0.080"	16-14 AWG	Crystal Clear™	6"	HST395C-6	8
0.365"	0.100"	12-10 AWG	Crystal Clear™	6"	HST396C-6	8



### Starter Assortments



#### ASST-HST-5015

7 Items • 32 Pieces

Tinted, Semi-Rigid & Crystal Clear™

# Semi-Rigid Adhesive-Lined Heat Shrink Tubing



## HST400 Series - Colored, Adhesive-Lined Polyolefin Tubing

Shrink Ratio: Exceeds 2:5 to 1

A semi-rigid tubing with a co-extruded integral adhesive lining. Provides a tough protective and insulating barrier.

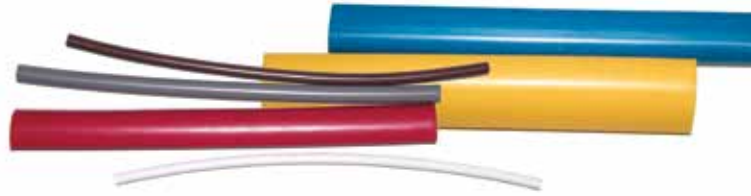
- Easy removability • Electrical wire splices, breakouts, connections and solder joints
- End-sealing of electrical cables and rigid tubings • Adhesive-lining provides a barrier against contaminants
- Excellent resistance to acids and alkalis • Good resistance to fuel, oil and solvents

Specs	UL	CSA	Material	Shrink Temp.	Continuous Oper. Temp.	Flammability
SAE-AMS-DTL-23053/4 Formerly, MIL-DTL-23053/4, Class 1	E157227	LR38227	Polyolefin	135°C (275°F)	-55°C to 110°C (-67°F to 230°F)	Non-Flame Retardant

### COLORS (NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION STANDARDS)

CUT LENGTHS				6 INCH		12 INCH		48 INCH	
Pre-Shrink ID	Rec ID	Wire Range	Colors	Part Numbers	Pkg Qty	Part Numbers	Pkg Qty	Part Numbers	Pkg Qty
1/8"	0.023"	24-18 AWG	BR	HST403BR-6	8	HST403BR-12	4	HST403BR-48	4
3/16"	0.060"	22-12 AWG	GY	HST404GY-6	8	HST404GY-12	4	HST404GY-48	4
1/4"	0.080"	20-10 AWG	W	HST405W-6	8	HST405W-12	4	HST405W-48	4
3/8"	0.130"	12-8 AWG	R	HST406R-6	8	HST406R-12	4	HST406R-48	4
1/2"	0.195"	8-4 AWG	BL	HST407BL-6	8	HST407BL-12	4	HST407BL-48	4
3/4"	0.313"	4-2/0 AWG	Y	HST408Y-6	8	HST408Y-12	4	HST408Y-48	4
1"	0.400"	2 AWG-300 MCM	B	HST409B-6	8	HST409B-12	4	HST409B-48	4

When ordering replace the (XX) with the following color codes in the part number: BR Brown GY Gray W White R Red BL Blue Y Yellow B Black



### BLACK

CUT LENGTHS				6 INCH		12 INCH		48 INCH	
Pre-Shrink ID	Rec ID	Wire Range	Colors	Part Numbers	Pkg Qty	Part Numbers	Pkg Qty	Part Numbers	Pkg Qty
1/8"	0.028"	24-18 AWG	B	HST403B-6	8	HST403B-12	4	HST403B-48	4
3/16"	0.060"	22-12 AWG	B	HST404B-6	8	HST404B-12	4	HST404B-48	4
1/4"	0.080"	20-10 AWG	B	HST405B-6	8	HST405B-12	4	HST405B-48	4
3/8"	0.130"	12-8 AWG	B	HST406B-6	8	HST406B-12	4	HST406B-48	4
1/2"	0.195"	8-4 AWG	B	HST407B-6	8	HST407B-12	4	HST407B-48	4
3/4"	0.313"	4-2/0 AWG	B	HST408B-6	8	HST408B-12	4	HST408B-48	4
1"	0.400"	2 AWG-300 MCM	B	HST409B-6	8	HST409B-12	4	HST409B-48	4

SPECIAL CUT LENGTHS AVAILABLE IN BULK QUANTITIES



### Starter Assortments



ASST-HST-5020  
12 Items • 32 Pieces

### Maintenance Assortments



ASST-HST-1030  
25 Items • 191 Pieces  
Thin Wall, Dual Wall & Heavy Wall

# High Adhesive Heat Shrink Tubing



## HST540 Series - High Adhesive, Clear Polyolefin Tubing

Shrink Ratio: 4 to 1

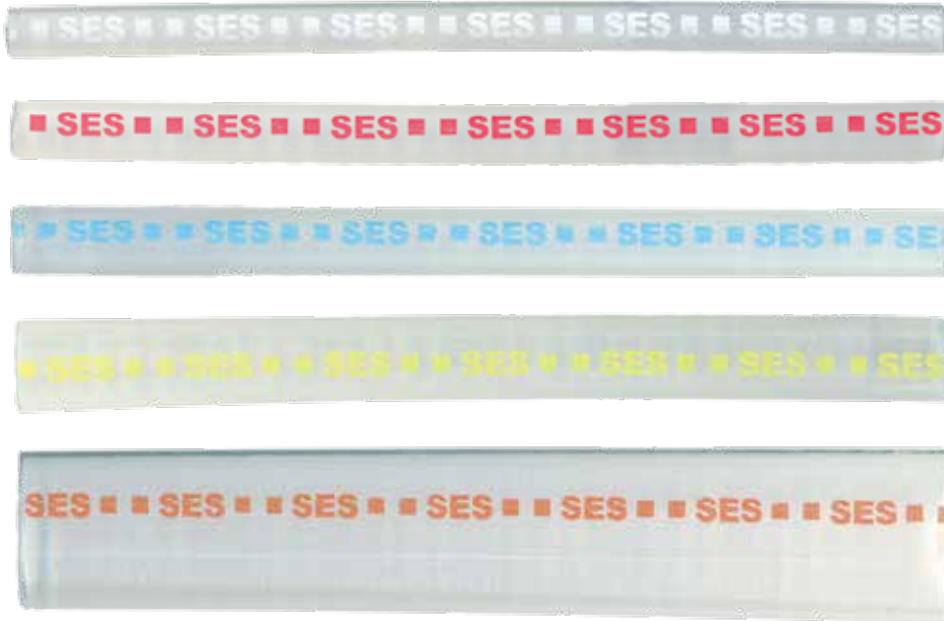
All weather, heat shrinkable, dual-wall, polyolefin tubing for automotive wire harnesses.

- Excellent for sealing multiple wires • Puncture resistant • Provides superior strain relief • Very active adhesive provides a barrier against contaminants • Excellent resistance to acids and alkalis • Good resistance to fuel, oil and solvents

Specs	UL	CSA	Material	Shrink Temp.	Continuous Oper. Temp.	Flammability
Chrysler MS-DB56 Ford ESB-M99D56	-	-	Polyolefin	121°C (250°F)	-55°C to 110°C (-67°F to 230°F)	Non-Flame Retardant

HIGH ADHESIVE FLOW HEAT SHRINK TUBING									
CUT LENGTHS				6 INCH		12 INCH		48 INCH	
Pre-Shrink ID	Rec ID	Wire Range	Color / Color Dash	Part Numbers	Pkg Qty	Part Numbers	Pkg Qty	Part Numbers	Pkg Qty
0.220"	0.045"	24-12 AWG	Ⓢ/Ⓜ	HST540C-6	8	HST540C-12	4	HST540C-48	4
0.300"	0.060"	22-8 AWG	Ⓢ/Ⓡ	HST541C-6	8	HST541C-12	4	HST541C-48	4
0.350"	0.080"	20-8 AWG	Ⓢ/Ⓡ	HST542C-6	8	HST542C-12	4	HST542C-48	4
0.450"	0.105"	14-4 AWG	Ⓢ/Ⓨ	HST543C-6	8	HST543C-12	4	HST543C-48	4
0.700"	0.175"	8-1/0 AWG	Ⓢ/Ⓡ	HST544C-6	8	HST544C-12	4	HST544C-48	4

Ⓢ/Ⓜ Clear Tubing/White Dash    Ⓢ/Ⓡ Clear Tubing/Red Dash    Ⓢ/Ⓡ Clear Tubing/Blue Dash  
 Ⓢ/Ⓨ Clear Tubing/Yellow Dash    Ⓢ/Ⓡ Clear Tubing/Orange Dash



# Specialty Heat Shrink Tubing



## HST680 Series - Extremely High Shrink Ratio, Adhesive-Lined Tubing

Shrink Ratio: Approximately 6 to 1

High ratio heat shrink tubing accommodates extreme size differences between cables, connectors & substrates.

- Excellent for sealing multiple wires • Puncture resistant • Active adhesive provides a barrier against contaminants
- Provides superior strain relief • Flame retardant

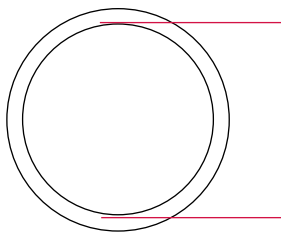
Specs	UL	CSA	Material	Shrink Temp.	Continuous Oper. Temp.	Flammability
SAE-AMS-DTL-23053/15 Formerly, MIL-DTL-23053/15, Class 1	-	-	Polyolefin	120°C (248°F)	-55°C to 110°C (-67°F to 230°F)	Flame Retardant ASTM D2671, Procedure C

### HIGH RATIO ADHESIVE-LINED HEAT SHRINK TUBING

CUT LENGTHS				6 INCH		12 INCH		48 INCH	
Pre-Shrink ID	Rec ID	Wire Range	Color	Part Numbers	Pkg Qty	Part Numbers	Pkg Qty	Part Numbers	Pkg Qty
0.750"	0.125"	12-2/0 AWG	Ⓟ	HST680B-6	8	HST680B-12	4	HST680B-48	1
1.300"	0.220"	6 AWG-500 MCM	Ⓟ	HST681B-6	8	HST681B-12	4	HST681B-48	1
1.750"	0.290"	4 AWG-1000 MCM	Ⓟ	HST682B-6	8	HST682B-12	4	HST682B-48	1
2.000"	0.330"	4 AWG-1000 MCM	Ⓟ	HST683B-6	8	HST683B-12	4	HST683B-48	1
2.750"	0.460"	1/0 AWG-2.2"	Ⓟ	HST684B-6	8	HST684B-12	4	HST684B-48	1
3.500"	0.673"	250 MCM-2.8"	Ⓟ	HST685B-6	8	HST685B-12	4	HST685B-48	1
4.700"	0.900"	500 MCM-3.8"	Ⓟ	HST686B-6	8	HST686B-12	4	HST686B-48	1

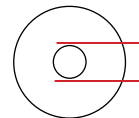


PRE-SHRINK ID



MIN ID = .75"

RECOVERED ID:



MIN ID = .125"



# Medium Wall Heat Shrink Tubing



## HST700 Series - Medium Wall, Adhesive-Lined Tubing

Shrink Ratio: 3 to 1

Medium-wall heat shrink tubing designed to provide reliable performance for electrical splices, connections and terminations, as well as mechanical and environmental protection.

- Excellent mechanical & environmental protection • Maintains some flexibility while delivering abrasion resistance
- Battery splices & terminals • Any connection in harsh conditions • Adhesive-lining provides a barrier against contaminants
- Excellent resistance to acids and alkalis • Good resistance to fuel, oil and solvents

UL	CSA	Material	Shrink Temp.	Continuous Oper. Temp.	Flammability
-	-	Polyolefin	121°C (250°F)	-55°C to 110°C (-67°F to 230°F)	Flame Retardant

### MEDIUM DUTY ADHESIVE-LINED HEAT SHRINK TUBING

CUT LENGTHS				6 INCH		12 INCH		48 INCH	
Pre-Shrink ID	Rec ID	Wire Range	Colors	Part Numbers	Pkg Qty	Part Numbers	Pkg Qty	Part Numbers	Pkg Qty
0.40"	0.150"	12-6 AWG	Ⓑ Ⓡ	HST706(X)-6	8	HST706(X)-12	4	HST706(X)-48	1
0.80"	0.220"	8-3 AWG	Ⓑ Ⓡ	HST708(X)-6	8	HST708(X)-12	4	HST708(X)-48	1
1.10"	0.370"	2-2/0 AWG	Ⓑ Ⓡ	HST709(X)-6	8	HST709(X)-12	4	HST709(X)-48	1
1.30"	0.430"	1-4/0 AWG	Ⓑ	HST720B-6	8	HST720B-12	4	HST720B-48	1
1.50"	0.500"	1/0 AWG-250 MCM	Ⓑ	HST710B-6	8	HST710B-12	4	HST710B-48	1
1.70"	0.600"	4/0 AWG-400 MCM	Ⓑ	HST721B-6	8	HST721B-12	4	HST721B-48	1
2.00"	0.750"	300-500 MCM	Ⓑ	HST711B-6	8	HST711B-12	4	HST711B-48	1
3.00"	1.000"	600-1250 MCM	Ⓑ	HST712B-6	8	HST712B-12	4	HST712B-48	1
4.30"	1.500"	1000-2500 MCM	Ⓑ	HST713B-6	8	HST713B-12	4	HST713B-48	1

When ordering replace the (X) with the following color codes in the part number: Ⓑ Black Ⓡ Red



## Adhesive Clips - Designed for Water Sealing



ADHESIVE CLIPS ARE SPECIALLY DESIGNED TO PROVIDE LONGITUDINAL WATER SEALING IN SMALL WIRE BUNDLES.

- Must be used with adhesive-lined heat shrink tubing
- Most adhesive-lined heat shrink tubing is designed to insulate & seal a single wire or cable
- Adhesive clips allow the installer to use standard adhesive-lined tubing to seal multiple wires, non-standard wire harnesses, and plug connectors
- Adhesive clips attach to a single wire or multiple small wires
- Recommend that the opening is facing the wall of the heat shrink tubing, instead of the center of the tubing



Part #	ID	OD	Opening	Length	Wire Gauge*
AC-1	0.106"/2.7mm	0.217"/5.5mm	0.047"/1.2mm	0.197"/5mm	20-12 AWG
AC-2	0.138"/3.5mm	0.295"/7.5mm	0.055"/1.4mm	0.197"/5mm	16-8 AWG

\*Adhesive clips should attach to a single wire within this range

Continuous operating temperature range of -40F° to 221F° / -40C° to 105C°

Adhesive clips have good chemical and fuel resistance

Adhesive clips have good adhesion to PVC, XLPE and PP-EPDM wire insulating materials



**1** Position clips on wire.



**2** Slide adhesive-lined tubing over the substrate ( splice, wires, etc...) & adhesive clips.



**3** Heat tubing so that it is fully recovered and the adhesive clips have completely melted.

# Heavy Wall Heat Shrink Tubing

## HST800 Series - 3M Heavy Wall

Shrink Ratio: 3 to 1

A sturdy, heavy wall tubing with excellent insulating, abrasion-resisting, and strain-relieving properties. The thermo-plastic adhesive provides superior environmental protection.

- Battery splices and terminals • DIRECT BURIAL • SUBMERSIBLE • Meets UL486D
- Any connection in harsh conditions • Adhesive-lining provides a barrier against contaminants
- Excellent resistance to acids and alkalis • Good resistance to fuel, oil and solvents

UL	CSA	Material	Shrink Temp.	Continuous Oper. Temp.	Flammability
E102356	LR86335	Polyolefin	121°C (250°F)	-55°C to 110°C (-67°F to 230°F)	Flame Retardant



### HEAVY WALL FLAME RETARDANT ADHESIVE-LINED HEAT SHRINK TUBING

CUT LENGTHS				6 INCH		12 INCH		48 INCH	
Pre-Shrink ID	Rec ID	Wire Range	Color	Part Numbers	Pkg Qty	Part Numbers	Pkg Qty	Part Numbers	Pkg Qty
0.300"	0.100"	14-8 AWG	Ⓟ Ⓡ	HST805(X)-6	8	HST805(X)-12	4	HST805(X)-48	1
0.400"	0.150"	12-6 AWG	Ⓟ Ⓡ	HST806(X)-6	8	HST806(X)-12	4	HST806(X)-48	1
0.800"	0.200"	8-1/0 AWG	Ⓟ Ⓡ	HST808(X)-6	8	HST808(X)-12	4	HST808(X)-48	1
1.100"	0.370"	2-4/0 AWG	Ⓟ Ⓡ	HST809(X)-6	8	HST809(X)-12	4	HST809(X)-48	1
1.500"	0.500"	3/0 AWG-400 MCM	Ⓟ	HST810B-6	8	HST810B-12	4	HST810B-48	1
2.000"	0.650"	250-750 MCM	Ⓟ	HST811B-6	8	HST811B-12	4	HST811B-48	1
3.000"	1.000"	600-1250 MCM	Ⓟ	HST812B-6	8	HST812B-12	4	HST812B-48	1
4.500"	1.500"	1500-2500 MCM	Ⓟ	HST813B-6	8	HST813B-12	4	HST813B-48	1
6.000"	1.800"	2.1"-4.8"	Ⓟ	HST814B-6	8	HST814B-12	4	HST814B-48	1
7.000"	2.000"	2.5"-5.6"	Ⓟ	HST815B-6	8	HST815B-12	4	HST815B-48	1

When ordering replace the (X) with the following color codes in the part number: Ⓟ Black Ⓡ Red



#### Starter Assortments



**ASST-HST-5025**  
6 ITEMS • 12 PIECES

#### Maintenance Assortments



**ASST-HST-1025**  
8 ITEMS • 30 PIECES



**ASST-HST-1030**  
25 Items • 191 Pieces  
Thin Wall, Dual Wall & Heavy Wall



# Heavy Wall Heat Shrink Tubing



## HST850 & HST 860 Series - Canusa Heavy Wall

Shrink Ratio: 3 to 1

A sturdy, heavy wall tubing with excellent insulating, abrasion-resisting, and strain-relieving properties. The thermo-plastic adhesive provides superior environmental protection.

- Convenient cut lengths for insulating and sealing battery terminals • Meets UL486D • Direct burial • Submersible
- Any connection in harsh conditions • Adhesive-lining provides a barrier against contaminants



Specs	UL	CSA	Material	Shrink Temp.	Continuous Oper. Temp.	Flammability
SAE-AMS-DTL-23053/15, Class 1	486D	C22.2	Polyolefin	120°C (248°F)	-55°C to 110°C (-67°F to 230°F)	Flame Retardant (except .35" size)

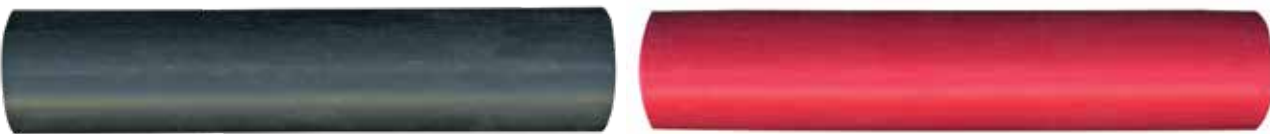
CUT LENGTHS				1.5 INCH		2 INCH		6 INCH		12 INCH		48 INCH	
Pre-Shrink ID	Rec ID	Wire Range	Color	Part Numbers	Pkg Qty	Part Numbers	Pkg Qty	Part Numbers	Pkg Qty	Part Numbers	Pkg Qty	Part Numbers	Pkg Qty
0.35"	0.120"	14-10 AWG	Ⓑ Ⓡ					HST855(X)-6	8	HST855(X)-12	4	HST855(X)-48	1
0.40"	0.150"	12-8 AWG	Ⓑ Ⓡ					HST856(X)-6	8	HST856(X)-12	4	HST856(X)-48	1
0.500"	0.160"	8-6 AWG	Ⓑ Ⓡ	HST857(X)-1.5	10	HST857(X)-2	10	HST857(X)-6	8	HST857(X)-12	4	HST857(X)-48	1
0.750"	0.220"	6-2 AWG	Ⓑ Ⓡ	HST858(X)-1.5	10	HST858(X)-2	10	HST858(X)-6	8	HST858(X)-12	4	HST858(X)-48	1
1.100"	0.350"	1-3/0 AWG	Ⓑ Ⓡ			HST859(X)-2	10	HST859(X)-6	8	HST859(X)-12	4	HST859(X)-48	1
1.50"	0.470"	2/0 AWG-350 MCM	Ⓑ Ⓡ					HST860(X)-6	8	HST860(X)-12	4	HST860(X)-48	1
2.00"	0.630"	250-500 MCM	Ⓑ Ⓡ					HST861(X)-6	8	HST861(X)-12	4	HST861(X)-48	1

When ordering replace the (X) with the following color codes in the part number: Ⓑ Black Ⓡ Red

## HST880 Series - Economy Heavy Wall, Adhesive-Lined

Shrink Ratio: 3:1

- Excellent for battery splices and terminations
- Flame retardant
- Adhesive lining provides a barrier against contaminants
- Superior abrasion and environmental protection in harsh conditions



Material	Shrink Temp.	Continuous Oper. Temp.	Flammability
Polyolefin	125°C (257°F)	-45°C to 125°C (-49°F to 257°F)	Flame Retardant

CUT LENGTHS				6 INCH		12 INCH		48 INCH	
Pre-Shrink ID	Rec ID	Wire Range	Colors	Part Numbers	Pkg. Qty.	Part Numbers	Pkg. Qty.	Part Numbers	Pkg. Qty.
0.35"	0.118"	12-8	Ⓑ	HST885B-6	8	HST885B-12	4	HST885B-48	1
0.35"	0.118"	12-8	Ⓡ	HST885R-6	8	HST885R-12	4	HST885R-48	1
0.75"	0.240"	6-2/0	Ⓑ	HST887B-6	8	HST887B-12	4	HST887B-48	1
0.75"	0.240"	6-2/0	Ⓡ	HST887R-6	8	HST887R-12	4	HST887R-48	1
1.10"	0.355"	2-400	Ⓑ	HST889B-6	8	HST889B-12	4	HST889B-48	1
1.10"	0.355"	2-400	Ⓡ	HST889R-6	8	HST889R-12	4	HST889R-48	1

# Sealed Solder System for Battery Terminals

Our Sealed Solder System for Battery Terminals product line is the innovative solution for soldering cable terminations. Pre-measured solder pellets and adhesive-lined heat shrink tubing combine to provide maximum conductivity and a corrosion-proof seal. The result is a high quality termination without the need for expensive crimping tools.

## Frequent Problems in Battery Cable Connections:

- Improperly installed connectors
- Voltage drop
- Vibration damage
- Corrosion in cable



## The sealed solder system for battery terminals Solution:

- Easily installed termination system
- Soldered connections for maximum conductivity
- Superior tensile strength from a soldered bond
- Adhesive-lined tubing prevents cable corrosion



### SOLDER PELLETS

Part #	Gauge	Color	Description
CL-6	6 AWG	Gray	"No-Clean" Flux Core
CL-4	4 AWG	Gray	"No-Clean" Flux Core
CL-2	2 AWG	Green	"No-Clean" Flux Core
CL-1	1 AWG	Pink	"No-Clean" Flux Core
CL-1-0	1/0 AWG	Black	"No-Clean" Flux Core
CL-2-0	2/0 AWG	Orange	"No-Clean" Flux Core
CL-3-0	3/0 AWG	Purple	"No-Clean" Flux Core
CL-4-0	4/0 AWG	Yellow	"No-Clean" Flux Core



### HEAVY WALL ADHESIVE-LINED HEAT SHRINK TUBING

Part #	Gauge	Color	Length	Pre-Shrink ID
HST857B-1.5	8-6 AWG	Black	1.5" Length	0.50" ID
HST857R-1.5	8-6 AWG	Red	1.5" Length	0.50" ID
HST858B-1.5	6-2 AWG	Black	1.5" Length	0.75" ID
HST858R-1.5	6-2 AWG	Red	1.5" Length	0.75" ID
HST859B-2	1-3/0 MCM AWG	Black	2" Length	1.10" ID
HST859R-2	1-3/0 MCM AWG	Red	2" Length	1.10" ID



### LIQUID FLUX

Part #	Description
CL-FLUX	"No-Clean" Liquid Flux, 2 oz. bottle



## Features and Benefits:

- Color-coded solder pellets conform to industry standards & ensure correct product identification.
- Pre-measured solder pellets assure the right amount of solder will be used in each connection.
- Flux core and "No-Clean" liquid flux prevent dirt and contaminants from hindering the soldering process.
- Color-coded, pre-cut lengths of heat shrink tubing provide positive designation of polarity and make installation easy.
- Installation requires only standard shop tools which eliminates the need for an expensive crimping tool.



### NO expensive tools needed

- Can be installed using only a standard propane shop torch and a utility knife
- No need to purchase an expensive crimping tool



### NO special connectors

- Works with any brand of closed-end battery terminals or starter lugs
- Use with your current inventory - no need to purchase special "Solder-Only" connectors
- The least expensive method of obtaining a high quality soldered and sealed connection



### Solder Pellets

- Pre-measured to assure the right amount of solder
- Color-coded to industry standards to ensure correct product identification
- Flux core prevents dirt and contaminants from hindering the soldering process
- "No-Clean"



### Heavy Wall Adhesive-Lined Heat Shrink Tubing

- Color-coded for positive identification of polarity
- Pre-cut to the proper length for ease of installation
- Adhesive-lined to provide a permanent seal against corrosion



### Starter Assortments



**ASST-CL-5000**  
15 ITEMS • 53 PIECES

### Maintenance Assortments



**ASST-CL-1000**  
15 ITEMS • 127 PIECES

## Coiled Solder

### TIN/LEAD ACID CORE SOLDER

Meeting Temperature is 460°F • Acid Flux Core • 40% Tin & 60% Lead • Use for Non-electrical Applications: Tools, Radiators, General Automotive, Sheet Metal, etc.

Part #	Wire Diameter	Description
S-340AC	.062"	.90 oz. tube (9ft.)
S-350AC	.093"	1/2 lb. spool



### TIN/LEAD ROSIN CORE SOLDER

Meeting Temperature is 460°F • Rosin Flux Core • 40% Tin & 60% Lead • Use for Many Electrical Applications: Wiring, Motors, Radios, Televisions, Stereos, etc.

Part #	Wire Diameter	Description
S-340RC	.062"	.90 oz. tube (9ft.)
S-350RC	.093"	1/2 lb. spool



# Copper Lugs & Splices



## Copper Lugs - Unplated & Plated

- Made from seamless tubes of 99.9% copper for higher conductivity
- Exceeds SAE conductivity standard J163 & J1811
- Designed for stranded copper wires
- Rated for 600 volts
- Larger pad area for better contact
- Cable size and stud hole stamped on pad
- Can be crimped or soldered
- Highly controlled flare to allow easy cable insertion
- Tight barrel to pad transition provides longer usable barrel length

UNPLATED PART #	CABLE SIZE	STUD	ADDITIONAL DESCRIPTION	TIN PLATED PART #
BCLU-8-10-PK	8	#10		BCLP-8-10-PK
BCLU-8-14-PK	8	1/4"		BCLP-8-14-PK
BCLU-8-516-PK	8	5/16"		BCLP-8-516-PK
BCLU-8-516-W-PK	8	5/16"	WIDE PAD	BCLP-8-516-W-PK
BCLU-8-38-PK	8	3/8"		BCLP-8-38-PK
BCLU-8-38-W-PK	8	3/8"	WIDE PAD	BCLP-8-38-W-PK
BCLU-8-12-PK	8	1/2"		BCLP-8-12-PK
BCLU-6-10-PK	6	#10		BCLP-6-10-PK
BCLU-6-14-PK	6	1/4"		BCLP-6-14-PK
BCLU-6-14-W-PK	6	1/4"	WIDE PAD	BCLP-6-14-W-PK
BCLU-6-14-90-PK	6	1/4"	90°	
BCLU-6-516-PK	6	5/16"		BCLP-6-516-PK
BCLU-6-516-W-PK	6	5/16"	WIDE PAD	BCLP-6-516-W-PK
BCLU-6-38-PK	6	3/8"		BCLP-6-38-PK
BCLU-6-38-W-PK	6	3/8"	WIDE PAD	BCLP-6-38-W-PK
BCLU-6-12-PK	6	1/2"		BCLP-6-12-PK
BCLU-4-10-PK	4	#10		BCLP-4-10-PK
BCLU-4-14-PK	4	1/4"		BCLP-4-14-PK
BCLU-4-14-90-PK	4	1/4"	90°	
BCLU-4-516-PK	4	5/16"		BCLP-4-516-PK
BCLU-4-516-W-PK	4	5/16"	WIDE PAD	BCLP-4-516-W-PK
BCLU-4-38-PK	4	3/8"		BCLP-4-38-PK
BCLU-4-38-W-PK	4	3/8"	WIDE PAD	BCLP-4-38-W-PK
BCLU-4-38-XW-PK	4	3/8"	EXTRA WIDE PAD	BCLP-4-38-XW-PK
BCLU-4-12-PK	4	1/2"		BCLP-4-12-PK
BCLU-2-14-PK	2	1/4"		BCLP-2-14-PK
BCLU-2-14-90-PK	2	1/4"	90°	
BCLU-2-516-PK	2	5/16"		BCLP-2-516-PK
BCLU-2-38-PK	2	3/8"		BCLP-2-38-PK
BCLU-2-38-W-PK	2	3/8"	WIDE PAD	BCLP-2-38-W-PK
BCLU-2-12-PK	2	1/2"		BCLP-2-12-PK
BCLU-1-14-PK	1	1/4"		BCLP-1-14-PK
BCLU-1-516-PK	1	5/16"		BCLP-1-516-PK
BCLU-1-516-W-PK	1	5/16"	WIDE PAD	
BCLU-1-38-PK	1	3/8"		BCLP-1-38-PK
BCLU-1-12-PK	1	1/2"		BCLP-1-12-PK
BCLU-10-14-PK	1/0	1/4"		BCLP-10-14-PK
BCLU-10-516-PK	1/0	5/16"		BCLP-10-516-PK
BCLU-10-38-PK	1/0	3/8"		BCLP-10-38-PK
BCLU-10-38-W-PK	1/0	3/8"	WIDE PAD	BCLP-10-38-W-PK
BCLU-10-12-PK	1/0	1/2"		BCLP-10-12-PK
BCLU-10-12-W-PK	1/0	1/2"	WIDE PAD	BCLP-10-12-W-PK
BCLU-20-14-PK	2/0	1/4"		BCLP-20-14-PK
BCLU-20-516-PK	2/0	5/16"		BCLP-20-516-PK
BCLU-20-38-PK	2/0	3/8"		BCLP-20-38-PK
BCLU-20-12-PK	2/0	1/2"		BCLP-20-12-PK
BCLU-30-14-PK	3/0	1/4"		BCLP-30-14-PK
BCLU-30-516-PK	3/0	5/16"		BCLP-30-516-PK
BCLU-30-38-PK	3/0	3/8"		BCLP-30-38-PK
BCLU-30-12-PK	3/0	1/2"		BCLP-30-12-PK
BCLU-40-14-PK	4/0	1/4"		
BCLU-40-516-PK	4/0	5/16"		BCLP-40-516-PK
BCLU-40-38-PK	4/0	3/8"		BCLP-40-38-PK
BCLU-40-12-PK	4/0	1/2"		BCLP-40-12-PK
BCLU-40XL-516-PK	4/0	5/16"	LARGER BARREL ID	BCLP-40XL-516-PK
BCLU-40XL-38-PK	4/0	3/8"	LARGER BARREL ID	BCLP-40XL-38-PK
BCLU-40XL-12-PK	4/0	1/2"	LARGER BARREL ID	BCLP-40XL-12-PK
BCLU-250-38-PK	250MCM	3/8"		
BCLU-250-12-PK	250MCM	1/2"		



Please visit [www.nspa.com/ul\\_csa\\_listing.html](http://www.nspa.com/ul_csa_listing.html) for a complete list of UL Listings.

# Copper Lugs & Splices



## Copper Splices - Tin Plated

- Made from seamless tubes of 99.9% copper & electro tin-plated for higher conductivity & corrosion resistance
- Exceeds SAE conductivity standard J163 & J1811
- Rated for 600 volts
- Designed for stranded copper wires
- Cable size stamped on splice
- Highly controlled flare to allow easy cable insertion

TIN PLATED NSPA Part #	CABLE SIZE	PKG QTY
BCSP-8-PK	8	10
BCSP-6-PK	6	10
BCSP-4-PK	4	10
BCSP-2-PK	2	10
BCSP-1-PK	1	10
BCSP-10-PK	1/0	10
BCSP-20-PK	2/0	10
BCSP-30-PK	3/0	10
BCSP-40-PK	4/0	10



## Heavy Duty Lugs, Splices & Bent Lugs

- Made from seamless tubes 99.9% copper & electro tin-plated for higher conductivity & corrosion resistance
- Heavy duty lugs & splices – thicker wall & wider pad
- Color-coded to industry standard
- Designed for stranded copper wires
- Cable size and crimp tool die codes stamped on pad
- Lugs can be crimped or soldered
- Chamfered for easy cable insertion
- Tight barrel to pad transition provides longer usable barrel length
- Rated for 600 volts



### HEAVY DUTY LUGS - TIN PLATED & COLOR-CODED

TIN PLATED Part #	CABLE SIZE	STUD	COLOR
BCHD-8-14-PK	8	1/4"	RED
BCHD-8-516-PK	8	5/16"	RED
BCHD-8-38-PK	8	3/8"	RED
BCHD-6-10-PK	6	#10	BLUE
BCHD-6-14-PK	6	1/4"	BLUE
BCHD-6-516-PK	6	5/16"	BLUE
BCHD-6-38-PK	6	3/8"	BLUE
BCHD-6-12-PK	6	1/2"	BLUE
BCHD-4-10-PK	4	#10	GRAY
BCHD-4-14-PK	4	1/4"	GRAY
BCHD-4-516-PK	4	5/16"	GRAY
BCHD-4-38-PK	4	3/8"	GRAY
BCHD-4-12-PK	4	1/2"	GRAY
BCHD-2-1-14-PK	2-1	1/4"	PINK
BCHD-2-1-516-PK	2-1	5/16"	PINK
BCHD-2-1-38-PK	2-1	3/8"	PINK
BCHD-2-1-12-PK	2-1	1/2"	PINK
BCHD-10-14-PK	1/0	1/4"	BLACK
BCHD-10-516-PK	1/0	5/16"	BLACK
BCHD-10-38-PK	1/0	3/8"	BLACK
BCHD-10-12-PK	1/0	1/2"	BLACK
BCHD-20-14-PK	2/0	1/4"	ORANGE
BCHD-20-516-PK	2/0	5/16"	ORANGE
BCHD-20-38-PK	2/0	3/8"	ORANGE
BCHD-20-12-PK	2/0	1/2"	ORANGE
BCHD-30-516-PK	3/0	5/16"	PURPLE
BCHD-30-38-PK	3/0	3/8"	PURPLE
BCHD-30-12-PK	3/0	1/2"	PURPLE
BCHD-40-516-PK	4/0	5/16"	YELLOW
BCHD-40-38-PK	4/0	3/8"	YELLOW
BCHD-40-12-PK	4/0	1/2"	YELLOW



Suggested UL Tool:



**T-BCL-1**  
8 AWG - 250 MCM Crimp Tool  
See page 59 for details.

Please visit [www.nspa.com/ul\\_csa\\_listing.html](http://www.nspa.com/ul_csa_listing.html) for a complete list of UL Listings.

# Heavy Duty Lugs, Splices & Bent Lugs



## HEAVY DUTY ANGLED LUGS - TIN PLATED & COLOR-CODED

TIN PLATED PART #	CABLE SIZE	STUD	BEND	COLOR
BCHD-8-38-45-PK	8	3/8"	45°	RED
BCHD-8-38-90-PK	8	3/8"	90°	RED
BCHD-6-38-45-PK	6	3/8"	45°	BLUE
BCHD-4-38-45-PK	4	3/8"	45°	GRAY
BCHD-4-38-90-PK	4	3/8"	90°	GRAY
BCHD-2-1-516-45-PK	2-1	5/16"	45°	PINK
BCHD-2-1-516-90-PK	2-1	5/16"	90°	PINK
BCHD-2-1-38-45-PK	2-1	3/8"	45°	PINK
BCHD-2-1-38-90-PK	2-1	3/8"	90°	PINK
BCHD-2-1-12-45-PK	2-1	1/2"	45°	PINK
BCHD-2-1-12-90-PK	2-1	1/2"	90°	PINK
BCHD-10-516-45-PK	1/0	5/16"	45°	BLACK
BCHD-10-516-90-PK	1/0	5/16"	90°	BLACK
BCHD-10-38-45-PK	1/0	3/8"	45°	BLACK
BCHD-10-38-90-PK	1/0	3/8"	90°	BLACK
BCHD-20-516-45-PK	2/0	5/16"	45°	ORANGE
BCHD-20-38-45-PK	2/0	3/8"	45°	ORANGE
BCHD-20-38-90-PK	2/0	3/8"	90°	ORANGE
BCHD-20-38-LE-PK	2/0	3/8"	LEFT ELBOW	ORANGE
BCHD-20-38-RE-PK	2/0	3/8"	RIGHT ELBOW	ORANGE
BCHD-20-12-45-PK	2/0	1/2"	45°	ORANGE
BCHD-20-12-90-PK	2/0	1/2"	90°	ORANGE
BCHD-30-516-45-PK	3/0	5/16"	45°	PURPLE
BCHD-30-38-45-PK	3/0	3/8"	45°	PURPLE
BCHD-30-38-90-PK	3/0	3/8"	90°	PURPLE
BCHD-30-12-45-PK	3/0	1/2"	45°	PURPLE
BCHD-30-12-90-PK	3/0	1/2"	90°	PURPLE
BCHD-40-516-90-PK	4/0	5/16"	90°	YELLOW
BCHD-40-38-45-PK	4/0	3/8"	45°	YELLOW
BCHD-40-38-90-PK	4/0	3/8"	90°	YELLOW
BCHD-40-12-45-PK	4/0	1/2"	45°	YELLOW
BCHD-40-12-90-PK	4/0	1/2"	90°	YELLOW

## HEAVY DUTY SPLICES - TIN PLATED & COLOR-CODED

TIN PLATED PART #	CABLE SIZE	COLOR
BCHDSP-6-PK	6	BLUE
BCHDSP-4-PK	4	GRAY
BCHDSP-2-1-PK	2-1	PINK
BCHDSP-10-PK	1/0	BLACK
BCHDSP-20-PK	2/0	ORANGE
BCHDSP-30-PK	3/0	PURPLE
BCHDSP-40-PK	4/0	YELLOW



Please visit [www.nspa.com/ul\\_csa\\_listing.html](http://www.nspa.com/ul_csa_listing.html) for a complete list of UL Listings.

### Maintenance Assortments



**ASST-BCHD-1000**  
27 Items • 102 Pieces  
Heavy Duty



**ASST-BCLP-1000**  
29 Items • 111 Pieces  
Plated



**ASST-BCLU-1000**  
20 Items • 94 Pieces  
Unplated

# Battery Terminals

CABLELINK STRAIGHT BATTERY TERMINALS			
Part #	Wire Gauge	Polarity	Color Code
CLBT-6U	6	Universal	Grey
CLBT-4U	4	Universal	Grey
CLBT-4P	4	Positive	Grey
CLBT-4N	4	Negative	Grey
CLBT-21P	2-1	Positive	Pink
CLBT-21N	2-1	Negative	Pink
CLBT-1/0P	1/0	Positive	Black
CLBT-1/0N	1/0	Negative	Black
CLBT-2/0P	2/0	Positive	Orange
CLBT-2/0N	2/0	Negative	Orange
CLBT-3/0P	3/0	Positive	Purple
CLBT-3/0N	3/0	Negative	Purple
CLBT-4/0P	4/0	Positive	Yellow
CLBT-4/0N	4/0	Negative	Yellow

CABLELINK FLAG BATTERY TERMINALS			
Part #	Wire Gauge	Polarity	Color Code
CLFT-1/0P	1/0	Positive	Black
CLFT-1/0N	1/0	Negative	Black
CLFT-2/0P	2/0	Positive	Orange
CLFT-2/0N	2/0	Negative	Orange
CLFT-3/0P	3/0	Positive	Purple
CLFT-3/0N	3/0	Negative	Purple

EMERGENCY TYPE BATTERY CABLE TERMINALS			
Part #	Wire Gauge	Polarity	Post Type
EBT-838U	6-2/0	Universal	Side mount
EBT-880U	6-2/0	Universal	Top mount
EBT-890U	1-4/0	Universal	Top mount



# Non-Insulated Heavy-Duty Terminals

BRAZED SEAM • HEAVY DUTY APPLICATIONS • BRAZED WITH A HIGH GRADE SILVER ALLOY FOR MAXIMUM STRENGTH

NON-INSULATED RINGS		
Part #	Wire Gauge	Stud
WTU-108-10	8	#10
WTU-108-14	8	1/4"
WTU-108-516	8	5/16"
WTU-108-38	8	3/8"
WTU-108-12	8	1/2"
WTU-106-14	6	1/4"
WTU-106-38	6	3/8"
WTU-106-12	6	1/2"
WTU-104-14	4	1/4"
WTU-104-38	4	3/8"
WTU-104-12	4	1/2"
WTU-102-14	2	1/4"
WTU-102-38	2	3/8"
WTU-102-12	2	1/2"



NON-INSULATED BUTT CONNECTORS	
Part #	Wire Gauge
WTU-5-08	8
WTU-5-06	6
WTU-5-04	4
WTU-5-02	2



# Thomas & Betts Ty-Rap™ Cable Ties

- 316 stainless steel locking device in head
- Low profile head & smooth body design
- Easy to install & infinitely adjustable design
- SAE-AS-23190

## STANDARD TY-RAP™ CABLE TIES

Part #	Pkg Qty	Bundle Range	Tensile Strength	Width	Length	Color
TY23M	100	1/16" to 5/8"	18 lbs	.094"	3.62"	Natural
TY23MX*	100	1/16" to 5/8"	18 lbs	.094"	3.62"	Black
TY2315M	100	1/16" to 1.5"	18 lbs	.094"	7.00"	Natural
TY232M	100	1/16" to 2"	18 lbs	.094"	8.00"	Natural
TY232MX*	100	1/16" to 2"	18 lbs	.094"	8.00"	Black
TY234M	100	1/16" to 4"	18 lbs	.094"	14.00"	Natural
TY24M	100	1/16" to 1.25"	30 lbs	.140"	5.50"	Natural
TY24MX*	100	1/16" to 1.25"	30 lbs	.140"	5.50"	Black
TY242M	100	1/16" to 2"	40 lbs	.140"	8.19"	Natural
TY242MX*	100	1/16" to 2"	40 lbs	.140"	8.19"	Black
TY26M	100	1/16" to 3"	40 lbs	.140"	11.08"	Natural
TY26MX*	100	1/16" to 3"	40 lbs	.140"	11.08"	Black
TY244M	100	1/16" to 4"	40 lbs	.140"	14.50"	Natural
TY244MX*	100	1/16" to 4"	40 lbs	.140"	14.50"	Black
TY25M	100	1/16" to 1.75"	50 lbs	.184"	7.31"	Natural
TY25MX*	100	1/16" to 1.75"	50 lbs	.184"	7.31"	Black
TY253M	100	1/16" to 3"	50 lbs	.184"	11.41"	Natural
TY253MX*	100	1/16" to 3"	50 lbs	.184"	11.41"	Black
TY28M	100	1/16" to 4"	50 lbs	.184"	14.19"	Natural
TY28MX*	100	1/16" to 4"	50 lbs	.184"	14.19"	Black
TY272M	100	3/16" to 2"	120 lbs	.301"	8.00"	Natural
TY272MX*	100	3/16" to 2"	120 lbs	.301"	8.00"	Black
TY27M	50	3/16" to 3.5"	120 lbs	.301"	13.38"	Natural
TY27MX*	50	3/16" to 3.5"	120 lbs	.301"	13.38"	Black
TY29M	50	1/2" to 9"	120 lbs	.301"	30"	Natural
TY29MX	50	1/2" to 9"	120 lbs	.301"	30"	Black

\*BLACK CABLE TIES ARE OUTDOOR TYPE MADE OF WEATHER STABILIZED NYLON

## COLORED TY-RAP™ CABLE TIES

Part #	Pkg Qty	Bundle Range	Tensile Strength	Width	Length	Color
TY25M-R	100	1/16" to 1.75"	50 lbs	.184"	7.31"	Red
TY25M-G	100	1/16" to 1.75"	50 lbs	.184"	7.31"	Green
TY25M-Y	100	1/16" to 1.75"	50 lbs	.184"	7.31"	Yellow
TY25M-B	100	1/16" to 1.75"	50 lbs	.184"	7.31"	Blue
TY25M-OR	100	1/16" to 1.75"	50 lbs	.184"	7.31"	Orange

## MOUNTING TY-RAP™ CABLE TIES

Screw mount

Part#	Pkg Qty	Screw Size	Bundle Range	Tensile Strength	Width	Length	Color
TY33M	100	#4	1/16" to 5/8"	18 lbs	.091"	4"	Natural
TY33MX*	100	#4	1/16" to 5/8"	18 lbs	.091"	4"	Black
TY34M	100	#8	1/16" to 1-1/8"	40 lbs	.140"	6"	Natural
TY635M	100	#6	1/16" to 1-3/4"	50 lbs	.184"	7.81"	Natural
TY35M	100	#10	1/16" to 1-3/4"	50 lbs	.184"	7.81"	Natural
TY354M	100	#10	1/16" to 4"	50 lbs	.184"	14.6"	Natural
TY37M	50	1/4"	3/16" to 3-1/2"	120 lbs	.301"	13.93"	Natural
TY37MX*	50	1/4"	3/16" to 3-1/2"	120 lbs	.301"	13.93"	Black

## TY-RAP™ HOLE MOUNT CABLE TIES

Part#	Pkg Qty	Hole Size	Bundle Range	Tensile Strength	Width	Length	Color
TY554M	100	3/16"	1/16" to 1-1/4"	40 lbs	.140"	5.96"	Natural
TY38M	100	1/4"	1/16" to 1-3/4"	50 lbs	.184"	7.78"	Natural

BLACK CABLE TIES ARE OUTDOOR TYPE MADE OF WEATHER STABILIZED NYLON

## TY-RAP™ CABLE TIES

Part#	Pkg Qty	Marking Pad Size	Bundle Range	Tensile Strength	Width	Length	Color
TY46M	100	1/2" x 7/8"	3/8" to 1-3/4"	50 lbs.	.184"	7.25"	Natural
TY48M	100	1/2" x 2-1/8"	3/4" to 4"	50 lbs.	.184"	14.18"	Natural



## NYLON CABLE TIES

STANDARD CABLE TIES ARE MOLDED ONE-PIECE TIES AVAILABLE IN HIGH QUALITY STANDARD NATURAL AND BLACK NYLON

Part #	Bundle Range	Length	Width	Tensile Strength	Color
CT100	1/16"-7/8"	4"	.10"	18 lbs	Natural
CT100B	1/16"-7/8"	4"	.10"	18 lbs	Black
CT200	1/16"-7/8"	5 3/4"	.14"	40 lbs	Natural
CT200B	1/16"-7/8"	5 3/4"	.14"	40 lbs	Black
CT400	1/16"-1 7/8"	7 1/2"	.19"	50 lbs	Natural
CT400B	1/16"-1 7/8"	7 1/2"	.19"	50 lbs	Black
CT500	1/16"-3 1/16"	11 1/4"	.19"	50 lbs	Natural
CT500B	1/16"-3 1/16"	11 1/4"	.19"	50 lbs	Black
CT600	1/16"-4 1/8"	14 1/2"	.19"	50 lbs	Natural
CT600B	1/16"-4 1/8"	14 1/2"	.19"	50 lbs	Black
CT700	1/16"-4 1/16"	15"	.30"	120 lbs	Natural
CT700B	1/16"-4 1/16"	15"	.30"	120 lbs	Black

## HEAVY DUTY NYLON CABLE TIES

Part #	Bundle Range	Length	Width	Tensile Strength	Color
CT1100	3/16"-7 3/16"	24"	.345"	175 lbs	Natural
CT1100B	3/16"-7 3/16"	24"	.345"	175 lbs	Black
CT1200	3/16"-11"	36"	.345"	175 lbs	Natural
CT1200B	3/16"-11"	36"	.345"	175 lbs	Black
CT1300	3/16"-15"	48"	.345"	175 lbs.	Natural

## SCREW MOUNT NYLON CABLE TIES

SCREW MOUNT CABLE TIES ARE MADE OF THE SAME HIGH QUALITY STANDARD NATURAL AND BLACK NYLON AS THE STANDARD TIES WITH A CONVENIENT HOLE FOR SCREW MOUNTING.

Part #	Screw Size	Bundle Range	Length	Width	Tensile Strength	Color
CT800	#10	1/16"-1 3/4"	8"	.178"	50 lbs	Natural
CT800B	#10	1/16"-1 3/4"	8"	.178"	50 lbs	Black
CT900	#10	1/16"-4"	16"	.190"	50 lbs	Natural
CT900B	#10	1-16"-4"	16"	.190"	50 lbs	Black

## RELEASABLE NYLON CABLE TIES

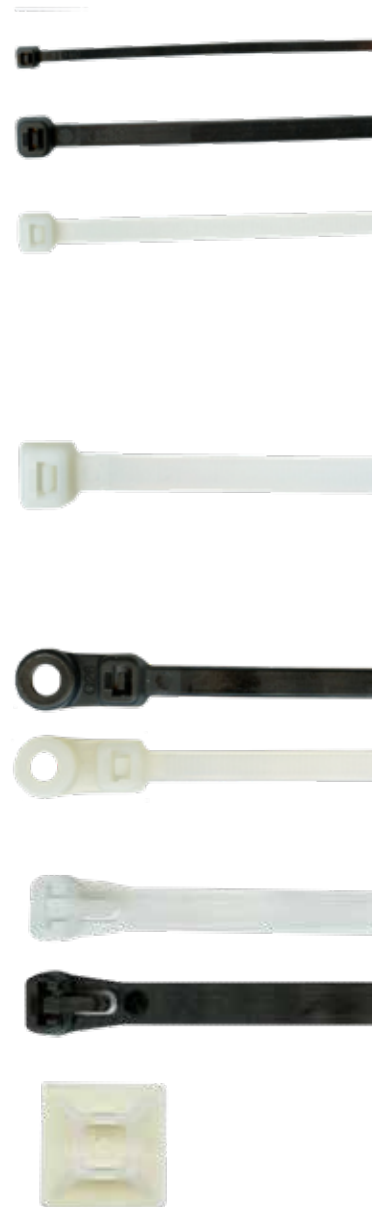
THESE CABLE TIES HAVE A RELEASE MECHANISM MAKING THEM REUSABLE

Part #	Bundle Range	Length	Width	Tensile Strength	Color
CT1500	1/8"-1 1/4"	6"	.298"	50 lbs	Natural
CT1500B	1/8"-1 1/4"	6"	.298"	50 lbs	Black
CT1600B	1/8"-3"	11.75"	.298"	50 lbs	Black

## NYLON CABLE TIE MOUNTING BASE

ADHESIVE BACKED • NATURAL NYLON

Part #	Base Size	Max Tie Width	Color
CTMB-1	.75" x .75"	.200"	Natural
CTMB-2	1" x 1"	.200"	Natural



### Starter Assortments



**ASST-CT-5000**  
7 Items • 160 Pieces  
T&B Ty-Rap™

### Maintenance Assortments



**ASST-CT-1000**  
15 Items • 180 Pieces  
T&B Ty-Rap™



**ASST-CT-1010**  
18 Items • 200 Pieces  
Nylon Cable Ties

# Installation Tools - Heat Tools

## SELF-IGNITING MICRO BLASTER TORCH

### T-MT-4E

- Self-Igniting butane micro torch
- Refillable with butane
- Produces temperature up to 2370° F/1300° C
- 30 minutes of continuous use
- Can adjust flame height
- Pinpoint flame is perfect for soldering, desoldering, heat shrinking & terminating, heating, lighting and many other applications
- Ships without butane

T-MTC-4E - Clamshell, No butane



## SELF-IGNITING POCKET TORCH

### T-MTC-5

- Piezo ignition/Self-igniting torch
- Refillable with butane
- Safety lock
- Continuous burning flame lock
- Produces temperature up to 2370° F/1300° C
- 60-90 minutes of continuous use
- Ships without butane
- Can adjust flame intensity
- Pinpoint flame is perfect for soldering, desoldering, heat shrinking & terminating, heating, lighting and many other applications



## SELF-IGNITING MINI PENCIL TORCH

### T-MTC-7

- Piezo ignition/Self-igniting torch
- Refillable with butane
- Safety lock
- Continuous burning flame lock
- Can adjust flame intensity
- Produces temperature up to 2370° F/1300° C
- 60 minutes of continuous use
- Ships without butane
- Pinpoint flame is perfect for soldering, desoldering, heat shrinking & terminating, heating, lighting and many other applications



## BUTANE POWERED MICRO-TORCH

### T-MT-11

- Compact palm size
- Produces an adjustable, wind resistant flame with temperatures up to 2500°F/1300°C
- Built-in Safety Lock with improved easy to use self-ignition system
- Meets Consumer Products Safety Commission (CPSC) Requirements
- Powered by refillable "fuel cell" (included) with flame adjustment lever
- Built-in fuel level viewing window
- Use with Master Ultratane® Butane for best performance
- Pinpoint flame is perfect for soldering, desoldering, heat shrinking & terminating, heating, lighting and many other applications
- Ships without butane
- 20 minutes of continuous use



## SELF-IGNITING ULTRATORCH

### T-UT-100SI

- Self-igniting butane torch
- The 28ml gas tank is easily refilled with standard butane canisters
- Comes standard with a soldering tip, pinpoint attachment, heat deflector, maintenance tools, and a sturdy plastic protective cover
- The flame is contained within the barrel of the torch so that only heat is emitted at tip
- Features an adjustable temperature mechanism up to 1202°F Maximum (650°C)
- Soldering tip temperatures range from 482°F to 932°F (250°C - 500°C)
- UL listed
- Ships without butane
- 120 minutes of continuous use



## SELF-IGNITING BUTANE TORCH

### T-MTC-20

- Piezo ignition/Self-igniting torch
- Refillable with butane
- Safety lock
- Continuous burning flame lock
- Can adjust flame intensity
- Produces temperature up to 2370° F/1300° C
- 40-60 minutes of continuous use
- Ships without butane
- Pinpoint flame is perfect for soldering, desoldering, heat shrinking & terminating, heating, lighting and many other applications



# Installation Tools - Heat Tools

## SELF-IGNITING METAL CANISTER TORCH

### T-MTC-50

- Piezo ignition/Self-igniting torch
- Refillable with butane
- Requires two steps to ignite
- Continuous burning flame
- Can adjust flame intensity
- Produces temperature up to 2370°F/1300°C
- 90 minutes of continuous use
- Windproof flame
- Hand held or table top stand
- Ships without butane
- Pinpoint flame is perfect for soldering, desoldering, heat shrinking & terminating, heating, lighting and many other applications
- Can use T-MT-EXT attachment



## SELF-IGNITING SUPER BLASTER TORCH

### T-MTC-51\*

- Plastic canister torch
- Self-Igniting, Piezo Electronic Ignition System
- 2500°F/1300°C
- 120 minutes of continuous use
- Refillable
- Windproof flame
- Hand held or table top
- Ships without butane
- Pinpoint flame is perfect for soldering, desoldering, heat shrinking & terminating, heating, lighting and many other applications
- Meets CPSC child safety requirements

\*Butane not included  
T-MTC-51B · Includes butane



### T-MTC-51

Clamshell  
Package,  
No butane



### T-MTC-51B

Clamshell  
Package,  
includes  
butane



### T-MT-EXT

- Contains flame in the extender barrel
- Heat deflector shield

# Installation Tools - Heat Tools

## HEAVY-DUTY SELF-IGNITING BUTANE TORCH

### T-MTC-60

- Piezo ignition/Self-Igniting
- Refillable with butane
- Large flame - not pencil point flame
- Safety lock
- Continuous burning flame lock
- 2500°F / 1300°C
- 40-60 minutes of continuous use
- Ships without butane



## 2&1 BATON TORCH

### T-MTC-70

- Flameless or pencil point flame
- Flameless torch - 1380°F/750°C
- Pencil point flame - 2400°F/1300°C
- Piezo ignition/Self-igniting torch
- Refillable with butane
- Adjustable temperature
- Ships without butane
- Heat deflector shield
- Pop-out stand for hands-free use



## BUTANE GAS CANISTER

### T-BUTANE-MINI

- Triple-refined formula reduces clogging of filters
- Special vapor pressure promotes consistent ignition
- Contains no CFC's, canister with single-piece universal filling tip
- Recommended refill for all Ultratorch® & Master Butane-powered products

Pkg Qty	Weight
12	15/16 oz.

Mini Butane is shipped ground without HMED/Hazardous Material charges.



## Installation Tools - Heat Guns

**MASTER**  
APPLIANCE

### PROHEAT VARITEMP HEAT GUN

#### T-PH-1200

Lightweight, compact and easy to use, the T-PH-1200 heat gun has a variable temperature range up to 1000°F/540°C. This heat gun's versatility makes it ideal for a wide array of applications, such as: Installing heat shrink tubing/connectors, activating adhesive, shrink wrapping, thawing, etc.

- Ergonomic design for superb balance and grip
- Variable temperature with patented electronic temperature control system
- Pre-select and maintain any temperature from 130° - 1000°F / 50° - 540°C
- Powerful airflow at 4000 FPM and 16 CFM
- Rated for 120V, 60Hz, 11A, 1300W max
- Overall dimensions: 8.2"L x 3.0"W x 7.3"H
- 1.3" O.D. nozzle opening
- Heavy-duty Lexan® plastic housing with built-in stand for hands-free use
- Protective hand/switch guard and convenient hanging loop
- 6-ft cord length
- Net weight: 1.6lbs
- Accessories also available separately



### PROHEAT VARITEMP ACCESSORIES

Part #	Pkg Qty	Description
T-35216	1	<ul style="list-style-type: none"> <li>• Bench Stand for the T-PH-1200</li> <li>• Allows operator to work with both hands free</li> </ul>
T-35017	1	<ul style="list-style-type: none"> <li>• Heat Deflector for the T-PH-1200</li> <li>• For use in heat shrink and heat shrink terminal applications</li> </ul>
T-40061	1	<ul style="list-style-type: none"> <li>• Pinpoint nozzle</li> </ul>

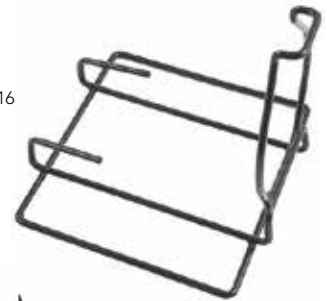
T-35017



T-40061



T-35216



### HOT AIR GUN

#### T-EC-100

Economical electric hot air tool

- Two heat settings: 500°F and 1000°F
- Lightweight construction
- UL listed at 120 volts
- Ideal for heat shrink terminals, paint stripping and thawing
- Deflector sold separately

#### T-EC-100 HEAT TOOL DEFLECTOR

Part #	Pkg Qty	Description
T-EC-100-1	1	<ul style="list-style-type: none"> <li>• Heat deflector for the T-EC-100 heat gun</li> <li>• For use in heat shrink and heat shrink terminal applications</li> </ul>



# Installation Tools - Crimping Tools

## Multi-Purpose Hand Tool Features

### T-R-15

#### Multi-Purpose Hand Tool that Crimps, Cuts and Strips Wire

Perhaps the most versatile multi-purpose hand tool you've ever seen...

#### TWO PRECISION-GROUND WIRE CUTTERS

Convenient up-front anvil-type cutter, perfect for work in close quarters. Scissor type cutter logically located behind the pivot point for use with the wire stripper. No more jumping back and forth. Cutter and stripper are next to each other.

#### FOUR VERSATILE CRIMPING DIES

Confined crimping die for 26-14 AWG insulated terminals and another for 12-10 AWG insulated terminals. Separate crimping dies for non-insulated terminals & ignition terminals.

#### FIVE COMMON SIZE BOLT CUTTERS

Cuts 4-40, 6-32, 8-32, 10-24 and 10-32 bolts and screws. Threaded slots to firmly grip the bolts when cutting can also be used for rethreading the bolts.

#### PRECISION-GROUND WIRE STRIPPER

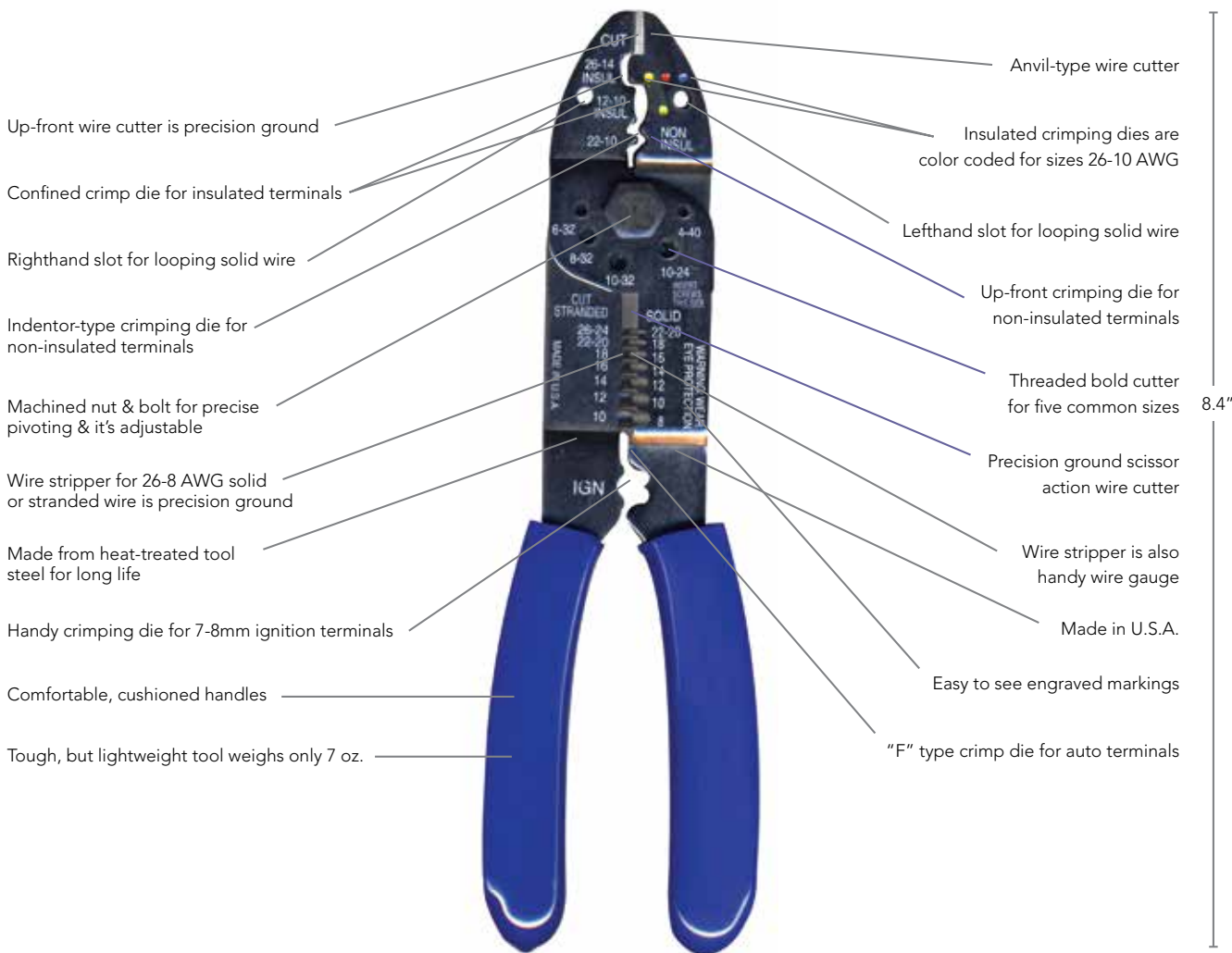
Scissor action wire stripper is precision ground for accuracy and clean, neat stripping. Strips stranded wire in 26 to 10 AWG sizes and solid wire in 18 to 8 AWG sizes. Wire stripper can also be used as a wire gauge.

#### TWO WIRE LOOPING SLOTS

A right and left hand slot for looping solid wire, conveniently located up front for close quarters work - no more nipped or nicked fingers.

#### ALSO...

- Cushioned handles for user comfort
- Made of heat-treated tool steel for long life, reliability and accuracy
- Machined nut and bolt for precise pivoting and it's adjustable - allows user to adjust the closing tension, as well as compensating for any possible tool wear
- Tough, but lightweight



### T-RC-15

- Crimping, cutting, stripping and rethreading tool in a clamshell for retail displays

# Installation Tools - Ratcheting Crimp Tools

T-R-40

Tool Features



3 CRIMP NESTS

22-18 AWG

16-14 AWG

12-10 AWG

Designed to crimp heat shrink terminals

Won't damage or cut heat shrink tubing

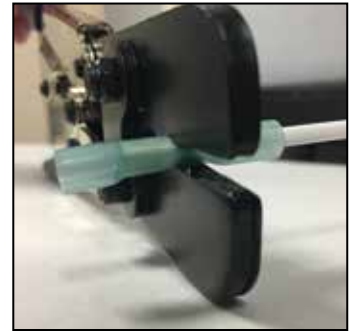
Crimps 22-10 AWG wires

Narrow crimp profile makes it easy to align on crimp barrel

Ratcheting design provides the proper amount of force to each size connector

A trouble-free full-cycle mechanism that assures consistent terminations

**PROVIDES EASY, UNIFORM CRIMP TERMINATIONS**



## WIRE STRIPPER & CUTTER

T-R-18

- Cuts & Strips 22 AWG to 10 AWG Wire
- Precision ground
- Spring-action handles
- Solid wire looping
- Locking mechanism
- Small plier tip





# Installation Tools - Ratcheting Crimp Tools

T-R-45

Tool Features



- 4 CRIMP NESTS
- 24-22 AWG
- 22-18 AWG
- 16-14 AWG
- 12-10 AWG

Designed to crimp heat shrink terminals

Won't damage or cut heat shrink tubing

Crimps 24-10 AWG wires

Narrow crimp profile makes it easy to align on crimp barrel

Ratcheting design provides the proper amount of force to each size connector

Easy to use release mechanism

A trouble free full-cycle mechanism that assures consistent terminations

## PROVIDES EASY, UNIFORM CRIMP TERMINATIONS



## WIRE & CABLE CUTTER

T-R-19

- Cuts up to 1 AWG cable
- Dual elliptical cutting blades - prevents wire from deforming
- For copper & aluminum wire
- Cuts solid or stranded wire
- Two cutter
  - Smaller Wires
  - Larger Wires



# Installation Tools - Ratcheting Crimp Tools

## Tool Features

- T-R-50**
- Designed for heat shrink terminals
  - Ratcheting design provides the proper amount of force to each size connector
  - UL Listed tool for sealed connectors
  - A trouble free full-cycle mechanism that assures consistent terminations
  - Dies on page 57 are interchangeable with the T-R-50

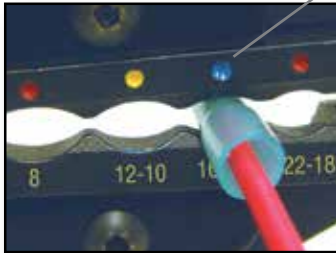
### 4 CRIMP NESTS

22-18 AWG, Red

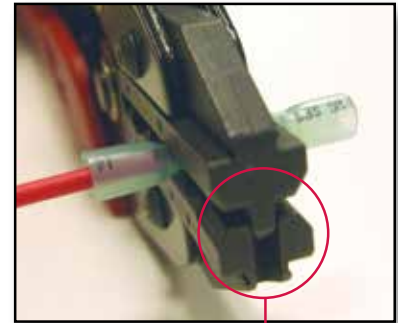
16-14 AWG, Blue

12-10 AWG, Yellow

8 AWG, Red

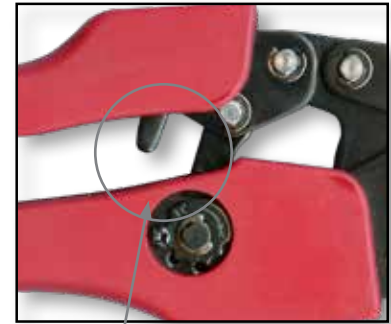


Mating Mechanism prevents the jaws from slipping or mis-alignment



Mating Mechanism - to ensure dies won't slip during crimping

Easy to use release mechanism



Release Switch - Push lever toward the crimp nests.

Ergonomic design to initiate the crimp process

Long handles make it easier to crimp (less force required)

### T-R-53

- 4 crimp nests - 12-10, 16-14, 22-18, 26-24
- Ensures uniform crimp termination regardless of user
- Release switch, if terminal or wire is inserted improperly
- High quality, economical tool
- Alignment guide to ensure dies won't slip during crimping
- Designed for heat shrink terminals
- Dies on page 57 are interchangeable with the T-R-53



# Installation Tools - Ratcheting Crimp Tools

## Tool Kit & Dies

- Die for Insulated Closed End Connectors (T-DIE-13C)
- Die for Open Barrel Terminals (T-DIE- 3B)
- Die for Insulated Flag Terminals (T-DIE-3F)
- Die for Insulated Double Crimp Terminals (T-DIE-4C)
- Die for Heat Shrink Terminals (T-DIE-53)
- Black case with clear plastic window



Part #	Includes
T-R-50-KIT-1	Case, T-R-50, all 6 dies below & 2.5mm Allen Wrench
T-R-50-KIT-2	Case, T-DIE-3F, T-DIE-13C, T-DIE-4C, T-DIE-3B-L, T-DIE-53 & 2.5mm Allen Wrench (No crimp tool)
T-R-50-CASE	Case & 2.5mm Allen Wrench

### INSTALLATION AND POSITIONING OF TERMINAL IN DIES



### T-R-50 DIES



All crimp dies should be positioned with the smallest wire size at the nose of the tool (opposite crimp handles).

# Installation Tools - Crimping Tools

## RATCHETING CRIMP TOOL

### T-R-25

- Ratcheting crimping tool for installing insulated wire connectors from 22 to 10 AWG
- Installs vinyl and nylon connectors
- Color coded nests allow for easy match up of terminal size to nest
- Assures that the proper crimp force will be applied to the connector every time



## EASY STRIPPER TOOL

### T-R-35

- Durable wire stripper for 22 to 10 AWG wire
- Self-adjusting strip mechanism with spring action



## CRIMP TOOLS -

### T-WT-2000

All purpose precision hand tool with color-coded compression guide which visually indicates when correct crimp has been made

- For insulated or non-insulated terminals, disconnects, splices and wire joints from 22 to 10 AWG
- Cuts wire and bolts, cleans and reshapes threads
- Has scissor-action wire stripper with spring loaded handles for convenience and ease of use



### T-WT-111M

Plier type hand tool for installing **non-insulated terminals**, splices and twist on wire joints from 22 to 10 AWG

- Equipped with wire cutters



### T-WT-112M

Plier type hand tool for installing both **insulated and non-insulated terminals**, disconnects, splices from 22 to 10 AWG

- Wire cutters are located in the nose of the tool for tight spaces



# Installation Tools - Crimping Tools

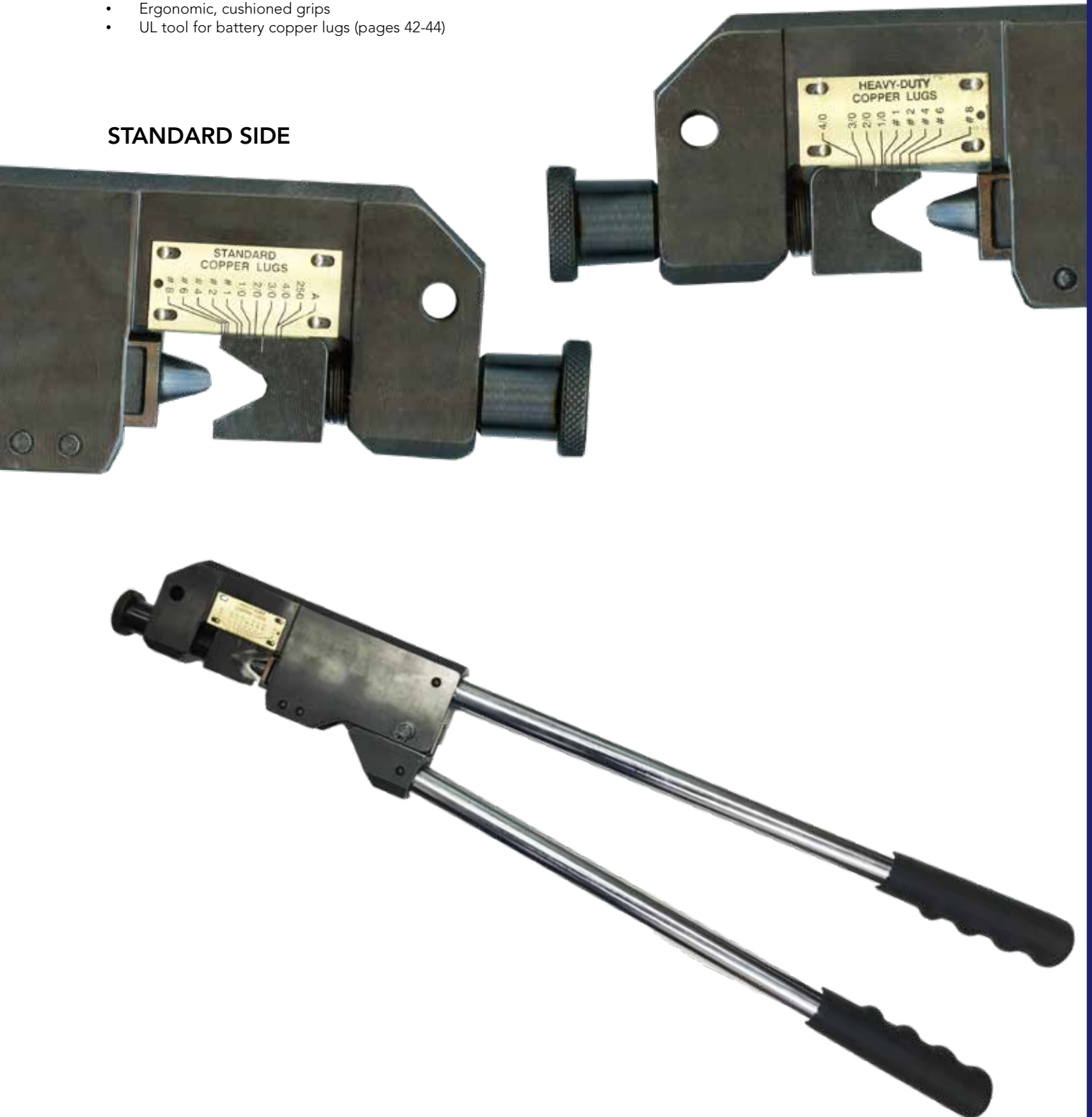
## ADJUSTABLE CRIMP TOOL FOR COPPER LUGS - STANDARD & HEAVY DUTY

### T-BCL-1

- Crimps 8 AWG - 250 MCM
- Adjustable die for quick changes - Anvil Style
- 25" Tool with 15 1/2" long handles for easy crimping
- Ergonomic, cushioned grips
- UL tool for battery copper lugs (pages 42-44)

HEAVY DUTY SIDE

STANDARD SIDE



# Heavy Duty Flat Washers

## THE EXTRA-THICK USS & SAE FLAT WASHER ADVANTAGE

Our extra thick flat washers are designed for high performance in the most rugged environments. Use these washers with Grade 8 bolts and lower in critical applications.

- Through hardened carbon steel
- Yellow dichromate finish protects against rust and corrosion
- Extra thickness helps to prevent splitting, bellying, and dishing
- Great for off-road applications and other extreme conditions

### EXTRA THICK HIGH ALLOY SAE FLAT WASHERS

- MULTIPLE HEAT TREATED
- ELIMINATES BOLT FAILURE CAUSED BY ORDINARY FLAT WASHERS "DISHING OUT"

Part #	Bolt Size	O.D.	Thickness
ETFW-6501	1/4"	5/8"	.098"
ETFW-6502	5/16"	11/16"	.098"
ETFW-6503	3/8"	13/16"	.118"
ETFW-6504	7/16"	15/16"	.118"
ETFW-6505	1/2"	1-1/16"	.199"
ETFW-6506	9/16"	1-3/16"	.199"
ETFW-6507	5/8"	1-5/16"	.250"
ETFW-6508	3/4"	1-1/2"	.250"
ETFW-6509	7/8"	1-3/4"	.250"
ETFW-6510	1"	2"	.250"



### EXTRA THICK HIGH ALLOY USS FLAT WASHERS

- MULTIPLE HEAT TREATED
- ELIMINATES BOLT FAILURE CAUSED BY ORDINARY FLAT WASHERS "DISHING OUT"

Part #	Bolt Size	O.D.	Thickness
ETFW-6601	1/4"	3/4"	.098"
ETFW-6602	5/16"	7/8"	.098"
ETFW-6603	3/8"	1"	.118"
ETFW-6604	7/16"	1-1/4"	.118"
ETFW-6605	1/2"	1-3/8"	.199"
ETFW-6606	9/16"	1-1/2"	.199"
ETFW-6607	5/8"	1-3/4"	.250"
ETFW-6608	3/4"	2"	.250"
ETFW-6609	7/8"	2-1/4"	.250"
ETFW-6610	1"	2-1/2"	.250"



### EXTRA THICK FENDER WASHERS

- Zinc plated for excellent corrosion resistance
- Use to repair sloppy holes
- Extra thickness allows for higher bolt torque without washer deformation

### EXTRA THICK FENDER WASHERS

#### STEEL • ZINC PLATED

Part #	Bolt Size	O.D.	Thickness
ETFD-1970	1/4"	1"	.120"
ETFD-1972	1/4"	1-1/2"	.120"
ETFD-1975	5/16"	1-1/4"	.120"
ETFD-1983	5/16"	1-3/4"	.120"
ETFD-1978	3/8"	1-1/4"	.120"
ETFD-1984	3/8"	1-3/4"	.120"
ETFD-1982	1/2"	2"	.120"



## SES SAMPLE BOARD - 3

- Physical Samples of our SES connectors compared to the competitor's or inferior connectors
- Each installed strip is removable for demonstration
- Features and Benefits listed for each product
- Customizable area for your company logo

**SEALED HEAT SHRINK CONNECTORS**  
DESIGNED TO MAKE PERMANENT REPAIRS!

**Inferior, Unsealed Vinyl Ring**

- Wire Corrodes
- Wire Pulls Out

**Sealed Crimp Connector**

- Stops Wire Corrosion
- 50% Stronger than PVC Connectors

**Sealed Solder Connector**

- Stops Wire Corrosion
- 75% Stronger than PVC Connectors
- Maximum Current Flow - Ideal for LEDs

**Sealed Crimp & Solder Connector**

- Stops Wire Corrosion
- 80% Stronger than PVC Connectors
- Maximum Current Flow - Ideal for LEDs
- Crimping Holds Wire in Place & Provides Mechanical Reliability

**Competitor Heat Shrink Connector**

- Can strip wire too short, resulting in poor crimp termination & a new connector
- Wire is not fully sealed to connector, resulting in poor crimp termination & a new connector
- NO visual inspection of wire's condition

**Sealed Crimp Window Butt Connector**

- Crystal-clear tubing provides unparalleled visual inspection
- Window ensures the wire is stripped the proper length & is fully sealed to wire strap
- Color-coded stripes identify wire gauge size to use and where to crimp the connector

**Inferior Quick-Tap**

- Inferior Termination
- Unsealed Connection
- Temporary Repair

**Sealed Multiple Wire Butt Connector**

- Allows for "Daisy Chain" by joining 3 wires in-line
- Tapered barrel has a uniform copper wall, making it easy to crimp with a strong termination
- Active adhesive seals between multiple wires to prevent corrosion

**YOUR COMPANY LOGO HERE**

Front Side

**THE SEALED ELECTRICAL SYSTEM** | Do it Once. Do it right!

**WHY USE HEAT SHRINK TERMINALS?**

**PROBLEM: CORROSION**

When using a standard crimp terminal, the wire is exposed to moisture and other contaminants. Over time, the wire starts to corrode which reduces the current carrying capacity of the electrical system.

**PROBLEM: PULL-OUT**

In most cases, electrical connectors must operate in adverse conditions: heat, cold, vibration, strain, etc. These conditions can cause the wire or wires to pull-out of the connector.

**SOLUTION: SEAL YOUR CONNECTIONS**

**STOP WIRE CORROSION. MAKE PERMANENT REPAIRS!**

**WHO USES HEAT SHRINK TERMINALS?**

Images showing various applications: a truck, a boat, a car, a construction site, a school bus, and a utility vehicle.

Back Side

# Storage Kits

## METAL TRAYS

Large metal assortment trays have long been the backbone of the industrial maintenance industry. Our maintenance assortments come in industry standard 18" x 12" metal drawers. These drawers can hold a substantial quantity of a wide range of products.

- An economical way to organize and track inventory needed to keep critical equipment up and running
- A must for large maintenance shops
- Designed to be restocked with our standard package quantities
- Can be used as a master inventory location for smaller trays in satellite or mobile maintenance facilities

Part #	Description	Measurements
EQDL-12	12 hole, 4 down x 3 across	18"W x 3"H x 12"D
EQDL-16	16 hole, 4 down x 4 across	18"W x 3"H x 12"D
EQDL-20	20 hole, 4 down x 5 across	18"W x 3"H x 12"D
EQDL-21	21 hole, 4 down x 5 across + long hole on right	18"W x 3"H x 12"D
EQDL-24	24 hole, 4 down x 6 across	18"W x 3"H x 12"D
EQDL-32	32 hole, 4 down x 8 across	18"W x 3"H x 12"D
EQDL-6-VERT	6 hole, vertical	18"W x 3"H x 12"D
EQDL-ADH	6 down, horizontally adjustable with 12 dividers	18"W x 3"H x 12"D
EQDL-ADL	4 across, vertically adjustable with 9 dividers	18"W x 3"H x 12"D



## LID LABEL FOR METAL TRAYS

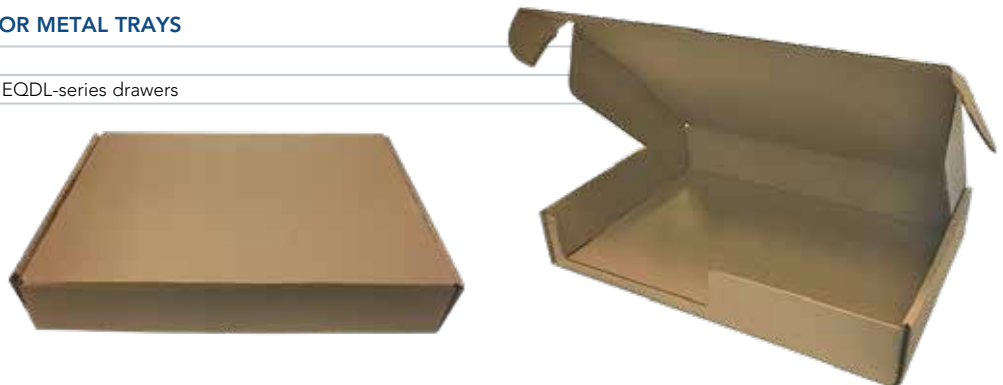
Lid label protectors are made of a heavy gauge plastic. Each protector is adhesive-backed and installs in seconds. A lid label may be placed in the plastic pouch, protecting it from dirt, dust and grease.

Part #	Description	Measurements
EQLLP	Plastic sleeve with adhesive-back	18"W x 11.5"H



## CARDBOARD SHIPPING BOX FOR METAL TRAYS

Part #	Description
BOX #33	"Pizza Box" for EQDL-series drawers





# Storage Kits

## PLASTIC STARTER TRAYS

Starter assortments offer a storage solution for a very modest investment. The plastic starter kits are 11" x 6.75".

- Extremely portable
- Allows the user to identify high usage items before making a large investment
- Ideal for satellite or mobile maintenance facilities

Part #	Description	Measurements
EQSP12	12 hole, 2 down x 6 across	11"W x 1.75"H x 6.75"D
EQSP12-OFF	12 hole, 2 down x 6 across, bottom holes are bigger	11"W x 1.75"H x 6.75"D
EQSP13	13 hole, 2 down x 6 across, one large hole at top	11"W x 1.75"H x 6.75"D
EQSP18	18 hole, 3 down x 6 across	11"W x 1.75"H x 6.75"D
EQSP6	6 hole, 1 down, 6 across	11"W x 1.75"H x 6.75"D
EQSPADJ	3 down, horizontally adjustable with dividers	11"W x 1.75"H x 6.75"D



EQSP12



EQSP13



EQSPADJ

## ADJUSTABLE PLASTIC TRAYS

Part #	Description	Measurements
EQLP-ADJ-CLEAR	4 down, horizontally adjustable with 20 dividers	13.2"W x 2.25"H x 9.2"D
EQSPADJ	3 down, horizontally adjustable with dividers	11"W x 1.75"H x 6.75"D
EQMP-ADJ	Medium plastic box, fully adjustable	8.5"W x 1.3"H x 4.8"D



EQMP-ADJ



EQLP-ADJ-CLEAR

## PLASTIC MINI TRAYS

Our Mini Kits are designed as a convenient way to put the most popular parts for a particular product line at the fingertips of the user. They come in very portable 7.5" by 3.5" plastic boxes.

- Great for quick fix kits on vehicles – cars, trucks & boats
- Excellent as home repair kits
- Very cost effective

Part #	Description	Measurements
EQT-1	1 hole	7.5"W x 1.5"H x 3.75"D
EQT-6	6 hole	7.5"W x 1.5"H x 3.75"D





























EQT-1



EQT-6

## Terminal Stud Size Chart

	INCHES	DIAMETER	METRIC	DIAMETER
#2		0.086" (2,144 mm)		2,0 mm (0.080")
#4		0.112" (2,844 mm)		2,5 mm (0.100")
#5		0.125" (3,175 mm)		3,0 mm (0.120")
#6		0.138" (3,505 mm)		3,5 mm (0.140")
#8		0.164" (4,166 mm)		4,0 mm (0.174")
#10		0.190" (4,826 mm)		5,0 mm (0.20")
1/4		0.250" (6,350 mm)		6,0 mm (0.24")
5/16		0.3125" (7,938 mm)		8,0 mm (0.32")
3/8		0.375" (9,525 mm)		10,0 mm (0.40")
7/16		0.4375" (11,113 mm)		10,0 mm (0.48")
1/2		0.500" (12,700 mm)		12,0 mm (0.48")
5/8		0.625" (15,875 mm)		16,0 mm (0.64")
3/4		0.750" (19,050 mm)		18,0 mm (0.72")

## Wire Gauge Chart

Size	Inches	Millimeters	mm <sup>2</sup>
4/0	0.4600	11,684	107
3/0	0.4096	10,040	85.0
2/0	0.3648	9,266	67.4
1/0	0.3249	8,253	53.5
1	0.2893	7,347	42.4
2	0.2576	6,543	33.6
4	0.2043	5,189	21.2
6	0.1620	4,115	13.3
8	0.1285	3,264	8.37

Size	Inches	Millimeters	mm <sup>2</sup>
10	0.1019	2,588	5.26
12	0.0808	2,052	3.31
14	0.0641	1,628	2.08
16	0.0508	1,290	1.31
18	0.0403	1,024	0.823
20	0.0320	0,813	0.518
22	0.0253	0,643	0.326
24	0.0201	0,511	0.205
26	0.0159	0,404	0.129

# Heat Shrink Terminal & Tubing Specifications

SEALED CONNECTORS							
	SEALED CRYSTAL CLEAR™ CONNECTORS	SEALED CRIMP CONNECTORS	SEALED SOLDER CONNECTORS	SEALED CRIMP AND SOLDER CONNECTORS	SEALED MULTIPLE WIRE CONNECTORS	SEALED NYLON CRIMP CONNECTORS	SEALED SOLDER SYSTEM FOR BATTERY TERMINALS
<b>TERMINAL HEAT SHRINK TUBING</b>							
Material	Ionic Polymer	Polyolefin	Polyolefin	Polyolefin	Polyolefin	Nylon	Polyolefin
Shrink Ratio	Exceeds 3 to 1	3 to 1	Exceeds 3 to 1	Exceeds 3 to 1	4 to 1	2 to 1	3 to 1
Shrink Temperature	100° C	135°C	135°C	135°C	121°C	185°C	120°C
Continuous Operating Temperature	-55°C to 125°C	-55°C to 110°C	-55°C to 110°C	-55°C to 110°C	-55°C to 110°C	-55°C to 125°C	-55°C to 110°C
Flammability	Non-Flame Retardant	Non-Flame Retardant	Non-Flame Retardant	Non-Flame Retardant	Non-Flame Retardant	Non-Flame Retardant	Flame Retardant
Tensile Strength	4000 PSI	2200 PSI	2200 PSI	2200 PSI	2450 PSI	5000 PSI	2100 PSI
Longitudinal Change	+10% to -10%	+1% to -10%	+1% to -10%	+1% to -10%	+0% to -10%	+0% to -15%	+1% to -10%
Dielectric Strength	750 Volts/Mil	900 Volts/Mil	900 Volts/Mil	900 Volts/Mil	900 Volts/Mil	500 Volts/Mil	500 Volts/Mil
UL Voltage Rating	600 Volts	600 Volts	600 Volts	600 Volts	600 Volts	600 Volts	600 Volts
Corrosion Resistance	Non-Corrosive	Non-Corrosive	Non-Corrosive	Non-Corrosive	Non-Corrosive	Non-Corrosive	Non-Corrosive
Fungus Resistance		Non-Nutrient	Non-Nutrient	Non-Nutrient		Non-Nutrient	Non-Nutrient
Water Absorption	1% Max	<0.1%	<0.1%	<0.1%		<2.5%	<0.1%
UL		E157227	E157227	E157227		E87681	486D
CSA		LR38227	LR38227	LR38227			C22.2
Specs		SAE-AMS-DTL-23053/4	SAE-AMS-DTL-23053/4	SAE-AMS-DTL-23053/4	Chrysler MS-DB56		SAE-AMS-23053/15, Class 1
Other Specs		Formerly, MIL-DTL-23053/4	Formerly, MIL-DTL-23053/4	Formerly, MIL-DTL-23053/4	Ford ESB- M99D56		
<b>SOLDER</b>							
Contains Solder Alloy	No	No	42 Tin/58 Bismuth	42 Tin/58 Bismuth	No	No	63 Tin/37 Lead
Specs	N/A	N/A	J-STD-006	J-STD-006	N/A	N/A	J-STD-006
<b>FLUX</b>							
Specs	N/A	N/A	J-STD-004	J-STD-004	N/A	N/A	J-STD-004

HEAT SHRINK TUBING						
	HST100 SERIES	HST200 SERIES	HST300 SERIES	HST390 SERIES	HST400 SERIES	HST540 SERIES
	Thin Wall	Flexible Adhesive-Lined	Tinted Adhesive-Lined	Crystal Clear	Semi-Rigid Adhesive-Lined	High Adhesive Flow
Material	Polyolefin	Polyolefin	Polyolefin	Ionic Polymer	Polyolefin	Polyolefin
Shrink Ratio	2 to 1	3 to 1	Exceeds 3 to 1	Exceeds 3 to 1	Exceeds 2:5 to 1	4 to 1
Shrink Temperature	100°C	121°C	135°C	100° C	135°C	121°C
Continuous Operating Temperature	-55°C to 135°C	-55°C to 110°C	-55°C to 110°C	-55°C to 125°C	-55°C to 110°C	-55°C to 110°C
Flammability	Self-extinguishing UL224, except clear	Self-extinguishing UL224, except clear	Non-Flame Retardant	Non-Flame Retardant	Passed FMVSS 302 Test	Non-Flame Retardant
UL	E39100	E157227	E157227		E157227	
CSA	LR38227	LR38227	LR38227		LR38227	
Specs	SAE-AMS-DTL-23053/5 Formerly MIL-DTL-23053/5, Class 1		SAE-AMS-DTL-23053/4 Formerly MIL-DTL-23053/4		SAE-AMS-DTL-23053/4 Formerly MIL-DTL-23053/4, Class 1	Chrysler MS-DB56, Ford ESB-M99D56
	HST680 SERIES	HST700 SERIES	HST800 SERIES	HST850 SERIES		
	High Ratio Adhesive-Lined	Medium Duty Adhesive-Lined	Heavy Wall, Adhesive-Lined	Heavy Wall, Adhesive-Lined for Battery Terminals		
Material	Polyolefin	Polyolefin	Polyolefin	Polyolefin		
Shrink Ratio	Approximately 6 to 1	3 to 1	3 to 1	3 to 1		
Shrink Temperature	120°C	121°C	121°C	120°C		
Continuous Operating Temperature	-55°C to 110°C	-55°C to 110°C	-55°C to 110°C	-55°C to 110°C		
Flammability	Flame Retardant	Flame Retardant	Flame Retardant	Flame Retardant		
UL			E102356	486D		
CSA			LR86335	C22.2		
Specs	SAE-AMS-DTL-23053/15 Formerly MIL-DTL-23053/15, Class 1			SAE-AMS-DTL-23053/15, Class 1 Formerly MIL-DTL-23053/15, Class 1		

## IMPORTANT NOTICE

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**STOP WIRE  
CORROSION**



**MAKE PERMANENT  
REPAIRS**

**DO IT ONCE. DO IT RIGHT.**

