Medium Voltage

PRODUCT CATALOG

2015 EDITION

15kV 25kV 35kV

Richards MANUFACTURING CO.

Richards Medium Voltage Products

Richards designs, manufactures, and tests Loadbreak and Deadbreak Medium Voltage Cable Accessories for 5kV through 35kV voltage classes.

In addition to “standard” products, we offer many innovative solutions designed to solve specific industry issues, make installation simpler, and increase reliability.

- Innovative Designs
- Made in USA
- Higher Testing
- Custom Kitting

CONTENTS

More insulation. That's what makes our Loadbreak Elbow better than other similar products on the market. Additional insulation makes our elbow more reliable, enabling it to outperform competitors' products.

Richards is committed to discovering new ideas that will improve our products and increase their safety and reliability for our customers. Our 200 Amp Loadbreak Elbow is proof of this commitment.

Richards 200A Loadbreak Elbow was designed and validated against the following industry standards:

- IEEE Std 386: For Separable Insulated Connector Systems
- IEEE Std 592: For Exposed Semiconducting Shields

IEEE 386 Product Ratings		
Voltage Class, Phase-to-Phase	**15kV**	**25kV**
Maximum Operating Line-to-Ground/Line-to-Line Voltage	8.3/14.4kV	15.2/26.3kV
Corona Voltage Level – (partial discharge extinction voltage)	11kV	19kV
AC Withstand, 1 minute	34kV	40kV
DC Withstand, 15 minutes	53kV	78kV
Impulse-Withstand Voltage – (BIL)	95kV	125kV

Continuous Current	
Bi-Metallic	200A
Copper	

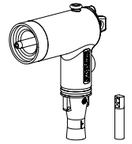
Short-Time Current	
Bi-Metallic	3.5 kA, 3 s. and 10 kA, 10 c.
Copper	

RUS ACCEPTED

WE DO MORE TESTING THAN INDUSTRY STANDARDS REQUIRE. IEEE 386 REQUIRES EITHER IMPULSE OR AC WITHSTAND. WE RUN BOTH ON ALL OF OUR PRODUCTS.

200A Loadbreak Elbow (without Test Point)
21LBN1W — 15kV
Use Table W2 to select "W".

200A Loadbreak Elbow (with Test Point)
21LBT1W — 15kV
Use Table W2 to select "W".

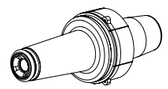


200A Loadbreak Elbow (without Test Point) and Bi-Metal Connector
21LBN2WXB — 15kV
Use Table W2 to select "W".
Use Table X to select "X".

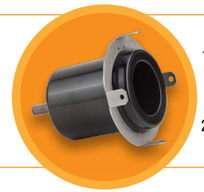
200A Loadbreak Elbow (without Test Point) and Copper Connector
21LBN2WXC — 15kV
Use Table W2 to select "W".
Use Table X to select "X".

200A Loadbreak Elbow (with Test Point) and Bi-Metal Connector
21LBT2WXB — 15kV
Use Table W2 to select "W".
Use Table X to select "X".

200A Loadbreak Elbow (with Test Point) and Copper Connector
21LBT2WXC — 15kV
Use Table W2 to select "W".
Use Table X to select "X".

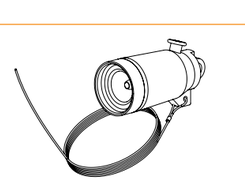


Loadbreak Bushing Insert
21LBI — 15kV



RICHARDS NOW OFFERS 15/25KV 200A APPARATUS BUSHING WELLS!

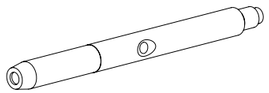
To order, use part number 22ABW. Contact the factory for technical information.



Loadbreak Insulating Cap
21LBICG — 15kV (w/drain wire)
22LBICG — 25kV (w/drain wire)

Grounding Elbow (Yellow)
21LGN
Supplied with a 6 ft. 1/0 copper cable. Contact the factory if a different size or length is required.

Connector
P2ALCU-X — Bi-Metallic
P2CU-X — Copper
Use Table X to select "X".



Elbow Probe
P2100EP — 15kV

200A LOADBREAK ELBOW

Ordering Information

CHARACTER NO.	1	2	3	4	5	6	7	8	9	10					
SAMPLE PART NO.	2	1	LB	N	2	B	9	B	B	C					

CHARACTER #1 (current rating)
2 = 200A Elbow

CHARACTER #2 (voltage class)
1 = 15kV class

CHARACTER #3 (product series)
LB = Loadbreak Elbow

CHARACTER #4 (optional Test Point)
N = No Test Point
T = Test Point

CHARACTER #5 (kit type)
1 = 200A Elbow housing only
2 = 200A Elbow housing, probe and lug

CHARACTER #6 (elbow sizes from Table W2)
"A" through "D"

CHARACTER #7 (connector sizes from Table X, if applicable)
"3" through "13" — use 1 or 2 digits as necessary

If Character #5 was selected as "2", proceed to character #8. Otherwise, skip this character.

CHARACTER #8 (connector type, if applicable)
B = Bi-Metal
C = Copper

To order with Shield Adapter and/or Jacket Seal Kit proceed to characters #9 and #10. Otherwise skip these characters.

CHARACTER #9 (cable shield adapter options from Table 1)
NONE
A = No cable shield adapter
NON-INSULATED TYPES
B = #6 AWG tinned-copper braid
INSULATED TYPES
M = #6 AWG insulated jumper

CHARACTER #10 (cable jacket seal options from Table 1)
B = Jacketing tape
C = Cold shrinkable sleeve
E = Heat shrinkable sleeve

**Example noted above: 200A, 15kV, "B" size Elbow Connector with no Test Point. Kit includes 1/0 Bi-Metal connector, with a #6 AWG tinned-copper braid and cold shrinkable jacket seal.*

CONTACT THE FACTORY FOR SPECIALIZED KITS.

600/900A DEADBREAK

Overview

RUS ACCEPTED

600A Deadbreak Elbow Connectors and Accessories from Richards Manufacturing provide an easy way to terminate cables and equipment and splice primary cable at 15/25kV and 35kV. The 600A Elbow is fully shielded and features a bolted connection in either aluminum (600A) or copper (900A). Accessories are available for insulating, testing, grounding and circuit expansion.

If you are splicing cables together, see the R-Stack section on page MV10.

Richards 600/900A, 15/25kV and 35kV Class, Separable Elbow Connector components have been designed and tested per the following industry standards:

- IEEE Std 386:
  For Separable Insulated Connector Systems
- IEEE Std 592: For Exposed Semiconducting Shields

For your reference, IEEE 386 Voltage Ratings and Characteristics are provided in table form below. IEEE 386 requires that compliant connectors be qualified to the below levels; additionally, the standard defines a routine test that is performed 100% on manufactured components. This routine test requires 2 of 3 defined tests. Richards performs all 3 of the tests—Partial Discharge, AC Withstand and Impulse.

IEEE 386 Product Ratings			
Voltage Class, Phase-to-Phase	**15kV**	**25kV**	**35kV**
Maximum Operating Line-to-Ground/Line-to-Line Voltage	8.3/14.4kV	15.2/26.3kV	21.1/36.6kV
Corona Voltage Level – (partial discharge extinction voltage)	11kV	19kV	26kV
AC Withstand, 1 minute	34kV	40kV	50kV
DC Withstand, 15 minutes	53kV	78kV	103kV
Impulse-Withstand Voltage – (BIL)	95kV	125kV	150kV

Continuous Current	
Aluminum	600A
Copper	900A

Short-Time Current	
Aluminum	25kA, 10c. and 10kA, 3s
Copper	40kA, 10c. and 10kA, 3s

As we mentioned, all our products exceed the routine production test requirements in IEEE 386. Further, many of our products were qualified to higher/more severe levels than the standard. For product specific information, visit our website or contact the factory.

WE DO MORE TESTING THAN INDUSTRY STANDARDS REQUIRE. IEEE 386 REQUIRES EITHER IMPULSE OR AC WITHSTAND. WE RUN BOTH ON ALL OF OUR PRODUCTS.

600A Elbow (without Test Point) and Stud
62LCN1 — 15/25kV
63LCN1 — 35kV

600A Elbow (without Test Point) and Copper Stud
92LCN1 — 15/25kV
93LCN1 — 35kV

600A Elbow (with Test Point) and Stud
62LCT1 — 15/25kV
63LCT1 — 35kV

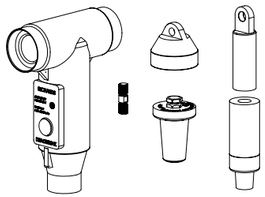
600A Elbow (with Test Point) and Copper Stud
92LCT1 — 15/25kV
93LCT1 — 35kV

600A Elbow (without Test Point), Stud and Insulating Plug and Cap
62LCN2 — 15/25kV
63LCN2 — 35kV

600A Elbow (without Test Point), Copper Stud and Copper Insulating Plug and Cap
92LCN2 — 15/25kV
93LCN2 — 35kV

600A Elbow (with Test Point), Stud and Insulating Plug and Cap
62LCT2 — 15/25kV
63LCT2 — 35kV

600A Elbow (with Test Point), Copper Stud and Copper Insulating Plug and Cap
92LCT2 — 15/25kV
93LCT2 — 35kV

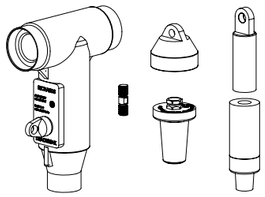


600A Elbow (without Test Point), Stud, Insulating Plug and Cap, Lug and Cable Adapter
62LCN2WX — 15/25kV *Use Table W1 to select "W".*
63LCN2WX — 35kV *Use Table W3 to select "W".*

600A Elbow (without Test Point), Copper Stud, Copper Insulating Plug and Cap, Bi-Metallic Lug and Cable Adapter
72LCN2WX — 15/25kV *Use Table W1 to select "W".*
73LCN2WX — 35kV *Use Table W3 to select "W".*

600A Elbow (without Test Point), Copper Stud, Copper Insulating Plug and Cap, Copper Lug and Cable Adapter
92LCN2WX — 15/25kV *Use Table W1 to select "W".*
93LCN2WX — 35kV *Use Table W3 to select "W".*

Use Table X to select "X".

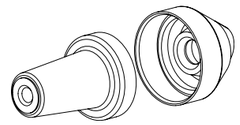


600A Elbow (with Test Point), Stud, Insulating Plug and Cap, Lug and Cable Adapter
62LCT2WX — 15/25kV *Use Table W1 to select "W".*
63LCT2WX — 35kV *Use Table W3 to select "W".*

600A Elbow (with Test Point), Copper Stud, Copper Insulating Plug and Cap, Bi-Metallic Lug and Cable Adapter
72LCT2WX — 15/25kV *Use Table W1 to select "W".*
73LCT2WX — 35kV *Use Table W3 to select "W".*

600A Elbow (with Test Point), Copper Stud, Copper Insulating Plug and Cap, Copper Lug and Cable Adapter
92LCT2WX — 15/25kV *Use Table W1 to select "W".*
93LCT2WX — 35kV *Use Table W3 to select "W".*

Use Table X to select "X".



Insulating Plug
P625HIP — 15/25kV
P635HIP — 35kV

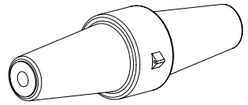
Insulating Plug with Installed Stud
P625HIP-S — 15/25kV
P635HIP-S — 35kV

Insulating Plug with Loose Stud
P625HIP-LS — 15/25kV
P635HIP-LS — 35kV

Copper Insulating Plug
P925HIP — 15/25kV
P935HIP — 35kV

Copper Insulating Plug with Installed Stud
P925HIP-S — 15/25kV
P935HIP-S — 35kV

Copper Insulating Plug with Loose Stud
P925HIP-LS — 15/25kV
P935HIP-LS — 35kV



Connecting Plug
P625CPR — 15/25kV
P635CP — 35kV

Connecting Plug with Installed Stud
P625CPR-S — 15/25kV
P635CP-S — 35kV

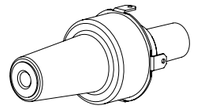
Connecting Plug with Loose Stud
P625CPR-LS — 15/25kV
P635CP-LS — 35kV

Copper Connecting Plug
P925CPR — 15/25kV
P935CP — 35kV

Copper Connecting Plug with Installed Stud
P925CPR-S — 15/25kV
P935CP-S — 35kV

Copper Connecting Plug with Loose Stud
P925CPR-LS — 15/25kV
P935CP-LS — 35kV

Connecting Plugs are installed by engaging 3/8" hex broach. See P6AT Installation Tool on MV8.



Reducing Tap Plug
P625RTP — 15/25kV

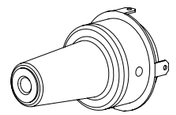
Reducing Tap Plug with Installed Stud
P625RTP-S — 15/25kV

Reducing Tap Plug with Loose Stud
P625RTP-LS — 15/25kV

Copper Reducing Tap Plug
P925RTP — 15/25kV

Copper Reducing Tap Plug with Installed Stud
P925RTP-S — 15/25kV

Copper Reducing Tap Plug with Loose Stud
P925RTP-LS — 15/25kV



Reducing Tap Well
P625RTW — 15/25kV

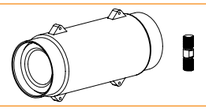
Reducing Tap Well with Installed Stud
P625RTW-S — 15/25kV

Reducing Tap Well with Loose Stud
P625RTW-LS — 15/25kV

Copper Reducing Tap Well
P925RTW — 15/25kV

Copper Reducing Tap Well with Installed Stud
P925RTW-S — 15/25kV

Copper Reducing Tap Well with Loose Stud
P925RTW-LS — 15/25kV



Bushing Extender with Loose Stud
P625BE — 15/25kV
P635BE — 35kV

Copper Bushing Extender with Loose Stud
P925BE — 15/25kV
P935BE — 35kV

Insulating Cap (without Test Point) and Loose Stud
P625ICN — 15/25kV

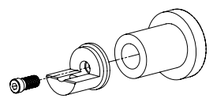
Insulating Cap (without Test Point) and Installed Stud
P625ICN-S — 15/25kV
P635IC — 35kV **Note: Stud is molded-in.*

Insulating Cap (with Test Point) and Loose Stud
P625IC — 15/25kV

Insulating Cap (with Test Point) and Installed Stud
P625IC-S — 15/25kV

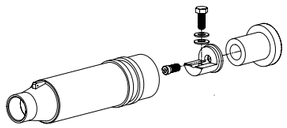
600A Aluminum Stud
P625HIP-STUD — 15/25kV
P635HIP-STUD — 35kV

900A Copper Stud
P925HIP-STUD — 15/25kV
P935HIP-STUD — 35kV



600A Straight Receptacle Adapter
P625SRA — 15/25kV

900A Copper Straight Receptacle Adapter
P925SRA — 15/25kV

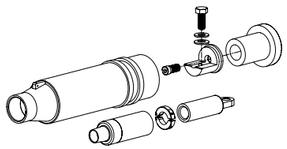


600A Straight Receptacle Adapter, Bolt and Sleeve
P625SRA1 — 15/25kV

600A Straight Receptacle Adapter, Barrier Bolt and Sleeve
P625SRAB1 — 15/25kV

900A Copper Straight Receptacle Adapter, Bolt and Sleeve
P925SRA1 — 15/25kV

900A Copper Straight Receptacle Adapter, Barrier Bolt and Sleeve
P925SRAB1 — 15/25kV



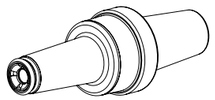
600A Straight Receptacle Adapter, Sleeve, Lug, Bolt, Cable Adapter and Retaining Ring
P625SRA2WX — 15/25kV

600A Straight Receptacle Adapter, Sleeve, Lug, Barrier Bolt, Cable Adapter and Retaining Ring
P625SRAB2WX — 15/25kV

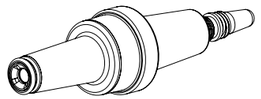
900A Copper Straight Receptacle Adapter, Sleeve, Lug, Bolt, Cable Adapter and Retaining Ring
P925SRA2WX — 15/25kV

900A Copper Straight Receptacle Adapter, Sleeve, Lug, Barrier Bolt, Cable Adapter and Retaining Ring
P925SRAB2WX — 15/25kV

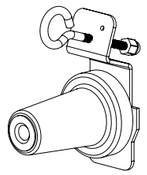
Use Table W1 to select "W". Use Table X to select "X".



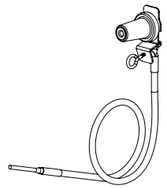
Elbow Tap Plug
P615ETP — 15kV
P625ETP — 25kV



Loadbreak Reducing Tap Plug (LRTP)
P615LRTP — 15kV

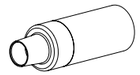


Insulated Parking Bushing
P625IPB — 15/25kV
P635IPB — 35kV

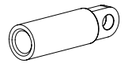


Grounding Bushing
P625GB — 15/25kV
P635GB — 35kV

Supplied with a 6 ft. 4/0 copper cable. Contact the factory if a different size or length is required.



Cable Adapter
P625CA-W — 15/25kV *Use Table W1 to select "W".*
P635CA-W — 35kV *Use Table W3 to select "W".*



Aluminum Lug – For use on Copper or Aluminum cable.
P6AL-X — 15/25/35kV

Bi-Metal Lug "Copper Top" – Aluminum barrel with a Copper pad. For use on Copper or Aluminum cable.
P7ALCU-X — 15/25/35kV

Copper Lug – For use on Copper cable only.
P9CU-X — 15/25/35kV

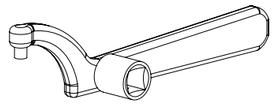
Use Table X to select "X".
For a threaded Bi-Metal or Copper lug, add "-15/16" to the end of the lug part number.

600A Elbow Subunit Kit with Aluminum Lug
P625SK1WX — 15/25kV *Use Table W1 to select "W".*
P635SK1WX — 35kV *Use Table W3 to select "W".*

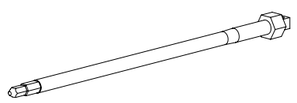
600A Elbow Subunit Kit with Bi-Metal Lug
P725SK1WX — 15/25kV *Use Table W1 to select "W".*
P735SK1WX — 35kV *Use Table W3 to select "W".*

600A Elbow Subunit Kit with Copper Lug
P925SK1WX — 15/25kV *Use Table W1 to select "W".*
P935SK1WX — 35kV *Use Table W3 to select "W".*

Use Table X to select "X".



Spanner Wrench
P6SW



Assembly Tool #2
P6AT

3/8" and 5/16" tip.
3/4" Hex drive head.
MUST be used with a torque wrench.
For use with all accessories.

600/900A DEADBREAK — Ordering Information

CHARACTER NO.	1	2	3	4	5	6	7	8	9	10	11	12			
SAMPLE PART NO.	6	2	L	C	N	2	L	M	2	2	D	D			

CHARACTER #1 (current rating)
- 6 = 600A (all aluminum components)
- 7 = 600A (bi-metallic, copper-top lug)
- 9 = 900A (all copper components)

CHARACTER #2 (voltage class)
- 2 = 15/25kV class
- 3 = 35kV class

CHARACTER #3, #4 & #5
- LCN = 600A Elbow with no Test Point
- LCT = 600A Elbow with Test Point

CHARACTER #6
- 0 = 600A Elbow connector housing only
- 1 = 600A Elbow connector housing, stud
- 2 = 600A Elbow connector housing, stud, Insulating Plug and Cap

To order with Cable Adapter and Lug, proceed to character #7/#8 and #9/#10. Otherwise skip these characters.

CHARACTER #7 & #8 (cable adapter sizes — Use Tables W1 or W3, depending on product)
- "E" through "PQ" — use 1 or 2 digits as necessary

CHARACTER #9 & #10 (lug size — Use Table X)
- "7" through "30" — use 1 or 2 digits as necessary

To order with Shield Adapter and/or Jacket Seal Kit, proceed to characters #11 and #12. Otherwise skip these characters.

CHARACTER #11 (cable shield adapter options from Table 1)

NONE
- A = No cable shield adapter

NON-INSULATED TYPES
- B = #6 AWG tinned-copper braid
- D = #4 AWG tinned-copper braid

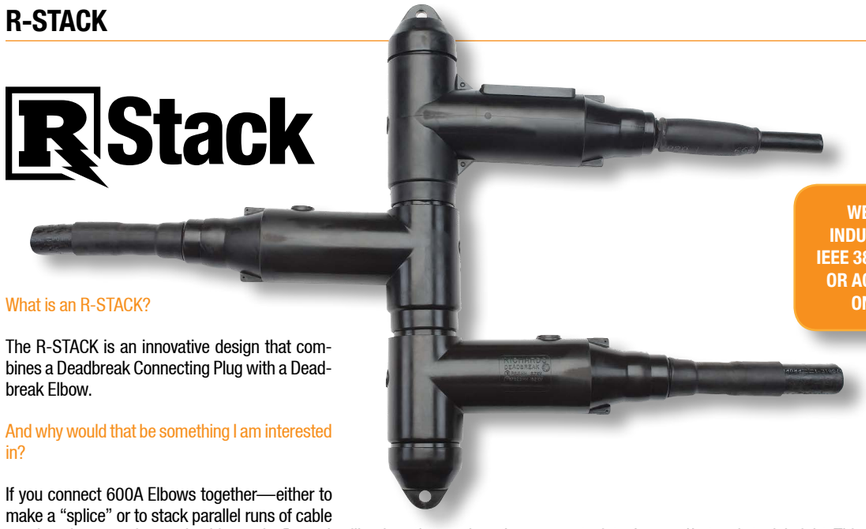
INSULATED TYPES
- M = #6 AWG insulated jumper
- P = #4 AWG insulated jumper

CHARACTER #12 (cable jacket seal options from Table 1)
- B = Jacketing tape
- C = Cold shrinkable sleeve for cable adapter sizes E through J
- D = Cold shrinkable sleeve for cable adapter sizes K through PQ
- E = Heat shrinkable sleeve for cable adapter sizes E through J
- F = Heat shrinkable sleeve for cable adapter sizes K through PQ

**Example noted above: 600A, 25kV, Elbow Connector with no Test Point. Kit includes stud, insulating plug and cap, "LM" size Cable Adapter, Lug size "22" with a #4 AWG tinned-copper braid and cold shrinkable jacket seal.*

CONTACT THE FACTORY FOR SPECIALIZED KITS.

R-STACK — Overview



WE DO MORE TESTING THAN INDUSTRY STANDARDS REQUIRE. IEEE 386 REQUIRES EITHER IMPULSE OR AC WITHSTAND. WE RUN BOTH ON ALL OF OUR PRODUCTS.

What is an R-STACK?

The R-STACK is an innovative design that combines a Deadbreak Connecting Plug with a Deadbreak Elbow.

And why would that be something I am interested in?

If you connect 600A Elbows together—either to make a "splice" or to stack parallel runs of cable on a junction or equipment bushing—the R-stack will reduce the number of components, interfaces, effort and stack height. This results in a simpler and quicker installation with less chance of contamination or installation error. It also reduces the number of components stored in inventory.

You said it reduces the stack height. This is important to me because our manholes and cabinets are very congested and compact.

I am glad you appreciate the stack height savings. On the next page, you will see configuration drawings showing just how much room you'll be saving. The stack height of a splice with 3 Deadbreak Elbows and Connecting Plugs is 20% larger than making the connection using R-Stacks!

That's amazing. The stack height savings are really going to help us out.

But the height savings aren't the only advantage. Aside from being quicker and easier because there are fewer components, there's also significantly less force to overcome when installing R-Stacks. This is because there's no Connecting Plug to torque down while holding the mating component in place. Also, the more loose components, the greater the chance of damage or contamination before/during installation. So the R-stack significantly enhances reliability.

I think I saw other manufactures promoting "combination" Deadbreak Elbows. Is the R-Stack one-of-a-kind?

The R-Stack was the first of its kind and the only design that truly combines the Connecting Plug with a Deadbreak Elbow. Other manufactures have, in an attempt to replicate the R-Stack, marketed an elbow housing molded in the shape of an R-Stack. But don't be fooled: their design doesn't have the internal, load-carrying components installed at the factory. So there's really no "combination" at all…it combines one thing but separates another, leaving you with the same number of components as before! And now you're required to install all of those internal components in the field! The R-Stack is molded as one piece, with everything you need pre-installed in a controlled, clean environment. We give you the complete solution—not a gimmick.

OK, enough words. Show me the pictures!

In a few pages, you will find drawings comparing R-Stacks to "standard" elbows. If you don't see the configuration you're interested in, contact us and we'll be glad to help.

IEEE 386 Product Ratings			
Voltage Class, Phase-to-Phase	**15kV**	**25kV**	**35kV**
Maximum Operating Line-to-Ground/Line-to-Line Voltage	8.3/14.4kV	15.2/26.3kV	21.1/36.6kV
Corona Voltage Level – (partial discharge extinction voltage)	11kV	19kV	26kV
AC Withstand, 1 minute	34kV	40kV	50kV
DC Withstand, 15 minutes	53kV	78kV	103kV
Impulse-Withstand Voltage – (BIL)	95kV	125kV	150kV

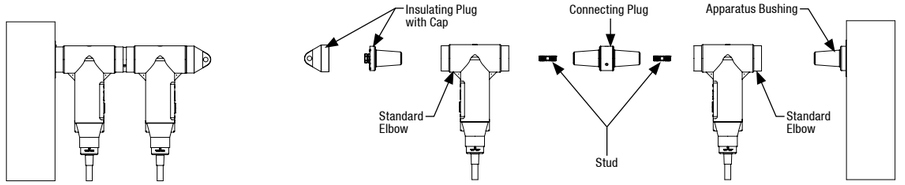
Continuous Current	
Aluminum	600A
Copper	900A

Short-Time Current	
Aluminum	10kA, 3 s. and 25kA, 10c.
Copper	10kA, 3 s. and 40kA, 10c.

Richards MANUFACTURING CO. Richards Manufacturing, Inc. | 517 Lyons Avenue, Irvington, NJ 07111 | 973.371.1771 | www.Richards-Mfg.com MVC1215

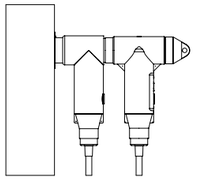
15/25kV Apparatus Bushing Installation

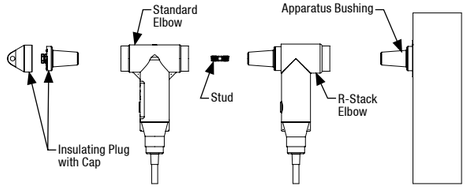
Standard



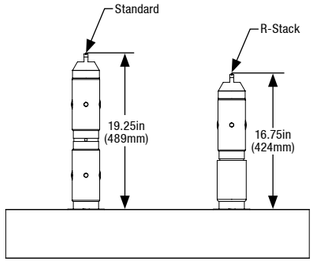
6 Total Components

R-Stack



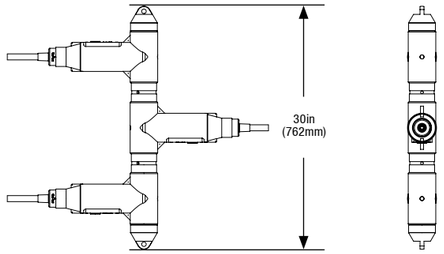


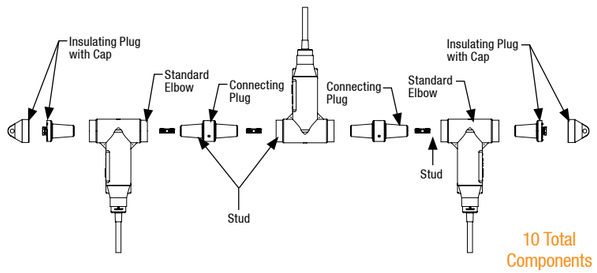
4 Total Components



15/25kV Elbow Splice Installation

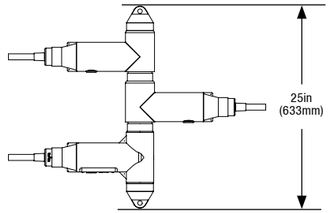
Standard

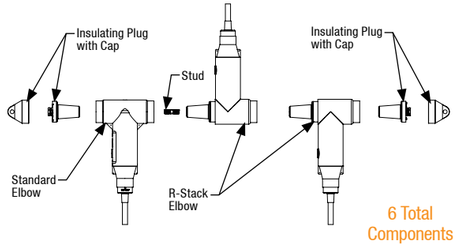




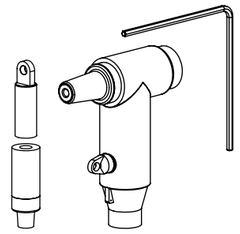
10 Total Components

R-Stack





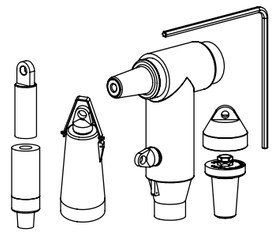
6 Total Components



R-Stack (with Test Point) Hex Tool, Cable Adapter and Lug
62CBT0WX — 15/25kV *Use Table W1 to select "W".*
63CBT0WX — 35kV *Use Table W3 to select "W".*

R-Stack (without Test Point) Hex Tool, Cable Adapter and Lug
62CBN0WX — 15/25kV *Use Table W1 to select "W".*
63CBN0WX — 35kV *Use Table W3 to select "W".*

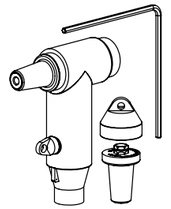
To order these kits without cable adapter and lug, omit characters "W" and "X".



R-Stack (with Test Point), Hex Tool, Insulating Cap, Insulating Plug and Cap, Cable Adapter and Lug
62CBT1WX — 15/25kV *Use Table W1 to select "W".*
63CBT1WX — 35kV *Use Table W3 to select "W".*

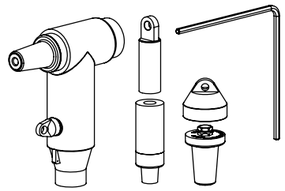
R-Stack (without Test Point), Hex Tool, Insulating Cap, Insulating Plug and Cap, Cable Adapter and Lug
62CBN1WX — 15/25kV *Use Table W1 to select "W".*
63CBN1WX — 35kV *Use Table W3 to select "W".*

To order these kits without cable adapter and lug, omit characters "W" and "X".



R-Stack (with Test Point), Hex Tool, Insulating Plug and Cap
62CBT2 — 15/25kV
63CBT2 — 35kV

R-Stack (without Test Point), Hex Tool, Insulating Plug and Cap
62CBN2 — 15/25kV
63CBN2 — 35kV



R-Stack (with Test Point), Hex Tool, Insulating Plug and Cap, Cable Adapter and Lug
62CBT2WX — 15/25kV *Use Table W1 to select "W".*
63CBT2WX — 35kV *Use Table W3 to select "W".*

R-Stack (without Test Point), Hex Tool, Insulating Plug and Cap, Cable Adapter and Lug
62CBN2WX — 15/25kV *Use Table W1 to select "W".*
63CBN2WX — 35kV *Use Table W3 to select "W".*

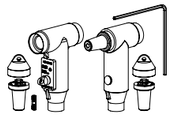
Use Table X to select "X".

62CFNO shown

IF A FEMALE FASTENER IS NEEDED, PLEASE FOLLOW THE ORDERING INFORMATION PAGE

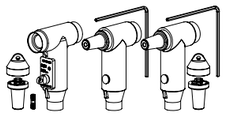
Female fastener means the R-Stack comes with a loose threaded stud.

Add "-NT" if no Hex Tool is required.



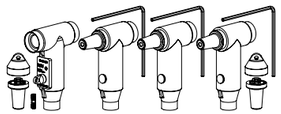
R-Stack (without Test Point), Standard Elbow (with Test Point), Hex Tool, 2 Insulating Plugs and Caps and 1 Stud
62BJT2 — 15/25kV
63BJT2 — 35kV

R-Stack (without Test Point), Standard Elbow (without Test Point), Hex Tool, 2 Insulating Plugs and Caps and 1 Stud
62BJN2 — 15/25kV
63BJN2 — 35kV



2 R-Stacks (without Test Points), Standard Elbow (with Test Point), 2 Hex Tools, 2 Insulating Plugs and Caps and 1 Stud
62BJT3 — 15/25kV
63BJT3 — 35kV

2 R-Stacks (without Test Points), Standard Elbow (without Test Point), 2 Hex Tools, 2 Insulating Plugs and Caps and 1 Stud
62BJN3 — 15/25kV
63BJN3 — 35kV



3 R-Stacks (without Test Points), Standard Elbow (with Test Point), 3 Hex Tools, 2 Insulating Plugs and Caps and 1 Stud
62BJT4 — 15/25kV
63BJT4 — 35kV

3 R-Stacks (without Test Points), Standard Elbow (without Test Point), 3 Hex Tools, 2 Insulating Plugs and Caps and 1 Stud
62BJN4 — 15/25kV
63BJN4 — 35kV

1 Standard Elbow (with Test Point), 2 Insulating Plugs and Caps and 1 Stud
62LJT1 — 15/25kV
63LJT1 — 35kV

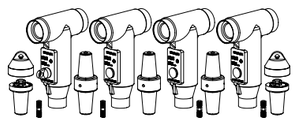
1 Standard Elbow (without Test Point), 2 Insulating Plugs and Caps and 1 Stud
62LJN1 — 15/25kV
63LJN1 — 35kV

1 Standard Elbows (with Test Point), 1 Standard Elbows (without Test Point), 2 Insulating Plugs and Caps, 1 Connecting Plug and 2 Studs
62LJT2 — 15/25kV
63LJT2 — 35kV

2 Standard Elbows (without Test Points), 2 Insulating Plugs and Caps, 1 Connecting Plug and 2 Studs
62LJN2 — 15/25kV
63LJN2 — 35kV

1 Standard Elbows (with Test Point), 2 Standard Elbows (without Test Points), 2 Insulating Plugs and Caps, 2 Connecting Plugs and 3 Studs
62LJT3 — 15/25kV
63LJT3 — 35kV

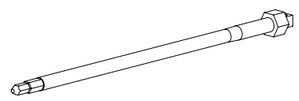
3 Standard Elbows (without Test Points), 2 Insulating Plugs and Caps, 2 Connecting Plugs and 3 Studs
62LJN3 — 15/25kV
63LJN3 — 35kV



1 Standard Elbows (with Test Point), 3 Standard Elbows (without Test Points), 2 Insulating Plugs and Caps, 3 Connecting Plugs and 4 Studs
62LJT4 — 15/25kV
63LJT4 — 35kV

4 Standard Elbows (without Test Points), 2 Insulating Plugs and Caps, 3 Connecting Plugs and 4 Studs
62LJN4 — 15/25kV
63LJN4 — 35kV

These Kits do not include Cable Adapters or Lugs. Please order them separately as components or in Subunit Kits.

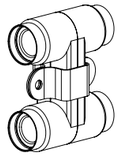


Assembly Tool #2
P6AT

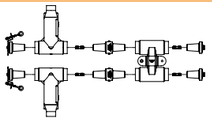
3/8" and 5/16" tip.
3/4" Hex drive head.
MUST be used with a torque wrench.
For use with all accessories.

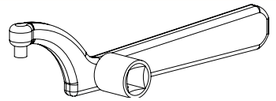
Hex Tool
P650DAT

3/8" Disposable assembly tool – single use.
Yields at 50-60 ft-lbs.
Use to install R-STACK, connecting plugs, ETP and some R-800s.

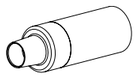


Disconnect Link
P915DL — 15kV
P925DL — 25kV

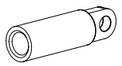




Spanner Wrench
P6SW



Cable Adapter
P625CA-W — 15/25kV *Use Table W1 to select "W".*
P635CA-W — 35kV *Use Table W3 to select "W".*

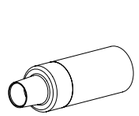


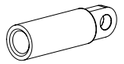
Aluminum Lug – For use on Copper or Aluminum cable.
P6AL-X — 15/25/35kV

Bi-Metal Lug "Copper Top" – Aluminum barrel with a Copper pad. For use on Copper or Aluminum cable.
P7ALCU-X — 15/25/35kV

Copper Lug – For use on Copper cable only.
P9CU-X — 15/25/35kV

Use Table X to select "X".
For a threaded Bi-Metal or Copper lug, add "-15/16" to the end of the lug part number.





600A Elbow Subunit Kit with Aluminum Lug
P625SK1WX — 15/25kV *Use Table W1 to select "W".*
P635SK1WX — 35kV *Use Table W3 to select "W".*

600A Elbow Subunit Kit with Bi-Metal Lug
P725SK1WX — 15/25kV *Use Table W1 to select "W".*
P735SK1WX — 35kV *Use Table W3 to select "W".*

600A Elbow Subunit Kit with Copper Lug
P925SK1WX — 15/25kV *Use Table W1 to select "W".*
P935SK1WX — 35kV *Use Table W3 to select "W".*

Use Table X to select "X".

CHARACTER NO.	1	2	3	4	5	6	7	8	9	10	11	12			
SAMPLE PART NO.	6	2	C	B	N	2	L	M	2	2	D	D			

CHARACTER #1 (current rating)
- 6 = 600A (all aluminum components)
- 7 = 600A (bi-metallic, copper-top lug)
- 9 = 900A (all copper components)

CHARACTER #2 (voltage class)
- 2 = 15/25kV class
- 3 = 35kV class

CHARACTER #3
- C = Connecting plug elbow (R-Stack)

CHARACTER #4 (fastener type)
- B = Male bolt (mating part has no stud)
- F = Female (mating part has stud)

CHARACTER #5 (optional Test Point)
- N = No Test Point
- T = Test point

CHARACTER #6 (kit type)
- 0 = R-Stack only
- 1 = R-Stack, Insulating Cap and Insulating Plug and Cap
- 2 = R-Stack, Insulating Plug and Cap

To order with Cable Adapter and Lug, proceed to character #7/#8 and #9/#10. Otherwise skip these characters.

CHARACTER #7 & #8 (cable adapter sizes from Table W1 or W3, depending on product)
- "E" through "PQ" — use 1 or 2 digits as necessary

CHARACTER #9 & #10 (lug size from Table X, if applicable)
- "7" through "30" — use 1 or 2 digits as necessary

To order with Shield Adapter and/or Jacket Seal Kit, proceed to characters #11 and #12. Otherwise skip these characters.

CHARACTER #11 (cable shield adapter options from Table 1)

NONE
- A = No cable shield adapter

NON-INSULATED TYPES
- B = #6 AWG tinned-copper braid
- D = #4 AWG tinned-copper braid

INSULATED TYPES
- M = #6 AWG insulated jumper
- P = #4 AWG insulated jumper

CHARACTER #12 (cable jacket seal options from Table 1)
- B = Jacketing tape
- C = Cold shrinkable sleeve for cable adapter sizes E through J
- D = Cold shrinkable sleeve for cable adapter sizes K through PQ
- E = Heat shrinkable sleeve for cable adapter sizes E through J
- F = Heat shrinkable sleeve for cable adapter sizes K through PQ

**Example noted above: 600A, 15/25kV, R-Stack with no Test Point. Kit includes hex tool, insulating plug and cap, "LM" size Cable Adapter, Lug size "22" with a #4 AWG tinned-copper braid and cold shrinkable jacket seal.*

CONTACT THE FACTORY FOR SPECIALIZED KITS.

RUS ACCEPTED

PRODUCT FEATURES

- Combines 200A Loadbreak tap and Deadbreak Elbow
- Available in multiple configurations to meet every application
- Includes installation tool that guarantees proper torque
- Reduces inventory and installation costs

Tell me more about the R-800, I'm not familiar with it.

The R-800 is a product that combines a 600A Deadbreak Elbow and a 200A Loadbreak interface.

By combining multiple components into a pre-assembled, pre-tested body, you are able to boost reliability, simplify installation, and reduce overall installation cost. Like a machine with less moving parts, an installation with less interfaces and components is simpler and more dependable.

Fewer interfaces…that's certainly better. When would someone be using a Loadbreak tap?

That's a good question. There are two main reasons our customers install Loadbreak taps on Deadbreak Elbows. First, a Loadbreak Elbow may be installed to connect to a transformer or feed another circuit. Second, by keeping a Loadbreak Insulating Cap on the end of the Loadbreak Interface, whenever the circuit needs to be tested to verify it's de-energized, the cap may be pulled off and tested with approved test equipment. This is a common "direct test" method.

I think I may have seen one of these on the market from one of your competitors.

Actually, the Richards R-800 is the only product of its kind. There are imitations out there. They came after and fall a bit short, if we may be frank about it. There are other products being marketed that are molded in the imitative shape of an R-800. But the key is on the inside: the R-800 has an internal fastener that allows us to pre-assemble all of the Loadbreak components in our controlled, clean, dependable factory environment. Without the fastener, there's no way to torque down the assembly without taking out the Loadbreak "guts". You can see the fastener labeled in the picture above.

Ah, I see. So the competitive product is actually not really combining anything—they must give you the Loadbreak "guts" separately, right?

Very astute! Those competitive imitations are actually combining one thing but separating another, which leaves you with the same amount of pieces to install as before. What's worse: their design leaves you with the burden of field-installing internal Loadbreak components in the field.

I do agree their design is inferior, but I am curious as to why you are emphasizing the field-installation of internal Loadbreak components.

Another good question. The correct installation of Loadbreak components is absolutely critical to the proper functioning of the Loadbreak system. At Richards we very tightly control this installation. Our employees are thoroughly trained to install these components, follow tightly controlled engineering drawings/instructions, and our quality control department carefully inspects their work. If installation is done incorrectly in the field, the Loadbreak components may not function correctly when a splicer operates an elbow. This is a safety issue. Richards provides a one piece solution—not the burden of field-installing critical internal components in a field-environment where installation error and contamination can result in major operational issues with the product.

I would like to avoid having to install all of those components in the field. How do I know which R-800 to order?

There are R-800's to accommodate every kind of configuration found in the field for Loadbreak Taps on Deadbreak Elbows. Take a look at the next few pages and contact the factory if you have any questions.

Installing an R-800 is extremely simple and efficient—pictured below is the installation of a “G” Style 15kV R-800:

THE FIRST STEP.

A standard threaded stud is hand-tightened into the bushing. The lug/cable assembly is inserted into the R-800 and pushed into position. The assembly tool is inserted through the 200A interface to engage the fastener. Note the fastener is in the recessed position.

THE SECOND STEP.

The fastener is pushed through the lug hole, and locks into the forward position. The fastener will stay in the forward position, holding the lug/cable assembly in place.

THE LAST STEP.

The R-800 is pushed onto the mating interface and the fastener is rotated to engage the threads on the stud. The R-800 is completely installed once the proper installation torque is reached.

Scan these QR codes to watch short videos on installing our other R-800 versions!

R-800 F Style

R-800 H Style

R-800 M Style

Choose the R-800 that’s right for your system:

R-800 Sizing							
Currently Using:	Upgrade to R-800 Type:	Installation Torque	Tool Size	Lug	Stick Operable*	Male or Female?**	One-Piece Design
Elbow Tap Plug (ETP) or Bushing Insert + Reducing Tap Well	F or H	55 ft-lbs	3/8”	Regular	No	Female	Yes
T-OP II	G	20 ft-lbs	5/16”	15/16” Hole	Yes		
Loadbreak Reducing Tap Plug (LRTP)	M	55 ft-lbs	3/8”	Regular		Male	
	N	20 ft-lbs	5/16”	15/16” Hole			

**Stick operability is defined here as the ability to remove the R-800 from the bushing without the assembly of R-800/Cable/Lug being separated.*

***Female R-800’s come with a loose threaded stud. Male R-800’s have the threaded stud built into the fastener.*

Product Ratings

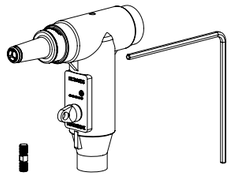
For your reference, IEEE 386 Voltage Ratings and Characteristics are provided in table form below. IEEE 386 requires that compliant connectors be qualified to the below levels; additionally, the standard defines a routine test that is performed 100% on manufactured components. This routine test requires 2 of 3 defined tests. Richards performs all 3 of the tests—Partial Discharge, AC Withstand and Impulse.

IEEE 386 Product Ratings		
Voltage Class, Phase-to-Phase	**15kV**	**25kV**
Maximum Operating Line-to-Ground/Line-to-Line Voltage	8.3/14.4kV	15.2/26.3kV
Corona Voltage Level – (partial discharge extinction voltage)	11kV	19kV
AC Withstand, 1 minute	34kV	40kV
DC Withstand, 15 minutes	53kV	78kV
Impulse-Withstand Voltage – (BIL)	95kV	125kV

Continuous Current (600A Side)	
Aluminum	600A
Copper	900A

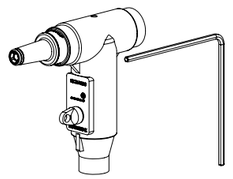
Current (200A Loadbreak Tap)	
Continuous (copper-top or copper)	200A
Short-Time Current (copper-top or copper)	3.5kA, 3 s. and 10kA, 10c.

As we mentioned, all our products exceed the routine production test requirements in IEEE 386. Further, many of our products were qualified to higher/more severe levels than the standard. For product specific information, visit our website or contact the factory.



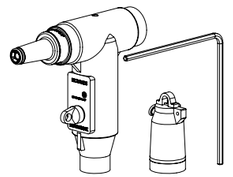
R-800 (with Test Point and Integral Female Fastener for use with Standard Lug), Hex Tool and Stud
618FT0 — 15kV
628FT0 — 25kV

R-800 (without Test Point, with Integral Female Fastener for use with Standard Lug), Hex Tool and Stud
618FN0 — 15kV
628FN0 — 25kV



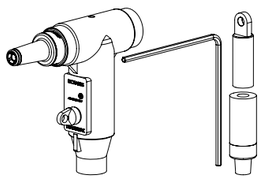
R-800 (with Test Point and Integral Male Fastener for use with Standard Lug) and Hex Tool
618MT0 — 15kV
628MT0 — 25kV

R-800 (without Test Point, with Integral Male Fastener for use with Standard Lug) and Hex Tool
618MN0 — 15kV
628MN0 — 25kV



R-800 (with Test Point and Integral Male Fastener for use with Standard Lug), Hex Tool and Loadbreak Insulating Cap
618MT1 — 15kV
628MT1 — 25kV

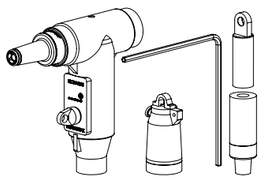
R-800 (without Test Point, with Integral Male Fastener for use with Standard Lug), Hex Tool and Loadbreak Insulating Cap
618MN1 — 15kV
628MN1 — 25kV



R-800 (with Test Point and Integral Male Fastener for use with Standard Lug) Hex Tool. Cable Adapter and Lug
618MT2WX — 15kV
628MT2WX — 25kV

R-800 (without Test Point, with Integral Male Fastener for use with Standard Lug) Hex Tool, Cable Adapter and Lug
618MN2WX — 15kV
628MN2WX — 25kV

Use Table W1 to select "W". Use Table X to select "X".



R-800 (with Test Point and Integral Male Fastener for use with Standard Lug), Hex Tool, Loadbreak Insulating Cap, Cable Adapter and Lug
618MT3WX — 15kV
628MT3WX — 25kV

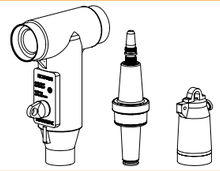
R-800 (without Test Point, with Integral Male Fastener for use with Standard Lug), Hex Tool, Loadbreak Insulating Cap, Cable Adapter and Lug
618MN3WX — 15kV
628MN3WX — 25kV

Use Table W1 to select "W". Use Table X to select "X".

RICHARDS OFFERS AN R-800 KIT OPTION FOR EVERY 600/200A INTERFACE CONFIGURATION. NOT ALL KITS ARE DISPLAYED ON THIS PAGE. PLEASE SEE MV18 FOR OTHER OPTIONS, OR CONTACT THE FACTORY.

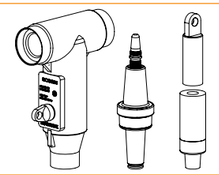
600A Deadbreak Elbow (with Test Point), with Loadbreak-Reducing Tap Plug (LRTP)
61LRTT0 — 15kV kit

600A Deadbreak Elbow (without Test Point), with Loadbreak-Reducing Tap Plug (LRTP)
61LRTN0 — 15kV kit



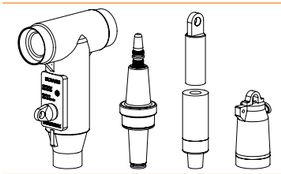
600A Deadbreak Elbow (with Test Point), with Loadbreak-Reducing Tap Plug (LRTP) and Loadbreak Insulating Cap
61LRTT1 — 15kV kit

600A Deadbreak Elbow (without Test Point), with Loadbreak-Reducing Tap Plug (LRTP) and Loadbreak Insulating Cap
61LRTN1 — 15kV kit



600A Deadbreak Elbow (with Test Point), with Loadbreak-Reducing Tap Plug (LRTP), Cable Adapter and Lug
61LRTT2WX — 15kV kit

600A Deadbreak Elbow (without Test Point), with Loadbreak-Reducing Tap Plug (LRTP), Cable Adapter and Lug
61LRTN2WX — 15kV kit *Use Table W1 to select "W". Use Table X to select "X".*

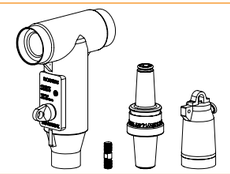


600A Deadbreak Elbow (with Test Point), with Loadbreak-Reducing Tap Plug (LRTP), Cable Adapter, Lug and Loadbreak Insulating Cap
61LRTT3WX — 15kV kit

600A Deadbreak Elbow (without Test Point), with Loadbreak-Reducing Tap Plug (LRTP), Cable Adapter, Lug and Loadbreak Insulating Cap
61LRTN3WX — 15kV kit *Use Table W1 to select "W". Use Table X to select "X".*

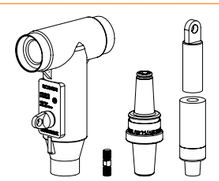
600A Deadbreak Elbow (with Test Point), with Elbow Tap Plug (ETP) and Stud
61ETPT0 — 15kV kit 62ETPT0 — 25kV kit

600A Deadbreak Elbow (without Test Point), with Elbow Tap Plug (ETP) and Stud
61ETPN0 — 15kV kit 62ETPN0 — 25kV kit



600A Deadbreak Elbow (with Test Point), with Elbow Tap Plug (ETP), Stud and Loadbreak Insulating Cap
61ETPT1 — 15kV kit 62ETPT1 — 25kV kit

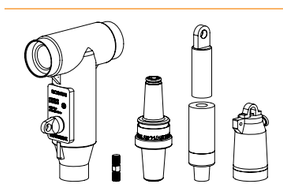
600A Deadbreak Elbow (without Test Point), with Elbow Tap Plug (ETP), Stud and Loadbreak Insulating Cap
61ETPN1 — 15kV kit 62ETPN1 — 25kV kit



600A Deadbreak Elbow (with Test Point), with Elbow Tap Plug (ETP), Stud, Cable Adapter and Lug
61ETPT2WX — 15kV kit 62ETPT2WX — 25kV kit

600A Deadbreak Elbow (without Test Point), with Elbow Tap Plug (ETP), Stud, Cable Adapter and Lug
61ETPN2WX — 15kV kit 62ETPN2WX — 25kV kit

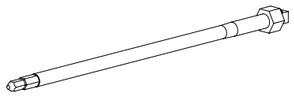
Use Table W1 to select "W". Use Table X to select "X".



600A Deadbreak Elbow (with Test Point), with Elbow Tap Plug (ETP), Stud, Cable Adapter, Lug and Loadbreak Insulating Cap
61ETPT3WX — 15kV kit 62ETPT3WX — 25kV kit

600A Deadbreak Elbow (without Test Point), with Elbow Tap Plug (ETP), Stud, Cable Adapter, Lug and Loadbreak Insulating Cap
61ETPN3WX — 15kV kit 62ETPN3WX — 25kV kit

Use Table W1 to select "W". Use Table X to select "X".



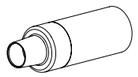
Assembly Tool #2
P6AT

3/8" and 5/16" tip.
3/4" Hex drive head.
MUST be used with a torque wrench.
For use with all accessories.

Hex Tool
P650DAT

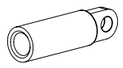
3/8" Disposable assembly tool – single use.
Yields at 50-60 ft-lbs.
Use to install R-STACK, connecting plugs, ETP and some R-800s.

Loadbreak Insulating Cap (w/drain wire)
21LBICG — 15kV
22LBICG — 25kV



Cable Adapter
P625CA-W — 15/25kV

Use Table W1 to select "W".

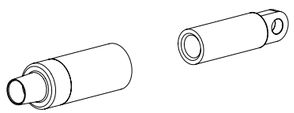


Aluminum Lug – For use on Copper or Aluminum cable.
P6AL-X — 15/25kV

Bi-Metal Lug "Copper Top" – Aluminum barrel with a Copper pad. For use on Copper or Aluminum cable.
P7ALCU-X — 15/25kV

Copper Lug – For use on Copper cable only.
P9CU-X — 15/25kV

Use Table X to select "X".
For a threaded Bi-Metal or Copper lug, add "-15/16" to the end of the lug part number.



600A Elbow Subunit Kit with Aluminum Lug
P625SK1WX — 15/25kV

600A Elbow Subunit Kit with Bi-Metal Lug
P725SK1WX — 15/25kV

600A Elbow Subunit Kit with Copper Lug
P925SK1WX — 15/25kV

Use Table W1 to select "W". Use Table X to select "X".

Silicone Grease
P6SL1 — (1) 5 gram packet
P6SL5 — (1) 5 oz. tube
P6SL100 — (100) 5 gram packets
P6SL500 — (100) 5 oz. tubes

CHARACTER NO.	1	2	3	4	5	6	7	8	9	10	11	12			
SAMPLE PART NO.	6	2	8	M	N	2	L	M	2	2	D	D			

CHARACTER #1 (current rating)
6 = 600A (all aluminum components)
7 = 600A (bi-metallic, copper-top lug)
9 = 900A (all copper components)

CHARACTER #2 (voltage class)
1 = 15kV class
2 = 25kV class

CHARACTER #3
8 = R-800 kit

CHARACTER #4 (fastener type)
M = Male fastener used with standard lug
N = Male fastener with large shoulder used with large hole lugs (15/16" threaded holes)
F = Female fastener used with standard lug
H = Female fastener with hex broach used with standard lug
G = Female fastener with large shoulder used with large hole lugs (15/16" threaded holes)

CHARACTER #5 (optional Test Point)
N = No Test Point
T = Test point

CHARACTER #6 (kit type)
0 = R-800 only
1 = R-800 and loadbreak cap
2 = R-800, cable adapter and lug
3 = R-800, loadbreak cap, cable adapter and lug

R-800'S WITH 3/8" FASTENERS COME WITH DISPOSABLE HEX TOOL (P650DAT)

If Character #6 was selected as "2" or "3", proceed to character #7/#8 and #9/#10. Otherwise, leave these characters blank.

CHARACTER #7 & #8 (cable adapter sizes from Tables W1 or W3, depending on product)
"E" through "PQ" — use 1 or 2 digits as necessary

CHARACTER #9 & #10 (lug size from Table X, if applicable)
"7" through "30" — use 1, 2, or 3 digits as necessary

To order with Shield Adapter and/or Jacket Seal Kit, proceed to characters #11 and #12. Otherwise leave these characters blank.

CHARACTER #11 (cable shield adapter options from Table 1)
NONE
A = No cable shield adapter
NON-INSULATED TYPES
B = #6 AWG tinned-copper braid
D = #4 AWG tinned-copper braid
INSULATED TYPES
M = #6 AWG insulated jumper
P = #4 AWG insulated jumper

CHARACTER #12 (cable jacket seal options from Table 1)
B = Jacketing tape
C = Cold shrinkable sleeve for cable adapter sizes E through J
D = Cold shrinkable sleeve for cable adapter sizes K through PQ
E = Heat shrinkable sleeve for cable adapter sizes E through J
F = Heat shrinkable sleeve for cable adapter sizes K through PQ

**Example noted above: 600/200A, 25kV, male R-800 with no Test Point. Kit includes "LM" size Cable Adapter, Hex Tool, Lug size "22" with a #4 AWG tinned-copper braid and cold shrinkable jacket seal.*

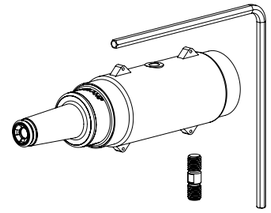
CONTACT THE FACTORY FOR SPECIALIZED KITS.

The Richards Bushing Extender R-800 is the only fully integrated 200A Loadbreak Tap and 600/900A Deadbreak Bushing Extender. Like many Richards Medium Voltage innovations, this product takes multiple components and combines them into a single factory molded and tested unit. This not only reduces installation cost and effort, but increases reliability and quality for our customers. The Bushing Extender R-800 is used to transition from an IEEE 386 600/900A Deadbreak interface to an IEEE 386 200A Loadbreak interface. Typical applications include:

- Installation of a 200A Loadbreak Elbow
- Installation of a 200A Surge Arrester
- Installation of an Insulating Cap, removed when testing the interface using approved voltage-indicators

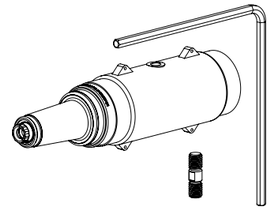
1. **600/900A MATING INTERFACE:** IEEE 386 Interface 11.
2. **THREADED STUD:** A standard threaded stud is hand-tightened into mating part before installing the Bushing Extender R-800.
3. **EPDM CONSTRUCTION:** Our peroxide-cured EPDM is formulated and produced completely in-house by our rubber production division. This material is durable, reliable and possesses ideal electrical properties for underground medium voltage applications.
4. **INTERNAL FASTENER:** To thread the Bushing Extender R-800 onto the mating interface, the installer simply rotates the internal fastener with an assembly tool (pictured) as opposed to rotating the entire EPDM housing. This makes installation as easy and simple as possible.
5. **SOLID INTEGRAL CONSTRUCTION:** The Bushing Extender R-800 is molded and tested as a solid, fully-integrated product. By reducing multiple components and installation steps to one, total installation cost is dramatically reduced. Further, by reducing the potential for installation errors (such as interface contamination), reliability is increased.
6. **SEATING INDICATOR:** The seating indicator provides visual confirmation of proper seating between the Bushing Extender R-800 and 200A Loadbreak mating part. The indicator is completely covered when seating is correct.
7. **200A LOADBREAK INTERFACE:** This IEEE 386 Interface 5 (15kV) or Interface 7 (25kV) mates with a 200A Loadbreak Insulating Cap, Surge Arrester, or Loadbreak Elbow. A 15kV interface is shown above.
8. **DISPOSABLE INSTALLATION TOOL:** Our innovative disposable installation tool comes with every kit. The tool is zone-annealed such that the wrench yields once the required 50-60 ft-lbs of torque are achieved. No torque wrench required!

Kit Options



Bushing Extender R-800, Hex Tool, and Stud

618BEF— 15kV



Bushing Extender R-800, Hex Tool, and Stud

628BEF— 25kV

Product Ratings

For your reference, IEEE 386 Voltage Ratings and Characteristics are provided in table form below. IEEE 386 requires that compliant connectors be qualified to the below levels; additionally, the standard defines a routine test that is performed 100% on manufactured components. This routine test requires 2 of 3 defined tests. Richards performs all 3 of the tests—Partial Discharge, AC Withstand and Impulse.

IEEE 386 Product Ratings		
Voltage Class, Phase-to-Phase	**15kV**	**25kV**
Maximum Operating Line-to-Ground/Line-to-Line Voltage	8.3/14.4kV	15.2/26.3kV
Corona Voltage Level – (partial discharge extinction voltage)	11kV	19kV
AC Withstand, 1 minute	34kV	40kV
DC Withstand, 15 minutes	53kV	78kV
Impulse-Withstand Voltage – (BIL)	95kV	125kV

Current (200A Loadbreak Tap)	
Continuous (copper-top or copper)	200A
Short-Time Current (copper-top or copper)	3.5kA, 3 s. and 10kA, 10c.

Qualification & Testing
Qualified to IEEE 386 latest revision
100% production tests: Partial Discharge, AC Withstand, & Impulse Withstand

As we mentioned, all our products exceed the routine production test requirements in IEEE 386. Further, many of our products were qualified to higher/more severe levels than the standard. For product specific information, visit our website or contact the factory.

The SSC Series from Richards Manufacturing is a cold shrink splicing system for use on medium voltage power cables through 35kV. Equipped with numerous advantages and features, the SSC Series is an innovative, high-performance splicing solution. The Splice is a hybrid design, incorporating the best features of cold shrink and push-on technologies. For example, our Splice provides the benefits of cold shrink—integral jacket seals, range taking capabilities—and yet it also can be furnished with a capacitive test point! Molded entirely from Richards' cold shrink EPDM materials, the Splice is built for durability in the toughest environments.

Product Ratings:

The SSC Series is fully qualified to IEEE Std 404. For your reference, the Cold Shrink Splice ratings are listed in the below table. Our Splices are 100% production tested as completely assembled, finished units. For more information about our qualification and routine testing, please contact the factory.

Product Ratings		
Voltage Class, Phase-to-Phase	**15/25/28kV**	**35kV**
Maximum Operating Line-to-Ground Voltage	8.7/14.4/15.6kV	20.2kV
Corona Voltage Level – (partial discharge extinction voltage)	24kV	30kV
AC Withstand, 1 minute	56V	69kV
Impulse-Withstand Voltage – (BIL)	160kV	200kV

Current Ratings	
Continuous Current	Cable Rated
Short-Time Current*	

*Maximum 40kA for 10 cycles per IEEE Std. 404

1. **EPDM CONSTRUCTION:** All layers of our splice are composed of EPDM, a proven material in underground electrical applications. Our oil-resistant cold shrink material was formulated in-house and is produced by our rubber manufacturing division. The durable semi-conductive jacket of the splice provides outstanding mechanical impact/tear resistance. The splice body is fully-shielded and passed industry qualification testing without any mesh or sock.

2. **CONNECTORS:** The shear bolts on this connector are precision-machined to shear off at the proper torque and below the surface. This eliminates the need for filing down protruding sharp edges, which can introduce contamination and cause failure. Our connector and splice housing were carefully engineered and tested to ensure they work together as a proven, solid *system*—no more guessing about whether a manufacturer's connector will perform adequately with another manufacturer's splice and vice versa.

3. **CENTERING GROOVE:** A common concern when installing a cold shrink splice is ensuring the splice is properly seated. Improper positioning of a splice can result in electrical failure. The centering groove on our splice prevents this issue by ensuring the splice body is properly seated. As it is pushed from the parked position to the center of the connector, the splice will reach a *positive stop* when correctly seated. The splice will stay in the center while the cable prep and removal of the cores is completed.

4. **CAPACITIVE TEST POINT:** Our splice has a fixed-diameter center which, amongst other advantages, allows us to offer a capacitive test point. Our splice is the only cold shrink solution that has this feature!

5. **EASY-TO-REMOVE CORE:** Other splices employ spiral holdouts or cores that rely on grease. Spiral holdouts can be difficult to remove and may prematurely collapse. Further, cores that rely on grease can become very difficult to remove if the grease hardens or migrates over time. Our greaseless cores rely on a simple yet effective design to provide extremely easy, consistent performance across a variety of installation environments.

6. **INTEGRAL JACKET SEAL:** Molded-in jacket seals make sealing the metallic shield/outer jacket incredibly easy. The jacket seals are deployed over supplied sealing mastic, forming a dependable barrier against water ingress.

7. **ENHANCED TESTING:** IEEE Std. 404 requires manufactures to perform two out of three defined tests on all splices. Richards goes above and beyond this requirement by performing ALL THREE production tests on every splice we mold.

SSC SERIES - COLD SHRINK SPLICE

Ordering Information

CHARACTER NO.	1	2	3	4	5	6	7	8	9	10	11	12			
SAMPLE PART NO.	6	3	S	S	C	N	P	2	3	B	2	3			

CHARACTER #1 (connector material)
6 = Aluminum
9 = Copper

CHARACTER #2 (voltage class)
2 = 5kV-28kV
3 = 35kV

CHARACTER #3, #4 & #5 (product family)
SSC = Straight Splice Cold Shrink

CHARACTER #6 (optional Test Point)
N = No Test Point
T = Test point

CHARACTER #7 (splice size— use Table Z1)
Size O-Q

CHARACTER #8 & #9 (connector sizes — use Table X)
"07" through "30"

CHARACTER #10 (shear bolt style)
B = 1" Hex Head Shear Bolt
H = 1" Hex Head Shear Bolt with internal broach

CHARACTER #11 & #12 (connector sizes — use Table X)
"07" through "30"

Various neutral configuration options are available. Please contact the factory for more information.

DISCONNECTABLE JOINTS

Overview

Richards Manufacturing's Disconnectable Joints are designed to provide maximum circuit flexibility in a small operating environment. These compact splices are available in I, Y, H, and U styles to accommodate many different cable configurations. Accessories are also available for circuit expansion, isolation, and grounding.

WE DO MORE TESTING THAN INDUSTRY STANDARDS REQUIRE. IEEE 386 REQUIRES EITHER IMPULSE OR AC WITHSTAND. WE RUN BOTH ON ALL OF OUR PRODUCTS.

Disconnectable Joint Ratings:

The Richards 15, 25 and 35kV Disconnectable Joints were designed and validated against the following industry standards:

- IEEE Std. 386: For Separable Insulated Connector Systems
- IEEE Std. 404: For Cable Joints
- IEEE Std. 592: For Exposed Semiconducting Shields

RICHARDS OFFERS ALL COPPER 900A JOINTS

For your reference, IEEE 386 Voltage Ratings and Characteristics are provided in table form below. IEEE 386 requires that compliant connectors be qualified to the below levels; additionally, the standard defines a routine test that is performed 100% on manufactured components. This routine test requires 2 of 3 defined tests. Richards performs all 3 of the tests—Partial Discharge, AC Withstand and Impulse.

IEEE 386 Product Ratings			
Voltage Class, Phase-to-Phase	**15kV**	**25kV**	**35kV**
Maximum Operating Line-to-Ground/Line-to-Line Voltage	8.3/14.4kV	15.2/26.3kV	21.1/36.6kV
Corona Voltage Level – (partial discharge extinction voltage)	11kV	19kV	26kV
AC Withstand, 1 minute	34kV	40kV	50kV
DC Withstand, 15 minutes	53kV	78kV	103kV
Impulse-Withstand Voltage – (BIL)	95kV	125kV	150kV

Continuous Current	
Aluminum	600A
Copper	900A

Short-Time Current	
Aluminum	25kA, 10c. and 10kA, 3s
Copper	40kA, 10c. and 10kA, 3s

As we mentioned, all our products exceed the routine production test requirements in IEEE 386. Further, many of our products were qualified to higher/more severe levels than the standard. For product specific information, visit our website or contact the factory.

I Restraint

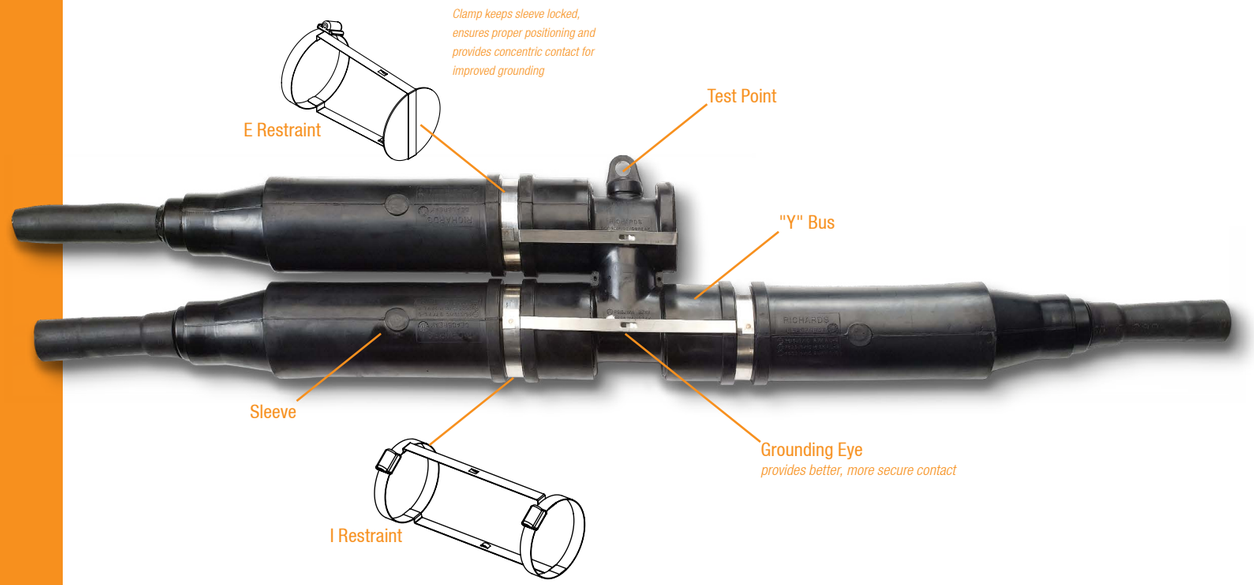
E Restraint

Richards Sleeve Restraints give you the extra security and peace of mind you need for sleeves installed in extreme environments (such as excessive heat from overloaded joints, or cables suspected of having water in the strands, which can increase internal pressure) or very demanding locations (tight vaults, for example, where cables need to be bent to fit).

- **ADDED SECURITY** for our joints in especially demanding environments
- **GUARANTEES** proper sleeve positioning — the Sleeve Restraint cannot be installed until sleeves are fully seated
- Provides **BETTER GROUNDING CONNECTION**

Our Sleeve Restraint locks sleeves in place — ensuring the joint remains tightly together and minimizing the probability of failures in any situation.

Restraints are available as an add-on with Joint Kits. See 'I-Joint', 'Y-Joint', 'H-Joint' and 'U-Joint' pages for ordering options.

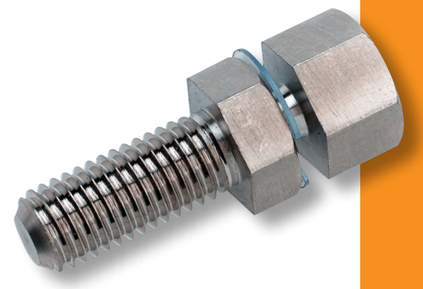


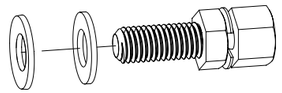
Sleeve Restraint Sizing	
Configuration	**Kit**
"I"	(1) "I" Restraint
"Y"	(1) "I" Restraint (1) "E" Restraint
"H"	(2) "I" Restraints
"U"	(2) "E" Restraints

Barrier Shear Bolt

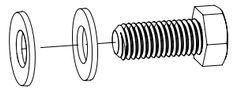
The new Barrier Bolt from Richards Manufacturing — Disconnectable Joints made easy.

- Barrier head prevents assembly of sleeve until bolt is fully torqued
- Bolt is designed to shear at 50-60 ft-lbs — no need for a torque wrench
- Standard hex bolt remains for easy removal and disconnectability





Barrier Shear Bolts with Standard Washer and Belleville Washer



Standard Bolts with Standard Washer and Belleville Washer

Spiking Stem

The Spiking Stem is a special accessory designed for use with Disconnectable Splices. For utilities that "spike" to verify a circuit is de-energized, this accessory makes the process simple and cost effective. As opposed to preparing a piece of cable and affixing a live-end cap, the Spiking Stem comes with everything pre-molded and a compression lug crimped on the end. The lug is bolted to the bus of a Disconnectable Splice—just the same as normal cable connections are attached to the bus. The Spiking Stem protrudes only a small length from the end of the Sleeve, preserving the compact, low-profile nature of the Disconnectable Splice. Simply setup a custom kit with this Spiking Stem included with your Disconnectable Joints and everything you need will come in one convenient package!

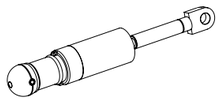
Spiking Stem Assembly

Product Features

- Saves time and effort when spiking cable
- Low profile, compact design
- Pre-crimped lug for easy installation
- Compatible with all Disconnectable Splices—no special bus required!

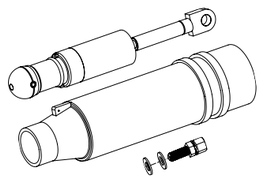

Cutaway of Sleeve with Spiking Stem installed

Kit Options



Spiking Stem Assembly

92DSS0 — 15/25kV
93DSS0 — 35kV



Spiking Stem Assembly, Sleeve, Standard Bolt Pack and Grease

92DSS1 — 15/25kV
93DSS1 — 35kV

Spiking Stem Assembly, Sleeve, Barrier Bolt Pack and Grease

92DSSB1 — 15/25kV
93DSSB1 — 35kV

Cold Shrink Sleeve

The JSCS Series Cold Shrink Sleeve is a major breakthrough in Disconnectable Joint technology. This range-taking design significantly eases installation and eliminates the need for several components. The JSCS Series is molded from Richards' Cold Shrink EPDM formula which is manufactured by our rubber production division. Equipped with a rugged, oil-resistant EPDM exterior, the Cold Shrink Sleeve is built to last in the toughest environments. Available in 15/25/28kV and 35kV, the JSCS is 100% compatible with existing Disconnectable Joint interfaces and was designed and validated against the following industry standards:

- IEEE Std. 386: For Separable Insulated Connector Systems
- IEEE Std. 404: For Cable Joints


Cold Shrink Sleeve

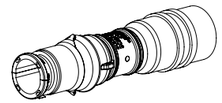

Compatible with Sleeve Restraints and Barrier Bolts!

Product Features

- Eliminates Cable Adapter and Retaining Ring
- 100% EPDM Composition
- Oil-Resistant Outer Jacket
- Short, Easy-to-remove, Greaseless Core Design
- Range-Taking
- Integral Jacket Seal
- Fully Shielded and Submersible

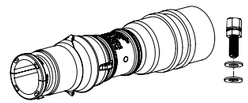

Cold Shrink Sleeve installed

Kit Options



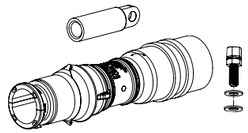
Cold Shrink Sleeve

P625JSCSZ — 15/25kV
P635JSCSZ — 35kV



Cold Shrink Sleeve and Barrier Bolt Pack

P625JSCS1Z — 15/25kV
P635JSCS1Z — 35kV



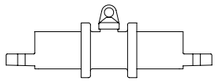
Cold Shrink Sleeve, Barrier Bolt Pack and Aluminum Lug

P625JSCS2ZX — 15/25kV
P635JSCS2ZX — 35kV

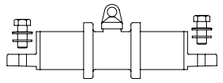
Cold Shrink Sleeve, Barrier Bolt Pack and Copper Lug

P925JSCS2ZX — 15/25kV
P935JSCS2ZX — 35kV

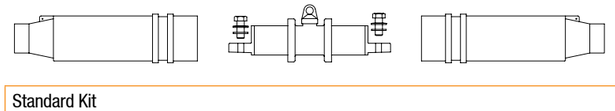
Use Table Z2 to select "Z". Use Table X to select "X".



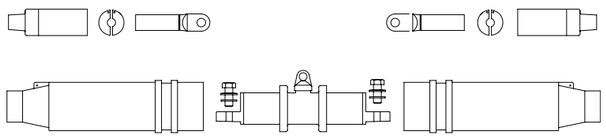
	I Bus	
	15kV/25kV	35kV
I-Bus only	P625JI0	P635JI0



	I Bus, Grease and Bolts	
	15kV/25kV	35kV
Standard Kit	P625JI1	P635JI1
Kit with Barrier Shear Bolts	P625JIB1	P635JIB1
Kit with Sleeve Restraints	P625JIR1	P635JIR1
Kit with Barrier Shear Bolts and Sleeve Restraints	P625JIA1	P635JIA1

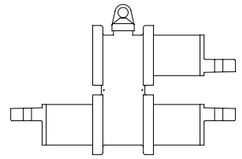


	I Bus, 2 Sleeves, Grease and Bolts	
	15kV/25kV	35kV
Standard Kit	P625JI2	P635JI2
Kit with Barrier Shear Bolts	P625JIB2	P635JIB2
Kit with Sleeve Restraints	P625JIR2	P635JIR2
Kit with Barrier Shear Bolts and Sleeve Restraints	P625JIA2	P635JIA2
Kit with Cold Shrink Sleeves, Barrier Shear Bolts, and Sleeve Restraints	P625JIA2SZ	P635JIA2SZ

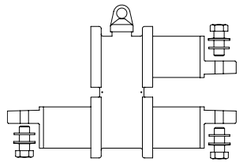


	I Bus, 2 Sleeves, 2 Cable Adapters, 2 Lugs, 2 Retaining Rings, Grease and Bolts	
	15kV/25kV	35kV
Standard Kit	P625JI3WX	P635JI3WX
Kit with Barrier Shear Bolts	P625JIB3WX	P635JIB3WX
Kit with Sleeve Restraints	P625JIR3WX	P635JIR3WX
Kit with Barrier Shear Bolts and Sleeve Restraints	P625JIA3WX	P635JIA3WX
Kit with Cold Shrink Sleeves, Barrier Shear Bolts, and Sleeve Restraints*	P625JIA3SZX	P635JIA3SZX

Use Table W1 to select "W". Use Table X to select "X".
To order all copper joints, replace "6" with "9".
**For cold shrink only - Use Table Z2 to select "Z".*

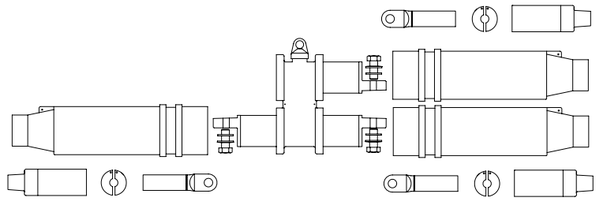


	Y Bus	
	15kV/25kV	35kV
Y-Bus only	P625JY0	P635JY0



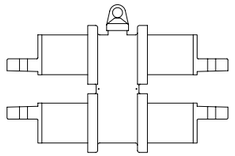
	Y Bus, Grease and Bolts	
	15kV/25kV	35kV
Standard Kit	P625JY1	P635JY1
Kit with Barrier Shear Bolts	P625JYB1	P635JYB1
Kit with Sleeve Restraints	P625JYR1	P635JYR1
Kit with Barrier Shear Bolts and Sleeve Restraints	P625JYA1	P635JYA1

	Y Bus, 3 Sleeves, Grease and Bolts	
	15kV/25kV	35kV
Standard Kit	P625JY2	P635JY2
Kit with Barrier Shear Bolts	P625JYB2	P635JYB2
Kit with Sleeve Restraints	P625JYR2	P635JYR2
Kit with Barrier Shear Bolts and Sleeve Restraints	P625JYA2	P635JYA2
Kit with Cold Shrink Sleeves, Barrier Shear Bolts, and Sleeve Restraints	P625JYA2SZ	P635JYA2SZ

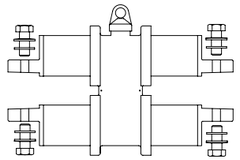


	Y Bus, 3 Sleeves, 3 Cable Adapters, 3 Lugs, 3 Retaining Rings, Grease and Bolts	
	15kV/25kV	35kV
Standard Kit	P625JY3WX	P635JY3WX
Kit with Barrier Shear Bolts	P625JYB3WX	P635JYB3WX
Kit with Sleeve Restraints	P625JYR3WX	P635JYR3WX
Kit with Barrier Shear Bolts and Sleeve Restraints	P625JYA3WX	P635JYA3WX
Kit with Cold Shrink Sleeves, Barrier Shear Bolts, and Sleeve Restraints*	P625JYA3SZX	P635JYA3SZX

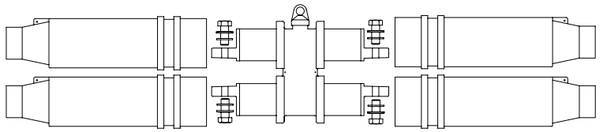
Use Table W1 to select "W". Use Table X to select "X".
To order all copper joints, replace "6" with "9".
**For cold shrink only - Use Table Z2 to select "Z".*



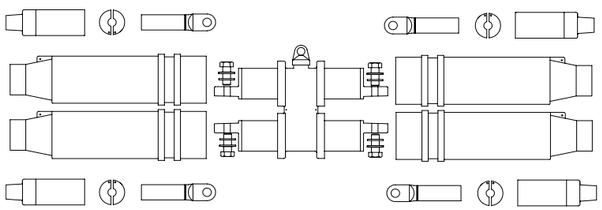
	H Bus	
	15kV/25kV	35kV
H-Bus only	P625JH0	P635JH0



	H Bus, Grease and Bolts	
	15kV/25kV	35kV
Standard Kit	P625JH1	P635JH1
Kit with Barrier Shear Bolts	P625JHB1	P635JHB1
Kit with Sleeve Restraints	P625JHR1	P635JHR1
Kit with Barrier Shear Bolts and Sleeve Restraints	P625JHA1	P635JHA1

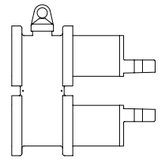


	H Bus, 4 Sleeves, Grease and Bolts	
	15kV/25kV	35kV
Standard Kit	P625JH2	P635JH2
Kit with Barrier Shear Bolts	P625JHB2	P635JHB2
Kit with Sleeve Restraints	P625JHR2	P635JHR2
Kit with Barrier Shear Bolts and Sleeve Restraints	P625JHA2	P635JHA2
Kit with Cold Shrink Sleeves, Barrier Shear Bolts, and Sleeve Restraints	P625JHA2SZ	P635JHA2SZ

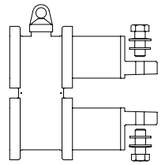


	H Bus, 4 Sleeves, 4 Cable Adapters, 4 Lugs, 4 Retaining Rings, Grease and Bolts	
	15kV/25kV	35kV
Standard Kit	P625JH3WX	P635JH3WX
Kit with Barrier Shear Bolts	P625JHB3WX	P635JHB3WX
Kit with Sleeve Restraints	P625JHR3WX	P635JHR3WX
Kit with Barrier Shear Bolts and Sleeve Restraints	P625JHA3WX	P635JHA3WX
Kit with Cold Shrink Sleeves, Barrier Shear Bolts, and Sleeve Restraints*	P625JHA3SZX	P635JHA3SZX

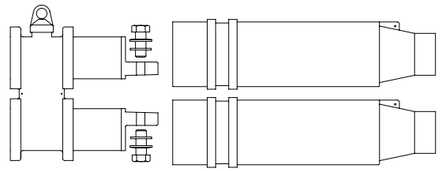
Use Table W1 to select "W". Use Table X to select "X".
To order all copper joints, replace "6" with "9".
**For cold shrink only - Use Table Z2 to select "Z".*



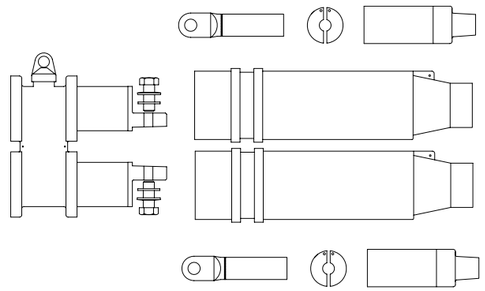
	U Bus	
	15kV/25kV	35kV
U Bus only	P625JU0	P635JU0



	U Bus, Grease and Bolts	
	15kV/25kV	35kV
Standard Kit	P625JU1	P635JU1
Kit with Barrier Shear Bolts	P625JUB1	P635JUB1
Kit with Sleeve Restraints	P625JUR1	P635JUR1
Kit with Barrier Shear Bolts and Sleeve Restraints	P625JUA1	P635JUA1



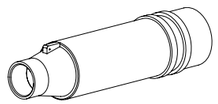
	U Bus, 2 Sleeves, Grease and Bolts	
	15kV/25kV	35kV
Standard Kit	P625JU2	P635JU2
Kit with Barrier Shear Bolts	P625JUB2	P635JUB2
Kit with Sleeve Restraints	P625JUR2	P635JUR2
Kit with Barrier Shear Bolts and Sleeve Restraints	P625JUA2	P635JUA2
Kit with Cold Shrink Sleeves, Barrier Shear Bolts, and Sleeve Restraints	P625JUA2SZ	P635JUA2SZ



	U Bus, 2 Sleeves, 2 Cable Adapters, 2 Lugs, 2 Retaining Rings, Grease and Bolts	
	15kV/25kV	35kV
Standard Kit	P625JU3WX	P635JU3WX
Kit with Barrier Shear Bolts	P625JUB3WX	P635JUB3WX
Kit with Sleeve Restraints	P625JUR3WX	P635JUR3WX
Kit with Barrier Shear Bolts and Sleeve Restraints	P625JUA3WX	P635JUA3WX
Kit with Cold Shrink Sleeves, Barrier Shear Bolts, and Sleeve Restraints*	P625JUA3SZX	P635JUA3SZX

Use Table W1 to select "W". Use Table X to select "X".
To order all copper joints, replace "6" with "9".
**For cold shrink only - Use Table Z2 to select "Z".*

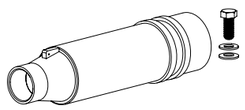
Silicone Grease
P6SL1 — (1) 5 gram packet
P6SL5 — (1) 5 oz. tube
P6SL100 — (100) 5 gram packets
P6SL500 — (100) 5 oz. tubes



Sleeve and Grease
P625JS0 — 15/25kV
P635JS0 — 35kV

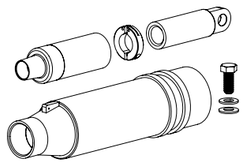
Sleeve with Test Point and Grease
P625JS0-TP — 15/25kV
P635JS0-TP — 35kV

To order a sleeve with 2 test points, contact the factory.



Sleeve, Standard Bolt, Washer and Grease
P625JS1 — 15/25kV
P635JS1 — 35kV

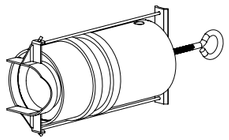
Sleeve, Barrier Bolt, Washer and Grease
P625JSB1 — 15/25kV
P635JSB1 — 35kV



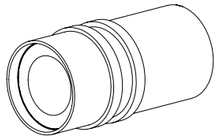
Sleeve, Cable Adapter, Lug, Retaining Ring, Standard Bolt, Washer and Grease
P625JS2WX — 15/25kV
P635JS2WX — 35kV

Sleeve, Cable Adapter, Lug, Retaining Ring, Barrier Bolt, Washer and Grease
P625JSB2WX — 15/25kV
P635JSB2WX — 35kV

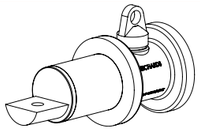
Use Table W1 to select "W". Use Table X to select "X".



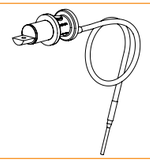
Joint Insulating Cap
P625JIC — 15/25kV
P635JIC — 35kV



Joint Insulating Cap without Bail
P625JIC-NB — 15/25kV
P635JIC-NB — 35kV

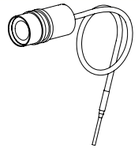


Joint Insulating Plug
P625JIP — 15/25kV
P635JIP — 35kV



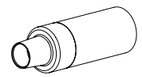
Joint Grounding Plug
P6JGP

Supplied with a 6 ft. 4/0 copper cable. Contact the factory if a different size or length is required.



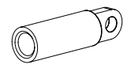
Joint Grounding Cap
P6JGC

Supplied with a 6 ft. 4/0 copper cable. Contact the factory if a different size or length is required.



Cable Adapter
P625CA-W — 15/25kV/35kV*

Use Table W1 to select "W".

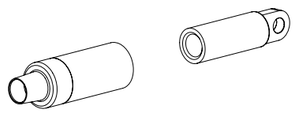


Aluminum Lug – For use on Copper or Aluminum cable.
P6AL-X — 15/25/35kV

Bi-Metal Lug "Copper Top" – Aluminum barrel with a Copper pad. For use on Copper or Aluminum cable.
P7ALCU-X — 15/25/35kV

Copper Lug – For use on Copper cable only.
P9CU-X — 15/25/35kV

Use Table X to select "X".



600A Elbow Subunit Kit with Aluminum Lug
P625SK1WX — 15/25/35kV*

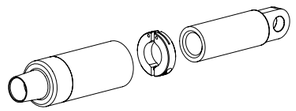
600A Elbow Subunit Kit with Bi-Metal Lug
P725SK1WX — 15/25/35kV*

600A Elbow Subunit Kit with Copper Lug
P925SK1WX — 15/25kV/35kV*

Use Table W1 to select "W". Use Table X to select "X".

Retaining Ring
P6JR-X — 15/25/35kV

Use Table X to select "X".

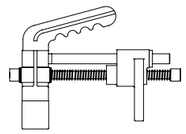


Sleeve Subunit Kit
P625SK2WX — 15/25/35kV*

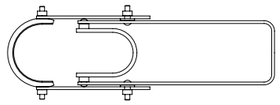
Sleeve Subunit Kit with Bi-Metal Lug
P725SK2WX — 15/25/35kV*

Sleeve Subunit Kit with Copper Lug
P925SK2WX — 15/25/35kV*

Use Table W1 to select "W". Use Table X to select "X".



Screw-Type Assembly Tool
P6JAT3



Lever-Type Assembly Tool
P6JAT1-1

**NOTE: 35kV Application is for Disconnectable Joints only. 35kV Elbows use different Cable Adapters*

- Available in Aluminum (600A) or Copper (900A)
- Available in 2-way, 3-way, and 4-way configurations
- Includes U-straps or Stainless Steel Bracket for mounting
- Comes in either 4” spacing or 6” spacing

WE DO MORE TESTING THAN INDUSTRY STANDARDS REQUIRE. IEEE 386 REQUIRES EITHER IMPULSE OR AC WITHSTAND. WE RUN BOTH ON ALL OF OUR PRODUCTS.

Richards 35kV 600/900A Junctions have been designed and tested per the following industry standards:

- IEEE Std 386: For Separable Insulated Connector Systems
- IEEE Std 592: For Exposed Semiconducting Shields

For your reference, IEEE 386 Voltage Ratings and Characteristics are provided in table form below. IEEE 386 requires that compliant connectors be qualified to the below levels; additionally, the standard defines a routine test that is performed 100% on manufactured components. This routine test requires 2 of 3 defined tests. Richards performs all 3 of the tests—Partial Discharge, AC Withstand and Impulse.

IEEE 386 Product Ratings			
Voltage Class, Phase-to-Phase	**15kV**	**25kV**	**35kV**
Maximum Operating Line-to-Ground/Line-to-Line Voltage	8.3/14.4kV	15.2/26.3kV	21.1/36.6kV
Corona Voltage Level – (partial discharge extinction voltage)	11kV	19kV	26kV
AC Withstand, 1 minute	34kV	40kV	50kV
DC Withstand, 15 minutes	53kV	78kV	103kV
Impulse-Withstand Voltage – (BIL)	95kV	125kV	150kV

Continuous Current	
Aluminum	600A
Copper	900A

Short-Time Current	
Aluminum	25kA, 10c.
Copper	40kA, 10c.

As we mentioned, all our products exceed the routine production test requirements in IEEE 386. Further, many of our products were qualified to higher/more severe levels than the standard. For product specific information, visit our website or contact the factory.

CHARACTER NO.	1	2	3	4	5	6	7	8	9						
SAMPLE PART NO.	P	6	3	5	J	D	6	3	U						

CHARACTER #1
P = Premolded

CHARACTER #2 (current rating)
6 = 600 Amp
9 = 900 Amp

CHARACTER #3 & #4 (voltage level)
25 = 15/25 kV
35 = 35 kV

CHARACTER #5 & #6 (interface type)
JD = Deadbreak
JB = Bracket Only

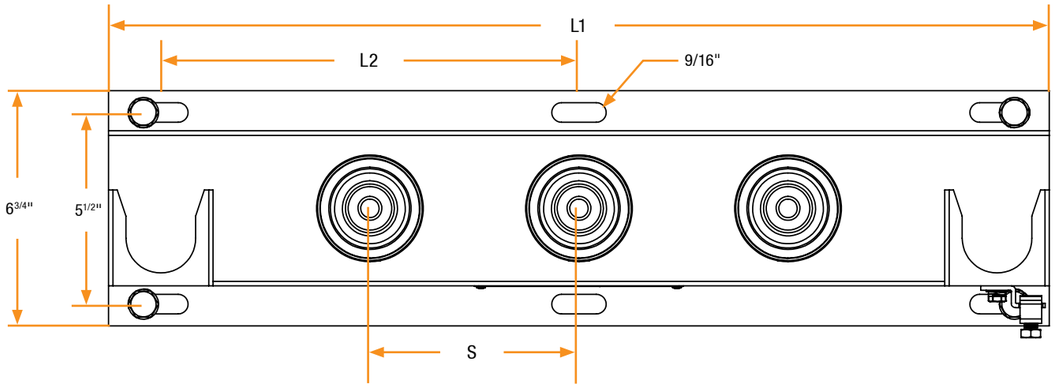
CHARACTER #7 (spacing)
4 = 4” Spacing
6 = 6” Spacing

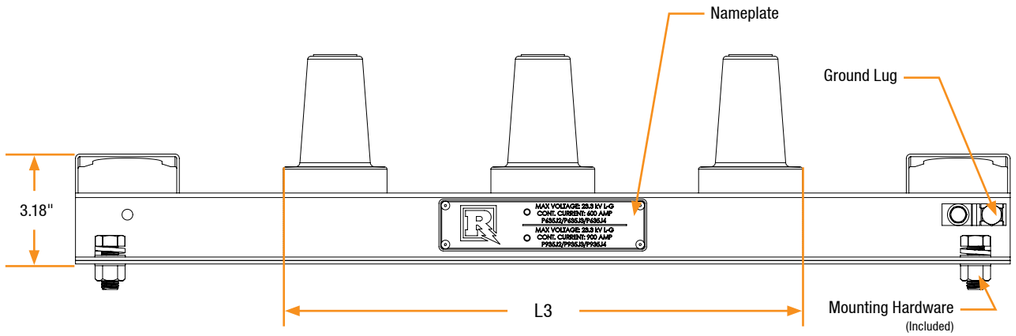
CHARACTER #8 (number of positions)
2 = 2 Position
3 = 3 Position
4 = 4 Position

CHARACTER #9 (mounting option)
U = U Straps
B = Bracket

**Example noted above: 600A 35kV 3-Position Deadbreak Junction with 6” spacing and U Straps*

Junction Dimensions





Junctions Sizing				
# OF POSITIONS	**SPACING (S)**	**L1**	**L2**	**L3**
2	4”	15”	6”	7”
	6”	21”	9”	9”
3	4”	19”	8”	11”
	6”	27”	12”	15”
4	4”	23”	10”	15”
	6”	33”	15”	21”

600A Deadbreak Bushings

Transformer and switchgear bushings are some of the most sensitive, delicate components in a medium voltage system. We take quality and safety seriously with all of our Medium Voltage products—and we refuse to cut corners when it comes to manufacturing. IEEE 386 specification requires apparatus bushings to be subjected to two out of three standardized tests — the mandatory partial discharge test, and either AC withstand or impulse test. Rather than run the bare minimum of 2/3 production tests as specified by IEEE 386, Richards runs all 3 tests—Partial Discharge, AC Withstand, and Impulse.

Richards offers 600A Deadbreak Apparatus Bushings in 15/25kV and 35kV voltage classes in a variety of shank lengths. Please see the following information for details.

For your reference, IEEE 386 Voltage Ratings and Characteristics are provided in table form below. IEEE 386 requires that compliant connectors be qualified to the below levels; additionally, the standard defines a routine test that is performed 100% on manufactured components. This routine test requires 2 of 3 defined tests. Richards performs all 3 of the tests—Partial Discharge, AC Withstand and Impulse.

IEEE 386 Product Ratings			
Voltage Class, Phase-to-Phase	**15kV**	**25kV**	**35kV**
Maximum Operating Line-to-Ground Voltage	8.3/14.4kV	15.2/26.3kV	21.1/36.6kV
Corona Voltage Level – (partial discharge extinction voltage)	11kV	19kV	26kV
AC Withstand, 1 minute	34kV	40kV	50kV
DC Withstand, 15 minutes	53kV	78kV	103kV
Impulse-Withstand Voltage – (BIL)	95kV	125kV	150kV

As we mentioned, all our products exceed the routine production test requirements in IEEE 386. Further, many of our products were qualified to higher/more severe levels than the standard. For product specific information, visit our website or contact the factory.

All 600A Deadbreak Bushings have been designed and tested per the following industry standards:

- IEEE Std 386: For Separable Insulated Connector Systems

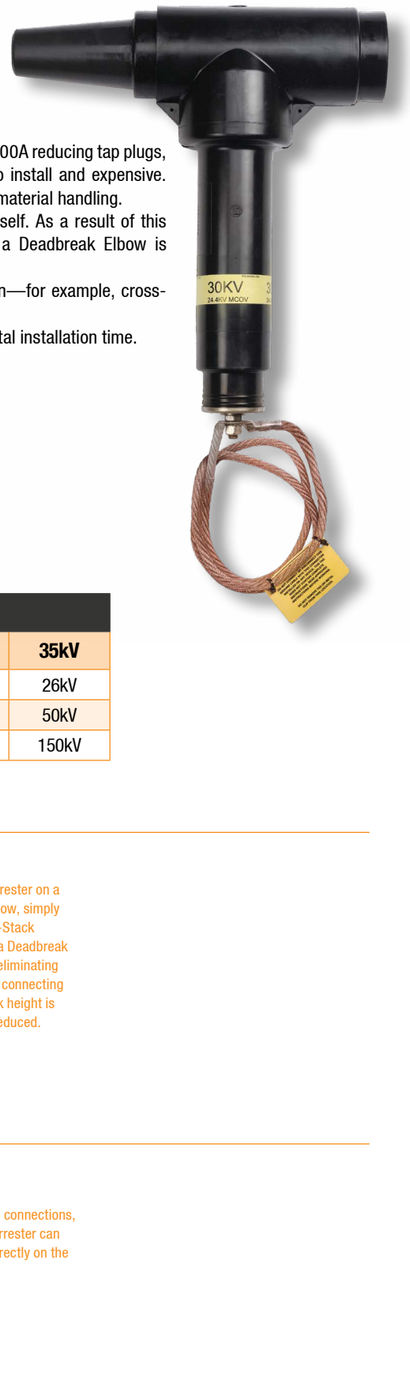
WE DO MORE TESTING THAN INDUSTRY STANDARDS REQUIRE. IEEE 386 REQUIRES EITHER IMPULSE OR AC WITHSTAND. WE RUN BOTH ON ALL OF OUR PRODUCTS.

Bushings Sizing						
Part Number	P625AB-3	P625AB-9	P625AB-12	P635AB-3	P635AB-9	P635AB-12
Shank Length in Inches	2 15/16	8 9/16	12	2 15/16	8 9/16	12
Voltage Class	15/25kV	15/25kV	15/25kV	35kV	35kV	35kV

**Add -S to the end of the part number to have an installed stud.*

600A 35kV R-STACK ARRESTER

Overview



Richards' innovative 35kV R-Stack Surge Arrester is an ultra-efficient way to protect underground cables/equipment from harmful over-voltages. Our Arrester is equipped with gapless Metal Oxide Varistor (MOV) technology, and assembled within a fully-shielded, submersible EPDM housing. By utilizing a Deadbreak R-Stack Elbow housing, several critical advantages are afforded:

- The R-Stack Arrester eliminates the need for Loadbreak surge arresters, 600A to 200A reducing tap plugs, connecting plugs, and bushing extenders. These components can be difficult to install and expensive. Additionally, having fewer required line items simplifies procurement and on-site material handling.
- The R-Stack Arrester has a male Deadbreak interface molded into the Elbow itself. As a result of this integral design, the overall stack height of an R-Stack Arrester installed on a Deadbreak Elbow is significantly shorter than other configurations on the market.
- Having fewer components/interfaces reduces the chance of improper installation—for example, cross-threading or contamination.
- Installing fewer components simplifies assembly procedures and cuts down on total installation time.

Testing

Richards 35kV 600A Arresters have been designed and tested per the following industry standards and are 100% production-tested as follows:

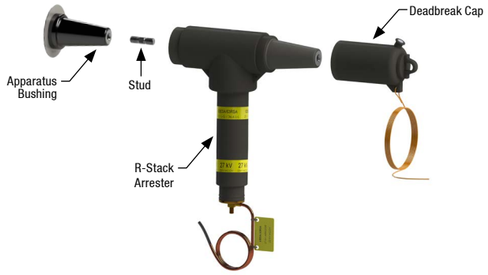
- IEEE Std 386:
  For Separable Insulated Connector Systems
- IEEE Std C62.11:
  For Metal Oxide Surge Arresters for AC Power Circuits

IEEE 386 Product Ratings	
Voltage Class, Phase-to-Phase	**35kV**
Corona Voltage Level – (partial discharge extinction voltage)	26kV
AC Withstand, 1 minute	50kV
Impulse-Withstand Voltage – (BIL)	150kV

Configuration 1: Arrester Stacked on Elbow

To stack an arrester on a deadbreak elbow, simply combine an R-Stack Arrester with a Deadbreak Elbow kit. By eliminating the need for a connecting plug, the stack height is significantly reduced.

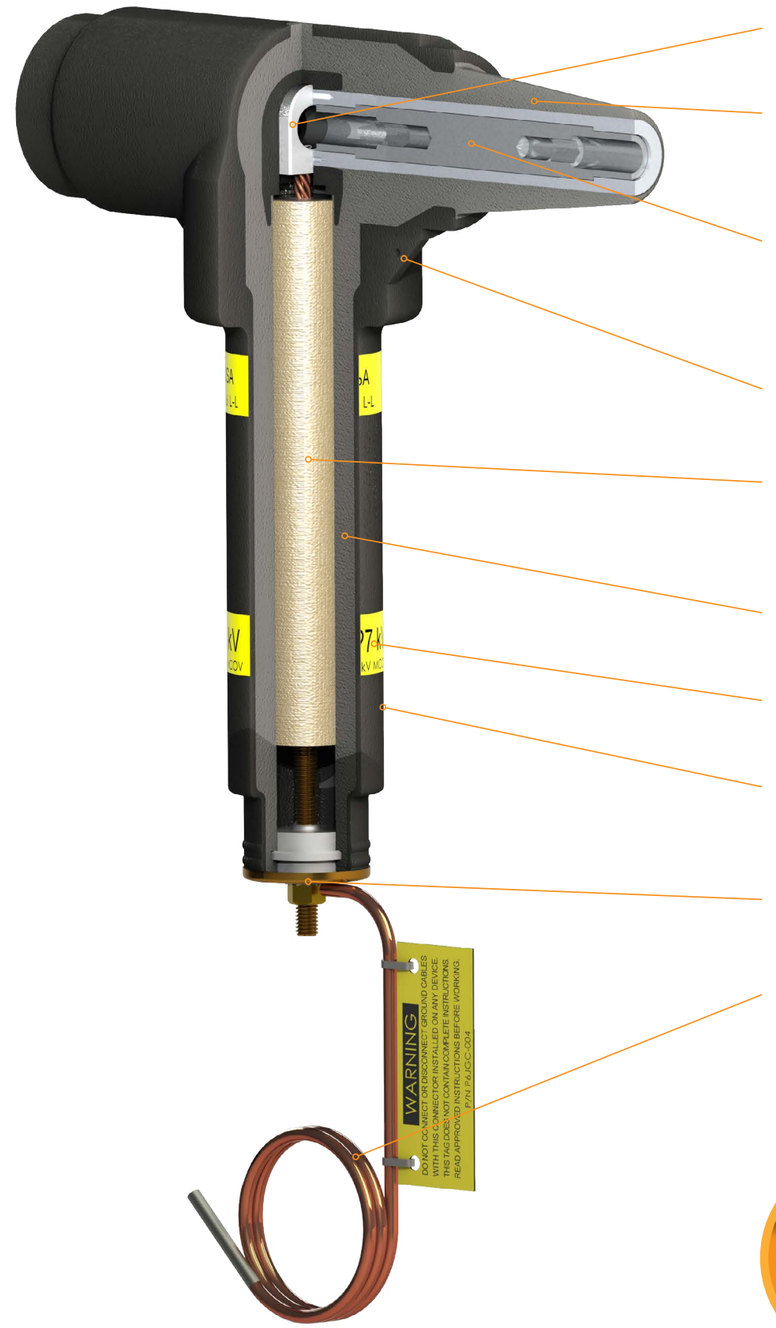
Configuration 2: Arrester Stacked on Bushing



For end of line connections, the R-Stack Arrester can be installed directly on the bushing.

600A 35kV R-STACK ARRESTER

Product Features



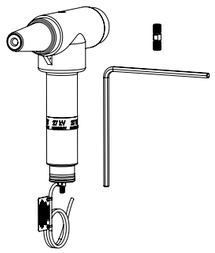
1. **600A CONTACT:** All-copper 600A Lug simulator acts like the spade of a 600A Lug to provide solid electrical contact.
2. **R-STACK 35kV 600A DEADBREAK MALE INTERFACE:** Rather than installing a connecting plug in the field, the R-Stack Arrester comes with this male interface molded directly into the elbow body.
3. **R-STACK FASTENER:** The R-Stack Fastener rotates in place, threading together with mating components. This unique fastener allows the R-Stack Arrester to be installed in either of the configurations shown on the previous page.
4. **DRAIN WIRE GROUNDING EYE:** Grounding eye provides a secure location to affix drain wires to the semi-conductive outer jacket.
5. **METAL OXIDE VARISTOR (MOV) DISK COLUMN:** The disk column assembly consists of MOV disks stacked together and wrapped in fiber. This gapless design ensures consistent and reliable performance.
6. **EPDM INSULATION:** The same high-quality rubber insulation that is found in all Richards medium voltage cable accessories.
7. **ARRESTER IDENTIFICATION LABEL:** Clearly visible yellow label indicates arrestor rating and MCOV.
8. **SEMI-CONDUCTIVE JACKET:** This semi-conductive peroxide-cured EPDM rubber jacket ensures compliance with IEEE Std 592: Exposed Semiconducting Shields.
9. **BRASS CAP:** The brass cap provides a water-tight seal and robust contact for the copper ground lead.
10. **COPPER GROUND LEAD:** This 42" long #4 AWG copper braid — during arrester operation — provides a reliable path to system ground.

DISPOSABLE INSTALLATION TOOL

Our innovative disposable installation tool comes with every kit. The tool is zone-annealed such that the wrench yields once the required 50-60 ft-lbs of torque are achieved. No torque wrench required!

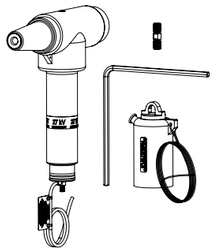
Richards MANUFACTURING CO. Richards Manufacturing, Inc. | 517 Lyons Avenue, Irvington, NJ 07111 | 973.371.1771 | www.Richards-Mfg.com MVC1215

R-Stack Arrester, Stud, and Installation Tool



Part Number	MCOV (kV)	Duty Cycle (kV)
63RSA0-27	22.0	27
63RSA0-30	24.4	30

R-Stack Arrester, Stud, Deadbreak Cap, and Installation Tool

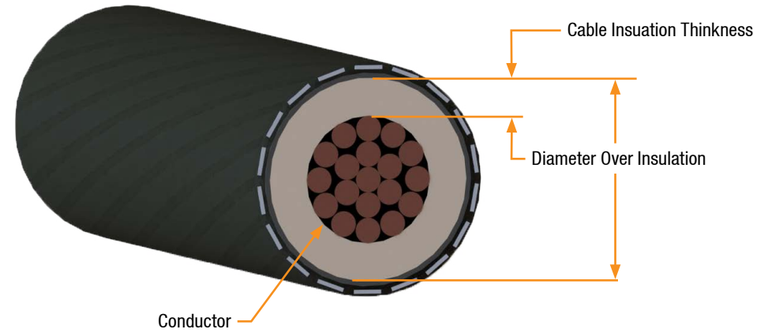


Part Number	MCOV (kV)	Duty Cycle (kV)
63RSA1-27	22.0	27
63RSA1-30	24.4	30

CONTACT THE FACTORY IF YOU HAVE INTEREST IN SURGE ARRESTERS WITH OTHER MCOV/DUTY CYCLE RATINGS.

PN__ __ __ **WX** **Suffx**

How to Determine W?



Any component or kit that contains a “W” in the part number is a “size-sensitive” product. These products—which include Loadbreak Elbows and Deadbreak Elbow kits with Cable Adapters—must be sized according to the cable they are to be installed with. Sizing these components properly is critical—an interference fit must be maintained over the cable insulation.

In order to correctly size these components, the diameter over the cable insulation must be accurately determined. The following are recommended methods for determining the diameter over insulation:

1. Contact the cable manufacturer for the design specifications of the cable being used. Locate the minimum diameter over insulation and record this number.

2. If specifications for the cable are unavailable, a measurement can be taken directly on the prepared cable being used for installation. When measuring the cable insulation, use a proper measurement device—such as “OD” tape. Avoid damaging the insulation in the process and clean the insulation properly afterwards. When using this method, keep in mind there are manufacturing tolerances in cable insulation and one length of cable may have a different insulation thickness than another. Thus, each prepared end of cable must be checked to ensure the correct size is being used.

3. If the cable conforms to AEIC or ICEA standards, refer to pages MV52 - MV54 and carefully determine the minimum diameter over insulation. There are different charts for stranded, compressed and compact conductors—be sure to refer to the correct chart .

Once the correct minimum diameter over insulation is determined:

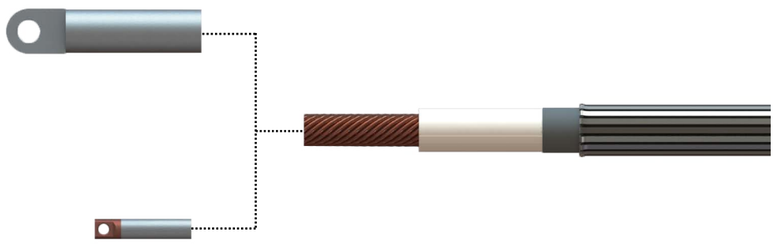
4. Locate the appropriate “Table W” for the component or kit being sized. Choose a size from “Table W” such that the minimum diameter listed in the table is less than the cable’s minimum diameter over insulation. You may choose the largest size that satisfies this criteria—this will make installation as easy as possible while ensuring an interfere fit.

5. Replace “W” in the part number with the selected letter size.

SELECTION GUIDE — Lug Connectors

PN__ __ __ | WX | Suffix

How to Determine X?



Richards Medium Voltage Deadbreak Elbows, Loadbreak Elbows and Disconnectable Joints require a lug connector to be installed on the cable conductor. In order to ensure reliable electrical and thermal performance, the lug style and size must be carefully determined based on the application. Any kit or lug part number that contains an “X” must be completed with the number of the appropriately sized lug.

Deadbreak Elbows and Disconnectable Joints:

P6AL-X 600A Aluminum Lugs are available for use on aluminum or copper conductors. These lugs come with oxide-inhibitor in the barrel of the lug. This compound breaks up any oxide that forms on the conductor strands and helps prevent future oxidation. For crimping information, refer to the crimp chart supplied with kit.

P7ALCU-X Bi-Metallic (copper top) Lugs are also available. These lugs have the same barrel as 600A Aluminum lugs but have a copper spade. This lug is a good option for customers who have aluminum cable but want an all-copper connection at the bushing interface. For crimping information, refer to the crimp chart supplied with kit.

P9CU-X 900A Copper Lugs can be ordered but must be used on copper conductors only. For crimping information, refer to the crimp chart supplied with kit.

200A Loadbreak Elbows:

Loadbreak Elbows also require a lug connector. This connector has a threaded hole to attach the Loadbreak probe. The majority of Loadbreak Elbow kits are furnished with a **P2ALCU-X Bi-Metallic Lug**. This lug has an aluminum barrel with a copper top. For crimping information, refer to the crimp chart supplied with kit.

P2CU-X All-Copper Lugs can also be ordered for Loadbreak Elbows if an all-copper connection is required. These lugs must be used on copper conductor only. For crimping information, refer to the crimp chart supplied with kit.

The following are recommended methods for determining the correct connector size:

1. Determine the conductor size (AWG or kcmil/MCM) from the cable design specification.
2. Identify the conductor type—stranded, compressed or compact
3. Identify whether the conductor is copper or aluminum

Once the above information has been determined:

4. Refer to “Table X”and select the appropriate lug size code.
5. Replace “X” in the part number with the selected lug size code.

SELECTION GUIDE — Shield Adapter & Jacket Seal Options

PN__ __ __ | WX | Suffix

Most Underground Medium Voltage Cable—whether it be XLPE or EPR insulation table—has a protective jacket covering the outer diameter of the cable. This jacket protects the semi-con shield and neutrals from damage. It also prevents corrosion of the neutrals.

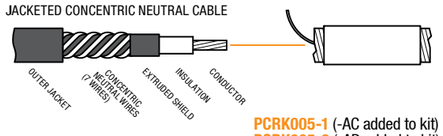
Once the jacket is cut back to terminate or splice the cable with a Medium Voltage Accessory, the jacket cut-back becomes a potential location for water ingress. Jacket seal and shield adapter kits provide the means to seal the jacket while still bringing the neutral connections outside the jacket for connection to ground.

The chart below illustrates suggested application and selection of these parts for the most popular cable constructions.

In order to order an appropriate kit refer to the chart below and “Table 1” and add the appropriate suffix to the end of the kit.

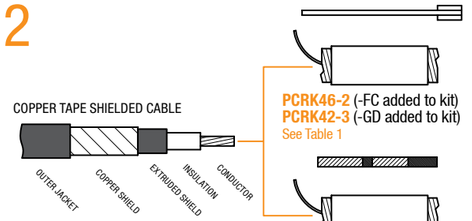
Note: Some Richards products come with an integral jacket seal and do not require a separate seal kit.

1



PCRK005-1 (-AC added to kit)
PCRK005-2 (-AD added to kit)
PCRK005-3 (-AG added to kit)
See Table 1

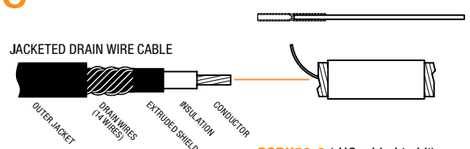
2



PCRK46-2 (-FC added to kit)
PCRK42-3 (-GD added to kit)
See Table 1

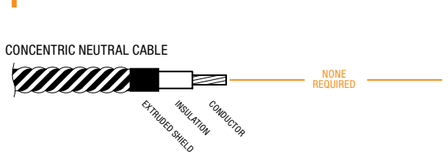
PCRK16-2 (-BC added to kit)
PCRK12-3 (-DD added to kit)
PCRK12-6 (-DG added to kit)
See Table 1

3

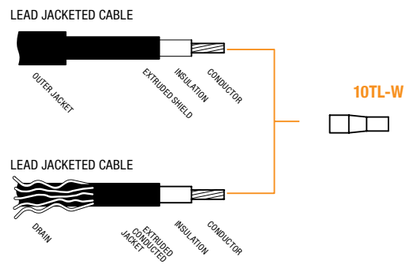


PCRK56-2 (-HC added to kit)
PCRK52-3 (-JD added to kit)
See Table 1

4



5



TABLES W1-W3

Cable Adapter Sizes

Table W1

For Use with the Following Part Families*	Cable Insulation Diameter (Inches)				"W"
	MINIMUM		MAXIMUM		
	IN	MM	IN	MM	
62LCN/LCT P625SRA P625CA/SK/JS 62CBN/CBT 62BJN/BJT 62LJN/LJT 618MN/MT/FN/FT 628MN/MT/FN/FT 62HFE 61ETPT/ETPN P615JI/JY/JH/JU P625JI/JY/JH/JU P635JI/JY/JH/JU	.530	13.46	.675	17.15	E
	.640	16.26	.820	20.83	F
	.760	19.30	.950	24.13	G
	.850	21.59	1.050	26.67	H
	.980	24.89	1.180	29.97	J
	1.090	27.69	1.310	33.27	K
	1.180	29.97	1.465	37.21	L
	1.280	32.51	1.430	36.32	LM
	1.370	34.80	1.630	41.40	M
	1.480	37.59	1.700	43.18	MN
	1.515	38.48	1.780	45.21	N
	1.665	42.29	1.785	45.34	PA
	1.725	43.82	1.935	49.15	P
	1.795	45.59	1.935	49.15	PQ

Table W2

For Use with the Following Part Families*	Cable Insulation Diameter (Inches)				"W"
	MINIMUM		MAXIMUM		
	IN	MM	IN	MM	
21LBN/LBT	.575	14.61	.740	18.80	A
	.635	16.13	.905	20.69	B
	.830	21.08	1.060	26.92	C
	.930	23.62	1.220	30.99	D

Table W3

For Use with the Following Part Families*	Cable Insulation Diameter (Inches)				"W"
	MINIMUM		MAXIMUM		
	IN	MM	IN	MM	
63LCN/LCT P635CA/SK1 63CBN/CBT 63BJN/BJT 63LJN/LJT	.850	21.59	1.050	26.67	H
	.980	24.89	1.180	29.97	J
	1.090	27.69	1.310	33.27	K
	1.180	29.97	1.465	37.21	L
	1.280	32.51	1.430	36.32	LM
	1.370	34.80	1.630	41.40	M
	1.480	37.59	1.700	43.18	MN
	1.515	38.48	1.780	45.21	N
	1.725	43.82	1.935	49.15	P
	1.900	48.26	2.120	53.85	Q

**Copper Top and 900A Copper versions of these kits are not listed but apply*

TABLES Z1-Z2

Cold Shrink Sizes

Table Z1 — SSC Series

Size	Min Cable Insulation Diameter	Max Cable Insulation Diameter
0	0.725"	1.096"
P	0.990"	1.286"
Q	1.268"	1.825"

Table Z2 — JSCS Series

Size	Min Cable Insulation Diameter	Max Cable Insulation Diameter
0	0.725"	1.346"
P	0.990"	1.536"
Q	1.268"	2.075"

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TABLE X

Cable Sizes

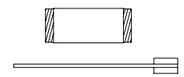
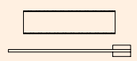
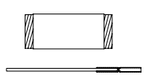
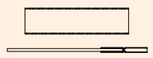
Table X				
Cable Size	Lug Sizing Chart			
	Stranded/Compressed Cable		Compact/Solid Cable	
	"X"	Competitor	"X"	Competitor
#4	5	200	4	190
#3	6	210	5	200
#2	7	220	6	210
#1	8	230	7	220
1/0 AWG	9	240	8	230
2/0 AWG	10	250	9	240
3/0 AWG	11	260	10	250
4/0 AWG	12	270	11	260
250 kcmil	13	280	12	270
300 kcmil	14	290	13	280
350 kcmil	15	300	14	290
400 kcmil	16	310	15	300
450 kcmil	17	320	16	310
500 kcmil	18	330	17	320
550 kcmil	20	340	18	320
600 kcmil	20	350	18	330
650 kcmil	211*	360	20	340
700 kcmil	22	370	20	350
750 kcmil	23	380	211*	360
800 kcmil	24	390	22	370
900 kcmil	26	400	23	380
1000 kcmil	28	410	26	400
1100 kcmil	285	—	26	—
1250 kcmil	29	440	contact factory	—
1500 kcmil	30	—	contact factory	—

Use '21' for copper P9CU-X Series

Notes:
1. 200A Loadbreak Elbows available up to 250kcmil Stranded/Compressed or 300kcmil Compact only.
2. 600A Deadbreak Elbows available starting at size '6'.

TABLE 1

Shield Adapter Kits

Table 1			
Part Number (If ordering separately)	'Kit Suffix' (If ordering with a kit)*	Description	Drawing
PCRK005-1	-AC	Cold Shrink Seal (for Cable Adapter Size E-J and all Loadbreak Elbow sizes)	
PCRK005-2	-AD	Cold Shrink Seal (for Cable Adapter Size K-PQ)	
PCRK005-3	-AG	Cold Shrink Seal (for 35kV Cables 1250kcmil and larger)	
PCRK001-1	-AE	Heat Shrink Seal (for Cable Adapter Size E-J and all Loadbreak Elbow sizes)	
PCRK001-2	-AF	Heat Shrink Seal (for Cable Adapter Size K-PQ)	
10TL-W	-TL-W	Tape/Lead Adapter	
PCRK16-2	-BC	Cold Shrink and #6 AWG Tinned Copper Braid w/ Constant Force Spring (for Cable Adapter Size E-J and all Loadbreak Elbow sizes)	
PCRK12-3	-DD	Cold Shrink and #4 AWG Tinned Copper Braid w/ Constant Force Spring (for Cable Adapter Size K-PQ)	
PCRK12-6	-DG	Cold Shrink and #4 AWG Tinned Copper Braid w/ Constant Force Spring (for 35kV Cables 1250kcmil and larger)	
PCRK16-4	-BE	Heat Shrink and #6 AWG Tinned Copper Braid w/ Constant Force Spring (for Cable Adapter Size E-J and all Loadbreak Elbow sizes)	
PCRK12-5	-DF	Heat Shrink and #4 AWG Tinned Copper Braid w/ Constant Force Spring (for Cable Adapter Size K-PQ)	
PCRK46-2	-FC	Cold Shrink and Copper Rod w/Constant Force Spring (for Cable Adapter Size E-J and all Loadbreak Elbow sizes)	
PCRK42-3	-GD	Cold Shrink and Copper Rod w/Constant Force Spring (for Cable Adapter Size K-PQ)	
PCRK46-4	-FE	Heat Shrink and Copper Rod w/Constant Force Spring (for Cable Adapter Size E-J and all Loadbreak Elbow sizes)	
PCRK42-5	-GF	Heat Shrink and Copper Rod w/Constant Force Spring (for Cable Adapter Size K-PQ)	
PCRK56-2	-HC	Cold Shrink and Ground Rod and Barrel (for Cable Adapter Size E-J and all Loadbreak Elbow sizes)	
PCRK52-3	-JD	Cold Shrink and Ground Rod and Barrel (for Cable Adapter Size K-PQ)	
PCRK56-4	-HE	Heat Shrink and Ground Rod and Barrel (for Cable Adapter Size E-J and all Loadbreak Elbow sizes)	
PCRK52-5	-JF	Heat Shrink and Ground Rod and Barrel (for Cable Adapter Size K-PQ)	

*Add the appropriate suffix shown to any kit part number to have that shield kit included.

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TABLE 2a – AEIC/ICEA CABLE SPECIFICATIONS

Calculated Dimensions – Stranded Conductor

Aluminum and Copper Conductors			15kV Cable (100% level - 0.175" Wall) Insulation Diameter - Inches				15kV Cable (133% level - 0.220" Wall) Insulation Diameter - Inches				25kV Cable (100% level - 0.260" Wall) Insulation Diameter - Inches				35kV Cable (100% level - 0.345" Wall) Insulation Diameter - Inches			
SIZE AWG/kcmil	No. of Strands	Inches	AEIC CS8-07		ICEA S-97-682		AEIC CS8-07		ICEA S-97-682		AEIC CS8-07		ICEA S-97-682		AEIC CS8-07		ICEA S-97-682	
			MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
#4	7	0.232	0.585	0.675	0.585	0.670	0.675	0.765	0.675	0.765	0.745	0.845	0.745	0.835	0.915	1.015	0.915	1.015
#3	7	0.260	0.615	0.700	0.615	0.695	0.705	0.790	0.705	0.790	0.775	0.870	0.775	0.865	0.945	1.040	0.945	1.045
#2 Solid	1	0.258	0.610	0.700	0.610	0.695	0.700	0.790	0.700	0.790	0.770	0.870	0.770	0.860	0.940	1.040	0.940	1.040
#2	7	0.292	0.645	0.735	0.645	0.730	0.735	0.825	0.735	0.825	0.805	0.905	0.805	0.895	0.975	1.075	0.975	1.075
#1 Solid	1	0.289	0.645	0.730	0.645	0.725	0.735	0.820	0.735	0.820	0.805	0.900	0.805	0.895	0.975	1.070	0.975	1.070
#1	7	0.332	0.685	0.775	0.685	0.770	0.775	0.865	0.775	0.865	0.845	0.945	0.845	0.935	1.015	1.115	1.015	1.115
1/0 Solid	1	0.325	0.680	0.765	0.680	0.760	0.770	0.855	0.770	0.855	0.840	0.935	0.840	0.930	1.010	1.105	1.010	1.110
1/0 AWG	19	0.373	0.725	0.815	0.725	0.810	0.815	0.905	0.815	0.905	0.885	0.985	0.885	0.980	1.055	1.155	1.055	1.155
2/0 AWG	19	0.418	0.775	0.860	0.775	0.855	0.865	0.950	0.865	0.950	0.935	1.030	0.935	1.025	1.105	1.200	1.105	1.200
3/0 AWG	19	0.470	0.825	0.915	0.825	0.905	0.915	1.005	0.915	1.000	0.985	1.085	0.985	1.075	1.155	1.255	1.155	1.255
4/0 AWG	19	0.528	0.880	0.970	0.880	0.965	0.970	1.060	0.970	1.060	1.040	1.140	1.040	1.135	1.210	1.310	1.210	1.310
250 kcmil	37	0.575	0.935	1.030	0.935	1.020	1.025	1.120	1.025	1.115	1.095	1.210	1.095	1.190	1.265	1.385	1.265	1.370
300 kcmil	37	0.630	0.990	1.085	0.990	1.075	1.080	1.175	1.080	1.170	1.150	1.265	1.150	1.245	1.320	1.440	1.320	1.425
350 kcmil	37	0.681	1.045	1.135	1.045	1.130	1.135	1.225	1.135	1.220	1.205	1.315	1.205	1.295	1.375	1.490	1.375	1.475
400 kcmil	37	0.728	1.090	1.185	1.090	1.175	1.180	1.275	1.180	1.270	1.250	1.365	1.250	1.345	1.420	1.540	1.420	1.520
450 kcmil	37	0.772	1.135	1.230	1.135	1.220	1.225	1.320	1.225	1.315	1.295	1.410	1.295	1.385	1.465	1.585	1.465	1.565
500 kcmil	37	0.813	1.175	1.270	1.175	1.260	1.265	1.360	1.265	1.355	1.335	1.450	1.335	1.430	1.505	1.625	1.505	1.605
550 kcmil	61	0.855	1.215	1.315	1.215	1.300	1.305	1.405	1.305	1.395	1.375	1.495	1.375	1.470	1.545	1.670	1.545	1.650
600 kcmil	61	0.893	1.265	1.360	1.265	1.350	1.355	1.450	1.355	1.445	1.425	1.540	1.425	1.520	1.595	1.715	1.595	1.695
650 kcmil	61	0.929	1.300	1.400	1.300	1.385	1.390	1.490	1.390	1.480	1.460	1.580	1.460	1.555	1.630	1.755	1.630	1.730
700 kcmil	61	0.964	1.335	1.435	1.335	1.420	1.425	1.525	1.425	1.515	1.495	1.615	1.495	1.590	1.665	1.790	1.665	1.765
750 kcmil	61	0.998	1.370	1.470	1.370	1.455	1.460	1.560	1.460	1.550	1.530	1.650	1.530	1.625	1.700	1.825	1.700	1.800
800 kcmil	61	1.031	1.400	1.500	1.400	1.490	1.490	1.590	1.490	1.580	1.560	1.680	1.560	1.655	1.730	1.855	1.730	1.835
900 kcmil	61	1.094	1.465	1.565	1.465	1.550	1.555	1.655	1.555	1.645	1.625	1.745	1.625	1.720	1.795	1.920	1.795	1.895
1000 kcmil	61	1.152	1.520	1.625	1.520	1.610	1.610	1.715	1.610	1.705	1.680	1.805	1.680	1.775	1.850	1.980	1.850	1.955
1250 kcmil	91	1.289	1.755	1.880	1.755	1.870	1.755	1.880	1.755	1.870	1.825	1.970	1.825	1.945	1.995	2.145	1.995	2.120
1500 kcmil	91	1.412	1.880	2.005	1.880	1.995	1.880	2.005	1.880	1.995	1.950	2.095	1.950	2.065	2.120	2.270	2.120	2.245

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TABLE 2b – AEIC/ICEA CABLE SPECIFICATIONS

Calculated Dimensions – Compressed Conductor

Aluminum and Copper Conductors			15kV Cable (100% level - 0.175" Wall) Insulation Diameter - Inches				15kV Cable (133% level - 0.220" Wall) Insulation Diameter - Inches				25kV Cable (100% level - 0.260" Wall) Insulation Diameter - Inches				35kV Cable (100% level - 0.345" Wall) Insulation Diameter - Inches			
SIZE AWG/kcmil	No. of Strands	Inches	AEIC CS8-07		ICEA S-97-682		AEIC CS8-07		ICEA S-97-682		AEIC CS8-07		ICEA S-97-682		AEIC CS8-07		ICEA S-97-682	
			MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
#4	7	0.225	0.580	0.665	0.580	0.660	0.670	0.755	0.670	0.755	0.740	0.835	0.740	0.830	0.910	1.005	0.910	1.010
#3	7	0.252	0.605	0.695	0.605	0.690	0.695	0.785	0.695	0.785	0.765	0.865	0.765	0.855	0.935	1.035	0.935	1.035
#2	7	0.283	0.635	0.725	0.635	0.720	0.725	0.815	0.725	0.815	0.795	0.895	0.795	0.890	0.965	1.065	0.965	1.065
#1	7	0.322	0.675	0.765	0.675	0.760	0.765	0.855	0.765	0.855	0.835	0.935	0.835	0.925	1.005	1.105	1.005	1.105
1/0 AWG	19	0.362	0.715	0.805	0.715	0.800	0.805	0.895	0.805	0.895	0.875	0.975	0.875	0.965	1.045	1.145	1.045	1.145
2/0 AWG	19	0.406	0.760	0.850	0.760	0.845	0.850	0.940	0.850	0.935	0.920	1.020	0.920	1.010	1.090	1.190	1.090	1.190
3/0 AWG	19	0.456	0.810	0.900	0.810	0.895	0.900	0.990	0.900	0.985	0.970	1.070	0.970	1.060	1.140	1.240	1.140	1.240
4/0 AWG	19	0.512	0.865	0.955	0.865	0.950	0.955	1.045	0.955	1.045	1.025	1.125	1.025	1.115	1.195	1.295	1.195	1.295
250 kcmil	37	0.558	0.920	1.015	0.920	1.005	1.010	1.105	1.010	1.100	1.080	1.195	1.080	1.175	1.250	1.370	1.250	1.350
300 kcmil	37	0.611	0.975	1.065	0.975	1.060	1.065	1.155	1.065	1.150	1.135	1.245	1.135	1.225	1.305	1.420	1.305	1.405
350 kcmil	37	0.661	1.025	1.115	1.025	1.110	1.115	1.205	1.115	1.200	1.185	1.295	1.185	1.275	1.355	1.470	1.355	1.455
400 kcmil	37	0.706	1.070	1.160	1.070	1.155	1.160	1.250	1.160	1.245	1.230	1.340	1.230	1.320	1.400	1.515	1.400	1.500
450 kcmil	37	0.749	1.110	1.205	1.110	1.195	1.200	1.295	1.200	1.290	1.270	1.385	1.270	1.365	1.440	1.560	1.440	1.540
500 kcmil	37	0.789	1.150	1.245	1.150	1.235	1.240	1.335	1.240	1.330	1.310	1.425	1.310	1.405	1.480	1.600	1.480	1.580
550 kcmil	61	0.829	1.190	1.285	1.190	1.275	1.280	1.375	1.280	1.370	1.350	1.465	1.350	1.445	1.520	1.640	1.520	1.620
600 kcmil	61	0.866	1.235	1.335	1.235	1.325	1.325	1.425	1.325	1.415	1.395	1.515	1.395	1.490	1.565	1.690	1.565	1.670
650 kcmil	61	0.901	1.270	1.370	1.270	1.360	1.360	1.460	1.360	1.450	1.430	1.550	1.430	1.525	1.600	1.725	1.600	1.705
700 kcmil	61	0.935	1.305	1.405	1.305	1.390	1.395	1.495	1.395	1.485	1.465	1.585	1.465	1.560	1.635	1.760	1.635	1.740
750 kcmil	61	0.968	1.340	1.440	1.340	1.425	1.430	1.530	1.430	1.520	1.500	1.620	1.500	1.595	1.670	1.795	1.670	1.770
800 kcmil	61	1.000	1.370	1.470	1.370	1.455	1.460	1.560	1.460	1.550	1.530	1.650	1.530	1.625	1.700	1.825	1.700	1.805
900 kcmil	61	1.061	1.430	1.530	1.430	1.520	1.520	1.620	1.520	1.610	1.590	1.710	1.590	1.685	1.760	1.885	1.760	1.865
1000 kcmil	61	1.117	1.485	1.590	1.485	1.575	1.575	1.680	1.575	1.670	1.645	1.770	1.645	1.740	1.815	1.945	1.815	1.920
1250 kcmil	91	1.251	1.720	1.845	1.720	1.830	1.720	1.845	1.720	1.830	1.790	1.935	1.790	1.905	1.960	2.110	1.960	2.085
1500 kcmil	91	1.370	1.840	1.965	1.840	1.950	1.840	1.965	1.840	1.950	1.910	2.055	1.910	2.025	2.080	2.230	2.080	2.205

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TABLE 2c – AEIC/ICEA CABLE SPECIFICATIONS

Calculated Dimensions – Compact Conductor

Aluminum and Copper Conductors			15kV Cable (100% level - 0.175" Wall) Insulation Diameter - Inches				15kV Cable (133% level - 0.220" Wall) Insulation Diameter - Inches				25kV Cable (100% level - 0.260" Wall) Insulation Diameter - Inches				35kV Cable (100% level - 0.345" Wall) Insulation Diameter - Inches			
SIZE AWG/kcmil	No. of Strands	Inches	AEIC CS8-07		ICEA S-97-682		AEIC CS8-07		ICEA S-97-682		AEIC CS8-07		ICEA S-97-682		AEIC CS8-07		ICEA S-97-682	
			MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
#4	7	0.213	0.565	0.650	0.565	0.650	0.655	0.740	0.655	0.745	0.725	0.820	0.725	0.815	0.895	0.990	0.895	0.995
#3	7	0.238	0.590	0.675	0.590	0.675	0.680	0.765	0.680	0.770	0.750	0.845	0.750	0.845	0.920	1.015	0.920	1.020
#2	7	0.268	0.620	0.710	0.620	0.705	0.710	0.800	0.710	0.800	0.780	0.880	0.780	0.875	0.950	1.050	0.950	1.050
#1	7	0.299	0.655	0.740	0.655	0.735	0.745	0.830	0.745	0.830	0.815	0.910	0.815	0.905	0.985	1.080	0.985	1.080
1/0 AWG	19	0.336	0.690	0.775	0.690	0.775	0.780	0.865	0.780	0.865	0.850	0.945	0.850	0.940	1.020	1.115	1.020	1.120
2/0 AWG	19	0.376	0.730	0.815	0.730	0.815	0.820	0.905	0.820	0.905	0.890	0.985	0.890	0.980	1.060	1.155	1.060	1.160
3/0 AWG	19	0.423	0.775	0.865	0.775	0.860	0.865	0.955	0.865	0.955	0.935	1.035	0.935	1.030	1.105	1.205	1.105	1.205
4/0 AWG	19	0.475	0.830	0.915	0.830	0.910	0.920	1.005	0.920	1.005	0.990	1.085	0.990	1.080	1.160	1.255	1.160	1.260
250 kcmil	37	0.520	0.880	0.970	0.880	0.965	0.970	1.060	0.970	1.060	1.040	1.150	1.040	1.135	1.210	1.325	1.210	1.315
300 kcmil	37	0.570	0.930	1.020	0.930	1.015	1.020	1.110	1.020	1.110	1.090	1.200	1.090	1.185	1.260	1.375	1.260	1.365
350 kcmil	37	0.616	0.980	1.065	0.980	1.065	1.070	1.155	1.070	1.155	1.140	1.245	1.140	1.230	1.310	1.420	1.310	1.410
400 kcmil	37	0.659	1.020	1.110	1.020	1.105	1.110	1.200	1.110	1.200	1.180	1.290	1.180	1.275	1.350	1.465	1.350	1.450
450 kcmil	37	0.700	1.060	1.150	1.060	1.145	1.150	1.240	1.150	1.240	1.220	1.330	1.220	1.315	1.390	1.505	1.390	1.495
500 kcmil	37	0.736	1.100	1.185	1.100	1.185	1.190	1.275	1.190	1.275	1.260	1.365	1.260	1.350	1.430	1.540	1.430	1.530
550 kcmil	61	0.775	1.135	1.225	1.135	1.220	1.225	1.315	1.225	1.315	1.295	1.405	1.295	1.390	1.465	1.580	1.465	1.570
600 kcmil	61	0.813	1.185	1.275	1.185	1.270	1.275	1.365	1.275	1.365	1.345	1.455	1.345	1.440	1.515	1.630	1.515	1.615
650 kcmil	61	0.845	1.215	1.305	1.215	1.300	1.305	1.395	1.305	1.395	1.375	1.485	1.375	1.470	1.545	1.660	1.545	1.650
700 kcmil	61	0.877	1.245	1.340	1.245	1.335	1.335	1.430	1.335	1.430	1.405	1.520	1.405	1.500	1.575	1.695	1.575	1.680
750 kcmil	61	0.908	1.280	1.370	1.280	1.365	1.370	1.460	1.370	1.460	1.440	1.550	1.440	1.535	1.610	1.725	1.610	1.710
800 kcmil	61	0.938	1.310	1.400	1.310	1.395	1.400	1.490	1.400	1.490	1.470	1.580	1.470	1.565	1.640	1.755	1.640	1.740
900 kcmil	61	0.999	1.370	1.460	1.370	1.455	1.460	1.550	1.460	1.550	1.530	1.640	1.530	1.625	1.700	1.815	1.700	1.800
1000 kcmil	61	1.060	1.430	1.520	1.430	1.515	1.520	1.610	1.520	1.610	1.590	1.700	1.590	1.685	1.760	1.875	1.760	1.865
1250 kcmil																		
1500 kcmil																		

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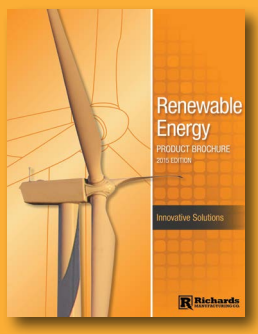

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