

# Southern Copper and Supply 800-289-2728

## SINGLE BEND ELECTRODES



Phone: 866-634-8884

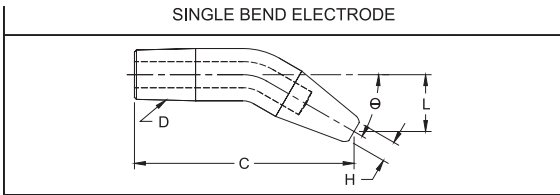
Fax: 866-239-6995

Email: cmw@cmwinc.com

CMW<sup>®</sup>3 single bend electrodes are cold formed from full hard straight electrodes, and have properties superior to those obtained by casting or hot forging methods. Cooling tubes are bent in place, if requested, to provide water flow as near to the welding face as in the case of straight electrodes. These extra values assure you a more efficient, less costly electrode for gun welders and special offset welding applications.

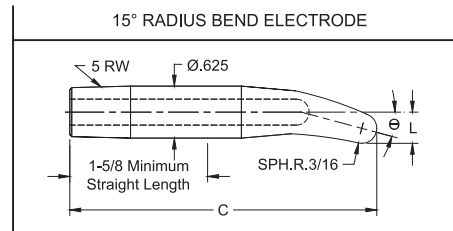
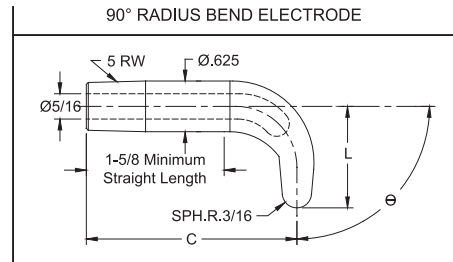
Furnished with water tubes as specials to your order. Other nose types available to order. For dimensions not shown here see straight electrode (round water hole) measurements on page 14, 15, & 16. CMW<sup>®</sup>28 material available on special order.

### SINGLE BEND ELECTRODES



PART No.	Reference Length to $\phi$ of Face C	Taper D	Offset $\phi$ of Taper to $\phi$ of Face L	Bend Angle $\theta$	Bend Weld Face Dia. H	
3214-04-15	1-11/16	4 RW	1/4	15°	3/16	
3219-04-15	2-15/16		1/4			
32118-13-15	3-7/8		13/16			
3225-04-15	1-7/8	5 RW	1/4		30°	1/4
3229-04-15	2-7/8		1/4			
32218-10-15	3-13/16		5/8			
3215-07-30	1-7/8	4 RW	7/16	45°		3/16
3219-07-30	2-7/8		7/16			
32118-23-30	3-5/8		1-7/16			
3226-09-30	2-1/16	5 RW	9/16		60°	1/4
32212-09-30	3-1/16		9/16			
32220-24-30	3-13/16		1-1/2			
3215-10-45	1-11/16	4 RW	5/8	75°		3/16
32112-12-45	2-7/8		3/4			
32118-33-45	3-1/8		2-1/16			
3228-17-45	2-1/4	5 RW	1-1/16		90°	1/4
32214-17-45	3		1-1/16			
32220-33-45	3-3/8		2-1/16			
3218-23-60	2	4 RW	1-7/16	15°		3/16
32116-23-60	3		1-7/16			
32118-40-60	2-5/8		2-1/2			
32212-25-60	2-3/8	5 RW	1-9/16		30°	1/4
32218-25-60	3-1/8		1-9/16			
32220-38-60	3		2-3/8			
32216-35-75	2-5/16	5 RW	2-3/16	45°		3/16
32220-37-75	2-11/16		2-5/16			
32220-43-75	2-3/8		2-11/16			

Bend dimensions are for reference only

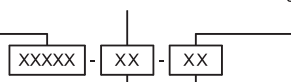


PART No.	O.A.L. C	Offset $\phi$ of Taper to Top of Radius L	Bend Angle $\theta$
16-26015	3-11/16	3/8	15°
16-26030	3-5/8	33/64	30°
16-26045	3-1/2	43/64	45°
16-26060	3-3/8	27/32	60°
16-26075	3-7/64	1-1/32	75°
16-26090	2-13/16	1-1/4	90°

Radius bend electrodes are designed for use with 18-768 & 18-784 straight universal adapters shown on page 46.

- See page 6 for Metric Conversion  
- See page 7 for Taper Dimensions

Original Electrode      "A" Offset 1/16 Increments      "B" Bend In Degrees



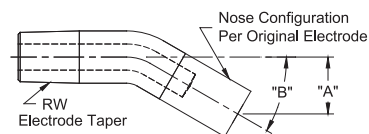
04 = 1/4	26 = 1-5/8
06 = 3/8	28 = 1-3/4
08 = 1/2	30 = 1-7/8
10 = 5/8	32 = 2
12 = 3/4	34 = 2-1/8
14 = 7/8	36 = 2-1/4
16 = 1	38 = 2-3/8
18 = 1-1/8	40 = 2-1/2
20 = 1-1/4	42 = 2-5/8
22 = 1-3/8	44 = 2-3/4
24 = 1-1/2	46 = 2-7/8

15 = 15° Bend
30 = 30° Bend
45 = 45° Bend
60 = 60° Bend
75 = 75° Bend
90 = 90° Bend

Example:  
3319-08-15  
= 1/2 Offset  
= 15° Bend

### SINGLE BEND ELECTRODE CODING SYSTEM

For electrodes not listed



**DOUBLE BEND ELECTRODES**



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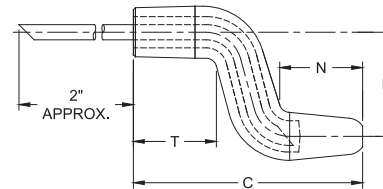
Email: cmw@cmwinc.com

Offset D	Taper Size	Nose End N	Taper End T	Dome, Pointed & Flat, O.A.L. C	Pointed Nose Part No.	
1/2	4 RW	3/4	7/8	2	321-0832-23	
		3/4	7/8	2-1/2	321-0840-23	
		2	7/8	3-1/4	321-0852-93	
	5 RW	1	1	2-1/2	322-0840-44	
		1	1	2-3/4	322-0844-44	
		2	1	3-1/2	322-0856-94	
3/4	4 RW	3/4	7/8	2	321-1232-23	
		3/4	7/8	2-1/2	321-1240-23	
		2	7/8	3-1/2	321-1256-93	
	5 RW	1	1	2-3/4	322-1244-44	
		1	1	3	322-1248-44	
		2	1	3-1/2	322-1256-94	
1	4 RW	3/4	7/8	2-1/4	321-1636-23	
		3/4	7/8	2-3/4	321-1644-23	
		1-3/4	7/8	3-1/4	321-1652-83	
		3/4	7/8	3-1/2	321-1656-23	
	5 RW	1	1	2-3/4	322-1644-44	
		1	1	3	322-1648-44	
		1	1	3-1/2	322-1656-44	
		1-3/4	1	3-1/2	322-1656-84	
	1-1/4	4 RW	3/4	7/8	2-1/2	321-2040-23
			3/4	7/8	3	321-2048-23
			1-1/2	7/8	3	321-2048-73
		5 RW	1	1	2-3/4	322-2044-44
1			1	3-1/4	322-2052-44	
1			1	3-1/2	322-2056-44	
1-1/2	5 RW	1	1	2-3/4	322-2444-44	
		1-1/4	1	3	322-2448-64	
1-3/4	5 RW	1	1	2-3/4	322-2844-44	
		1-1/4	1	3	322-2848-64	

**DOUBLE BEND ELECTRODES**

CMW double bend electrodes are cold formed from full hard straight electrodes, and have properties superior to those obtainable by casting or hot forging methods. Cooling tubes, unless otherwise specified are bent in place to provide coolant flow near the welding face as in the case of straight electrodes. These extra values assure you of longer electrode life, longer runs between dressings, and highest weld quality. CMW®3 material is standard for these electrodes. CMW®28, CMW®100, available on special order.

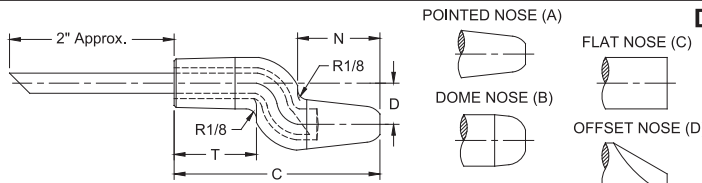
DOUBLE BEND POINTED NOSE



Bent dimensions are for reference only

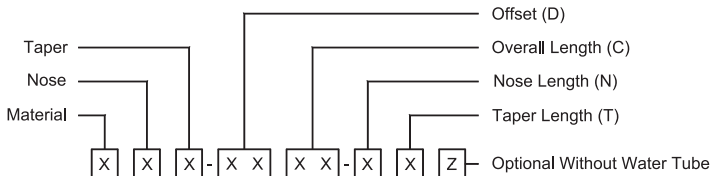
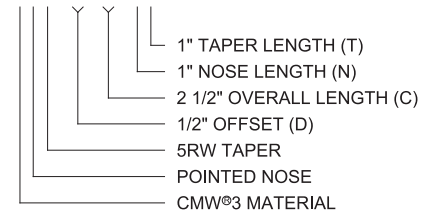


Water Tube Sizes:  
4RW = .182 O.D.  
5RW = .245 O.D.



**DOUBLE BEND ELECTRODE CODING SYSTEM**

EXAMPLE:  
322-0840-44



1= CMW®28
3= *CMW®3
5= CMW®100
*Standard

1= DOME
2= *POINTED
3= FLAT
4= OFFSET

1= 4RW 1MT
2= 5RW 2MT

08= 1/2"
12= 3/4"
16= 1"
20= 1 1/4"
24= 1 1/2"
28= 1 3/4"

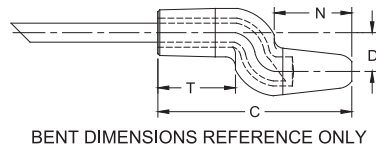
32= 2"
36= 2 1/4"
40= 2 1/2"
44= 2 3/4"
48= 3"
52= 3 1/4"
56= 3 1/2"
60= 3 3/4"

2= 3/4"
3= 7/8"
4= 1"
** 5= 1 1/8"
** 6= 1 1/4"
** 7= 1 1/2"
** 8= 1 3/4"
** 9= 2"

\*\*May not be a stock item  
Standard 4RW nose length = 3/4"  
Standard 4RW taper length = 7/8"  
Standard 5RW nose & taper length = 1"

Water Tube Sizes:  
4RW = .182 O.D.  
5RW = .245 O.D.

- See Page 6 for Metric Conversion  
- See Page 7 for Taper Dimensions



BENT DIMENSIONS REFERENCE ONLY



Phone: 866-634-8884

Fax: 866-239-6995

Email: cmw@cmwinc.com

**FEATURES AND SPECIFICATIONS**

- Very strong bend electrodes for higher force applications

- Bent & Offset electrodes are for hard to reach locations

- Long lasting heavy duty electrodes

- Works with all industry standard holders

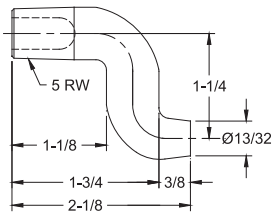
- Use with 4 & 5 R.W.M.A Holders

- Bent dimensions are for reference only

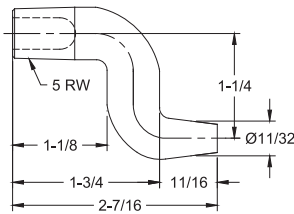
- Electrical conductivity up to 85% IACS for cold formed crank electrodes

- Rockwell hardness up to 83 HRB for cold formed crank electrodes

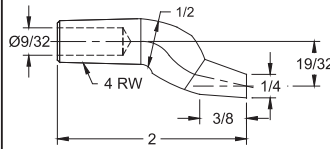
**CRANK ELECTRODES - COLD FORMED**



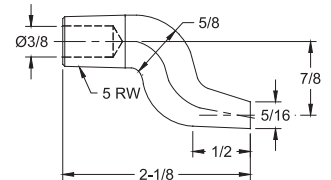
16-38661 CMW<sup>®</sup>3  
COLD FORMED\*



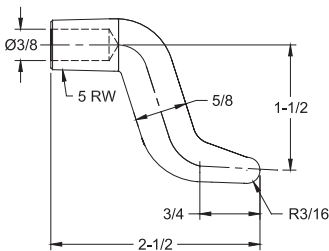
16-38666 CMW<sup>®</sup>3  
COLD FORMED\*



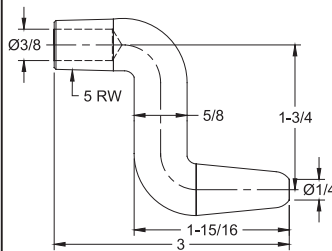
16-3870 CMW<sup>®</sup>3  
COLD FORMED\*



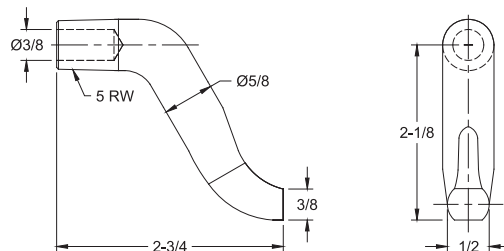
16-3871 CMW<sup>®</sup>3  
COLD FORMED\*



16-38351 CMW<sup>®</sup>3  
COLD FORMED\*



16-38352 CMW<sup>®</sup>3  
COLD FORMED\*



16-38353 CMW<sup>®</sup>3  
COLD FORMED\*

\*Optional materials CMW<sup>®</sup>28 and CMW<sup>®</sup>100 available on special order

Southern Copper and Supply 800-289-2728  
**CRANK ELECTRODES - CASTINGS, FORGED**



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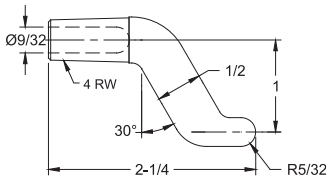
**FEATURES AND SPECIFICATIONS**

- Very strong bend electrodes for higher force applications
- Offset electrodes are for hard to reach locations
- Long lasting heavy duty electrodes

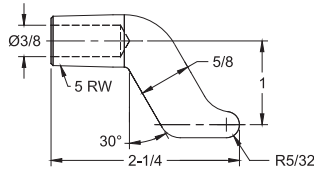
- Can be used in many job shop applications
- Works with all industry standard holders
- Use with 4 & 5 R.W.M.A Holders

- Electrical conductivity up to 80% IACS for castings & forged crank electrodes
- Rockwell hardness up to 70 HRB for castings & forged crank electrodes

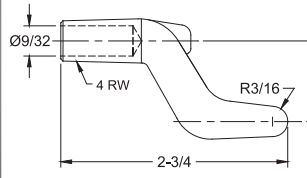
**CRANK ELECTRODES - CASTING, FORGED**



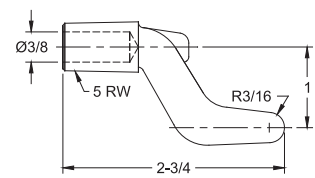
16-3835 CMW<sup>®</sup>3  
CASTING



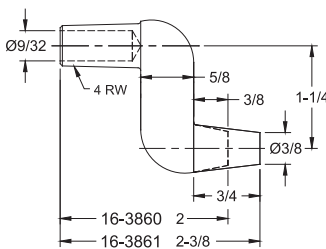
16-3836 CMW<sup>®</sup>3  
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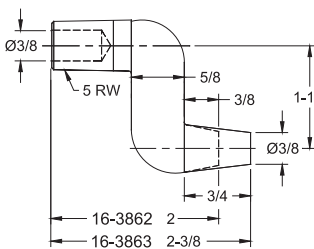
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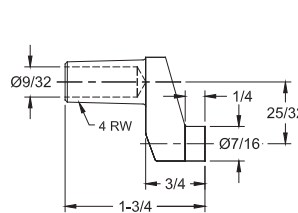
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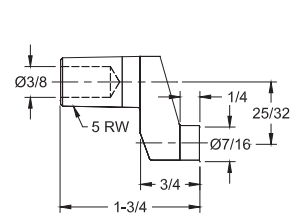
CMW<sup>®</sup>3  
FORGED



CMW<sup>®</sup>3  
FORGED



16-3873 CMW<sup>®</sup>3  
CASTING



16-3874 CMW<sup>®</sup>3  
CASTING



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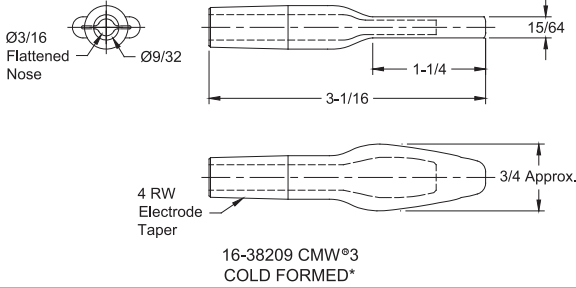
Email: cmw@cmwinc.com

**SPADE ELECTRODES**

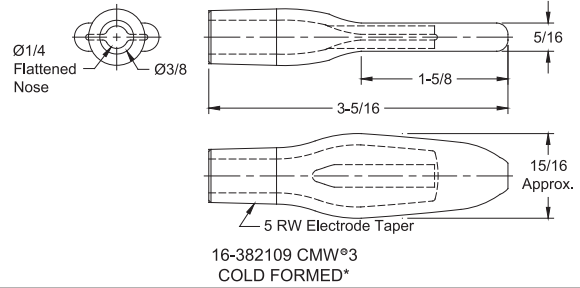
- See page 6 for  
Metric Conversions  
- See page 7 for  
Taper Dimensions



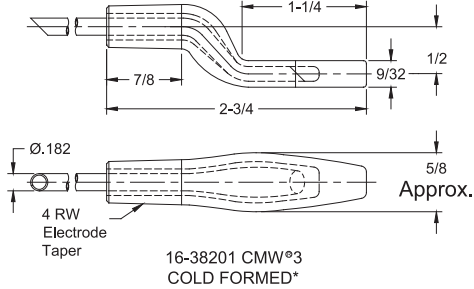
Bent Dimensions for Reference Only



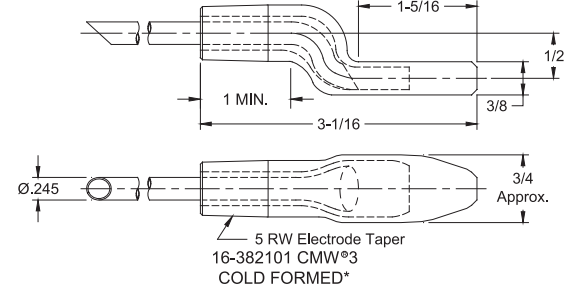
Bent Dimensions for Reference Only



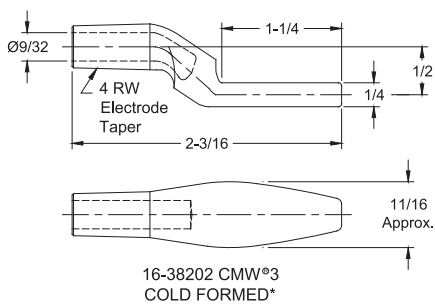
Bent Dimensions for Reference Only



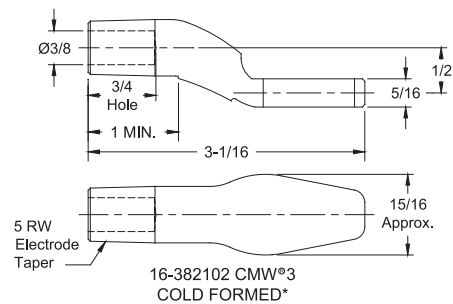
Bent Dimensions for Reference Only



Bent Dimensions for Reference Only



Bent Dimensions for Reference Only



\*Optional material available on special order: CMW<sup>®</sup>28 & CMW<sup>®</sup>100

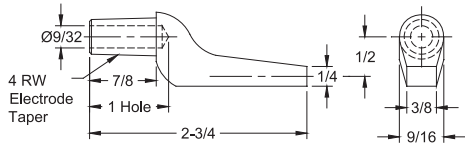


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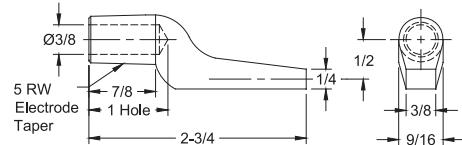
Fax: 866-239-6995

Email: [cmw@cmwinc.com](mailto:cmw@cmwinc.com)

**GUN ELECTRODES**



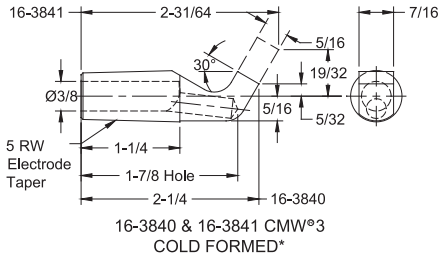
16-3820 CMW<sup>®</sup>3  
CASTING



16-3821 CMW<sup>®</sup>3  
CASTING

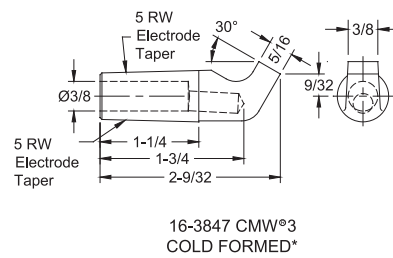


Bent Dimensions for Reference Only



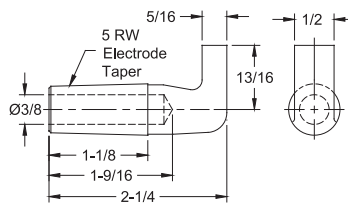
16-3840 & 16-3841 CMW<sup>®</sup>3  
COLD FORMED\*

Bent Dimensions for Reference Only



16-3847 CMW<sup>®</sup>3  
COLD FORMED\*

\*Optional material CMW<sup>®</sup>28 & CMW<sup>®</sup>100 available on special order.



16-382120 CMW<sup>®</sup>3  
CASTING

- See page 6 for  
Metric Conversions  
- See page 7 for  
Taper Dimensions