

**COPALUM Terminals and Splices
(For Solid and Stranded Aluminum or Copper Wire)**

Product Facts

- COPALUM terminates film insulated solid aluminum, film insulated solid copper, or uninsulated stranded copper conductors — individually or in combination
- Round wire — up to 10 wires can be terminated in a single terminal or splice
- Stripping of film insulated solid conductors not required when the insulation piercing technique/tooling are utilized
- Eliminates messy inhibitors
- Available for a broad range of wire sizes — from 16 to 4/0 AWG [1.25 to 105 mm²]
- Provides stable electrical and mechanical performance in a low-cost reliable termination



Applications

- Transformers
- Coil windings
- Motors
- Regulators

COPALUM terminals and splices provide reliable, low cost terminations for film insulated solid aluminum, film insulated solid copper, or uninsulated stranded copper conductors.

Stranded solid, round and rectangular conductors can be terminated in the same wire barrel, individually or in combinations falling within a specified CMA range.

The combination of an insulation displacement crimp configuration and an integral perforated inner sleeve design penetrates the film insulation, creating an elec-

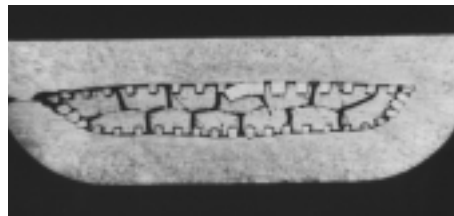
trical interface between the conductor and terminal. Adequate surface contact is achieved due to the high-density hole pattern of the sleeve.

The crimp shears the film insulation and the conductor extrudes into the perforated sleeve, producing a hermetic seal. These terminations can be exposed to the typical gaseous and oil environments found in oil and air-cooled transformers or air and fluid-cooled motors.

A secondary mechanical crimp section flanks the

electrical crimp and provides a robust interface which optimizes the mechanical properties (tensile strength, vibration, resistance, flex life) of the electrical crimp. The insulation piercing crimp design permits parallel, butt or pigtail splicing.

The crimp design allows solid copper, solid aluminum and stranded copper to be terminated in the same wire barrel if certain restrictions regarding size, number and total CMA of conductors being terminated are observed.



**Cross Section of
Insulation Piercing Crimp**

COPALUM Terminals and Splices
(For Solid and Stranded Aluminum or Copper Wire) (Continued)

General Application Guidelines

To assist you in obtaining the optimum COPALUM insulation piercing crimp termination for solid copper, solid aluminum and stranded copper in the same wire barrel, the following guidelines regarding size, number and total CMA of conductors being terminated are recommended:

1. A maximum of 10 equal size round wires, or a maximum of 6 equal square wires may be crimped without insulation removal.
2. Four rectangular wires (where $T \geq 1/4W$) or 2 rectangular wires (where $T \leq 1/4W$) may be crimped without insulation removal.
3. When crimping different size solid conductors, size should not vary by more than 1 wire gauge, and preferably by no more than 1/2 wire gauge.
4. To use parallel splices with round magnet wire, the CMA of the lead wire should be less than the sum of the magnet wire CMA, and the total number of conductors (lead and magnet) must be less than six.
5. To use a butt splice when the lead wire CMA is \geq the combined magnet wire CMA.
6. In a solid (or combination of solids) aluminum and stranded copper application, the maximum amount of CMA fill for the copper conductor should not exceed 40% of the total CMA being crimped.
7. Due to the closed barrel, it may not be possible for a particular CMA loading to fit in the normally recommended connector. In instances where 7 or more equal round conductors or a combination of solid aluminum and stranded copper is used, and the total CMA is at least 50% of the maximum CMA of the next larger size connector, this larger size connector may be used.
8. For applications using wire combinations not covered by guidelines above, consult Tyco Electronics Engineering.

Warning: Not approved for reconnection of residential aluminum branch circuit wiring. (Refer to Catalog 82205.)

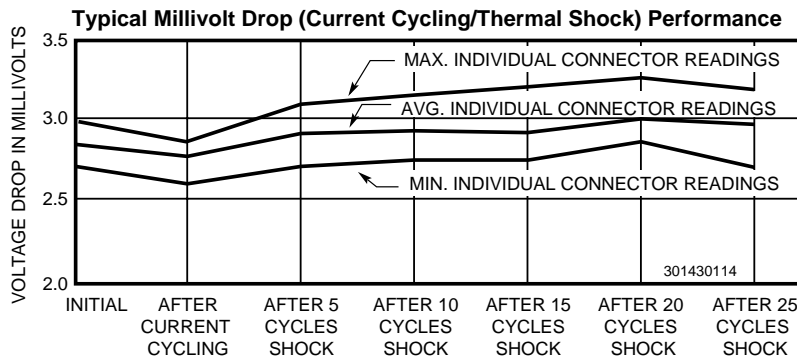
Test Results of Insulation Piercing Crimp Terminations

Current Cycling — 100 cycles @ 35 amperes, AC; each cycle consisting of 15 min. "on current" and 15 min. "off current"

Thermal Shock — 0.5 hr. @ +150°C and 0.17 hr. in ice water per cycle; 5 amperes, DC

Products Tested — COPALUM parallel splices, wire size 8 AWG [8 mm²] using two 14 AWG [2 mm²] solid aluminum conductors (unstripped) and one 14 AWG [2 mm²] stranded copper wire

conductor (stripped). Graph curves represent individual conductor readings.



Technical Documents

Product Specification — 108-13013

Application Specification — 114-02121

Test Reports —

110-13506 — Copper lead wire to aluminum magnet wire in a COPALUM parallel splice

502-1084 — COPALUM butt splice performance in several copper lead wire to copper magnet wire combinations

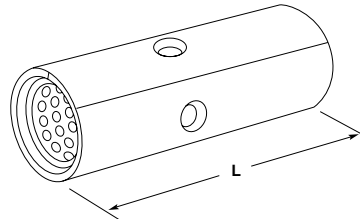
502-1085 — Performance comparison: COPALUM butt splice vs. brazing process

COPALUM

COPALUM Terminals and Splices
(For Solid and Stranded Aluminum or Copper Wire) (Continued)

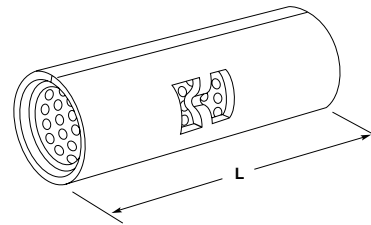
Butt Splices

Wire Size Range —
Aluminum — AWG 16 to 10
 [1.25 to 5.0 mm²], CMA 2,050 to 13,100
Copper — AWG 18 to 12
 [0.8 to 3 mm²], CMA 1,290 to 8,230



Wire Size [mm ²] Circular Mils		Dim. L Max.	Hand Tool	Part Numbers		Splice
Aluminum	Copper			Heads for Pneumatic Tools		
				626 Tooling	68068	
16-14 [1.25] 2050-5180	18-16 [0.8] 1290-3260	.701 17.81	68140-1	189447-1	68100	52001
12-10 [5.0] 5180-13100	14-12 [3.0] 3260-8230	.799 20.29	68141-1	189444-1	68100 68101	52004

Wire Size Range —
Aluminum — AWG 8 to 4/0
 [8.0 to 105 mm²], CMA 13,100 to 231,000
Copper — AWG 12 to 3/0
 [5.0 to 85 mm²], CMA 5,180 to 190,000



Wire Size [mm ²] Circular Mils		Dim. L Max.	Part Numbers			Splice		
Aluminum	Copper		Heads for Pneumatic Tools		Tooling for Power Unit 69120			
			626 Tooling	69015	68068	Head	Die Insert	
8 [8.0] 13100-20800	12-10 [5.0] 5180-13100	1.195 30.35	662546-1	68081	68101 68192-1	69099	68084	51826
6 [14] 20800-33100	8 [8.0] 13100-20800	1.340 34.04	—	68082	68102	69099	68085	51941
4 [21] 33100-52600	6 [14] 20800-33100	1.630 41.4	—	68038	—	69099	68086	51942
2 [35] 52600-83700	4 [21] 33100-52600	1.995 50.67	—	—	—	69099	68130	52007
1/0 [50] 83700-119500	2 [35] 52600-83700	1.985 50.42	—	—	—	69099	68131	52010
2/0 [70] 119500-150500	1/0 [50] 83700-119500	1.985 50.42	—	—	—	69099	68132	52013
3/0 [85] 150500-190000	2/0 [70] 119500-150500	1.985 50.42	—	—	—	69099	68133	52016
4/0 [105] 190000-231000	3/0 [85] 150500-190000	1.985 50.42	—	—	—	69082	68129	52019

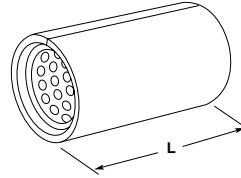
COPALUM Terminals and Splices
(For Solid and Stranded Aluminum or Copper Wire) (Continued)

Parallel Splices

Wire Size Range —

Aluminum — AWG 16 to 4/0
[1.25 to 105 mm²], CMA 2,050
to 231,000

Copper — AWG 18 to 3/0
[0.8 to 85 mm²], CMA 1,290 to
190,000



Wire Size [mm ²] Circular Mills	Dim. L Max.	Hand Tool	Part Numbers					Splice
			Heads for Pneumatic Tools			Tooling for Power Unit 69120		
			69015	626 Tooling	68068	Head	Die Insert	
16-14 [1.25] 2050-5180	.283 7.19	68140-1	—	189447-1	68100	—	—	52791
12-10 [5.0] 5180-13100	.375 9.53	68141-1	—	189444-1	68100 68101	—	—	52792
8 [8.0] 13100-20800	.437 11.1	—	68081	662546-1	68101 68192-1	69099	68084	52745
6 [14] 20800-33100	.450 11.43	—	68082	—	68102	69099	68085	52746
4 [21] 33100-52600	.562 14.27	—	68038	—	—	69099	68086	52747
2 [35] 52600-83700	.781 19.84	—	—	—	—	69099	68130	52748
1/0 [50] 83700-119500	.734 18.64	—	—	—	—	69099	68131	52749
2/0 [70] 11950-150500	.734 18.64	—	—	—	—	69099	68132	52750
3/0 [85] 150500-190000	.749 19.02	—	—	—	—	69099	68133	52751
4/0 [105] 190000-231000	.765 19.43	—	—	—	—	69082	68129	52752

Important:

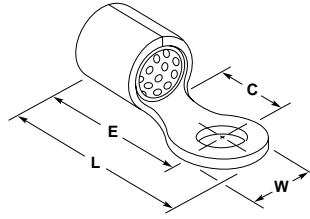
When two or more wires are used in a parallel splice, the combined cross-section area must be within the CMA range listed.

COPALUM

COPALUM Terminals and Splices
(For Solid and Stranded Aluminum or Copper Wire) (Continued)

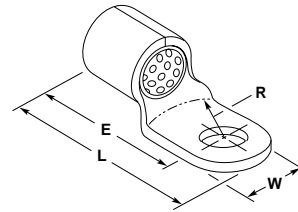
Ring Tongue Terminals

Wire Size Range —
Aluminum — AWG 16 to 10
[1.25 to 5.0 mm²], CMA 2,050
to 13,100
Copper — AWG 18 to 12
[0.8 to 3.0 mm²], CMA 1,290
to 8,230



Wire Size [mm ²] Circular Mils	Tongue Thickness Max.	Stud Size	Dimensions				Hand Tool	Part Numbers		Terminal
			W	L Max.	E Max.	C Min.		Heads for Pneumatic Tools		
							626 Tooling		68068	
16-14 [1.25] 2050-5180	.033 0.84	1/4	.531	1.107	.839	.564	68140-1	189447-1	68100	52587-1
		M6	13.49	28.12	21.31	14.33				
		6	.375	.835	.645	.302				
12-10 [5.0] 5180-13100	.042 1.07	M3.5	9.53	21.21	16.38	7.67	68141-1	189444-1	68100 68101	51979
		8	.375	.835	.645	.302	68141-1	189444-1	68100 68101	51979-1
		M4	9.53	21.21	16.38	7.67	68141-1	189444-1	68100 68101	51979-2
		10	.375	.835	.645	.302	68141-1	189444-1	68100 68101	51979-3
		1/4	.375	.835	.645	.302	68141-1	189444-1	68100 68101	51979-3
		M6	9.53	21.21	16.38	7.67	68141-1	189444-1	68100 68101	51979-3
		1/4	.593	1.173	.874	.531	68141-1	189444-1	68100 68101	52590-1
		M6	15.06	29.79	22.20	13.49				
		5/16	.593	1.173	.874	.531				
		M8	15.06	29.79	22.20	13.49	68141-1	189444-1	68100 68101	52590-2

Wire Size Range —
Aluminum — AWG 8 to 6
[8.0 to 14 mm²], CMA 13,100
to 33,100
Copper — AWG 12 to 8
[3.0 to 8.0 mm²], CMA 1,290
to 13,100



Wire Size [mm ²] Circular Mils	Tongue Thickness Max.	Stud Size	Dimensions				Part Numbers			Terminal								
			W	L Max.	E Max.	R Max.	Heads for Pneumatic Tools		Heads & Die Inserts for Power Unit 69120									
							626 Tooling		69015		68068							
									Head		Die Insert							
8 [8.0] 13100-20800	.048 1.22	10	.500	1.384	1.131	.560	662546-1	68081	68101 68192-1	69099	68084	50720						
		—	12.70	35.15	28.73	14.22												
		1/4	.500	1.384	1.131	.560							662546-1	68081	68101 68192-1	69099	68084	50720-1
		M6	12.70	35.15	28.73	14.22												
5/16	.625	1.446	1.131	.560	662546-1	68081	68101 68192-1	69099	68084	50720-2								
M8	15.88	36.73	28.73	14.22														
6 [14] 20800-33100	.051 1.30	10	.500	1.415	1.162	.580	662546-1	68081	68101 68192-1	69099	68084	184076-1						
		—	12.70	35.94	29.51	14.73												
		1/4	.500	1.415	1.162	.580							662546-1	68081	68101 68192-1	69099	68084	50719-1
		M6	12.70	35.94	29.51	14.73												
		5/16	.679	1.504	1.162	.580							662546-1	68081	68101 68192-1	69099	68084	50719-2
		M8	17.25	38.20	29.51	14.73												
3/8	.679	1.504	1.162	.580	662546-1	68081	68101 68192-1	69099	68084	50719-3								
—	17.25	38.20	29.51	14.73														
10MM	.679	1.504	1.162	.580	662546-1	68081	68101 68192-1	69099	68084	184079-1								
—	17.25	38.20	29.51	14.73														

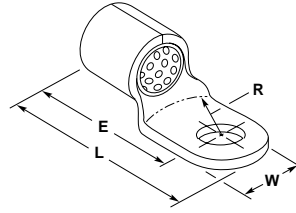
COPALUM Terminals and Splices
(For Solid and Stranded Aluminum or Copper Wire) (Continued)

Ring Tongue Terminals

Wire Size Range —

Aluminum — AWG 4 to 4/0
[21 to 105 mm²], CMA 33,100 to 231,000

Copper — AWG 6 to 3/0
[14 to 85 mm²], CMA 20,800 to 190,000



Wire Size [mm ²] Circular Mils	Tongue Thickness Max.	Stud Size	Dimensions				Part Numbers		Terminal
			W	L Max.	E Max.	R Max.	Heads & Die Inserts for Power Unit 69120		
							Head	Die Insert	
4 [21] 33100-52600	.060 1.52	10 —	.531 13.49	1.630 41.40	1.362 34.59	.625 15.88	69099	68086	50717
		1/4 M6	.531 13.49	1.630 41.40	1.362 34.59	.625 15.8	69099	68086	50717-1
		5/16 M8	.531 13.49	1.630 41.40	1.362 34.59	.62 15.88	69099	68086	50717-2
		3/8 —	.675 17.15	1.702 43.23	1.362 34.59	.625 15.88	69099	68086	50717-3
		1/2 —	.675 17.15	1.702 43.23	1.362 34.59	.625 15.88	69099	68086	50717-5
		10MM —	.675 17.15	1.702 43.23	1.362 34.59	.625 15.88	69099	68086	184082-1
		2 [35] 52600-83700	.060 1.52	1/4 M6	.675 17.15	1.859 47.22	1.541 39.14	.625 15.88	69099
5/16 M8	.675 17.15			1.859 47.22	1.541 39.14	.625 15.88	69099	68130	51982-1
3/8 —	.675 17.15			1.859 47.22	1.541 39.14	.625 15.88	69099	68130	51982-2
1/2 —	.807 20.50			1.925 48.90	1.541 39.14	.625 15.88	69099	68130	51982-3
10MM —	.807 20.50			1.925 48.90	1.541 39.14	.625 15.88	69099	68130	184084-1
1/0 [50] 83700-119500	.073 1.85	1/4 M6	.675 17.15	1.859 47.22	1.541 39.14	.625 15.88	69099	68131	51986
		5/16 M8	.675 17.15	1.859 47.22	1.541 39.14	.625 15.88	69099	68131	51986-1
		3/8 —	.675 17.15	1.859 47.22	1.541 39.14	.625 15.88	69099	68131	51986-2
		1/2 —	.807 20.50	1.925 48.90	1.541 39.14	.625 15.88	69099	68131	51986-3
		10MM —	.807 20.50	1.925 48.90	1.541 39.14	.625 15.88	69099	68131	184087-1
2/0 [70] 119500-150500	.083 2.11	5/16 M8	.926 23.52	1.930 49.02	1.560 39.62	.625 15.88	69099	68132	51989-1
		3/8 —	.926 23.52	1.930 49.02	1.560 39.62	.625 15.88	69099	68132	51989-2
		1/2 —	.926 23.52	1.930 49.02	1.560 39.62	.625 15.88	69099	68132	51989-3
		10MM —	.926 23.52	1.930 49.02	1.560 39.62	.625 15.88	69099	68132	184090-1
3/0 [85] 150500-190000	.094 2.39	7/16 —	1.020 25.91	2.112 53.64	1.645 41.66	.625 15.88	69099	68133	51992-2
		1/2 —	1.020 25.91	2.112 53.64	1.645 41.66	.625 15.88	69099	68133	51992-3
		10MM —	1.020 25.91	2.112 53.64	1.645 41.66	.625 15.88	69099	68133	184092-1
4/0 [105] 190000-231000	.105 2.67	1/2 —	1.087 27.61	2.178 55.32	1.676 42.57	.625 15.88	69082	68129	51995-2
		10MM —	1.087 27.61	2.178 55.32	1.676 42.57	.625 15.88	69082	68129	184094-1

COPALUM

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

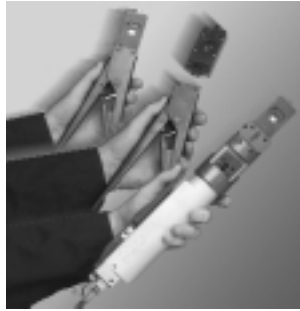
Dimensions are shown for reference purposes only. Specifications subject to change.

Technical Support
USA: 1-800-522-6752
Canada: 1-905-475-6222
Mexico: 01-800-733-8926

www.tycoelectronics.com

COPALUM Application Tooling

626 Pneumatic Tool System



Lightweight, air-operated modular tooling system. Accepts a wide variety of interchangeable heads for crimping various types of contacts, terminals and splices onto wires ranging 6-26 AWG [13-0.12 mm²], plus coaxial and fiber optic cable. Available with either hand- or foot-actuation switch. Optional ratchet control available to provide complete crimp cycle.

Specifications

Outside Diameter—1.83 [46.5]
Length—11.6-12.9 [295-327]
Grip Span—2.19 [55.6] over button/handle
Weight—2.3-3.3 lb [1.0-1.5 kg]
Air—90-100 psi [6.21-6.89 bar], 11.14 in³ [0.00018 m³]
Cycle Time—0.7-0.8 sec (16-14 AWG [1.3-2 mm²] PIDG Terminals)
 For more information, request Catalog **124208**.

Power Unit

Style	Power Unit Part Number
Hand Actuated	189721-1*
Foot Actuated	189722-1*

*Change to -2 suffix to order Power Unit for use with "C" Head die set adapter.

Notes:

1. Power Units with a '1' suffix can be converted to -2 by ordering Booster Addition Kit part no. 189720-1
2. 10 ft [3.05] Air Supply Hose, part no. 38111, is included with each power unit
3. Order Tool Holders, Crimping Heads/Adapters separately.

Tool Holder

w/Ratchet Control	w/o Ratchet Control
356302-1	189767-1

Crimp Heads

AWG	Part Number
16-14	189447-1
12-10	189444-1
8	602546-1

**Bench Mount Assembly
Part Number 856402-1***



Fully adjustable stand allows operator free use of both hands — recommended for maximum productivity.

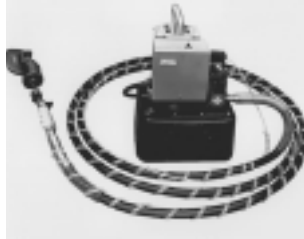
Specifications

Base Size — 8 x 8 [200 x 200]
Weight — 6.5 lb [2.9 kg]
Bench Mounting Dimensions — Base has two, 1/4 - 20 tapped holes on 6 [150] centerlines

*Note: Not for use in the European Community

COPALUM Application Tooling (Continued)

DYNA-CRIMP Electric-Hydraulic Power Units, 69120-1, -2, plus Heads



Power units for crimping large terminals and splices, including AMPOWER and SOLISTRAND terminals, onto wires ranging from 8 AWG [8 mm²] through 1 000 kcmil [507 mm²]. Heads and die sets are interchangeable. Available with either hand- or foot-actuation switch, and hose/coupling assemblies up to 28 ft [8.5 m] in length.

Specifications

Width—9.5 [240]
Depth—11.5 [292]
Height—18.2 [464]
Weight—65 lb [29 kg]
Electrical—120 VAC, 60 Hz (69120-1); 220 VAC, 50 or 60 Hz (69120-2); 3 240 VA max.
 For more information, request Instruction Sheet **408-1965**.

Accessories for DYNA-CRIMP Power Units 69120-1 (115 V) or 69120-2 (230 V)

Accessory Part No.	Description
59907-7	7 ft. [2.13m] Handle Control Assembly — Hose and Cord*
1-59907-5	15 ft. [4.57m] Handle Control Assembly — Hose and Cord*
2-59907-1	21 ft. [6.4m] Handle Control Assembly — Hose and Cord*
2-59908-1	21 ft. [6.4 m] Handle Control Assembly — Cord w/o Hose*
2-59907-8	28 ft [8.53m] Handle Control Assembly — Hose and Cord*
68284-1	15 ft. [4.57m] Foot Switch Assembly (requires hose assembly)
59909-3	3 ft [0.91m] Hose Assembly**
59909-7	7 ft. [2.13m] Hose Assembly**
1-59909-5	15 ft. [4.57m] Hose Assembly**
2-59909-1	21 ft. [6.4m] Hose Assembly**
59220	3-Way Multi-Directional Valve (for use with foot switch only)
59220-2	3-Way Multi-directional valve (for use with foot switch only)

* Pressure release on Power Unit only

** 311470-1 Quick Disconnect Coupling (Hose Half) and 68284-1 Foot Switch Assembly required

Pneumatic Power Units, 68068, 69015



Designed for medium production, these semi-automatic power tools offer the convenience of hand tools plus the effortless precision and speed of machines. They are built for long, rugged service and are equipped with removable crimping dies for terminating a variety of AMP products.

Wire range: — 16 AWG to 6 AWG (68068), 8 AWG to 4 AWG (69015)
CMA range: — 2,050 to 33,100 (68068), 20,800 to 52,600 (69015)
 Note: Part Number 68068-3, tool with foot pedal, can be bench mounted.

COPALUM

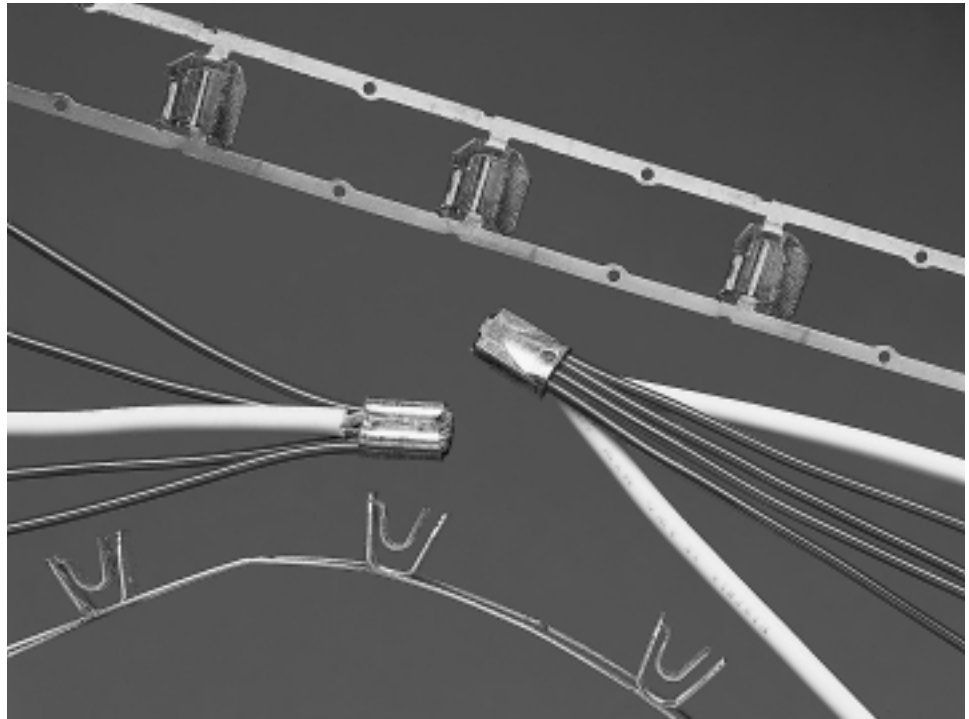
Power Splice

Product Facts

- Compression crimp eliminates cold solder points, weld burns and wire embrittlement usually connected with thermal-type terminations
- Precisely controlled crimp termination helps eliminate human error, for maximum reliability
- Excellent tensile strength, up to 90 lbs axial retention, vibration resistant
- Provides a superior electrical connection that is free of many contaminants such as stripper residue and solder flux
- 8000 - 38,000 CMA nominal capacity
- Accepts up to six magnet wires and two standard solid or stranded lead wires
- Superior test results: low resistance, high stability
- High termination rates, low wire consumption and the elimination of rejects caused by solder flux or heat damage results in the lowest applied costs

Applications

- Hermetic/Compressor motors
- Squirrel Cage DC motors
- Capacitor Start motors
- Gear & Traction motors
- Power supplies
- Liner, Torroid & RF transformers
- Circuit breakers & welders



Tyco Electronics features the AMP Power Splice terminal that is specifically designed to terminate a wide range of lead and magnet wire combinations.

The splice contains two cavities that separate and cradle magnet wire and stripped lead wires prior to crimping.

The outer saddle accepts up to six-magnet wire allowing for a CMA range of 15,000 to 30,000.

The inner saddle accepts pre-stripped lead wires that total up to 10,900 CMA.

In a one step automatic operation, the magnet wire film insulation is multiple ring-stripped as it is forced into the serrations while the lead wire is simultaneously terminated during the precisely controlled crimp

The outer saddle has machined, sharp edges made by a special production process that pierces the insulating layer of the magnet wire in a manner that provides a large contact area.

The resulting termination produces a high tensile strength, air sealed connection that is as resistant to corrosion as the insulated conductor with up to 90 lbs axial retention.

As many as six magnet wires can be terminated simultaneously in one splice in combination with up to two pre-stripped standard solid or stranded lead wire.

A semi-automatic machine provides high output per hour terminations.



Technical Information

Tensile Strength of Magnet Wire¹

Wire Size	Nominal Dia. Copper (lbs.)	Nominal Dia. Aluminum (lbs.)
8	438	142
9	340	113
10	269	89
11	213	71
12	189	56
13	134	44
14	106	35
15	84	28
16	66	22
17	53	17
18	42	14
19	33	11
20	6	8
21	21	7
22	16	5
23	13	4
24	10	3
25	8	2.7
26	6	2.1
27	5	1.7
28	4	1.3
29	3	1.1
30	2	.86
31	2	.68
32	1	.55
33	1	.43
34	1	.34
35	.81	.27
36	.65	.21
37	.65	.21
38	.42	.13
39	.32	.10
40	.25	.083
41	.20	.067
42	.16	.054
43	.12	.041
44	.10	.034
45	.08	.027
46	.06	.022
47	.05	.017
48	.04	.013
49	.03	.010
50	.02	.009
51	.02	.007
52	.01	.005

C.	F.	C.	F.	C.	F.	C.	F.
-80	-112.0	9	48.2	47	116.6	85	185.0
-70	-94.0	10	50.0	48	118.4	86	186.8
-60	-76.0	11	51.8	49	120.2	87	188.6
-50	-58.0	12	53.6	50	122.0	88	190.4
-45	-49.1	13	55.4	51	123.8	89	192.2
-40	-40.0	14	57.2	52	125.6	90	194.0
-35	-31.0	15	59.0	53	127.4	91	195.8
-30	-22.0	16	60.8	54	129.2	92	197.6
-25	-13.0	17	62.6	55	131.0	93	199.4
-20	- 4.0	18	64.4	56	132.8	94	201.2
-19	- 2.2	19	66.2	57	134.6	95	203.0
-18	- .4	20	68.0	58	136.4	96	204.8
-17	1.4	21	69.8	59	138.2	97	206.6
-16	3.2	22	71.6	60	140.0	98	208.4
-15	5.0	23	73.4	61	141.8	99	210.2
-14	6.8	24	75.2	62	143.6	100	212.0
-13	8.6	25	77.0	63	145.4	110	230.0
-12	10.4	26	78.8	64	147.2	120	248.0
-11	12.2	27	80.6	65	149.0	130	266.0
-10	14.0	28	82.4	66	150.8	140	284.0
- 9	15.8	29	84.2	67	152.6	150	302.0
- 8	17.6	30	86.0	68	154.4	160	320.0
- 7	19.4	31	87.8	69	156.2	170	338.0
- 6	21.2	32	89.6	70	158.0	180	356.0
- 5	23.0	33	91.4	71	159.8	190	374.0
- 4	24.8	34	93.2	72	161.6	200	392.0
- 3	26.6	35	95.0	73	163.4	220	428.0
- 2	8.4	36	96.8	74	165.2	240	464.0
- 1	30.2	37	98.6	75	167.0	260	500.0
0	32.0	38	100.4	76	168.8	280	536.0
1	33.8	39	102.2	77	170.6	300	572.0
2	35.6	40	104.0	78	172.4	400	752.0
4	39.2	42	107.6	80	176.0	600	1112.0
5	41.0	43	109.4	81	177.8	700	1292.0
6	42.8	44	111.2	82	179.6	800	1472.0
7	44.6	45	113.0	83	181.4	900	1652.0
8	46.4	46	114.8	84	183.2	1000	1832.0

C = 5/9 (F. - 32)
F = 9/5C. + 32

¹ Magnet wire tensile will change as the psi of magnet wire changes.

Note: Copper magnet wire is calculated at 33,000 psi. Aluminum magnet wire is calculated at 11,000 psi (EC grade). Magnet wire should be tensiled on each coil. After termination of the AMPLIVAR splice, the tensile strength will be 70% (min.) of the original magnet wire tensile values.

Technical Information (Continued)

Circular Mil Area (CMA) and Diameter for Magnet Wires (AWG Wire Size Range 52–25^{1/2})

AWG Bare Wire	Bare Wire Dia.		CMA Bare	Single Film Coated Dia.		CMA Single Film Coated	Heavy Film Coated Dia.		CMA Heavy Film Coated
	in.	mm		in.	mm		in.	mm	
52	.0008	.020	0.6	.0010	.025	1.0	.0011	.028	1.2
51	.0009	.023	0.8	.0011	.028	1.2	.0012	.031	1.5
50	.0010	.025	1.0	.0012	.031	1.5	.0013	.033	1.7
49	.0011	.028	1.2	.0013	.033	1.7	.0014	.035	2.0
48	.0012	.031	1.5	.0014	.035	2.0	.0015	.038	2.2
47	.0014	.035	2.0	.0016	.040	2.5	.0018	.045	3.1
46	.0016	.040	2.5	.0017	.043	2.9	.0019	.048	3.6
45	.0018	.045	3.1	.0019	.048	3.6	.0021	.053	4.4
44	.0020	.050	4.0	.0022	.056	4.8	.0025	.063	6.2
43	.0022	.056	4.8	.0025	.063	6.2	.0027	.069	7.3
42	.0025	0.06	6.3	.0028	0.07	8	.0030	0.08	9
41	.0028	0.07	7.8	.0031	0.08	10	.0034	0.09	12
40	.0031	0.08	9.6	.0035	0.09	12	.0038	0.10	14
39	.0035	0.09	12	.0039	0.10	15	.0043	0.11	18
38	.0040	0.10	16	.0045	0.11	20	.0049	0.12	24
37	.0045	0.11	20	.0050	0.13	25	.0055	0.14	30
36	.0050	0.13	25	.0056	0.14	31	.0060	0.15	36
35	.0056	0.14	31	.0062	0.16	38	.0067	0.17	45
35	.0056	0.14	31	.0062	0.16	38	.0067	0.17	45
34	.0063	0.16	40	.0069	0.18	48	.0075	0.19	56
33	.0071	0.18	50	.0077	0.20	59	.0085	0.22	72
32	.0080	0.20	64	.0084	0.21	71	.0095	0.24	90
31	.0089	0.23	79	.0092	0.23	85	.0105	0.27	110
30 ^{1/2}	.0095	0.24	90	.0099	0.25	98	.0111	0.28	123
30	.0100	0.25	100	.0106	0.27	112	.0116	0.29	135
29 ^{1/2}	.0107	0.27	115	.0114	0.29	130	.0123	0.31	151
29	.0113	0.29	128	.0120	0.30	144	.0130	0.33	169
28 ^{1/2}	.0120	0.30	144	.0126	0.32	159	.0137	0.35	187
28	.0126	0.32	159	.0136	0.35	185	.0144	0.37	207
27 ^{1/2}	.0134	0.34	180	.0144	0.37	207	.0153	0.39	234
27	.0142	0.36	202	.0152	0.39	231	.0161	0.41	259
26 ^{1/2}	.0151	0.38	225	.0160	0.41	256	.0170	0.43	289
26	.0159	0.40	258	.0170	0.43	289	.0179	0.45	320
25 ^{1/2}	.0169	0.43	289	.0180	0.46	324	.0190	0.48	361