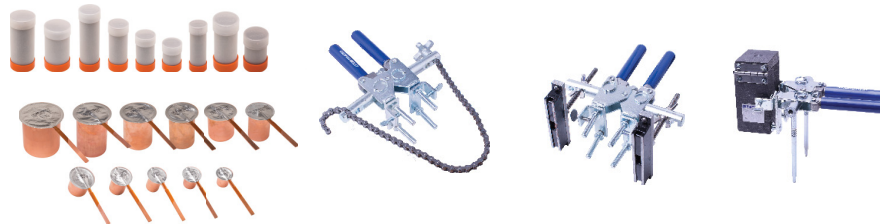
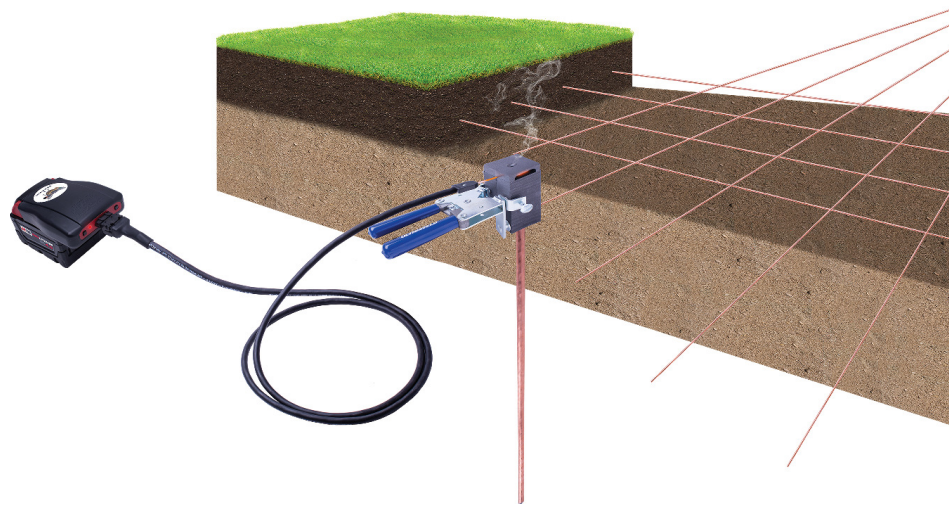


ULTRAWELD®

Exothermic Connections Field Catalog



HARGER
847.548.8700
www.harger.com



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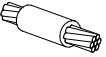










Materials, Tools & Accessories


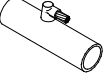

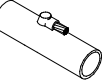


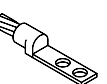
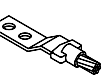
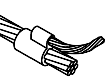
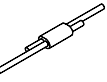
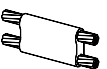
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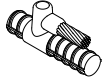
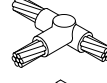







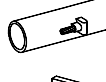

Connection Types






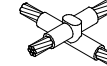
Connection Type	Page
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Connection Types

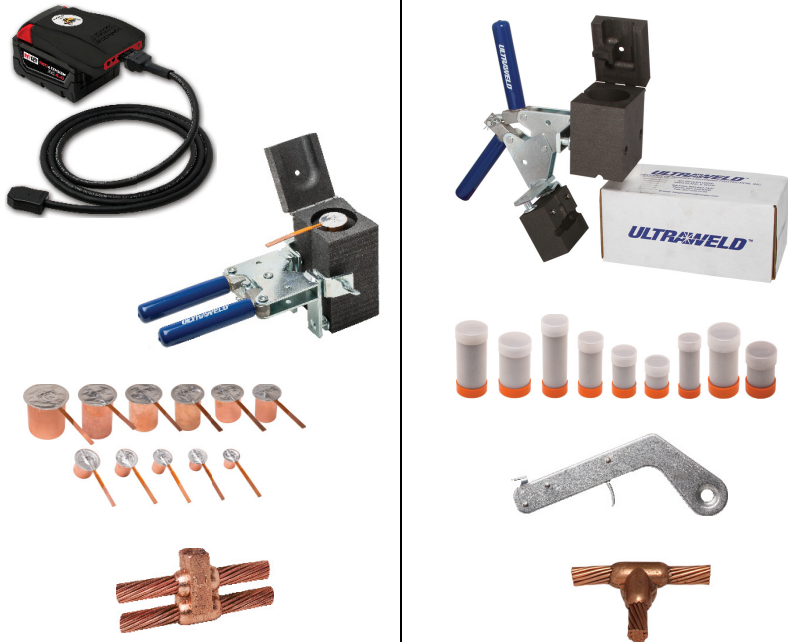
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 VU	53
 VU (Pipe)	54
 XO	22

For more exothermic connections, please see our Master Catalog.

Exothermic Process

The Exothermic Process is an effective and safe method of welding copper to copper or copper to steel for the purpose of producing permanent electrical connections. Exothermically welded connections are produced from the energy and molten copper metal liberated from an exothermic reaction between powdered copper oxide and aluminum. The exothermic reaction takes place at a theoretical temperature of 4600°F and as a result, molten copper alloy is created and used to melt the conductors and cast the finished connection. The exothermic reaction takes place in a semi-permanent graphite mold that will last 50 or more welds if properly maintained. The process is simple and easy to implement providing an on-site means to make welded electrical connections without requiring external power, equipment or the special training usually required for brazing and welding. The process will provide a finished connection that will never corrode, loosen or increase in resistance. The finished connection also provides an ampacity that exceeds that of the conductors being joined.



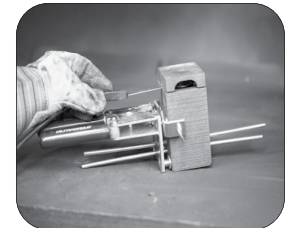
UltraShot® Drop-In Process



Step 1:
Dry and clean the mold and conductor.



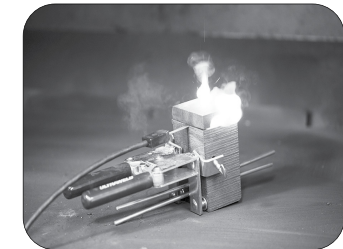
Step 2:
Place conductors and UltraShot cartridge into mold.



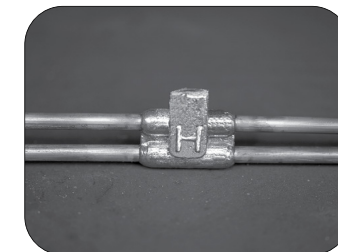
Step 3:
Close the lid and attach DRONE cord to the UltraShot igniter.



Step 4:
Push and hold both igniter buttons at the same time.



Step 5:
Reaction is made, open mold to remove connection and clean mold before next connection.



A completed UltraShot connection

Note: When exothermic welding, always wear proper clothing, safety glasses and gloves. Harger offers UltraShot training. Please contact the factory for more information.

Introduction

NUWTube® Pour & Shoot Process



Step 1:
Torch dry the mold before making the first connection.



Step 2:
Clean and dry conductors, insert conductor into mold, close handle clamp and lock mold.



Step 3:
Insert disk into mold.



Step 4:
Remove Clear cap from NUWTube, pour weld metal into mold.



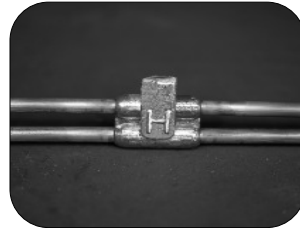
Step 5:
Close Lid, remove Orange cap from starting powder chamber and sprinkle next to ignition hold.



Step 6:
Ignite material located on top of the lid using a flint igniter (FLTIG).



Step 7:
After the connection is complete, open the mold and remove the connection, remove slag and clean mold before making the next connection.



Complete NUWTube® connection

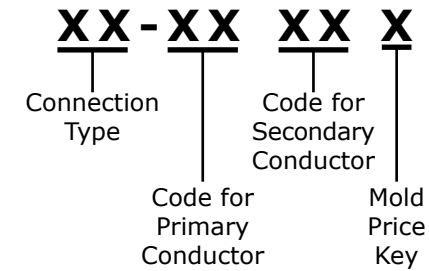
Note: When exothermic welding, always wear proper clothing, safety glasses and gloves. Harger offers Ultraweld training. Please contact the factory for more information.

Introduction

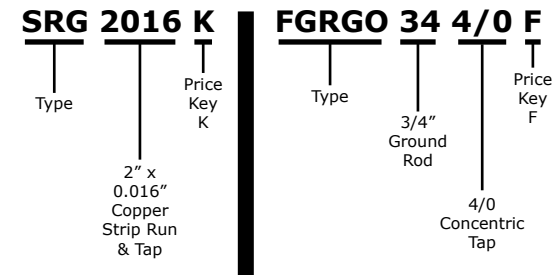
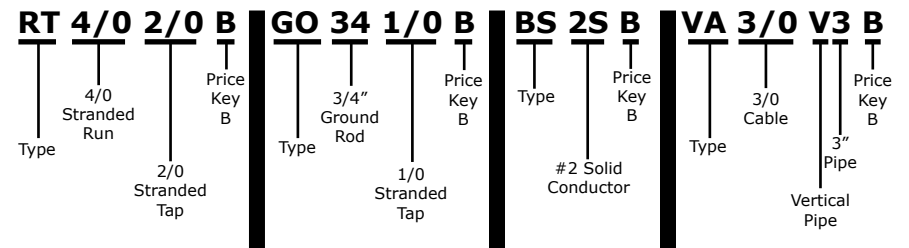
Mold Numbering System

The Part Number gives, in code, the complete information of the mold.

- Type of connection, conductor size(s) and mold price key.
- Some connection types have more than 2 characters.



Examples



Mold Information:

• Price Key is the **Bold Letter** in the Mold Part No.

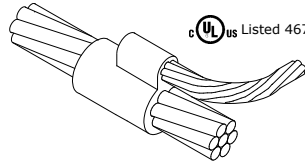
Required Tools & Accessories:

MH1 - Handle for "B" Price Key Molds (Page 75)

Recommended Tools & Accessories:

CCBRSH1 - Cable Cleaning Brush (Page 72)

MCBRSH1 - Mold Cleaning Brushes (Page 73)

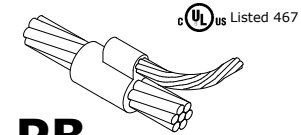


PB
(Parallel Butt)

PB Connection Type

Cable Size		Mold Part No.	Weld Metal	
Run	Tap		NUWTube	UltraShot
#6	#6	PB66 B	NUWTUBE25	US25
#4	#8 Sol	PB48 S B	NUWTUBE32	US32
	#6 Sol	PB46 S B	NUWTUBE32	US32
	#6	PB46 B	NUWTUBE32	US32
	#4	PB44 B	NUWTUBE32	US32
	#2 Sol	PB252 S B	NUWTUBE65	US65
#2	#8 Sol	PB28 S B	NUWTUBE32	US32
	#6 Sol	PB26 S B	NUWTUBE32	US32
	#6	PB26 B	NUWTUBE32	US32
	#4	PB24 B	NUWTUBE45	US45
	#2	PB22 B	NUWTUBE65	US65
1/0	#8 Sol	PB1/08 S B	NUWTUBE45	US45
	#6 Sol	PB1/06 S B	NUWTUBE45	US45
	#6	PB1/06 B	NUWTUBE45	US45
	#4	PB1/04 B	NUWTUBE65	US65
	#2 Sol	PB1/02 S B	NUWTUBE65	US65
	#2	PB1/02 B	NUWTUBE65	US65
	1/0	PB1/01/0 B	NUWTUBE90	US90

Continued on next page



PB
(Parallel Butt)

PB Connection Type Continued

Cable Size		Mold Part No.	Weld Metal	
Run	Tap		NUWTube	UltraShot
2/0	#8 Sol	PB2/08 S B	NUWTUBE65	US65
	#6 Sol	PB2/06 S B	NUWTUBE65	US65
	#6	PB2/06 B	NUWTUBE65	US65
	#4	PB2/04 B	NUWTUBE65	US65
	#2 Sol	PB2/02 S B	NUWTUBE90	US90
	#2	PB2/02 B	NUWTUBE90	US90
	1/0	PB2/01/0 B	NUWTUBE115	US115
	2/0	PB2/02/0 B	NUWTUBE115	US115
4/0	#8 Sol	PB4/08 S B	NUWTUBE90	US90
	#6 Sol	PB4/06 S B	NUWTUBE90	US90
	#6	PB4/06 B	NUWTUBE90	US90
	#4	PB4/04 B	NUWTUBE90	US90
	#2 Sol	PB4/02 S B	NUWTUBE115	US115
	#2	PB4/02 B	NUWTUBE115	US115
	1/0	PB4/01/0 B	NUWTUBE115	US115
	2/0	PB4/02/0 B	NUWTUBE115	US115
4/0	PB4/04/0 B	NUWTUBE150	US150	

Cable to Cable

Mold Information:

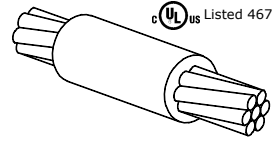
- Price Key is the **Bold Letter** in the Mold Part No.
- Molds with Price Key "L" SOLD WITH HANDLES but not FLTIG.
- For mold Wear Plates, add suffix "WP" to the end of the Mold Part No. See page 70 for details.

Required Tools & Accessories:

- MH1 - Handle for "B" Price Key Molds (Page 75)
- MH2 - Handle for "C" Price Key Molds (Page 75)

Recommended Tools & Accessories:

- CCBRSH1 - Cable Cleaning Brush (Page 72)
- MCBRSH1 - Mold Cleaning Brushes (Page 73)



BS

(Butt Splice Cables)

BS Connection Type

Cable Size	Mold Part No.	Weld Metal	
		NUWTube	UltraShot
#6 Sol	BS6 SL	NUWTUBE25	US25
#4	BS4 L	NUWTUBE25	US25
#2 Sol	BS2 SL	NUWTUBE32	US32
#2	BS2 L	NUWTUBE32	US32
1/0	BS1/0 B	NUWTUBE45	US45
2/0d	BS2/0 B	NUWTUBE65	US65
3/0	BS3/0 B	NUWTUBE90	US90
4/0	BS4/0 B	NUWTUBE90	US90
250 MCM	BS25 CMB	NUWTUBE115	US115
300 MCM	BS3 CMB	NUWTUBE115	US115
350 MCM	BS35 CMB	NUWTUBE150	US150
500 MCM	BS5 CMB	NUWTUBE200	US200
750 MCM	BS75 CMC	2-NUWTUBE150	US300
1000 MCM	BS1 MMC	2-NUWTUBE200	US400

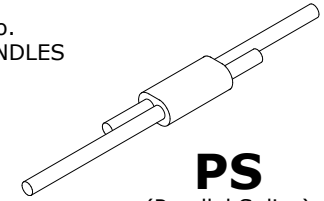
Cable to Cable

Mold Information:

- Price Key is the **Bold Letter** in the Mold Part No.
- Molds with Price Key "L" & "M" SOLD WITH HANDLES but not FLTIG.

Recommended Tools & Accessories:

- CCBRSH1 - Cable Cleaning Brush (Page 72)
- MCBRSH1 - Mold Cleaning Brushes (Page 73)



PS

(Parallel Splice)

PS Connection Type

Cable Size		Mold Part No.	Weld Metal	
Run	Tap		NUWTube	UltraShot
#8 Sol	#8 Sol	PS8 S8SL	NUWTUBE25	US25
#8	#8	PS8 8L	NUWTUBE25	US25
#6 Sol	#6 Sol	PS6 S6SL	NUWTUBE25	US25
#6	#6	PS6 6L	NUWTUBE25	US25
#4 Sol	#4 Sol	PS4 S4SM	NUWTUBE32	US32
#4	#4	PS4 4M	NUWTUBE32	US32
#2 Sol	#2 Sol	PS2 S2SM	NUWTUBE45	US45

Mold Information:

- Price Key is the **Bold Letter** in the Mold Part No.
- For mold Wear Plates, add suffix "WP" to the end of the Mold Part No. See page 70 for details.

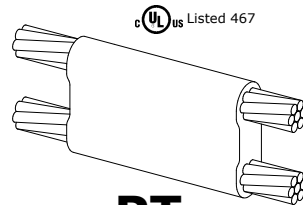
Required Tools & Accessories:

MH1 - Handle for "B" Price Key Molds (Page 75)

Recommended Tools & Accessories:

CCBRSH1 - Cable Cleaning Brush (Page 72)

MCBRSH1 - Mold Cleaning Brushes (Page 73)



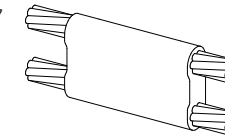
PT

(Parallel Thru Cables)

PT Connection Type

Cable Size		Mold Part No.	Weld Metal		
Run	Tap		NUWTube	UltraShot	
#6	#6	PT66 B	NUWTUBE25	US25	
#4	#8 Sol	PT48 SB	NUWTUBE32	US32	
	#8	PT48 B	NUWTUBE32	US32	
	#6 Sol	PT46 SB	NUWTUBE32	US32	
	#6	PT46 B	NUWTUBE32	US32	
#2	#4	PT44 B	NUWTUBE32	US32	
	#2 Sol	PT2S2 SB	NUWTUBE65	US65	
	#8 Sol	PT28 SB	NUWTUBE45	US45	
	#8	PT28 B	NUWTUBE45	US45	
	#6 Sol	PT26 SB	NUWTUBE45	US45	
	#6	PT26 B	NUWTUBE45	US45	
#2	#4	PT24 B	NUWTUBE65	US65	
	#2 Sol	PT22 SB	NUWTUBE65	US65	
	#2	PT22 B	NUWTUBE65	US65	
	#1/0	#8 Sol	PT1/08 SB	NUWTUBE65	US65
		#8	PT1/08 B	NUWTUBE65	US65
		#6 Sol	PT1/06 SB	NUWTUBE65	US65
		#6	PT1/06 B	NUWTUBE65	US65
#4		PT1/04 B	NUWTUBE65	US65	
#2 Sol		PT1/02 SB	NUWTUBE65	US65	
#2		PT1/02 B	NUWTUBE65	US65	
1/0	PT1/01/0 B	NUWTUBE90	US90		

Continued on next page



PT

(Parallel Thru Cables)

PT Connection Type Continued

Cable Size		Mold Part No.	Weld Metal	
Run	Tap		NUWTube	UltraShot
2/0	#8 Sol	PT2/08 SB	NUWTUBE65	US65
	#8	PT2/08 B	NUWTUBE65	US65
	#6 Sol	PT2/06 SB	NUWTUBE90	US90
	#6	PT2/06 B	NUWTUBE90	US90
	#4	PT2/04 B	NUWTUBE90	US90
	#2 Sol	PT2/02 SB	NUWTUBE90	US90
	#2	PT2/02 B	NUWTUBE90	US90
	1/0	PT2/01/0 B	NUWTUBE115	US115
3/0	2/0	PT2/02/0 B	NUWTUBE115	US115
	#8 Sol	PT3/08 SB	NUWTUBE90	US90
	#8	PT3/08 B	NUWTUBE90	US90
	#6 Sol	PT3/06 SB	NUWTUBE90	US90
	#6	PT3/06 B	NUWTUBE90	US90
	#4	PT3/04 B	NUWTUBE115	US115
	#2 Sol	PT3/02 SB	NUWTUBE115	US115
	#2	PT3/02 B	NUWTUBE115	US115
	1/0	PT3/01/0 B	NUWTUBE115	US115
	2/0	PT3/02/0 B	NUWTUBE150	US150
4/0	3/0	PT3/03/0 B	NUWTUBE150	US150
	#8 Sol	PT4/08 SB	NUWTUBE90	US90
	#8	PT4/08 B	NUWTUBE90	US90
	#6 Sol	PT4/06 SB	NUWTUBE90	US90
	#6	PT4/06 B	NUWTUBE90	US90
	#4	PT4/04 B	NUWTUBE150	US150
	#2 Sol	PT4/02 SB	NUWTUBE150	US150
	#2	PT4/02 B	NUWTUBE150	US150
	1/0	PT4/01/0 B	NUWTUBE150	US150
	2/0	PT4/02/0 B	NUWTUBE150	US150
	3/0	PT4/03/0 B	NUWTUBE200	US200
	4/0	PT4/04/0 B	NUWTUBE200	US200

Cable to Cable

Mold Information:

- Price Key is the **Bold Letter** in the Mold Part No.
- For mold Wear Plates, add suffix "WP" to the end of the Mold Part No. See page 70 for details.

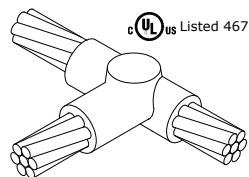
Required Tools & Accessories:

MH1 - Handle for "B" Price Key Molds (Page 75)

Recommended Tools & Accessories:

CCBRSH1 - Cable Cleaning Brush (Page 72)

MCBRS1 - Mold Cleaning Brushes (Page 73)



RT
(Run & Tap)

**Horizontal Split
2-Piece Design**

RT Connection Type

Cable Size		Mold Part No.	Weld Metal	
Run	Tap		NUWTube	UltraShot
#6	#6	RT66 B	NUWTUBE32	US32
#4	#4	RT44 B	NUWTUBE32	US32
#2 Sol	#2 Sol	RT2S2 SB	NUWTUBE45	US45
#2	#6	RT26 B	NUWTUBE45	US45
	#4	RT24 B	NUWTUBE45	US45
	#2 Sol	RT22 SB	NUWTUBE45	US45
	#2	RT22 B	NUWTUBE45	US45
1/0	#6	RT1/06 B	NUWTUBE45	US45
	#4	RT1/04 B	NUWTUBE45	US45
	#2 Sol	RT1/02 SB	NUWTUBE45	US45
	#2	RT1/02 B	NUWTUBE45	US45
1/0	1/0	RT1/01/0 B	NUWTUBE90	US90
	#6	RT2/06 B	NUWTUBE45	US45
	#4	RT2/04 B	NUWTUBE45	US45
	#2 Sol	RT2/02 SB	NUWTUBE45	US45
	#2	RT2/02 B	NUWTUBE45	US45
	1/0	RT2/01/0 B	NUWTUBE90	US90
2/0	2/0	RT2/02/0 B	NUWTUBE90	US90
	#6	RT3/06 B	NUWTUBE45	US45
	#4	RT3/04 B	NUWTUBE45	US45
	#2 Sol	RT3/02 SB	NUWTUBE45	US45
	#2	RT3/02 B	NUWTUBE45	US45
	1/0	RT3/01/0 B	NUWTUBE90	US90
3/0	2/0	RT3/02/0 B	NUWTUBE90	US90
	3/0	RT3/03/0 B	NUWTUBE115	US115

Continued on next page

Cable to Cable

Mold Information:

- Price Key is the **Bold Letter** in the Mold Part No.
- For mold Wear Plates, add suffix "WP" to the end of the Mold Part No. See page 70 for details.

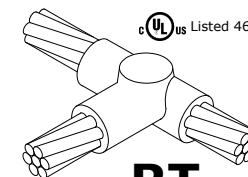
Required Tools & Accessories:

MH6 - Handle for "I" Price Key Molds (Page 75)

Recommended Tools & Accessories:

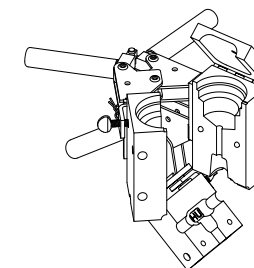
CCBRSH1 - Cable Cleaning Brush (Page 72)

MCBRS1 - Mold Cleaning Brushes (Page 73)



RT
(Run & Tap)

**Vertical & Horizontal
Split
3-Piece Design**



RT Connection Type Continued

Cable Size		Mold Part No.	Weld Metal	
Run	Tap		NUWTube	UltraShot
4/0	#6	RT4/06 I	NUWTUBE90	US90
	#4	RT4/04 I	NUWTUBE90	US90
	#2 Sol	RT4/02 SI	NUWTUBE90	US90
	#2	RT4/02 I	NUWTUBE90	US90
	1/0	RT4/01/0 I	NUWTUBE90	US90
	2/0	RT4/02/0 I	NUWTUBE90	US90
	3/0	RT4/03/0 I	NUWTUBE115	US115
	4/0	RT4/04/0 I	NUWTUBE150	US150
250 MCM	#2	RT25CM2 I	NUWTUBE90	US90
	1/0	RT25CM1/0 I	NUWTUBE90	US90
	2/0	RT25CM2/0 I	NUWTUBE90	US90
	3/0	RT25CM3/0 I	NUWTUBE150	US150
	4/0	RT25CM4/0 I	NUWTUBE150	US150
	250 MCM	RT25CM25CM I	NUWTUBE150	US150

Continued on next page

NOTES:

- Innovative 3-piece design allows for ease of cleaning mold cavities and tap holes between connections.
- Proper care and cleaning extends the life of exothermic molds.

Cable to Cable

Mold Information:

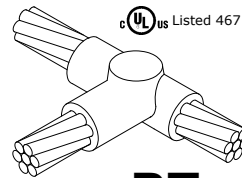
- Price Key is the **Bold Letter** in the Mold Part No.
- For mold Wear Plates, add suffix "WP" to the end of the Mold Part No. See page 70 for details.

Required Tools & Accessories:

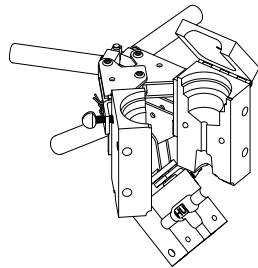
- MH6 - Handle for "I" Price Key Molds (Page 75)
- MH7 - Handle for "J" Price Key Molds (Page 75)

Recommended Tools & Accessories:

- CCBRSH1 - Cable Cleaning Brush (Page 72)
- MCBRSH1 - Mold Cleaning Brushes (Page 73)



RT
(Run & Tap)



**Vertical &
Horizontal Split
3-Piece Design**

RT Connection Type Continued

Cable Size		Mold Part No.	Weld Metal	
Run	Tap		NUWTube	UltraShot
300 MCM	#2	RT3CM2 I	NUWTUBE90	US90
	1/0	RT3CM1/0 I	NUWTUBE90	US90
	2/0	RT3CM2/0 I	NUWTUBE90	US90
	3/0	RT3CM3/0 I	NUWTUBE150	US150
	4/0	RT3CM4/0 I	NUWTUBE150	US150
	250 MCM	RT3CM25CM I	NUWTUBE200	US200
	300 MCM	RT3CM3CM I	NUWTUBE200	US200
350 MCM	#2	RT35CM2 I	NUWTUBE90	US90
	1/0	RT35CM1/0 I	NUWTUBE90	US90
	2/0	RT35CM2/0 I	NUWTUBE90	US90
	3/0	RT35CM3/0 I	NUWTUBE150	US150
	4/0	RT35CM4/0 I	NUWTUBE150	US150
	250 MCM	RT35CM25CM I	NUWTUBE200	US200
	300 MCM	RT35CM3CM I	NUWTUBE200	US200
350 MCM	RT35CM35CM I	NUWTUBE200	US200	
500 MCM	#2	RT5CM2 I	NUWTUBE90	US90
	1/0	RT5CM1/0 I	NUWTUBE90	US90
	2/0	RT5CM2/0 I	NUWTUBE90	US90
	4/0	RT5CM4/0 I	NUWTUBE150	US150
	250 MCM	RT5CM25CM I	NUWTUBE200	US200
	300 MCM	RT5CM3CM I	NUWTUBE200	US200
	350 MCM	RT5CM35CM I	NUWTUBE200	US200
500 MCM	RT5CM5CM I	2-NUWTUBE150	US300	

Continued on next page

Cable to Cable

Mold Information:

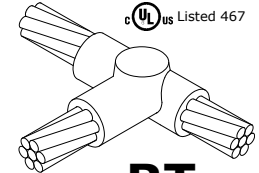
- Price Key is the **Bold Letter** in the Mold Part No.
- For mold Wear Plates, add suffix "WP" to the end of the Mold Part No. See page 70 for details.

Required Tools & Accessories:

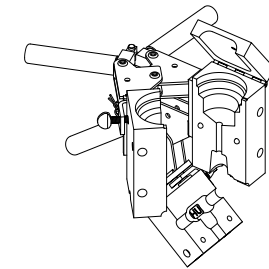
- MH6 - Handle for "I" Price Key Molds (Page 75)
- MH7 - Handle for "J" Price Key Molds (Page 75)

Recommended Tools & Accessories:

- CCBRSH1 - Cable Cleaning Brush (Page 72)
- MCBRSH1 - Mold Cleaning Brushes (Page 73)



RT
(Run & Tap)



**Vertical &
Horizontal Split
3-Piece Design**

RT Connection Type Continued

Cable Size		Mold Part No.	Weld Metal	
Run	Tap		NUWTube	UltraShot
750 MCM	1/0	RT75CM1/0 I	NUWTUBE150	US150
	2/0	RT75CM2/0 I	NUWTUBE150	US150
	4/0	RT75CM4/0 I	NUWTUBE150	US150
	250 MCM	RT75CM25CM I	NUWTUBE200	US200
	300 MCM	RT75CM3CM I	NUWTUBE200	US200
	350 MCM	RT75CM35CM I	NUWTUBE250	US250
	500 MCM	RT75CM5CM J	2-NUWTUBE200	US400
1000 MCM	750 MCM	RT75CM75CM J	2-NUWTUBE250	US500
	1/0	RT1MM1/0 I	NUWTUBE150	US150
	2/0	RT1MM2/0 I	NUWTUBE150	US150
	4/0	RT1MM4/0 I	NUWTUBE200	US200
	250 MCM	RT1MM25CM I	NUWTUBE200	US200
	300 MCM	RT1MM3CM I	NUWTUBE200	US200
	350 MCM	RT1MM35CM I	NUWTUBE250	US250
	500 MCM	RT1MM5CM J	2-NUWTUBE200	US400
	750 MCM	RT1MM75CM J	2-NUWTUBE250	US500
	1000 MCM	RT1MM1MM J	2-NUWTUBE250	US500

NOTES:

- Innovative 3-piece design allows for ease of cleaning mold cavities and tap holes between connections.
- Proper care and cleaning extends the life of exothermic molds.

Cable to Cable

Mold Information:

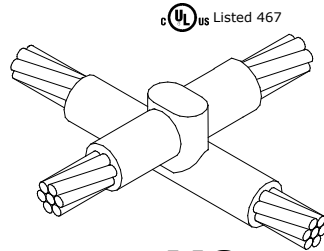
- Price Key is the **Bold Letter** in the Mold Part No.
- For mold Wear Plates, add suffix "WP" to the end of the Mold Part No. See page 70 for details.

Required Tools & Accessories:

MH1 - Handle for "B" & "Q" Price Key Molds (Page 75)

Recommended Tools & Accessories:

- CCBRSH1 - Cable Cleaning Brush (Page 72)
- MCBRSH1 - Mold Cleaning Brushes (Page 73)



XO
(Cross ("X") Over)

**Horizontal Split
2-Piece Design**

XO Connection Type

Cable Size		Mold Part No.	Weld Metal	
Run	Tap		NUWTube	UltraShot
#6	#6	XO66 B	NUWTUBE45	US45
#4	#4	XO44 B	NUWTUBE65	US65
#2 Sol	#2 Sol	XO2S2 S	NUWTUBE90	US90
#2	#4	XO24 B	NUWTUBE65	US65
	#2	XO22 B	NUWTUBE90	US90
1/0	#4	XO1/04 Q	NUWTUBE115	US115
	#2	XO1/02 Q	NUWTUBE115	US115
	1/0	XO1/01/0 Q	NUWTUBE150	US150
2/0	#2	XO2/02 Q	NUWTUBE150	US150
	1/0	XO2/01/0 Q	NUWTUBE200	US200
	2/0	XO2/02/0 Q	NUWTUBE200	US200
3/0	#2	XO3/02 Q	NUWTUBE150	US150
	1/0	XO3/01/0 Q	NUWTUBE200	US200
	2/0	XO3/02/0 Q	NUWTUBE200	US200
	3/0	XO3/03/0 Q	NUWTUBE250	US250

Continued on next page

Cable to Cable

Mold Information:

- Price Key is the **Bold Letter** in the Mold Part No.
- For mold Wear Plates, add suffix "WP" to the end of the Mold Part No. See page 70 for details.

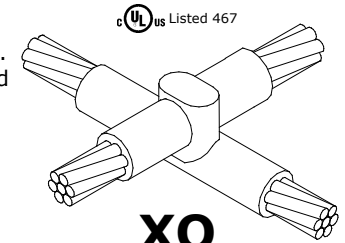
Required Tools & Accessories:

MH6 - Handle for "I" Price Key Molds (Page 75)

MH7 - Handle for "J" Price Key Molds (Page 75)

Recommended Tools & Accessories:

- CCBRSH1 - Cable Cleaning Brush (Page 72)
- MCBRSH1 - Mold Cleaning Brushes (Page 73)



XO
(Cross ("X") Over)

**Vertical &
Horizontal Split
3-Piece Design**

XO Connection Type Continued

Cable Size		Mold Part No.	Weld Metal	
Run	Tap		NUWTube	UltraShot
4/0	#2	XO4/02 I	NUWTUBE150	US150
	1/0	XO4/01/0 I	NUWTUBE200	US200
	2/0	XO4/02/0 I	NUWTUBE200	US200
	3/0	XO4/03/0 I	NUWTUBE250	US250
	4/0	XO4/04/0 I	NUWTUBE250	US250
250 MCM	#2	XO25CM2 I	NUWTUBE150	US150
	1/0	XO25CM1/0 I	NUWTUBE250	US250
	2/0	XO25CM2/0 I	NUWTUBE250	US250
	3/0	XO25CM3/0 I	2-NUWTUBE150	US300
	4/0	XO25CM4/0 I	2-NUWTUBE150	US300
	250 MCM	XO25CM25CM I	2-NUWTUBE150	US300
500 MCM	#2	XO5CM2 I	NUWTUBE250	US250
	1/0	XO5CM1/0 I	2-NUWTUBE150	US300
	2/0	XO5CM2/0 J	2-NUWTUBE200	US400
	3/0	XO5CM3/0 J	2-NUWTUBE250	US500
	4/0	XO5CM4/0 J	2-NUWTUBE250	US500
	250 MCM	XO5CM25CM J	2-NUWTUBE250	US500
	300 MCM	XO5CM3CM J	3-NUWTUBE200	US600
	350 MCM	XO5CM35CM J	3-NUWTUBE200	US600
	500 MCM	XO5CM5CM J	3-NUWTUBE250	US750

Cable to Ground Rod

Mold Information:

- Molds listed are for copper-clad ground rods.
- Molds with Price Key "L" SOLD WITH HANDLES but not FLTIG.
- For mold Wear Plates, add suffix "WP" to the end of the Mold Part No. See page 70 for details.
- Price Key is the **Bold Letter** in the Mold Part No.

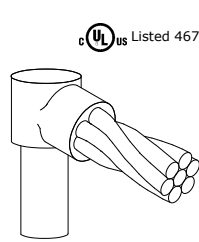
Required Tools & Accessories:

MH1 - Handle for "B" Price Key Molds (Page 75)

Recommended Tools & Accessories:

CCBRSH1 - Cable Cleaning Brush (Page 72)

MCBRSH1 - Mold Cleaning Brushes (Page 73)



GD

(Ground Rod to Dead End Cable)

GD Connection Type

Ground Rod Size	Cable Size	Mold Part No.	Weld Metal	
			NUWTube	UltraShot
1/2"	#6	GD12F6 L	NUWTUBE25	US25
	#4	GD12F4 L	NUWTUBE25	US25
	#2 Sol	GD12F2 SB	NUWTUBE65	US65
	#2	GD12F2 B	NUWTUBE65	US65
	1/0	GD12F1/0 B	NUWTUBE90	US90
	2/0	GD12F2/0 B	NUWTUBE90	US90
	3/0	GD12F3/0 B	NUWTUBE90	US90
	4/0	GD12F4/0 B	NUWTUBE90	US90
	250 MCM	GD12F25 CMB	NUWTUBE90	US90
	300 MCM	GD12F3 CMB	NUWTUBE90	US90

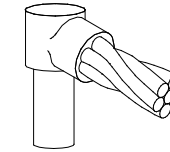
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NOTES:

- Molds shown are for copper-clad steel ground rods.
- 1/2" molds are for full size ground rods. See page 83.
- For welding to stainless steel, galvanized steel or solid copper ground rods, add letter "F" to ground rod size. For sectional ground rods, add letter "S" to ground rod size. See chart on page 83 for details.

Cable to Ground Rod

cUL US Listed 467



GD

(Ground Rod to Dead End Cable)

GD Connection Type Continued

Ground Rod Size	Cable Size	Mold Part No.	Weld Metal	
			NUWTube	UltraShot
5/8"	#6	GD586 L	NUWTUBE32	US32
	#4	GD584 L	NUWTUBE32	US32
	#2 Sol	GD582 SB	NUWTUBE65	US65
	#2	GD582 B	NUWTUBE65	US65
	1/0	GD581/0 B	NUWTUBE90	US90
	2/0	GD582/0 B	NUWTUBE90	US90
	3/0	GD583/0 B	NUWTUBE90	US90
	4/0	GD584/0 B	NUWTUBE90	US90
	250 MCM	GD5825 CMB	NUWTUBE90	US90
	300 MCM	GD583 CMB	NUWTUBE115	US115
350 MCM	GD5835 CMB	NUWTUBE115	US115	
500 MCM	GD585 CMB	NUWTUBE150	US150	
3/4"	#6	GD346 L	NUWTUBE32	US32
	#4	GD344 L	NUWTUBE45	US45
	#2 Sol	GD342 SB	NUWTUBE90	US90
	#2	GD342 B	NUWTUBE90	US90
	1/0	GD341/0 B	NUWTUBE90	US90
	2/0	GD342/0 B	NUWTUBE90	US90
	3/0	GD343/0 B	NUWTUBE90	US90
	4/0	GD344/0 B	NUWTUBE90	US90
	250 MCM	GD3425 CMB	NUWTUBE90	US90
	300 MCM	GD343 CMB	NUWTUBE115	US115
	350 MCM	GD3435 CMB	NUWTUBE115	US115
	500 MCM	GD345 CMB	NUWTUBE150	US150
	750 MCM	GD3475 CMB	NUWTUBE250	US250
1"	1/0	GD101/0 B	NUWTUBE150	US150
	2/0	GD102/0 B	NUWTUBE150	US150
	3/0	GD103/0 B	NUWTUBE150	US150
	4/0	GD104/0 B	NUWTUBE150	US150
	250 MCM	GD1025 CMB	NUWTUBE150	US150
	300 MCM	GD103 CMB	NUWTUBE200	US200
	350 MCM	GD1035 CMB	NUWTUBE200	US200
	500 MCM	GD105 CMB	NUWTUBE200	US200
	750 MCM	GD1075 CMB	NUWTUBE250	US250
	1000 MCM	GD101 MMB	2-NUWTUBE150	US300

Cable to Ground Rod

Mold Information:

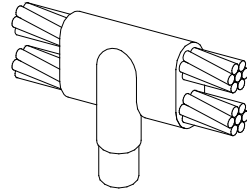
- Molds listed are for copper-clad ground rods.
- Price Key is the **Bold Letter** in the Mold Part No.

Required Tools & Accessories:

- MH1 - Handle for "K" Price Key Molds (Page 75)
- MH2 - Handle for "D" Price Key Molds (Page 75)

Recommended Tools & Accessories:

- CCBRSH1 - Cable Cleaning Brush (Page 72)
- MCBRS1 - Mold Cleaning Brushes (Page 73)



GF

(Ground Rod Top to 4 Horizontal Cables)

GF Connection Type

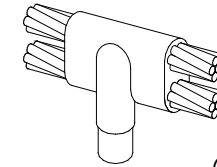
Ground Rod Size	Cable Size	Mold Part No.	Weld Metal	
			Part No.	UltraShot
1/2"	#6	GF12F6 K	NUWTUBE90	US90
	#4	GF12F4 K	NUWTUBE115	US115
	#2 Sol	GF12F2 SK	NUWTUBE115	US115
	#2	GF12F2 K	NUWTUBE115	US115
	1/0	GF12F1/0 K	NUWTUBE150	US150
	2/0	GF12F2/0 K	NUWTUBE200	US200
	3/0	GF12F3/0 K	NUWTUBE250	US250
	4/0	GF12F4/0 K	NUWTUBE250	US250

Continued on next page

NOTES:

- Molds shown are for copper-clad steel ground rods.
- 1/2" molds are for full size ground rods. See page 83.
- For welding to stainless steel, galvanized steel or solid copper ground rods, add letter "F" to ground rod size. For sectional ground rods, add letter "S" to ground rod size. See chart on page 83 for details.

Cable to Ground Rod



GF

(Ground Rod Top to 4 Horizontal Cables)

GF Connection Type Continued

Ground Rod Size	Cable Size	Mold Part No.	Weld Metal	
			Part No.	UltraShot
5/8"	#6	GF586 K	NUWTUBE90	US90
	#4	GF584 K	NUWTUBE115	US115
	#2 Sol	GF582 SK	NUWTUBE150	US150
	#2	GF582 K	NUWTUBE150	US150
	1/0	GF581/0 K	NUWTUBE200	US200
	2/0	GF582/0 K	NUWTUBE250	US250
	3/0	GF583/0 K	2-NUWTUBE150	US300
	4/0	GF584/0 K	2-NUWTUBE150	US300
	250 MCM	GF5825 CMD	2-NUWTUBE200	US400
	300 MCM	GF583 CMD	2-NUWTUBE250	US500
	350 MCM	GF5835 CMD	2-NUWTUBE250	US500
	3/4"	#6	GF346 K	NUWTUBE90
#4		GF344 K	NUWTUBE115	US115
#2 Sol		GF342 SK	NUWTUBE150	US150
#2		GF342 K	NUWTUBE150	US150
1/0		GF341/0 K	NUWTUBE200	US200
2/0		GF342/0 K	NUWTUBE250	US250
3/0		GF343/0 K	2-NUWTUBE150	US300
4/0		GF344/0 K	2-NUWTUBE150	US300
250 MCM		GF3425 CMD	2-NUWTUBE200	US400
300 MCM		GF343 CMD	2-NUWTUBE250	US500
350 MCM		GF3435 CMD	2-NUWTUBE250	US500
1"		#4	GF104 K	NUWTUBE150
	#2	GF102 K	NUWTUBE200	US200
	1/0	GF101/0 K	NUWTUBE250	US250
	2/0	GF102/0 K	2-NUWTUBE150	US300
	3/0	GF103/0 D	2-NUWTUBE200	US400
	4/0	GF104/0 D	2-NUWTUBE200	US400
	250 MCM	GF1025 CMD	2-NUWTUBE250	US500

Cable to Ground Rod

Mold Information:

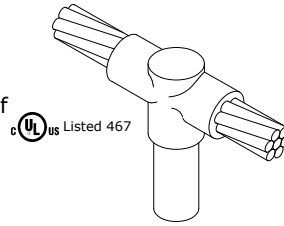
- Molds listed are for copper-clad ground rods.
- Molds with Price Key "L" and "M" SOLD WITH HANDLES but not FLTIG.
- For mold Wear Plates, add suffix "WP" to the end of the Mold Part No. See page 70 for details.
- Price Key is the **Bold Letter** in the Mold Part No.

Required Tools & Accessories:

- MH1 - Handle for "B" Price Key Molds (Page 75)
- MH2 - Handle for "C" Price Key Molds (Page 75)

Recommended Tools & Accessories:

- CCBRSH1 - Cable Cleaning Brush (Page 72)
- MCBRSH1 - Mold Cleaning Brushes (Page 73)



GO

(Ground Rod to Cable Over Top)



GO Connection Type

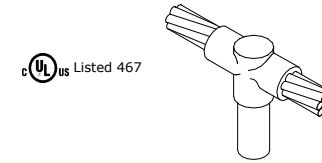
Ground Rod Size	Cable Size	Mold Part No.	Weld Metal	
			NUWTube	UltraShot
1/2"	#6	GO12F6 L	NUWTUBE32	US32
	#4	GO12F4 L	NUWTUBE32	US32
	#2 Sol	GO12F2 SB	NUWTUBE90	US90
	#2	GO12F2 B	NUWTUBE90	US90
	1/0	GO12F1/0 B	NUWTUBE90	US90
	2/0	GO12F2/0 B	NUWTUBE90	US90
	3/0	GO12F3/0 B	NUWTUBE115	US115
	4/0	GO12F4/0 B	NUWTUBE115	US115
	250 MCM	GO12F25 CMB	NUWTUBE150	US150
	300 MCM	GO12F3 CMB	NUWTUBE200	US200

Continued on next page

NOTES:

- Molds shown are for copper-clad steel ground rods.
- 1/2" molds are for full size ground rods. See page 83.
- For welding to stainless steel, galvanized steel or solid copper ground rods, add letter "F" to ground rod size. For sectional ground rods, add letter "S" to ground rod size. See chart on page 83 for details.

Cable to Ground Rod



GO

(Ground Rod to Cable Over Top)

GO Connection Type Continued

Ground Rod Size	Cable Size	Mold Part No.	Weld Metal	
			NUWTube	UltraShot
5/8"	#6	GO586 L	NUWTUBE32	US32
	#4	GO584 L	NUWTUBE32	US32
	#2 Sol	GO582 SB	NUWTUBE90	US90
	#2	GO582 B	NUWTUBE90	US90
	1/0	GO581/0 B	NUWTUBE90	US90
	2/0	GO582/0 B	NUWTUBE115	US115
	3/0	GO583/0 B	NUWTUBE115	US115
	4/0	GO584/0 B	NUWTUBE115	US115
	250 MCM	GO5825 CMB	NUWTUBE150	US150
	300 MCM	GO583 CMB	NUWTUBE200	US200
3/4"	350 MCM	GO5835 CMB	NUWTUBE200	US200
	500 MCM	GO585 CMB	NUWTUBE250	US250
	#6	GO346 L	NUWTUBE45	US45
	#4	GO344 M	NUWTUBE65	US65
	#2 Sol	GO342 SB	NUWTUBE90	US90
	#2	GO342 B	NUWTUBE90	US90
	1/0	GO341/0 B	NUWTUBE115	US115
	2/0	GO342/0 B	NUWTUBE115	US115
	3/0	GO343/0 B	NUWTUBE115	US115
	4/0	GO344/0 B	NUWTUBE115	US115
1"	250 MCM	GO3425 CMB	NUWTUBE150	US150
	300 MCM	GO343 CMB	NUWTUBE200	US200
	350 MCM	GO3435 CMB	NUWTUBE200	US200
	500 MCM	GO345 CMB	NUWTUBE250	US250
	750 MCM	GO3475 CMC	2-NUWTUBE200	US400
	1/0	GO101/0 B	NUWTUBE150	US150
	2/0	GO102/0 B	NUWTUBE150	US150
	3/0	GO103/0 B	NUWTUBE150	US150
	4/0	GO104/0 B	NUWTUBE150	US150
	250 MCM	GO1025 CMB	NUWTUBE200	US200
300 MCM	GO103 CMB	NUWTUBE200	US200	
350 MCM	GO1035 CMB	NUWTUBE200	US200	
500 MCM	GO105 CMB	NUWTUBE250	US250	
750 MCM	GO1075 CMC	2-NUWTUBE200	US400	
1000 MCM	GO101 MMC	2-NUWTUBE250	US500	



Cable to Ground Rod

Mold Information:

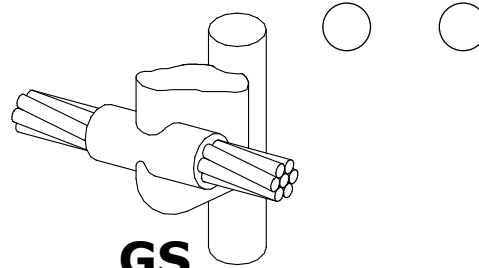
- Molds listed are for copper-clad ground rods.
- Price Key is the **Bold Letter** in the Mold Part No.
- For mold Wear Plates, add suffix "WP" to the end of the Mold Part No. See page 70 for details.

Required Tools & Accessories:

- MH1 - Handle for "P" Price Key Molds (Page 75)
- MH2 - Handle for "Y" Price Key Molds (Page 75)
- MH3 - Handle for "R" Price Key Molds (Page 75)

Recommended Tools & Accessories:

- CCBRSH1 - Cable Cleaning Brush (Page 72)
- MCBRSH1 - Mold Cleaning Brushes (Page 73)



GS
(Ground Rod to Cable on Side)

**Cost Effective
2-Piece Design**

GS Connection Type

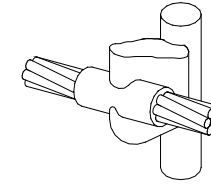
Ground Rod Size	Cable Size	Mold Part No.	Weld Metal	
			NUWTube	UltraShot
1/2"	#6	GS12F6 R	NUWTUBE65	US65
	#4	GS12F4 R	NUWTUBE65	US65
	#2 Sol	GS12F2 SR	NUWTUBE65	US65
	#2	GS12F2 R	NUWTUBE65	US65
	1/0	GS12F1/0 P	NUWTUBE115	US115
	2/0	GS12F2/0 P	NUWTUBE115	US115
	3/0	GS12F3/0 P	NUWTUBE150	US150
	4/0	GS12F4/0 P	NUWTUBE150	US150
	250 MCM	GS12F25 CMP	NUWTUBE150	US150

Continued on next page

NOTES:

- Molds shown are for copper-clad steel ground rods.
- 1/2" molds are for full size ground rods. See page 83.
- For welding to stainless steel, galvanized steel or solid copper ground rods, add letter "F" to ground rod size. For sectional ground rods, add letter "S" to ground rod size. See chart on page 83 for details.

Cable to Ground Rod



GS
(Ground Rod to Cable on Side)

**Cost Effective
2-Piece Design**

GS Connection Type Continued

Ground Rod Size	Cable Size	Mold Part No.	Weld Metal	
			NUWTube	UltraShot
5/8"	#6	GS586 R	NUWTUBE65	US65
	#4	GS584 R	NUWTUBE65	US65
	#2 Sol	GS582 SR	NUWTUBE65	US65
	#2	GS582 R	NUWTUBE65	US65
	1/0	GS581/0 P	NUWTUBE115	US115
	2/0	GS582/0 P	NUWTUBE115	US115
	3/0	GS583/0 P	NUWTUBE150	US150
	4/0	GS584/0 P	NUWTUBE150	US150
	250 MCM	GS5825 CMP	NUWTUBE150	US150
	500 MCM	GS585 CMY	2-NUWTUBE200	US400
3/4"	#6	GS346 R	NUWTUBE65	US65
	#4	GS344 R	NUWTUBE65	US65
	#2 Sol	GS342 SR	NUWTUBE65	US65
	#2	GS342 R	NUWTUBE65	US65
	1/0	GS341/0 P	NUWTUBE115	US115
	2/0	GS342/0 P	NUWTUBE115	US115
	3/0	GS343/0 P	NUWTUBE150	US150
	4/0	GS344/0 P	NUWTUBE150	US150
	250 MCM	GS3425 CMP	NUWTUBE200	US200
	500 MCM	GS345 CMY	2-NUWTUBE250	US500

Cable to Ground Rod

Mold Information:

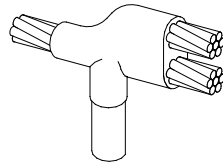
- Molds listed are for copper-clad ground rods.
- Price Key is the **Bold Letter** in the Mold Part No.

Required Tools & Accessories:

- MH1 - Handle for "K" Price Key Molds (Page 75)
- MH2 - Handle for "D" Price Key Molds (Page 75)

Recommended Tools & Accessories:

- CCBRSH1 - Cable Cleaning Brush (Page 72)
- MCBRSH1 - Mold Cleaning Brushes (Page 73)



GT

(Horizontal Thru Cable Plus Tap Cable to Top of Ground Rod)



Ground Rod to Ground Rod

Mold Information:

- Molds listed are for copper-clad ground rods.
- Price Key is the **Bold Letter** in the Mold Part No.

Required Tools & Accessories:

- MH1 - Handle for "B" Price Key Molds (Page 75)
- MH2 - Handle for "C" Price Key Molds (Page 75)

Recommended Tools & Accessories:

- CCBRSH1 - Cable Cleaning Brush (Page 72)
- MCBRSH1 - Mold Cleaning Brushes (Page 73)



GG

(Butt Splice of Vertical Ground Rods)



GT Connection Type

Ground Rod Size	Cable Size	Mold Part No.	Weld Metal	
			NUWTube	UltraShot
5/8"	#6	GT586 K	NUWTUBE90	US90
	#4	GT584 K	NUWTUBE90	US90
	#2 Sol	GT582 SK	NUWTUBE115	US115
	#2	GT582 K	NUWTUBE115	US115
	1/0	GT581/ OK	NUWTUBE150	US150
	2/0	GT582/ OK	NUWTUBE200	US200
	3/0	GT583/ OK	NUWTUBE250	US250
	4/0	GT584/ OK	NUWTUBE250	US250
3/4"	250 MCM	GT5825 CMK	2-NUWTUBE150	US300
	#6	GT346 K	NUWTUBE90	US90
	#4	GT344 K	NUWTUBE90	US90
	#2 Sol	GT342 SK	NUWTUBE115	US115
	#2	GT342 K	NUWTUBE115	US115
	1/0	GT341/ OK	NUWTUBE150	US150
	2/0	GT342/ OK	NUWTUBE200	US200
	3/0	GT343/ OK	NUWTUBE250	US250
	4/0	GT344/ OK	NUWTUBE250	US250
	250 MCM	GT3425 CMK	2-NUWTUBE150	US300
300 MCM	GT343 CMD	2-NUWTUBE200	US400	
350 MCM	GT3435 CMD	2-NUWTUBE200	US400	

GG Connection Type

Ground Rod Size	Mold Part No.	Weld Metal	
		NUWTube	UltraShot
1/2"	GG12 FB	NUWTUBE250	US250
5/8"	GG58 C	2-NUWTUBE150	US300
3/4"	GG34 C	2-NUWTUBE200	US400

NOTES:

- Molds shown are for copper-clad steel ground rods.
- 1/2" molds are for full size ground rods. See page 83.
- For welding to stainless steel, galvanized steel or solid copper ground rods, add letter "F" to ground rod size. For sectional ground rods, add letter "S" to ground rod size. See chart on page 83 for details.

NOTES:

- Molds shown are for copper-clad steel ground rods.
- 1/2" molds are for full size ground rods. See page 83.
- For welding to stainless steel, galvanized steel or solid copper ground rods, add letter "F" to ground rod size. For sectional ground rods, add letter "S" to ground rod size. See chart on page 83 for details.

Cable to Steel Surface

Mold Information:

- Price Key is the **Bold Letter** in the Mold Part No.
- For mold Wear Plates, add suffix "WP" to the end of the Mold Part No. See page 70 for details.

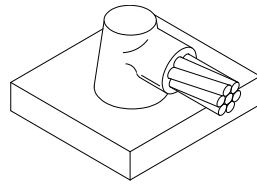
Required Tools & Accessories:

- MH1 - Handle for "B" Price Key Molds (Page 75)
- MH2 - Handle for "C" Price Key Molds (Page 75)

Recommended Tools & Accessories:

- CCBRSH1 - Cable Cleaning Brush (Page 72)
- MCBRSH1 - Mold Cleaning Brushes (Page 73)
- UMHDKIT - Mold Hold Down Kit (Page 76)

cUL US Listed 467



HB

(Horizontal Butt OFF Surface)



Cable to Steel Surface / Pipe

Mold Information:

- Mold cable is off the pipe surface.
- Price Key is the **Bold Letter** in the Mold Part No.

Required Tools & Accessories:

- MH1 - Handle for "B" Price Key Molds (Page 75)

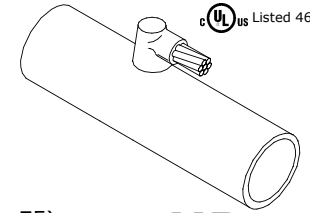
Recommended Tools & Accessories:

- CCBRSH1 - Cable Cleaning Brush (Page 72)
- MCBRSH1 - Mold Cleaning Brushes (Page 73)
- UMHDKIT - Mold Hold Down Kit (Page 76)

OR

- CSKITHP - Chain Support Kit for Horizontal (Page 75)

cUL US Listed 467



HB

(Horizontal Cable to Top of Horizontal Steel Pipe OFF Surface)

HB Connection Type

Cable Size	Mold Part No.	Weld Metal	
		NUWTube	UltraShot
#6	HB6 B	NUWTUBE65	US65
#2 Sol	HB2 SB	NUWTUBE65	US65
#2	HB2 B	NUWTUBE65	US65
1/0	HB1/0 B	NUWTUBE90	US90
2/0	HB2/0 B	NUWTUBE90	US90
3/0	HB3/0 B	NUWTUBE115	US115
4/0	HB4/0 B	NUWTUBE115	US115
250 MCM	HB25CM B	NUWTUBE115	US115
300 MCM	HB3CM B	NUWTUBE150	US150
350 MCM	HB35CM B	NUWTUBE200	US200
500 MCM	HB5CM B	NUWTUBE200	US200
750 MCM	HB75CM B	2-NUWTUBE150	US300
1000 MCM	HB1MM C	2-NUWTUBE200	US400

HB (Pipe) Connection Type

Cable Size	Mold Part No.	Weld Metal	
		NUWTube	UltraShot
1/0	HB-1/0** B	NUWTUBE90	US90
2/0	HB-2/0** B	NUWTUBE90	US90
3/0	HB-3/0** B	NUWTUBE115	US115
4/0	HB-4/0** B	NUWTUBE115	US115
250 MCM	HB-25CM** B	NUWTUBE115	US115

****Add Pipe Size to Mold Part No. See chart below.**



UMHDKIT
U.S. Patent No. 6,382,496



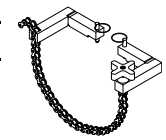
UMHDKIT

UMHDKIT with Handle

U.S. Patent No. 6,382,496

CABLE TO HORIZONTAL STEEL PIPE (HB & HD) Use Mold Part No. with Pipe Size (**) Indicator		
Cable	Nominal Pipe Size	Pipe Size Indicator
#1 and Smaller	12" and Smaller 14" and Larger	Nominal Pipe Size* None
1/0 thru 250	28" and Smaller 30" and Larger	Nominal Pipe Size* None
Example: #1/0 cable to 2-1/2" pipe = HB-1/02.5 B		

***See Pipe Sizes on page 81.**



CSKITHP
U.S. Patent No. 6,382,496

Cable to Steel Surface

Mold Information:

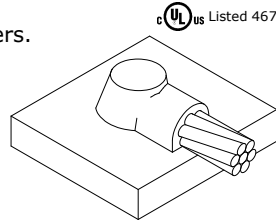
- Molds with Price Key "A" SOLD WITH FRAME.
- Frame for "A" Price Key Molds INCLUDES Flint Igniters.
- Price Key is the **Bold Letter** in the Mold Part No.

Required Tools & Accessories:

MH1 - Handle for "B" Price Key Molds (Page 75)

Recommended Tools & Accessories:

- CCBRSH1 - Cable Cleaning Brush (Page 72)
- MCBRSH1 - Mold Cleaning Brushes (Page 73)
- UMHDKIT - Mold Hold Down Kit (Page 76)
- UMMHDA - Hold Down Kit when Price Key is "A" (Page 76)



HD

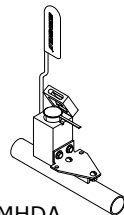
(Horizontal Butt
DOWN on Surface)

HD Connection Type

Cable Size	Mold Part No.	Weld Metal	
		NUWTube	UltraShot
#6 Sol	HD6SA	NUWTUBE45	US45
#6	HD6A	NUWTUBE45	US45
#4	HD4A	NUWTUBE45	US45
#2 Sol	HD2SA	NUWTUBE45	US45
#2	HD2A	NUWTUBE45	US45
1/0	HD1/0B	NUWTUBE90	US90
2/0	HD2/0B	NUWTUBE90	US90
3/0	HD3/0B	NUWTUBE115	US115
4/0	HD4/0B	NUWTUBE115	US115
250 MCM	HD25CMB	NUWTUBE115	US115
300 MCM	HD3CMB	NUWTUBE150	US150
350 MCM	HD35CMB	NUWTUBE200	US200
500 MCM	HD5CMB	NUWTUBE200	US200

NOTE:

- Mold Sealer (Page 72) required on conductors 1/0 and larger



UMMHDA
U.S. Patent No. 6,382,496

Cable to Steel Surface / Pipe

Mold Information:

- Mold cable is on the pipe surface.
- Frame for "A" Price Key Molds INCLUDES Flint Igniters.
- Price Key is the **Bold Letter** in the Mold Part No.
- For mold Wear Plates, add suffix "WP" to the end of the Mold Part No. See page 70 for details.

Required Tools & Accessories:

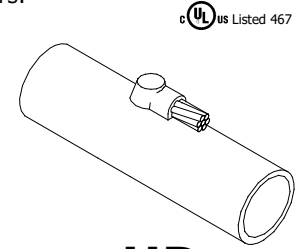
MH1 - Handle for "B" Price Key Molds (Page 75)

Recommended Tools & Accessories:

- CCBRSH1 - Cable Cleaning Brush (Page 72)
- MCBRSH1 - Mold Cleaning Brushes (Page 73)
- UMHDKIT - Mold Hold Down Kit (Page 76)
- UMMHDA - Hold Down Kit when Price Key is "A" (Page 76)

OR

CSKITHP - Chain Support Kit for Horizontal (Page 75) (Horizontal Cable to Top of Horizontal Steel Pipe, ON Surface)



HD

HD (Pipe) Connection Type

Cable Size	Mold Part No.	Weld Metal	
		NUWTube	UltraShot
#6 Sol	HD-6**A	NUWTUBE45	US45
#4	HD-4**A	NUWTUBE45	US45
#2 Sol	HD-2S**A	NUWTUBE45	US45
#2	HD-2**A	NUWTUBE45	US45
1/0	HD-1/0**B	NUWTUBE90	US90
2/0	HD-2/0**B	NUWTUBE90	US90
3/0	HD-3/0**B	NUWTUBE115	US115
4/0	HD-4/0**B	NUWTUBE115	US115
250 MCM	HD-25CM**B	NUWTUBE115	US115

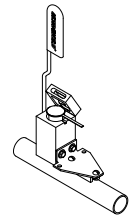
**Add Pipe Size to Mold Part No.
See chart below.

CABLE TO HORIZONTAL STEEL PIPE (HB & HD)		
Use Mold Part No. with Pipe Size (**) Indicator		
Cable	Nominal Pipe Size	Pipe Size Indicator
#1 and Smaller	12" and Smaller 14" and Larger	Nominal Pipe Size* None
1/0 thru 250	28" and Smaller 30" and Larger	Nominal Pipe Size* None
Example: #1/0 cable to 2-1/2" pipe = HD-1/02.5B		

*See Pipe Sizes on page 81.

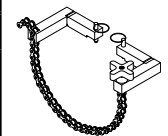
NOTE:

- Mold Sealer (Page 72) required on conductors 1/0 and larger



UMMHDA

U.S. Patent
No. 6,382,496



CSKITHP

U.S. Patent
No. 6,382,496

Cable to Steel Surface

Mold Information:

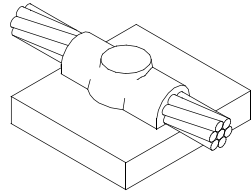
- Mold cable is on the pipe surface.
- Frame for "A" Price Key Molds sold with frame.
- Price Key is the **Bold Letter** in the Mold Part No.

Required Tools & Accessories:

- MH1 - Handle for "B" Price Key Molds (Page 75)
- MH2 - Handle for "C" Price Key Molds (Page 75)

Recommended Tools & Accessories:

- CCBRSH1 - Cable Cleaning Brush (Page 72)
- MCBRSH1 - Mold Cleaning Brushes (Page 73)
- UMHDKIT - Mold Hold Down Kit (Page 76)



HT

(Horizontal Thru
ON Surface)



HT Connection Type

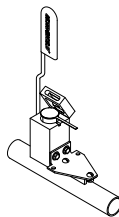
Cable Size	Mold Part No.	Weld Metal	
		NUWTube	UltraShot
#6	HT6 A	NUWTUBE45	US45
#4	HT4 A	NUWTUBE45	US45
#2 Sol	HT2 SA	NUWTUBE45	US45
#2	HT2 A	NUWTUBE45	US45
1/0	HT1/0 B	NUWTUBE90	US90
2/0	HT2/0 B	NUWTUBE115	US115
3/0	HT3/0 B	NUWTUBE115	US115
4/0	HT4/0 B	NUWTUBE150	US150
250 MCM	HT25 CMB	NUWTUBE150	US150
300 MCM	HT3 CMB	NUWTUBE200	US200
350 MCM	HT35 CMB	NUWTUBE200	US200
500 MCM	HT5 CMC	2-NUWTUBE150	US300



UMHDKIT

UMHDKIT with Handle

U.S. Patent
No. 6,382,496



UMMHDA

NOTE:

- Mold Sealer (Page 72) required on conductors 1/0 and larger

Cable to Steel Surface

Mold Information:

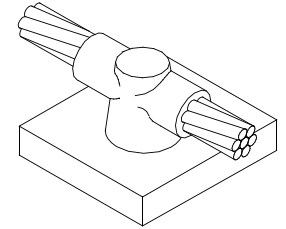
- Mold cable is off the pipe surface.
- Price Key is the **Bold Letter** in the Mold Part No.
- For mold Wear Plates, add suffix "WP" to the end of the Mold Part No. See page 70 for details.

Required Tools & Accessories:

- MH1 - Handle for "B" Price Key Molds (Page 75)
- MH2 - Handle for "C" Price Key Molds (Page 75)

Recommended Tools & Accessories:

- CCBRSH1 - Cable Cleaning Brush (Page 72)
- MCBRSH1 - Mold Cleaning Brushes (Page 73)
- UMHDKIT - Mold Hold Down Kit (Page 76)



HU

(Horizontal Thru
OFF Surface)

HU Connection Type

Cable Size	Mold Part No.	Weld Metal	
		NUWTube	UltraShot
1/0	HU1/0 B	NUWTUBE90	US90
2/0	HU2/0 B	NUWTUBE115	US115
3/0	HU3/0 B	NUWTUBE115	US115
4/0	HU4/0 B	NUWTUBE150	US150
250 MCM	HU25 CMB	NUWTUBE150	US150
300 MCM	HU3 CMB	NUWTUBE200	US200
350 MCM	HU35 CMB	NUWTUBE250	US250
500 MCM	HU5 CMC	2-NUWTUBE150	US300



UMHDKIT

UMHDKIT with Handle

U.S. Patent No. 6,382,496

Cable to Steel Surface

Mold Information:

- Price Key is the **Bold Letter** in the Mold Part No.
- For mold Wear Plates, add suffix "WP" to the end of the Mold Part No. See page 70 for details.

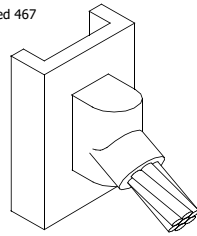
Required Tools & Accessories:

- MH1 - Handle for "B" Price Key Molds (Page 75)
- MH2 - Handle for "C" Price Key Molds (Page 75)

Recommended Tools & Accessories:

- CCBRSH1 - Cable Cleaning Brush (Page 72)
- MCBRSH1 - Mold Cleaning Brushes (Page 73)
- MSKIT - Magnetic Support Kit (Page 76)

cULus Listed 467



VA

(Vertical Angle 45°)



Cable to Steel Surface / Pipe

Mold Information:

- Price Key is the **Bold Letter** in the Mold Part No.
- For mold Wear Plates, add suffix "WP" to the end of the Mold Part No. See page 70 for details.

Required Tools & Accessories:

CSH1 - Chain Support Handle clamp for "B" Price Key Molds (Page 75)

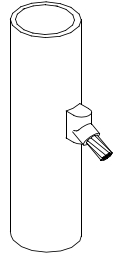
MH1 - Handle for "B" Price Key Molds (Page 75)

CSKIT - Chain Support Kits (Page 75)

Recommended Tools & Accessories:

- CCBRSH1 - Cable Cleaning Brush (Page 72)
- MCBRSH1 - Mold Cleaning Brushes (Page 73)

cULus Listed 467



VA

(Vertical Angle 45°)

VA Connection Type

Cable Size	Mold Part No.	Weld Metal	
		NUWTube	UltraShot
#6	VA6 B	NUWTUBE45	US45
#4	VA4 B	NUWTUBE45	US45
#2 Sol	VA2 SB	NUWTUBE45	US45
#2	VA2 B	NUWTUBE45	US45
1/0	VA1/0 B	NUWTUBE90	US90
2/0	VA2/0 B	NUWTUBE90	US90
3/0	VA3/0 B	NUWTUBE115	US115
4/0	VA4/0 B	NUWTUBE115	US115
250 MCM	VA25 CMB	NUWTUBE115	US115
300 MCM	VA3 CMB	NUWTUBE150	US150
350 MCM	VA35 CMB	NUWTUBE200	US200
500 MCM	VA5 CMB	NUWTUBE200	US200
750 MCM	VA75 CMC	2-NUWTUBE150	US300
1000 MCM	VA1 MMC	2-NUWTUBE200	US400



VA (Pipe) Connection Type (Range Taking)

Cable Size	Nominal Pipe Size	Mold Part No.	Weld Metal	
			NUWTube	UltraShot
#6	1-1/4" to 4" Pipe	VA6V1.25X4 B	NUWTUBE45	US45
	4" to 6" Pipe	VA6V4X6 B	NUWTUBE45	US45
	6" to 10" Pipe	VA6V6X10 B	NUWTUBE45	US45
	12" to 30" Pipe	VA6V12X30 B	NUWTUBE45	US45
	32" Pipe or Larger	VA6 B	NUWTUBE45	US45
#4	1-1/2" to 4" Pipe	VA4V1.5X4 B	NUWTUBE45	US45
	4" to 6" Pipe	VA4V4X6 B	NUWTUBE45	US45
	6" to 10" Pipe	VA4V6X10 B	NUWTUBE45	US45
	12" to 30" Pipe	VA4V12X30 B	NUWTUBE45	US45
	32" Pipe or Larger	VA4 B	NUWTUBE45	US45
#2 Sol	1/2" to 1" Pipe	VA2SV.5X1 B	NUWTUBE45	US45
	1-1/2" to 4" Pipe	VA2SV1.5X4 B	NUWTUBE45	US45
	4" to 6" Pipe	VA2SV4X6 B	NUWTUBE45	US45
	6" to 10" Pipe	VA2SV6X10 B	NUWTUBE45	US45
	12" to 30" Pipe	VA2SV12X30 B	NUWTUBE45	US45
#2	32" Pipe or Larger	VA2 SB	NUWTUBE45	US45
	1-1/2" to 4" Pipe	VA2V1.5X4 B	NUWTUBE45	US45
	4" to 6" Pipe	VA2V4X6 B	NUWTUBE45	US45
	6" to 10" Pipe	VA2V6X10 B	NUWTUBE45	US45
	12" to 30" Pipe	VA2V12X30 B	NUWTUBE45	US45
32" Pipe or Larger	VA2 B	NUWTUBE45	US45	



MSKIT

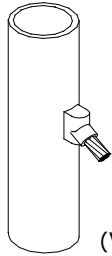
U.S. Patent
No. 6,382,496



MSKIT with Handle

Continued on next page

UL US Listed 467



VA

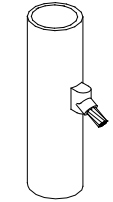
(Vertical Angle 45°)

VA (Pipe) Connection Type (Range Taking) Continued

Cable Size	Nominal Pipe Size	Mold Part No.	Weld Metal	
			NUWTube	UltraShot
1/0	2" to 4" Pipe	VA1/0V2X4B	NUWTUBE90	US90
	4" to 6" Pipe	VA1/0V4X6B	NUWTUBE90	US90
	6" to 10" Pipe	VA1/0V6X10B	NUWTUBE90	US90
	12" to 30" Pipe	VA1/0V12X30B	NUWTUBE90	US90
	32" Pipe or Larger	VA1/0B	NUWTUBE90	US90
2/0	2" to 4" Pipe	VA2/0V2X4B	NUWTUBE90	US90
	4" to 6" Pipe	VA2/0V4X6B	NUWTUBE90	US90
	6" to 10" Pipe	VA2/0V6X10B	NUWTUBE90	US90
	12" to 30" Pipe	VA2/0V12X30B	NUWTUBE90	US90
	32" Pipe or Larger	VA2/0B	NUWTUBE90	US90
3/0	2" to 4" Pipe	VA3/0V2X4B	NUWTUBE115	US115
	4" to 6" Pipe	VA3/0V4X6B	NUWTUBE115	US115
	6" to 10" Pipe	VA3/0V6X10B	NUWTUBE115	US115
	12" to 30" Pipe	VA3/0V12X30B	NUWTUBE115	US115
	32" Pipe or Larger	VA3/0B	NUWTUBE115	US115
4/0	2" to 4" Pipe	VA4/0V2X4B	NUWTUBE115	US115
	4" to 6" Pipe	VA4/0V4X6B	NUWTUBE115	US115
	6" to 10" Pipe	VA4/0V6X10B	NUWTUBE115	US115
	12" to 30" Pipe	VA4/0V12X30B	NUWTUBE115	US115
	32" Pipe or Larger	VA4/0B	NUWTUBE115	US115

VA (Pipe) Connection Type

Cable Size	Mold Part No.	Weld Metal	
		NUWTube	UltraShot
#6 Sol	VA-6**B	NUWTUBE45	US45
#4	VA-4**B	NUWTUBE45	US45
#2 Sol	VA-2S**B	NUWTUBE45	US45
#2	VA-2**B	NUWTUBE45	US45
1/0	VA-1/0**B	NUWTUBE90	US90
2/0	VA-2/0**B	NUWTUBE90	US90
3/0	VA-3/0**B	NUWTUBE115	US115
4/0	VA-4/0**B	NUWTUBE115	US115

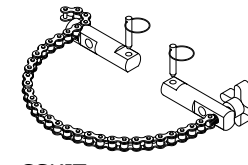


UL US Listed 467

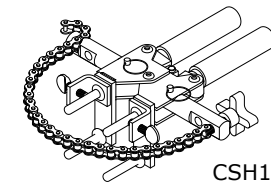
****Add Horizontal or Vertical Pipe Orientation and Pipe Size Indicator. See chart below.**

CABLE TO VERTICAL STEEL PIPE		
Use Mold Part No.; add "V" and Pipe Size (**) Indicator		
Cable	Nominal Pipe Size	Pipe Size Indicator
#4 thru 250	30" and Smaller 32" and Larger	Nominal Pipe Size* None
Example: #2 cable to 2-1/2" pipe = VA-2V2.5B		
CABLE TO HORIZONTAL STEEL PIPE		
Use Mold Part No.; add "H" and Pipe Size (**) Indicator		
Example: #2/0 cable to 6" pipe = VA-2/0H6B		

***See Pipe Sizes on page 81.**



CSKIT



CSH1

U.S. Patent No. 6,382,496

NOTE:

- Thin walled pipe may be unsuitable for exothermic connections. If experiencing burn through issues with the pipe (typically with 2/0 or 4/0 conductors), adding sand inside the fence post well past the exothermic connection may solve this problem. Another solution would be to use a smaller conductor such as a #2 AWG jumper which uses a smaller size weld metal. The last solution may be to use mechanical fence clamp assembly such as the ones found in the Master Equipment Catalog.

Cable to Steel Surface

Mold Information:

• Price Key is the **Bold Letter** in the Mold Part No.

Required Tools & Accessories:

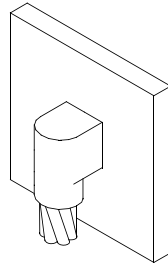
MH1 - Handle for "B" Price Key Molds (Page 75)

Recommended Tools & Accessories:

CCBRSH1 - Cable Cleaning Brush (Page 72)

MCBRSH1 - Mold Cleaning Brushes (Page 73)

MSKIT - Magnetic Support Kit (Page 76)



VD
(Vertical Down)



VD Connection Type

Cable Size	Mold Part No.	Weld Metal	
		NUWTube	UltraShot
#6d	VD6 B	NUWTUBE45	US45
#4	VD4 B	NUWTUBE65	US65
#2 Sol	VD2 S	NUWTUBE65	US65
#2	VD2 B	NUWTUBE65	US65
1/0	VD1/0 B	NUWTUBE115	US115
2/0	VD2/0 B	NUWTUBE115	US115
3/0	VD3/0 B	NUWTUBE150	US150
4/0	VD4/0 B	NUWTUBE150	US150
250 MCM	VD25C M	NUWTUBE200	US200
300 MCM	VD3C M	NUWTUBE200	US200
350 MCM	VD35C M	NUWTUBE250	US250
500 MCM	VD5C M	2-NUWTUBE150	US300



MSKIT



MSKIT with Mold Handle

U.S. Patent No. 6,382,496

Cable to Steel Surface / Pipe

Mold Information:

• Price Key is the **Bold Letter** in the Mold Part No.

Required Tools & Accessories:

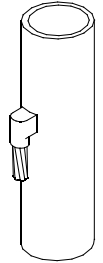
CSH1 - Chain Support Handle clamp for "B" Price Key Molds (Page 75) **OR**

MH1 - Handle for "B" Price Key Molds (Page 75) **AND**
CSKIT - Chain Support Kits (Page 75)

Recommended Tools & Accessories:

CCBRSH1 - Cable Cleaning Brush (Page 72)

MCBRSH1 - Mold Cleaning Brushes (Page 73)



VD
(Vertical Down)

VD (Pipe) Connection Type (Range Taking)

Mold Part No.	Cable Size	Nominal Pipe Size	Weld Metal	
			NUWTube	UltraShot
VD2SV1.25X4 B	#2 Sol	1-1/4" to 4" Pipe	NUWTUBE65	US65
VD2V1.25X4 B	#2	1-1/4" to 4" Pipe	NUWTUBE65	US65
VD1/0V1.25X4 B	1/0	1-1/4" to 4" Pipe	NUWTUBE115	US115
VD2/0V1.25X4 B	2/0	1-1/4" to 4" Pipe	NUWTUBE115	US115
VD4/0V1.25X4 B	4/0	1-1/4" to 4" Pipe	NUWTUBE150	US150

VD (Pipe) Connection Type

Cable Size	Mold Part No.	Weld Metal	
		NUWTube	UltraShot
#6	VD6** B	NUWTUBE45	US45
#4	VD4** B	NUWTUBE65	US65
#2 Sol	VD2S** B	NUWTUBE65	US65
#2	VD2** B	NUWTUBE65	US65
1/0	VD1/0** B	NUWTUBE115	US115
2/0	VD2/0** B	NUWTUBE115	US115
3/0	VD3/0** B	NUWTUBE150	US150
4/0	VD4/0** B	NUWTUBE150	US150
250 MCM	VD25CM** B	NUWTUBE200	US200

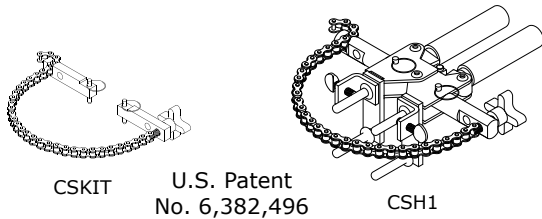
****Add Horizontal or Vertical Pipe Orientation and Pipe Size Indicator. See chart on the next page.**



VD (Pipe & Fence Post) Connection Type (Range Taking) Continued

CABLE TO VERTICAL STEEL PIPE		
Use Mold Part No.; add "V" and Pipe Size (**) Indicator		
Cable	Nominal Pipe Size	Pipe Size Indicator
#4 thru 250	30" and Smaller 32" and Larger	Nominal Pipe Size* None
Example: #2 cable to 2-1/2" pipe = VD-2V2.5B		
CABLE TO HORIZONTAL STEEL PIPE		
Use Mold Part No.; add "H" and Pipe Size (**) Indicator		
Example: #2/0 cable to 6" pipe = VD-2/0H6B		

*See Pipe Sizes on page 81.



NOTE:

- Thin walled pipe may be unsuitable for exothermic connections. If experiencing burn through issues with the pipe (typically with 2/0 or 4/0 conductors), adding sand inside the fence post well past the exothermic connection may solve this problem. Another solution would be to use a smaller conductor such as a #2 AWG jumper which uses a smaller size weld metal. The last solution may be to use mechanical fence clamp assembly such as the ones found in the Master Equipment Catalog.

Mold Information:

- Price Key is the **Bold Letter** in the Mold Part No.

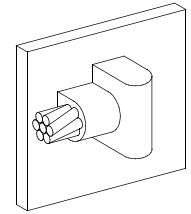
Required Tools & Accessories:

MH1 - Handle for "B" Price Key Molds (Page 75)

Recommended Tools & Accessories:

CCBRSH1 - Cable Cleaning Brush (Page 72)

MCBRS1 - Mold Cleaning Brushes (Page 73)

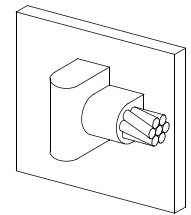


VL

(Vertical Surface Left Hand Mold*)

VL Connection Type

Cable Size	Mold Part No.	Weld Metal	
		NUWTube	Ultra-Shot
#6	VL6 B	NUWTUBE45	US45
#4	VL4 B	NUWTUBE45	US45
#2 Sol	VL2 S	NUWTUBE45	US45
#2	VL2 B	NUWTUBE45	US45
1/0	VL1/0 B	NUWTUBE90	US90
2/0	VL2/0 B	NUWTUBE90	US90
3/0	VL3/0 B	NUWTUBE115	US115
4/0d	VL4/0 B	NUWTUBE115	US115
250 MCM	VL25 C	NUWTUBE115	US115
300 MCM	VL3 C	NUWTUBE150	US150
350 MCM	VL35 C	NUWTUBE200	US200
500 MCM	VL5 C	NUWTUBE200	US200



VR

(Vertical Surface Right Hand Mold*)

NOTE:

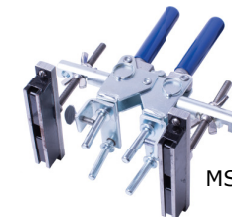
- Mold Sealer (Page 72) required on conductors 1/0 and larger

***NOTES:**

- VL is a Left Hand mold.
- To order a Right Hand mold, change the VL in the Mold Part No. to VR. Example: VR4B.



MSKIT



MSKIT with Mold Handle

U.S. Patent No. 6,382,496

Cable to Steel Surface

Mold Information:

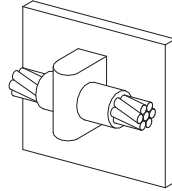
- Price Key is the **Bold Letter** in the Mold Part No.
- For mold Wear Plates, add suffix "WP" to the end of the Mold Part No. See page 70 for details.

Required Tools & Accessories:

- MH1 - Handle for "B" Price Key Molds (Page 75)

Recommended Tools & Accessories:

- CCBRSH1 - Cable Cleaning Brush (Page 72)
- MCBRSH1 - Mold Cleaning Brushes (Page 73)



VH

(Vertical Surface
Horizontal Cable)



Cable to Steel Surface / Pipe

Mold Information:

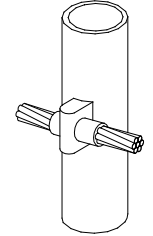
- Price Key is the **Bold Letter** in the Mold Part No.

Required Tools & Accessories:

- MH1 - Handle for "B" Price Key Molds (Page 75) **AND**
- CSKITHSVM - Chain Support Kits (Page 75)

Recommended Tools & Accessories:

- CCBRSH1 - Cable Cleaning Brush (Page 72)
- MCBRSH1 - Mold Cleaning Brushes (Page 73)



VH

(Horizontal Thru Cable to Side of
Vertical Steel Pipe)



CSKITHSVM

U.S. Patent
No. 6,382,496

VH Connection Type

Cable Size	Mold Part No.	Weld Metal	
		NUWTube	UltraShot
#6	VH6 B	NUWTUBE65	US65
#4	VH4 B	NUWTUBE65	US65
#2 Sol	VH2 S	NUWTUBE65	US65
#2	VH2 B	NUWTUBE65	US65
1/0	VH1/0 B	NUWTUBE115	US115
2/0	VH2/0 B	NUWTUBE115	US115
3/0	VH3/0 B	NUWTUBE150	US150
4/0	VH4/0 B	NUWTUBE150	US150
250 MCM	VH25CM B	NUWTUBE150	US150



VH (Pipe) Connection Type

Cable Size	Mold Part No.	Weld Metal	
		NUWTube	UltraShot
#6	VH6** B	NUWTUBE65	US65
#4	VH4** B	NUWTUBE65	US65
#2 Sol	VH2 S ** B	NUWTUBE65	US65
#2	VH2** B	NUWTUBE65	US65
1/0	VH1/0** B	NUWTUBE115	US115
2/0d	VH2/0** B	NUWTUBE115	US115
3/0	VH3/0** B	NUWTUBE150	US150
4/0	VH4/0** B	NUWTUBE150	US150
250 MCM	VH25CM** B	NUWTUBE150	US150

****Add Pipe Size and Vertical Pipe to
Mold Part No. See chart below.**

CABLE TO VERTICAL STEEL PIPE		
Use Mold Part No.; add "V" and Pipe Size (**) Indicator		
Cable	Nominal Pipe Size	Pipe Size Indicator
#1 and Smaller	12" and Smaller 14" and Larger	Nominal Pipe Size* None
1/0 thru 250	28" and Smaller 30" and Larger	Nominal Pipe Size* None
Example: #2 cable to 2-1/2" pipe = VH2V2.5 B		

***See Pipe Sizes on page 81.**

Cable to Steel Surface / Pipe

Mold Information:

- Price Key is the **Bold Letter** in the Mold Part No.

Required Tools & Accessories:

MH1 - Handle for "B" Price Key Molds (Page 75)

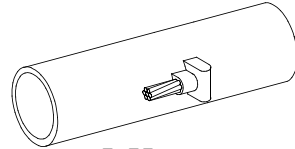
AND

CSKITHSVM - Chain Support Kits (Page 75)

Recommended Tools & Accessories:

CCBRSH1 - Cable Cleaning Brush (Page 72)

MCBRSH1 - Mold Cleaning Brushes (Page 73)



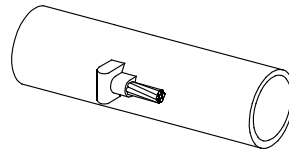
VL

(Vertical Dead End Cable to Side of Horizontal Steel Pipe*)



VL (Pipe) Connection Type

Cable Size	Mold Part No.	Weld Metal	
		NUWTUBE	UltraShot
#6	VL6** B	NUWTUBE65	US65
#4	VL4** B	NUWTUBE65	US65
#2 Sol	VL2S** B	NUWTUBE65	US65
#2	VL2** B	NUWTUBE65	US65
1/0	VL1/0** B	NUWTUBE115	US115
2/0	VL2/0** B	NUWTUBE115	US115
3/0	VL3/0** B	NUWTUBE150	US150
4/0	VL4/0** B	NUWTUBE150	US150
250 MCM	VL25CM** B	NUWTUBE150	US150



VR

(Horizontal Dead End Cable to Side of Horizontal Steel Pipe*)

**Add Pipe Size and Horizontal Pipe to Mold Part No. See chart below.

NOTE:

- Mold Sealer (Page 72) required on conductors 1/0 and larger

*NOTES:

- VL is a Left Hand mold.
- To order a Right Hand mold, change the VL in the Mold Part No. to VR. Example: VR4****B**.



CABLE TO HORIZONTAL STEEL PIPE		
Use Mold Part No.; add "H" and Pipe Size (**) Indicator		
Cable	Nominal Pipe Size	Pipe Size Indicator
#1 and Smaller	12" and Smaller 14" and Larger	Nominal Pipe Size* None
1/0 thru 250	28" and Smaller 30" and Larger	Nominal Pipe Size* None
Example: #2 cable to 2-1/2" pipe = VL-2H2.5 B		

*See Pipe Sizes on page 81.

Cable to Steel Surface

Mold Information:

- Price Key is the **Bold Letter** in the Mold Part No.
- For mold Wear Plates, add suffix "WP" to the end of the Mold Part No. See page 70 for details.

Required Tools & Accessories:

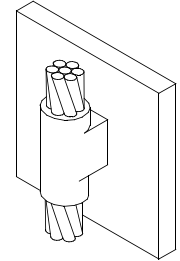
MH1 - Handle for "B" and "K" Price Key Molds (Page 75)

Recommended Tools & Accessories:

CCBRSH1 - Cable Cleaning Brush (Page 72)

MCBRSH1 - Mold Cleaning Brushes (Page 73)

MSKIT - Magnetic Support Kit (Page 76)



VT

(Vertical Thru off Vertical Surface)

VT Connection Type

Cable Size	Mold Part No.	Weld Metal	
		NUWTUBE	UltraShot
#6	VT6 B	NUWTUBE90	US90
#4	VT4 B	NUWTUBE90	US90
#2 Sol	VT2S B	NUWTUBE115	US115
#2	VT2 B	NUWTUBE115	US115
1/0	VT1/0 K	NUWTUBE200	US200
2/0	VT2/0 K	NUWTUBE200	US200
3/0	VT3/0 K	NUWTUBE250	US250
4/0	VT4/0 K *	NUWTUBE250	US250
250 MCM	VT25CM K *	NUWTUBE250	US250

* MSKITXL recommended



MSKIT



MSKIT with Mold Handle

U.S. Patent
No. 6,382,496

Cable to Steel Surface / Pipe

Mold Information:

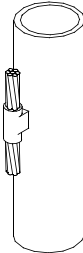
- Price Key is the **Bold Letter** in the Mold Part No.
- For mold Wear Plates, add suffix "WP" to the end of the Mold Part No. See page 70 for details.

Required Tools & Accessories:

- CSH1 - Chain Support Handle clamp for "B" and "K" Price Key Molds (Page 75) **OR**
- MH1 - Handle for "B" and "K" Price Key Molds (Page 75) **AND**
- CSKIT - Chain Support Kits (Page 75)

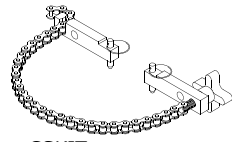
Recommended Tools & Accessories:

- CCBRSH1 - Cable Cleaning Brush (Page 72)
- MCBRSH1 - Mold Cleaning Brushes (Page 73)



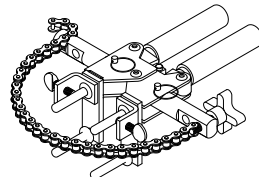
VT

(Vertical Thru Cable to Side of Vertical or Horizontal Steel Pipe)



CSKIT

U.S. Patent No. 6,382,496



CSH1

VT (Pipe) Connection Type

Cable Size	Mold Part No.	Weld Metal	
		NUWTube	UltraShot
#6	VT6**B	NUWTUBE90	US90
#4	VT4**B	NUWTUBE90	US90
#2 Sol	VT2S**B	NUWTUBE115	US115
#2	VT2**B	NUWTUBE115	US115
1/0	VT1/0**K	NUWTUBE200	US200
2/0	VT2/0**K	NUWTUBE200	US200
3/0	VT3/0**K	NUWTUBE250	US250
4/0	VT4/0**K	NUWTUBE250	US250
250 MCM	VT25CM**K	NUWTUBE250	US250

**Add Horizontal or Vertical Pipe Orientation and Pipe Size Indicator. See chart below.

CABLE TO VERTICAL STEEL PIPE		
Use Mold Part No.; add "V" and Pipe Size (**) Indicator		
Cable	Nominal Pipe Size	Pipe Size Indicator
#4 thru 250	28" and Smaller 30" and Larger	Nominal Pipe Size* None
Example: #2 cable to 2-1/2" pipe = VT-2V2.5B		
CABLE TO HORIZONTAL STEEL PIPE		
Use Mold Part No.; add "H" and Pipe Size (**) Indicator		
Example: #2/0 cable to 6" pipe = VT-2/0H6B		

*See Pipe Sizes on page 81.

Cable to Steel Surface

Mold Information:

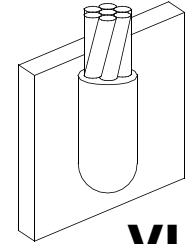
- Price Key is the **Bold Letter** in the Mold Part No.

Required Tools & Accessories:

- MH1 - Handle for "B" and "K" Price Key Molds (Page 75)
- MH2 - Handle for "D" Price Key Molds (Page 75)

Recommended Tools & Accessories:

- CCBRSH1 - Cable Cleaning Brush (Page 72)
- MCBRSH1 - Mold Cleaning Brushes (Page 73)
- MSKIT - Magnetic Support Kit (Page 76)



VU

(Vertical Upward Cable on Vertical Surface)

VU Connection Type

Cable Size	Mold Part No.	Weld Metal	
		NUWTube	UltraShot
#6	VU6B	NUWTUBE65	US65
#4	VU4B	NUWTUBE65	US65
#2 Sol	VU2SB	NUWTUBE65	US65
#2	VU2B	NUWTUBE65	US65
1/0	VU1/0B	NUWTUBE150	US150
2/0	VU2/0B	NUWTUBE150	US150
3/0	VU3/0K	NUWTUBE200	US200
4/0	VU4/0K	NUWTUBE200	US200
250 MCM	VU25CMK	NUWTUBE200	US200
300 MCM	VU3CMK	NUWTUBE250	US250
350 MCM	VU35CMK	2-NUWTUBE150	US300
500 MCM	VU5CMD*	2-NUWTUBE200	US400
750 MCM	VU75CMD*	2-NUWTUBE250	US500

* MSKITXL recommended



MSKIT



MSKIT with Mold Handle

U.S. Patent No. 6,382,496

Cable to Steel Surface / Pipe

Mold Information:

- Price Key is the **Bold Letter** in the Mold Part No.

Required Tools & Accessories:

CSH1 - Chain Support Handle clamp for "B" and "K" Price Key Molds (Page 75) **OR**

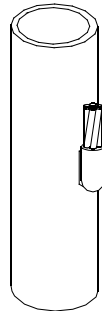
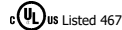
MH1 - Handle for "B" and "K" Price Key Molds (Page 75) **AND**

CSKIT - Chain Support Kits (Page 75)

Recommended Tools & Accessories:

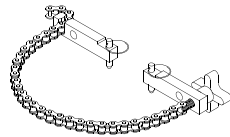
CCBRSH1 - Cable Cleaning Brush (Page 72)

MCBRSH1 - Mold Cleaning Brushes (Page 73)



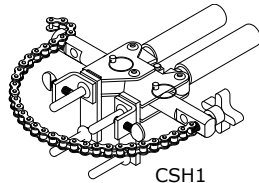
VU

(Vertical Cable Dead End to Side of Vertical or Horizontal Steel Pipe)



CSKIT

U.S. Patent No. 6,382,496



CSH1

VU (Pipe) Connection Type

Cable Size	Mold Part No.	Weld Metal	
		NUWTube	UltraShot
#6	VU6** B	NUWTUBE65	US65
#4	VU4** B	NUWTUBE65	US65
#2 Sol	VU2S** B	NUWTUBE65	US65
#2	VU2** B	NUWTUBE65	US65
1/0	VU1/0** B	NUWTUBE150	US150
2/0	VU2/0** B	NUWTUBE150	US150
3/0	VU3/0** K	NUWTUBE200	US200
4/0	VU4/0** K	NUWTUBE200	US200
250 MCM	VU25CM** K	NUWTUBE200	US200

****Add Pipe Size and Horizontal or Vertical Pipe to Mold Part No. See chart below.**

CABLE TO VERTICAL STEEL PIPE		
Use Mold Part No.; add "V" and Pipe Size (**) Indicator		
Cable	Nominal Pipe Size	Pipe Size Indicator
#4 thru 250	28" and Smaller 30" and Larger	Nominal Pipe Size* None
Example: #2 cable to 2-1/2" pipe = VU-2V2.5 B		
CABLE TO HORIZONTAL STEEL PIPE		
Use Mold Part No.; add "H" and Pipe Size (**) Indicator		
Example: #2/0 cable to 6" pipe = VU-2/0H6 B		

***See Pipe Sizes on page 81.**

Cable to Reinforcing Steel

Mold Information:

- Price Key is the **Bold Letter** in the Mold Part No.

Required Tools & Accessories:

MH1 - Handle for "B" Price Key Molds (Page 75)

Wrap Sleeves (Page 71) **OR**

Ceramic Packing Material (Page 72)

UMHDKIT - Mold Hold Down Kit (Page 76)

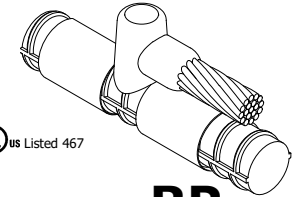
Recommended Tools & Accessories:

CCBRSH1 - Cable Cleaning Brush (Page 72)

MCBRSH1 - Mold Cleaning Brushes (Page 73)

UMHDKIT - Mold Hold Down Kit (Page 76)

UMMHDA - Hold Down Kit when Price Key is "A" (Page 76)



RP

(Reinforcing Steel Parallel Tap)

RP Connection Type

Size	Cable Size	Mold Part No.	Packing Mat'l No.	Weld Metal	
				NUWTube	UltraShot
#3	#6	RP36 B	WRPSLV	NUWTUBE25	US25
	#4	RP34 B	WRPSLV	NUWTUBE32	US32
	#2 Sol	RP32S B	WRPSLV	NUWTUBE45	US45
	#2	RP32 B	WRPSLV	NUWTUBE45	US45
	1/0	RP31/0 B	WRPSLV	NUWTUBE90	US90
	2/0	RP32/0 B	WRPSLV	NUWTUBE90	US90
	3/0	RP33/0 B	WRPSLV	NUWTUBE115	US115
	4/0	RP34/0 B	WRPSLV	NUWTUBE115	US115
#4 & Larger	#6	RP4L6 A	CERPM1	NUWTUBE25	US25
	#4	RP4L4 A	CERPM1	NUWTUBE32	US32
	#2 Sol	RP4L2S A	CERPM1	NUWTUBE45	US45
#4	#2	RP4L2 A	CERPM1	NUWTUBE45	US45
	1/0	RP41/0 B	WRPSLV	NUWTUBE90	US90
	2/0	RP42/0 B	WRPSLV	NUWTUBE90	US90
	3/0	RP43/0 B	WRPSLV	NUWTUBE115	US115
#5	4/0	RP44/0 B	WRPSLV	NUWTUBE115	US115
	1/0	RP51/0 B	WRPSLV	NUWTUBE90	US90
	2/0	RP52/0 B	WRPSLV	NUWTUBE90	US90
	3/0	RP53/0 B	WRPSLV	NUWTUBE115	US115
#6* & Larger	4/0	RP54/0 B	WRPSLV	NUWTUBE115	US115
	1/0	RP6L1/0 B	CERPM2	NUWTUBE90	US90
	2/0	RP6L2/0 B	CERPM2	NUWTUBE90	US90
	3/0	RP6L3/0 B	CERPM2	NUWTUBE115	US115
4/0	RP6L4/0 B	CERPM2	NUWTUBE115	US115	

* Requires Hold Down Kit (UMHDKIT) for welds made to #6 and Larger reinforcing steel.

- (2) #WRPSLV Wrap Sleeve required per weld.

- (1) #CERPM1 or #CERPM2 Ceramic Packing Material required per weld.

See Packing Material Materials and Notes on Page 72.



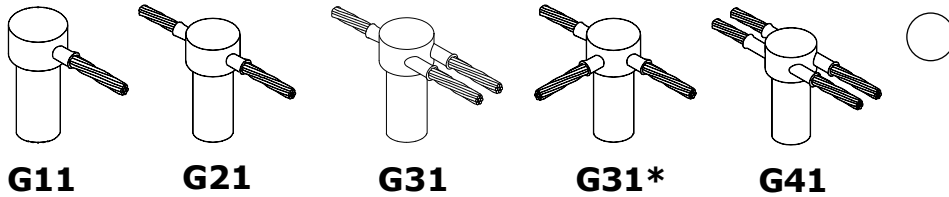
UMHDKIT

U.S. Patent No. 6,382,496



UMHDKIT with Handle

Uni-Shot - UltraShot



UL US Listed 467

Uni-Shots - UltraShot®

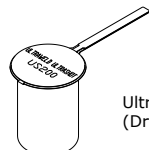
Type	Cable Sizes		Ground Rod			
	Solid	Stranded	5/8 Copper Clad	5/8 Full	3/4 Copper Clad	3/4 Full
G11	#6, #8	#8	G11588US	G1158F8US	G11348US	G1134F8US
G11	#3, #4	#4, #6	G11584US	G1158F4US	G11344US	G1134F4US
G11	#1, #2	#2, #3	G11582US	G1158F2US	G11342US	G1134F2US
G11	2/0, 1/0	1/0, #1	G11581/0US	G1158F1/0US	G11341/0US	G1134F1/0US
G11	---	2/0	G11582/0US	G1158F2/0US	G11342/0US	G1134F2/0US
G11	---	4/0	G11584/0US	G1158F4/0US	G11344/0US	G1134F4/0US
G21	#6, #8	#8	G21588US	G2158F8US	G21348US	G2134F8US
G21	#3, #4	#4, #6	G21584US	G2158F4US	G21344US	G2134F4US
G21	#1, #2	#2, #3	G21582US	G2158F2US	G21342US	G2134F2US
G21	2/0, 1/0	1/0, #1	G21581/0US	G2158F1/0US	G21341/0US	G2134F1/0US
G21	---	2/0	G21582/0US	G2158F2/0US	G21342/0US	G2134F2/0US
G21	---	4/0	G21584/0US	G2158F4/0US	G21344/0US	G2134F4/0US
G31	#6, #8	#8	G31588US	G3158F8US	G31348US	G3134F8US
G31	#3, #4	#4, #6	G31584US	G3158F4US	G31344US	G3134F4US
G31	#1, #2	#2, #3	G31582US	G3158F2US	G31342US	G3134F2US
G31	2/0, 1/0	1/0, #1	G31581/0US*	G3158F1/0US*	G31341/0US*	G3134F1/0US*
G41	#6, #8	#8	G41588US	G4158F8US	G41348US	G4134F8US
G41	#3, #4	#4, #6	G41584US	G4158F4US	G41344US	G4134F4US
G41	#1, #2	#2, #3	G41582US	G4158F2US	G41342US	G4134F2US

NOTES:

- Disposable single use ceramic mold provides convenience and ease of use.
- Packaged 12 per box.
- DRONE or USCONTROLLER required to make UltraShot connection. See page 66.
- No frames or handle clamps are required.

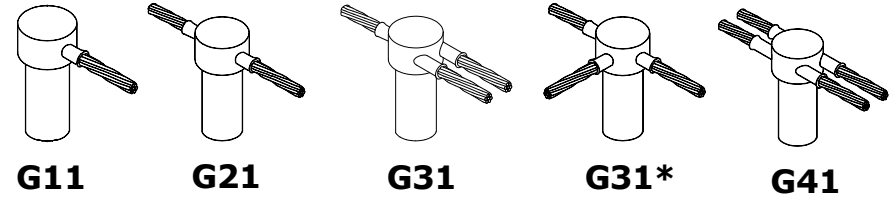


Use locking pliers to support mold



UltraShot (Drop-in)

Uni-Shots - NUWTube



UL US Listed 467

Uni-Shots - NUWTube®

Type	Cable Sizes		Ground Rod			
	Solid	Stranded	5/8 Copper Clad	5/8 Full	3/4 Copper Clad	3/4 Full
G11	#6, #8	#8	G11588NU	G1158F8NU	G11348NU	G1134F8NU
G11	#3, #4	#4, #6	G11584NU	G1158F4NU	G11344NU	G1134F4NU
G11	#1, #2	#2, #3	G11582NU	G1158F2NU	G11342NU	G1134F2NU
G11	2/0, 1/0	1/0, #1	G11581/0NU	G1158F1/0NU	G11341/0NU	G1134F1/0NU
G11	-	2/0	G11582/0NU	G1158F2/0NU	G11342/0NU	G1134F2/0NU
G11	-	4/0	G11584/0NU	G1158F4/0NU	G11344/0NU	G1134F4/0NU
G21	#6, #8	#8	G21588NU	G2158F8NU	G21348NU	G2134F8NU
G21	#3, #4	#4, #6	G21584NU	G2158F4NU	G21344NU	G2134F4NU
G21	#1, #2	#2, #3	G21582NU	G2158F2NU	G21342NU	G2134F2NU
G21	2/0, 1/0	1/0, #1	G21581/0NU	G3158F1/0NU	G21341/0NU	G2134F1/0NU
G21	-	2/0	G21582/0NU	G3158F2/0NU	G21342/0NU	G2134F2/0NU
G21	-	4/0	G21584/0NU	G3158F4/0NU	G21344/0NU	G2134F4/0NU
G31	#6, #8	#8	G31588NU	G3158F8NU	G31348NU	G3134F8NU
G31	#3, #4	#4, #6	G31584NU	G3158F4NU	G31344NU	G3134F4NU
G31	#1, #2	#2, #3	G31582NU	G3158F2NU	G31342NU	G3134F2NU
G31	2/0, 1/0	1/0, #1	G31581/0NU*	G3158F1/0NU*	G31341/0NU*	G3134F1/0NU*
G41	#6, #8	#8	G41588NU	G4158F8NU	G41348NU	G4134F8NU
G41	#3, #4	#4, #6	G41584NU	G4158F4NU	G41344NU	G4134F4NU
G41	#1, #2	#2, #3	G41582NU	G4158F2NU	G41342NU	G4134F2NU

NOTES:

- Disposable single use ceramic mold provides convenience and ease of use.
- Packaged 12 per box.
- Requires only a Flint Igniter (FLTIG) to make a connection. See Page 78.
- No frames or handle clamps are required.



Use locking pliers to support mold



NUWTube (Pour & Shoot)

Cable to Lug or Bus Bar

Mold Information:

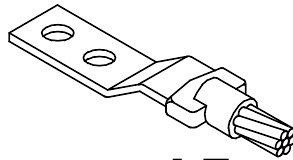
- Price Key is the **Bold Letter** in the Mold Part No.
- For mold Wear Plates, add suffix "WP" to the end of the Mold Part No. See page 70 for details.

Required Tools & Accessories:

- MH1 - Handle for "B" Price Key Molds (Page 75)
- MH2 - Handle for "C" Price Key Molds (Page 75)

Recommended Tools & Accessories:

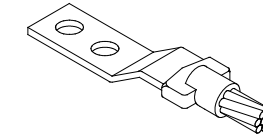
- CCBRSH1 - Cable Cleaning Brush (Page 72)
- MCBRSH1 - Mold Cleaning Brushes (Page 73)



LE
(Lug End)



Cable to Lug or Bus Bar



LE
(Lug End)



LE Connection Type

Cable Size	Lug Size	Mold Part No.	Weld Metal	
			NUWTube	UltraShot
#6	1/8 x 1	LE6181 B	NUWTUBE45	US45
#4	1/8 x 1	LE4181 B	NUWTUBE45	US45
#2 Sol	1/8 x 1	LE2S181 B	NUWTUBE45	US45
#2	1/8 x 1	LE2181 B	NUWTUBE45	US45
1/0	1/8 x 1	LE1/0181 B	NUWTUBE45	US45
	1/4 x 1	LE1/0141 B	NUWTUBE65	US65
2/0	1/8 x 1	LE2/0181 B	NUWTUBE65	US65
	1/4 x 1	LE2/0141 B	NUWTUBE65	US65
3/0	3/16 x 1	LE3/03161 B	NUWTUBE90	US90
	1/4 x 1	LE3/0141 B	NUWTUBE90	US90
4/0	3/16 x 1	LE4/03161 B	NUWTUBE90	US90
	1/4 x 1	LE4/0141 B	NUWTUBE90	US90
	1/4 x 1-1/4	LE4/0141.25 B	NUWTUBE90	US90
	1/4 x 1-1/2	LE4/0141.5 B	NUWTUBE90	US90

Continued on next page

LE Connection Type Continued

Cable Size	Lug Size	Mold Part No.	Weld Metal	
			NUWTube	UltraShot
250 MCM	1/4 x 1	LE25CM141 B	NUWTUBE90	US90
	1/4 x 1-1/4	LE25CM141.25 B	NUWTUBE90	US90
	1/4 x 1-1/2	LE25CM141.5 B	NUWTUBE90	US90
500 MCM	1/4 x 1-1/2	LE5CM141.5 B	NUWTUBE200	US200
	1/4 x 2	LE5CM142 B	NUWTUBE200	US200
	3/8 x 1	LE5CM381 B	NUWTUBE200	US200
	3/8 x 1-1/2	LE5CM381.5 B	NUWTUBE200	US200
	3/8 x 2	LE5CM382 B	2-NUWTUBE150	US300
750 MCM	1/4 x 2	LE75CM142 B	2-NUWTUBE150	US300
	3/8 x 1-1/2	LE75CM381.5 B	2-NUWTUBE150	US300
	3/8 x 2	LE75CM382 B	2-NUWTUBE150	US300
1000 MCM	3/8 x 2	LE1MM382 C	2-NUWTUBE200	US400
	7/16 x 2	LE1MM7162 C	2-NUWTUBE200	US400
	1/2 x 2	LE1MM122 C	2-NUWTUBE250	US500

See pages 61 and 62 for Lugs

Cable to Lug or Bus Bar

Mold Information:

• Price Key is the **Bold Letter** in the Mold Part No.

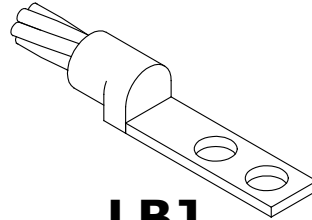
Required Tools & Accessories:

MH1 - Handle for "B" Price Key Molds (Page 75)

Recommended Tools & Accessories:

CCBRSH1 - Cable Cleaning Brush (Page 72)

MCBRSH1 - Mold Cleaning Brushes (Page 73)



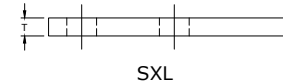
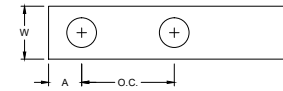
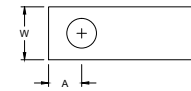
LBJ
(Lug Bent J)

LBJ Connection Type

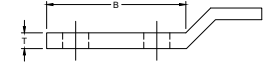
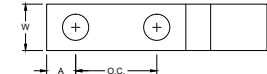
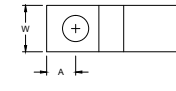
Cable Size	Lug Size	Mold Part No.	Weld Metal	
			NUWTube	UltraShot
#6	1/8 x 1	LBJ6181 B	NUWTUBE32	US32
#4	1/8 x 1	LBJ4181 B	NUWTUBE32	US32
#2 Sol	1/8 x 1	LBJ2S181 B	NUWTUBE32	US32
#2	1/8 x 1	LBJ2181 B	NUWTUBE32	US32
1/0	1/8 x 1	LBJ1/0181 B	NUWTUBE45	US45
2/0	1/8 x 1	LBJ2/0181 B	NUWTUBE45	US45
	3/16 x 1	LBJ2/03161 B	NUWTUBE65	US65
3/0	1/8 x 1	LBJ3/0181 B	NUWTUBE65	US65
	3/16 x 1	LBJ3/03161 B	NUWTUBE65	US65
4/0	1/8 x 1	LBJ4/0181 B	NUWTUBE65	US65
	3/16 x 1	LBJ4/03161 B	NUWTUBE65	US65

See pages 61 and 62 for Lugs

Copper Lugs



SXL



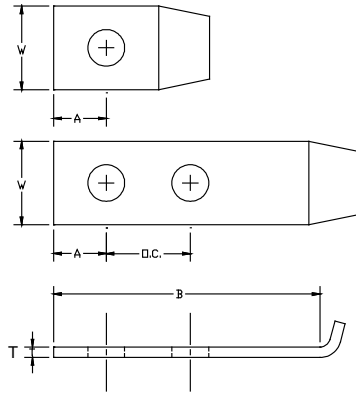
OXL

Straight & Offset

Lug Size	Straight Part No.	Offset Part No.	No. of Holes	Screw Size	O.C. Dim.	T	W	A	B
1/8 x 1	SXL181	OXL181	1	3/8	---	1/8	1	1/2	7/8
	SXL1812B	OXL1812B	2	3/8	.75	1/8	1	5/8	3
	SXL1812C	OXL1812C	2	1/2	1	1/8	1	5/8	3
	SXL1812D	OXL1812D	2	1/2	1.75	1/8	1	5/8	3
3/16 x 1	SXL3161	OXL3161	1	3/8	---	3/16	1	9/16	1-1/8
	SXL31612B	OXL31612B	2	3/8	.75	3/16	1	5/8	3
	SXL31612C	OXL31612C	2	1/2	1	3/16	1	5/8	3
1/4 x 1	SXL31612D	OXL31612D	2	1/2	1.75	3/16	1	5/8	3
	SXL141	OXL141	1	1/2	---	1/4	1	5/8	1-1/8
	SXL1412B	OXL1412B	2	3/8	.75	1/4	1	5/8	3
	SXL1412C	OXL1412C	2	1/2	1	1/4	1	5/8	3
1/4 x 1-1/2	SXL1412D	OXL1412D	2	1/2	1.75	1/4	1	5/8	3
	SXL141.5	OXL141.5	1	5/8	---	1/4	1-1/2	3/4	1-1/2
	SXL141.52B	OXL141.52B	2	3/8	.75	1/4	1-1/2	5/8	3
	SXL141.52C	OXL141.52C	2	1/2	1	1/4	1-1/2	5/8	3
1/4 x 2	SXL141.52D	OXL141.52D	2	1/2	1.75	1/4	1-1/2	5/8	3
	SXL1422B	OXL1422B	2	3/8	.75	1/4	2	5/8	3
	SXL1422C	OXL1422C	2	1/2	1	1/4	2	5/8	3
	SXL1422D	OXL1422D	2	1/2	1.75	1/4	2	5/8	3
3/8 x 1-1/2	SXL381.5	OXL381.5	1	5/8	---	3/8	1-1/2	3/4	1-1/2
	SXL381.52B	OXL381.52B	2	3/8	.75	3/8	1-1/2	5/8	3
	SXL381.52C	OXL381.52C	2	1/2	1	3/8	1-1/2	5/8	3
	SXL381.52D	OXL381.52D	2	1/2	1.75	3/8	1-1/2	5/8	3
3/8 x 2	SXL382	OXL382	1	5/8	---	3/8	2	1	2-1/8
	SXL3822B	OXL3822B	2	3/8	.75	3/8	2	5/8	3
	SXL3822C	OXL3822C	2	1/2	1	3/8	2	5/8	3
	SXL3822D	OXL3822D	2	1/2	1.75	3/8	2	5/8	3

For Use with LE Style Molds on Page 58.

Copper Lugs



JXL

Tinned Copper Lugs - Bent J

Lug Size	Bent J Part No.	No. of Holes	Screw Size	O.C. Dim.	T	W	A	B
1/8 x 1	JXL-1813/8	1	3/8	---	1/8	1	5/8	1-1/4
	JXL-181	1	1/2	---	1/8	1	5/8	1-1/4
	JXL-1812C1/4	2	1/4	1	1/8	1	5/8	3
	JXL-1812C3/8	2	3/8	1	1/8	1	5/8	3
	JXL-1812D	2	1/2	1.75	1/8	1	5/8	3
3/16 x 1	JXL-3161	1	1/2	---	3/16	1	5/8	1-1/4
	JXL-31612D	2	1/2	1.75	3/16	1	5/8	3

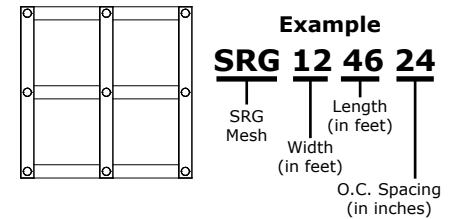
For Use with LBJ Style Molds on Page 60.

Supplementary Bonding Grids

Flat Strip Supplementary Bonding Grids

Harger's Flat Strip Supplementary Bonding Grids are manufactured from 2" wide x 26 gauge soft copper strip. They are welded together forming a 2' x 2' pattern. Rolls of SRG range from 2' to 18' wide and the weight per roll is usually limited to a maximum of 250 pounds. Signal Reference Grids (SRG) are also known as Mesh-BN's, System Reference Potential Planes (SRPP) and Supplementary Bonding Grids.

Supplementary Bonding Grid (SRG) Numbering System

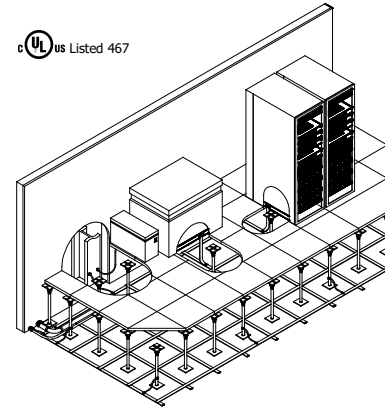


NOTES:

- 2" x .016" Copper Strip is used unless specified otherwise.
- Meets requirements of 2005 IEEE, Std. 1100

Today's electronic environments require specialized grounding applications. Understanding higher frequency grounds, equipotential ground planes and supplementary bonding subsystems are imperative to protecting sophisticated equipment systems. Harger offers the knowledge and products required to protect these delicate systems. Signal Reference Grids (SRG) are also known as Supplementary Bonding Grids.

UL Listed 467



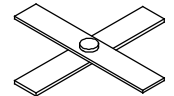
Standard SRG Sizes

Part No.	Description	Approx. Each Wt. (lbs.)
SRG105024	10' x 50', 24" O.C. Spacing	90
SRG125024	12' x 50', 24" O.C. Spacing	98

- Commonly stocked.

SRG to SRG Connections

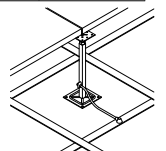
Mold Part No.	Flat Strip	Weld Metal		Handle Clamp
		NUWTube	UltraShot	
SRG2016K	2" x .016"	NUWTUBE32	US32	MH1



Exothermically Welded Pedestal Connections

Mold Part No.	Connection	Weld Metal		Handle Clamp
		NUWTube	UltraShot	
VHO61SQMX	#6 Conc. to 1" Sq. Pedestal	NUWTUBE25	US25	MH4
VHO41SQMX	#4 Conc. to 1" Sq. Pedestal	NUWTUBE25	US25	MH4

- For LO-smoke™ connection, contact the factory.
- LO-smoke™ system requires the use of the UltraShot system.

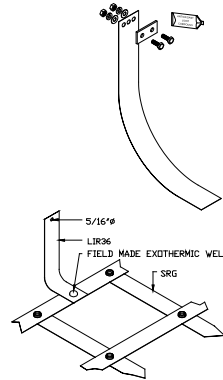


Supplementary Bonding Grids

Low Impedance Risers

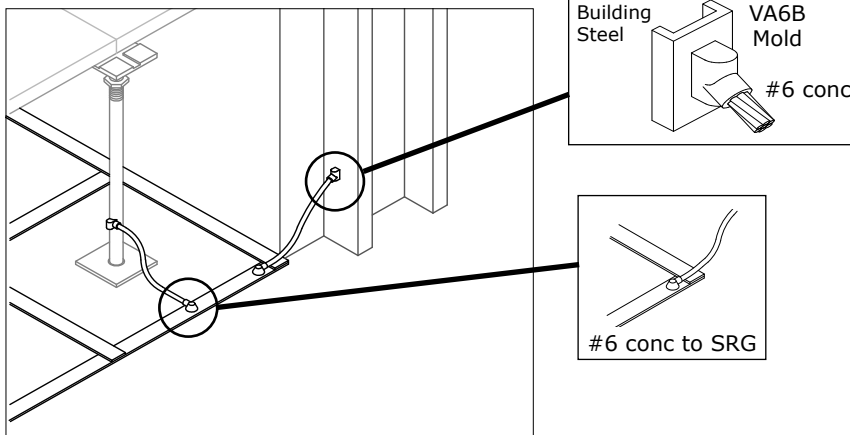
Part No.	Material	Length	Riser or Kit
LIR18	2" x .016" Flat Copper	18"	Riser
LIR18KIT	2" x .016" Flat Copper	18"	Kit
LIR24	2" x .016" Flat Copper	24"	Riser
LIR24KIT	2" x .016" Flat Copper	24"	Kit
LIR36	2" x .016" Flat Copper	36"	Riser
LIR36KIT	2" x .016" Flat Copper	36"	Kit
LIR72	2" x .016" Flat Copper	72"	Riser
LIR72KIT	2" x .016" Flat Copper	72"	Kit

- Kit includes all necessary hardware.
- Use mold SRG2016K to weld LIR to SRG.



Exothermic Connections for Bonding to Building Steel

All columns within and at perimeter of the computer room shall be bonded to the SRG using a concentric stranded copper conductor. #6 AWG 7 strand copper is the most common conductor used for this application. The cable should take the shortest path between the building steel and the Supplementary Bonding Grid.



Mold Part No.	Connection	Weld Metal		Handle Clamp
		NUWTube	UltraShot	
VA6B	#6 Conc. to Building Steel	NUWTUBE45	US45	MH1
VA4B	#4 Conc. to Building Steel	NUWTUBE45	US45	MH1
VA2B	#2 Conc. to Building Steel	NUWTUBE45	US45	MH1
BCF61.5016B	#6 Conc. to SRG	NUWTUBE25	US25	MH1
BCF41.5016B	#4 Conc. to SRG	NUWTUBE32	US32	MH1
BCF21.5016B	#2 Conc. to SRG	NUWTUBE32	US32	MH1

- For low smoke requirements, a USSXKIT (Page 69) is required to convert standard UltraShot molds into LO-smoke™ molds using UltraShot® weld metal only.

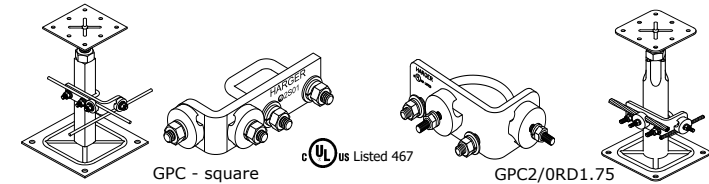
Supplementary Bonding Grids

Round-wire Supplementary Bonding Grid

"A Signal Reference Grid may also be economically fabricated from standard, bare round-wire joined together via welding, brazing, compression or a suitable grounding clamp arrangement at each of the crossing points". (2005 IEEE Std. 1100)

Harger offers a variety of ground pedestal clamps and conductors to achieve these objectives. Signal Reference Grids (SRG) are also known as Supplementary Bonding Grids.

Ground Pedestal Clamps & Bonding Clamps



Part No.	U-Bolt Type	Pedestal Size	Conductor Size (AWG)	Box Qty.	Approx. Box Wt. (lbs.)
GPC6SQ	Square	1" (1-1/8" OD)	#6	5	3-1/2
GPC6RD	Round	1" (1-1/8" OD)	#6	5	3-1/2
GPC4SQ	Square	1" (1-1/8" OD)	#4	5	3-1/2
GPC4RD	Round	1" (1-1/8" OD)	#4	5	3-1/2
GPC2SQ	Square	1" (1-1/8" OD)	#2	5	3-1/2
GPC2RD	Round	1" (1-1/8" OD)	#2	5	3-1/2
GPC2/ORD1.75	Round	1-1/8" - 1-3/4"	2/0 & #6	5	7-1/2

- Accommodates cross runs without adding an additional connector. Accommodates 4 conductors in total.
- Electro-tin plated copper.
- Includes stainless steel hardware.
- Other sizes available. Please contact factory for more information.

Computer Room Ground Clamps



Part No.	Conductor Size (AWG)	Box Qty.	Approx. Box Wt. (lbs.)
CRGC6	6	25	4
CRGC4	4	10	5
CRGC2	2	10	5

- Used when welded connections are not feasible.
- Unique design allows clamps to form connections at most any angle.
- Specific uses include fabrication under an existing computer room floor.
- Electro-tin plated brass.

UltraShot® Drone

Harger's Hand Held DRONE:

- Ignition is accomplished with the use of a hand held DRONE and 18 volt battery.
- Audible ignition alert.
- Makes over 1,300 connections on a single charge.
- UltraBright LED indicates instantaneous ignition.
- Includes six-foot cord with quick latch disconnect.

DRONE

Part No.	Approx. Wt. (lbs.)
DRONE	1

- Does NOT INCLUDE battery.



DRONE Kit

Part No.	Qty.	Approx. Each Wt. (lbs.)
DRONEKIT	EA	6-1/2

Kit Includes:

- (1) Controller #DRONE-Compact US Controller
- (1) Battery #MIL1820BAT-Milwaukee® M18™ REDLITHIUM™
- (1) Charger #MIL1812CHARGER-Milwaukee® M18™ & M12™ Multi-Voltage
- (1) Case #DRONECASE-Storage case for Drone, Battery and Charger.



USCONTROLLER

Part No.	Qty.	Approx. Each Wt. (lbs.)
USCONTROLLER	EA	11

- Rugged long lasting 12-volt rechargeable battery control unit ignites hundreds of connections on a single charge.
- Six-foot controller cord standard, 15-foot cord optional.



Drone Accessories

Milwaukee® Battery

Part No.	Approx. Wt. (lbs.)
MIL1820BAT	1-1/2



- 18 volt battery featuring a built-in fuel gauge.

Milwaukee® Charger

Part No.	Approx. Wt. (lbs.)
MIL1812CHARGER	2



- Accepts M18™ & M12™ Battery Packs.

DRONE Accessory Kit

Part No.	Approx. Wt. (lbs.)
DAK	17-1/4



- Includes the DRONE Case, Battery & Charger.

DRONE Case

Part No.	Approx. Wt. (lbs.)
DRONECASE	5



- Organized storage option.
- Holds the Drone, Battery, Charger & Cord (not included).

DRONE Pouch

Part No.	Approx. Wt. (lbs.)
DRONEPOUCH	1/4



- Easily transports the DRONE hands-free from connection to connection.

6' DRONE Cord

Part No.	Approx. Wt. (lbs.)
DRONECORD	1/8

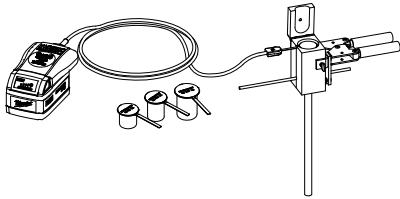


- Allows for flexibility in tight spaces as well as maintaining a safe distance from the reaction.

Weld Metal

UltraShot® (Drop-In)

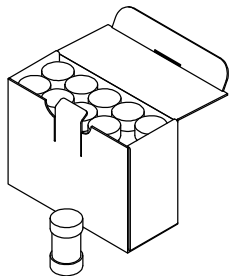
- The weld metal, a mixture of copper oxide and aluminum, is packaged in individual, moisture resistant copper drop-ins.
- The copper drop-in is consumed during the reaction process.
- Each drop-in is marked with the size.
- Requires DRONE to make connection. (Page 66)



UltraShot	Box Qty.
US25	20
US32	20
US45	20
US65	20
US90	10
US115	10
US150	10
US200	10
US250	10
US300	10
US400	5
US500	5
US600	5
US750	5

NUWTube® (Pour & Shoot)

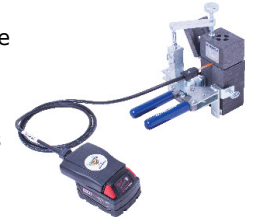
- The weld metal, a mixture of copper oxide and aluminum, is packaged in individual, moisture resistant plastic tubes.
- Dual chamber design holds starting material and weld metal separately, in the same tube.
- Easy to identify with color coded caps. Clear = Weld Metal, Orange = Starting Material.
- Each cartridge is marked with the size.
- Each box also contains instructions and metal disks. One metal disk is used for each connection.
- Requires FLTIG to make connection. (Page 78)



NUWTube	Box Qty.
NUWTUBE15	20
NUWTUBE25	20
NUWTUBE32	20
NUWTUBE45	20
NUWTUBE65	20
NUWTUBE90	10
NUWTUBE115	10
NUWTUBE150	10
NUWTUBE200	10
NUWTUBE250	10

LO-smoke™ System

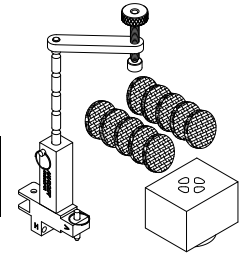
Using Harger's unique mold design and patented handle clamps, any mold that uses an MH1 or MH2 handle can be used with the LO-smoke™ System. The USSKIT, which includes a LO-smoke™ Adapter Clamp, Filter Housing, and 10 Disposable Filters is all that is required. There are three different USSKIT sizes, the selection of which is driven by the weld metal size and mold price key for the desired application.



- The use of LO-smoke™ requires the UltraShot® electronic ignition system.
- LO-smoke™ Filters should be replaced after every connection to ensure optimal system performance.

LO-smoke™ Kits

Part No.	Fits Mold Price Key	Weld Metal Size	Approx. Kit Wt. (lbs.)
USSKIT1	B, E, K, I, P, Q	25 thru 115	6
USSKIT2	B, E, K, I, P, Q	150 thru 300	6
USSKIT3	C, D, F, G, J, Y, Z	150 thru 400	6

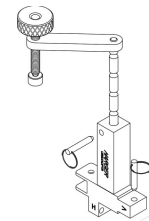


Kit Includes:

- (1) Adapter Clamp (USSXADPTR)
- (1) Filter Housing
- (10) Filters

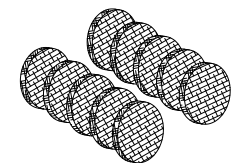
LO-smoke™ Adapter Clamp

Part No.	Qty.	Approx. Each Wt. (lbs.)
USSXADPTR	EACH	4



LO-smoke™ Filters

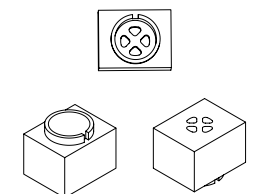
Part No.	Filter Housing	Filter Approx. Wt. (lbs.)
USSXFLR1.8	SAFHB25115	1/4
USSXFLR2	SAFHB150300	1/4
USSXFLR3	SAFHC400	3/4



- Sold as 10 pack.

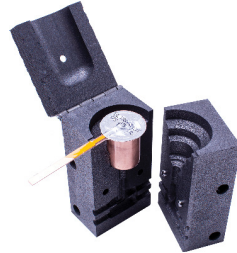
Replacement Filter Housing

Part No.	Weld Metal Size	Housing Approx. Wt. (lbs.)
SAFHB25115	25 thru 115	1/2
SAFHB150300	150 thru 300	1/2
SAFHC400	150 thru 400	3/4



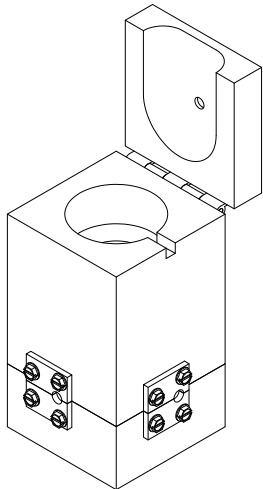
Ultraweld® Molds

- Depending on the care and treatment of the mold, it will average 50 or more welds. Substantially more with the UltraShot process.
- The LO-smoke™ process uses an integrated filter system on the mold and electric ignition of the weld metal to produce a finished connection with minimal smoke emission. Ideal for indoor and confined space working conditions. (See Page 69)
- For the LO-smoke™ process, ignition is accomplished with the use of a DRONE. (Page 66)
- Mold Handle not included.



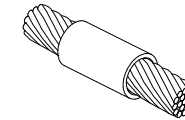
Wear Plates

- Wear plates help extend the life of the mold.
- The openings of the mold get worn down due to forcing a mold shut over "out of round" conductors, the ends of conductors hitting and chipping the openings, etc.
- Wear plates can be supplied for all molds for cable sizes; #2 Solid, 1/0 AWG through 500 MCM and Copper Clad Steel cable 7/#10 through 19/#6.
- To order, add the suffix "WP" to the Ultraweld part number. Example: RT-4/04/0B-WP



Available Weld Type	Number of Wear Plates
BH	2
BS	2
GD	2
GO	3
GS	3
HB	1
HU	2
LE	1
PB*	3
PT*	4
RO	2
RS	2
RT	3
VA	1
VH	2
VT	2
XO	4
XX	4

*Wear plates only available on 1/0 stranded and larger or Copper Clad Steel 7/#10 and larger run and tap cables. Also available from #2 solid run and tap cables.



Adapter Sleeves

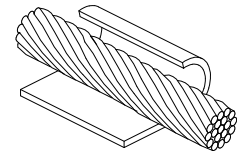
Part No.	Cable Size		Use in Mold for Stranded	Sleeve Dimensions			Box Qty.	Approx. Box Wt. (lbs.)
	Concentric Strand	Solid		O.D.	I.D.	Length		
ADPSLV6	#12, 14	#10, 12, 14	#6 Sol.	.156	.111	1.00	25	1/4
ADPSLV4	#7, 8, 10	#6, 8	#4 Str.	.227	.177	1.00	25	1/4
ADPSLV2A	#6	#5	#2 Str.	.292	.198	1.00	25	1/4
ADPSLV2B	#4, 5	#3, 4	#2 Str.	.287	.246	1.00	25	1/4
ADPSLV1	#4	n/a	#1 Str.	.340	.246	1.00	25	1/4
ADPSLV1/0	#2	#1	1/0 Str.	.370	.307	1.00	25	1/4
ADPSLV2/0	#1	1/0	2/0 Str.	.420	.359	1.00	25	1/4
ADPSLV3/0	1/0, #1	2/0	3/0 Str.	.452	.389	1.00	25	1/4
ADPSLV4/0	2/0, 1/0	3/0	4/0 Str.	.524	.437	1.50	25	1/4

- Adapter Sleeves can be used when welding cables smaller than indicated on mold tag.
- Adapter Sleeves slide over the cable to adapt smaller size cables to a larger size mold.

Wrap Sleeves

Part No.	Box Qty.	Approx. Box Wt. (lbs.)
WRPSLV	50	1/2

- Wrap Sleeves can be used when welding cables smaller than indicated on mold tag.
- When the cable opening in the mold is larger than the cable, copper Wrap Sleeves are wrapped around the cable until the diameter is about the same size as the mold cable opening.
- A copper Wrap Sleeve is also used for wrapping around reinforcing steel for certain connection styles.



Exothermic Adapter Kit with Case

Part No.	Box Qty.	Approx. Box Wt. (lbs.)
EXOADPKIT	1	10

- Most common adapters and packing material used when required with specific molds.



Packing Material Notes

Packing Material or Wrap Sleeve(s) are necessary when making Ultraweld connections to reinforcing steel. The two types of material used are CERPM or WRPSLV.

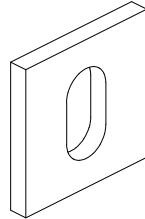
CERPM Packing Material is a ceramic fiber material and can be used for one connection only. CERPM is packaged in quantities of 25 per box.

WRPSLV Copper Wrap Sleeve is wrapped around the reinforcing steel for certain connection styles. WRPSLV is packaged in quantities of 50 per box.

Be sure to specify Packing Material No. when ordering Mold and Weld Metal. See pages 71 & 72 for Packing Material.

Ceramic Reinforcing Steel Packing Material

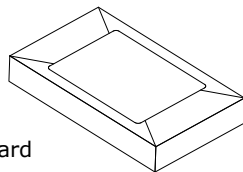
Part No.	Box Qty.	Approx. Box Wt. (lbs.)
CERPM1	25	1/4
CERPM2	25	1/4
CERPM3	25	1/4



- Packing consists of preformed ceramic batting.
- Packing is required on all reinforcing steel connections to prevent leakage.
- Some connection styles may require wrap sleeves in place of ceramic packing.

Mold Sealer

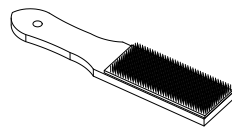
Part No.	Qty.	Approx. Each Wt. (lbs.)
MLDSLRL	EACH	1



- Mold Sealer is for sealing slightly worn molds to guard against leakage from large stranded conductors.
- Available in a convenient 1 pound package.

Cable Cleaning Brush

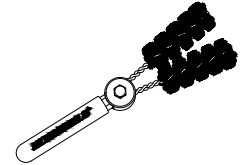
Part No.	Qty.	Approx. Wt. (lbs.)
CCBRSH1	EACH	1/4



- The Cable Cleaning Brush has short, stiff, metal bristles which are generally preferred for cleaning concentric conductors and busbars, that are not heavily oxidized.

Cable Cleaning Brush - Heavy Duty

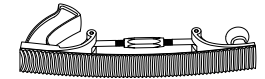
Part No.	Qty.	Approx. Each Wt. (lbs.)
CCBRSH2	EACH	3/4
CCBRSH2R	EACH	1/4



- Ideal for cleaning concentric stranded cable, especially very dirty or oxidized conductors.

Rasp

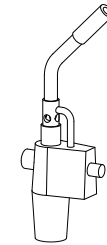
Part No.	Qty.	Approx. Each Wt. (lbs.)
RASP	EACH	2-1/2



- Ideal for removing mill scale and rust from steel surfaces.

Torch Head

Part No.	Qty.	Approx. Each Wt. (lbs.)
TRCHD	EACH	1-1/4



- Self-igniting Torch Head is designed to fit 14 or 16 ounce propane cylinders.
- Torches are required to remove moisture from the mold and conductors before making the Ultraweld connections.

Cold Galvanizing Spray

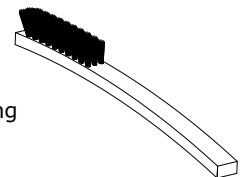
Part No.	Qty.	Unit Wt. (oz.)
CGS	EACH	14



- Instant cold galvanizing spray provides protection equal to hot dip galvanizing.
- Used for touching up surfaces affected by welding.
- Actual weight of the can is 18.5 oz.

Mold Cleaning Brushes

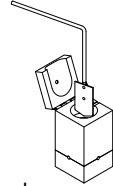
Part No.	Qty.	Approx. Each Wt. (lbs.)
MCBRSH1	EACH	1/4
MCBRSH2	EACH	1/16



- Slag can be removed from molds by using a Mold Cleaning Brush.
- The brush is especially useful on vertical split molds.
- Consistent and proper use of the brush will aid in maintaining or exceeding the average mold life of 50 connections.

Mold Cleaning Spades

Part No.	Weld Metal Sizes	Qty.	Approx. Each Wt. (lbs.)
MCSPD25/115	25 - 115	EA	1/4
MCSPD150/400	150 and larger	EA	1/4



- Slag can be cleaned from the molds by using a Mold Cleaning Spade.
- The cleaning spade is especially useful on horizontally split molds.
- The cleaning spades are specifically designed to fit the mold crucible for a given range of weld metal sizes.
- Consistent and proper use of cleaning spades will aid in maintaining or exceeding the average mold life of 50 connections.

Disks

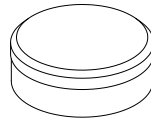
Part No.	Description	Diameter	Box Qty.	Approx. Box Wt. (lbs.)
DISK15/65	Used in molds using 15 thru 65 weld metal	3/4"	20	1/8
DISK90/115	Used in molds using 90 thru 115 weld metal	1"	10	1/8
DISK150/500	Used in molds using 150 thru 250 weld metal	1-1/2"	10	1/4



- The disk rests on the bottom of the crucible and holds the weld metal powder in place until the reaction occurs.
- A new disk is required each time a weld is made.
- Disks are included with the NUWTUBE Weld Metal.

Disk Kit

Part No.	Qty.	Approx. Each Wt. (lbs.)
DISKKIT1	EA	1/4



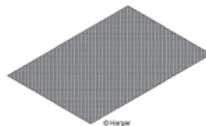
- A Disk Kit contains three sizes of steel disks; 60 small, 30 medium and 30 large.

Mold Blanket

Part No.	Qty.	Approx. Each Wt. (lbs.)
ULTRAWRAP	EA	2
WELDBKT	EA	1

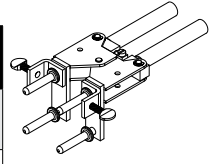


- Contains an inner and outer E-glass yarn with a padded non-crystalline silicate filling, finished with Kevlar®.
- Extends mold life by protecting against shock impact caused by rough handling.
- Protects exothermic welders from coming into contact with hot molds.
- Used as a protection blanket against weld splatter.

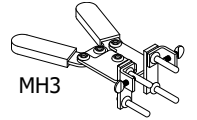


Mold Handle Clamp

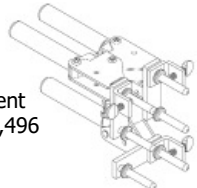
Part No.	Application	Qty.	Approx. Each Wt. (lbs.)
MH1	For All molds with B, E, K, P & Q mold price key (3" wide)	EA	2-3/4
MH2	For All molds with C, D, F, Y & Z mold price key (4" wide)	EA	3-1/2
MH3	For Combo molds with L & M mold price key	EA	1/4
MH4	For Combo molds with R mold price key	EA	1-1/2
MH6	For 3 Piece I mold price key	EA	4-3/4
MH7	For 3 Piece J mold price key	EA	5



MH1, MH2



MH3



MH6, MH7

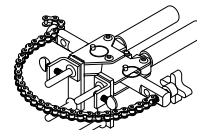
- Mold handle clamps are required for all molds.
- Some molds are used with specialized frames.
- Handle clamps have a Zinc plated finish.
- MH3 mold handle clamps are included with L & M molds.

U.S. Patent No. 6,382,496

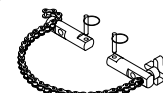
Chain Support Handle Clamps & Kits

Part No.	Fits Mold Price Key	For Following Connection Types	Pipe/ Reinforcing Steel	Qty.	Approx. Ea. Wt. (lbs.)
CSH1	B, E, K	RE, VA, VD, VT, VU	Vertical	EA	4
CSH2	C, D, F	VA, VD, VT, VU	Vertical	EA	4-1/2
CSKIT	B, C, D, E, F, K	RE, VA, VD, VT, VU	Vertical	EA	2
CSKITHSVM	B, C	VH, RS	Vertical	EA	3
CSKITHP	B, C	HB, HD, HT, HU	Horizontal	EA	3-1/4
CSKITHPVS	B	HTCP, RO	Horizontal	EA	4

- Handle clamps CSH1 & CSH2 come with MH1 & MH2 clamps respectively and a CSKIT.
- Chain Support Handle Clamps are used to securely hold the mold to either a vertical or horizontal pipe.
- A 20" length of chain, which fits up to 4" pipes, comes with the chain support handle clamps.
- Extra chain length is available. Please contact factory for details.
- CSKIT, CSKITHSVM, CSKITHP & CSKITHPVS Kits convert standard mold handle clamps into chain support clamps.



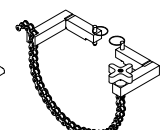
CSH1, CSH2



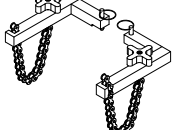
CSKIT



CSKITHSVM



CSKITHP

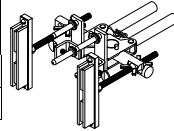


CSKITHPVS

U.S. Patent No. 6,382,496

Magnetic Support Handle Clamps

Part No.	Fits Mold Price Key	Minimum Width Requirements	Qty.	Approx. Each Wt. (lbs.)
MSHC1	B, E, K	8"	EA	6-1/4
MSHC2	C, D, F	8"	EA	6-1/2



U.S. Patent No. 6,382,496

- Handle clamps MSHC1 & MSHC2 come with MH1 & MH2 clamps, respectively.
- Magnetic Support Handle Clamp allows mold to be securely held in place to steel surfaces.
- MSKIT converts the standard mold handle into a magnetic support handle clamp.

Magnetic Support Kits

Part No.	Fits Mold Price Key	Minimum Width Requirements	Qty.	Approx. Each Wt. (lbs.)
MSKIT	B, C, D, E, F, K	8"	EA	3
MSKITHSVS	B, C, D, K	10"	EA	5
MSKITXL	D*, K*	10"	EA	3-1/2



U.S. Patent No. 6,382,496

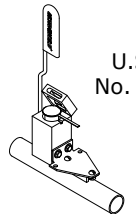
- These kits convert the standard mold handle clamp into a magnetic support handle clamp.
- * MSKITXL is used when mold width is greater than 4", this is also noted in the Connection Type tables.

Hold Down Kit

Part No.	Qty.	Approx. Each Wt. (lbs.)
UMHDKIT	EA	1-1/2
UMMHDA	EA	1/2



UMHDKIT



UMMHDA

U.S. Patent No. 6,382,496

- UMHDKIT: Attaches easily to MH1 & MH2 handle clamp for holding mold in place.
- UMMHDA: Used for horizontal "A" molds.

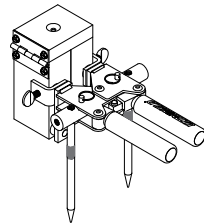
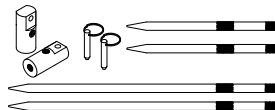
Mold Stabilizer Kit

Part No.	Qty.	Approx. Each Wt. (lbs.)
MLDSTBLZR	EA	1/2

- Help stabilize the mold when making cable to cable connections in the trench.
- Fits both the MH1 and MH2 mold handle.

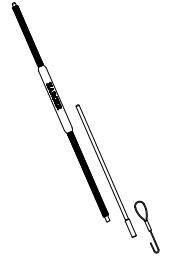
Kit includes:

- (2) 6" Spikes
- (2) 12" Spikes
- (1 set) Mold handle adapter
- (1 set) Quick release pin



Ground Rod Drivers

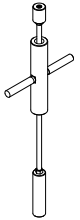
Part No.	Description	Ground Rod Size	Qty.	Approx. Each Wt. (lbs.)
GRD58	Driver & 5/8" Insert	1/2" & 5/8"	EA	25
GRD34I	Replacement Insert	3/4"	EA	12



- Drives ground rods from ground level without the need for a ladder or sledge hammer.
- 3/4" insert is interchangeable with driver body.
- Insert prevents driver from slipping off ground rod near ground level.
- Insert prevents "mushrooming" top of ground rod.

Ground Rod Drivers

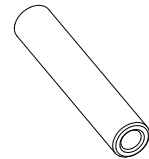
Part No.	Description	Qty.	Approx. Each Wt. (lbs.)
SMGRD58U	5/8" Ground Rod Driver	EA	16
SMGRD58USHGR	5/8" Ground Rod Driver	EA	14



- SMGRD58U - Ground rod driver with slide hammer. One end is threaded for use with threaded 5/8" ground rods and the other end is for use with tapered 5/8" copper clad steel ground rods.
- SMGRD58USHGR - Ground rod driver with slide hammer, connects to ground rods with 5/8" threads on both ends.
- Used to install or remove threaded ground rods.

Drive Sleeves

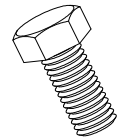
Part No.	Ground Rod Size	Qty.	Approx. Each Wt. (lbs.)
GRDS58	5/8"	EA	1-1/4
GRDS34	3/4"	EA	1-1/4



- For Copper Clad Steel ground rods.
- Prevents "mushrooming" top of ground rod while driving rod.

Drive Studs

Part No.	Ground Rod Size	Box Qty.	Approx. Box Wt. (lbs.)
GDS12	1/2"	5	1
GDS58	5/8"	5	1
GDS34	3/4"	5	3
GDS1	1"	3	2-1/2



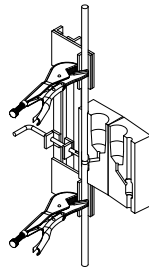
- High strength alloy driving stud prevents damage to the coupler or ground rod threads when driving ground rods.

Materials, Tools & Accessories

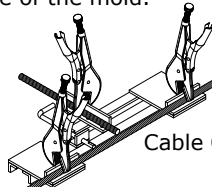
Ground Rod & Cable Clamp

Part No.	Qty.	Approx. Each Wt. (lbs.)
GRCC	EA	18

- Clamp properly aligns and supports Ground Rods for welding type GG connections. (See page 31)
- Add-on third clamp (included) is used to convert into a Cable Clamping system. Thus preventing cables under tension from moving during welding and ensuring no weld metal leakage. This ensures quality connections and increases the life of the mold.



Ground Rod Clamping

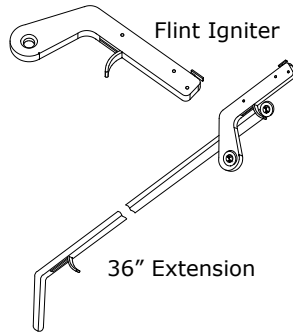


Cable Clamping

Flint Igniter

Part No.	Description	Qty.	Approx. Each Wt. (lbs.)
FLTIG	Flint Igniter	EA	1/4
FLTIGEXT	36" Extension	EA	1-1/2
RPLFLT	Replacement Flint	EA	1/8

- When making an Ultraweld connection, Flint Igniters are used to ignite the starting material.
- Replacement Flints are also available.



Flint Igniter

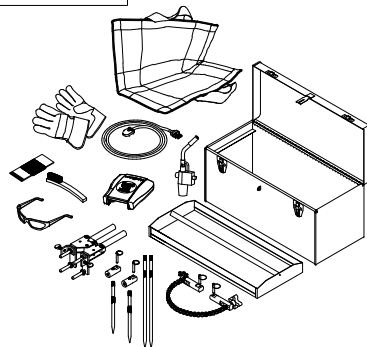
36" Extension

Toolkit

Part No.	Qty.	Approx. Each Wt. (lbs.)
USTOOLKIT	EA	23-1/4

• USTOOLKIT Includes:

- (1) DRONE
- (1) TOOLBOX: 20-1/16" x 8-7/16" x 9-7/16" metal toolbox with tray
- (1) MH1X: Mold Handle without Igniter
- (1) CSKIT: Chain Support Kit
- (1) MCBRSH2: Mold Cleaning Brush
- (1) SFTYGLS: Safety Glasses
- (1) GLOVES: Leather Palm Gloves
- (1) 3MABPAD: Abrasive Pad
- (1) ULTRAWRAP: Mold Blanket
- (1) TRCHD: Torch Head
- (1) MLDSTBLZR: Mold Stabilizer Kit



Troubleshooting Guide

PROBLEM	POSSIBLE CAUSE	SUGGESTED CORRECTION
UltraShot did not fire	Battery not charged	Charge battery and retry. Try different battery pack if available.
	Igniter not properly connected to plug	Push igniter all the way into plug.
NUWTube Starting Powder would not ignite	Old flint gun	Replace flint gun.
	Starting powder being used improperly	Sprinkle starting powder on the side of the lid's ignition pocket.
Weld cavity under fills	Wrong size cartridge for mold	Check ID plate on mold for proper size weld material to be used.
	Mold leaked too much molten copper to make proper weld	Worn mold. Opening in mold is too large to seal the mold properly. Replace mold.
	Wrong mold used for the conductors being welded. Buy correct mold.	Buy correct mold.
Weld not sticking to steel or cast iron surface	Surface not prepared properly	Clean surface down to bright metal by either grinding or using tools suggested in the instructions.
	Cable not placed in mold according to instructions	Be sure to follow the mold instruction on the placement of the conductors in the mold to make sure sufficient heat is transferred to the steel surface to make the weld.
	Not using cast iron powder when welding to cast iron surface	Order cast iron powder.
Problems welding to ground rod	Surface not prepared properly	Clean and prepare surfaces according to instructions.
	Mold not supported during welding	Place vice grips or clamp under mold to support it during welding process.
	Cable not placed in mold according to instructions	Be sure to follow the mold instructions on the placement of the conductors in the mold to make sure sufficient heat is transferred to the ground rod to make the weld.
Mold does not close all the way or handle clamps will lock	Handle clamp is not adjusted properly	Follow instructions on adjusting handle clamp to adjust them properly.
	Dirt, slag or other material stuck in the parting line or on the dowel pins	Clean off all material to get a good seal.
	Bent or out of round conductors	Straighten conductors or cut out bad sections and retry.

PROBLEM	POSSIBLE CAUSE	SUGGESTED CORRECTION
Mold gets stuck on weld	Mold left on weld too long	Remove mold from weld within about 30 seconds to weld being made, especially on welds to steel.
Excessively high weld or excessive gas in weld	Moisture or foreign substance on the mold or conductors	Preheat molds and conductors with a torch to a temperature that will burn off any water or organic material. Use steel brush to remove any residual material from conductors. Do not use steel brush on graphite mold.
	Wrong size cartridge used	Double check the mold ID plate to make sure the proper weld cartridge is being used.
	Moisture in weld metal	Replace with new weld metal.
	Duct seal in weld cavity	Duct seal is to be used on the outside portion of the mold only as a last resort. If it has to be used do not let it migrate into the weld cavity.
Conductors pull out of mold during process	Conductors are under tension	Remove tension from conductors or use wire clamp GRCC to remove tension from conductors.
Mold wearing out too fast	Improper cleaning of molds	Only use soft bristle brush or cotton rag to clean out the mold. Use of metal brushes, screw driver, or other metal objects will scratch the mold. Also, do not use plastic on the mold as it will melt and cause gassy welds.
	Bent, burred, or out of round conductors	Closing the mold on conductors that are bent, burred, or out of round will crack and chip the molds. Try removing the damaged sections if possible.
	Inserting conductors after mold is closed	Try to close the mold with the conductors already inserted. This will reduce the wear on the conductor openings.

Steel Pipe Sizes

Standard Weight
(Schedule 40)

ASTM A53-90-B
ANSI/ASME B36.10M-1985

Nominal Size	O.D.	Wall Thickness	Mold Code
1"	1.315"	.133"	1
1-1/4"	1.66"	.14"	1.25
1-1/2"	1.9"	.145"	1.5
2"	2.375"	.154"	2
2-1/2"	2.875"	.203"	2.5
3"	3.5"	.216"	3
3-1/2"	4"	.226"	3.5
4"	4.5"	.237"	4
5"	5.563"	.258"	5
6"	6.625"	.28"	6
8"	8.625"	.322"	8
10"	10.75"	.365"	10

Conductor Area Conversions

Square Inches x 1273 = MCM

MCM x 7.862×10^{-4} = Square Inches

Square Inches x 645.2 = Square Millimeter

Square Millimeter x 1.550×10^{-3} = Square Inches

Square Millimeters x 1.9736 = MCM

MCM x 0.5067 = Square Millimeters

1 MCM = 1 kcmil = 1,000 circular mil

Conductor Identification

Bare Class A, B, and C Concentric Stranded Conductors
Based on A.S.T.M Standard Specifications

Size in Circular mils	Size AWG	Conductor Diameter	Number of Wires - Strand Dia.					Cable Code
			7	19	37	61	91	
1,000,000	1000	1.152"			.1644*	.1280	0.148	1MM
800,000	800	1.031"		.1470*	.1145	.0938		8CM
750,000	750	.998"		.1424*	.1109	.0908		75CM
700,000	700	.964"		.1375*	.1071	.0877		7CM
600,000	600	.893"		.1273	.0992	.0812		6CM
500,000	500	.813"		.1622*	.1162	.0905		5CM
400,000	400	.728"		.1451	.1040	.0810		4CM
350,000	350	.681"		.1357	.0973	.0757		35CM
300,000	300	.630"		.1257	.0900	.0701		3CM
250,000	250	.575"		.1147	.0822	.0640		25CM
211,600	4/0	.528"	.1739	.1055	.0756			4/0
167,800	3/0	.470"	.1548	.0940	.0763			3/0
133,100	2/0	.419"	.1379	.0837	.0600			2/0
105,500	1/0	.373"	.1228	.0745	.0534			1/0
83,690	1	.332"	.1093	.0664	.0467			1
66,370	2	.292"	.0974	.0591				2
52,630	3	.260"	.0867	.0526				3
41,740	4	.232"	.0772	.0469				4
26,240	6	.184"	.0612	.0372				6
16,510	8	.146"	.0486	.0295				8
10,380	10	.116"	.0385	.0234				10
6,530	12	.0915"	.0305	.0185				12
4,110	14	.0726"	.0242	.0417				14

* Class AA

Bare Solid Copper Conductors

Based on A.S.T.M Standard Specifications

Size AWG	Cross Sectional Area Circular Mils	Wire Diameter	Cable Code
4/0	211,600	.4600"	4/0S
3/0	167,800	.4096"	3/0S
2/0	133,100	.3648"	2/0S
1/0	105,500	.3249"	1/0S
1	83,690	.2893"	1S
2	66,370	.2576"	2S
3	52,630	.2294"	3S
4	41,740	.2043"	4S
6	26,250	.1620"	6S
8	16,510	.1285"	8S
10	10,380	.1019"	10S
12	6,530	.0808"	12S
14	4,110	.0641"	14S

Copper-Clad Steel Conductors

Cable Code	Cable Stranding	Nominal Diameter (in.)	Cross Sectional Area (kcmil)
3/10CW	3/#10 CW	.220	31.15
3/9CW	3/#9 CW	.247	39.28
3/8CW	3/#8 CW	.277	49.53
7/10CW	7/#10 CW	.306	72.68
3/7CW	3/#7 CW	.311	62.45
7/9CW	7/#9 CW	.343	91.65
3/6CW	3/#6 CW	.349	78.75
7/8CW	7/#8 CW	.385	115.60
3/5CW	3/#5 CW	.392	99.31
7/7CW	7/#7 CW	.433	145.70
7/6CW	7/#6 CW	.486	183.80
7/5CW	7/#5 CW	.546	231.63
19/9CW	19/#9 CW	.572	248.70
7/4CW	7/#4 CW	.613	292.20
19/8CW	19/#8 CW	.642	313.70
19/7CW	19/#7 CW	.721	395.60
19/6CW	19/#6 CW	.810	498.60
19/5CW	19/#5 CW	.910	628.70

Ground Rods

Nominal Size	Material	Type	Body Diameter	Thread Size	Ground Rod Code
1/2"	Copper-Clad	Sectional	.504"	9/16"	12S
	Copper-Clad	Plain	.504"	N/A	12F
	Steel*	Plain	.504"	N/A	12F
5/8"	Copper-Clad	Plain	.475"	N/A	12
	Steel*	Plain	.625"	N/A	58F
	Copper-Clad	Plain	.56"	N/A	58
3/4"	Copper-Clad	Sectional	.56"	5/8"	58S
	Steel*	Plain	.75"	N/A	34F
	Copper-Clad	Plain	.678"	N/A	34
1"	Copper-Clad	Sectional	.678"	3/4"	34S
	Steel*	Plain	1.00"	N/A	10F
	Copper-Clad	Plain	.912"	N/A	10
	Copper-Clad	Sectional	.912"	1"	10S

* Stainless steel, galvanized steel, solid copper

Rectangular Copper Busbar

Thickness	Width	Circular Mil Size	Weight Lbs. per Foot	Busbar Code
1/8"	1"	159,200	.484	181
	1-1/2"	238,700	.726	181.5
	2"	318,300	.969	182
3/16"	1"	238,700	.727	3161
	2"	477,500	1.45	3162
1/4"	1"	318,300	.969	141
	1-1/2"	477,500	1.45	141.5
	2"	636,600	1.94	142
	3"	954,900	2.91	143
3/8"	4"	1,273,000	3.88	144
	1"	477,500	1.45	381
	1-1/2"	716,200	2.18	381.5
	2"	954,900	2.91	382
1/2"	3"	1,432,000	4.36	383
	4"	1,910,000	5.81	384
	2"	1,273,000	3.88	122
1/2"	3"	1,910,000	5.81	123
	4"	2,546,000	7.75	124

Reinforcing Steel

Size	Nominal Dimensions		Equivalent Copper Size*	Reinforcing Steel Code
	Diameter Inches	Cross-sectional Area-Sq. Inches		
3	.375"	.11"	9 AWG	3
4	.50"	.20"	7	4
5	.625"	.31"	5	5
6	.75"	.44"	3	6
7	.875"	.60"	2	7
8	1"	.79"	1	8
9	1.128"	1"	1/0	9
10	1.27"	1.27"	2/0	10
11	1.41"	1.56"	3/0	11
14	1.693"	2.25"	250 MCM	14
18	2.257"	4"	450	18

* Based on 8% IACS, rounded to the next higher commercial copper size.

Ultraweld® Exothermic Welding Certification Training by Harger

This training is hands-on and provides your team with understanding of Harger's Ultraweld exothermic welding process.

The tools required to make a connection as well as the inspection process, safety and troubleshooting are also discussed.

Attendees become certified!

How Do You Get Started?

- Work with your Harger Sales Representative to pick a date and time that works best for you and your team.
- Harger will provide the training materials and train your team at your designated location, ex; jobsite or at your office.
- Attendees must sign-in and pass a test prior to certification.
- Individual certification cards will be sent for distribution after successful class completion.
- Depending on class size, training typically takes 1 to 3 hours.





Exothermic Connections

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