Table of Contents

Note: Users should independently evaluate the suitability of the product for their application. Before ordering, check with TE Connectivity for most current data.

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

Table of Contents (Continued)

Overview

TE heat-shrinkable molded parts, with adhesive coating, form a watertight seal, protecting cables and equipment from corrosion and mechanical abuse while providing excellent electrical insulating properties. Meeting requirements for most mass-transit, military, and commercial marine applications, Raychem brand molded parts include:

- SSC end caps, which provide optimum waterproofing and environmental protection for underwater, underground, or outdoor applications. The end caps are highly resistant to moisture, fungus, and weathering.
- Heat-shrinkable boots and transitions, which replace tapes, mold-in-place epoxies, and grease. These molded parts can be used for cable breakouts, transitions, and terminations. For example, they provide reliable sealing to specific altitudes on standard Navy cable jackets and on lead, steel, aluminum, copper, and most elastomeric insulation materials.

All of these molded parts fit a wide variety of applications.

To select the right part for your application, follow these steps:

- Select the necessary shape.
- Match the shape with the appropriate material.
- Select a compatible adhesive, if needed, to provide additional environmental protection. Adhesives come either preinstalled or as separate components (see Section 5).

Also available is an extensive line of adapters (see Section 6) and heat-shrinkable tubings (see Section 3) to further integrate and strengthen harness assemblies.

Whatever your application, TE molded parts almost always meet the performance characteristics you require, including operation in low- and high-temperature environments; mechanical strength; resistance to fluids, flame, and mechanical abuse; environmental sealing; and strain relief.

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

General Information

Bulbous Molded Parts

TE bulbous-shaped molded parts provide rugged mechanical and environmental protection, meet numerous specifications, and have been used successfully in military wire and cable harnesses for more than 30 years.

Most connector strain relief boots come in two versions:

- With an adapter lip molded into the “H” end, which locks into the groove on the backshell adapter (part number is identified with a “D” or “K”).
- Without the adapter lip (the boot may be installed directly on the rear of connector threads 12 mm [.472] long or longer). This part number is identified with an “A.”

Many other optional features are available, such as molding ports and drain holes. For other modifications and custom shapes, please contact TE.

Modifications

Certain variations of the standard shapes, such as shorter leg lengths or specific over expansions, are possible. Modifications must be requested prior to your order, for feasibility.

Molding Port Modifications (-00)

Some specifications call for potting the molded shape with sealant to provide additional protection from moisture. Most of the bulbous boots and transitions can be ordered with molding ports for this purpose.

Drain Hole Modification (-88)

Some specifications require drain holes in the molded part to provide an exit for condensation. Drain holes must be requested when you place your order.

Specials

Complete design, tooling, and production of custom molded shapes and special adaptations are also possible. Estimates are made upon request.

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

General Information (Continued)

Breakout Boots

Heavy-duty breakouts provide mechanical strain relief and environmental sealing for power cables where the cable jacket is cut back and conductors broken out.

These boots are used widely in ship building and meet the requirements of the following:

- Lloyd's Register of Shipping
- American Bureau of Shipping (ABS)
- DOD-STD-2003
- SAE-AS-81765/1

Cable End Caps

Heat-shrinkable end caps provide a reliable method of sealing power cables, pipes, conduit, and other cylindrical objects against corrosion and moisture penetration.

Slim-Line Molded Parts

With their low profile, these flexible molded parts conform to cables better and create less bulk at transition points and connectors than bulbous molded parts.

TE molded parts are available in a variety of slim-line shapes, including straight and right-angle boots as well as transitions. A small family of parts can provide a wide variety of expansions (under expansion, over expansion, cutoff). Modifications are easily provided.

Catalog 1654025
Revised 3-13

www.te.com

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

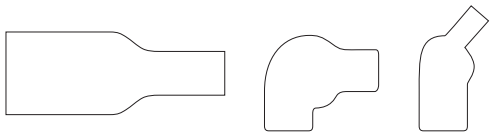
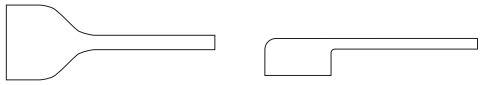
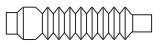
Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

Selection Tables

Boots

Application	Family Description	Typical Shapes
Lipped boots for use with a circular adapter	202D121 to 196 222D121 to 196 202K121 to 185 222K121 to 185 242W042 to 063	
Nonlipped boots for use directly on a circular connector	202A111 to 196 222A111 to 196	
Low-profile lipped boots for use with a circular adapter	202D211 to 299 222D211 to 299 202F211 to 274 222F211 to 285 202G211 to 253	
Lipped boots for use with a circular adapter	202D921 to 963 222D921 to 963	
Lipped boots with compressible design for use with a circular adapter	202C611 to 663 202G611 to 653	
Adapter boots for use with D-subminiature connectors	214A011 to 052 234A011 to 071 214A311 to 352 234A111 to 152 234A611 to 671	

Catalog 1654025
Revised 3-13

www.te.com

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

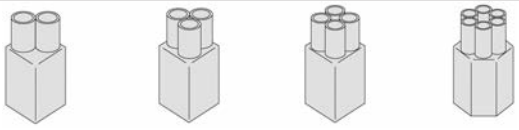
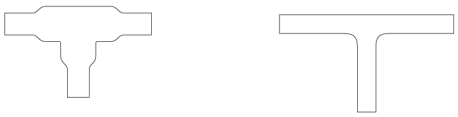
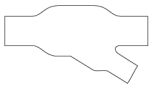
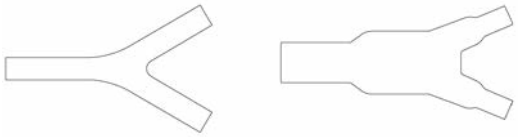
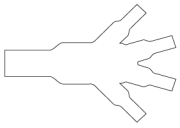
Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

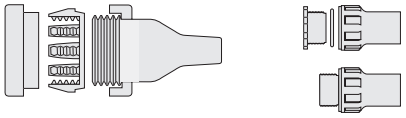
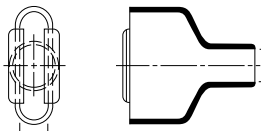
For additional support numbers please visit www.te.com

Selection Tables (Continued)

Transitions

Application	Family Description	Typical Shapes
Breakout Boots	SSB, T, F, 6S, 85	
"T" Transitions	301A011 to 048 301A511 to 514 322A112 to 158	
45° Transitions	342A012 to 058	
30° Transitions	362A014 to 114	
"Y" Transitions	381A301 to 304 382A012 to 046	
3:1 Transitions	462A011 to 060 462A421 to 424	
4:1 Transitions	562A011 to 067	

Shape Selection: Other Products

Application	Family Description	Typical Shapes
Feedthroughs	207W213 to 256 and CES	
D-Subminiatures	214A011 to 052	
End Caps	101A011 to 094 and SSC	 101A Series SSC Series

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

Part Numbering System

2 0 2D 1 21 - 3 - 01 / 42 - 0

Color (0 = Black). Other colors factory quote

Optional Adhesive* Coating (precoated in factory)

Modification (available on request)
- Over expansion
- Cutoff
- Molding ports (injection and vent)

Material**

Size of Part in Family: From 11 (= smallest) to 99 (= largest)

Family Number

Type of Part:
A = Nonlipped boots/transitions
C = Lipped boot
D = Lipped boot
F = Lipped boot
K = Lipped boot
S = Rayaten
G = Lipped boot
W = Other shapes

Angle of Part:

All openings	One opening
Circular	**Noncircular**
0 = Straight	**0 = Straight**
2 = 90˚	3 = 90˚
4 = 45˚	5 = 45˚
6 = 30˚	7 = 30˚

Number of openings in the part

*See section 5 for details on adhesives.
**See page 4-24 for details on materials.

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

Visual Selection Guide

Boots: Circular Connectors — Lipped

Lipped Boots for Use With an Adapter

As supplied

After recovery

202D121 through 196 | 202D211 through 299 | 202D921 through 963 | 202K121 through 185

As supplied

After recovery

222B012 through 063 | 222B112 and 123 | 222D121 through 196 | 222D211 through 299

As supplied

After recovery

222D921 through 963 | 222K121 through 185 | 242 A312 and 322

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

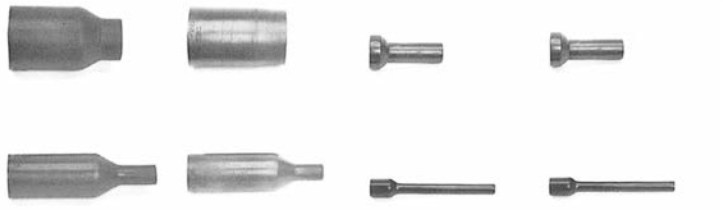
Visual Selection Guide (Continued)

Boots: Circular Connectors — Nonlipped

Nonlipped Boots for Direct Attachment on Connectors

As supplied

After recovery



202A011 through 096 | 202A111 through 196 | 202A212 through 264 | 202A312 through 364

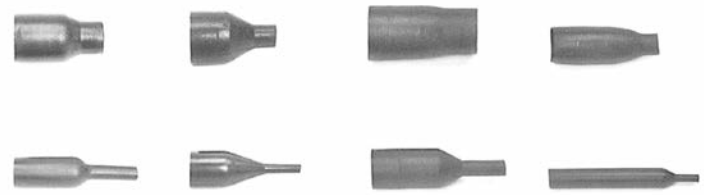
As supplied

After recovery

202A915 | 202A921 | 203A021

As supplied

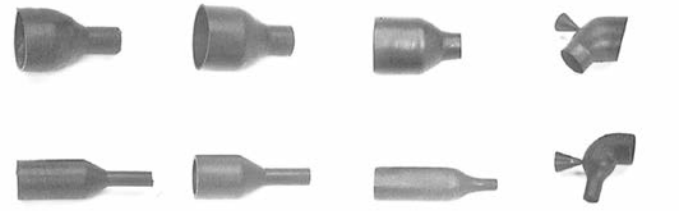
After recovery



203A211 | 203A312 | 204A011 | 204A311

As supplied

After recovery



204A511 | 204A612 | 208A011 through 086 | 222A011

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

Visual Selection Guide (Continued)

Boots: Circular Connectors — Nonlipped (Continued)

Nonlipped Boots for Direct Attachment on Connectors

As supplied

After recovery

222A111 through 196 | 222A213 through 255 | 234A313 through 355 | 223A213 through 233 | 224A012

As supplied

After recovery

226A075 | 228A011 through 097 | 242A142 | 243A012 & 022 | 246A166

As supplied

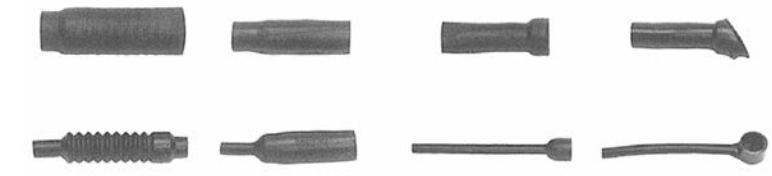
After recovery

202B521 through 598

Boots: Circular Connectors–Slim-Line

As supplied

After recovery



202C611 through 633
202G621 through 653 | 202E334 through 346 | 202F211 through 274
202G211 through 253 | 222F211 through 285

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

Visual Selection Guide (Continued)

Boots: Rectangular Connectors

As supplied

After recovery

214A011 through 052 | 214A124 and 133 | 214A311 through 352

As supplied

After recovery

214A814

As supplied

After recovery

234A011 through 071 | 234A111 | 234A333 | 234A443

As supplied

After recovery

234B111

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

Visual Selection Guide (Continued)

Transitions: Bulbous

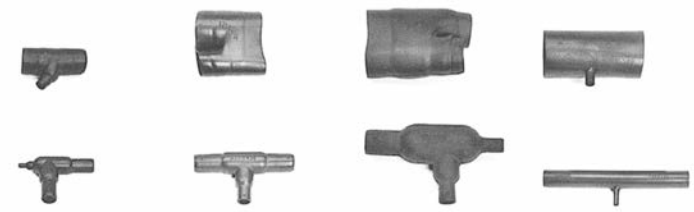
As supplied

After recovery

301A011 through 048 | 302A012 through 037 | 302A214 | 322A012 through 037 | 322A112 through 158

As supplied

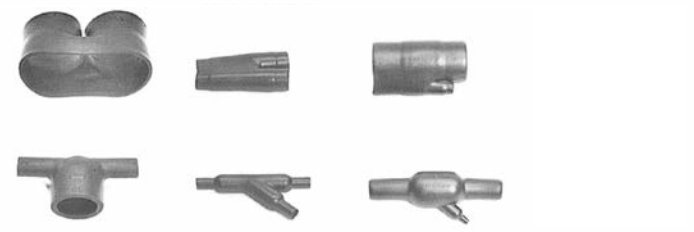
After recovery



322A315 | 322A412 through 434 | 322A514 | 322B813

As supplied

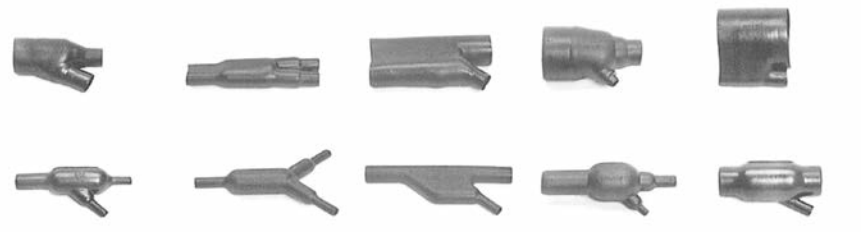
After recovery



323A222 | 341A015 | 342A012 through 058

As supplied

After recovery



342A112 through 138 | 342A215 | 342A313 and 323 | 343A014 through 027 | 362A014 through 114

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

Visual Selection Guide (Continued)

Transitions: Bulbous

(Continued)

As supplied

After recovery

363A018 381A015 381A115 382A012 through 046 402A013

As supplied

After recovery

403A123 through 155 413A013 and 024 422A011 422A414

As supplied

After recovery

422A616 422A716 422A813 423A014 423A117

As supplied

After recovery

462A011 through 060 462A214

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

Visual Selection Guide (Continued)

Transitions: Bulbous

(Continued)

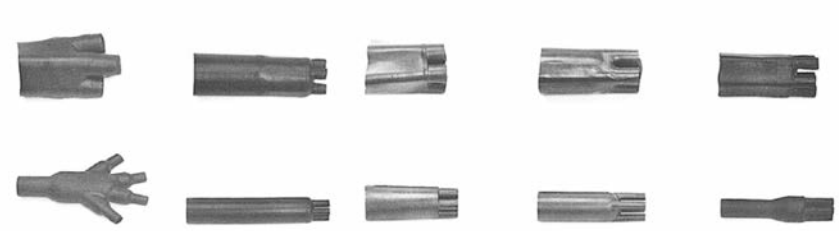
As supplied

After recovery

502A812 through 845 522A013 561A017

As supplied

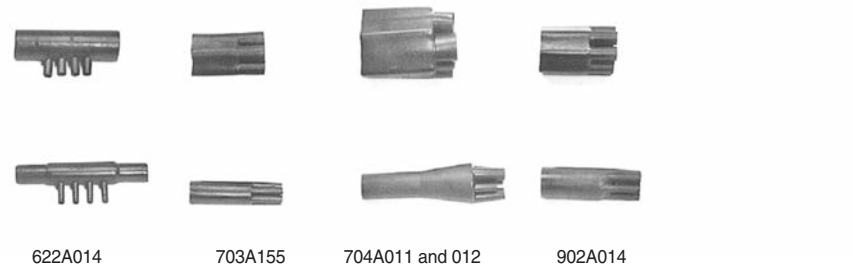
After recovery



562A011 through 067 602A012 602A022 602A114 602A212

As supplied

After recovery

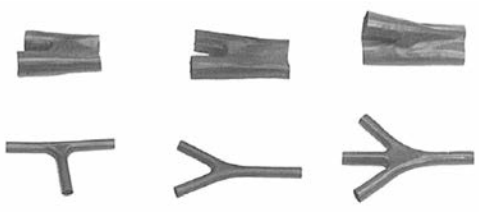


622A014 703A155 704A011 and 012 902A014

Transitions: Slim-Line

As supplied

After recovery



301A511 through 514 381A301 through 304 462A421 through 424

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

Visual Selection Guide (Continued)

Covers

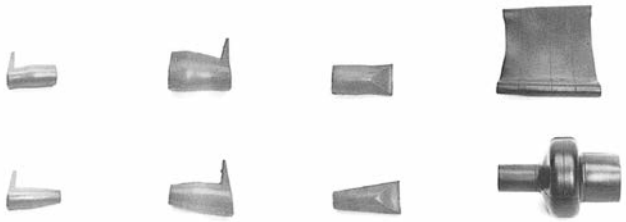
As supplied

After recovery

102A911 102A951 102A961 102A962 102A981

As supplied

After recovery



102A992 102A993 102A994 202A817

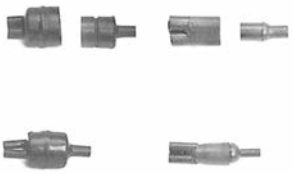
As supplied

After recovery

220A012 through 023 234A211 234B111 and 122 254A015

As supplied

After recovery



302A734 401A112 and 402A212

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

Visual Selection Guide (Continued)

Covers (Continued)

As supplied

After recovery

401A212 and 403A312 | 401A414 | 403A016 | 501A012 and 502A212

As supplied

After recovery

601A012

Sleeves

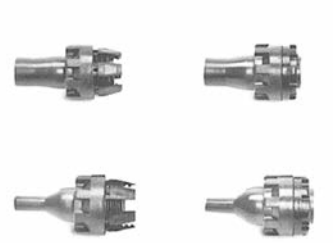
As supplied

After recovery

201A711 through 792 | 202B811 through 821

As supplied

After recovery



207W213 through 264 with A-type nut | 207W213-x-01 through 264-x-01 with B-type nut

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

Visual Selection Guide (Continued)

Caps

As supplied

After recovery

101A011 thru 094

Miscellaneous

204A711 and 002A011
Riser and Plug
(Not heat-shrinkable)

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

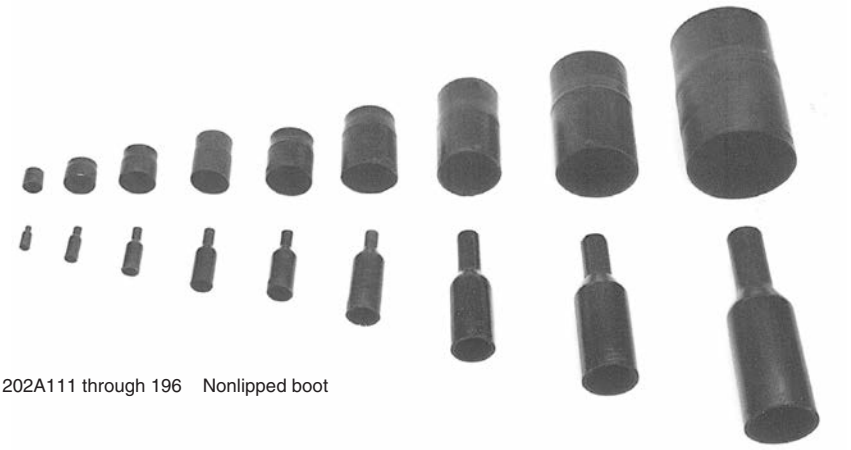
For additional support numbers please visit www.te.com

Visual Selection Guide (Continued)

Selected Molded Shapes
Families

As supplied

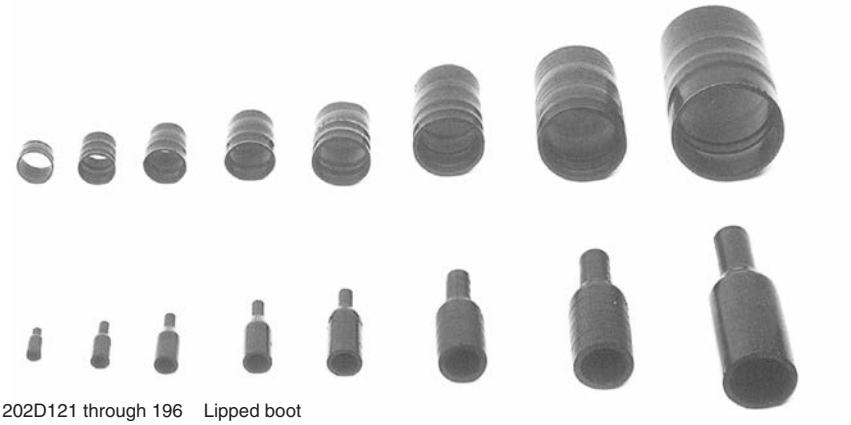
After recovery



202A111 through 196 Nonlipped boot

As supplied

After recovery



202D121 through 196 Lipped boot

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

Visual Selection Guide (Continued)

Selected Molded Shapes
Families (Continued)

As supplied

After recovery

202A212 through 264 Nonlipped boot

202D211 through 299 Lipped boot

As supplied

After recovery

202D921 through 963 Lipped boot

202K121 through 185 Lipped boot

As supplied

After recovery

207W213 through 264 Feedthrough

214A011 through 052 Rectangular boot

As supplied

After recovery

222A111 through 196 90° boot nonlipped

222A213 through 255 90° boot nonlipped

4 Molded Parts

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

Visual Selection Guide (Continued)

Selected Molded Shapes
Families (Continued)

As supplied

After recovery

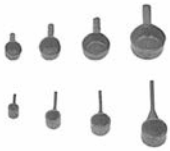
222A313 through 355 90° boot nonlipped

222D121 through 196 90° boot lipped

As supplied

After recovery

222D211 through 299 90° boot lipped



222D921 though 963 90° boot lipped

As supplied

After recovery

222K121 through 185 90° boot lipped

301A011 through 048 T transition

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

Boot Adapter Selection Tables

Table 1. Boots

Boot Type	Material Dash Number	Part No.	Dimensions		Fits Adapter Order Number			
			Cable Diameter Range	Length	Solid	Spin Coupling	Entry Size Shielded	Tinel-Lock
Uni-boot	50, 51 71	202C611	4.83-9.65 [.19-.38]	120.65 [4.75]	—	—	04	04
		202C621	8.13-16.26 [.32-.64]	133.35 [5.25]	12	12—14	06-08	04-07
		202C632	12.70-25.40 [.50-1.00]	146.05 [5.75]	14-16	16-18	10-14	10-16
		202C642	17.53-35.05 [.69-1.38]	158.75 [6.25]	18-20	20	12-18	12-18
		202C653	22.35-44.20 [.88-1.74]	171.45 [6.75]	22-32	22-32	18-20	16-20
		202C663	22.86-55.63 [.90-2.19]	236.22 [9.30]	24, 28, 31	32, 36	—	—
	55, 780, 790	202G621	8.13-16.26 [.32-.64]	133.86 [5.27]	12-14	12-14	06-08	04-07
		202G632	12.70-25.40 [.50-1.00]	151.13 [5.95]	16	16-18	10-14	08-12
		202G642	17.53-35.05 [.69-1.38]	157.23 [6.19]	18-20	20	12-18	12-18
		202G653	22.35-44.20 [.88-1.74]	170.18 [6.70]	22-32	22-32	18-20	16-22
		—	—	—	16-24, 61	22-28, 61	—	—
Low-profile, Straight	50, 51 71 770	202F211	6.60-15.75 [.26-.62]	105.16 [4.14]	10	08-10	04-07	04-07
		202F221	7.62-19.30 [.30-.76]	123.95 [4.88]	12-14	12-14	07-10	05-08
		202F232	8.89-22.86 [.35-.90]	146.30 [5.76]	16	16-18	10-14	08-12
		202F242	10.16-27.18 [.40-1.07]	172.21 [6.78]	18-20	20	12-18	12-16
		202F253	10.92-29.97 [.43-1.18]	185.16 [7.29]	22	22	18-20	16-18
		202F263	12.70-36.83 [.50-1.45]	213.61 [8.41]	24-28	24-28	20	18-20
		202F274	14.99-42.93 [.59-1.69]	203.20 [8.00]	24	32	—	—
	55 780, 790	202G221	7.62-19.30 [.30-.76]	121.16 [4.77]	12-14	12-14	07-10	05-08
		202G232	8.89-22.86 [.35-.90]	138.68 [5.46]	16	16-18	10-14	10-12
		202G242	10.16-27.18 [.40-1.07]	159.51 [6.28]	18-20	20	14-18	12-16
		202G253	10.92-29.97 [.43-1.18]	177.80 [7.00]	22-28	22-24	16-20	16-18
		—	—	—	16-20	20-24	—	—
Low-profile, 90°	50, 51 71 770	222F211	6.60-15.75 [.26-.62]	105.16 [4.14]	10	08-10	04-07	04-07
		222F221	7.62-20.83 [.30-.82]	123.95 [4.88]	12-14	12-14	07-10	05-10
		222F232	8.89-22.86 [.35-.90]	146.30 [5.76]	16	16-18	10-14	08-12
		222F242	10.16-27.18 [.40-1.07]	172.21 [6.78]	18-20	20	12-18	12-16
		222F253	10.92-29.97 [.43-1.18]	185.16 [7.29]	22	22	18, 20	16-18
		222F263	12.70-36.83 [.50-1.45]	213.61 [8.41]	24-28	24-28	20	18, 20
		222F274	14.99-42.43 [.59-1.69]	224.54 [8.84]	24	32	—	—
		222F285	17.53-61.21 [.69-2.41]	227.33 [8.95]	24-32	32-40	—	—

(continued on next page)

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

Boot Adapter Selection Tables (Continued)

Table 1. Boots (Continued)

Boot Type	Material Dash Number	Part No.	Dimensions		Fits Adapter Order Number			
			Cable Diameter Range	Length	Solid	Spin Coupling	Entry Size Shielded	Tinel-Lock
Low-profile, Straight	3,4,25 -12, -100	202D211	6.60-15.75 [.26-.62]	105.92 [4.17]	08	08-10	06-07	04-07
		202D221	7.62-19.30 [.30-.76]	121.16 [4.77]	08-10	08-10	08	06-07
		202D232	8.89-22.86 [.35-.90]	138.68 [5.46]	10-12	10-12	10-12	08-10
		202D242	10.16-27.18 [.40-1.07]	159.51 [6.28]	12-14	12-14	12-14	10-12
		202D253	10.92-29.97 [.43-1.18]	177.80 [7.00]	16-18	16-18	16-18	14-16
		202D263	12.70-36.83 [.50-1.45]	203.20 [8.00]	20-22	20-22	18-20	18-20
		202D274	14.99-42.93 [.59-1.69]	203.20 [8.00]	24	28	22-24	22-24
		202D285	18.29-55.88 [.72-2.20]	203.20 [8.00]	28	32-34	28	—
		202D296	20.07-59.69 [.79-2.35]	203.20 [8.00]	—	40	—	—
		202D299	23.37-72.39 [.92-2.85]	203.20 [8.00]	—	44	—	—
Low-profile, 90°	3,4,25 -12, -100	222D211	6.60-15.75 [.26-.62]	105.16 [4.14]	08	08-10	06-07	04-07
		222D221	7.62-19.30 [.30-.76]	123.95 [4.88]	08-10	08-10	08	06-08
		222D232	8.89-22.86 [.35-.90]	146.30 [5.76]	10-12	10-12	10-12	08-10
		222D242	10.16-27.18 [.40-1.07]	172.21 [6.78]	12-14	12-14	12-14	10-12
		222D253	10.92-29.97 [.43-1.18]	185.16 [7.29]	16-18	16-18	16-18	14-16
		222D263	12.70-36.83 [.50-1.45]	213.61 [8.41]	20-22	20-22	18-20	18-20
		222D274	14.99-42.93 [.59-1.69]	224.54 [8.84]	24	28	22-24	22-24
		222D285	18.29-55.88 [.72-2.20]	227.33 [8.95]	28	32-34	28	
		222D296	20.07-59.69 [.79-2.35]	233.43 [9.19]	—	40	—	—
		222D299	23.37-72.39 [.92-2.85]	203.20 [8.00]	—	44	—	—
Bulbous, Straight	3,4,25 -12, -100	202D121	6.10-19.05 [.24-.75]	38.10 [1.50]	—	08	04-05	04-07
		202D132	7.11-23.37 [.28-.92]	54.86 [2.16]	08	10	06-07	06-08
		202D142	7.62-25.15 [.30-.99]	66.80 [2.63]	10	12-14	09-10	07-10
		202D153	8.89-30.48 [.35-1.20]	80.10 [3.15]	12-14	16-18	11-14	10-12
		202D163	10.41-34.29 [.41-1.35]	103.63 [4.08]	16-18	20-22	15-16	14-16
		202D174	10.41-34.29 [.41-1.35]	103.63 [4.08]	16-18	20-22	15-16	14-16
		202D185	20.83-53.34 [.82-2.10]	165.10 [6.50]	—	—	24	24
		202D196	25.91-69.85 [1.02-2.75]	177.80 [7.00]	—	—	—	—
		202K121	6.10-19.05 [.24-.75]	38.10 [1.50]	—	08	04-05	04-07
		202K132	7.11-23.37 [.28-.92]	54.86 [2.16]	08	10	06-07	06-08
		202K142	7.62-25.15 [.30-.99]	66.80 [2.63]	10	12-14	09-10	07-10
		202K153	8.89-30.48 [.35-1.20]	80.10 [3.15]	12-14	16-18	11-14	10-12
		202K163	10.41-34.29 [.41-1.35]	103.63 [4.08]	16-18	20-22	15-16	14-16
		202K174	10.41-34.29 [.41-1.35]	103.63 [4.08]	16-18	20-22	15-16	14-16
		202K185	20.83-53.34 [.82-2.10]	165.10 [6.50]	—	—	24	24
Bulbous, 90°	3,4,25 -12, -100	222D121	6.10-19.05 [.24-.75]	21.34 [0.84]		08	04-05	04-07
		222D132	7.11-23.37 [.28-.92]	33.78 [1.33]	08	10	06-07	05-08
		222D142	7.62-25.15 [.30-.99]	36.58 [1.44]	10	12-14	09-10	08-10
		222D153	8.89-30.48 [.35-1.20]	43.69 [1.72]	12-14	16-18	11-14	10-14
		222D163	10.41-34.29 [.41-1.35]	53.59 [2.11]	16-18	20-22	15-16	14-18
		222D174	16.26-44.96 [.64-1.77]	77.98 [3.07]	20-24	24	18-22	18-22
		222D185	20.83-53.34 [.82-2.10]	97.54 [3.84]	—	—	24	24
		222D196	25.91-69.85 [1.02-2.75]	117.86 [4.64]	—	—	—	—
		222K121	6.10-19.05 [.24-.75]	21.34 [0.84]		08	04-05	04-07
		222K132	7.11-23.37 [.28-.92]	33.78 [1.33]	08	10	06-07	05-08
		222K142	7.62-25.15 [.30-.99]	36.58 [1.44]	10	12-14	09-10	08-10
		222K152	8.89-30.48 [.35-1.20]	43.69 [1.72]	12-14	16-18	11-14	10-14
		222K163	10.41-34.29 [.41-1.35]	53.59 [2.11]	16-18	20-22	15-16	14-18
		222K174	16.26-44.96 [.64-1.77]	77.98 [3.07]	20-24	24	18-22	18-22
		222K185	20.83-53.34 [.82-2.10]	97.54 [3.84]	—	—	24	24

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

Boot Adapter Selection Tables (Continued)

Table 2. Determining when Shims should be used

Part No.	Cable Range Requiring Shim	Type of Shim
202C611 *	3.81-4.83 [.15-.19]	Tubing
202C621 *	6.35-8.13 [.25-.32]	Tubing
202C632 *	9.65-12.70 [.38-.50]	Tubing
202C632 *	3.30-9.65 [.13-.38]	202E334
202C632 *	14.48-17.53 [.57-.69]	Tubing
202C642 *	9.91-14.48 [.39-.57]	202E346
202C642 *	3.30-9.65 [.13-.38]	202E344
202C642 *	19.30-22.35 [.76-.88]	Tubing
202C653 *	9.91-19.30 [.39-.76]	202E346
202C663	17.53-22.86 [.69-.90]	Tubing
202D211/202F211 †	5.08-6.60 [.20-.26]	Tubing
222D211/222F211 †	5.08-6.60 [.20-.26]	Tubing
202D221/202F221 †	5.84-7.62 [.23-.30]	Tubing
222D221/222F221 †	5.84-7.62 [.23-.30]	Tubing
202D221/202F221 †	5.92 [.233]	Tubing
222D221/222F221 †	5.92 [.233]	Tubing
202D232/202F232 †	6.86-8.89 [.27-.35]	Tubing
222D232/222F232 †	6.86-8.89 [.27-.35]	Tubing
202D242/202F242 †	7.87-10.16 [.31-.40]	Tubing
222D242/222F242 †	3.30-7.87 [.13-.31]	202E334
202D253/202F253 †	8.38-10.92 [.33-.43]	Tubing
222D253/222F253 †	3.30-8.38 [.13-.33]	202E334
202D263/202F263	9.65-12.70 [.38-.50]	Tubing
222D263/222F263	3.30-9.65 [.13-.38]	202E334
202D274/202F274	11.43-14.99 [.45-.59]	Tubing
222D274/222F274	9.91-11.43 [.39-.45]	202E346
222D274/222F274	3.30-9.65 [.13-.38]	202E344
222D274/222F274	13.46-17.53 [.53-.69]	Tubing
222D285/222F285	9.91-13.46 [.39-.53]	202E346
222D285/222F285	3.30-9.65 [.13-.38]	202E344
222D1XD/222D1XX	—	Use tubing as a shim if necessary

* These ranges also apply to the 202G6XX series of boots.
† These ranges also apply to the 202G2XX series of boots.

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

Material Selection Table

Applications

TE offers Raychem brand products in a variety of materials to enable designers and material specifiers to obtain optimum performance.

Material*	Characteristics
-3 Molded Part Material	A general purpose, heat-shrinkable semi rigid and flame retarded polyolefin molding compound with good resistance to fluids and heat. -3 molded parts are ideal for use in applications where toughness combined with resistance to occasional exposure to fluids or heat is required. -3 molded parts are recommended for use in System 10.
-3S Molded Part Material	A general purpose, heat-shrinkable flame retarded, polyolefin compound used to make shielded molded parts.-3S molded parts form part of the Rayaten shielding system and are ideal for use in applications where toughness combined with resistance to occasional exposure to fluids or heat is required. -3S molded parts are recommended for use in System 10.
-4 Molded Part Material	A general purpose, heat-shrinkable flexible and flame retarded polyolefin molding compound with good resistance to fluids and heat. -4 molded parts are ideal for use in applications where toughness combined with resistance to occasional exposure to fluids or heat is required. -4 molded parts are recommended for use in System 10.
-6 Molded Part Material	Designed for use in applications where extreme flexibility is required. The parts provide excellent strain relief and sealing over a broad temperature range and remain flexible at very low temperatures. The standard color is black.
-8 Molded Part Material	For use in outer space, where use of low outgassing components is required. The parts provide excellent strain relief at connector cable terminations. Please contact TE for available shapes. The standard color is black.
-12 Molded Part Material	A high temperature, heat-shrinkable, flexible, flame retarded, fluoroelastomeric molding compound with excellent resistance to long term fluid immersion and heat exposure. A wide range of shapes are available in this material. -12 molded parts are recommended for use in System 200.
-25 Molded Part Material	A heat-shrinkable, semi rigid, fluid and temperature resistant, elastomeric molding compound, designed to offer excellent performance in harsh environments. Ideal for use in military vehicles where high temperatures and long term exposure to hot fluids is expected. A wide range of shapes are available in this material. -25 molded parts are recommended for use in System 25.
-25S Molded Part Material	A heat-shrinkable, semi rigid, fluid and temperature resistant, elastomeric compound, used to make shielded molded parts. -25S molded parts form part of the Rayaten shielding system and are ideal for use in military vehicles where high temperatures and long term exposure to hot fluids is expected. -25S molded parts are recommended for use in System 25.
-50 Molded Part Material	A heat-shrinkable, highly flexible, fluid and temperature resistant, VPB molding compound, ideal for use in general purpose and high temperature military applications where exposure to petroleum based solvents is expected. Uniboots and a wide range of low profile shapes are available in this material. -50 molded parts are recommended for use in System 30.
-51 Molded Part Material	A heat-shrinkable, rugged, flexible, fluid and temperature resistant, EPB molding compound, ideal for use in general purpose applications where exposure to petroleum based solvents is expected. Uniboots and a wide range of low profile shapes are available in this material. -51 molded parts are recommended for use in System 20.
-55 Molded Part Material	A heat-shrinkable, flexible, flame retarded, fluid and high temperature resistant, modified fluoropolymer molding compound. A wide range of shapes is available. -55 molded parts are recommended for use in System 300.
-71 Molded Part Material	A heat-shrinkable, flexible, fluid and temperature resistant, polyolefin molding compound, ideal for use in general purpose applications where a good balance of fluid and heat resistance properties is required. Uniboots and a wide range of low profile shapes are available. -71 molded parts are suitable for use in System 10.
-100 Molded Part Material	A heat-shrinkable, semi flexible, low fire hazard molding compound designed to offer excellent fire safety characteristics combined with low smoke and low acid gas emission -100 also exhibits good mechanical and fluid resistance properties. A wide range of shapes are available in this material. -100 molded parts are recommended for use in System 100.
-100S Molded Part Material	A heat-shrinkable, semi flexible, low fire hazard compound used to make shielded molded parts. 100S molded parts form part of the Rayaten shielding system and are designed to offer excellent fire safety characteristics combined with low smoke and low acid gas emission. -100S also exhibits good mechanical and fluid resistance properties. -100S molded parts are recommended for use in System 100.
-125 Molded Part Material	A heat-shrinkable, flame retarded, fluid and high temperature resistant, modified fluoropolymer molding compound. A range of shapes are available. -125 molded parts are recommended for use in System 300.
-130 Molded Part Material	Non flame-retarded molded material. Low shrink temperature.
-770 Molded Part Material	NBCCS resistant material rated to 125˚C, Part of System 770.
-780 Molded Part Material	NBCCS resistant material rated to 175˚C, Part of System 780.
-790 Molded Part Material	NBCCS resistant material rated to 200˚C, Part of System 790.

*Check with specific part page for applicable materials.

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

-3

Semi-Rigid Modified Polyolefin

Product Facts

- Heat-shrinkable
- Semi-Rigid
- Flame Retardant
- Good resistance to fluids and heat

Applications

TE molded parts in -3 material are designed for use in general harnessing applications where toughness is required and systems are occasionally exposed to fluids or heat. The adhesive-lined parts provide excellent sealing and strain relief at connector-cable terminations and transitions. A wide range of shapes are available in this material. The standard color is black.

Installation

-3 molded parts will shrink on the application of heat above 125°C [257°F].

Recommended installation temperature: 150°C [302°F]

Operating Temperature Range

-55°C to 135°C
[-67°F to 275°F]

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

-3 (Continued)

Specifications/Approvals

UL	Military	TE
224, File E85381	SAE-AS81765/1, Type I Def. Stan. 59-97 Issue 3 Type DA (Europe) BS-G-198-5-DA (Europe)	RT-301
—	SAE-AS85049/ 140, 141, 142 (material designator A)	—

Product Characteristics

		Specification Requirements	Test Method
Physical	Tensile strength	10.5 MPa (min.)	ISO 37; ASTM D 412
	Ultimate elongation	250% (min.)	ISO 37; ASTM D 412
	2% secant modulus	80–160 MPa	ASTM D 882
	Specific gravity	1.4 (max.)	ISO 1183; ASTM D 792
Thermal	Heat aging for 168 h at 175°C [347°F]	Ultimate elongation 150% (min.)	ISO 188, ISO 37
	Heat shock for 4 h at 225°C [437°F]	No dripping, cracking, or flowing	ASTM D 2671
	Low-temperature flex at -55°C [-67°F]	No cracking during mandrel bend	RK-6703, CL 2.7: RT-301 Sec. 4.3.4
	Flammability	Self-extinguishing	RK-6703, CL 2.8: ASTM D 635
Electrical	Electric strength	8 MV/m (min.)	IEC 243
Water absorption	—	0.5% (max.)	ISO 62
Fluid resistance	Aviation fuel F40	Tensile strength 8.5 MPa (min.) Ultimate elongation 200% (min.)	ISO 1817 and ISO 37 after immersion for 24 h at 23°C [73°F]
	Lubricating oil O-149	Tensile strength 8.5 MPa (min.) Ultimate elongation 200% (min.)	ISO 1817 and ISO 37 after immersion for 24 h at 23°C [73°F]
	Phosphate ester hydraulic fluid (DTD 900/4881A)	Tensile strength 8.5 MPa (min.) Ultimate elongation 200% (min.)	ISO 1817 and ISO 37 after immersion for 24 h at 23°C [73°F]

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

-4

Flexible Polyolefin

Product Facts

- Heat-shrinkable
- Flexible
- Flame Retardant
- Good resistance to fluids and heat

Applications

TE molded parts in -4 material are designed for use in general harnessing applications where toughness is required and systems are occasionally exposed tofluids or heat. The adhesive-lined parts provide excellent sealing and strain relief at connector-cable terminations and transitions.

A wide range of shapes are available in this material. The standard color is black.

Installation

-4 molded parts will shrink on the application of heat above 100°C [212°F].

Recommended installation temperature: 150°C [302°F]

Operating Temperature Range

-55°C to 135°C
[-67°F to 275°F]

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

-4 (Continued)

Specifications/Approvals

UL	Military	TE
224, File E85381	SAE-AS81765/1, Type II	RT-1304
—	SAE-AS85049/ 140, 141, 142 (material designator B)	—

Product Characteristics

		Specification Requirements	Test Method
Physical	Tensile strength	1800 psi (min.)	ASTM D 412
	Ultimate elongation	400% (min.)	ASTM D 412
	Specific gravity	1.3 (max.)	ASTM D 792
Thermal	Heat aging for 168 h at 175°C [347°F]	Ultimate elongation 300% (min.)	RT 1304 Sec. 4.3.3
	Heat shock for 4 h at 225°C [437°F]	No dripping, flowing, or cracking	RT 1304 Sec. 4.3.5
	Low-temperature flex at -55°C [-67°F]	No cracking	RT 1304 Sec. 4.3.4
	Flammability (burn time)	Average flame time: 120 s (max.)	ASTM D 635
Electrical	Dielectric strength	350 V/mil (min.)	ASTM D 149
Water absorption	—	0.3% (max.)	ASTM D 570
Fluid resistance	JP-4 fuel, aviation gasoline, water, hydraulic fluid	Tensile strength 8.5 MPa psi (min.) Ultimate elongation 200% (min.)	RT-1304 Sec. 4.3.3

Catalog 1654025
Revised 3-13

www.te.com

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

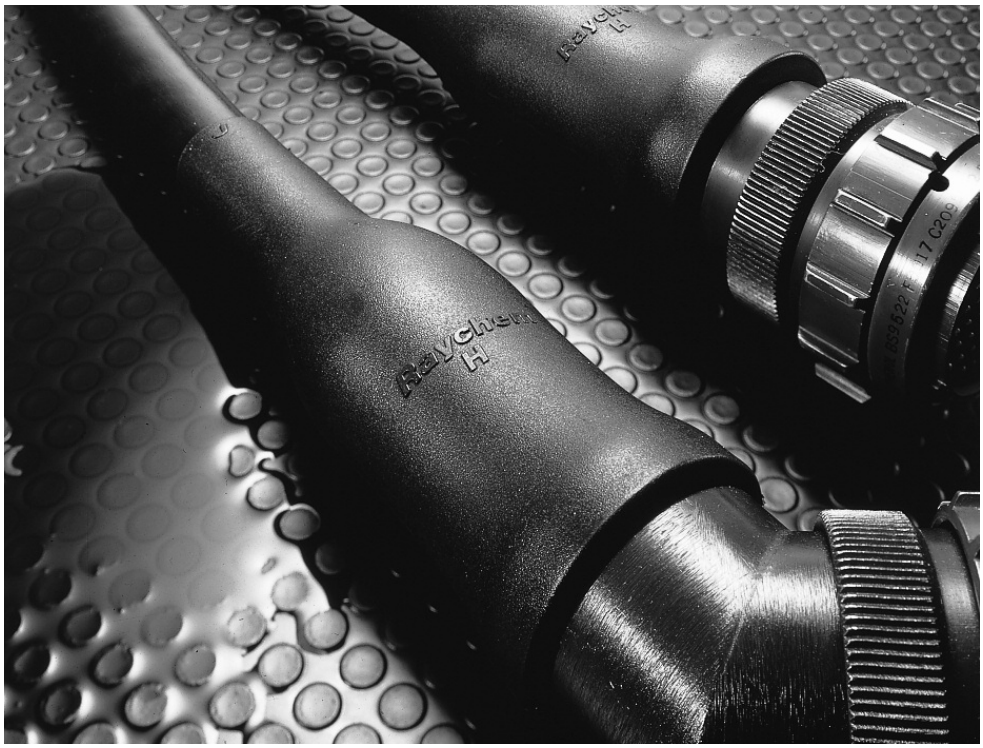
Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

-12

Modified Fluoroelastomer



Product Facts

- **Heat-shrinkable, flexible, fluid-resistant modified fluoro-elastomer**
- **Excellent resistance to long-term fuel immersion**

Applications

TE -12 molded parts with fluoroelastomers are designed to be used in conjunction with tubing made from fluoroelastomers or multi-conductor cable jackets and a suitable adhesive in System 200.

This system provides excellent resistance to elevated temperatures and continuous fuel immersion. Available in a wide range of configurations, -12 molded parts will operate from -55°C [-67°F] to 200°C [392°F]. The standard color is black.

Installation

-12 molded parts will shrink on the application of heat above 175°C [347°F].

Recommended installation temperature: 220°C [428°F]

Operating Temperature Range

-55°C to 200°C
[-67°F to 392°F]

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

-12 (Continued)

Specifications/Approvals

Military	TE
SAE-AS81765/4	RT-1312
Def. Stan. 59-97 Issue 3 Type DD (Europe)	—
BS-G-198-5-DD-P (Europe)	—
SAE-AS85049/ 140, 141, 142 (material designator D)	—

Product Characteristics

		Specification Requirements	Test Method
Physical	Tensile strength	12.4 MPa (min.)	ISO 37
	Ultimate elongation	300% (min.)	ISO 37
	2% secant modulus	70 MPa (max.)	ASTM D 882
	Specific gravity	1.95 (max.)	ISO 1183
Thermal	Heat aging for 168 h at 250°C [482°F]	Ultimate elongation 250% (min.)	ISO 188, ISO 37
	Heat shock for 4 h at 300°C [572°F]	No dripping, cracking, or flowing	ASTM D 2671
	Low temperature flex at -55°C [-67°F]	No cracking	ASTM D 2671
	Flammability (burn time)	30 s (max.)	ASTM D 635
Electrical	Electric strength	8 MV/m (min).	IEC 243
Water absorption	—	0.5% (max.)	ISO 62
Fluid resistance	Aviation fuel F40	Tensile strength 11 MPa (min.) Ultimate elongation 200% (min.)	ISO 1817 after immersion for 24 h at 23°C [73°F]
	Lubricating oil O-149	Tensile strength 11 MPa (min.) Ultimate elongation 200% (min.)	ISO 1817 after immersion for 24 h at 93°C [200°F]
	Hydraulic fluid H515	Tensile strength 11 MPa (min.) Ultimate elongation 200% (min.)	ISO 1817 after immersion for 24 h at 93°C [200°F]

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

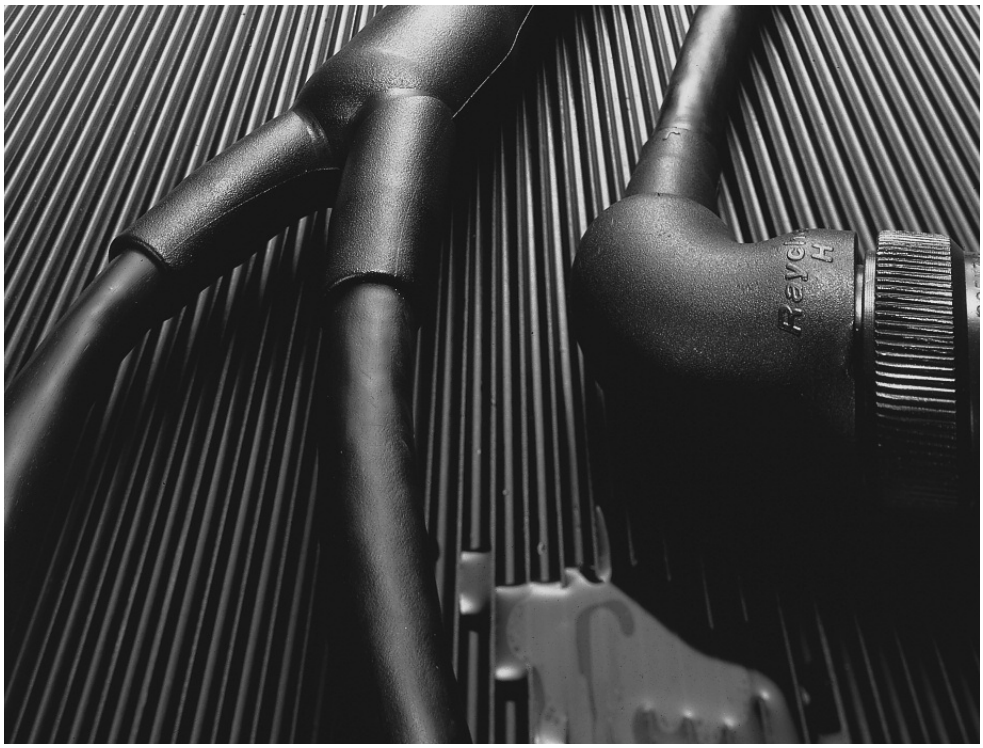
For additional support numbers please visit www.te.com

-25

Fluid-Resistant Modified Elastomer

Product Facts

- **Heat-shrinkable, semi-rigid, chemical- and abrasion-resistant molded shapes**
- **Excellent resistance to high-temperature fluids**
- **Resistance to long-term exposure at elevated temperatures**



Applications

TE heat-shrinkable molded parts in -25 material are designed to be used in conjunction with other System 25 components such as DR-25 tubing and S1125 adhesive, providing a complete cable harness system capability.

-25 parts have been specifically formulated and designed to provide optimum high-temperature fluid resistance and long-term heat resistance. This unique balance of properties makes -25 parts particularly suitable for sealing and strain relief at connector-cable terminations and cable-to-cable transitions on military vehicle cables and harnesses. Available in a wide range of configurations, -25 parts will operate from -75°C to 150°C [-103°F to 302°F] for long periods. The standard color is black.

Installation

-25 molded parts will shrink on the application of heat above 135°C [275°F].

Recommended installation temperature: 175°C [347°F]

Operating Temperature Range

-75°C to 150°C
[-103°F to 302°F]

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

-25 (Continued)

Specifications/Approvals

Military	TE
VG95343 Parts 6, 7, 8 and 9 (Europe)	RW-2070
Def Stan 59-97, Issue 3, Type DE (Europe)	—
BSG-198-5-DE-P	—
SAE-AS85049/ 140, 141, 142 (material designator H)	—

Product Characteristics

		Specification Requirements	Test Method
Physical	Tensile strength	15 MPa (min.)	ASTM D 412
	Ultimate elongation	350% (min.)	ASTM D 412
	Specific gravity	1.5 (max.)	ASTM D 792
Thermal	Heat aging for 168 h at 150°C [302°F	Ultimate elongation 300% (min.)	ASTM D 412
	Heat shock for 4 h at 225°C [437°F]	No dripping, cracking, or flowing	ASTM D 2671
	Low-temperature flex for 4 h at -70°C [-94°F]	No cracking during mandrel bend	ASTM D 2671
	Flammability (burn time)	120 s (max.)	ASTM D 635
Electrical	Electric strength	8 MV/m	ASTM D 149
Fluid resistance	Aviation fuel JP-4 (MIL-T-5624)	Tensile strength 12 MPa (min.) Ultimate elongation 300% (min.)	ASTM D 412 after immersion for 24 h at 25°C [77°F]
	Hydraulic fluid (MIL-H-6083)	Tensile strength 12 MPa (min.) Ultimate elongation 300% (min.)	ASTM D 412 after immersion for 24 h at 25°C [77°F]
	Diesel fuel (VV-F-800 No 2)	Tensile strength 12 MPa (min.) Ultimate elongation 300% (min.)	ASTM D 412 after immersion for 24 h at 50°C [122°F]
	Automotive gasoline (MIL-G-3056)	Tensile strength 12 MPa (min.) Ultimate elongation 300% (min.)	ASTM D 412 after immersion for 24 h at 25°C [77°F]

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

-25S

Fluid-Resistant Screened Elastomer

Product Facts

- Fuel and heat resistance
- RFI, EMI protection

Applications

Rayaten screened molded parts in -25S material are designed for use with FDR-25 or DR-25 jacketed screened multiconductor cable and S1125 adhesive to provide a complete high-performance harness system offering high levels of RFI and EMI protection. This -25 material provides optimum high-temperature fluid-resistance and long-term heat-aging properties. The material is particularly suitable for providing encapsulation, mechanical protection, and strain relief on terminations and cable transitions in harsh environments.The standard color is black. Products made from this material are normally used in an assembly (see section 7).

Operating Temperature Range

-55°C to 150°C
[-67°F to 302°F]

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

-25S (Continued)

Specifications/Approvals

Military	TE
VG 95343 Pt. 20, Pt. 22	RW-2077

Product Characteristics

		Specification Requirements*	Screening effectiveness in dB at 3 KHz to 30 MHz (min.)	Screening effectiveness in dB at >30 MHz to 100 MHz (min.)
Initial values		Tensile strength: 12 MPa (min.)	—	—
		Ultimate elongation: 400% (min.)	—	—
		Metal adhesion: 15 N/cm (min.)	—	—
		Shielding effectiveness	75	70
Thermal	Heat shock (1/2 h at 200°C [392°F])	Tensile strength: 12 MPa (min.)	—	—
		Ultimate elongation: 400% (min.)	—	—
		Shielding effectiveness	75	70
	Heat aging (168 h at 160°C [320°F])	Tensile strength: 12 MPa (min.)	—	—
		Ultimate elongation: 400% (min.)	—	—
		Shielding effectiveness	75	70
	3 thermal cycles of -75°C to 150°C [-103°F to 302°F]	Shielding effectiveness	75	70
Immersion in the following fluids for 24 h:				
Chemical	Lubricating oil (O-156, at 100°C [212°F])	Tensile strength: 10 MPa (min.)	—	—
		Ultimate elongation: 300% (min.)	—	—
		Shielding effectiveness	75	70
	Hydraulic fluid H515, at 50°C [122°F]	Tensile strength: 10 MPa (min.)	—	—
		Ultimate elongation: 300% (min.)	—	—
		Shielding effectiveness	75	70
	Aviation fuel JP4 F40, at 23°C [73°F]	Tensile strength: 10 MPa (min.)	—	—
		Ultimate elongation: 300% (min.)	—	—
		Shielding effectiveness	75	70
	Diesel fuel F54, at 23°C [73°F]	Tensile strength: 10 MPa (min.)	—	—
		Ultimate elongation: 300% (min.)	—	—
		Shielding effectiveness	75	70
	1, 1, 1, trichloroethane (1 h, at 23°C [73°F])	Tensile strength: 10 MPa (min.)	—	—
		Ultimate elongation: 300% (min.)	—	—
		Shielding effectiveness	75	70

*Values quoted are for the polymer/metal composite in all cases when terminated using epoxy adhesives.

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

-50

Fluid-Resistant Modified Elastomer

Product Facts

- Excellent heat and fluid resistance
- Low profile
- Rugged
- Lightweight

Applications

A high-performance blend of fluoroelastomers and other polymers, TE -50 material offers excellent fluid and temperature resistance. It is suitable for use in most areas of military vehicle harnessing. This material is available in the Uniboot shape and should be chosen in applications that use System 30 components. The standard color is black.

Installation

-50 molded parts will shrink on the application of heat above 150°C [302°F].

Recommended installation temperature is 175°C [347°F]

Operating Temperature Range

-55°C to 150°C
[-67°F to 302°F]

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

-50 (Continued)

Specifications/Approvals

Specification	TE
SC-X-15111 (U.S.)	RT-1313

Product Characteristics

		Specification Requirements	Test Method
Physical	Tensile strength	15 MPa (min.)	ASTM D 412
	Ultimate elongation	350% (min.)	ASTM D 412
	Specific gravity	1.5 (max.)	ASTM D 792
Thermal	Heat aging for 168 h at 150°C [302°F]	Ultimate elongation 300% (min.)	ASTM D 412
	Heat shock for 4 h at 225°C [437°F]	No dripping, cracking, or flowing	ASTM D 2671
	Low-temperature flex for 4 h at -70°C [-94°F]	No cracking during mandrel bend	ASTM D 2671
	Flammability (burn time)	120 s (max.)	ASTM D 635
Electrical	Electric strength	8 MV/m	ASTM D 149
Fluid resistance	Aviation fuel JP-4 (MIL-T-5624)	Tensile strength 12 MPa (min.) Ultimate elongation 300% (min.)	ASTM D 412 after immersion for 24 h at 25°C [77°F]
	Hydraulic fluid (MIL-H-6083)	Tensile strength 12 MPa (min.) Ultimate elongation 300% (min.)	ASTM D 412 after immersion for 24 h at 25°C [77°F]
	Diesel fuel (VV-F-800 No 2)	Tensile strength 12 MPa (min.) Ultimate elongation 300% (min.)	ASTM D 412 after immersion for 24 h at 50°C [122°F]
	Automotive gasoline (MIL-G-3056)	Tensile strength 12 MPa (min.) Ultimate elongation 300% (min.)	ASTM D 412 after immersion for 24 h at 25°C [77°F]

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

-51

Chemical-Resistant Fluoroelastomer

Product Facts

- Excellent fuel resistance
- Low profile
- Rugged
- Lightweight

Applications

A high-performance elastomeric blend of polymers, TE -51 material offers excellent fluid resistance.

It is suitable for use in most areas of military vehicle harnessing. This material is available in the Uniboot range and other slimline boots and transitions. The standard color is black.

Installation

-51 molded parts will shrink on the application of heat above 135°C [275°F].

Recommended installation temperature is 150°C [302°F]

Operating Temperature Range

-55°C to 135°C
[-67°F to 275°F]

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

-51 (Continued)

Specifications/Approvals

Specification	TE
SC-X-15112 (U.S.)	RT-1321

Product Characteristics

		Specification Requirements	Test Method
Physical	Tensile strength	1500 psi (min.)	ASTM D 412
	Ultimate elongation	300% (min.)	ASTM D 412
	Specific gravity	1.6 (max.)	ASTM D 792
Thermal	Heat aging for 168 h at 121°C [250°F]	Tensile strength 1200 psi. (min.) Elongation 250% (min.)	RT-1321 Sec. 4.3.3 RT-1321 Sec. 4.3.3
	Heat shock for 4 h at 200°C [392°F]	No dripping, flowing, or cracking	RT-1321 Sec. 4.3.5
	Low-temperature flex for 4 h at -55°C [-67°F]	No cracking	RT-1321 Sec. 4.3.4
	Flammability (burn time)	120 seconds, 1 inch (max.)	ASTM D 635
Electrical	Dielectric strength	200 V/mil (min.)	ASTM D 149
Fluid resistance	Lubricating oil, diesel oil, water for 24 h at 25°C [77°F]	Tensile strength 1000 psi (min.) Elongation 225% (min.) Weight increase 10% (max.)	RT-1321 Sec. 4.3.3 and 4.3.7
	Gasoline for 24 h at 25°C [77°F]	Tensile strength 800 psi (min.) Elongation 225% (min.) Weight increase 25% (max.)	RT-1321 Sec. 4.3.3 and 4.3.7
	Isopropyl alcohol, cleaning fluid for 24 h at 25°C 77°F]	Tensile strength 1400 psi (min.) Elongation 225% (min.) Weight increase 10% (max.)	RT-1321 Sec. 4.3.3 and 4.3.7
	Hydraulic fluid for 24 h at 71°C [160°F]	Tensile strength 1000 psi (min.) Elongation 225% (min.) Weight increase 25% (max.)	RT-1321 Sec. 4.3.3 and 4.3.7

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

-55

Flexible Fluoropolymer

Product Facts

- **Flame retardant**
- **Abrasion and cut through resistance**
- **Flexible**
- **High temperature resistance**
- **High fluid resistance**
- **Environmentally sealed**

Applications

A heat-shrinkable, flexible, flame retardant, fluid and high temperature resistant, modified fluoropolymer molding compound. -55 molded parts are ideal for use in applications where chemical resistance and abrasion resistance is required. A wide range of shapes are available. -55 molded parts are recommended for use in System 300.

Use the System 300 family of parts in military and industrial applications where excellent high temperature performance and good physical and chemical properties are a requirement.

System 300 jacketing is based on a modified fluoropolymer and features a one part epoxy adhesive in tape form.

Installation

This specification covers the requirements for one type of flexible, electrical insulating molded component whose expanded dimensions will reduce to a predetermined size upon the application of heat in excess of 220°C [428°F].

Operating Temperature Range

-65°C to 200°C
[-85°f to 392°F]

Specifications/Approvals

RT-1330

Product Characteristics

Physical	Tensile Strength	psi (MPa)	3500 minimum (24.1)	Section 4.3.3
	Ultimate Elongation	percent	200 minimum	ASTM D 2671
	Specific Gravity	—	2.0 maximum	ASTM D 792
	Low Temperature Flexibility 4 hours at -65 ± 2°C [-85 ± 4°F]	—	No cracking	Section 4.3.4
	Heat Shock 4 hours at 300°C [572°F]	—	No dripping, flowing or cracking	Section 4.3.5
	Heat Resistance 336 hours at 250°C [482°F]	—	—	Section 4.3.6
	Followed by tests for: Tensile Strength Elongation	 psi (MPa) percent	 2000 minimum (13.8) 150 minimum	 Section 4.3.3 ASTM D 2671

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

-55 (Continued)

Product Characteristics
(Continued)

Electrical			
Dielectric Strength	volts/mil	200 minimum	ASTM D 149
Volume Resistivity	ohm-cm	1011 minimum	ASTM D 257
Chemical			
Corrosive Effect 16 hours at 200 ± 3°C [392 ± 5°F]	—	Noncorrosive	Section 4.3.7 ASTM D 2671 Procedure A
Flammability Average Time of Burning Average Extent of Burning	 seconds inches (mm)	 15 maximum 0.5 maximum (12.5)	ASTM D 635
Fungus Resistance	—	Rating of 1 or less	ASTM G 21
Water Absorption 24 hours at 23 ± 3°C [73 ± 5°F)]	percent	0.5 maximum	ASTM D 570
Fluid Resistance 24 hours at 23 ± 3°C [73 ± 5°F] in: Gasoline, Aviation Grade 100 (ASTM D 910) 1,1,1 Trichloroethane (MIL-T-81533) Coolanol 25 Followed by tests for: Tensile Strength Ultimate Elongation 24 hours at 50 ± 3°C [122 ± 5°F] in: JP-5 (MIL-T-5624) Deicing Fluid (MIL-A-8243) Cleaning Compound (MIL-C-43616) 5% Salt Solution (O-S-1926) Fuel Oil, Diesel (VV-F-800, DF-2) Followed by tests for: Tensile Strength Ultimate Elongation 24 hours at 75 ± 3°C [167 ± 5°F] in: Hydraulic Fluid (MIL-H-5606) Skydrol® 500 Lubricating Oil (MIL-L-2104) Lubricating Oil (MIL-L-7808) Followed by tests for: Tensile Strength Ultimate Elongation	— psi (MPa) percent psi (MPa) percent — psi (MPa) percent	— 3000 minimum (20.7) 150 minimum 3000 minimum (20.7) 150 minimum — 3000 minimum (20.7) 150 minimum	Section 4.3.8 Section 4.3.3 ASTM D 2671 Section 4.3.3 ASTM D 2671 Section 4.3.8 Section 4,3.3 ASTM D 2671
Fluid Resistance 5 hours at 23 ± 3°C [73± 5°F] Tensile Strength Ultimate Elongation	— psi (MPa) Percent	— 3500 minimum (24.1) 150 minimum	Section 4.3.8 Section 4.3.3 ASTM D 2671
Nuclear			Section 4.3.9
Radiation Resistance Followed by tests for: Tensile Strength Ultimate Elongation	 psi (MPa) percent	 3500 minimum (24.1) 150 minimum	—

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

-71

Semirigid Modified Polyolefin

Product Facts

- Flexible
- Flame-retardant

Applications

TE -71 material is a flexible, flame-retardant polyolefin suitable for use in general harnessing applications. The material is very flexible and offers a good balance of fluid and heat resistance. If Uniboot molded parts are required, -71 should be chosen as a replacement for -4. The standard color is black.

Installation

-71 molded parts will shrink on the application of heat above 125°C [257°F].

Recommended installation temperature is 150°C [302°F]

Operating Temperature Range

-55°C to 135°C
-67°F to 275°F]

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

-71 (Continued)

Specifications/Approvals

Military	TE
SAE-AS81765/1, Type II	RT-1316

Product Characteristics

		Specification Requirements	Test Method
Physical	Tensile strength	10 MPa (min.)	ASTM D 412
	Ultimate elongation	250% (min.)	ASTM D 412
	Specific gravity	1.40 (max.)	ASTM D 792
Thermal	Heat aging for 168 hr at 175°C [347°F]	Ultimate elongation 200% (min.)	ASTM D 412
	Heat shock for 4 h at 250°C [482°F]	No dripping, cracking, or flowing	ASTM D 2671
	Low-temperature flex for 4 h at -55°C [-67°F]	No cracking during mandrel bend	ASTM D 2671
	Flammability (burn time)	90 s (max.)	ASTM D 635
Electrical	Electric strength	8 MV/m	ASTM D 149
Water absorption	—	0.5% (max.)	ASTM D 570
Fluid resistance	Aviation fuel JP-4 (MIL-T-5624)	Tensile strength 5 MPa (min.) Ultimate elongation 200% (min.)	ASTM D 412 after immersion for 24 h at 25°C [77°F]
	Lubricating oil O-149 (MIL-L-7808)	Tensile strength 5 MPa (min.) Ultimate elongation 200% (min.)	ASTM D 412 after immersion for 24 h at 25°C [77°F]
	Hydraulic fluid (MIL-H-5606)	Tensile strength 5 MPa (min.) Ultimate elongation 200% (min.)	ASTM D 412 after immersion for 24 h at 25°C [77°F]
	Skydrol® 500	Tensile strength 5 MPa (min.) Ultimate elongation 200% (min.)	ASTM D 412 after immersion for 24 h at 25°C [77°F]

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

-100

Low-Fire-Hazard Material

Product Facts

- **Heat-shrinkable, semiflexible molded shapes for low fire hazard applications**
- **Low-smoke index as defined by BS G 198 Part 5**
- **Low-toxicity index as defined by NES 713**
- **High-temperature index as defined by ISO 4589-3**

Applications

TE heat-shrinkable molded parts in -100 material form part of System 100. The molded parts are designed for use in conjunction with Zerohal cable and tubing for applications where hazard reduction in the event of fire is crucial. The material exhibits excellent fire safety characteristics combined with low-smoke and low-acid-gas emission while retaining good mechanical and fluid-resistant properties. -100 parts with adhesive lining provide location, sealing, and strain relief of cable-connector terminations and cable–cable transitions on harnesses used where there is a need to lower the risk (such as in marine applications, mass transit systems, and offshore installations), or where equipment would be irreparably damaged by the corrosive products of combustion. Available in a wide range of configurations, -100 parts will operate continuously from -30°C to 105°C [-22°F to 221°F]. The standard color is black.

Installation

-100 molded parts will shrink on the application of heat above 120°C [248°F].

Recommended installation temperature: 150°C [302°F]

Operating Temperature Range

-30°C to 105°C
[-22°F to 221°F]

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

-100 (Continued)

Specifications/Approvals

Military/NAVSEA	TE
5617649 (U.S.)	RW-2082
Def. Stan 59-97, Issue 3, Type DF (Europe)	—
BSG 198 Part 5 Type DF (Europe)	—
BR1326 listed Class C	—
VG95343 Part 29 & 30	
SAE-AS85049/ 140, 141, 142 (material designator G)	

Product Characteristics

		Specification Requirements	Test Method
Physical	Tensile strength	8 MPa (min.)	ISO 37
	Ultimate elongation	200% (min.)	ISO 37
	2% secant modulus	130 MPa (max.)	ASTM D 882
	Specific gravity	1.5 (max.)	ISO 1183
Thermal	Heat aging for 168 h at 150°C [302°F]	Ultimate elongation 100% (min.)	ISO 188, ISO 37
	Heat shock for 4 h at 225°C [437°F]	No dripping, cracking, or flowing	ASTM D 2671
	Low-temperature flex at -30°C [-22°F]	No cracking during mandrel bend	ASTM D 2671
Fire safety properties	Limiting oxygen index	29 min.	ISO 4589-2
	Temperature index	250°C [482°F] (min.)	ISO 4589-3
	Flammability (burn time)	100 s (max.)	ASTM D 635
	Smoke index	20 (max.)	BSG 198 Part 5
	Toxicity index	5 (max.) per 100 g	NES 713
Electrical	Electric strength	15 MV/m (min.)	IEC 243
Water absorption	—	0.75% (max.) at 23°C [73°F] 3.5% (max.) at 70°C [158°F]	ISO 62
Fluid resistance	ISO 1817 Gasoline fuel	Tensile strength 5 MPa (min.) Ultimate elongation 150% (min.)	ISO 1817 and ISO 37 after immersion for 24 h at 23°C [73°F]
	Lubricating oil O-149	Tensile strength 5 MPa (min.) Ultimate elongation 150% (min.)	ISO 1817 and ISO 37 after immersion for 24 h at 50°C [122°F]
	Hydraulic fluid H515	Tensile strength 5 MPa (min.) Ultimate elongation 150% (min.)	ISO 1817 and ISO 37 after immersion for 24 h at 23°C [73°F]

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

-100S

Low-Fire-Hazard Screened Material

Product Facts

- Screened Zerohal material
- Low smoke index as defined by NES 711
- Low toxicity index as defined by NES 713
- High temperature index as defined by NES 715

Applications

-100S is the Zerohal material option in the Rayaten shield (screen) termination system. This material combines the fire safety properties of -100 with the excellent EMI and RFI screening of Rayaten screened molded parts where there is a need to lower the risk.

-100S is suitable for high-performance screen terminations in areas where Zerohal materials are required.

The standard color is black.

Products made from these materials are normally used in an assembly with boot and adapter. See KTKK, TCFS in section 7.

Operating Temperature Range

-30°C to 105°C
[-22°F to 221°F]

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

-100S (Continued)

Specifications/Approvals

Military	TE
VG 95343 Pt. 20, Pt. 22	RW-2078

Product Characteristics

		Specification Requirements*	Screening Effectiveness in dB at	
			3 KHz to 30 MHz (min.)	>30 MHz to 100 MHz (min.)
Initial values		Tensile strength: 7 MPa (min.) Metal adhesion: 15 N/cm (min.) Shielding effectiveness	75	70
Thermal	Heat shock (1/2 h at 200°C [392°F])	Metal adhesion: 15 N/cm (min.) Shielding effectiveness	75	70
	Heat aging (168 h at 150°C [302°F])	Metal adhesion: 15 N/cm (min.) Shielding effectiveness	75	70
Fluids	Immersion in the following fluids for 24 h:			
	Phosphate ester hydraulic fluid DTD900/4881 at 23°C [73°F]	Tensile strength: 5 MPa (min.) Shielding effectiveness	75	70
	Water at 23°C [73°F]	Tensile strength: 5 MPa (min.) Shielding effectiveness	75	70
	Lubricating oil O-149 at 50°C [122°F]	Tensile strength: 5 MPa (min.) Shielding effectiveness	75	70
	Transformer oil S-756 at 50°C [122°F]	Tensile strength: 5 MPa (min.) Shielding effectiveness	75	70

*Values quoted are for the polymer/metal composite in all cases when terminated using epoxy adhesives. (Refer to section 5.)

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

-125

Flexible Fluoropolymer

Product Facts

- **Flame retardant**
- **Abrasion and cut through resistance**
- **High temperature resistance**
- **High fluid resistance**
- **Environmentally sealed**

Applications

A heat-shrinkable, flame retardant, fluid and high temperature resistant, modified fluoropolymer molding compound. A range of shapes is available. -125 molded parts are recommended for use in System 300.

Use the System 300 family of parts in military and industrial applications where excellent high temperature performance and good physical and chemical properties are a requirement.

System 300 jacketing is based on a modified fluoropolymer and features a one part epoxy adhesive in tape form.

Installation

-125 molded parts will shrink upon the application of heat in excess of 160°C ± 3°C [320°F ± 5°F].

Operating Temperature Range

-55°C to 175°C
[-67°F to 347°F]

Specifications/Approvals

RT-1334

Product Characteristics

Physical	Elastic Memory	Percent	275 minimum expansion 90 minimum retraction	Section 4.3.2
	Tensile Strength	psi (MPa)	4000 minimum (27.5)	Section 4.3.3
	Ultimate Elongation	Percent	300 minimum	ASTM D 412
	Secant Modulus	psi (MPa)	100,000 maximum (689)	Section 4.3.4 ASTM D 882
	Specific Gravity	—	1.85 maximum	ASTM D 792
	Low Temperature Flexibility 4 hours at -57 ± 3°C [-70 ± 5°F]	—	No cracking	Section 4.3.5
	Heat Shock 4 hours at 300 ± 5°C [572 ± 9°F]	—	No dripping, flowing or cracking	Section 4.3.6
	Heat Resistance 168 hours at 250 ± 5°C [482 ± 9°F]	—	—	Section 4.3.7.1
	Followed by tests for: Tensile Strength Ultimate Elongation 2000 hours at 150 ± 3°C [302 ± 5°F]	 psi (MPa) Percent —	 3500 minimum (24.1) 250 minimum —	 Section 4.3.3 Section 4.3.3 Section 4.3.7.2
	Followed by tests for: Tensile Strength Ultimate Elongation	 psi (MPa) Percent	 3500 minimum (24.1) 250 minimum	 Section 4.3.3 Section 4.3.3

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

-125 (Continued)

Product Characteristics
(Continued)

Electrical			
Dielectric Strength	Volts/mil (kV/mm)	300 minimum (11.9)	ASTM D 149
Volume Resistivity	ohm-cm	1013 minimum	ASTM D 257
Chemical			
Corrosive Effect 16 hours at 175 ± 3°C [347 ± 5°F]	—	Noncorrosive	Section 4.3.8 ASTM D 2671 Procedure A
Flammability Initial Average Time of Burning Average Extent of Burning After Fluid Immersion 24 hours at 23 ± 3°C [73 ± 5°F] Gasoline, Automotive, Combat MIL-G-3056 Fuel Oil, Diesel VV-F-800 DF-2 Turbine Fuel, Aviation, JP-4 MIL-T-5624 Average Time of Burning Average Extent of Burning	 Seconds Inches (mm) Seconds Inches (mm)	 15 maximum 1 maximum (25) 30 maximum 1 maximum (25)	 ASTM D 635 Section 4.3.10 ASTM D 635
Fungus Resistance	—	Rating of 1 or less	ASTM G 21
Water Absorption 24 hours at 23 ± 3°C [73 ± 5°F]	Percent	0.5 maximum	ASTM D 570
Fluid Resistance 24 hours at 23 ± 3°C [73 ± 5°F] Gasoline, Automotive, Combat MIL-G-3056 24 hours at 50 ± 3°C [122 ± 5°F] Fuel Oil Diesel VV-F-800 DF-2 Turbine Fuel, Aviation, JP-4 MIL-T-5624 Electrolyte 10873919 5% Salt Solution O-S-1926 Anti-Icing & Defrosting Fluid MIL-A-8243 Lube Oil, Aircraft, Synthetic MIL-L-23699 Lube Oil MIL-L-2104 Lube Oil, Aircraft, Synthetic MIL-L-7808 24 hours at 100 ± 3°C [212 ± 5°F] Hydraulic Fluid, Synthetic MIL-H-46170 4 hours at 50 ± 3°C [122 ± 5°F] Cleaning Compound PC-437 5 hours at 23 ± 3°C [73 ± 5°F] Decontaminating Agent, DS-2 MIL-D-50030 Decontaminating Agent STB MIL-D-12468 Followed by tests for: Tensile Strength Ultimate Elongation Weight Increase	— psi (MPa) Percent Percent	— 3000 minimum (20.7) 250 minimum 3 maximum	Section 4.3.9 Section 4.3.3 Section 4.3.3 Section 4.3.9
Adhesive Compatibility Lap Shear Strength NSM to S-1264 to DCNS	psi (kPa)	100 minimum (689)	Section 4.3.11
Nuclear			
Radiation Resistance Followed by tests for: Tensile Strength Ultimate Elongation	 psi (MPa) Percent	 4000 (27.6) 250	Section 4.3.12 Section 4.3.3

-770

CBRN Fluoroelastomer Molded Component

Product Facts

- **Hardened to withstand effect of NBC decontamination agents including DS-2 and STB**
- **Tested in live agent tests with HD, VX and TGD for interior and exterior exposure**
- **Meets the demands of flammability and fluid resistance of current military ground vehicles**
- **Offered with compatible tubing, adhesive, wire and other harness components for a survivable system**

Applications

-770 heat shrinkable molded shapes are made of a chemically resistant fluoropolymer that is suited for use where moisture, fungus and vehicle fluids and fuels are a concern. Chemical resistance has been tested in accordance with Army TOP 8-2-510 for NBC Contamination Survivability.

Installation

Boots shrink with temperatures in excess of 150°C

Product is provided with a minimum 2:1 expansion ratio

Optimum application range is 10% above recovered ID to 85% of the expanded ID for all openings.

Operating Temperature Range

-55°C to 125°C
[-67°F to 257°F]

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

-770 (Continued)

Specifications/Approvals

Military	TE
SC-X15112 TOP-8-2-510	RT-770 type II (Molded Parts)

Product Characteristics

Physical

PROPERTY	UNIT	RT-770 TYPE I TUBING	RT-770 TYPE II MOLDED PARTS	TEST METHOD
Dimensions	Inches (*mm*)	In accordance with Table 1	In accordance with applicable SCD	RT-770
Tensile Strength	Psi (*MPa*)	2500 (*17.2*) minimum	2500 (*17.2*) minimum	ASTM D 412
Ultimate Elongation	Percent	300 minimum	300 minimum	ASTM D 412
Secant Modulus (expanded), 2%	Psi (*MPa*)	100,000 (*689*) maximum	100,000 (*689*) maximum	ASTM 882
Specific Gravity	--	1.85 maximum	1.85 maximum	ASTM D 792
Low Temperature Flexibility 4 hours at -55±3˚C (*-67±5˚F*)	--	No cracking	No cracking	RT-770
Heat Shock 4 hours at 225±5˚C (*437±9˚F*)	--	No dripping, flowing or cracking	No dripping, flowing or cracking	RT-770
Heat Resistance 336 hours at 175±3˚C (*347±5˚F*) Followed by tests for:				RT-770
Tensile Strength	Psi (*MPa*)	2000 (*13.8*) minimum	2000 (*13.8*) minimum	
Ultimate Elongation	Percent	250 minimum	250 minimum	

Electrical

PROPERTY	UNIT	RT-770 TYPE I TUBING	RT-770 TYPE II MOLDED PARTS	TEST METHOD
Dielectric Strength	Volts/mil (*kV/mm*)	400 (*15.7*) minimum	400 (*15.7*) minimum	ASTM D 149
Volume Resistivity	Ohm-cm	1×10^{11} minimum	1×10^{11} minimum	ASTM D 257

Nuclear

PROPERTY	UNIT	RT-770 TYPE I TUBING	RT-770 TYPE II MOLDED PARTS	TEST METHOD
Radiation Resistance -10 Mrads gamma Followed by tests for:				RT-770
Tensile Strength	Psi (*MPa*)	2000 (*13.8*) minimum	2000 (*13.8*) minimum	
Ultimate Elongation	Percent	150 minimum	150 minimum	

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

-770 (Continued)

Chemical

PROPERTY	UNIT	RT-770 TYPE I TUBING	RT-770 TYPE II MOLDED PARTS	TEST METHOD
Copper Mirror Corrosion 16 hours at 175±3˚C (*347±5˚F*)	--	Non Corrosive	Non Corrosive	ASTM D 2671 Procedure A
Fungus Resistance	Growth	Rating of 1 or less	Rating of 1 or less	ASTM G21
Water Absorption 24 hours at 23±3˚C (*73±5˚F*)	Percent	0.5 maximum	0.5 maximum	ASTM D 570
Flammability Average Burn Time	Seconds	15 maximum	--	ASTM D 2671 Procedure A
Average Burn Time Average extent of burning	Seconds Inches	--	15 maximum 1 maximum	ASTM D 635-98
Fluid Resistance 24 hours at 23±3˚C (*73±5˚F*) a) JP-8 Jet Fuel (MIL-DTL-83133) b) Diesel Fuel (VV-F-800, DF-2)				RT-770
Followed by tests for:				
Tensile Strength	Psi (MPa)	2000 (*13.8*) minimum	2000 (*13.8*) minimum	
Ultimate Elongation	Percent	250 minimum	250 minimum	
Weight Increase	Percent	3 maximum	3 maximum	
24 hours at 50±3˚C (*122±5˚F*) a) Bore Cleaner (MIL-PRF-372 b) Anti-Icing Fluid (SAE-AMS-1424) c) Salt-5% solution (ASTM D 632) d) Lubricating Oil (MIL-PRF-2104) e) Lubricating Oil (MIL-PRF-23699) f) Arctic Lube (MIL-PRF-46167) g) Cleaning Compound (A-A-59133) h) Electrolyte (P/N 10873919)				
Followed by tests for:				
Tensile Strength	Psi (MPa)	2000 (*13.8*) minimum	2000 (*13.8*) minimum	
Ultimate Elongation	Percent	250 minimum	250 minimum	
Weight Increase	Percent	3 maximum	3 maximum	
24 hours at 71±3˚C (*160±5˚F*) Hydraulic, synthetic (MIL-PRF-46170)				
Followed by tests for:				
Tensile Strength	Psi (MPa)	2000 (*13.8*) minimum	2000 (*13.8*) minimum	
Ultimate Elongation	Percent	250 minimum	250 minimum	
Weight Increase	Percent	3 maximum	3 maximum	
4 hours at 23±3˚C (*73±5˚F*) a) Decontaminating Agent, DS-2 (MIL-D-50030) b) Decontaminating Agent, STB (MIL-DTL-12468) 5% Solution				RT-770
Followed by tests for:				
Tensile Strength	Psi (MPa)	2000 (*13.8*) minimum	2000 (*13.8*) minimum	
Ultimate Elongation	Percent	250 minimum	250 minimum	
Weight Increase	Percent	3 maximum	3 maximum	

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

-780

CBRN Fluoroelastomer Molded Component

Product Facts

- **Hardened to withstand effect of NBC decontamination agents including DS-2 and STB**
- **Tested in live agent tests with HD, VX and TGD for interior and exterior exposure**
- **Meets the demands of flammability and fluid resistance of current military ground vehicles**
- **Offered with compatible tubing, adhesive, wire and other harness components for a survivable system**

Applications

-780 heat shrinkable molded shapes are made of a chemically resistant fluoropolymer that is suited for use where moisture, fungus and vehicle fluids and fuels are a concern. Chemical resistance has been tested in accordance with Army TOP 8-2-510 for NBC Contamination Survivability.

Installation

Boots shrink with temperatures in excess of 150°C

Product is provided with a minimum 2:1 expansion ratio

Optimum application range is 10% above recovered ID to 85% of the expanded ID for all openings.

Operating Temperature Range

-55°C to 175°C
[-67°F to 347°F]

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

-780 (Continued)

Specifications/Approvals

Military	TE
SC-X15112 TOP-8-2-510	RT-780 type II (Molded Parts)

Product Characteristics

Physical

PROPERTY	UNIT	RT-780 TYPE I TUBING	RT-780 TYPE II MOLDED PARTS	TEST METHOD
Dimensions	Inches (*mm*)	In accordance with Table 1	In accordance with applicable SCD	RT-770
Tensile Strength	Psi (*MPa*)	3000 (*20.7*) minimum	3000 (*20.7*) minimum	ASTM D 412
Ultimate Elongation	Percent	300 minimum	300 minimum	ASTM D 412
Secant Modulus (expanded), 2%	Psi (*MPa*)	50,000 (*345*) maximum	50,000 (*345*) maximum	ASTM 882
Specific Gravity	--	2.0 maximum	2.0 maximum	ASTM D 792
Low Temperature Flexibility 4 hours at -55±3˚C (*-67±5˚F*)	--	No cracking	No cracking	RT-780
Heat Shock 4 hours at 275±5˚C (*527±9˚F*)	--	No dripping, flowing or cracking	No dripping, flowing or cracking	RT-780
Heat Resistance 336 hours at 200±3˚C (*392±5˚F*) Followed by tests for:				RT-780
Tensile Strength	Psi (*MPa*)	2000 (*13.8*) minimum	2000 (*13.8*) minimum	
Ultimate Elongation	Percent	250 minimum	250 minimum	

Electrical

PROPERTY	UNIT	RT-780 TYPE I TUBING	RT-780 TYPE II MOLDED PARTS	TEST METHOD
Dielectric Strength	Volts/mil (*kV/mm*)	200 (*7.9*) minimum	200 (*7.9*) minimum	ASTM D 149
Volume Resistivity	Ohm-cm	1 x 10^{11} minimum	1 x 10^{11} minimum	ASTM D 257

Nuclear

PROPERTY	UNIT	RT-780 TYPE I TUBING	RT-780 TYPE II MOLDED PARTS	TEST METHOD
Radiation Resistance -10 Mrads gamma Followed by tests for:				RT-780
Tensile Strength	Psi (*MPa*)	2000 (*13.8*) minimum	2000 (*13.8*) minimum	
Ultimate Elongation	Percent	150 minimum	150 minimum	

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

-780 (Continued)

Chemical

PROPERTY	UNIT	RT-780 TYPE I TUBING	RT-780 TYPE II MOLDED PARTS	TEST METHOD
Copper Mirror Corrosion 16 hours at 175±3˚C (*347±5˚F*)	--	Non Corrosive	Non Corrosive	ASTM D 2671 Procedure A
Fungus Resistance	Growth	Rating of 1 or less	Rating of 1 or less	ASTM G21
Water Absorption 24 hours at 23±3˚C (*73±5˚F*)	Percent	0.5 maximum	0.5 maximum	ASTM D 570
Flammability Average Burn Time	--	1) 25% max. flag burn 2) No burning of cotton 3) No flaming or glowing longer than 30 seconds	--	ASTM D 2671 Procedure C
Average Burn Time Average extent of burning	Seconds Inches	--	15 maximum 1 maximum	ASTM D 635-98
Fluid Resistance 24 hours at 23±3˚C (*73±5˚F*) a) JP-8 Jet Fuel (MIL-DTL-83133)				RT-780
Followed by tests for: Tensile Strength Ultimate Elongation Weight Increase	 Psi (MPa) Percent Percent	 2000 (*13.8*) minimum 250 minimum 3 maximum	 2000 (*13.8*) minimum 250 minimum 3 maximum	
24 hours at 50±3˚C (*122±5˚F*) a) Bore Cleaner (MIL-PRF-372 b) Diesel Fuel DF-2 (A-A-525571) c) Anti-Icing Fluid (SAE-AMS-1424) d) Salt-5% solution (ASTM D 632) e) Lubricating Oil (MIL-PRF-2104) f) Lubricating Oil (MIL-PRF-23699) g) Arctic Lube (MIL-PRF-46167) h) Cleaning Compound (A-A-59133) i) Electrolyte (P/N 10873919)				
Followed by tests for: Tensile Strength Ultimate Elongation Weight Increase	 Psi (MPa) Percent Percent	 2000 (*13.8*) minimum 250 minimum 3 maximum	 2000 (*13.8*) minimum 250 minimum 3 maximum	
24 hours at 71±3˚C (*160±5˚F*) Hydraulic, synthetic (MIL-PRF-46170)				
Followed by tests for: Tensile Strength Ultimate Elongation Weight Increase	 Psi (MPa) Percent Percent	 2000 (*13.8*) minimum 250 minimum 3 maximum	 2000 (*13.8*) minimum 250 minimum 3 maximum	
4 hours at 23±3˚C (*73±5˚F*) a) Decontaminating Agent, DS-2 (MIL-D-50030) b) Decontaminating Agent, STB (MIL-DTL-12468) 5% Solution				RT-780
Followed by tests for: Tensile Strength Ultimate Elongation Weight Increase	 Psi (MPa) Percent Percent	 2000 (*13.8*) minimum 250 minimum 3 maximum	 2000 (*13.8*) minimum 250 minimum 3 maximum	

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

-790

CBRN Fluoroelastomer Molded Component

Product Facts

- **Hardened to withstand effect of NBC decontamination agents including DS-2 and STB**
- **Tested in live agent tests with HD, VX and TGD for interior and exterior exposure**
- **Meets the demands of flammability and fluid resistance of current military ground vehicles**
- **Offered with compatible tubing, adhesive, wire and other harness components for a survivable system**

Applications

-790 heat shrinkable molded shapes are made of a chemically resistant fluoropolymer that is suited for use where moisture, fungus and vehicle fluids and fuels are a concern. Chemical resistance has been tested in accordance with Army TOP 8-2-510 for NBC Contamination Survivability.

Installation

Boots shrink with temperatures in excess of 150°C

Product is provided with a minimum 2:1 expansion ratio

Optimum application range is 10% above recovered ID to 85% of the expanded ID for all openings.

Operating Temperature Range

-55°C to 200°C
[-67°F to 392°F]

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

-790 (Continued)

Specifications/Approvals

Military	TE
SC-X15112 TOP-8-2-510	RT-790 type II (Molded Parts)

Product Characteristics

Physical

PROPERTY	UNIT	RT-790 TYPE I TUBING	RT-790 TYPE II MOLDED PARTS	TEST METHOD
Dimensions	Inches (*mm*)	In accordance with Table 1	In accordance with applicable SCD	RT-790
Tensile Strength	Psi (*MPa*)	4000 (*27.6)* minimum	4000 (*27.6)* minimum	ASTM D 412
Ultimate Elongation	Percent	300 minimum	300 minimum	ASTM D 412
Secant Modulus (expanded), 2%	Psi (*MPa*)	50,000 (*345*) maximum	50,000 (*345*) maximum	ASTM 882
Specific Gravity	--	2.0 maximum	2.0 maximum	ASTM D 792
Low Temperature Flexibility 4 hours at -65±3˚C (*-85±5˚F*)	--	No cracking	No cracking	RT-790
Heat Shock 4 hours at 300±5˚C (*572±9˚F*)	--	No dripping, flowing or cracking	No dripping, flowing or cracking	RT-790
Heat Resistance 336 hours at 250±3˚C (*482±5˚F*) Followed by tests for:				RT-790
Tensile Strength	Psi (*MPa*)	2000 (*13.8*) minimum	2000 (*13.8*) minimum	
Ultimate Elongation	Percent	150 minimum	150 minimum	

Electrical

PROPERTY	UNIT	RT-790 TYPE I TUBING	RT-790 TYPE II MOLDED PARTS	TEST METHOD
Dielectric Strength	Volts/mil (*kV/mm*)	200 (*7.9*) minimum	200 (*7.9*) minimum	ASTM D 149
Volume Resistivity	Ohm-cm	1 x 10^{11} minimum	1 x 10^{11} minimum	ASTM D 257

Nuclear

PROPERTY	UNIT	RT-790 TYPE I TUBING	RT-790 TYPE II MOLDED PARTS	TEST METHOD
Radiation Resistance -10 Mrads gamma Followed by tests for:				RT-790
Tensile Strength	Psi (*MPa*)	3000 (*20.7*) minimum	3000 (*20.7*) minimum	
Ultimate Elongation	Percent	150 minimum	150 minimum	

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

-790 (Continued)

Chemical

PROPERTY	UNIT	RT-790 TYPE I TUBING	RT-790 TYPE II MOLDED PARTS	TEST METHOD
Copper Mirror Corrosion 16 hours at 200±3˚C (*392±5˚F*)	--	Non Corrosive	Non Corrosive	ASTM D 2671 Procedure A
Fungus Resistance	Growth	Rating of 1 or less	Rating of 1 or less	ASTM G21
Water Absorption 24 hours at 23±3˚C (*73±5˚F*)	Percent	0.5 maximum	0.5 maximum	ASTM D 570
Flammability	--	1) 25% max. flag burn 2) No burning of cotton 3) No flaming or glowing longer than 30 seconds	--	ASTM D 2671 Procedure C
Average Burn Time Average extent of burning	Seconds Inches	--	15 maximum 1 maximum	ASTM D 635-98
Fluid Resistance 24 hours at 23±3˚C (*73±5˚F*) a) JP-8 Jet Fuel (MIL-DTL-83133)				RT-790
Followed by tests for:				
Tensile Strength	Psi (MPa)	3500 (*24.1*) minimum	3500 (*24.1*) minimum	
Ultimate Elongation	Percent	250 minimum	250 minimum	
Weight Increase	Percent	3 maximum	3 maximum	
24 hours at 50±3˚C (*122±5˚F*) a) Bore Cleaner (MIL-PRF-372 b) Diesel Fuel DF-2 (A-A-525571) c) Anti-Icing Fluid (SAE-AMS-1424) d) Salt-5% solution (ASTM D 632) e) Lubricating Oil (MIL-PRF-2104) f) Lubricating Oil (MIL-PRF-23699) g) Arctic Lube (MIL-PRF-46167) h) Cleaning Compound (A-A-59133) i) Electrolyte (P/N 10873919)				
Followed by tests for:				
Tensile Strength	Psi (MPa)	3500 (*24.1*) minimum	3500 (*24.1*) minimum	
Ultimate Elongation	Percent	250 minimum	250 minimum	
Weight Increase	Percent	3 maximum	3 maximum	
24 hours at 71±3˚C (*160±5˚F*) Hydraulic, synthetic (MIL-PRF-46170)				
Followed by tests for:				
Tensile Strength	Psi (MPa)	3500 (*24.1*) minimum	3500 (*24.1*) minimum	
Ultimate Elongation	Percent	250 minimum	250 minimum	
Weight Increase	Percent	3 maximum	3 maximum	
4 hours at 23±3˚C (*73±5˚F*) a) Decontaminating Agent, DS-2 (MIL-D-50030) b) Decontaminating Agent, STB (MIL-DTL-12468) 5% Solution				RT-790
Followed by tests for:				
Tensile Strength	Psi (MPa)	3500 (*24.1*) minimum	3500 (*24.1*) minimum	
Ultimate Elongation	Percent	250 minimum	250 minimum	
Weight Increase	Percent	3 maximum	3 maximum	

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

End Caps, 101A011 to 094

TE end caps provide optimum waterproofing and environmental protection for underwater, underground, or outdoor applications.

The end caps are highly resistant to moisture, fungus, and weathering.

Applications

Use for protecting cables and pipes or capping unused outlets in transitions. Provides an environmental seal when used with adhesive.

As Supplied (a)

After Unrestricted Recovery (b)

Product Dimensions

Part No.	H		P	HW
	Min. a	Max. b	Min. b	±20% b
101A011	5.10 [.20]	2.00 [.08]	22.90 [.90]	1.02 [.04]
101A021	7.40 [.29]	3.30 [.13]	25.40 [1.00]	1.27 [.05]
101A031	10.20 [.40]	4.80 [.18]	30.50 [1.20]	1.52 [.06]
101A041	15.20 [.60]	6.40 [.25]	40.60 [1.60]	1.78 [.07]
101A062	25.40 [1.00]	11.40 [.45]	68.80 [2.70]	2.29 [.09]
101A083	50.80 [2.00]	22.90 [.90]	101.60 [4.00]	2.79 [.11]
101A094	83.80 [3.30]	38.10 [1.50]	114.30 [4.50]	3.05 [.12]

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 [.06] max.

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

End Caps, 101A011 to 094 (Continued)

Materials Available

Material*	Material Description	Precoating No.	Adhesive Part No.**
-3	Semirigid polyolefin	/42 or /86	S-1017 or S-1048
-4	Flexible polyolefin	/42 or /86	S-1017 or S-1048
-12	Fluoroelastomer	N/A	S-1255-04
-25	Fluid-resistant elastomer	/42 or /86	S-1017 or S-1048 or S-1125
-100	Polyolefin, Zerohal	/180	S-1030

*For more information, please see the appropriate material page in this section.
**For more information, please see section 5.

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

SSC

Heat-Shrinkable End Caps

Product Facts

- **Self-sealing for waterproofing (sealant-coated parts only)**
- **Electrical insulation to 1000 V**
- **Abrasion-resistance**
- **Mechanical protection**
- **Easy installation, requiring no special skills**
- **Operating temperature range of -40°C to 85°C [-40°F to 185°F]**
- **Minimum shrink temperature of 121°C [250°F]**

Applications

These SSC heat-shrinkable end caps are made from a thermally stabilized, modified polyolefin, which makes them highly resistant to moisture, fungus, and weathering. The end caps also have excellent electrical properties. End caps coated with sealant are available for underwater or underground applications with a pressure differential up to 20 psi between the inside of the cable and the outside environment. End caps may be used over lead, steel, aluminum, copper, polyethylene, polyolefin, EPR, and PVC jacketing materials.

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

SSC (Continued)

Specifications/Approvals

Type	TE	Military/Commercial
SSC-X and SSC-XTV	SSC specification control drawing	PPS-3011/6
—	RW-2024	—

Adhesive is /239 = PPS = 3012/70

Product Dimensions

Part No.	Inner Diameter* As Supplied (min.)	Recovered Inside Dia. (max.)	Length Recovered ± 10 %	Wall Thickness Recovered ± 20 %
SSC-1	10.00 [.390]	4.00 [.160]	33.50 [1.320]	2.00 [.080]
SSC-2	20.00 [.790]	7.50 [.300]	55.30 [2.180]	2.30 [.090]
SSC-3	35.00 [1.380]	15.00 [.590]	89.90 [3.540]	3.00 [.120]
SSC-4	55.00 [2.170]	25.00 [.980]	143.20 [5.640]	3.30 [.130]
SSC-5	75.00 [2.950]	32.00 [1.250]	150.10 [5.910]	3.30 [.130]
SSC-5M1	75.00 [2.950]	32.00 [1.250]	79.25 [3.120]	3.30 [.130]
SSC-6	100.00 [3.940]	45.00 [1.770]	162.50 [6.400]	4.00 [.160]
SSC-7	120.00 [4.720]	70.00 [2.760]	145.00 [5.710]	3.80 [.150]

*As-supplied dimensions appearing in table are for uncoated parts. When adhesive is added, entry diameters will be reduced by 1.5 [.06] maximum.

Ordering Information

Military	
SSC-XTV	Sealing end cap with adhesive , w/ pressure valve
SSC-X	Sealing end cap with adhesive
SSC-XU	End cap, uncoated

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

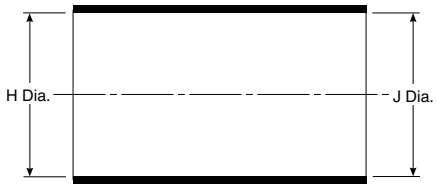
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

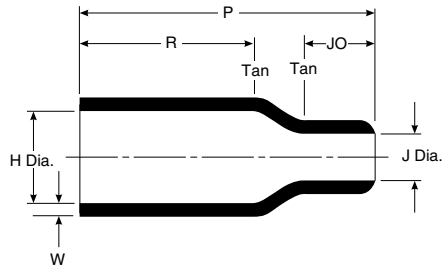
202A111 to 196

Straight Boot

As Supplied (a)



After Unrestricted Recovery (b)



Applications

Use for mechanical protection and connector/cable strain relief. This family of boots has no lip, so that a boot can be installed directly onto the connector accessory thread.

Materials Available

Material*	Material Description	Precoating No.	Adhesive Part No.**
-3	Semirigid polyolefin	/42 or /86	S-1017 or S-1048
-4	Flexible polyolefin	/42 or /86	S-1017 or S-1048
-12	Fluoroelastomer	N/A	S-1255-04
-25	Fluid-resistant elastomer	/42 or /86 or /225	S-1017 or S-1048 or S-1125
-100	Polyolefin, Zerohal	/86 or /180	S-1048 or S-1030

*For more information, please see the appropriate material page in this section.
**For more information, please see section 5.

Product Dimensions

Part No.	H Min. -3, -4, -25 a	H Min. -12, -100 a	H Max. b	J Min. -3, -4, -25 a	J Min. -12, -100 a	J Max. b	P ±10% b	R ±10% b	JO Ref. b	W ±20% b
202A111	16.5 [.65]	16.5 [.65]	7.9 [.31]	16.5 [.65]	11.9 [.47]	3.8 [.15]	25.4 [1.00]	14.2 [.56]	5.8 [.23]	1.27 [.05]
202A121	24.6 [.97]	22.6 [.89]	9.9 [.39]	24.6 [.97]	17.8 [.70]	5.3 [.21]	38.1 [1.50]	21.8 [.86]	9.1 [.36]	1.52 [.06]
202A132	28.4 [1.12]	26.2 [1.03]	14.2 [.56]	28.4 [1.12]	20.3 [.80]	6.6 [.26]	51.3 [2.02]	27.9 [1.10]	13.0 [.51]	1.78 [.07]
202A142	31.0 [1.22]	31.0 [1.22]	17.8 [.70]	31.0 [1.22]	25.4 [1.00]	7.4 [.29]	66.8 [2.63]	35.6 [1.40]	17.8 [.70]	1.78 [.07]
202A153	36.1 [1.42]	36.1 [1.42]	21.9 [.86]	36.1 [1.42]	26.2 [1.03]	8.6 [.34]	73.7 [2.90]	41.4 [1.63]	16.0 [.63]	1.78 [.07]
202A163	42.7 [1.68]	42.7 [1.68]	27.4 [1.08]	42.7 [1.68]	27.2 [1.07]	9.4 [.37]	99.1 [3.90]	62.7 [2.47]	18.0 [.71]	2.03 [.08]
202A174	51.8 [2.04]	48.3 [1.90]	35.3 [1.39]	51.8 [2.04]	48.3 [1.90]	16.0 [.63]	130.0 [5.13]	64.8 [2.55]	41.9 [1.65]	3.30 [.13]
202A185	66.0 [2.60]	66.0 [2.60]	43.7 [1.72]	66.0 [2.60]	54.1 [2.13]	19.6 [.77]	161.3 [6.35]	90.2 [3.55]	47.8 [1.88]	3.81 [.15]
202A196	86.4 [3.40]	86.4 [3.40]	57.2 [2.25]	86.4 [3.40]	71.4 [2.81]	26.9 [1.06]	212.6 [8.37]	113.0 [4.45]	62.2 [2.45]	4.06 [.16]

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 [.06] max.

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

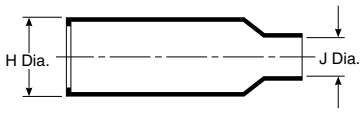
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

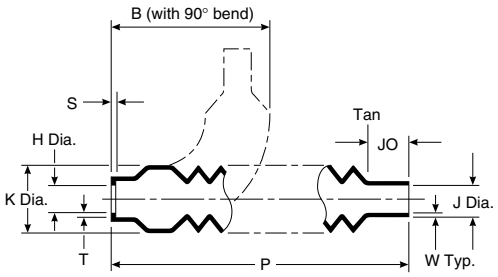
202C611 to 663

Uniboot

As Supplied (a)



After Unrestricted Recovery (b)



Applications

Use to provide abrasion protection for connectors. The flexibility of design allows a variety of cable outlet angles. When installed on a spin-coupling adapter, cold reentry to the connector is possible by compressing the molded part. When used with adhesive it provides environmental sealing.

Materials Available

Material*	Material Description	Precoating No.	Adhesive Part No.**
-50	Fluoroelastomer polymer blend	N/A	S-1125
-51	Elastomer polymer blend	/164	S-1124
-71	Flexible polyolefin	/42 or /86	S-1017 or S-1048

*For more information, please see the appropriate material page in this section.
**For more information, please see section 5.

Product Dimensions

Part No.	H Min. a -50, -51	H Min. a -71	H Max. b	J Min. a -50, -51	J Min. a -71	J Max. b	K Max. b	P ±10% b	JO ±10% b	S ±.03[0.76] b	T ±.03[0.76] b	W Min. b	B Nom. b
202C611	14.2 [.56]	17.5 [.69]	6.9 [.27]	11.2 [.44]	14.2 [.56]	4.8 [.19]	21.1 [.83]	120.7 [4.75]	17.5 [.69]	1.52 [.06]	1.27 [.05]	0.33 [.013]	62.5 [2.46]
202C621	22.4 [.88]	26.4 [1.04]	11.7 [.46]	17.8 [.70]	26.4 [1.04]	8.1 [.32]	26.7 [1.05]	133.4 [5.25]	19.0 [.78]	1.52 [.06]	1.27 [.05]	0.46 [.018]	67.8 [2.67]
202C632	34.0 [1.34]	38.1 [1.50]	17.5 [.69]	26.9 [1.06]	38.1 [1.50]	12.7 [.50]	32.8 [1.29]	146.1 [5.75]	22.4 [.88]	1.78 [.07]	1.27 [.05]	0.51 [.020]	73.4 [2.89]
202C642	44.2 [1.74]	47.8 [1.88]	22.4 [.88]	36.6 [1.44]	47.8 [1.88]	17.5 [.69]	37.8 [1.49]	158.8 [6.25]	25.4 [1.00]	1.78 [.07]	1.27 [.05]	0.61 [.024]	78.2 [3.08]
202C653	53.8 [21.2]	54.9 [2.16]	27.9 [1.10]	45.7 [1.80]	54.9 [2.16]	22.4 [.88]	42.9 [1.69]	171.5 [6.75]	28.4 [1.12]	1.78 [.07]	2.03 [.08]	0.61 [.024]	82.8 [3.26]
202C663	57.2 [22.5]	77.2 [3.04]	40.6 [1.60]	57.2 [2.25]	54.6 [2.15]	22.9 [.90]	62.2 [2.45]	236.2 [9.30]	35.1 [1.38]	2.03 [.08]	2.03 [.08]	0.66 [.026]	138.4 [5.45]

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 [.06] max.

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

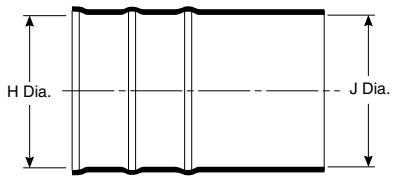
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

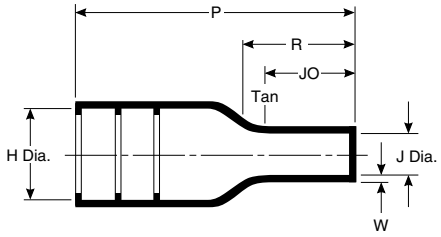
202D121 to 196

Straight, Lipped Boot

As Supplied (a)



After Unrestricted Recovery (b)



Applications

Use in conjunction with TE adapters to provide strain relief for harness systems using circular connectors. Boot is compatible with all grooved adapters of appropriate shell size.

Materials Available

Material*	Material Description	Precoating No.	Adhesive Part No.**
-3	Semirigid polyolefin	/42 or /86	S-1017 or S-1048
-4	Flexible polyolefin	/42 or /86	S-1017 or S-1048
-12	Fluoroelastomer	N/A	S-1255-04
-25	Fluid-resistant elastomer	/42 or /86 or /225	S-1017 or S-1048 or S-1125
-100	Polyolefin, Zerohal	186/180	S-1048 or S-1030

*For more information, please see the appropriate material page in this section.
**For more information, please see section 5.

Product Dimensions

Part No.	H		J			P ±10% b	JO ±10% b	W ±20% b	R ±10% b
	Min. a	Max. b	Min. -3, -4, -25 a	Min. -12, -100 a	Max. b				
202D121	23.3 [.92]	10.5 [.41]	23.3 [.92]	12.4 [.49]	5.6 [.22]	38.1 [1.50]	10.2 [.40]	1.78 [.07]	—
202D132	28.4 [1.12]	14.3 [.56]	28.4 [1.12]	14.7 [.58]	6.6 [.26]	54.9 [2.16]	16.5 [.65]	1.78 [.07]	21.6 [.85]
202D142	31.0 [1.22]	17.8 [.70]	31.0 [1.22]	16.0 [.63]	7.2 [.28]	66.8 [2.63]	17.8 [.70]	2.03 [.08]	24.5 [.96]
202D153	36.0 [1.42]	22.4 [.88]	36.0 [1.42]	18.5 [.73]	8.4 [.33]	80.0 [3.15]	20.8 [.82]	2.03 [.08]	29.7 [1.17]
202D163	42.7 [1.68]	28.2 [1.11]	42.7 [1.68]	22.0 [.87]	9.9 [.39]	103.6 [4.08]	24.6 [.97]	2.29 [.09]	36.7 [1.44]
202D174	51.8 [2.04]	35.1 [1.38]	51.8 [2.04]	35.3 [1.39]	15.8 [.62]	130.3 [5.13]	39.6 [1.56]	3.30 [.13]	53.8 [2.12]
202D185	66.0 [2.60]	44.5 [1.75]	66.0 [2.60]	45.7 [1.80]	20.4 [.80]	165.1 [6.50]	48.3 [1.90]	4.06 [.16]	65.6 [2.59]
202D196	81.7 [3.22]	57.6 [2.27]	81.7 [3.22]	57.1 [2.25]	25.4 [1.00]	177.8 [7.00]	47.8 [1.88]	4.06 [.16]	67.1 [2.64]

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 [.06] max.

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

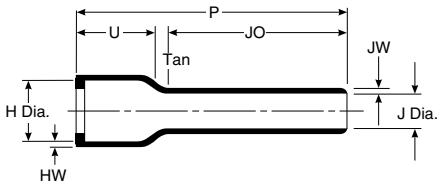
For additional support numbers please visit www.te.com

202D211 to 299

Straight, Lipped Boot

As Supplied (a)

After Unrestricted Recovery (b)



Applications

Use with circular connectors and the appropriate TE backshell adapter to provide connector/cable strain relief. Boot is used on open-wire-bundle airborne harnesses, or applications where the long tail replaces cable jacketing removed during termination.

Materials Available

Material*	Material Description	Precoating No.	Adhesive Part No.**
-3	Semirigid polyolefin	/42 or /86	S-1017 or S-1048
-4	Flexible polyolefin	/42 or /86	S-1017 or S-1048
-12	Fluoroelastomer	N/A	S-1255-04
-25	Fluid-resistant elastomer	/42 or /86 or /225	S-1017 or S-1048 or S-1125
-100	Polyolefin, Zerohal	/86 or /180	S-1048 or S-1030

*For more information, please see the appropriate material page in this section.
**For more information, please see section 5.

Product Dimensions

Part No.	H		J			P ±10% b	JO ±10% b	U ±10% b	HW ±20% b	JW ±20% b
	Min. a	Max. b	Min. -3, -4, -25 a	Min. -12, -100 a	Max. b					
202D211	22.4 [.88]	11.4 [.45]	22.4 [.88]	14.0 [.55]	6.4 [.25]	105.9 [4.17]	86.4 [3.40]	14.2 [.56]	1.52 [.06]	1.14 [.045]
202D221	25.7 [1.01]	15.0 [.59]	25.7 [1.01]	16.0 [.63]	7.4 [.29]	121.2 [4.77]	98.6 [3.88]	15.0 [.59]	1.52 [.06]	1.14 [.045]
202D232	29.5 [1.16]	18.8 [.74]	29.5 [1.16]	18.3 [.72]	8.4 [.33]	138.7 [5.46]	112.8 [4.44]	15.5 [.61]	1.78 [.07]	1.14 [.045]
202D242	34.0 [1.34]	22.9 [.90]	34.0 [1.34]	21.3 [.84]	9.7 [.38]	159.5 [6.28]	130.8 [5.15]	15.7 [.62]	1.78 [.07]	1.14 [.045]
202D253	37.3 [1.47]	29.5 [1.16]	37.3 [1.47]	23.1 [.91]	10.4 [.41]	177.8 [7.00]	142.2 [5.60]	18.0 [.71]	2.0 [.08]	1.14 [.045]
202D263	43.7 [1.72]	34.0 [1.34]	43.7 [1.72]	27.2 [1.07]	12.2 [.48]	203.2 [8.00]	163.1 [6.42]	19.8 [.78]	2.0 [.08]	1.14 [.045]
202D274	50.0 [1.97]	41.2 [1.62]	50.0 [1.97]	31.5 [1.24]	14.2 [.56]	203.2 [8.00]	157.7 [6.21]	20.8 [.82]	2.3 [.09]	1.40 [.055]
202D285	62.7 [2.47]	47.0 [1.85]	62.7 [2.47]	39.1 [1.54]	17.5 [.69]	203.2 [8.00]	153.2 [6.03]	23.4 [.92]	2.5 [.10]	1.40 [.055]
202D296	69.3 [2.73]	59.7 [2.35]	69.3 [2.73]	43.2 [1.70]	19.6 [.77]	203.2 [8.00]	143.3 [5.64]	23.6 [.93]	2.5 [.10]	1.40 [.055]
202D299	81.8 [3.22]	67.1 [2.64]	81.8 [3.22]	51.1 [2.01]	22.9 [.90]	203.2 [8.00]	138.4 [5.45]	31.2 [1.23]	2.5 [.10]	1.40 [.055]

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 [.06] max.

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

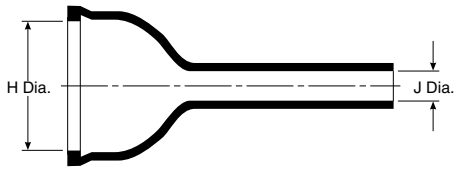
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

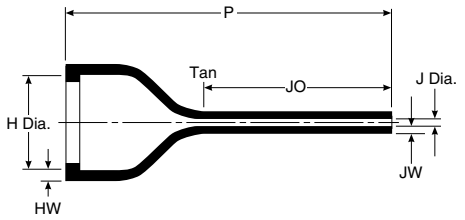
202D921 to 963

Straight, Lipped Boot

As Supplied (a)



After Unrestricted Recovery (b)



Applications

Use with circular connectors and the appropriate TE backshell adapter to provide connector/cable strain relief. Boot is used in applications where only a small number of the available contacts are utilized, thus resulting in a high ratio between the adapter and cable diameters.

Materials Available

Material*	Material Description	Precoating No.	Adhesive Part No.**
-3	Semirigid polyolefin	/42 or /86	S-1017 or S-1048
-4	Flexible polyolefin	/42 or /86	S-1017 or S-1048
-12	Fluoroelastomer	N/A	S-1255-04
-25	Fluid-resistant elastomer	/42 or /86 or /225	S-1017 or S-1048 or S-1125
-100	Polyolefin, Zerohal	/86 or /180	S-1048 or S-1030

*For more information, please see the appropriate material page in this section.
**For more information, please see section 5.

Product Dimensions

Part No.	H		J			P ±10% b	JO ±10% b	HW ±20% b	JW ±20% b
	Min. a	Max. b	Min. -3, -4, -25 a	Min. -12, -100 a	Max. b				
202D921	19.3 [.76]	13.0 [.51]	6.3 [.25]	4.5 [.18]	2.1 [.08]	60.2 [2.37]	37.6 [1.48]	1.52 [.06]	1.14 [.045]
202D932	26.1 [1.03]	19.1 [.75]	7.6 [.30]	5.5 [.22]	2.6 [.10]	74.2 [2.92]	45.0 [1.77]	1.78 [.07]	1.14 [.045]
202D953	34.2 [1.35]	26.0 [1.02]	9.6 [.38]	6.6 [.26]	3.1 [.12]	84.3 [3.32]	51.1 [2.01]	1.78 [.07]	1.14 [.045]
202D963	43.6 [1.72]	34.1 [1.34]	11.4 [.45]	7.8 [.31]	3.6 [.14]	99.6 [3.92]	57.7 [2.27]	1.78 [.07]	1.14 [.045]

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 [.06] max.

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

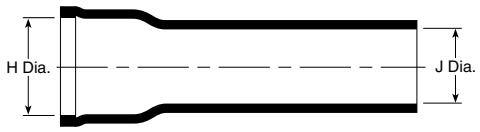
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

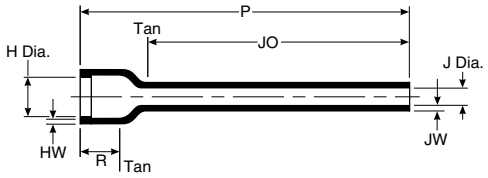
202F211 to 274

Straight, Lipped Boot

As Supplied (a)



After Unrestricted Recovery (b)



Applications

Use in conjunction with TE adapters to provide strain relief for harness systems using circular connectors. Boot is compatible with all grooved adapters of the appropriate shell size.

Materials Available

Material*	Material Description	Precoating No.	Adhesive Part No.**
-50	Flexible Fluoroelastomer polymer blend	N/A	S-1125
-51	Flexible elastomer polymer blend	/164	S-1124
-71	Flexible polyolefin	/42 or /86	S-1017 or S-1048

Product Dimensions

Part No.	H Min. a	H Max. b	J Min. a	J Max. b	P ±10% b	JO ±10% b	HW ±20% b	JW ±20% b
202F211	23.9 [.94]	9.9 [.39]	17.3 [.68]	6.6 [.26]	105.9 [4.17]	86.4 [3.40]	1.5 [.06]	1.5 [.06]
202F221	27.2 [1.07]	13.2 [.52]	20.8 [.82]	7.6 [.30]	121.2 [4.77]	98.6 [3.88]	1.5 [.06]	1.5 [.06]
202F232	31.0 [1.22]	18.5 [.73]	24.4 [.96]	8.9 [.35]	138.7 [5.46]	112.8 [4.44]	1.8 [.07]	1.5 [.06]
202F242	35.6 [1.40]	22.1 [.87]	28.7 [1.13]	10.2 [.40]	159.5 [6.28]	130.8 [5.15]	1.8 [.07]	1.5 [.06]
202F253	38.9 [1.53]	28.2 [1.11]	31.5 [1.24]	10.9 [.43]	177.8 [7.00]	142.2 [5.60]	1.8 [.07]	1.5 [.06]
202F263	45.2 [1.78]	32.3 [1.27]	38.4 [1.51]	12.7 [.50]	203.2 [8.00]	163.1 [6.42]	1.8 [.07]	1.5 [.06]
202F274	51.6 [2.03]	41.1 [1.62]	45.5 [1.79]	15.0 [.59]	203.2 [8.00]	157.7 [6.21]	1.8 [.07]	1.8 [.07]

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 [.06] max.

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

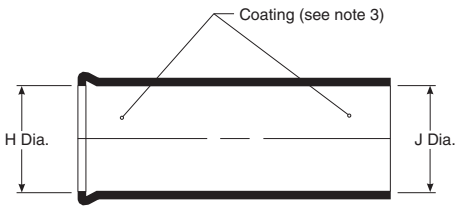
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

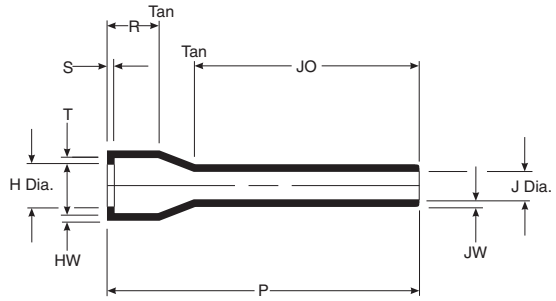
202G211 to 253

Straight, Low Profile Lipped Boot

As Supplied (a)



After Unrestricted Recovery (b)



Applications

Use in conjunction with TE adapters to provide strain relief for harness systems using circular connectors. This range of parts is compatible with all grooved adapters of appropriate shell or entry size. When used with adhesive it provides environmental sealing.

Materials Available

Material Dash No.	Material Description	Adhesive
-55	Fluoroploymer	S-1255-04

Product Dimensions

Part No.	H		J		P	R	S	T	JO	HW	JW
	Min. a	Max. b	Min. a	Max. b	±10% b	±10% b	Ref. b	Ref. b	±10% b	Ref. b	Ref. b
202G211	23.9 [.94]	9.9 [.39]	23.9 [.94]	7.4 [.29]	105.9 [4.17]	11.7 [.46]	1.0 [.04]	1.3 [.05]	86.4 [3.40]	1.0 [.04]	0.7 [.03]
202G221	27.2 [1.07]	13.2 [.52]	27.2 [1.07]	8.4 [.33]	121.2 [4.77]	12.2 [.48]	1.0 [.04]	1.3 [.05]	87.4 [3.44]	1.0 [.04]	0.7 [.03]
202G232	31.0 [1.22]	18.5 [.73]	31.0 [1.22]	9.4 [.37]	138.7 [5.46]	12.2 [.48]	1.0 [.04]	1.3 [.05]	104.4 [4.11]	1.0 [.04]	0.7 [.03]
202G242	31.7 [1.25]	22.1 [.87]	31.7 [1.25]	10.7 [.42]	159.5 [6.28]	12.2 [.48]	1.0 [.04]	1.5 [.06]	124.5 [4.90]	1.0 [.04]	0.7 [.03]
202G253	38.9 [1.53]	28.2 [1.11]	38.9 [1.53]	11.9 [.47]	177.8 [7.00]	10.6 [.42]	1.3 [.05]	1.8 [.07]	143.5 [5.65]	1.3 [.05]	1.0 [.04]

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

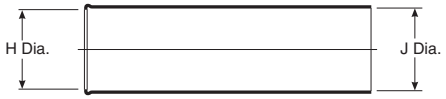
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

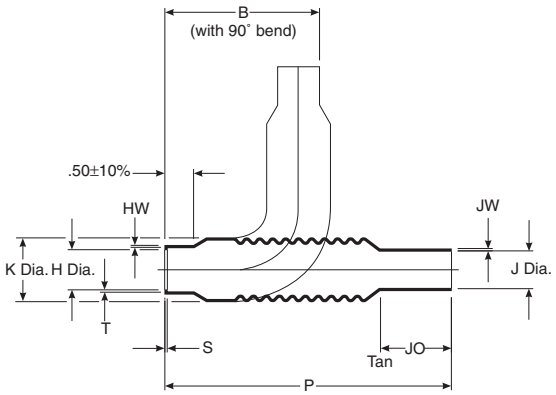
202G611 to 653

Uniboot

As Supplied (a)



After Unrestricted Recovery (b)



Applications

Use to provide abrasion protection for connectors. The flexibility of design allows a variety of cable outlet angles. When installed on a spin-coupling adapter, cold re-entry to the connector is possible by unscrewing the adapter and compressing the molded part. When used with adhesive it provides environmental sealing.

Materials Available

Material Dash No.	Material Description	Adhesive
-55	Fluoroploymer	S-1255-04

Product Dimensions

Part No.	H Min. a	H Max. b	J Min. a	J Max. b	K Max. b	P ±10% b	JO ±10% b	HW Ref. b	JW Ref. b	S Ref. b	T Ref. b	B Nom. b
202G611	14.2 [.56]	6.9 [.27]	11.2 [.44]	4.8 [.19]	21.1 [.83]	120.7 [4.75]	17.5 [.69]	1.0 [.04]	0.7 [.03]	1.0 [.04]	1.3 [.05]	62.5 [2.46]
202G621	26.6 [1.05]	11.7 [.46]	26.6 [1.05]	8.1 [.32]	26.6 [1.05]	133.8 [5.27]	19.9 [.78]	1.0 [.04]	0.7 [.03]	1.0 [.04]	1.3 [.05]	67.8 [2.67]
202G632	33.0 [1.30]	17.5 [.69]	33.0 [1.30]	12.7 [.50]	32.7 [1.29]	151.1 [5.95]	22.4 [.88]	1.0 [.04]	0.7 [.03]	1.0 [.04]	1.3 [.05]	73.4 [2.89]
202G642	35.5 [1.40]	22.3 [.88]	35.5 [1.40]	17.5 [.69]	37.8 [1.49]	157.2 [6.19]	25.4 [1.00]	1.3 [.05]	1.0 [.04]	1.3 [.05]	1.3 [.05]	78.2 [3.08]
202G653	42.6 [1.68]	27.9 [1.10]	42.6 [1.68]	22.4 [.88]	42.9 [1.69]	170.2 [6.70]	28.4 [1.12]	1.3 [.05]	1.0 [.04]	1.3 [.05]	1.5 [.06]	82.8 [3.26]

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

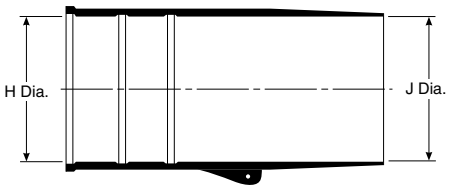
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

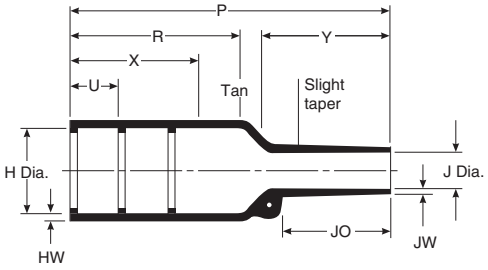
202K121 to 185

Straight, Lipped Boot

As Supplied (a)



After Unrestricted Recovery (b)



202K121 - 153 = 2 lips
202K163 - 185 = 3 lips

Mod 01 = 1 lip removed
Mod 02 = 2 lips removed
(only available in sizes 163, 174, 185).
For eyelet clip, order CS-1858 option.

Applications

Use in conjunction with TE adapters to provide strain relief for harness systems using circular connectors. Boot is compatible with all grooved adapters of the appropriate shell size.

Materials Available

Material*	Material Description	Precoating No.	Adhesive Part No.**
-3	Semirigid polyolefin	/42 or /86	S-1017 or S-1048
-4	Flexible polyolefin	/42 or /86	S-1017 or S-1048
-12	Fluoroelastomer	N/A	S-1255-04
-25	Fluid-resistant elastomer	/42 or /86 or /225	S-1017 or S-1048 or S-1125
-100	Polyolefin, Zerohal	/86 or /180	S-1048 or S-1030

*For more information, please see the appropriate material page in this section.
**For more information, please see section 5.

Product Dimensions

Part No.	H Min. -3,-4,-12,-25 a	H Min. -100 a	H Max. b	J Min. -3, -4, -25 a	J Min. -12 a	J Min. -100 a	J Max. b	P ±10% b	R ±10% b	U ±10% b	JO ±10% b	HW ±20% b	JW Min. b	X ±20% b	Y ±20% b
202K121	24.0 [.95]	24.0 [.95]	10.4 [.41]	24.0 [.95]	13.0 [.51]	14.0 [.55]	5.6 [.22]	38.0 [1.50]	21.0 [.83]	12.0 [.47]	8.5 [.33]	1.6 [.06]	.41 [.016]	24.0 [.94]	13.0 [.51]
202K132	30.0 [1.18]	30.0 [1.18]	14.2 [.56]	30.0 [1.18]	14.0 [.55]	15.0 [.59]	5.9 [.23]	55.0 [2.17]	32.0 [1.26]	12.0 [.47]	11.5 [.45]	1.8 [.07]	.81 [.032]	24.0 [.94]	18.0 [.71]
202K142	31.0 [1.22]	31.0 [1.22]	18.0 [.71]	31.0 [1.22]	16.0 [.63]	18.0 [.71]	7.1 [.28]	67.0 [2.64]	35.0 [1.38]	20.0 [.79]	17.0 [.67]	1.8 [.07]	.81 [.032]	32.0 [1.26]	25.0 [.98]
202K153	36.0 [1.42]	36.0 [1.42]	22.4 [.88]	36.0 [1.42]	19.0 [.75]	21.0 [.83]	8.4 [.33]	80.0 [3.15]	42.0 [1.65]	20.0 [.79]	19.5 [.76]	2.0 [.08]	.81 [.032]	32.0 [1.26]	30.0 [1.18]
202K163	43.0 [1.69]	43.0 [1.69]	28.2 [1.11]	43.0 [1.69]	22.0 [.87]	25.0 [.98]	9.9 [.39]	99.0 [3.90]	61.0 [2.40]	20.0 [.79]	21.0 [.82]	2.2 [.08]	.81 [.032]	52.0 [2.05]	30.0 [1.18]
202K174	60.0 [2.36]	52 [12.05]	35.1 [1.38]	60.0 [2.36]	35.0 [1.38]	39.0 [1.54]	15.7 [.62]	130.0 [5.12]	72.0 [2.83]	20.0 [.79]	39.0 [1.53]	3.3 [.13]	1.02 [.040]	52.0 [2.05]	50.0 [1.97]
202K185	66.0 [2.60]	66 [12.60]	44.5 [1.75]	66.0 [2.60]	38.0 [1.50]	42.0 [1.65]	16.8 [.66]	170.0 [6.69]	90.0 [3.54]	20.0 [.79]	51.5 [2.02]	3.8 [.15]	1.63 [.064]	52.0 [2.05]	70.0 [2.76]

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 [.06] max.

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

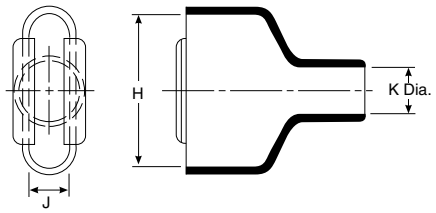
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

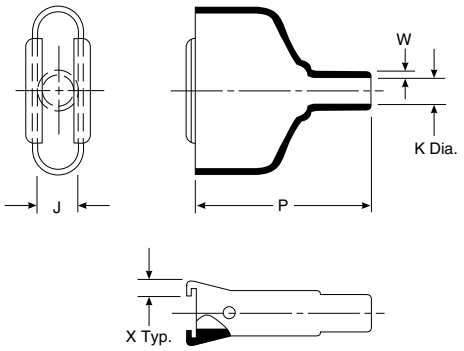
214A011 to 052

D-Subminiature, Straight Boot

As Supplied (a)



After Unrestricted Recovery (b)



Applications

Provides strain relief and mechanical protection on D-subminiature connector terminations.

Materials Available

Material*	Material Description	Precoating No.	Adhesive Part No.**
-3	Semirigid polyolefin	/42 or /86	S-1017 or S-1048
-4	Flexible polyolefin	/42 or /86	S-1017 or S-1048
-12	Fluoroelastomer	N/A	S-1255-04
-25	Fluid-resistant elastomer	/42 or /86 or /225	S-1017 or S-1048 or S-1125
-100	Polyolefin, Zerohal	/86 or /180	S-1048 or S-1030

*For more information, please see the appropriate material page in this section.
**For more information, please see section 5.

Product Dimensions

Part No.	H		J		K		P	W	X	This Boot Fits	
	±5% a	±5% b	±5% a	±5% b	Min. a	Max. b	±10% b	±20% b	±20% b	Cannon/ Cinch	Amphenol Series 17
214A011	20.3 [.80]	20.3 [.80]	10.7 [.42]	10.7 [.42]	7.9 [.31]	4.1 [.16]	33.3 [1.31]	1.0 [.04]	3.0 [.12]	DE-9	XX09X
214A021	28.2 [1.11]	28.2 [1.11]	10.7 [.42]	10.7 [.42]	10.2 [.40]	5.3 [.21]	38.9 [1.53]	1.0 [.04]	3.0 [.12]	DA-15	XX15X
214A032	42.2 [1.66]	42.2 [1.66]	10.7 [.42]	10.7 [.42]	14.0 [.55]	8.1 [.32]	45.0 [1.77]	1.0 [.04]	3.0 [.12]	DB-25	XX25X
214A042	58.7 [2.31]	58.7 [2.31]	10.7 [.42]	10.7 [.42]	17.3 [.68]	8.6 [.34]	53.3 [2.10]	1.0 [.04]	3.0 [.12]	DC-37	XX37X
214A052	57.9 [2.28]	57.9 [2.28]	13.7 [.54]	13.7 [.54]	19.1 [.75]	10.7 [.42]	61.0 [2.40]	1.0 [.04]	3.0 [.12]	DD-50	XX50X

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 [.06] max.

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

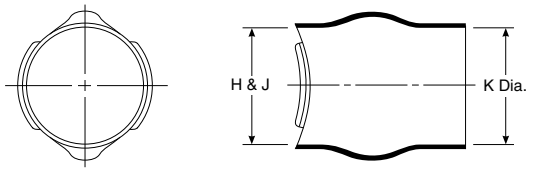
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

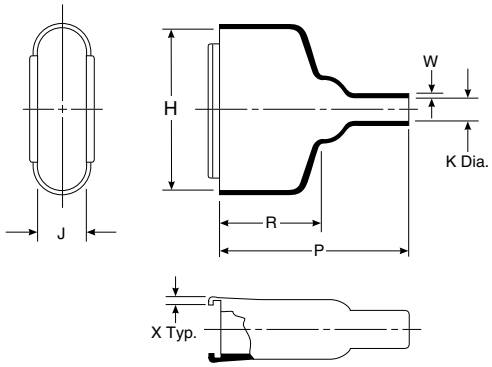
214A311 to 352

D-Subminiature, Straight Boot

As Supplied (a)



After Unrestricted Recovery (b)



Applications

Provides strain relief and mechanical protection on D-subminiature connector terminations.

Materials Available

Material*	Material Description	Precoating No.	Adhesive Part No.**
-3	Semirigid polyolefin	/42 or /86	S-1017 or S-1048
-4	Flexible polyolefin	/42 or /86	S-1017 or S-1048
-25	Fluid-resistant elastomer	/42 or /86	S-1017 or S-1048 or S-1125

*For more information, please see the appropriate material page in this section.
**For more information, please see section 5.

Product Dimensions

Part No.	H		J		K		P	R	W	X	This Boot Fits	
	±5% a	±5% b	±5% a	±5% b	Min. a	Max. b	±10% b	±10% b	±20% b	±20% b	Cannon/ Cinch	Amphenol Series 17
214A311	16.0 [.63]	20.3 [.80]	16.0 [.63]	10.7 [.42]	16.0 [.63]	4.1 [.16]	33.3 [1.31]	19.1 [.75]	1.02 [.04]	3.05 [.12]	DE-9	XX09X
214A321	19.1 [.75]	28.2 [1.11]	19.1 [.75]	10.7 [.42]	19.1 [.75]	5.3 [.21]	38.9 [1.53]	22.1 [.87]	1.02 [.04]	3.05 [.12]	DA-15	XX15X
214A332	29.2 [1.15]	42.2 [1.66]	29.2 [1.15]	10.7 [.42]	29.2 [1.15]	8.1 [.32]	45.0 [1.77]	25.4 [1.00]	1.02 [.04]	3.05 [.12]	DB-25	XX25X
214A342	34.3 [1.35]	58.7 [2.31]	34.3 [1.35]	10.7 [.42]	34.3 [1.35]	8.6 [.34]	53.3 [2.10]	28.4 [1.12]	1.02 [.04]	3.05 [.12]	DC-37	XX37X
214A352	37.6 [1.48]	57.9 [2.28]	37.6 [1.48]	13.7 [.54]	37.6 [1.48]	10.7 [.42]	61.0 [2.40]	31.8 [1.25]	1.02 [.04]	3.05 [.12]	DD-50	XX50X

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 [.06] max.

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

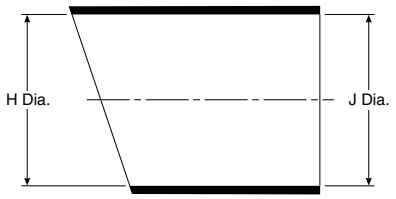
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

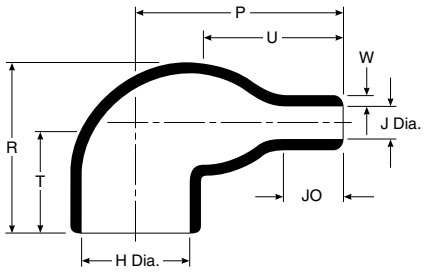
222A111 to 196

Right-Angled Boot

As Supplied (a)



After Unrestricted Recovery (b)



Applications

Use for mechanical protection and connector-cable strain relief. This family of boots has no lip, so a boot can be installed directly onto the connector accessory thread.

Materials Available

Material*	Material Description	Precoating No.	Adhesive Part No.**
-3	Semirigid polyolefin	/42 or /86	S-1017 or S-1048
-4	Flexible polyolefin	/42 or /86	S-1017 or S-1048
-12	Fluoroelastomer	N/A	S-1255-04
-25	Fluid-resistant elastomer	/42 or /86 or /225	S-1017 or S-1048 or S-1125
-100	Polyolefin, Zerohal	/86 or/180	S-1048 or S-1030

*For more information, please see the appropriate material page in this section.
**For more information, please see section 5.

Product Dimensions

Part No.	H		J				P	R	T	U	JO	W
	Min. a	Max. b	Min. -3, -4, -25 a	Min. -100 a	Min. -12 a	Max. b	±10% b	±10% b	±10% b	±10% b	±10% b	±20% b
222A111	17.8 [.70]	7.9 [.31]	17.8 [.70]	10.9 [.43]	9.9 [.39]	3.8 [.15]	17.3 [.68]	20.1 [.79]	—	11.4 [.45]	4.3 [.17]	1.02 [.04]
222A121	24.9 [.98]	10.2 [.40]	24.9 [.98]	16.0 [.63]	18.0 [.71]	5.3 [.21]	21.3 [.84]	22.6 [.89]	—	14.7 [.58]	5.8 [.23]	1.27 [.05]
222A132	30.0 [1.18]	14.2 [.56]	30.0 [1.18]	21.1 [.83]	20.6 [.81]	6.4 [.25]	26.9 [1.06]	26.7 [1.05]	19.1 [.75]	17.8 [.70]	7.1 [.28]	1.52 [.06]
222A142	32.5 [1.28]	17.3 [.68]	32.5 [1.28]	22.9 [.90]	22.9 [.90]	6.9 [.27]	36.6 [1.44]	30.5 [1.20]	19.1 [.75]	24.9 [.98]	10.2 [.40]	1.78 [.07]
222A152	36.1 [1.42]	21.8 [.86]	36.1 [1.42]	27.4 [1.08]	26.4 [1.04]	8.4 [.33]	43.7 [1.72]	35.1 [1.38]	19.1 [.75]	30.0 [1.18]	12.7 [.50]	1.78 [.07]
222A163	43.9 [1.73]	27.4 [1.08]	43.9 [1.73]	28.4 [1.12]	27.4 [1.08]	9.4 [.37]	53.6 [2.11]	43.9 [1.73]	19.1 [.75]	34.0 [1.34]	17.3 [.68]	2.03 [.08]
222A174	53.1 [2.09]	33.8 [1.33]	53.1 [2.09]	48.3 [1.90]	46.7 [1.84]	15.0 [.59]	75.7 [2.98]	52.8 [2.08]	25.4 [1.00]	53.3 [2.10]	32.0 [1.26]	3.30 [.13]
222A185	67.6 [2.66]	44.2 [1.74]	67.6 [2.66]	58.4 [2.30]	54.4 [2.14]	20.3 [.80]	97.5 [3.84]	66.0 [2.60]	25.4 [1.00]	71.1 [2.80]	40.6 [1.60]	3.81 [.15]
222A196	87.6 [3.45]	55.4 [2.18]	87.6 [3.45]	68.8 [2.71]	63.0 [2.48]	23.4 [.92]	128.0 [5.04]	79.2 [3.12]	25.4 [1.00]	87.6 [3.45]	56.4 [2.22]	4.57 [.18]

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 [.06] max.

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

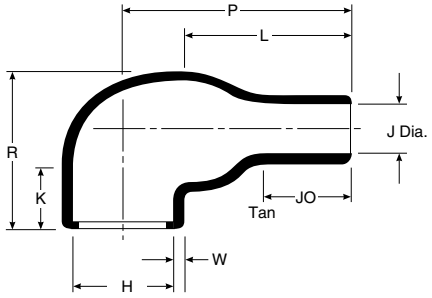
For additional support numbers please visit www.te.com

222D121 to 196

Right-Angled, Lipped Boot

As Supplied (a)

After Unrestricted Recovery (b)



Applications

Use in conjunction with TE adapters to provide strain relief for harness systems using circular connectors. Boot is compatible with all grooved adapters of the appropriate shell size.

Materials Available

Material*	Material Description	Precoating No.	Adhesive Part No.**
-3	Semirigid polyolefin	/42 or /86	S-1017 or S-1048
-4	Flexible polyolefin	/42 or /86	S-1017 or S-1048
-12	Fluoroelastomer	N/A	S-1255-04
-25	Fluid-resistant elastomer	/42 or /86 or /225	S-1017 or S-1048 or S-1125
-100	Polyolefin, Zerohal	/86 or /180	S-1048 or S-1030

*For more information, please see the appropriate material page in this section.
**For more information, please see section 5.

Product Dimensions

Part No.	H		J				P	R	JO	W	K	L
	Min. a	Max. a	Min. -3, -4, -25 b	Min. -100 b	Min. -12 b	Max. b	±10% b	Ref. b	±10%	±20%	±10% b	±10% b
222D121	23.4 [.92]	10.4 [.41]	23.4 [.92]	14.0 [.55]	12.4 [.49]	5.6 [.22]	21.3 [.84]	22.6 [.89]	5.8 [.23]	1.27 [.05]	15.2 [.60]	14.7 [.58]
222D132	28.4 [1.12]	14.2 [.56]	28.4 [1.12]	15.0 [.59]	14.7 [.58]	6.6 [.26]	33.8 [1.33]	27.2 [1.07]	15.5 [.65]	1.52 [.06]	19.1 [.75]	24.9 [.98]
222D142	31.0 [1.22]	17.8 [.70]	31.0 [1.22]	18.0 [.71]	16.0 [.63]	7.1 [.28]	36.6 [1.44]	31.0 [1.22]	12.7 [.50]	1.78 [.07]	19.1 [.75]	24.9 [.98]
222D152	36.0 [1.42]	22.4 [.88]	36.0 [1.42]	21.0 [.83]	18.5 [.73]	8.4 [.33]	43.7 [1.72]	35.1 [1.38]	14.5 [.57]	1.78 [.07]	19.1 [.75]	30.0 [1.18]
222D163	42.7 [1.68]	28.2 [1.11]	42.7 [1.68]	25.0 [.98]	22.1 [.87]	9.9 [.39]	53.6 [2.11]	43.9 [1.73]	17.5 [.69]	2.03 [.08]	19.3 [.76]	33.0 [1.30]
222D174	51.8 [2.04]	35.1 [1.38]	51.8 [2.04]	39.0 [1.54]	35.3 [1.39]	15.7 [.62]	78.0 [3.07]	52.8 [2.08]	33.5 [1.32]	3.30 [.13]	25.4 [1.00]	53.8 [2.12]
222D185	66.0 [2.60]	44.5 [1.75]	66.0 [2.60]	42.0 [1.65]	45.7 [1.80]	20.3 [.80]	97.5 [3.84]	66.0 [2.60]	40.1 [1.58]	3.81 [.15]	25.4 [1.00]	71.1 [2.80]
222D196	81.8 [3.22]	60.5 [2.38]	81.8 [3.22]	57.2 [2.25]	57.2 [2.25]	25.4 [1.00]	117.9 [4.64]	83.8 [3.30]	38.1 [1.50]	4.06 [.16]	25.4 [1.00]	80.0 [3.15]

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 (.06) max.

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

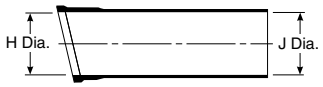
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

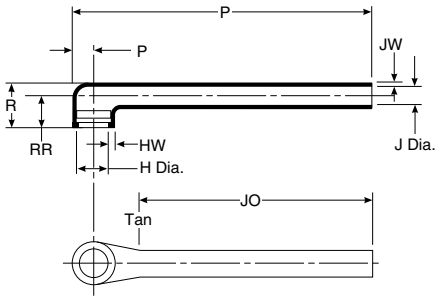
222D211 to 299

Right-Angled, Lipped Boot

As Supplied (a)



After Unrestricted Recovery (b)



Applications

Provides strain relief and mechanical protection between cable and connector. Boot is usually used on open-wire-bundle airborne harnesses, or applications where the long tail replaces cable jacketing removed during termination.

Materials Available

Material*	Material Description	Precoating No.	Adhesive Part No.**
-3	Semirigid polyolefin	/42 or /86	S-1017 or S-1048
-4	Flexible polyolefin	/42 or /86	S-1017 or S-1048
-12	Fluoroelastomer	N/A	S-1255-04
-25	Fluid-resistant elastomer	/42 or /86 or /225	S-1017 or S-1048 or S-1125
-100	Polyolefin, Zerohal	/86 or /180	S-1048 or S-1030

*For more information, please see the appropriate material page in this section.
**For more information, please see section 5.

Product Dimensions

Part No.	H		J			P ±10% b	R Ref b	JO ±10% b	PP ±10% b	RR 10% b	HW ±20%	JW ±20%
	Min. a	Max. b	Min. -3, -4, -25 a	Min. -12, -100 b	Max. b							
222D211	22.4 [.88]	11.4 [.45]	22.4 [.88]	14.0 [.55]	6.4 [.25]	105.2 [4.14]	18.5 [.73]	87.6 [3.45]	6.9 [.27]	12.4 [.49]	1.52 [.06]	1.14 [.045]
222D221	25.7 [1.01]	15.0 [.59]	25.7 [1.01]	16.0 [.63]	7.4 [.29]	124.0 [4.88]	19.8 [.78]	99.1 [3.90]	8.4 [.33]	15.0 [.59]	1.52 [.06]	1.14 [.045]
222D232	29.5 [1.16]	18.8 [.74]	29.5 [1.16]	18.3 [.72]	8.4 [.33]	146.3 [5.76]	20.8 [.82]	114.3 [4.50]	10.4 [.41]	15.5 [.61]	1.78 [.07]	1.14 [.045]
222D242	34.0 [1.34]	22.9 [.90]	34.0 [1.34]	21.3 [.84]	9.7 [.38]	172.2 [6.78]	21.8 [.86]	132.6 [5.22]	12.2 [.48]	15.7 [.62]	1.78 [.07]	1.14 [.045]
222D253	37.3 [1.47]	29.5 [1.16]	37.3 [1.47]	23.1 [.91]	10.4 [.41]	185.2 [7.29]	24.4 [.96]	143.8 [5.66]	15.5 [.61]	17.8 [.70]	2.03 [.08]	1.14 [.045]
222D263	43.7 [1.72]	34.0 [1.34]	43.7 [1.72]	27.2 [1.07]	12.2 [.48]	231.6 [8.41]	27.4 [1.08]	169.2 [6.66]	18.3 [.72]	19.8 [.78]	2.03 [.08]	1.14 [.045]
222D274	50.0 [1.97]	41.1 [1.62]	50.0 [1.97]	31.5 [1.24]	14.2 [.56]	224.5 [8.84]	29.5 [1.16]	173.2 [6.82]	21.1 [.83]	20.8 [.82]	2.29 [.09]	1.40 [.055]
222D285	62.7 [2.47]	47.0 [1.85]	62.7 [2.47]	39.1 [1.54]	17.5 [.69]	227.3 [8.95]	33.3 [1.31]	168.1 [6.62]	24.1 [.95]	23.4 [.92]	2.54 [.10]	1.40 [.055]
222D296	69.3 [2.73]	59.7 [2.35]	69.3 [2.73]	43.2 [1.70]	19.6 [.77]	233.4 [9.19]	35.1 [1.38]	157.2 [6.19]	30.0 [1.18]	23.6 [.93]	2.54 [.10]	1.40 [.055]
222D299	81.8 [3.22]	67.1 [2.64]	81.8 [3.22]	51.1 [2.01]	22.9 [.90]	237.0 [9.33]	44.5 [1.75]	151.1 [5.95]	33.3 [1.31]	31.2 [1.23]	2.54 [.10]	1.40 [.055]

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 [.06] max.

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

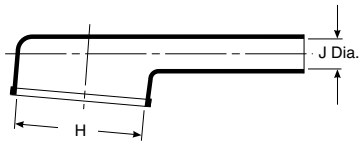
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

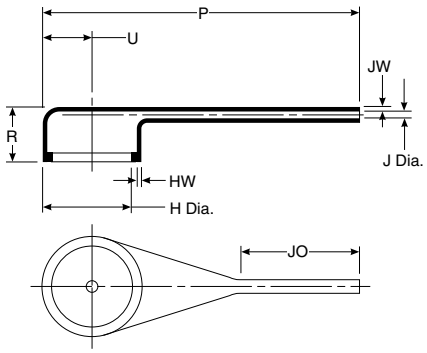
222D921 to 963

Right-Angled, Lipped Boot

As Supplied (a)



After Unrestricted Recovery (b)



Applications

Provides strain relief and mechanical protection between cable and connector. It is used in applications where only a small number of the available contacts are utilized, resulting in a high ratio between the adapter and cable diameters.

Materials Available

Material*	Material Description	Precoating No.	Adhesive Part No.**
-3	Semirigid polyolefin	/42 or /86	S-1017 or S-1048
-4	Flexible polyolefin	/42 or /86	S-1017 or S-1048
-12	Fluoroelastomer	N/A	S-1255-04
-25	Fluid-resistant elastomer	/42 or /86 or /225	S-1017 or S-1048 or S-1125
-100	Polyolefin, Zerohal	/86 or /180	S-1048 or S-1030

Product Dimensions

Part No.	H		J			P	R	U	JO	HW	JW
	Min. a	Max. b	Min. -3, -4, -25 a	Min. -12, -100 a	Max. b	±10% b	Ref. b	±10% b	±10% b	±20% b	±20% b
222D921	19.3 [.76]	13.0 [.51]	6.3 [.25]	4.5 [.18]	2.1 [.08]	44.5 [1.75]	16.3 [.64]	5.6 [.22]	21.8 [.86]	1.52 [.06]	1.14 [.045]
222D932	26.1 [1.03]	19.1 [.75]	7.6 [.30]	5.6 [.22]	2.6 [.10]	67.3 [2.65]	18.0 [.71]	8.4 [.33]	29.2 [1.15]	1.78 [.07]	1.14 [.045]
222D953	34.2 [1.35]	26.0 [1.02]	9.6 [.38]	6.6 [.26]	3.0 [.12]	81.3 [3.20]	18.8 [.74]	11.4 [.45]	36.3 [1.39]	1.78 [.07]	1.14 [.045]
222D963	43.6 [1.72]	34.1 [1.34]	11.4 [.45]	7.8 [.31]	3.6 [.14]	115.6 [4.55]	21.3 [.84]	15.5 [.61]	47.0 [1.85]	1.78 [.07]	1.14 [.045]

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 mm [.06"] max.

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

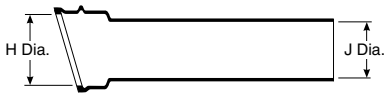
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

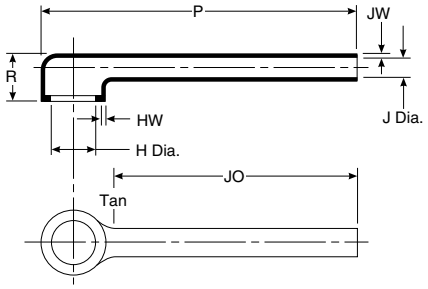
222F211 to 285

Right-Angled, Lipped Boot

As Supplied (a)



After Unrestricted Recovery (b)



Applications

Use in conjunction with TE adapters to provide strain relief for harness systems using circular connectors. Boot is compatible with all grooved adapters of the appropriate shell size.

Materials Available

Material*	Material Description	Precoating No.	Adhesive Part No.**
-50	Fluoroelastomer polymer blend	N/A	S-1125
-51	Elastomer polymer blend	/164	S-1124
-71	Flexible polyolefin	/42 or /86	S-1017 or S-1048

*For more information, please see the appropriate material page in this section.
**For more information, please see section 5.

Product Dimensions

Part No.	H		J		P	R	JO	HW	JW
	Min. a	Max. b	Min. a	Max. b	±10% b	±10% b	±10% b	+.06 to -.03 b	±.03 b
222F211	23.9 [.94]	9.9 [.39]	17.3 [.68]	6.6 [.26]	105.2 [4.14]	18.5 [.73]	87.6 [3.45]	1.52 [.06]	1.52 [.06]
222F221	27.2 [1.07]	13.2 [.52]	20.8 [.82]	7.6 [.30]	124.0 [4.88]	19.8 [.78]	99.1 [3.90]	1.52 [.06]	1.52 [.06]
222F232	31.0 [1.22]	18.5 [.73]	24.4 [.96]	8.9 [.35]	146.3 [5.76]	20.8 [.82]	114.3 [4.50]	1.78 [.07]	1.52 [.06]
222F242	35.6 [1.40]	22.1 [.87]	28.7 [1.13]	10.2 [.40]	172.2 [6.78]	21.8 [.86]	132.6 [5.22]	1.78 [.07]	1.52 [.06]
222F253	38.9 [1.53]	28.2 [1.11]	31.5 [1.24]	10.9 [.43]	185.2 [7.29]	24.4 [.96]	143.8 [5.66]	1.78 [.07]	1.52 [.06]
222F263	45.2 [1.78]	32.3 [1.27]	38.4 [1.51]	12.7 [.50]	213.6 [8.41]	27.4 [1.08]	169.2 [6.66]	1.78 [.07]	1.52 [.06]
222F274	51.6 [2.03]	41.1 [1.62]	44.5 [1.75]	15.0 [.59]	224.5 [8.84]	29.5 [1.16]	173.2 [6.82]	1.78 [.07]	1.78 [.07]
222F285	62.7 [2.47]	42.9 [1.69]	47.2 [1.86]	17.5 [.69]	227.3 [8.95]	33.3 [1.31]	168.1 [6.62]	2.03 [.08]	1.78 [.07]

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 [.06] max.

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

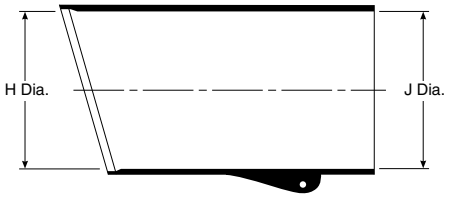
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

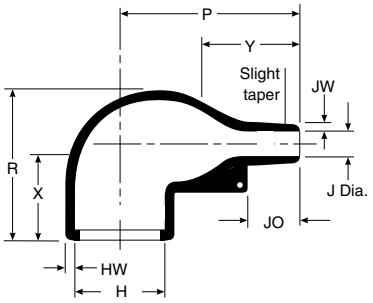
222K121 to 185

Right-Angled, Lipped Boot

As Supplied (a)



After Unrestricted Recovery (b)



For eyelet clip, order CS-1858 option.

Applications

Use in conjunction with TE adapters to provide strain relief for harness systems using circular connectors. Boot is compatible with all grooved adapters of the appropriate shell size.

Materials Available

Material*	Material Description	Precoating No.	Adhesive Part No.**
-3	Semirigid polyolefin	/42 or /86	S-1017 or S-1048
-4	Flexible polyolefin	/42 or /86	S-1017 or S-1048
-12	Fluoroelastomer	N/A	S-1255-04
-25	Fluid-resistant elastomer	/42 or /86 or /225	S-1017 or S-1048 or S-1125
-100	Polyolefin, Zerohal	/86 or /180	S-1048 or S-1030

*For more information, please see the appropriate material page in this section.
**For more information, please see section 5.

Product Dimensions

Part No.	H Min. -3, -4, -12, -25 a	H Min. -100 a	H Max. b	J Min. -3, -4, -25 a	J Min. -12, -100 a	J Max. b	P ±10% b	R ±10% b	JO ±10% b	HW ±20% b	JW ±20% b	X ±20% b	Y ±20% b
222K121	24.0 [.95]	24.0 [.95]	10.4 [.41]	24.0 [.95]	14.0 [.55]	5.6 [.22]	25.0 [.98]	25.0 [.98]	8.5 [.33]	1.3 [.05]	.41 [.016]	18.0 [.71]	16.0 [.63]
222K132	30.0 [1.18]	30.0 [1.18]	14.2 [.56]	30.0 [1.18]	15.0 [.59]	5.9 [.23]	32.0 [1.26]	27.0 [1.06]	8.5 [.33]	1.5 [.06]	.61 [.024]	18.0 [.71]	20.0 [.79]
222K142	31.0 [1.22]	31.0 [1.22]	18.0 [.71]	31.0 [1.22]	18.0 [.71]	7.1 [.28]	39.0 [1.54]	31.0 [1.22]	15.0 [.59]	1.8 [.07]	.81 [.032]	18.0 [.71]	20.0 [.79]
222K152	36.0 [1.42]	36.0 [1.42]	22.4 [.88]	36.0 [1.42]	21.0 [.83]	8.4 [.33]	46.0 [1.81]	38.0 [1.50]	18.0 [.63]	1.8 [.07]	.81 [.032]	25.0 [.98]	25.0 [.98]
222K163	43.0 [1.69]	43.0 [1.69]	28.2 [1.11]	43.0 [1.69]	25.0 [.98]	9.9 [.39]	55.0 [2.17]	45.0 [1.77]	17.5 [.69]	2.0 [.08]	.81 [.032]	25.0 [.98]	30.0 [1.18]
222K174	60.0 [2.36]	52.0 [2.05]	35.1 [1.38]	60.0 [2.36]	39.0 [1.54]	15.7 [.62]	80.0 [3.15]	54.0 [2.13]	32.0 [1.26]	3.3 [.13]	1.02 [.040]	25.0 [.98]	45.0 [1.77]
222K185	66.0 [2.60]	66.0 [2.60]	44.5 [1.75]	66.0 [2.60]	42.0 [1.65]	16.8 [.66]	108.0 [4.25]	68.0 [2.68]	48.0 [1.89]	3.8 [.15]	1.63 [.064]	35.0 [1.38]	70.0 [2.76]

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 [.06] max.

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

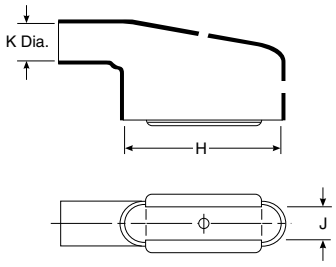
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

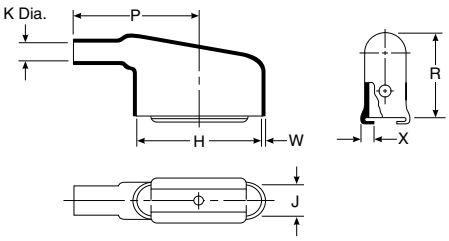
234A011 to 071

D-Subminiature, Right-Angled Boot

As Supplied (a)



After Unrestricted Recovery (b)



Applications

Provides strain relief and mechanical protection on D-subminiature connector terminations.

Materials Available

Material*	Material Description	Precoating No.	Adhesive Part No.**
-3	Semirigid polyolefin	/42 or /86	S-1017 or S-1048
-4	Flexible polyolefin	/42 or /86	S-1017 or S-1048
-12	Fluoroelastomer	N/A	S-1255-04
-25	Fluid-resistant elastomer	/42 or /86 or /225	S-1017 or S-1048 or S-1125
-100	Polyolefin, Zerohal	/86 or /180	S-1048 or S-1030

*For more information, please see the appropriate material page in this section.
**For more information, please see section 5.

Product Dimensions

Part No.	H		J		K		P	R	W	X	This Boot Fits Cannon/ Cinch
	±5% a	±5% b	±5% a	±5% b	Min. a	Max. b	±10% b	±10% b	±20% b	±20% b	
234A011	20.3 [.80]	20.3 [.80]	10.7 [.42]	10.7 [.42]	7.9 [.31]	4.1 [.16]	25.9 [1.02]	21.6 [.85]	1.02 [.04]	3.05 [.12]	DE-9
234A021	28.2 [1.11]	28.2 [1.11]	10.7 [.42]	10.7 [.42]	10.2 [.40]	5.3 [.21]	30.7 [1.21]	24.6 [.97]	1.02 [.04]	3.05 [.12]	DA-15
234A032	42.2 [1.66]	42.2 [1.66]	10.7 [.42]	10.7 [.42]	14.0 [.55]	7.4 [.29]	42.9 [1.69]	27.9 [1.10]	1.02 [.04]	3.05 [.12]	DB-25
234A042	58.7 [2.31]	58.7 [2.31]	10.7 [.42]	10.7 [.42]	17.3 [.68]	8.6 [.34]	53.3 [2.10]	30.5 [1.20]	1.02 [.04]	3.05 [.12]	DC-37
234A052	57.9 [2.28]	57.9 [2.28]	13.7 [.54]	13.7 [.54]	19.1 [.75]	10.7 [.42]	55.9 [2.20]	32.3 [1.27]	1.02 [.04]	3.05 [.12]	DD-50
234A061	20.3 [.80]	20.3 [.80]	10.7 [.42]	10.7 [.42]	7.9 [.31]	3.8 [.15]	25.9 [1.02]	18.5 [.73]	1.02 [.04]	3.05 [.12]	DE-9
234A071	28.2 [1.11]	28.2 [1.11]	10.7 [.42]	10.7 [.42]	10.2 [.40]	5.1 [.20]	30.7 [1.21]	19.8 [.78]	1.02 [.04]	3.05 [.12]	DA-15

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 (.06) max.

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

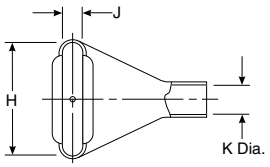
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

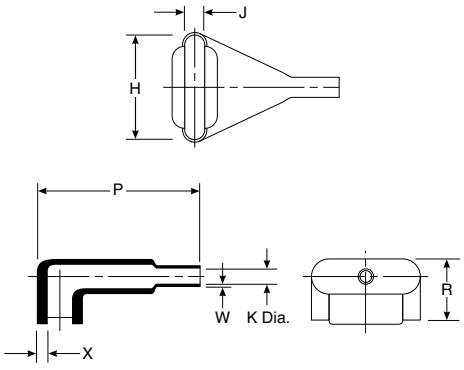
234A111 to 152

D-Subminiature, Side-Entry Boot

As Supplied (a)



After Unrestricted Recovery (b)



Applications

Provides strain relief and mechanical protection on D-subminiature connector terminations.

Materials Available

Material*	Material Description	Precoating No.	Adhesive Part No.**
-3	Semirigid polyolefin	/42 or /86	S-1017 or S-1048
-4	Flexible polyolefin	/42 or /86	S-1017 or S-1048
-25	Fluid-resistant elastomer	/42 or /86 or /225	S-1017 or S-1048 or S-1125

*For more information, please see the appropriate material page in this section.
**For more information, please see section 5.

Product Dimensions

Part No.	H ±5% a	H ±5% b	J ±5% a	J ±5% b	K Min. a	K Max. b	P ±10% b	R ±10% b	W ±20% b	X ±20% b	This Boot Fits Cannon/Cinch
234A111	20.3 [.80]	20.3 [.80]	10.7 [.42]	10.7 [.42]	7.9 [.31]	4.1 [.16]	27.9 [1.10]	18.5 [.73]	1.02 [.04]	3.05 [.12]	DE-9
234A121	28.2 [1.11]	28.2 [1.11]	10.7 [.42]	10.7 [.42]	10.2 [.40]	5.3 [.21]	35.1 [1.38]	18.8 [.74]	1.02 [.04]	3.05 [.12]	DA-15
234A132	42.2 [1.66]	42.2 [1.66]	10.7 [.42]	10.7 [.42]	14.0 [.55]	6.4 [.25]	47.5 [1.87]	20.1 [.79]	1.02 [.04]	3.05 [.12]	DB-25
234A142	58.7 [2.31]	58.7 [2.31]	10.7 [.42]	10.7 [.42]	17.3 [.68]	7.9 [.31]	59.7 [2.35]	20.1 [.79]	1.02 [.04]	3.05 [.12]	DC-37
234A152	57.9 [2.28]	57.9 [2.28]	13.7 [.54]	13.7 [.54]	19.1 [.75]	9.1 [.36]	63.2 [2.49]	26.4 [1.04]	1.02 [.04]	3.05 [.12]	DD-50

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 [.06] max.

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

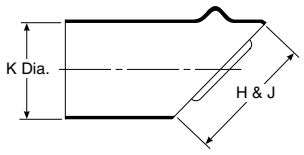
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

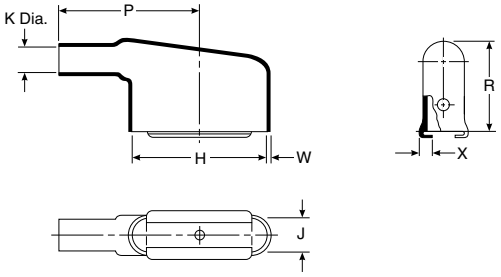
234A611 to 671

D-Subminiature, 90° End-Entry Boot

As Supplied (a)



After Unrestricted Recovery (b)



Applications

Provides strain relief and mechanical protection on D-subminiature connector terminations.

Materials Available

Material*	Material Description	Precoating No.	Adhesive Part No.**
-3	Semirigid polyolefin	/42 or /86	S-1017 or S-1048
-4	Flexible polyolefin	/42 or /86	S-1017 or S-1048
-25	Fluid-resistant elastomer	/42 or /86	S-1017 or S-1048 or S-1125

*For more information, please see the appropriate material page in this section.
**For more information, please see section 5.

Product Dimensions

Part No.	H ±5% a	H ±5% b	J ±5% a	J ±5% b	K Min. a	K Max. b	P ±10% b	R ±10% b	W ±20% b	X ±20% b	This Boot Fits Cannon/Cinch
234A611	16.0 [.63]	20.3 [.80]	16.0 [.63]	10.7[.42]	16.0 [.63]	4.1 [.16]	25.9 [1.02]	21.6 [.85]	1.02 [.04]	3.05 [.12]	DE-9
234A621	19.1 [.75]	28.2 [1.11]	19.1 [.75]	10.7 [.42]	19.1 [.75]	5.3 [.21]	30.7 [1.21]	24.6 [.97]	1.02 [.04]	3.05 [.12]	DA-15
234A632	29.2 [1.15]	42.2 [1.66]	29.2 [1.15]	10.7 [.42]	29.2 [1.15]	7.4 [.29]	42.9 [1.69]	27.9 [1.10]	1.02 [.04]	3.05 [.12]	DB-25
234A642	34.3 [1.35]	58.7 [2.31]	34.3 [1.35]	10.7 [.42]	34.3 [1.35]	8.6 [.34]	53.3 [2.10]	30.5 [1.20]	1.02 [.04]	3.05 [.12]	DC-37
234A652	37.6 [1.48]	57.9 [2.28]	37.6 [1.48]	13.7 [.54]	37.6 [1.48]	10.7 [.42]	55.9 [2.20]	32.3 [1.27]	1.02 [.04]	3.05 [.12]	DD-50
234A661	16.0 [.63]	20.3 [.80]	16.0 [.63]	10.7 [.42]	16.0 [.63]	3.8 [.15]	25.9 [1.02]	18.5 [.73]	1.02 [.04]	3.05 [.12]	DE-9
234A671	19.1 [.75]	28.2 [1.11]	19.1 [.75]	10.7 [.42]	19.1 [.75]	5.1 [.20]	30.7 [1.21]	19.8 [.78]	1.02 [.04]	3.05 [.12]	DA-15

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 [.06] max.

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

242W042 to 063

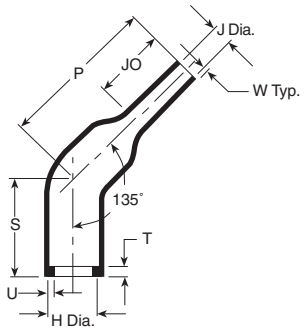
45° Angled Boot

Applications

Designed for use in the aggressive environments found adjacent to engines in automotive, aerospace and military applications, heat-shrinkable molded parts provide rugged protection, strain relief and a full 360°environmental seal. The introduction of the 45° option means there is now a choice of three routes to the connector for closer positioning and greater design freedom.

As Supplied (a)

After Unrestricted Recovery (b)



Compatibility Chart

Material Dash Number	Material Description	Precoating No.	Adhesive Part No.
-3	Polyolefin, semirigid	/42, /86	S-1017 or S-1048
-4	Polyolefin, flexible	/42, /86	S-1017 or S-1048
-12	Fluoroelastomer	N/A	S-1255-04
-25	Elastomer, fluid-resistant	/42, /86, /225	S-1017, S-1125 or S-1048
-100	Polyolefin, Zerohal	/180	S-1030

Product Dimensions

Part No.	H		J			P	S	T	U	JO	W
	Min. a	Max. b	Min. a -12, -100	Min. a -3, -4, -25	Max. b -12, -100, -3, -25	± 10% b	± 10% b	± 10% b	± 10% b	± 10% b	± 20% b
242W042	31.0 [1.22]	17.9 [.70]	18.0 [.71]	31.0 [1.22]	7.0 [.28]	55.0 [2.17]	35.0 [1.38]	3.5 [.14]	2.0 [.08]	25.0 [.98]	1.8 [.07]
242W053	36.0 [1.42]	22.1 [.87]	21.0 [.83]	36.0 [1.42]	8.4 [.33]	60.0 [2.36]	40.0 [1.58]	3.5 [.14]	2.0 [.08]	30.0 [1.18]	2.0 [.08]
242W063	43.0 [1.69]	27.9 [1.10]	25.0 [.99]	43.0 [1.69]	9.9 [.39]	65.0 [2.56]	45.0 [1.77]	3.5 [.14]	2.0 [.08]	35.0 [1.38]	2.2 [.09]

As supplied dimensions are for uncoated parts, when coating is added, entry diameters will reduce by 1.5 [.06] max.

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

Micro Molded Shapes

Micro Molded Heat-Shrink Shapes

Connector manufacturers are increasingly offering smaller high performance, rugged, micro circular connectors for use in wiring harnesses in both civilian and defense markets.

The range of small heat-shrink molded shapes from TE Connectivity (TE) has evolved in order to cater for these requirements for smaller, lighter-weight products that still offer a great balance of protection properties at the connector-wire interface.

Produced in a variety of shapes and materials, TE's range of Raychem branded molded shapes are supplied in an expanded form. On the application of heat, they shrink to a pre-determined size and shape, providing a tough, protective covering for the components over which they are installed.

Product Facts

- **Small size**
- **Supplied in expanded form**
- **Adhesive lined options**
- **Strain relief**
- **Available in a range of different cross-linked polymeric materials**

Benefits

- **Weight and space savings**
- **Facilitates installation**
- **Environmental sealing against fluid and dirt ingression**
- **Provides protection against mechanical abuse at the cable-connector interface**
- **Suitable for a wide range of application and environmental requirements for low fire hazard, flame retardance, high temperatures and fluid resistant characteristics. Applications from underwater to outer space, in military vehicles to cars, rail and mass transit**

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

Micro Molded Shapes (Continued)

Material

-25 Molded Part Material

A heat-shrinkable, semi-rigid, fluid and temperature resistant, elastomeric molding compound, designed to offer excellent performance in harsh environments. Ideal for use in military and commercial vehicles where high temperatures and long-term exposure to hot fluids is expected.

-100 Molded Part Material*

A heat-shrinkable, semi-flexible, low-fire-hazard molding compound designed to offer excellent fire safety characteristics combined with low smoke and low acid gas emission. 100 also exhibits good mechanical and fluid resistance properties.

-12 Molded Part Material*

A high-temperature, heat-shrinkable, flexible, flame-retarded, fluoroelastomeric molding compound with excellent resistance to long-term fluid immersion and heat exposure.

-3 Molded Part Material*

A general purpose, heat-shrinkable semi rigid and flame retarded polyolefin molding compound with good resistance to fluids and heat.

Min = Minimum inner diameter of the supplied expanded shape. We would supply to this dimension or greater.

Max = Recovered dimensions after heating.

The recommended usage range for the part is from 10% less than minimum expanded inside diameter to 10% greater than the maximum recovered inside diameter.

For more information please search by Part Number on: **www.te.com/adm** or contact our TE sales representatives.

Materials:
*As Supplied/Expanded dimensions may be slightly reduced due to the nature of the material. After recovery sizes are not affected.

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

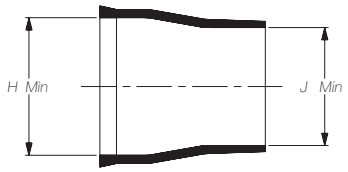
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

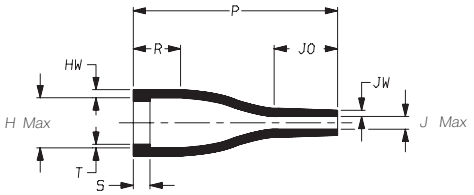
Micro Molded Shapes (Continued)

Selection Guide

As Supplied (a)



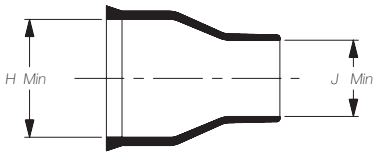
After Recovery (b)



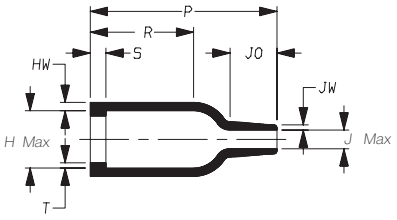
Dimensions in millimeters (in inches, for reference)

	As Supplied		After Recovery								
Part Number	H Min. a	J Min. a	H Max. b	J Max. b	P ±10% b	R ±10% b	S ±10% b	T ±10% b	JO ±10% b	HW ±20% b	JW ±20% b
204W201	10 [.39]	9.0 [.35]	5.2 [.20]	1.5 [.06]	20 [.79]	4.0 [.16]	0.8 [.03]	0.35 [.01]	6.6 [.26]	0.8 [.03]	0.6 [.02]

As Supplied (a)



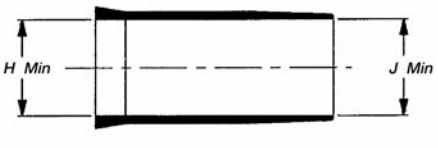
After Recovery (b)



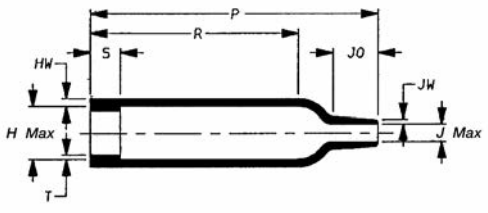
Dimensions in millimeters (in inches, for reference)

	As Supplied		After Recovery								
Part Number	H Min. a	J Min. a	H Max. b	J Max. b	P ±10% b	R ±10% b	S ±10% b	T ±10% b	JO ±10% b	HW ±20% b	JW ±20% b
203W301-*-G02	10 [.39]	6.0 [.24]	5.8 [.23]	2.2 [.09]	19 [.75]	11 [.43]	1.5 [.06]	0.5 [.02]	4.5 [.18]	0.8 [.03]	0.5 [.02]

As Supplied (a)



After Recovery (b)



Dimensions in millimeters (in inches, for reference)

	As Supplied		After Recovery								
Part Number	H Min. a	J Min. a	H Max. b	J Max. b	P ±10% b	R ±10% b	S ±10% b	T ±10% b	JO ±10% b	HW ±20% b	JW ±20% b
203W301	10 [.39]	10 [.39]	5.8 [.23]	2.2 [.09]	29 [1.14]	21 [.83]	3.0 [.12]	0.5 [.02]	4.5 [.18]	0.8 [.03]	0.5 [.02]

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

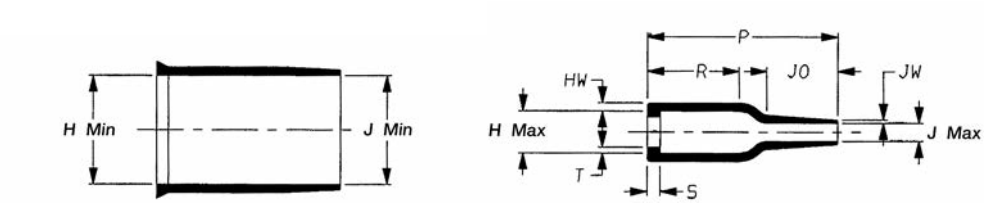
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

Micro Molded Shapes (Continued)

Selection Guide

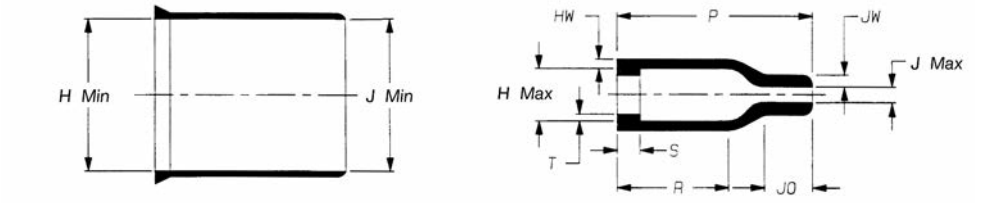
As Supplied (a) | After Recovery (b)



Dimensions in millimeters (in inches, for reference)

	As Supplied		After Recovery								
Part Number	H Min. a	J Min. a	H Max. b	J Max. b	P ±10% b	R ±10% b	S ±10% b	T ±10% b	JO ±10% b	HW ±20% b	JW ±20% b
202K111-*-01	17 [.67]	17 [.67]	6.9 [.27]	3.0 [.12]	29 [1.14]	14 [.55]	1.7 [.07]	0.9 [.04]	10.8 [.43]	1.3 [.05]	0.7 [.03]

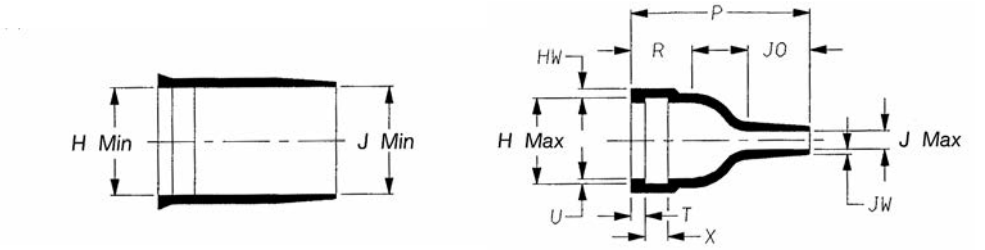
As Supplied (a) | After Recovery (b)



Dimensions in millimeters (in inches, for reference)

	As Supplied		After Recovery								
Part Number	H Min. a	J Min. a	H Max. b	J Max. b	P ±10% b	R ±10% b	S ±10% b	T ±10% b	JO ±10% b	JW ±20% b	HW ±20% b
202A111-*-G07	17 [.67]	17 [.67]	7.9 [.31]	2.2 [.09]	25 [.98]	14 [.55]	3.0 [.12]	1.0 [.04]	6.0 [.24]	1.7 [.07]	1.0 [.04]

As Supplied (a) | After Recovery (b)



Dimensions in millimeters (in inches, for reference)

	As Supplied		After Recovery									
Part Number	H Min. a	J Min. a	H Max. b	J Max. b	P ±10% b	R ±10% b	T ±10% b	U ±10% b	X ±10% b	JO ±10% b	HW ±20% b	JW ±20% b
204W221	11 [.43]	11 [.43]	9.3 [.37]	2.1 [.08]	19 [.75]	6.5 [.26]	1.5 [.06]	0.55 [.02]	2.4 [.09]	6.6 [.26]	1.1 [.04]	0.5 [.02]

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

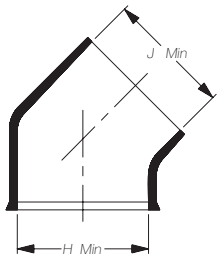
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

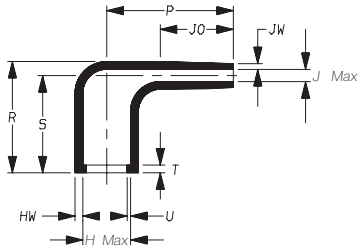
Micro Molded Shapes (Continued)

Selection Guide

As Supplied (a)



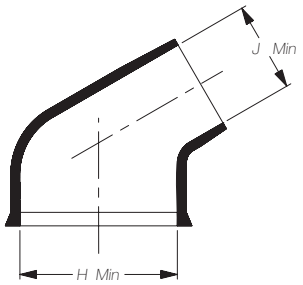
After Recovery (b)



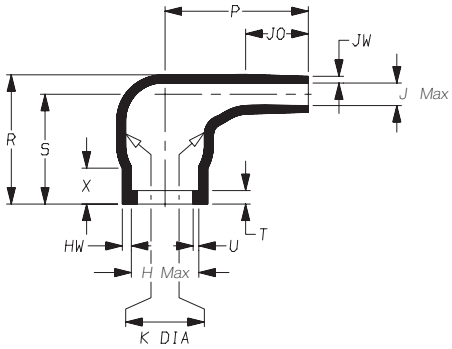
Dimensions in millimeters (in inches, for reference)

Part Number	As Supplied H Min. a	As Supplied J Min. a	After Recovery H Max. b	J Max. b	P ±10% b	R ±10% b	S ±10% b	T ±10% b	U ±10% b	JO ±10% b	HW ±20% b	JW ±20% b
224W201	11 [.43]	9.0 [.35]	5.2 [.20]	1.6 [.06]	13 [.51]	11.5 [.45]	10 [.39]	0.8 [.03]	0.35 [.01]	7.5 [.30]	0.8 [.03]	0.6 [.02]

As Supplied (a)



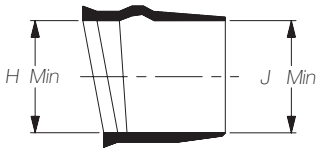
After Recovery (b)



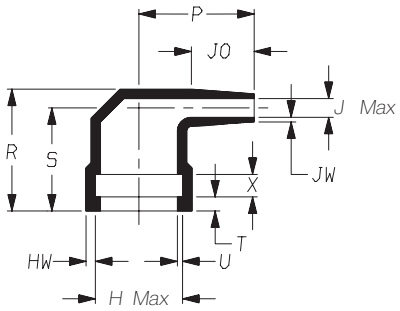
Dimensions in millimeters (in inches, for reference)

Part Number	As Supplied H Min. a	As Supplied J Min. a	After Recovery H Max. b	J Max. b	K Min. b	K Max. b	P ±10% b	R ±10% b	S ±10% b	T ±10% b	U ±10% b	JO ±10% b	HW ±20% b	JW ±20% b	X ±20% b
223W601	10 [.39]	6.0 [.24]	6.3 [.25]	2.0 [.08]	10 [.39]	7.4 [.29]	12.5 [.49]	11.5 [.45]	9.8 [.39]	1.2 [.05]	0.5 [.02]	6.0 [.24]	1.0 [.04]	0.6 [.02]	3.2 [.13]

As Supplied (a)



After Recovery (b)



Dimensions in millimeters (in inches, for reference)

Part Number	As Supplied H Min. a	As Supplied J Min. a	After Recovery H Max. b	J Max. b	P ±10% b	R ±10% b	S ±10% b	T ±10% b	U ±10% b	X ±10% b	JO ±10% b	HW ±20% b	JW ±20% b
224W221	11 [.43]	11 [.43]	9.3 [.37]	2.1 [.08]	12.3 [.48]	13 [.51]	11 [.43]	1.5 [.06]	0.55 [.02]	2.4 [.09]	6.6 [.26]	1.0 [.04]	0.5 [.02]

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

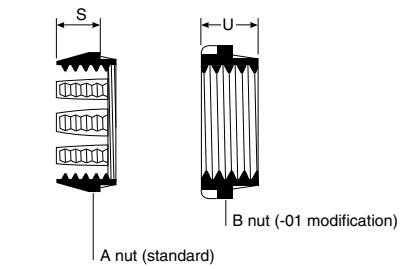
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

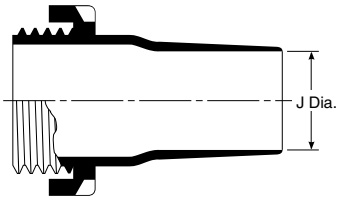
207W213 to 256

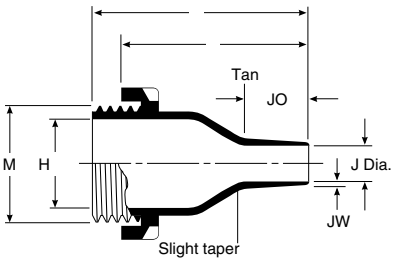
Two-Part Feedthrough

After Unrestricted Recovery (b)



As Supplied (a)





Applications

Use for strain relief and abrasion protection when cables pass through equipment boxes or panels.

Materials Available

Material Dash Number	Material Description	Precoating No.	Adhesive Part No.
-3	Semirigid polyolefin	/42 or /86	S-1017 or S-1048
-4	Flexible polyolefin	/42 or /86	S-1017 or S-1048
-12	Fluoroelastomer	N/A	S-1255-04
-25	Fluid-resistant elastomer	/42 or /86 or /225	S-1017 or S-1048 or S-1125
-100	Polyolefin, Zerohal	/86 or /180	S-1048 or S-1030

*For more information, please see the appropriate material page in this section.

**For more information, please see section 5.

Product Dimensions

Part No.	H Ref. b	J Min. -3, -4, -12, -25 a	J Min. -100 a	J Max. b	JO Max. b	M Thread b	P ±10% b	R ±10% b	S ±10% b	U ±10% b	JW ±20% b	Hole Dia. ±.51 (.02]
207W213	11.9 [.47]	9.9 [.39]	8.5 [.33]	4.1 [.16]	15.2 [.60]	20.1 [.79]	62.0 [2.44]	49.0 [1.93]	13.0 [.51]	9.9 [.39]	1.3 [.05]	23.9 [.94]
207W223	20.1 [.79]	18.0 [.71]	16.5 [.65]	7.1 [.28]	19.3 [.76]	30.0 [1.18]	71.9 [2.83]	58.9 [2.32]	16.0 [.63]	9.9 [.39]	1.8 [.07]	34.0 [1.34]
207W234	30.1 [1.22]	27.9 [1.10]	26.5 [1.04]	11.9 [.47]	26.9 [1.06]	41.9 [1.65]	87.1 [3.43]	73.9 [2.91]	18.0 [.71]	9.9 [.39]	2.03 [.08]	47.0 [1.85]
207W245	45.0 [1.77]	41.9 [1.65]	40.5 [1.59]	18.0 [.71]	32.0 [1.26]	55.9 [2.20]	102.1 [4.02]	88.9 [3.50]	18.0 [.71]	9.9 [.39]	3.05 [.12]	60.5 [2.38]
207W256	68.1 [2.68]	64.0 [2.52]	64.5 [2.54]	30.0 [1.18]	39.1 [1.54]	80.0 [3.15]	121.9 [4.80]	109.0 [4.29]	18.0 [.71]	9.9 [.39]	3.05 [.12]	85.1 [3.35]

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 [.06] max.

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

CES

Heat-Shrinkable Cable Entry Seals

Product Facts

- Comes in many sizes and configurations
- Seals multicable openings
- SAE-AS81765/1 Type 1

Applications

Tyco Electronics Heat-Shrinkable Cable-Entry Seals (CESs) provide a watertight, fume-tight seal where cables enter connection boxes, bulkheads, or other enclosures.

CESs are available in two basic types: standard and threaded. The standard CES for thin-wall enclosures consists of a three-part assembly — a rigid plastic nylon nut, an O-ring, and a heat-shrinkable molded area. The CES for threaded-hole applications is a one-part assembly that combines a tapered national pipe thread (NPT) in rigid plastic nylon with a heat-shrinkable molded area.

All CESs are available with the molded area configured with one opening for a single wire or cable entry or with two, three, or four legs of equal size to seal multiple wires or cables at the entry to enclosures and/or bulkheads. To meet sealing requirements, all CESs have factory-applied adhesive that provides the seal to wire and cable jackets. When armored cable is being sealed it may be necessary to use additional sealants, such as G.E. RTV 112 or Dow Corning RTV 732, to form the water seal.

Standard Cable Entry Seal Installation Instructions

Cable entry seal number	Torque in-pounds	Torque Nm
1	15-20	1.7-2.3
2	15-20	1.7-2.3
3	20-25	2.3-2.8
4	40-45	4.5-5.1
5	45-50	5.1-5.7

Step 1
Place rigid, externally threaded nut through hole so flanged end is on the inside of the can or cabinet.

Step 2
Place O-ring over threaded end and position against outside of can or cabinet.

Step 3
Screw shrinkable, internally threaded component onto the rigid nut and tighten, using appropriate spanner wrenches, until O-ring is slightly flattened — or use the torque values shown in the table to the left.

Step 4
Insert cable through expanded opening and make necessary connections (see note following Step 4 in the next section).

Step 5
Shrink expanded nose by applying 121°C-135°C [250°F-275°F] of heat from a heat gun with circular reflector, or a gas torch, or other heat source.* When part has shrunk to the cable, and when the sealant is seen to flow, discontinue heat. Additional heating *will not* make the component shrink tighter.

*Follow the safety precautions of the manufacturer of the heater.

Threaded Cable Entry Seal Installation Instructions

Note: Surfaces to be sealed should be clean and free of burrs, pits, or deep scratches.

Step 1
Apply a thread sealant to the threaded end and then screw threaded cable entry seal into pretapped hole or pipe fitting.

Step 2
Tighten by applying wrench to hexagonal nut.

Step 3
Insert cable through expanded opening and make necessary connection (see Note).

Step 4
Shrink expanded nose by applying 121°C-135°C [250°F-275°F] of heat from a heat gun with circular reflector, gas torch, or other heat source.* When part has shrunk to the cable, and when the sealant is seen to flow, discontinue heat. Additional heating *will not* make the component shrink tighter.

Note
If armored cable is used, the factory-applied sealant will not fill the interstices of the armor. The armor must be cut back so that the part is allowed to shrink and seal to the cable sheath as well as come down over the armor. To keep the armor from unraveling, some armor must be approximately 1/4 inch to 3/8 inch [.01 to .02 mm] inside the cable entry seal leg.

*Follow the safety precautions of the manufacturer of the heater.

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

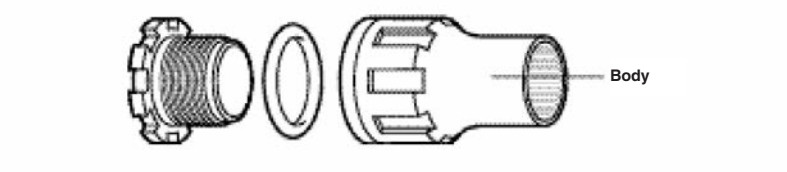
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

CES (Continued)

Standard CES

Dimensions are mm [inches]



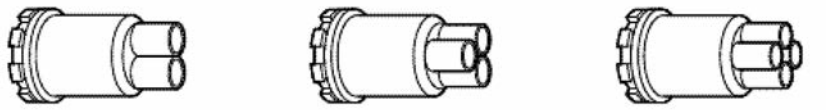
Product Dimensions

Part No.	No. of Legs	Overall Nom. Recommended Length	Min. Expanded I.D. Body	Max. Recovered I.D. Body	Max. I.D. of Part	Drill Size	Max. O.D. of Nut
CES-1	1	69.85 [2.75]	12.70 [0.50]	4.32 [0.17]	19.05 [0.75]	25.40 [1.00]	35.81 [1.410]
CES-2	1	69.85 [2.75]	19.05 [0.75]	6.35 [0.25]	19.05 [0.75]	25.40 [1.00]	35.81 [1.410]
CES-3	1	95.25 [3.75]	28.45 [1.12]	12.70 [0.50]	27.94 [1.10]	35.05 [1.38]	48.31 [1.902]
CES-4	1	114.30 [4.50]	40.64 [1.60]	19.05 [0.75]	39.62 [1.56]	50.80 [2.00]	69.09 [2.720]
CES-4S*	1	114.30 [4.50]	50.80 [2.00]	19.05 [0.75]	53.34 [2.10]	59.94 [2.36]	85.09 [3.350]
CES-5	1	177.80 [7.00]	69.85 [2.75]	36.32 [1.43]	73.66 [2.90]	88.90 [3.50]	103.38 [4.070]

*Part configuration may be different than depicted in figure. Contact TE for specification.
Also available in threaded version.

Breakout CES

Dimensions are mm [inches]

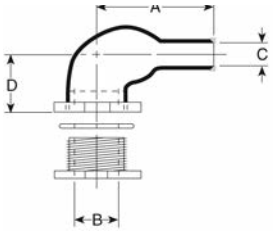


Product Dimensions

Part No.	No. of Legs	Overall Nom. Recommended Length	Min. Expanded I.D. (Each Leg)	Max. Recovered I.D. (Each Leg)	Max. I.D. of Part	Drill Size	Max. O.D. of Nut
CES-2-D1A	2	69.85 [2.75]	15.24 [0.60]	2.79 [0.11]	19.05 [0.75]	25.40 [1.00]	35.81 [1.41]
CES-2-T1	3	69.85 [2.75]	10.16 [0.40]	2.79 [0.11]	19.05 [0.75]	25.40 [1.00]	35.81 [1.41]
CES-2-T1B	3	88.90 [3.50]	15.24 [0.60]	4.32 [0.17]	19.05 [0.75]	25.40 [1.00]	35.81 [1.41]
CES-2-F1A	4	69.85 [2.75]	10.16 [0.40]	2.79 [0.11]	19.05 [0.75]	25.40 [1.00]	35.81 [1.41]
CES-2-F1	4	88.90 [3.50]	15.24 [0.60]	4.32 [0.17]	19.05 [0.75]	25.40 [1.00]	35.81 [1.41]
CES-3-D1	2	88.90 [3.50]	15.24 [0.60]	4.32 [0.17]	27.94 [1.10]	35.05 [1.38]	48.26 [1.90]
CES-3-T1	3	88.90 [3.50]	15.24 [0.60]	4.32 [0.17]	27.94 [1.10]	35.05 [1.38]	48.26 [1.90]
CES-3-F1	4	88.90 [3.50]	15.24 [0.60]	4.32 [0.17]	27.94 [1.10]	35.05 [1.38]	48.26 [1.90]
CES-4-D3	2	101.60 [4.00]	22.86 [0.90]	7.62 [0.30]	40.64 [1.60]	50.80 [2.00]	69.09 [2.72]
CES-4-T1	3	101.60 [4.00]	22.86 [0.90]	7.62 [0.30]	40.64 [1.60]	50.80 [2.00]	69.09 [2.72]
CES-4-F1	4	101.60 [4.00]	22.86 [0.90]	7.62 [0.30]	40.64 [1.60]	50.80 [2.00]	69.09 [2.72]
CES-5-T4	3	127.00 [5.00]	31.75 [1.25]	12.70 [0.50]	73.66 [2.90]	63.50 [2.50]	103.38 [4.07]
CES-5-F4	4	127.00 [5.00]	31.75 [1.25]	12.70 [0.50]	73.66 [2.90]	63.50 [2.50]	103.38 [4.07]

Right-Angle Breakout CES

Dimensions are mm [inches]



Part No.	C		B	Length		Drill Size
	Min. Exp. ID	Max. Rec. ID	ID Min	D	A	
CES-1R	12.70 [0.50]	7.11 [0.28]	12.70 [0.50]	35.56 [1.4]	42.67 [1.68]	25.40 [1.00]
CES-2R	18.03 [0.71]	8.38 [0.33]	19.05 [0.75]	43.18 [1.7]	44.96 [1.77]	25.40 [1.00]
CES-3R	27.94 [1.10]	9.65 [0.38]	27.94 [1.10]	53.34 [2.1]	58.42 [2.30]	34.80 [1.37]
CES-4R	40.64 [1.60]	15.75 [0.62]	40.64 [1.60]	78.74 [3.1]	71.12 [2.80]	50.80 [2.00]

Catalog 1654025
Revised 3-13

www.te.com

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

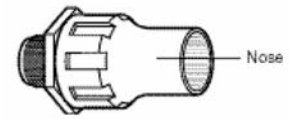
Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

CES (Continued)

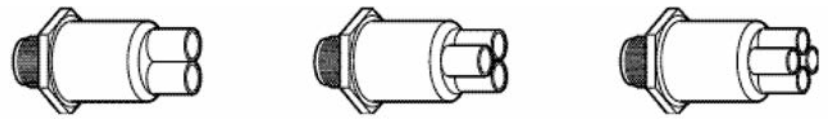
Threaded CES



Part No.	Overall Nom. Recommended Length	Min. Expanded I.D. Nose	Max. Recovered I.D. Nose	National Adapter I.D.	Pipe Thread Size
CES-2-A50	83.82 [3.30]	19.05 [0.75]	6.35 [0.25]	12.70 [0.50]	1/2–14
CES-2-A75	83.82 [3.30]	19.05 [0.75]	6.35 [0.25]	19.05 [0.75]	3/4–14
CES-2-A100	83.82 [3.30]	19.05 [0.75]	6.35 [0.25]	19.05 [0.75]	1–11 1/2
CES-3-A100	111.00 [4.37]	28.45 [1.12]	12.70 [0.50]	25.40 [1.00]	1–11 1/2
CES-3-A150	117.35 [4.62]	28.45 [1.12]	12.70 [0.50]	27.94 [1.10]	1 1/2–11 1/2
CES-4-A150*	127.00 [5.00]	50.80 [2.00]	19.05 [0.75]	35.56 [1.40]	1 1/2–11 1/2
CES-5-A250*	152.40 [6.00]	69.85 [2.75]	25.40 [1.00]	60.96 [2.40]	2 1/2–10

* Not illustrated - refer to Specification Control Drawing for details.

Threaded Breakout CES



Product Dimensions

Part No.	No. of Legs	Overall Nom. Recommended Length	Min. Expanded I.D. (Each Leg)	Max. Recovered I.D. (Each Leg)	Max. I.D. of Part	Pipe Thread Size (NPT)
CES-2A-T1	3	95.25 [3.75]	10.16 [0.4]	2.79 [0.11]	12.70 [0.50]	1/2–14
CES-2A-F1	4	95.25 [3.75]	10.16 [0.4]	2.79 [0.11]	12.70 [0.50]	1/2–14
CES-2A-D1	2	95.25 [3.75]	15.24 [0.6]	2.79 [0.11]	19.05 [0.75]	3/4–14
CES-2A-T2	3	95.25 [3.75]	10.16 [0.4]	2.79 [0.11]	19.05 [0.75]	3/4–14
CES-2A-F2	4	95.25 [3.75]	10.16 [0.4]	2.79 [0.11]	19.05 [0.75]	3/4–14
CES-3A-D1	2	95.25 [3.75]	15.24 [0.6]	4.32 [0.17]	25.40 [1.00]	1–11 1/2
CES-2A-T3	3	95.25 [3.75]	15.24 [0.6]	4.32 [0.17]	25.40 [1.00]	1–11 1/2
CES-3A-F1	4	95.25 [3.75]	15.24 [0.6]	4.32 [0.17]	25.40 [1.00]	1–11 1/2
CES-3A-D2	2	95.25 [3.75]	15.24 [0.6]	4.32 [0.17]	27.94 [1.10]	1 1/2–11 1/2
CES-3A-T2	3	95.25 [3.75]	15.24 [0.6]	4.32 [0.17]	27.94 [1.10]	1 1/2–11 1/2
CES-3A-F2	4	95.25 [3.75]	15.24 [0.6]	4.32 [0.17]	27.94 [1.10]	1 1/2–11 1/2
CES-4A-D3	2	95.25 [3.75]	22.86 [0.9]	7.62 [0.30]	37.34 [1.47]	1 1/2–11 1/2
CES-4A-T3	3	95.25 [3.75]	22.86 [0.9]	7.62 [0.30]	37.34 [1.47]	1 1/2–11 1/2
CES-4A-F3	4	95.25 [3.75]	22.86 [0.9]	7.62 [0.30]	37.34 [1.47]	1 1/2–11 1/2

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 [.06] max.

Catalog 1654025
Revised 3-13

www.te.com

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

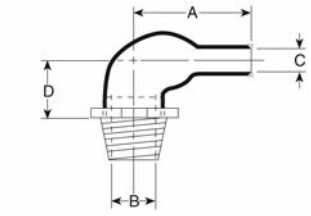
Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

CES (Continued)

Right-Angle Threaded CES



Part No.	C		B	Length		NPT Size
	Min. Exp. ID	Max. Rec. ID	ID Min	A	D	
CES-2R-A50	12.70 [0.50]	7.11 [0.28]	12.70 [0.50]	35.56 [1.4]	25.40 [1.00]	1/2-14
CES-2R-A75	18.03 [0.71]	8.38 [0.33]	19.05 [0.75]	43.18 [1.7]	27.94 [1.10]	3/4-14
CES-3R-A100	27.94 [1.10]	9.65 [0.38]	25.40 [1.00]	53.34 [2.1]	33.78 [1.33]	1-11 1/2
CES-3R-A150	40.64 [1.60]	15.75 [0.62]	27.94 [1.10]	78.74 [3.1]	39.62 [1.56]	1 1/2-11 1/2

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

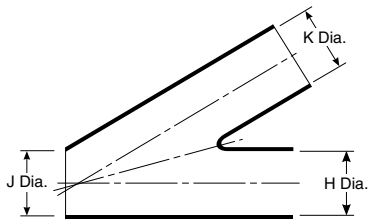
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

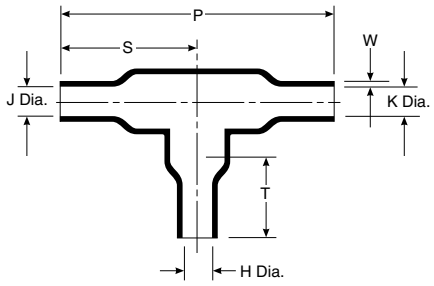
301A011 to 048

T Transition

As Supplied (a)



After Unrestricted Recovery (b)



Applications

Provides strain relief and mechanical protection on cable harness assemblies.

Materials Available

Material Dash Number	Material Description	Precoating No.	Adhesive Part No.
-3	Semirigid polyolefin	/42 or /86	S-1017 or S-1048
-4	Flexible polyolefin	/42 or /86	S-1017 or S-1048
-12	Fluoroelastomer	N/A	S-1255-04
-25	Fluid-resistant elastomer	/42 or /86 or /225	S-1017 or S-1048 or S-1125
-100	Polyolefin, Zerohal	/86, /180	S-1048 or S-1030

*For more information, please see the appropriate material page in this section.
**For more information, please see section 5.

Product Dimensions

Part No.	H, J & K		P	S	T	W
	Min. a	Max. b	±10% b	±10% b	±10% b	±30% b
301A011	6.6 [.26]	3.6 [.14]	29.7 [1.17]	15.1 [.59]	—	1.02 [.04]
301A022	13.2 [.52]	6.9 [.27]	58.7 [2.31]	29.5 [1.16]	17.5 [.69]	1.52 [.06]
301A028	20.0 [0.79]	10.2 [.40]	90 [3.54]	45 [1.77]	30 [1.18]	2.0 [.08]
301A034	26.9 [1.06]	13.5 [.53]	120.1 [4.73]	60.2 [2.37]	35.6 [1.40]	2.29 [.09]
301A048	55.6 [2.19]	30.2 [1.19]	246.4 [9.70]	123.2 [4.85]	70.9 [2.79]	3.05 [.12]

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 [.06] max.

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

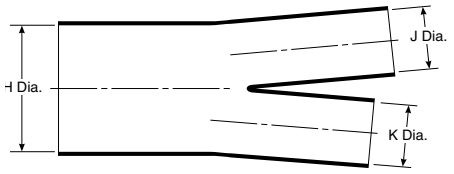
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

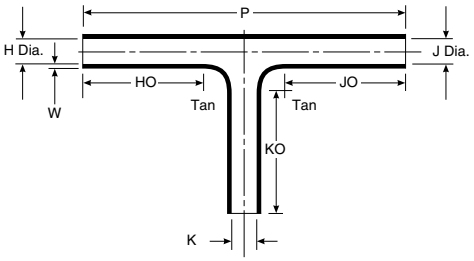
301A511 to 514

Slimline T Transition

As Supplied (a)



After Unrestricted Recovery (b)



Applications

Provides strain relief and mechanical protection on cable harness assemblies.

Materials Available

Material Dash Number	Material Description	Precoating No.	Adhesive Part No.
-50	Fluoroelastomer polymer blend	N/A	S-1125
-51	Elastomer polymer blend	/164	S-1124
-71	Flexible polyolefin	/42 or /86	S-1017 or S-1048
-125	Fluoropolymer	N/A	S-1255-04

*For more information, please see the appropriate material page in this section.
**For more information, please see section 5.

Product Dimensions

Part No.	H		J & K		HO, JO, & KO ±10% b	W Nom. b	P Nom. b
	Min. a	Max. b	Min. a	Max. b			
301A511	19.8 [.78]	6.6 [.26]	13.2 [.52]	6.6 [.26]	25.4 [1.00]	1.02 [.04]	80.8 [3.18]
301A512	34.3 [1.35]	11.4 [.45]	22.9 [.90]	11.4 [.45]	41.1 [1.62]	1.27 [.05]	120.4 [4.74]
301A513	60.2 [2.37]	20.1 [.79]	40.1 [1.58]	20.1 [.79]	63.5 [2.50]	1.52 [.06]	175.8 [6.92]
301A514*	83.3 [3.28]	33.3 [1.31]	54.9 [2.16]	33.3 [1.31]	88.9 [3.50]	1.78 [.07]	242.3 [9.54]

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 [.06] max.
*301A514 is not available in -125 Fluoropolymer material.

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

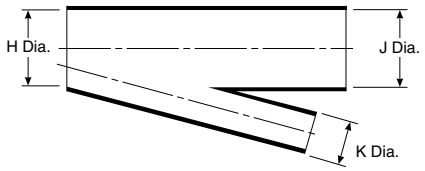
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

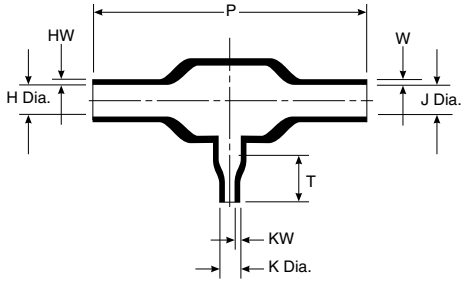
322A112 to 158

T Transition

As Supplied (a)



After Unrestricted Recovery (b)



Applications

Provides strain relief and mechanical protection on cable harness assemblies.

Materials Available

Material Dash Number	Material Description	Precoating No.	Adhesive Part No.
-3	Semirigid polyolefin	/42 or /86	S-1017 or S-1048
-4	Flexible polyolefin	/42 or /86	S-1017 or S-1048
-12	Fluoroelastomer	N/A	S-1255-04
-25	Modified elastomer	/42 or /86 or /225	S-1017 or S-1048 or S-1125
-100	Polyolefin, Zerohal	/86 or /180	S-1048 or S-1030

*For more information, please see the appropriate material page in this section.
**For more information, please see section 5.

Product Dimensions

Part No.	H & J		K		P	T	HW & W	KW
	Min. a	Max. b	Min. a	Max. b	±10% b	±10% b	±20% b	±20% b
322A112	13.2 [.52]	5.8 [.23]	6.6 [.26]	3.0 [.12]	52.3 [2.06]	—	1.52 [.06]	1.02 [.04]
322A123	26.9 [1.06]	12.4 [.49]	6.6 [.26]	3.0 [.12]	83.3 [3.28]	10.7 [.42]	2.54 [.10]	1.02 [.04]
322A134	26.9 [1.06]	12.7 [.50]	13.2 [.52]	5.8 [.23]	107.7 [4.24]	20.3 [.80]	2.54 [.10]	1.52 [.06]
322A148	55.6 [2.19]	25.4 [1.00]	13.2 [.52]	5.8 [.23]	180.6 [7.11]	25.4 [1.00]	4.57 [.18]	1.52 [.06]
322A158	55.6 [2.19]	25.4 [1.00]	26.9 [1.06]	12.4 [.49]	222.3 [8.75]	38.1 [1.50]	4.57 [.18]	2.54 [.10]

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 [.06] max.

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

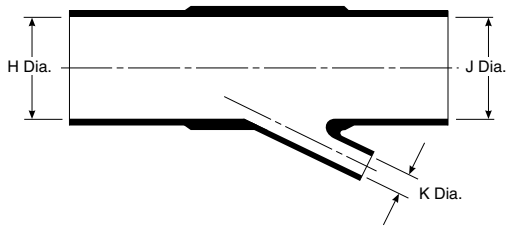
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

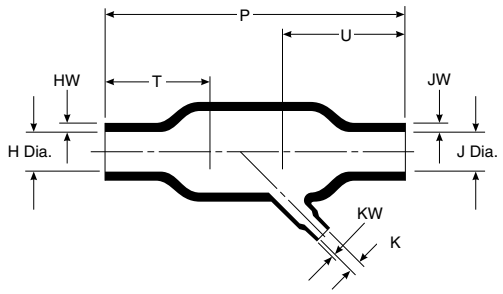
342A012 to 058

45° Side-Breakout Transition

As Supplied (a)



After Unrestricted Recovery (b)



Applications

Provides strain relief and mechanical protection on cable harness assemblies.

Materials Available

Material*	Material Description	Precoating No.	Adhesive Part No.**
-3	Semirigid polyolefin	/42 or /86	S-1017 or S-1048
-4	Flexible polyolefin	/42 or /86	S-1017 or S-1048
-12	Fluoroelastomer	N/A	S-1255-04
-25	Fluid-resistant elastomer	/42 or /86 or /225	S-1017 or S-1048 or S-1125
-100	Polyolefin, Zerohal	/86 or /180	S-1048 or S-1030

*For more information, please see the appropriate material page in this section.
**For more information, please see section 5.

Product Dimensions

Part No.	H & J		K		P ±10% b	T* ±10% b	U* ±10% b	HW & JW ±20% b	KW ±20% b
	Min. a	Max. b	Min. a	Max. b					
342A012	13.2 [.52]	6.9 [.27]	6.6 [.26]	3.6 [.14]	49.3 [1.94]	19.6 [.77]	19.6 [.77]	1.52 [.06]	1.02 [.04]
342A024	26.9 [1.06]	12.7 [.50]	6.6 [.26]	3.6 [.14]	92.5 [3.64]	31.8 [1.25]	39.6 [1.56]	2.54 [.10]	1.02 [.04]
342A034	26.9 [1.06]	13.7 [.54]	13.2 [.52]	6.1 [.24]	144.8 [5.70]	50.8 [2.00]	50.8 [2.00]	2.54 [.10]	1.52 [.06]
342A048	55.6 [2.19]	26.9 [1.06]	13.2 [.52]	6.9 [.27]	184.9 [7.28]	63.5 [2.50]	63.5 [2.50]	4.57 [.18]	1.52 [.06]
342A058	55.6 [2.19]	26.9 [1.06]	26.9 [1.06]	13.7 [.54]	203.5 [8.01]	66.0 [2.60]	66.0 [2.60]	4.57 [.18]	2.54 [.10]

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 [.06] max.
* T = vent port location, U = injection port location

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

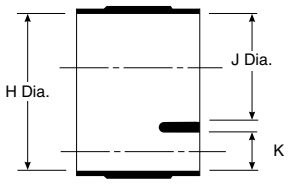
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

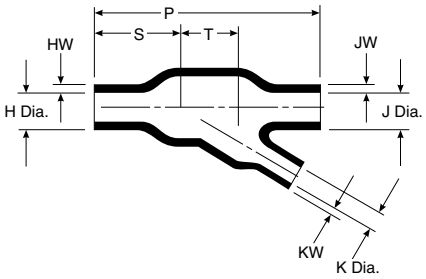
362A014 to 114

30° Side-Breakout Transition

As Supplied (a)



After Unrestricted Recovery (b)



Applications

Provides strain relief and mechanical protection on cable harness assemblies.

Materials Available

Material*	Material Description	Precoating No.	Adhesive Part No.**
-3	Semirigid polyolefin	/42 or /86	S-1017 or S-1048
-4	Flexible polyolefin	/42 or /86	S-1017 or S-1048
-12	Fluoroelastomer	N/A	S-1255-04
-25	Fluid-resistant elastomer	/42 or /86 or /225	S-1017 or S-1048 or S-1125
-100	Polyolefin, Zerohal	/86 or /180	S-1048 or S-1030

*For more information, please see the appropriate material page in this section.
**For more information, please see section 5.

Product Dimensions

Part No.	H & J		K		P	S	T	HW & JW	KW
	Min. a	Max. b	Min. a	Max. b	±10% b	±10% b	±10% b	±20% b	±20% b
362A014	30.5 [1.20]	15.7 [.62]	20.3 [.80]	10.7 [.42]	82.6 [3.25]	31.8 [1.25]	21.1 [.63]	2.54 [.10]	1.78 [.07]
362A024	35.6 [1.40]	18.3 [.72]	15.2 [.60]	8.6 [.34]	63.5 [2.50]	19.1 [.75]	22.4 [.88]	2.54 [.10]	1.52 [.06]
362A114	35.6 [1.40]	18.8 [.74]	10.2 [.40]	5.3 [.21]	61.0 [2.40]	19.1 [.75]	21.3 [.84]	2.79 [.11]	1.52 [.06]

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 [.06] max.
S = vent port, S + T = injection port

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

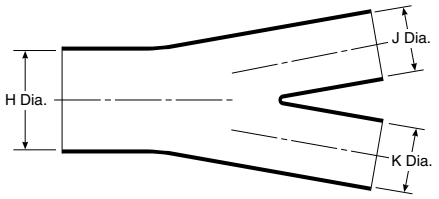
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

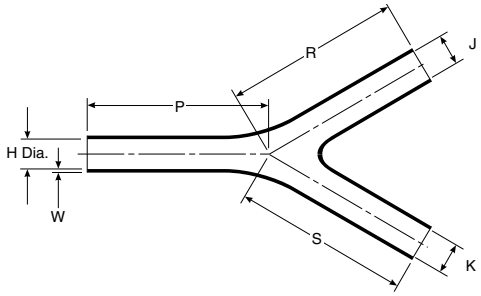
381A301 to 304

Slimline Y Transition

As Supplied (a)



After Unrestricted Recovery (b)



Applications

Provides strain relief and mechanical protection on cable harness assemblies.

Materials Available

Material*	Material Description	Precoating No.	Adhesive Part No.**
-50	Fluoroelastomer polymer blend	N/A	S-1125
-51	Elastomer polymer blend	/164	S-1124
-71	Flexible polyolefin	/42 or /86	S-1017 or S-1048
-125	Fluoropolymer	—	S-1255-04

*For more information, please see the appropriate material page in this section.
**For more information, please see section 5.

Product Dimensions

Part No.	H		J & K		W	P	R & S
	Min. a	Max. b	Min. a	Max. b	Nom. b	Nom. b	Nom. b
381A301	19.8 [.78]	6.6 [.26]	13.2 [.52]	6.6 [.26]	1.0 [.04]	40.6 [1.60]	40.6 [1.60]
381A302	34.3 [1.35]	11.4 [.45]	22.9 [.90]	11.4 [.45]	1.3 [.05]	63.0 [2.48]	63.0 [2.48]
381A303	60.2 [2.37]	20.1 [.79]	40.1 [1.58]	20.1[.79]	1.5 [.06]	94.7 [3.73]	94.7 [3.73]
381A304*	83.3 [3.28]	33.3 [1.31]	54.9 [2.16]	33.3 [1.31]	1.8 [.07]	133.9 [5.27]	133.9 [5.27]

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 [.06] max.
*381A304 is not available in -125 Fluoropolymer material.

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

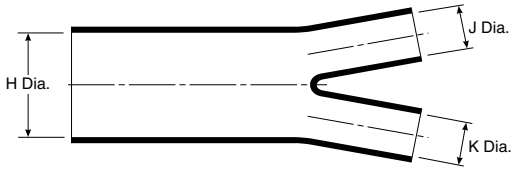
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

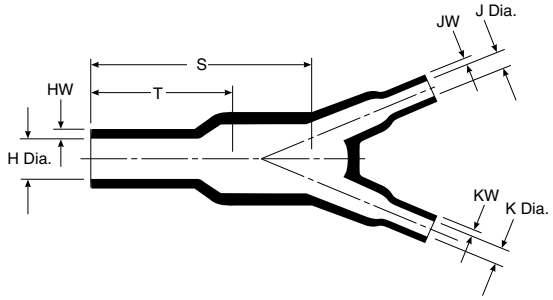
382A012 to 046

Y Transition

As Supplied (a)



After Unrestricted Recovery (b)



Applications

Provides strain relief and mechanical protection on cable harness assemblies.

Materials Available

Material*	Material Description	Precoating No.	Adhesive Part No.**
-3	Semirigid polyolefin	/42 or /86	S-1017 or S-1048
-4	Flexible polyolefin	/42 or /86	S-1017 or S-1048
-12	Fluoroelastomer	N/A	S-1255-04
-25	Fluid-resistant elastomer	/42 or /86 or /225	S-1017 or S-1048 or S-1125
-100	Polyolefin, Zerohal	/86 or /180	S-1048 or S-1030

*For more information, please see the appropriate material page in this section.
**For more information, please see section 5.

Product Dimensions

Part No.	H Min. a	H Max. b	J & K Min. a	J & K Max. b	S ±10% b	T ±10% b	HW ±20% b	JW & KW ±20% b
382A012	13.2 [.52]	6.1 [.24]	6.6 [.26]	3.3 [.13]	23.9 [.94]	15.5 [.61]	1.52 [.06]	1.02 [.04]
382A023	26.9 [1.06]	12.4 [.49]	13.2 [.52]	6.1 [.24]	53.3 [2.10]	33.0 [1.30]	2.54 [.10]	1.52 [.06]
382A034	38.6 [1.52]	18.0 [.71]	26.9 [1.06]	12.4 [.49]	78.7 [3.10]	55.9 [2.20]	3.05 [.12]	2.54 [.10]
382A046	55.6 [2.19]	25.9 [1.02]	26.9 [1.06]	12.7 [.50]	111.8 [4.40]	71.1 [2.80]	4.57 [.18]	2.54 [.10]

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 [.06] max.

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

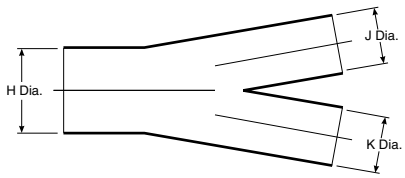
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

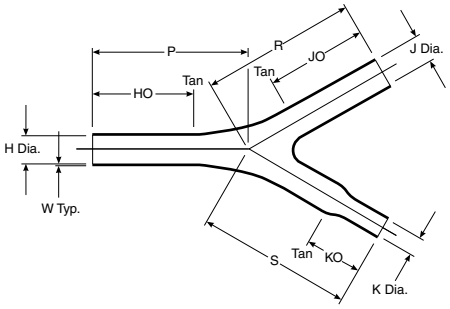
382C312, 322 and 332

Slimline Y Transition

As Supplied (a)

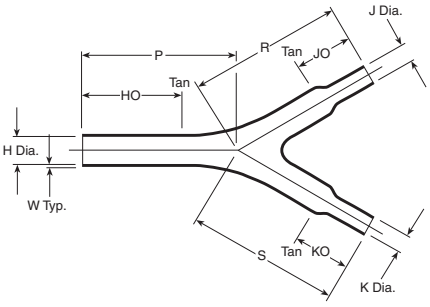


After Unrestricted Recovery (b)



382C312

After Unrestricted Recovery (b)



382C322, 382C332

Applications

Provides strain relief and mechanical protection at two into one Y junctions in cable harness assemblies. When used with adhesive it provides environmental sealing. These parts are based on the 382A3 range. They have the branched outlet(s) reduced in size to accommodate smaller cable diameters without the need for packing or shimming.

Materials Available

Material	Material Description	Precoating No.	Adhesive Part No.
-50	Fluoroelastomer polymer blend	N/A	S-1125
-51	Elastomer polymer blend	/164	S-1124
-71	Flexible polyolefin	/42 or /86	S-1017 or S-1048
-125	Fluoropolymer	N/A	S-1255-04

Product Dimensions

Part No.	H		J		K		P, R & S	KO	HO & JO	W
	Min. a	Max. b	Min. a	Max. b	Min. a	Max. b	Nom. b	±15% b	±15% b	Nom b
382C312	1.20 [30.5]	.45 [11.4]	.90 [22.9]	.45 [11.4]	.60 [15.2]	.30 [7.6]	2.48 [63.0]	.85 [21.6]	1.62 [41.1]	.04 [1.0]

Part No.	H		J & K		P, R & S	HO	JO & KO	W
	Min. a	Max. b	Min. a	Max. b	Nom. b	±15% b	±15% b	Nom. b
382C322	.90 [22.9]	.45 [11.4]	.40 [10.2]	.20 [5.1]	2.48 [63.0]	1.62 [41.1]	.85 [21.6]	.04 [1.0]

Part No.	H		J & K		P, R & S	HO	JO & KO	W
	Min. a	Max. b	Min. a	Max. b	Nom. b	±15% b	±15% b	Nom. b
382C332	1.00 [25.4]	.45 [11.4]	.60 [15.2]	.30 [7.5]	2.48 [63.0]	1.62 [41.1]	.85 [21.6]	.04 [1.0]

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 [.06] max.

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

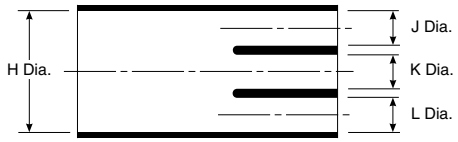
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

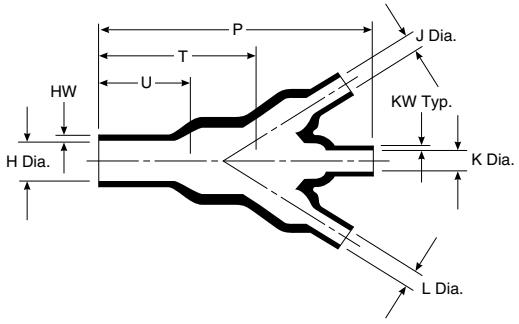
462A011 to 060

Transition, One to Three Cables

As Supplied (a)



After Unrestricted Recovery (b)



Applications

Provides strain relief and mechanical protection on cable harness assemblies.

Materials Available

Material*	Material Description	Precoating No.	Adhesive Part No.**
-3	Semirigid polyolefin	/42 or /86	S-1017 or S-1048
-4	Flexible polyolefin	/42 or /86	S-1017 or S-1048
-12	Fluoroelastomer	N/A	S-1255-04
-25	Fluid-resistant elastomer	/42 or /86 or /225	S-1017 or S-1048 or S-1125
-100	Polyolefin, Zerohal	/86 or /180	S-1048 or S-1030

*For more information, please see the appropriate material page in this section.
**For more information, please see section 5.

Product Dimensions

Part No.	H		J, K&L		P
	Min. a	Max. b	Min. a	Max. b	±10% b
462A011	13.2 [.52]	6.6 [.26]	6.6 [.26]	3.6 [.14]	46.2 [1.82]
462A023	26.9 [1.06]	13.2 [.52]	13.2 [.52]	6.9 [.27]	93.2 [3.67]
462A034	38.6 [1.52]	18.8 [.74]	19.3 [.76]	9.7 [.38]	135.1 [5.32]
462A046	55.6 [2.19]	25.4 [1.00]	26.9 [1.06]	12.4 [.49]	192.0 [7.56]
462A060	91.4 [3.60]	54.6 [2.15]	45.7 [1.80]	27.4 [1.08]	390.4 [15.37]

Part No.	T ±10% b	U ±10% b	HW ±20% b	KW ±10% b
462A011	30.5 [1.20]	15.7 [.62]	1.52 [.06]	1.02 [.04]
462A023	57.2 [2.25]	33.0 [1.30]	2.54 [.10]	1.52 [.06]
462A034	88.9 [3.50]	45.7 [1.80]	3.05 [.12]	1.78 [.07]
462A046	121.9 [4.80]	71.1 [2.80]	4.57 [.18]	3.05 [.12]
462A060	254.0 [10.00]	127.0 [5.00]	7.11 [.28]	4.57 [.18]

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 [.06] max.

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

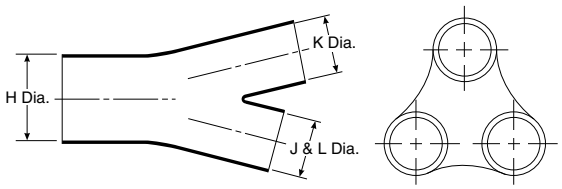
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

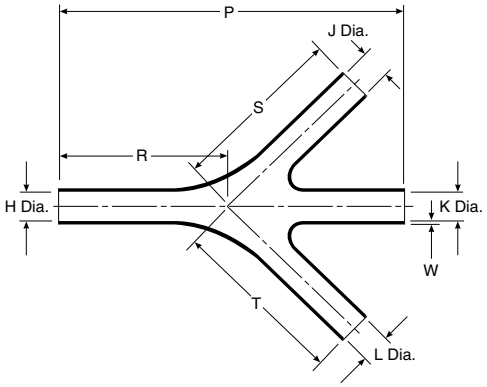
462A421 to 424

Slimline Transition, One to Three Cables

As Supplied (a)



After Unrestricted Recovery (b)



Applications

Provides strain relief and mechanical protection on cable harness assemblies.

Materials Available

Material*	Material Description	Precoating No.	Adhesive Part No.**
-50	Fluoroelastomer polymer blend	N/A	S-1125
-51	Elastomer polymer blend	/164	S-1124
-71	Flexible polyolefin	/42 or /86	S-1017 or S-1048

Product Dimensions

Part No.	H Min. a	H Max. b	J, K & L Min. a	J, K & L Max. b	W Nom. b	P Nom. b	R, S & T Nom. b
462A421	19.8 [.78]	6.6 [.26]	13.2 [.52]	6.6 [.26]	1.0 [.04]	85.9 [3.38]	42.9 [1.69]
462A422	34.3 [1.35]	11.4 [.45]	20.6 [.81]	11.4 [.45]	1.3 [.05]	135.6 [5.34]	67.8 [2.67]
462A423	60.2 [2.37]	20.1 [.79]	36.1 [1.42]	20.1 [.79]	1.5 [.06]	207.3 [8.16]	103.6 [4.08]
462A424*	99.8 [3.93]	33.3 [1.31]	54.9 [2.16]	33.3 [1.31]	1.8 [.07]	207.2 [8.16]	103.6 [4.08]

*-01 modification only

Materials Available

Material*	Material Description	Precoating No.	Adhesive Part No.**
-125	Fluoropolymer	—	S-1255-04

*For more information, please see the appropriate material page in this section.
**For more information, please see section 5.

Product Dimensions

Part No.	H Min. a	H Max. b	J, K & L Min. a	J, K & L Max. b	W Nom. b	P Nom. b	R, S & T Nom. b
462A421	19.8 [.78]	6.6 [.26]	13.2 [.52]	6.6 [.26]	1.0 [.04]	85.9 [3.38]	42.9 [1.69]
462A422	34.3 [1.35]	11.4 [.45]	20.6 [.81]	11.4 [.45]	1.3 [.05]	135.6 [5.34]	67.8 [2.67]
462A423	60.2 [2.37]	20.1 [.79]	36.1 [1.42]	20.1 [.79]	1.5 [.06]	207.3 [8.16]	103.6 [4.08]

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 [.06] max.

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

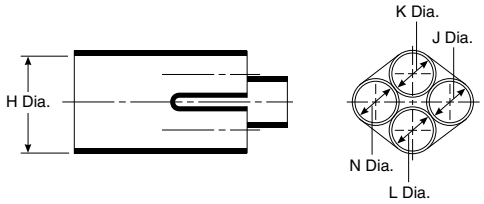
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

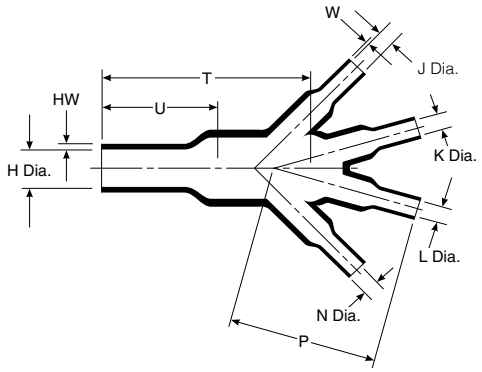
562A011 to 067

Transition, One to Four Cables

As Supplied (a)



After Unrestricted Recovery (b)



Applications

Provides strain relief and mechanical protection on cable harness assemblies.

Materials Available

Material*	Material Description	Precoating No.	Adhesive Part No.**
-3	Semirigid polyolefin	/42 or /86	S-1017 or S-1048
-4	Flexible polyolefin	/42 or /86	S-1017 or S-1048
-12	Fluoroelastomer	N/A	S-1255-04
-25	Fluid-resistant elastomer	/42 or /86 or /225	S-1017 or S-1048 or S-1125
-100	Polyolefin, Zerohal	/86 or /180	S-1048 or S-1030

*For more information, please see the appropriate material page in this section.
**For more information, please see section 5.

Product Dimensions

Part No.	H		J, K, L & N		P	T	U	HW	W
	Min. a	Max. b	Min. a	Max. b	±10% b	±10% b	±10% b	±20% b	±20% b
562A011	13.2 [.52]	6.9 [.27]	6.6 [.26]	3.4 [.14]	24.1 [.95]	43.9 [1.73]	18.0 [.71]	1.52 [.06]	1.02 [.04]
562A022	19.3 [.76]	9.7 [.38]	9.4 [.37]	5.3 [.21]	35.6 [1.40]	43.2 [1.70]	23.1 [.91]	1.78 [.07]	1.02 [.04]
562A032	19.3 [.76]	9.7 [.38]	13.2 [.52]	6.9 [.27]	49.3 [1.94]	50.5 [1.99]	25.4 [1.00]	1.78 [.07]	1.52 [.06]
562A043	26.9 [1.06]	13.0 [.51]	13.2 [.52]	6.9 [.27]	49.3 [1.94]	65.8 [2.59]	33.5 [1.32]	2.54 [.10]	1.52 [.06]
562A054	38.6 [1.52]	18.5 [.73]	19.3 [.76]	9.7 [.38]	71.9 [2.83]	95.3 [3.75]	46.5 [1.83]	3.05 [.12]	1.78 [.07]
562A067	55.6 [2.19]	26.7 [1.05]	26.9 [1.06]	13.0 [.51]	101.6 [4.00]	135.1 [5.32]	65.5 [2.58]	4.57 [.18]	2.54 [.10]

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 [.06] max.

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

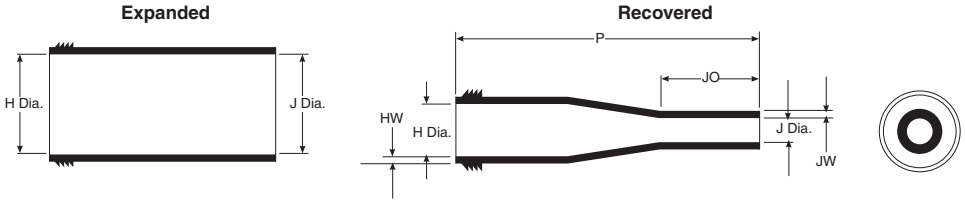
For additional support numbers please visit www.te.com

QFT

Configurable Heat-Shrink Transition

Product Facts

- Configurable heat-shrink transition
- Low cost commercial polyolefin
- 80°C [176°F] shrink temperature
- High shrink ratio
- Specially engineered easy-to-use crimp tool



Applications

QFT heat-shrinkable transitions form a watertight seal protecting cable splices from corrosion and mechanical abuse while providing excellent electrical insulating properties. QFT products use special crimps that allow them to be employed as 1:2, 1:3, and even 1:4 transitions. With their high shrink ratio and crimps the configurable QFT product line can accommodate almost all of your transition needs with only 3 product sizes.

Operating Temperature Range

-20°C to 70°C
[-4°F to 158°F]

Specifications/Approvals

TE	RW 2008	Molded Part
	RT1050/1	Adhesive

Temperature Ratings

Operating temperature range	-20°C to 70°C [-4°F to 158°F] (125°C [257°F] without sealant)
Minimum recovery temperature	55°C [131°F]
Maximum storage temperature	40°C [104°F]

Dimensions Table

	H		J		P	JO	HW	JW
	Min.	Max.	Min.	Max.	+/- 10%	+/- 10%	+/- 20%	+/- 20%
QFT1	31.0 [1.22]	9.0 [.35]	31.0 [1.22]	4.4 [.17]	60.0 [2.36]	12.0 [.47]	1.5 [.06]	1.0 [.039]
QFT2	43.0 [1.69]	14.0 [.55]	43.0 [1.69]	7.0 [.28]	75.0 [2.95]	18.0 [.71]	1.8 [.07]	1.0 [.039]
QFT3	57.0 [2.24]	24.0 [.95]	57.0 [2.24]	12.0 [.47]	90.0 [3.53]	25.0 [.98]	1.8 [.07]	1.0 [.039]

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

QFT (Continued)

Typical QFT Performance

	Property	Performance	Test method
Physical	Tensile strength	10 MPa (1500psi) minimum	ISO 37
	Ultimate elongation	250% minimum	ISO 37
	Longitudinal change	0 to 20% maximum	ISO 1183
	Specific gravity	1.4 maximum	ISO 1183
	Heat aging	Minimum 200% ultimate elongation	ISO 188
	168 hours at 120°C [248°F]	Tensile Strength 10 MPa min.	ISO 37
	Heat shock 4 hours at 105°C	No cracking, dripping or flowing	ASTM D 2671
Electrical	Dielectric strength	8MV/m minimum	IEC 243-1
Chemical	Fluid resistance 1	(24 +/- 2h immersion at 23C+/- 2C)	ISO 1817
	Engine Oil	(SAE 20W/50)	—
	Hydraulic Fluid Tensile Strength	10 MPa minimum	ISO 37
	Ultimate Elongation	200% minimum	—
	Fluid resistance 2	(30 +/- 3m immersion at 23C+/- 2C)	ISO 1817
	Automotive gasoline	(BS 4040)	—
	Diesel fuel	(BS 2869)	—
	Cleaning fluid	(TL 6850-07)	—
	Antifreeze	(Ethylene Glycol/Water 50/50 v/v)	—
	Engine cleaning fluid Tensile strength	(Gunk) 10 MPa minimum	ISO 37
	Ultimate elongation	200% minimum	—

Part Numbering System

QFT3 - 130/42 - 0*

*Available in bulk pack, part number QFT3-130/42-0-B500 (US and UK).

Ordering Information

Color	Standard	Black (-0)
	Code	0
Packaging	Standard	10 pieces per bag, 30 clips
	Bulk pack	500 pieces per box and 500 clips per bag (clips ordered separately) - contact TE for details
Crimp tool	QFT-Crimp-Tool-Manual (069172-000)	—

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

SSB, D, T, F to 8S

Heavy Duty Breakout Boots

Product Facts

- Watertight
- Easy installation, requiring no special skills
- Compatibility with polyethylene, PVC, lead, steel, aluminum, standard Navy cable jackets, and copper wire and cable
- Four configurations and twelve sizes
- Minimum shrink temperature of 121°C [250°F]
- Type approval by:
  - ABS (American Bureau of Shipping)
  - DNV (Det Norske Veritas)
  - Lloyd's (Lloyd's Register of Shipping)

Applications

These flame-retardant heat-shrinkable transitions are especially designed for shipboard applications and meet or exceed all of the U.S. Navy specifications described in MIL-I-81765/1A (as of 5/02). The transitions are made of a rugged, thermally stabilized, modified polyolefin and factory-coated with a thermoplastic adhesive sealant. As a result, they offer excellent water sealing, mechanical abrasion-protection, corrosion-resistance, weatherproofing, and electrical insulation. The transitions replace tapes, epoxies, and grease in applications involving cable breakouts, transitions, and terminations.

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

SSB, D, T, F to 8S (Continued)

Specifications/Approvals

Commercial	Military
RW-2024	MIL-STD-2003
	MIL-I-81765/1A

Product Dimensions

Description	Number of Legs	ID Base		ID legs		Leg	Length Body
		Min. Exp.	Max. Rec.	Min. Exp.	Max. Rec.		
SSB-1202 FR	2	40.64[1.60]	11.43 [0.45]	13.97[0.55]	3.81[0.15]	36.83[1.45]	62.23[2.45]
SSB-2002 FR	2	50.8[2.00]	35.56[1.40]	19.05[0.75]	8.89[0.35]	69.85[2.75]	88.90[3.50]
D3-9 FR	2	20.32[0.80]	9.39[0.37]	8.38[0.33]	2.79[0.11]	17.78[0.7]	50.8[2]
D14-30 FR	2	30.48[1.2]	15.24[0.6]	12.7[0.5]	4.32[0.17]	25.4[1]	63.5[2.5]
D50-100 FR	2	48.26[1.9]	22.86[0.9]	19.05[0.75]	7.62[0.3]	30.48[1.2]	76.2[3]
D200-400 FR	2	76.2[3]	38.1[1.5]	36.83[1.45]	12.7[0.5]	38.1[1.5]	88.9[3.5]
T3-9 FR	3	22.86[0.9]	9.14[0.36]	8.38[0.33]	2.29[0.09]	19.05[0.75]	50.80[2.0]
T14-23 FR	3	30.48[1.2]	17.78[0.70]	12.70[0.5]	4.57[0.18]	25.4[1]	60.96[2.40]
T14-50 FR	3	38.1[1.5]	12.7[0.5]	16.51[0.65]	4.06[0.16]	30.48[1.2]	76.2[2.3]
T42-100 FR	3	43.18[1.7]	22.86[0.9]	20.32[0.8]	4.83[0.19]	30.48[1.25]	57.15[2.25]
T150-300 FR	3	60.96[2.4]	35.56[1.4]	30.48[1.25]	12.70[0.5]	40.6[1.6]	88.90[3.50]
T-400 FR	3	81.28[3.2]	50.8[2]	35.56[1.4]	17.78[0.7]	40.6[1.6]	88.9[3.5]
T500-600 FR	3	124.46[4.90]	58.93[2.32]	50.8[2]	22.86[0.9]	50.8[2]	187.96[7.40]
F3-9 FR	4	22.86[0.9]	10.92[0.43]	7.11[0.28]	2.79[0.11]	19.05[0.75]	50.8[2]
F-23 FR	4	31.75[1.25]	20.32[0.8]	12.7[0.5]	5.08[0.2]	27.94[1.1]	63.50[2.50]
F42-60 FR	4	44.45[1.75]	25.4[1]	20.32[0.8]	8.13[0.32]	30.48[1.25]	63.50[2.50]
F75-100 FR	4	59.69[2.35]	25.4[1]	25.4[1]	8.89[0.35]	43.18[1.7]	165.1[6.5]
F133-200 FR	4	67.31[2.65]	35.56[1.4]	30.48[1.2]	10.92[0.43]	38.1[1.5]	91.44[3.6]
F150-400 FR	4	133.35[5.25]	76.2[3]	34.29[1.35]	13.97[0.55]	76.2[3]	152.4[6]
6S100-200 FR	6	60.96[2.4]	36.83[1.45]	20.32[0.8]	8.89[0.35]	69.85[2.75]	86.36[3.4]
8S23-75 FR	8	35.56[1.4]	21.59[0.85]	10.16[0.4]	3.3[0.13]	30.48[1.25]	50.8[2]
8S14-50 FR	8	57.15[2.25]	21.59[0.85]	14.22[0.56]	3.3[0.13]	30.48[1.25]	50.8[2]
8S42-100 FR	8	63.50[2.50]	21.59[0.85]	22.1[0.87]	3.3[0.13]	30.48[1.25]	50.8[2]

Catalog 1654025
Revised 3-13

www.te.com

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

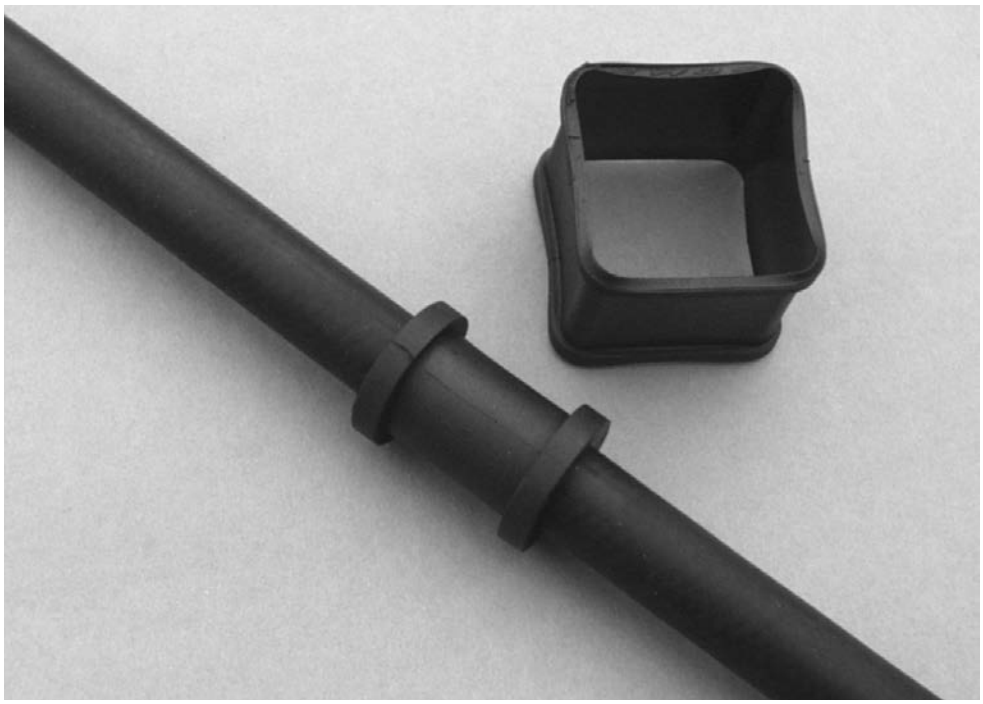
Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

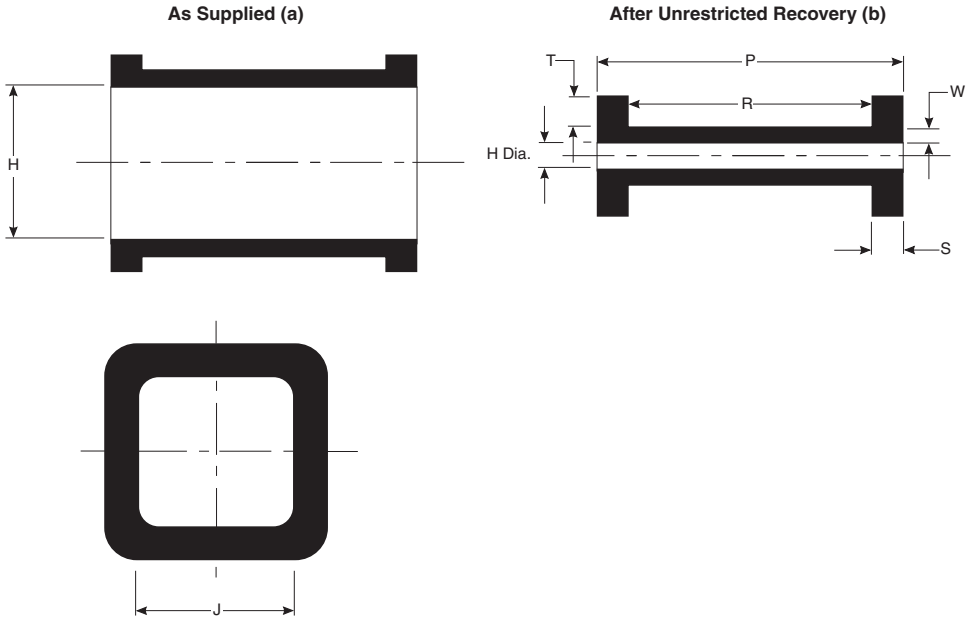
202W302 to 342

Heat-Shrink Bobbins



Product Facts

- Good abrasion resistance
- Fits range of diameters
- Excellent location, cushioning and protection of cable or hoses from P clips and wire ties
- Low cost, high volume installation
- Shrinks onto hose/pipe/wire harnesses
- Good mechanical, thermal and chemical properties
- Stays in place
- No expensive tooling required



Square expanded = -130 material

Circular expanded = -12 and -25 material
-3, -4

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

202W302 to 342 (Continued)

Materials Available

Material	Material Description	Precoating No.	Adhesive Part No.
-3	Polyolefin, semi-rigid	/42, /86	S-1017, S-1048
-4	Polyolefin, flexible	/42, /86	S-1017, S-1048
-12	Fluoroelastomer	N/A	S-1255-04
-25	Fluid resistant elastomer	/86 or /225	S-1017 or S-1048 or S-1125
-130	Flexible polyolefin	/42, /86	S-1017

Product Dimensions

Part No.	H		J	P	R	S	T	W	Recommended Hose Sizes	
	Min. a	Max. b	Min. a	±10% b	±10% b	±10% b	±10% b	±20% b	Min.	Max.
202W302	29.0 [1.142]	9.5 [.374]	29.0 [1.142]	35.0 [1.378]	25.0 [.984]	5.0 [.197]	3.0 [.118]	1.5 [.059]	11.0 [.433]	25.0 [.984]
202W312	39.0 [1.535]	12.7 [.500]	39.0 [1.535]	35.0 [1.378]	25.0 [.984]	5.0 [.197]	3.0 [.118]	2.0 [.079]	14.0 [.551]	34.0 [1.339]
202W321	10.0 [.394]	3.0 [.118]	10.0 [.394]	29.0 [1.142]	23.0 [.906]	3.0 [.118]	3.0 [.118]	1.5 [.059]	4.0 [.157]	8.0 [.315]
202W331	19.0 [.748]	6.4 [.252]	19.0 [.748]	29.0 [1.142]	24.0 [.945]	2.5 [.098]	2.0 [.079]	1.5 [.059]	8.0 [.315]	17.0 [.669]
202W342	54.0 [2.126]	18.0 [.709]	54.0 [2.126]	35.0 [1.378]	25.0 [.984]	5.0 [.197]	3.0 [.118]	2.0 [.079]	20.0 [.787]	48.0 [1.889]

Note: Coating is optional. As supplied dimensions appearing in table are for uncoated parts. When coating is added, entry diameters will be reduced by 1.5 [.06] max.

Catalog 1654025
Revised 3-13

www.te.com

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

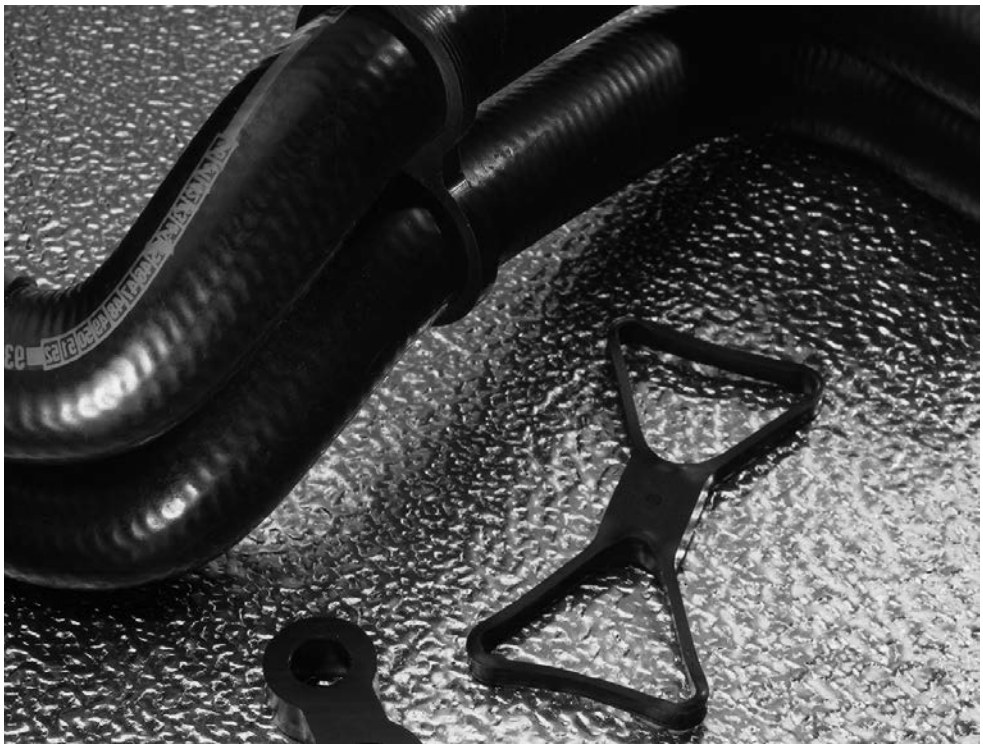
Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

400W242

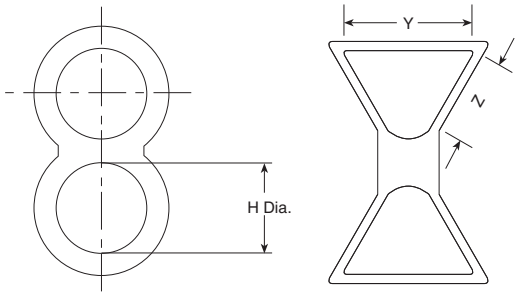
Heat-Shrink Positioning Ring



Product Facts

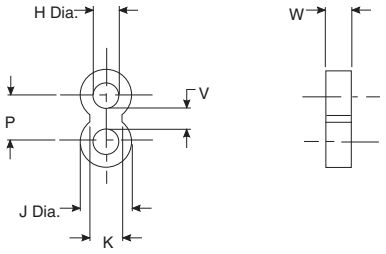
- Easy to install
- Bundles hoses/pipe
- Fits range of diameters due to high expansion
- Low cost, high volume installation
- Shrinks onto hose/pipe
- Minimum distance between substrates
- Good mechanical, thermal and chemical properties
- Push on fit to hose/pipe
- Stays in place when installed
- No expensive tooling required
- Keeps hoses/pipes together, optimizing space
- Twinning two hoses/pipes rationalizes part descriptions
- Hose/pipe can be orientated correctly for ease of fitting to vehicle
- Vibration damping

As Supplied (a)



-3, -4, -25, -100 -130

After Unrestricted Recovery (b)



Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

400W242 (Continued)

Materials Available

Material	Material Description	Precoating no.	Adhesive part no.
-3	Polyolefin, semi-rigid	/42, /86	S-1017 or S-1048
-4	Polyolefin, flexible	/42, /86	S-1017 or S-1048
-25	Elastomer, fluid resistant	/86, /225	S-1017 or S-1048
-100	Polyolefin, Zerohal	-100-CS1972 (S1030 tape supplied in bag)	S-1030
-130	Flexible polyolefin	/42, /86	S-1017

As supplied dimensions are for uncoated parts, when coating is added, entry diameters will reduce by 1.5 [.06] max.

Part Numbering System

400W242 -/**-0**

Adhesive Slash Number
(if required see compatibility chart)

Material Dash Number
(see compatibility chart)

Base Part Number

Product Dimensions

Part No.	H		J	K	P	V	W	Y*	Z*
	Min. a	Max. b	Max. b	± 1.2 b	± 1.7 b	± 0.45 b	± 1 b	± 2 a	± 2 a
400W242	28 [1.102]	10.2 [.402]	19.3 [.760]	12 [.472]	17 [.669]	7.0 [.276]	10 [.394]	29 [1.142]	25 [.984]

*Applicable for -130 only.

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

RayOLOn Kits

Roll-On Sealing Sleeve

Product Facts

- Heatless sealing solution
- Re-useable sealing solution
- Roll-on to seal, roll-off to re-enter
- Enhanced sealing with gel strips
- Protection of connectors and splices against corrosion
- Available in many conveniently packaged kits

Applications

RayOLOn re-useable roll-on sealing sleeves are a family of products designed to protect connectors, electrical cable splices, and other cylindrical substrates from harsh environmental elements like salt spray and water moisture. RayOLOn sleeves are a part of TE "heatless" sealing products that require no heat guns or torches. This is useful in the areas where the use of motorized heat sources or open flames are prohibited or undesirable.

RayOLOn sealing sleeves provide the sealing of the substrates by simply rolling the sleeve over the area to be protected. If the substrate requires servicing, the sleeve can be rolled off to provide access to the component under the sleeve. After the service is completed, the sleeve can be rolled on the part again to provide the protection. This operation may be done many times throughout the life of the sleeve providing time and material cost savings.

Operating Temperature Range

-40°C to 70°C
[-40°F to 158°F]

Specifications and Approvals

TE	RW-3031

Temperature Ratings

Continuous operating temperature range	-40°C to 70°C [-40°F to 158°F]
Short term temperature exposure	-63°C to 90°C [-81°F to 194°F]
Minimum installation	-25°C [-13°F]

Sleeve Dimensions Inches (millimeters)

Base Part No.	Available Kits	Dimensions (Reference)		Recommended Use Range	Connection Length
		Diameter	Lengths		
LNCL-11-125	GK	0.51 [13.0]	4.92 [125]	0.22 - 0.68 [6 - 17]	3.00 [75]
LNCL-11-205	GK	0.51 [13.0]	8.07 [205]	0.22 - 0.68 [6 - 17]	6.00 [150]
LNCL-12-140	GK, CK-N	0.56 [14.2]	5.51 [140]	0.48 - 0.90 [12 - 23]	4.00 [100]
LNCL-12-240	GK, CK-N	0.56 [14.2]	9.45 [240]	0.48 - 0.90 [12 - 23]	7.00 [175]
LNCL-13-155	GK, TK-8	0.75 [19.0]	6.10 [155]	0.69 - 1.20 [18 - 30]	4.00 [100]
LNCL-13-305	GK	0.75 [19.0]	12.00 [305]	0.69 - 1.20 [18 - 30]	9.00 [225]
LNCL-14-185	GK, TK-7	1.02 [25.9]	7.28 [185]	0.96 -1.50 [25 - 38]	5.00 [125]
LNCL-14-355	GK	1.02 [25.9]	14.00 [355]	0.96 -1.50 [25 - 38]	10.0 [250]
LNCL-15-185	GK, TK-1, TK-5, TK-6	1.45 [36.8]	7.28 [185]	1.40 - 2.00 [36 - 46]	5.00 [125]
LNCL-15-260	GK, SS	1.45 [36.8]	10.2 [260]	1.40 - 2.00 [36 - 46]	7.50 [190]
LNCL-15-450	GK, SS	1.45 [36.8]	17.72 [450]	1.40 - 2.00 [36 - 46]	12.0 [300]

Refer to TE specification control drawing LNCL-XX-125 thru LNCL-XX-450 for more details.
*TE Gel and Sealant product information available at www.te.com

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

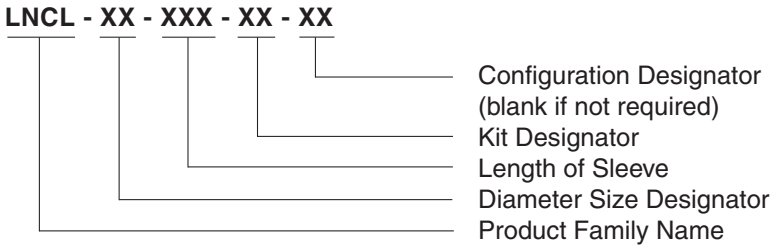
RayOLOn Kits (Continued)

Typical RayOLOn Roll-On Sealing Sleeve Properties

	Property	Performance	Test method
Physical/ Chemical	Tensile strength	8.3 MPa (1200 psi) minimum	ASTM D 2671
	Ultimate elongation	100 % minimum	ASTM D 412
	Density	1.1 g/cm3 maximum	ASTM D 792
	Water absorption 24 hours at 23°C [73°F]	0.5 % maximum	ASTM D 570
	Flammability	40 mm/min maximum	ASTM D 635
Electrical	Dielectric strength	90 kV/cm (225 V/mil) minimum	ASTM D 149
	Volume resistivity	1x1012 Ω-cm	ASTM D 257

Refer to TE specification RW-3031 for more requirements and performance information.
Notes:
1. The sleeve is not intended to be heated during the installation process.
2. DO NOT CUT LNCL roll-on sealing sleeve.
3. In case of a conflict between this data sheet and RW-3031, RW-3031 takes precedence.
4. Not recommended for extended exposure to hydrocarbon based fuel or fluids.

Part Numbering System



Kits

GK—General kit:	Roll-on sleeve, gel strip, cable tie, core tube, installation instruction
CK—Connector sealing kit:	Roll-on sleeve, cable tie, connector flange cover, gel strip, installation instruction
TK—Panel boot sealing kit:	Roll-on sleeve, ferrule, gel strip, cable tie, installation Instruction
SS—Ship-or-shore kit:	Roll-on sleeve, connection shield, installation instruction

Note: Not all sizes and lengths are available for all kit combinations. Please refer to the table on the previous page. Special bulk packaging can be available.

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

SEB

Raychem Side Entry Bushing (SEB)

Pre-coiled side entry reusable silicone bushing designed to be used in high temperature applications where tape or other molded grommets are used.

One strip of this Side Entry Bushing replaces as much as 6 feet and 40 wraps of traditional tapes. The material is crosslinked and thermoformed to naturally conform to the tight bundle configuration of its application.

The standard Side Entry Bushing has no adhesive layer, so it is easily removed and can be re-used often after repairs have been made.

Product Facts

- **Fewer wraps needed than conventional silicone tapes**
- **High temperature resistant silicone material rated to 180˚C**
- **Trim to fit capabilities. Fit any size saddle clamp/wire bundle combination**
- **Thermally formed so it naturally conforms to circular wire bundles**
- **Re-usable**
- **6 standard sizes available**
- **No adhesive layer for easy removal**

Applications

Used in a non-environmentally sealed backshell (also known as a saddle clamp) and in clamping and wire management applications

Standards & Specs

Conforms to Mil Standard AMS-DTL-23053/10 and TE RT-1140

Ordering Information

25 per bag

Materials

Flexible, flame-retardant, silicone elastomer strip

Electrical

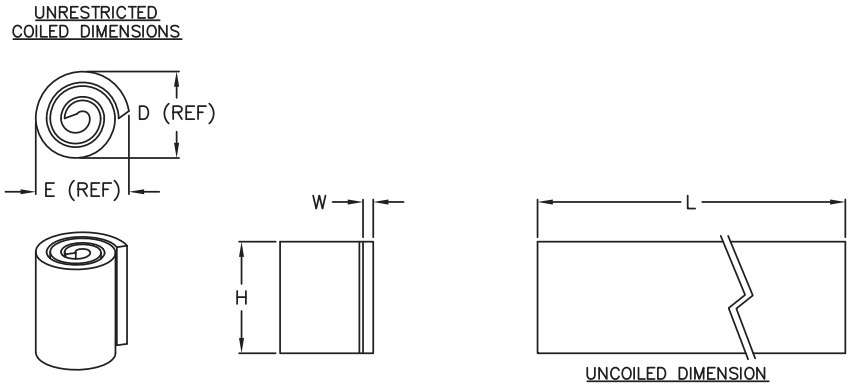
Volume resistance:
10E11 OHM-CM min.

Dielectric strength:
350 V/mil. min.

Operating temperature range:
-75°C to +180°C

Physical or Other Properties

Durometer Shore A:
60 +/- 5



Part Numbers

Part Number	E Ref	D Ref	H ± 10%	L±10%	W±10%	Bundle O.D. Minimum
SEB-A	.27 [6.9]	.30 [7.6]	.40 [10.2]	1.00 [25.4]	.06 [1.5]	.05 [1.3]
SEB-B	.35 [8.9]	.40 [10.2]	.40 [10.2]	2.00 [50.8]	.06 [1.5]	.05 [1.3]
SEB-C	.48 [12.2]	.53 [13.5]	.50 [12.7]	3.00 [76.2]	.06 [1.5]	.05 [1.3]
SEB-D	.55 [14.0]	.60 [15.2]	.60 [15.2]	4.00 [101.6]	.06 [1.5]	.10 [2.5]
SEB-E	.65 [16.5]	.70 [17.8]	.60 [15.2]	6.00 [152.4]	.06 [1.5]	.30 [7.6]
SEB-F	.85 [21.6]	.88 [22.4]	.60 [15.2]	9.00 [228.6]	.06 [1.5]	.30 [7.6]

Dimensions are in inches, metric in brackets.
Number of wraps will vary for each size.

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

shrinkHOoP

Cable Clamp Heat-Shrink Grommet

Product Facts

- **Less assembly time**
- **Superior strain-relief**
- **Fewer errors — less rework**
- **No build-up taping or feeding wire through grommet**
- **Typical installation in just 10-20 seconds**
- **Re-expandable I.D. allows wire addition to a cable bundle**

Applications

shrinkHOoP grommet (URHR) is an ultra high ratio heat-shrinkable-strain-relief grommet that can be placed over the cable assembly after the connector pinning operation is completed. The ultra-high expansion ratio material conveniently fills the space between the clamp type connector accessory and the cable. (When clamped into position, shrinkHOoP grommet provides strain relief that is more consistent and convenient than many conventional practices — for example, taping, grommet, or tape/grommet combination). The high ratio conformity of shrinkHOoP grommets will match most typical cable configurations from single conductor to the high density multiple conductor arrangements.

With shrinkHOoP grommet, repairs and rework are a snap – simply heat the grommet until soft, slide a NON-METALLIC probe through the center of the wire bundle (enlarging the grommet I.D.). Once cooled, the grommet will remain open allowing wires to be added, removed or reworked. The system can then be checked, the grommet reheated (shrinking it down again), positioned, and clamped in place.

Operating Temperature Range

-55°C to 135°C
[-67°F to 275°F]

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

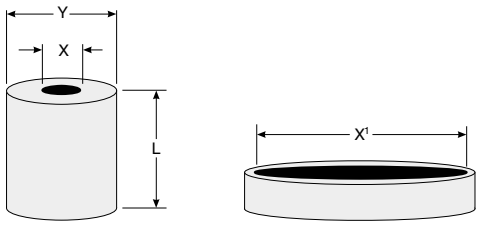
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

shrinkHOoP (Continued)

Specifications/Approvals

RW



Product Dimensions Inches (millimeters)

Part No.	I.D. Expanded (X1) min.	I.D. Recovered (X) max.	O.D. (Y) Ref.	Length (L) Ref.	Wt. (gm) Ref.	Notes
URHR-1	1 [25]	.08 [2.1]	0.25 [6]	0.5 [13]	0.75	a) Recovered length will allow for 1.91 [0.075] either side of the collar, minimum in most cases.
URHR-2	1.23 [31]	.10 [2.6]	0.375 [10]	0.5 [13]	1	
URHR-3	1.44 [37]	.14 [3.6]	0.5 [13]	0.5 [13]	1.5	
URHR-4	1.85 [47]	0.18 [4.7]	0.562 [14]	0.75 [19]	3.5	
URHR-5	2 [51]	0.20 [5.1]	0.812 [21]	0.75 [19]	5	

Typical shrinkHOoP Grommet Performance

	Property	Performance	Test Method
Physical	Tensile strength	1500 psi (10.3 Mpa)	ASTM D-412
	Ultimate elongation	250% minimum	ASTM D-412
	Specific gravity	1.4 maximum	ASTM D-792
	Water absorption	0.5 % maximum	ASTM D-570 A
	Flammability	Pass	ASTM D-635
	Corrosion resistance	Pass	ASTM D-2671 A
	Low temperature flex 4 hours at - 55±1°C [67±2°F]	Pass	ASTM D-2671 C
	Heat resistance	200% ultimate elongation, minimum	ASTM D-2671
	168 hrs at 175±1°C [347±2°F]	1200 psi (8.3 Mpa) tensile strength, minimum	
	Heat shock 4 hrs at 225±2°C [437±5°F]	No cracking, dripping or flowing	ASTM D 2671
Elastic Memory	—	275% minimum expansion to 4 inch (10 cm) of a fully recovered test specimen, and 93% recovery of expanded specimen after oven conditioning for 1 minute at 150±2°C[302 ± 4°F]	—
Electrical	Dielectric strength	200 v/mil (7880 v/mm) minimum	ASTM D-876
	Volume resistivity	10 14 ohm-cm minimum	ASTM D-257
Chemical Fluid Resistance	—	200% ultimate Elongation, minimum 1200 psi (8.3 Mpa) tensile strength, minimum	ASTM F-146
	Flammability*	Avg. flame time = 30 sec. max Avg. burn length = 3 in. max. Avg. flame time from drippings = 3 sec. max	FAR part 25, Appendix F, part 1 (a), section 3

*Applies to sizes 2, 3, and 4 only

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

shrinkHOoP (Continued)

Selection Chart

Connector Series	Connector Size				
	8 (9)	10, 12 (11, 13)	14, 16 (15, 17)	18, 20 (19, 21)	22, 24, 28*
MIL-C-5015					
MS3451, 52, 56, 59	1	2	3	4	5
MS3450	2	3	4	5	*
MIL-C-26500**					
MS24266	1	2	3	4	5
MS24264, 265	2	3	4	5	*
MIL-C-26482					
MS3120, 21, 22, 26	1	2	3	4	5
MS3470, 71, 74, 75, 76	1	2	3	4	5
MS3124, MS3472	2	3	4	5	*
MIL-C-83723 Series I					
M83723/01 & 02, 05 & 06	1	2	3	4	5
07 & 08, 13 & 14, 23 & 24	1	2	3	4	5
M83723/03 & 04	2	3	4	5	*
MIL-C-83723 Series II					
M83723/17 & 18, 23 & 24	1	2	3	4	5
M83723/12 & 20, 21 & 22	2	3	4	5	*
MIL-C-83723 Series III					
M83723/71 & 72 thru 97 & 98	1	2	3	4	5
M83723/66, 67, 68 & 69	2	3	4	5	*
MIL-C-38999 Series I					
MS27469	1	2	3	4	5
MS27466, 68, 96, 27505, 27656	2	3	4	5	*
MIL-C-38999 Series II					
MS27472, 97, 98, 27508, 27513	1	2	3	4	5
MS27473, 84, 27474	2	3	4	5	*
MIL-C-38999 Series III					
38999/26	1	2	3	4	5
38999/20, 24	3	4	5	5	*
Boeing					
BACC45, F, M, N, P, R, S, T	—	2	3	4	5
BACC 63X	—	3	4	5	*
Boeing					
DC39, 31, 34, 35, 50-57	1	2	3	4	5
DC32, 33, 36, 37, 60, 61, 62, 63	2	3	4	5	*

* Consult TE for availability of larger sizes.
** Note: cable support clamp I.D. may effect the size of shrinkHOoP grommet selected.

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

Ordering Information

TE has acquired XL Technologies. Use the information in the following table to convert the XL part number into the new TE product description.

Description	Convert to
XL Part No.	Description
080EK025	SSC-2/239
080EK025-woA	SSC-2/U
137EK050	SSC-3/239
137EK050-woA	SSC-3/U
1-8117-2A	CES-2A-D1
1-8117-3A	CES-2A-T1
1-8117-4A	CES-2A-F1
200EK075	SSC-4/239
200EK075-woA	SSC-4/U
20432242	CES-4/HR-3
2-8115-2A	CES-2-D1A
2-8115-2AOE	CES-2-D1A
2-8115-2B	CES-2-D1
2-8115-3A	CES-2-T1
2-8115-3B	CES-2-T1B
2-8115-4A	CES-2-F1A
2-8115-4B	CES-2-F1
2-8117-2A	CES-2A-D1
2-8117-2AOE	CES-2A-D1
2-8117-3A	CES-2A-T2
2-8117-4A	CES-2A-F2
2-8118-3A	CES-2-T1
2S-8115-2A	CES-2-D1A
2S-8115-3A	CES-2-T1
2S-8115-4A	CES-2-F1A
380EK150	SSC-6/239
380EK150woA	SSC-6/U
3-8115-2B	CES-3-D1
3-8115-3B	CES-3-T1
3-8115-4B	CES-3-F1
3-8118-4B	CES-3-F1
3A-8117-2B	CES-3A-D1
3A-8117-3B	CES-2A-T3
3A-8117-4B	CES-3A-F1
4-8115-2C	CES-4-D3
4-8115-3C	CES-4-T1
4-8115-4C	CES-4-F1
4-8117-2B	CES-3A-D2
4-8117-3B	CES-3A-T2
4-8117-4B	CES-3A-F2
4A-8117-2C	CES-4A-D3
4A-8117-3C	CES-4A-T3
4A-8117-4C	CES-4A-F3
52451-2X12A	91385-2/12
5-8115-3D	CES-5-T4
8114-1	CES-1
1/2/14	CES-1-2
8114-1-49R	CES-1R
8114-2	CES-2
8114-2-50R	CES-2R
8114-2S	CES-2
8114-3	CES-3
8114-3-51R	CES-3R
8114-3L	CES-3L
8114-3S	CES-3S
8114-4	CES-4
8114-4-54R	CES-4R
8114-4N	CES-4
8114-4S	CES-4S
8114-4S/C	CES-4S
8114-5	CES-5

Description	Convert to
XL Part No.	Description
8116-1	CES-2-A50
8116-1-49R	CES-2R-A50
8116-1A	CES-2-A50
8116-2	CES-2-A75
8116-2-50R	CES-2R-A75
8116-3	CES2-A100
8116-3-51R	CES-3R-A100
8116-3A	CES-3-A100
8116-4	CES-3-A150
8116-4-52R	CES-3R-A150
8116-4A	CES-4-A150
8116-5	CES-5-A250
8118-2	CES-2
91342-1	D3-9 FR
91342-12	D3-30 FR
91342-2	D14-30 FR
91342-23	D14-100 FR
91342-3X2.5	D50-200 FR
91342-3	D50-100 FR
91342-34	D50-400 FR
91342-4	D200-400 FR
91343-1	T3-9 FR
91343-2	T14-23 FR
91343-2A	T14-50 FR
91343-3	T42-100 FR
91343-4	T150-300 FR
91343-5	T-400 FR
91343-5678	T3-100 FR
91343-6	T500-600 FR
91343-910	T150-400 FR
91344-1	F3-9 FR
91344-1213	F3-23 FR
91344-1415	F42-100 FR
91344-1617	F75-200 FR
91344-2	F-23 FR
91344-3	F42-60 FR
91344-4	F75-100 FR
91344-5	F133-200 FR
91344-6	F150-400 FR
91346-3	6S100-200 FR
91346-30	202A111-3-0
91346-31	202A111-3/42-0
91346-32	202A111-3/86-0
91347-30	202A121-3-0
91347-31	202A121-3/42-0
91347-32	202A121-3/86-0
91348-1	8S23-75 FR
91348-2	8S14-50 FR
91348-3	8S42-100 FR
91348-30	202A132-3-0
91348-31	202A132-3/42-0
91348-32	202A132-3/86-0
91349-30	202A142-3-0
91349-31	202A142-3/42-0
91349-32	202A142-3/86-0
91350-30	202A153-3-0
91350-31	202A153-3/42-0
91350-32	202A153-3/86-0
91351-30	202A163-3-0
91351-31	202A163-3/42-0
91351-32	202A163-3/86-0

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

Ordering Information (Continued)

Description	Convert to
XL Part No.	Description
91352-30	202A174-3-0
91352-31	202A174-3/42-0
91352-32	202A174-3/86-0
91353-30	202A185-3-0
91353-31	202A185-3/42-0
91353-32	202A185-3/86-0
91354-30	202A196-3-0
91354-31	202A196-3/42-0
91354-32	202A196-3/86-0
913L87-30	202D921-3/-0
913L87-31	202D921-3/42-0
913L87-32	202D921-3/86-0
91387-30	202A921-3/-0
91387-31	202A921-3/42-0
913L47-30	202D121-3/-0
913L47-31	202D121-3/42-0
913L47-32	202D121-3/86-0
913L48-30	202D132-3/-0
913L48-31	202D132-3/42-0
913L48-32	202132-3/-86-0
913L49-30	202D142-3/-0
913L49-31	202D142-3/42-0
913L49-32	202D142-3/86-0
913L50-30	202D153-3-0
913L50-31	202D153-3/42-0
913L50-32	202D153-3/86-0
913L51-30	202D163-3-0
913L51-31	202D163-3/42-0
913L51-32	202D163-3/86-0
913L52-30	202D174-3-0
913L52-31	202D174-3/42-0
913L52-32	202D174-3/86-0
913L53-30	202D185-3-0
913L53-31	202D185-3/42-0
913L53-32	202D185-3/86-0
913L54-30	202D196-3-0
913L54-31	202D196-3/42-0
913L54-32	202D196-3/86-0
913L66-30	202D211-3-0
913L66-31	202D211-3/42-0
913L66-32	202D211-3/86-0
913L67-30	202D221-3-0
913L67-31	202D221-3/42-0
913L67-32	202D221-3/86-0
913L68-30	202D232-3-0
913L68-31	202D232-3/42-0
913L68-32	202D232-3/86-0
913L69-30	202D242-3-0
913L69-31	202D242-3/42-0
913L69-32	202D242-3/86-0
913L70-30	202D253-3-0
913L70-31	202D253-3/42-0
913L70-32	202D253-3/86-0
913L87-30	202D921-3-0
913L87-31	202D921-3/42-0
913L87-32	202D921-3/86-0
913R48-30	222A132-3-0
913R48-31	222A132-3/42-0
913R48-32	222A132-3/86-0
913R49-30	222A142-3-0

Description	Convert to
XL Part No.	Description
913R49-31	222A142-3/42-0
913R49-32	222A142-3/86-0
913R50-30	222A152-3-0
913R50-31	222A152-3/42-0
913R50-32	222A152-3/86-0
913R51-30	222A163-3-0
913R51-31	222A163-3/42-0
913R51-32	222A163-3/86-0
913R52-30	222A174-3-0
913R52-31	222A174-3/42-0
913R52-32	222A174-3/86-0
913RL48-30	222D132-3-0
913RL48-31	222D132-3/42-0
913RL48-32	222D132-3/86-0
913RL49-30	222D142-3-0
913RL49-31	222D142-3/42-0
913RL49-32	222D142-3/86-0
913RL50-30	222D152-3-0
913RL50-31	222D152-3/42-0
913RL50-32	222D152-3/86-0
913RL51-30	222D163-3-0
913RL51-31	222D163-3/42-0
913RL51-32	222D163-3/86-0
913RL52-30	222D174-3-0
913RL52-31	222D174-3/42-0
913RL52-32	222D174-3/86-0
913Y95-30	381A301-71/-0
913Y95-31	381A301-71/42-0
913Y95-32	381A301-71/86-0
913Y96-30	381A302-71/-0
913Y96-31	381A302-71/42-0
913Y96-32	381A302-71/86-0
HHW-1.3/6A	SST-6-13FR/97-0
HHW-13/6A	SST-6-13FR/97-0
HHW-15/12	SST-12-15FR/97-0
HHW-15/6	SST-6-15FR/97-0
HHW-15/9	SST-9-15FR/97-0
HHW-20/9	SST-9-20FR/97-0
HRSR-1	URHR-1
HRSR-2	URHR-2
HRSR-3	URHR-3
HRSR-4	URHR-4
HRSR-5	URHR-5
XHTA	RHW
XHTU	RHW
XMTA	RPRD

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

Sigmaform Product Dimensions

Conversion Table mm (in)

Commercial Description	Military Description	Number of Legs	I.D. base		I.D. legs		Leg Length	Base Length
			Minimum Expanded	Maximum Recovered*	Minimum Expanded	Maximum Recovered*	Recovered*	Recovered*
302V111	SSB-1202 FR	2	40.64 [1.60]	11.43 [.45]	13.97 [.55]	3.81 [.15]	36.83 [1.45]	62.23 [2.45]
302V163	SSB-2002 FR	2	50.80 [2.00]	35.56 [1.40]	19.05 [.75]	8.89 [.35]	69.85 [2.75]	88.90 [3.50]
402V101	T3-9 FR	3	22.86 [.90]	9.14 [.36]	8.38 [.33]	2.29 [.09]	19.05 [.75]	50.80 [2.00]
402V121	T14-23 FR	3	30.48 [1.20]	17.78 [.70]	12.70 [.50]	4.57 [.18]	25.40 [1.00]	60.96 [2.40]
402V142	T42-100 FR	3	43.18 [1.70]	22.86 [.90]	20.32 [.80]	4.83 [.19]	30.48 [1.25]	57.15 [2.25]
402V163	T150-300 FR	3	60.96 [2.40]	35.56 [1.40]	28.70 [1.13]	12.70 [.50]	69.85 [2.75]	88.90 [3.50]
402V185	T-400 FR	3	81.28 [3.20]	50.80 [2.00]	35.56 [1.40]	17.78 [.70]	73.15 [2.88]	88.90 [3.50]
402V196	T500-600 FR	3	124.46 [4.90]	58.93 [2.32]	50.80 [2.00]	22.86 [.90]	50.80 [2.00]	187.96 [7.40]
502V132	F-23 FR	4	31.75 [1.25]	20.32 [.80]	12.70 [.50]	5.08 [.20]	27.94 [1.10]	63.50 [2.50]
502V153	F-42-60 FR	4	44.45 [1.75]	25.40 [1.00]	20.92 [.80]	8.13 [.32]	30.48 [1.25]	63.50 [2.50]
502V163	F133-200 FR	4	67.31 [2.65]	35.56 [1.40]	30.48 [1.20]	10.92 [.43]	71.12 [2.80]	91.44 [3.60]
705V174	6S100-200 FR	6	60.96 [2.40]	36.83 [1.45]	20.32 [.80]	8.89 [.35]	69.85 [2.75]	86.36 [3.40]

*After unrestricted recovery

Catalog 1654025
Revised 3-13

www.te.com

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

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com