



Introduction

The Thomas & Betts Method is Better.

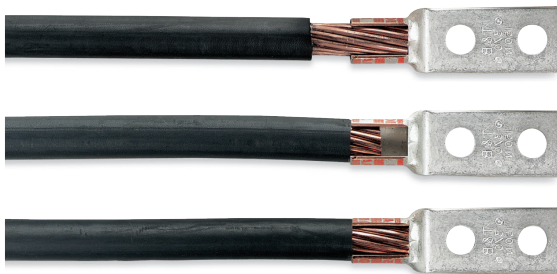
The Thomas & Betts method of installing compression connectors on power cables is designed to provide a high degree of reliability in electrical wiring. This method allows electrical workers to make installations with little effort and at a considerable savings in time. The benefit, of course, is a high quality connection at a low installed cost.

Just Four Easy Steps to a Perfect Connection!

Step 1

Strip the insulation carefully to avoid nicking or cutting conductors (wire brush if required).

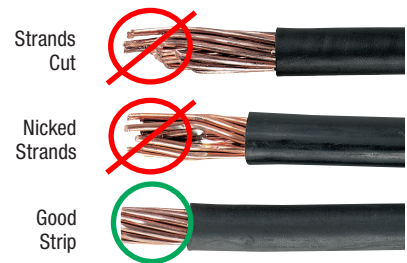
Strip the insulation to the proper length so that conductors can be fully inserted into the connector barrel.



Strip Length Too Long

Strip Length Too Short

Strip Length Just Right



Strands Cut

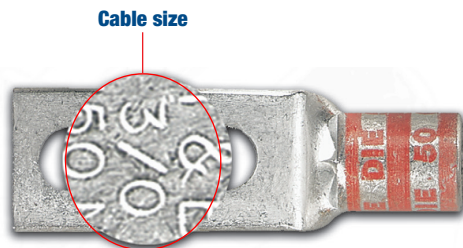
Nicked Strands

Good Strip



Step 2

Determine the proper Color-Keyed® Connector for the cable size being used. Connectors are marked to show cable size.



- Connectors marked with just cable size or Cu should be used on copper conductors only.
- Connectors marked "AL9" with the cable size should be used on aluminum conductors only.
- Connectors marked "AL9CU" with the cable size may be used on aluminum or copper conductors.

Note: Aluminum lugs with a "9" indicate 90°C rating.

Introduction

Step 3

Select the proper installing die and appropriate tool.

Color-Keyed® Connectors have coloured bands or coloured dots that correspond to colour markings on the dies.

Connectors and dies also have a die code number marked or stamped on them. Dies have a code number engraved in the crimp surface.



Step 4

Locate tool with correct die in proper position on connector and activate tool.

When making multiple crimps, make the first crimp nearest the tongue and work towards the barrel end.

When properly crimped, the die code number will be embossed on the connector for easy inspection to determine if correct die and connector combination were used.

Die location for compression

Copper
Die to be positioned
BETWEEN bands



Aluminum
Die to be positioned
ON bands



Color-Keyed® Connectors are banded by coloured stripes or engraving to indicate location of die on connector for compression.

Thomas & Betts uses “full-width” and “half-width” dies dependent on connector size and tool used. “Half-width” dies are marked with the letter “H” after the die code number.

Refer to the instruction sheet supplied with the connectors for information regarding strip length, die selection and number of compressions.



Introduction

Precision Dies form a Solid Homogeneous Mass

The T&B method utilizing compression tools with matching dies forms the connector and conductor into a solid, homogeneous mass to provide an optimum electrical bond between connector and conductor.

Thomas & Betts method dies are designed to produce a circumferential, hex- or diamond-shaped compression rather than a simple indent. Precision dies are an integral part of the Thomas & Betts method. The precision hardened steel dies exert tremendous, controlled pressure on the connector and conductor. The dies compress the connector around the cable, converting the round strands to hexagonal or diamond shapes and forming the strands and connector into a solid mass. Each die is designed so that all conductors receive the same amount of compression force.

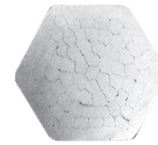
The circumferential compression creates a large area of high-pressure contact between cable and connector which, in turn assures high-conductivity, low resistance and high pullout values which exceed CSA and UL requirements. These features result in a permanent, low-installed cost connection. You can install it and forget it.

Thomas & Betts' System Tells You Where to Place the Installing Die

Color-Keyed® connectors not only identify the correct installing die to be used for positive compressions, but also indicate the proper placement of the die on the connector. This is done by the bands of colour on the connector which match the colour on the dies. Compression is made between or on these colour bands. The colour name is also spelled on the connector as an added means of identification.



Before compression, a typical cross section of cable and connector consists of about 75% metal and 25% air.



After air compression by the T&B Method, the cross section looks like this, 100% metal with virtually no air spaces.

Thomas & Betts Dies Offer Inspection Capability

Dies that are used in Thomas & Betts hand and hydraulic tools contain the "die code" numbers which are engraved on the compression surface of the die. Under compression, this number becomes embossed on the completed connection for inspection purposes.

The inspector compares the die code number embossed on the connector with the die table to ensure that the proper connector was compressed with the correct die for that particular size conductor.

Copper
Die to be positioned
BETWEEN bands



Aluminum
Die to be positioned
ON bands



Color-Keyed® Connectors are banded by coloured stripes or engraving to indicate location of die on connector for compression.



Introduction

Quality Tooling with the Shure Stake® Mechanism

T&B manual tools with the exclusive Shure Stake® mechanism take the guesswork out of making compression connections. The Shure Stake® mechanism provides a full cycle compression stroke every time. Once the stroke has started, the tool will not release the connector until the proper amount of force has been applied. This is your assurance of a fully compressed connection. T&B compression tools develop uniform, controlled pressure to each connector within their size range. Thomas & Betts offers electric and battery-powered hydraulic pumps with a Shure Stake® feature that guarantees a full cycle compression.



Battpac® LT Pump

The newest battery-powered hydraulic pump, rated for 10,000 psi. Portable power for all T&B hydraulic heads, using just one Ni-MH 24 V rechargeable battery.



TBM62PCR-LI

Designed for one-handed control ram advancement and retraction. Capacity up to Cu #8-600 kcmil • Al #8-400 kcmil.



TBM6S

Hard-operated crimping tool, features Shure Stake® mechanism to insure a completed crimp. For connectors up to 500 kcmil Cu, 350 kcmil Al.

Thomas & Betts Method Components Meet Industry Standards

Depending on the application, all Thomas & Betts copper connectors meet UL standard for code stranded and 24 gauge flex, CSA standard requirements for power and UL and CSA standards requirements for direct buried grounding.

T&B method connectors are available in a range of sizes and styles to accommodate copper and larger aluminum cable. They may be compressed on cable with either manual or hydraulic tools. They are offered with standard length or long barrels, with one bolt or two bolt holes, or in two-way styles, for splicing applications. Two-way connectors are compact, providing high pullout values with low resistance.

Color-Keyed® two-hole lugs are ideal for bus bar applications that require two bolts to prevent lug rotation.

The T&B Method is the most efficient, highest quality connection that has been engineered and delivers the best electrical performance and highest reliability. T&B compression connectors eliminate risk of problems relating to loose connections when installed properly.

High Grade Materials Incorporated in Thomas & Betts Method

Low-installed cost connections of superior quality can be achieved only through the use of high grade components. That is an important part of the T&B method – quality products you can depend on.

Copper Color-Keyed® connectors are made of high-conductivity wrought copper and electro-tin plated to prevent corrosion and to improve conductivity. Thomas & Betts Color-Keyed® connectors offer the thickest tin-plating in the industry. Other copper connectors for heavy duty use and grid grounding applications are made of high-conductivity cast copper, bright finished.

High-conductivity cast aluminum connectors are available for heavy-duty application.



Introduction

Color-Keyed® Special Lugs for Special Problems — Angled, Shaped and Flared the Way You Need Them

Thomas & Betts can solve your difficult wire bending and terminating problems in confined power distribution panels, switchgear and motor control enclosures.

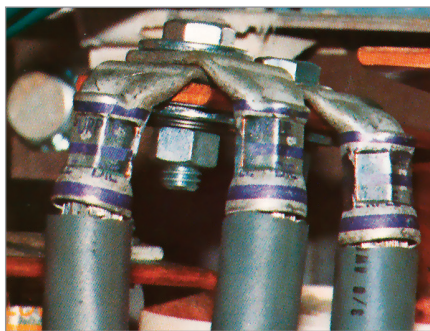
We have the design and production capability to deliver exactly the type lug you need, shaped the way you need.

- Straight, 45° and 90° angle
- Stacking or non-stacking
- Narrow-tongue or standard
- Tin, silver and nickel plating available

Thomas & Betts offers an extensive line of copper Color-Keyed® lugs for #8 AWG through 1000 kcmil flex and code cables. The lug tongues are modified in several different configurations to meet your exact needs: 45° and 90° bend angles, narrow-tongues to fit into circuit breakers, offset tongues to stack two cables and special stud hole drilling. These special configurations let you:

1. Run cable directly to the bus bar with no bending
2. Terminate into very narrow spaces
3. Utilize minimal bus bar space

The specially designed lugs help you “clean up” your cabling in crowded enclosures. The pictures show some examples of how and where the lugs can be used.



Customized Color-Keyed® Connectors for Copper Cables

- Standard and special tongue angles, stacking and non-stacking, bolt holes sizes and centers, protective platings.
- Specially modified one and two hole copper Color-Keyed® compression lugs, Series 54100, 54200, 54850BE and 54930BE for flex and code copper stranded cables. Material: high-conductivity wrought copper.
- Minimum order quantity: Standard package quantity by cable size. Consult your Regional Sales Office for price and delivery. All customized lugs are made to order and cannot be cancelled.



Introduction

Order Form (to be scanned or photocopied)

Catalogue No. _____ Qty. _____

Design Controls and Requirements

All "MADE-UP" catalogue numbers start with a standard or basic catalogue number and are followed by the customer-required extra features: Tongue shape, bolt hole size, distance between bolt holes, stacking, plating and inspection hole (peep hole). A code letter or a number has been assigned to each extra feature. See CODE CABLE TABLE below.

Notes: 1) Lack of any of the extra features on the "MADE-UP" catalogue number means that the standard Cat. No. features are prevalent.
 2) If either bolt hole size or distance between bolt holes needs to be changed from standard Cat. No., both code numbers will appear on the "MADE-UP" Cat. No. (see example below).

Cat. No. 54212UB0416BSP

54212	UB	04	16	B
2 hole 4/0 Cu lug basic cat. no.	90° bend	1/4 in. bolt hole	1 in. hole spacing	bottom stack

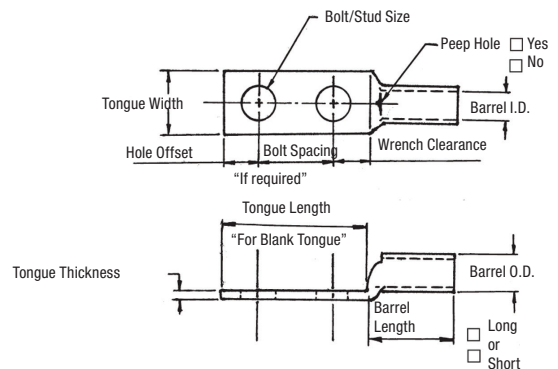
Code Cable Table

Tongue Shape		Bolt Holes Size .020		Code	Bolt Hole Centers		Stacking		Finish (Plating)		Inspection Hole (Long Barrel)		Inspection Hole (Short Barrel)	
Type	Code				Center to Center (in.)	Code	Type	Code	Type 1	Code	I.D.	Code	I.D.	Code
45°	UF	#8	0.173	02	1/2	08	Top	T**	Silver	SP	Peep Hole	PH	Blind End	BE
90°	UB	#10	0.204	03	5/8	10	Bottom	B	Lead	LP				
Blank	BT	1/4	0.281	04	3/4	12			Nickel	NP	150°			
(No Bolt Hole)		5/16	0.344	05	7/8	14			Plain Finish	PF				
		3/8	0.406	06	1	16			No Marking	NM				
		1/2	0.531	08	1-1/8	18								
		5/8	0.656	10	1-1/4	20								
		3/4	0.812	12	1-3/8	22								
		1/8	0.937	14	1-1/2	24								
		1	1.062	16	1-5/8	26								
					1-3/4	28								
					*1-7/8	30								
					*2	32								

* These bolt centers are not available for bolt holes larger than 13/16 in.

** Not required for 45° & 90° Top Stacking.

Cable	Code	<input type="checkbox"/>
	Weld	<input type="checkbox"/>
<input type="checkbox"/> #8	<input type="checkbox"/> #6	<input type="checkbox"/> #4
<input type="checkbox"/> #2	<input type="checkbox"/> #1	<input type="checkbox"/> 1/0
<input type="checkbox"/> 2/0	<input type="checkbox"/> 3/0	<input type="checkbox"/> 4/0
<input type="checkbox"/> 250 kcmil & up (Code cable Only)		



Introduction

Tongue Specifications — See Chart “A” for Dimensions

Stud Sizes		
<input type="checkbox"/> #8	<input type="checkbox"/> #10	<input type="checkbox"/> 1/4 in.
<input type="checkbox"/> 5/16 in.	<input type="checkbox"/> 3/8 in.	<input type="checkbox"/> 1/2 in.
<input type="checkbox"/> 5/8 in.	<input type="checkbox"/> 3/4 in.	<input type="checkbox"/> 7/8 in.
<input type="checkbox"/> 1 in.		

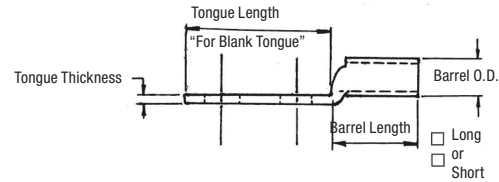
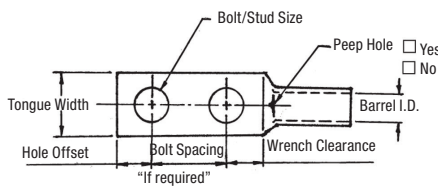


Chart A

Nominal Bolt Hole	Hole Offset	Min. Wrench Clearance	Tongue Width Cable Size									
			#8 Code #8 Weld	#6 Code #6 Weld	#4 Code	#2 Code #4 Weld	#1 Code #2 Weld	1/0 Code #1 Weld	2/0 Code 1/0 Weld	3/0 Code 2/0 Weld	4/0 Code 3/0 Weld	250 Code
#8	0.173	0.200	0.406	0.437	0.562	0.593	0.672	0.750	0.825	0.937	1.030	1.125
#10	0.204	0.218	0.469	0.500								
1/4	0.281	0.250	0.562	0.562	0.594	0.750	0.750					
5/16	0.344	0.375										
3/8	0.406	0.375										
1/2	0.531	0.500										
5/8	0.656	0.812										
3/4	0.812	0.750										
*7/8	0.937	0.875										
*1	1.062	0.937										

* These bolt holes are available in one hole lug only. Dimensions are in inches.

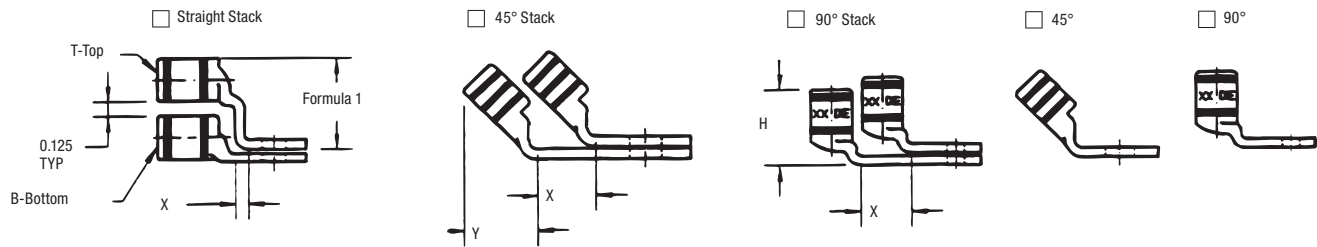
Chart B

Cable Size	Tongue Thickness	Straight Lug Barrel Length		Barrel		Dim. "X" Stacked Lugs			Dim. "Y"		Dim. "H"	
		Short	Long	O.D.	I.D.	Straight	45°	90°	Short	Long	Short	Long
#8	0.080	0.635	0.935	0.260	0.180	0.158	0.478	0.394	0.595	0.808	0.779	1.079
#6	0.081	0.675	0.975	0.296	0.215	0.134	0.544	0.432	0.587	0.799	0.767	10.67
#4	0.099	0.685	0.985	0.365	0.266	0.175	0.622	0.502	0.637	0.849	0.838	1.138
#2	0.108	0.815	1.115	0.410	0.302	0.216	0.649	0.535	0.711	0.923	0.958	1.258
#1	0.106	0.825	1.275	0.467	0.361	0.212	0.731	0.592	0.710	1.028	0.956	1.406
1/0	0.125	0.975	1.325	0.520	0.396	0.250	0.789	0.646	0.794	1.042	1.075	1.425
2/0	0.125	0.965	1.315	0.571	0.446	0.250	0.859	0.696	0.829	1.077	1.125	1.475
3/0	0.125	1.085	1.435	0.632	0.507	0.250	0.946	0.757	0.900	1.148	1.225	1.575
4/0	0.137	1.255	1.705	0.701	0.564	0.274	1.031	0.826	1.015	1.333	1.387	1.837
250	0.137	1.375	1.925	0.766	0.629	0.274	1.123	0.891	1.085	1.474	1.487	2.037
300	0.153	1.900	2.675	0.850	0.660	0.459	1.226	0.975	1.180	1.726	1.924	2.679
350	0.177	2.090	2.896	0.926	0.720	0.531	1.333	1.103	1.267	1.830	2.096	2.896
400	0.173	2.460	2.980	0.960	0.757	0.519	1.370	1.085	1.551	1.913	2.484	2.984
500	0.218	2.670	3.610	1.100	0.852	0.654	1.514	1.225	1.629	2.266	2.669	3.619
600	0.244	2.900	3.490	1.200	0.926	0.732	1.630	1.325	1.762	2.147	2.897	3.497
700	0.228	2.784	-	1.255	0.997	0.684	1.662	1.375	1.780	-	3.011	-
750	0.270	3.050	3.925	1.330	1.030	0.810	1.745	1.455	1.827	2.434	3.050	3.925
800	0.266	3.213	-	1.375	1.079	0.800	1.728	1.625	1.952	2.787	3.213	4.554
900	0.313	3.450	4.550	1.500	1.145	0.940	1.900	1.650	2.065	-	1.387	-
1,000	0.297	3.356	4.500	1.550	1.203	0.890	2.070	1.675	2.031	2.787	1.487	4.506

Stacking lugs are available for one bolt only. Consult your Regional Sales Office for details. Straight: 700 kcmil & up; 45°: 400 kcmil & up; 90°: 500 kcmil & up. Dimensions are in inches.

Introduction

Tongue Specifications — See Chart “A” for Dimensions



Formula 1 = (0.125 + 2 (OD) + 0.037 – Tongue Thickness)

Chart C

Bolt Hole Size	Tongue Width 0.030 / Code Cable Size										
	300 kcmil 4/0 Weld	350 kcmil	400 kcmil	500 kcmil 400 Weld	600 kcmil 500 Weld	1325/24	700 kcmil	750 kcmil	800 kcmil	900 kcmil	1000 kcmil
#8	-	-	-	-	-	-	-	-	-	-	-
#10	-	-	-	-	-	-	-	-	-	-	-
1/4	1.250	1.355	1.410	1.605	1.745	1.805	1.840	1.935	2.010	2.180	2.265
5/16											
3/8											
1/2											
5/8											
3/4	-	-	-	-	-	-	-	-	-	-	
*7/8	-	-	-	-	-	-	-	-	-	-	-
*1	-	-	-	-	-	-	-	-	-	-	-

* These bolt holes are available in one hole lug only. Dimensions are in inches.