









# Raychem Molded Parts

## Visual Reference Guide

Seal, Protect, and Strain-Relieve with Heat-Shrinkable Molded Parts in a Range of Shapes and Materials to Help Withstand Harsh Environments

# Raychem Molded Parts
## Visual Reference Guide

## Contents


**Introduction** 3

- System Options 4
- Molded Parts Materials 7
- Adhesive/Sealant Product Characteristics 8

**Part Numbering System** 9

**Visual Reference** 10

- **Boots** 10
- Lipped Boots for Use with a Circular Connector Adapter 10
- Nonlipped Boots for Direct Attachment to Circular Connectors 11
- Slim-Line Boots 12
- Uniboots 12
- Rectangular Boots 13
- Micromolded Boots 14
- **Transitions** 15
- Bulbous Transitions 15
- Slim-Line Transitions 17
- **Covers** 18
- **Sleeves** 19
- **Caps** 19
- **Feedthroughs** 19
- **Miscellaneous Cable Management** 19
- **Selected Molded Shape Families** 20

**Boot Selection Tables** 23

**Raychem Application Tooling** 27


With one of the largest varieties of heat-shrinkable molded parts available, the TE Connectivity (TE) Raychem brand offers both the components and system-level solutions for complete harnesses.

This visual guide provides photos of common configurations, both in their expanded and fully recovered forms. Because the photos do not indicate relative sizes, the individual product photos are followed by family shots to show the range of each family.

Heat-shrinkable molded parts are useful for a wide range of harnessing needs, including:

- **Connector sealing**
- **Cable strain relief**
- **Cable breakouts and transitions**
- **End caps**

**TE Components . . . TE Technology . . . TE Know-how . . .**

AMP | AGASTAT | CII | HARTMAN | KILOVAC | MICRODOT | NANONICS | POLAMCO | Raychem | Rochester | DEUTSCH
SEACON Phoenix | LL ROWE | Phoenix Optix | AFP | SEACON

Get your product to market faster with a smarter, better solution.



**HAZARD MATCHED**

- Different families meet a wide range of challenging environments
- Custom material formulation for enhanced performance

**SYSTEM MATCHED**

- Molded parts, adhesives, tubing, and cable insulations and jackets—all designed to work together

**VERSATILE**

- Wide range of shapes and sizes
- Custom features available
- With or without pre-applied adhesive

**HIGH PERFORMANCE**

- High dielectric strength
- Mechanical robustness
- Superior chemical and fluid resistance
- Wide temperature ranges
- Excellent sealing

## Molding Expertise in Materials to Work for You

Expertise in crosslinked polymer chemistry allows TE to create unique formulations that go beyond off-the-shelf polymers to provide exceptional performance in heat-shrinkable tubing, molded parts, and wire insulation and jackets.

Crosslinking and specialized chemical formulations combine to provide demanding markets with reliable high-temperature and fluid-resistant products. Not only did TE's Raychem business pioneer crosslinking and invent heat-shrinkable tubing, we have continually innovated the technology, evolving it into new materials, new applications, and new levels of performance and quality.

## Matched to Your Application Needs

TE's Raychem heat-shrinkable molded parts meet a wide range of harsh environmental conditions. Mechanically robust molded parts are easy to install and available in a variety of sizes and shapes.

We have leveraged our expertise in materials well suited to applications requiring:

- **Low and high-temperature environments**
- **Fluid resistance**
- **Flame resistance**
- **Mechanical abuse**
- **Environmental sealing**
- **Strain relief**
- **Transitions**





## A System-Level Approach to Harnessing

Engineered component systems of matched performance is the key to simplifying product choice for a variety of markets. From commercial applications to high-end demands in the aerospace industry, TE has a variety of material systems designed to survive the temperature and harsh environments required by the various markets.

### Systems

| Components | System 10 | System 20 | System 25 | System 30 | System 100 | System 200 | System 300 |
|---|---|---|---|---|---|---|---|
| Tubing | VERSAFIT | NTFR | DR-25 | VPB | ZHTM | RW-200 | RT555 |
| Molded Part | -3,-4,-71 | -51 | -25, -25L | -50 | -100 | -12 | -55 |
| Adhesive | S1017, S1030 | S1124, S1048 | S1048, S1125 | S1125, S1255-04 | S1030, S1125 | S1125, S1255-04 | S1255-04 |
| Precoat | /42, /180 | /164, /86 | /86, /225 | — | /180 | — | — |




### INSTALITE Lightweight Molded Parts

INSTALITE boots are a lighter weight alternative of our -25 heat-shrink boots. Using our expertise in fluid-resistant, modified elastomers, we've created semi-rigid, abrasion-resistant boots that are up to 30% lighter than our standard -25 boots. INSTALITE boots offer the same balance of high-temperature fluid resistance and long-term heat resistance.

## Shaped to Your Needs

Also available is an extensive line of adapters and heat-shrinkable tubing to further integrate and strengthen harness assemblies.

Whatever your application, our molded parts almost always meet the performance characteristics you require.

**Application Requirements** → **Select Shape** → **Select Material** → **Select Adhesive** (Preinstalled or as Separate Component)





### BULBOUS SHAPES

Raychem bulbous-shaped molded parts are VG approved and help 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:

- **Lipped** A molded adapter lip locks into the groove on the backshell adapter. Lipped part numbers are identified with a “D” or “K.”
- **Nonlipped** The boot may be installed directly on the rear of connector threads 12 mm or longer. Nonlipped part numbers are identified with an “A.”

Many other optional features are available, such as molded 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 overexpansions, are possible. Modifications must be requested prior to your order to determine feasibility.

### SPECIALS

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

## HEAVY-DUTY CABLE BREAKOUTS

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
- Det Norske Veritas (DNV)
- American Bureau of Shipping (ABS)
- DOD-STD-2003
- MIL-I-81765/1A
- AS85049/142



## SLIM-LINE SHAPES

With their low profile, these flexible shapes conform to cables better and create less bulk at transition points and connectors than bulbous shapes. Slim-line shapes include 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).

## MICROMOLDED SHAPES

With the continued miniaturization of electronic systems and connectors, our micromolded parts offer weight and size savings—and compatibility with today's miniature parts.



## CABLE END CAPS

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

## Rayaten EMI SHIELDED BOOTS

The Rayaten screen termination is a range of heat-shrinkable boots, transitions, and conductive adhesives that provide high levels of screening against electromagnetic radiation across a very wide frequency range.

| Material ID | Material | Temperature Range | Shelf Life | TE Raychem Specification |
|---|---|---|---|---|
| **Ruggedized Materials** | | | | |
| **-3** | Flame-retardant, semi-rigid polyolefin | -55°C to +135°C | 5 years | RT-301 |
| **-4** | Flame-retardant, flexible polyolefin | -55°C to +135°C | 5 years | RT-1304 |
| **-12** | Flexible, chemical-resistant fluoroelastomer | -55°C to +200°C | 3 years | RT-1312 |
| **-25** | Fluid resistant modified, semi-rigid elastomer | -75°C to +150°C | 5 years | RW-2070 |
| **-25L** | Light weight, flame-retardant, semi-rigid, elastomer | -75°C to 150°C | 5 years | RW-3040 |
| **-71** | Semi-rigid modified polyolefin | -55°C to 135°C | 5 years | RT-1316 |
| **-100** | Zerohal low-fire-hazard material | -30°C to +105°C | 5 years | RW-2082 |
| **Slim-Line Materials** | | | | |
| **-50** | Fluid-resistant modified elastomer | -55°C to +150°C | 15 months | RT-1313 |
| **-51** | Chemical-resistant fluoroelastomer | -55°C to +135°C | 15 months | RT-1321 |
| **-55** | Flexible fluoropolymer | -65°C to +200°C | Unlimited | RT-1330 |
| **Chemical, Biological, Radiation, Nuclear-Resistant Materials** | | | | |
| **-770** | CBRN fluoropolymer | -55°C to +125°C | 3 years | RT-770 Type II |
| **-780** | CBRN fluoropolymer | -55°C to +175°C | 5 years | RT-780 Type II |
| **-790** | CBRN fluoropolymer | -55°C to +200°C | 5 years | RT-790 Type II |





## Adhesive/Sealant Product Characteristics Tables

| Product Type | Precoat Designation | Type | Operating Temperature Range | Product Designation | Available Form/ Packaging |
|---|---|---|---|---|---|
| **Thermosets** | | | | | |
| **S1006** | | Epoxy/polyamide two-part paste | -55°C to 135°C [-67°F to 275°F] | S1006 Kit 1 | Two 15-gram packs |
| | | | | S1006 Kit 2 | Four 7.5-gram packs |
| | | | | S1006 Kit A | Ten 3-gram packs |
| **S1009** | — | Epoxy/polymercaptan two-part paste | -55°C to 135°C [-67°F to 275°F] | S1009 Kit A | Ten 3-gram packs |
| | | | | S1009 Kit 8 | 50-ml dual syringe |
| **S1255-04** | — | One-part epoxy tape adhesive | -55°C to 200°C [-67°F to 392°F] | S1255-04 | Tape [3/4 in. x .020 x 100 ft.] |
| **S1125** | — | Epoxy/polyamide two-part paste | -55°C to 150°C [-67°F to 302°F] | S1125 Kit 1 | Five 10-gram packs |
| | | | | S1125 Kit 2 | Two 10-gram packs |
| | | | | S1125 Kit 4 | Five 10-gram packs |
| | | | | S1125 Kit 5 | One 10-gram pack |
| | | | | S1125 Kit 8 | 50-ml dual syringe |
| **S1264** | — | Epoxy/polyamide two-part paste | -55°C to 150°C [-67°F to 302°F] | S1264 Kit 1 | One 10-gram pack |
| | | | | S1264 Kit 8 | 50-ml dual syringe |
| | /225 | Precoated latent-curing epoxy/ polyamide | -75°C to 150°C [-103°F to 302°F] | Precoat only on -25 molded parts | — |
| **Thermoplastics** | | | | | |
| **S1017** | /42 | Hot-melt, polyamide | -20°C to 60°C * [-4°F to 140°F] | S1017 | Tape [1 in. x .010 in. x 50 ft.] |
| **S1030** | /180 | Hot-melt, polyolefin | -80°C to 80°C [-112°F to 176°F] | S1030 | Tape [3/4 in. x .010 in. x 33 ft.] |
| **S1048** | /86 | Hot-melt, high performance | -55°C to 120°C [-67°F to 248°F] | S1048 | Tape [1 in. x .026 in. x 100 ft.] |
| **S1124** | /164 | Hot-melt, elastomeric polymer | -55°C to 105°C [-67°F to 221°F] | S1124 | Tape [3/4 in. x .018 in.x 10 ft.] |
| **S1297** | /97 | Hot-melt, polyamide adhesive | -20°C to 90°C [-4°F to 194°F] | S1297 | Tape [1 in. x .010 in. x 10 ft.] |
| **Sealants** | | | | | |
| **S1278** | — | Hot-melt grey butyl sealant | -40°C to 90°C [-40°F to 194°F] | S1278-01 | Tape [1 in. x .062 in. x 25 ft.] |
| | | | | S1278-02 | Tape [3-3/4 in. x .125 in. x 10 ft.] |
| **S1305** | — | Hot-melt grey butyl sealant, FR | -40°C to 90°C [-40°F to 194°F] | S1305-01 | Tape [1 in. x .062 in. x 25 ft.] |

*Passes cold bend at -40°C [-40°F] per RT-4204.

**For full details on installation procedures and curing conditions, please refer to the applicable TE Code of Practice or installation document.**



## Part Numbering System

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

**NUMBER OF OPENINGS IN THE PART**

**ANGLE OF PART**

| All Openings | | One Opening | |
|---|---|---|---|
| **Circular** | | **Noncircular** | |
| **0** | Straight | **2** | 90° |
| **2** | 90° | **3** | 90° |
| **4** | 45° | **5** | 45° |
| **6** | 30° | **7** | 30° |

**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

**FAMILY NUMBER**

**SIZE OF PART IN FAMILY**

From **11** (Smallest) to **99** (Largest)

**MATERIAL**

- **3** Semirigid Polyolefin
- **4** Flexible Polyolefin
- **12** Flexible Fluoroelastomer
- **25** Fluid-Resistant Elastomer
- **100** Zero Halogen Semiflexible Polyolefin

**MODIFICATION** (Available on Request)

- Over Expansion
- Cutoff
- Molding Ports (Injection and Vent)

**OPTIONAL ADHESIVE* COATING** (Precoated in Factory)

**COLOR**

- **0** Black

Consult TE for Other Colors

## Visual Reference

### Lipped Boots
For Use with Adapters

| As Supplied | Recovered | Part No. |
|---|---|---|
|  |  | **202D121** through **202D196** |
|  |  | **202D921** through **202D963** |
|  |  | **222B012** through **222B063** |
|  |  | **222D121** through **222D196** |
|  |  | **222D921** through **222D963** |
|  |  | **242A312** and **242A322** |

| As Supplied | Recovered | Part No. |
|---|---|---|
|  |  | **202D211** through **202D299** |
|  |  | **202K121** through **202K185** |
|  |  | **222B112** and **222B123** |
|  |  | **222D211** through **222D299** |
|  |  | **222K121** through **222K185** |



### Available in INSTALITE -25L Material
Many of the shapes shown above are available as INSTALITE lightweight boots. Consult TE.

## Visual Reference

### Nonlipped Boots
For Direct Attachment on Connectors

| As Supplied | Recovered | Part No. |
|---|---|---|
|  |  | **202A011** through **202A096** |
|  |  | **202A111** through **202A196** |
|  |  | **202A212** through **202A264** |
|  |  | **202A312** through **202A364** |
|  |  | **202A512** |
|  |  | **202A915** |
|  |  | **202A921** |
|  |  | **202B422** and **202B433** |
|  |  | **203A021** |

| As Supplied | Recovered | Part No. |
|---|---|---|
|  |  | **203A211** |
|  |  | **203A312** |
|  |  | **204A011** |
|  |  | **204A311** |
|  |  | **204A411** |
|  |  | **204A511** |
|  |  | **204A612** |
|  |  | **208A011** through **208A098** |
|  |  | **222A011** through **222A096*** |

*Shown with risers for potting

## Visual Reference

### Nonlipped Boots
For Direct Attachment on Connectors (continued)

| As Supplied | Recovered | Part No. |
|---|---|---|
|  |  | **222A111** through **222A196*** |
|  |  | **222A213** through **222A255** |
|  |  | **222A313** through **222A355** |
|  |  | **223A213** through **223A233** |
|  |  | **224A012** |

*Shown with risers for potting

| As Supplied | Recovered | Part No. |
|---|---|---|
|  |  | **226A045** and **226A075** |
|  |  | **228A011** through **228A097** |
|  |  | **242A142** |
|  |  | **243A012** and **243A022** |
|  |  | **246A166** |
|  |  | **202B521** through **202B598** |

### Slim-Line Boots

| As Supplied | Recovered | Part No. |
|---|---|---|
|  |  | **202E334** through **202E346** |
|  |  | **202F211** through **202F274** **202G211** through **202G253** |
|  |  | **222F211** through **222F285** |

### Uniboots
Allow a Variety of Cable Exit Angles

| As Supplied | Recovered | Part No. |
|---|---|---|
|  |  | **202C611** through **202C663** **202G621** through **202G653** |

# Visual Reference

## Rectangular Boots
For Rectangular Connectors

| As Supplied | Recovered | Part No. |
|---|---|---|
|  |  | **211A012** |
|  |  | **214A011** through **214A052** |
|  |  | **214A124** and **214A133** |
|  |  | **214A311** through **214A352** |
|  |  | **214A452** |
|  |  | **214A511** through **214A552** |
|  |  | **214A613** |
|  |  | **214A814** |
|  |  | **214A923** |
|  |  | **214B623** |
|  |  | **413A013** through **413A024** |

| As Supplied | Recovered | Part No. |
|---|---|---|
|  |  | **214B713** |
|  |  | **234A011** through **234A071** |
|  |  | **234A111** through **234A152** |
|  |  | **234A313** through **234A333** |
|  |  | **234A413** through **234A434** |
|  |  | **234A611** through **234A671** |
|  |  | **234A711** through **234A752** |
|  |  | **234A911** through **234A971** |
|  |  | **234B011** through **234B052** |
|  |  | **453A215** and **453A225** |

# Visual Reference

## Micromolded Boots

| As Supplied | Recovered | Part No. |
|---|---|---|
|  |  | 202A111-25-G07-0 |
|  |  | 203W301-25-G02-0 |
|  |  | 224W221-25-0 |
|  |  | 222A511-3-0 |
|  |  | 223W601-25-0 |
|  |  | 203W301-25-0 |

| As Supplied | Recovered | Part No. |
|---|---|---|
|  |  | 202K111-25-01-0 |
|  |  | 224W201-25-0 |
|  |  | 204W221-25-0 |
|  |  | 204W201-25-0 |
|  |  | 302A115 |



# Visual Reference

## Bulbous Transitions

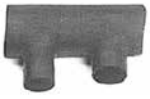
| As Supplied | Recovered | Part No. |
|---|---|---|
|  |  | **301A011** through **301A048** |
|  |  | **302A012** through **302A037** |
|  |  | **302A214** |
|  |  | **322A012** through **322A037** |
|  |  | **322A112** through **322A158** |
|  |  | **322A315** |
|  |  | **322A412** through **322A434** |
|  |  | **322A514** |

| As Supplied | Recovered | Part No. |
|---|---|---|
|  |  | **322B813** |
|  |  | **341A015** |
|  |  | **342A012** through **342A058** |
|  |  | **342A112** through **342A138** |
|  |  | **342A215** |
|  |  | **342A313** and **342A323** |
|  |  | **343A014** through **343A027** |
|  |  | **362A014** through **362A114** |

## Visual Reference

### **Bulbous Transitions** (continued)

| As Supplied | Recovered | Part No. |
|---|---|---|
|  |  | **363A018** and **363A020** |
|  |  | **381A015** |
|  |  | **381A115** |
|  |  | **382A012** through **382A046** |
|  |  | **402A013** |
|  |  | **403A123** through **403A155** |
|  |  | **422A011** |
|  |  | **422A114** |
|  |  | **422A414** |
|  |  | **422A616** |

| As Supplied | Recovered | Part No. |
|---|---|---|
|  |  | **422A716** |
|  |  | **422A813** |
|  |  | **423A014** |
|  |  | **423A117** |
|  |  | **453A017** |
|  |  | **462A011** through **462A060** |
|  |  | **462A214** |
|  |  | **502A812** through **502A845** |
|  |  | **522A013** |
|  |  | **561A017** |

# Visual Reference

## Bulbous Transitions (continued)

| As Supplied | Recovered | Part No. |
|---|---|---|
|  |  | **622A014** |
|  |  | **562A011** through **562A067** |
|  |  | **602A012** |

| As Supplied | Recovered | Part No. |
|---|---|---|
|  |  | **602A022** |
|  |  | **602A114** |
|  |  | **602A212** |

## Lipped Bulbous Transitions

| As Supplied | Recovered | Part No. |
|---|---|---|
|  |  | **323A211** |
|  |  | **323A222** |

## Slim-Line Transitions

| As Supplied | Recovered | Part No. |
|---|---|---|
|  |  | **301A511** through **301A514** |
|  |  | **381A301** through **381A304** |
|  |  | **462A421** through **462A424** |

# Visual Reference

## Covers

| As Supplied | Recovered | Part No. |
|---|---|---|
|  |  | **102A911** |
|  |  | **102A951** |
|  |  | **102A961** |
|  |  | **102A962** |
|  |  | **102A981** |
|  |  | **102A992** |
|  |  | **102A993** |
|  |  | **102A994** |
|  |  | **202A817** |
|  |  | **601A012** |

| As Supplied | Recovered | Part No. |
|---|---|---|
|  |  | **220A012** through **220A023** |
|  |  | **234A211** |
|  |  | **234B111** and **234B122** |
|  |  | **301A212, 301A222, 302A312** |
|  |  | **302A734** |
|  |  | **401A212** and **403A312** |
|  |  | **401A414** |
|  |  | **403A016** |
|  |  | **501A012** and **502A212** |

# Visual Reference

## Sleeves

| As Supplied | Recovered | Part No. |
|---|---|---|
|  |  | **200A413** and **200A426** |
|  |  | **200D944** through **200D988** |

| As Supplied | Recovered | Part No. |
|---|---|---|
|  |  | **202B811** through **202B821** |

## Caps

| As Supplied | Recovered | Part No. |
|---|---|---|
|  |  | **101A011** through **101A094** |
|  |  | **102A811** through **102A865** |
|  |  | **SSC** |

## Feedthroughs

| As Supplied | Recovered | Part No. |
|---|---|---|
|  |  | **207W213** through **207W264** with A-type nut |
|  |  | **207W213-x-01** through **207W264-x-01** with B-type nut |
|  |  | **Cable Entry Seals** |

## Cable Management

| As Supplied | Recovered | Part No. |
|---|---|---|
|  |  | **210W321** **203W302** **203W312** **203W342** |

| As Supplied | Recovered | Part No. |
|---|---|---|
|   |  | **400W242** |

# Visual Reference

## Selected Molded Shape Families

**As Supplied**

**Recovered**



**Lipped Boots (K Series)**
**202K121** through **202K185**
VG Approved

---

**As Supplied**

**Recovered**



**Nonlipped Boots (A Series)**
**202A111** through **202A196**

---

**As Supplied**

**Recovered**



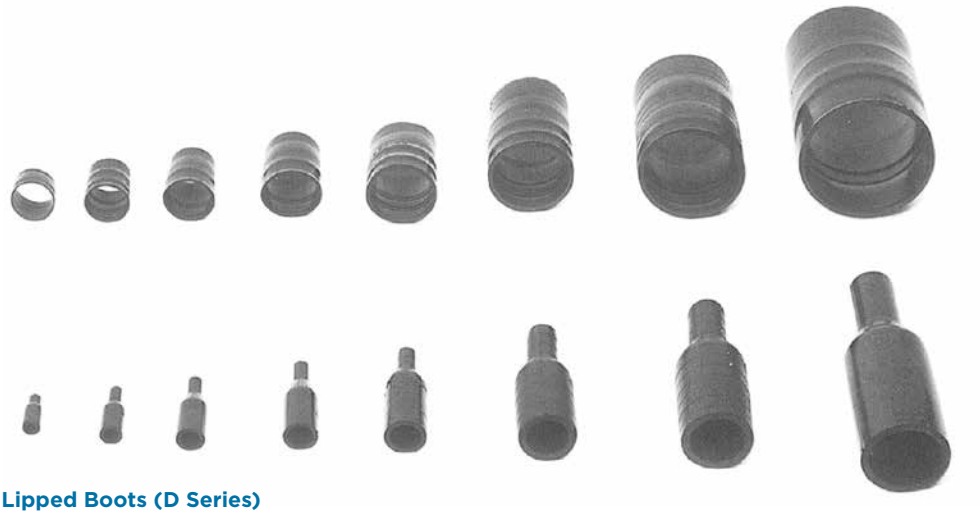
**Nonlipped Boots (A Series)**
**202A212** through **202A264**

# Visual Reference

## Selected Molded Shape Families

**As Supplied**

**Recovered**



**Lipped Boots (D Series)**
**202D121** through **202D196**

**As Supplied**

**Recovered**



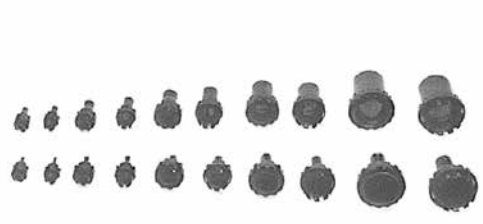
**Lipped Boots (D Series)**
**202D211** through **202D299**
Mil Spec



**Lipped Boots (D Series)**
**202D921** through **202D963**
Mil Spec

**As Supplied**

**Recovered**



**Feedthroughs**
**207W213** through **207W264**



**Rectangular Boots**
**214A011** through **214A052**

# Visual Reference

## Selected Molded Shape Families

**As Supplied**

**Recovered**



**90° Nonlipped Boots**
**222A111** through **222A196**



**90° Nonlipped Boots**
**222A213** through **222A255**

---

**As Supplied**

**Recovered**



**90° Nonlipped Boots**
**222A313** through **222A355**



**90° Lipped Boots**
**222D121** through **222D196**

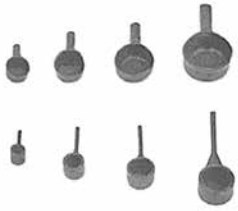
---

**As Supplied**

**Recovered**



**90° Lipped Boots**
**222D211** through **222D299**
Mil Spec



**90° Lipped Boots**
**222D921** through **222D963**
Mil Spec

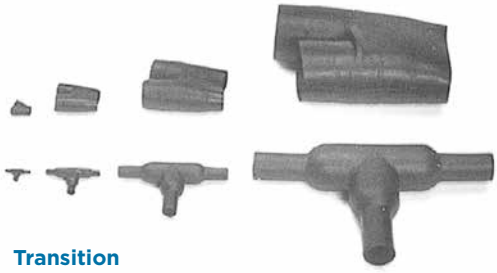
---

**As Supplied**

**Recovered**



**90° Lipped Boots**
**222K121** through **222K185**
VG Approved

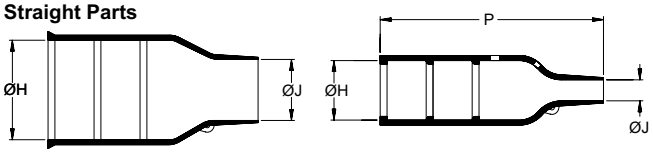


**Transition**
**301A011** through **301A048**

---

# Boot Selection Tables

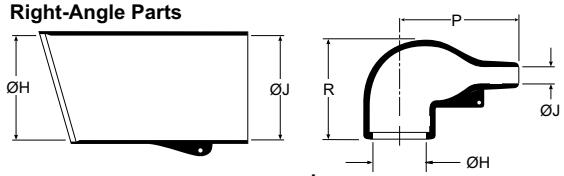
**Straight Parts**




**a**) Part as supplied

**b**) Part after unrestricted recovery

**Right-Angle Parts**




**a**) Part as supplied

**b**) Part after unrestricted recovery

Dimensions relate to -3, -4, -25 compounds, unless otherwise noted.
For expanded dimensions of -12 and -100 parts, please refer to latest TE drawing on TE.com

## Lipped Molded Parts

### 202K Bulbous Straight Parts: VG Style

| Part No. | H | | J | | P ±10% |
|---|---|---|---|---|---|
| | Min. | Max. | Min. | Max. | |
| | a | b | a | b | b |
| 202K121 | 24 [0.95] | 10.4 [0.41] | 24 [0.95] | 5.6 [0.22] | 38 [1.50] |
| 202K132 | 30 [1.18] | 14.2 [0.56] | 30 [1.18] | 5.9 [0.23] | 55 [2.17] |
| 202K142 | 31 [1.22] | 18.0 [0.71] | 31 [1.22] | 7.1 [0.28] | 67 [2.64] |
| 202K153 | 36 [1.42] | 22.4 [0.88] | 36 [1.42] | 8.4 [0.33] | 80 [3.15] |
| 202K163 | 43 [1.69] | 28.2 [1.11] | 43 [1.69] | 9.9 [0.39] | 99 [3.90] |
| 202K174 | 60 [2.36] | 35.1 [1.38] | 60 [2.36] | 15.7 [0.62] | 130 [5.12] |
| 202K185 | 66 [2.60] | 44.5 [1.75] | 66 [2.60] | 16.8 [0.66] | 170 [6.69] |

### 222K Bulbous Right-Angle Parts: VG Style

| Part No. | H | | J | | P ±10% | R ±10% |
|---|---|---|---|---|---|---|
| | Min. | Max. | Min. | Max. | | |
| | a | b | a | b | b | b |
| 222K121 | 24 [0.95] | 10.4 [0.41] | 24 [0.95] | 5.6 [0.22] | 25 [0.98] | 25 [0.98] |
| 222K132 | 30 [1.18] | 14.2 [0.56] | 30 [1.18] | 5.9 [0.23] | 32 [1.26] | 27 [1.06] |
| 222K142 | 31 [1.22] | 18.0 [0.71] | 31 [1.22] | 7.1 [0.28] | 39 [1.54] | 31 [1.22] |
| 222K153 | 36 [1.42] | 22.4 [0.88] | 36 [1.42] | 8.4 [0.33] | 46 [1.81] | 38 [1.50] |
| 222K163 | 43 [1.69] | 28.2 [1.11] | 43 [1.69] | 9.9 [0.39] | 55 [2.17] | 45 [1.77] |
| 222K174 | 60 [2.36] | 35.1 [1.38] | 60 [2.36] | 15.7 [0.62] | 80 [3.15] | 54 [2.13] |
| 222K185 | 66 [2.60] | 44.5 [1.75] | 66 [2.60] | 16.8 [0.66] | 108 [4.25] | 68 [2.68] |

## Nonlipped Molded Parts

### 202A Straight Parts

| Part No. | H | | J | | P ±10% |
|---|---|---|---|---|---|
| | Min. | Max. | Min. | Max. | |
| | a | b | a | b | b |
| 202A011 | 10.7 [0.42] | 7.9 [0.31] | 8.4 [0.33] | 3.8 [0.15] | 25.4 [1.00] |
| 202A021 | 23.7 [0.54] | 9.9 [0.39] | 11.7 [0.46] | 5.3 [0.21] | 38.1 [1.50] |
| 202A032 | 19.3 [0.76] | 14.2 [0.56] | 14.2 [0.56] | 6.6 [0.26] | 51.3 [2.02] |
| 202A042 | 23.9 [0.94] | 17.8 [0.70] | 15.5 [0.61] | 7.4 [0.29] | 66.8 [2.63] |
| 202A053 | 30.0 [1.18] | 21.9 [0.86] | 18.0 [0.71] | 8.6 [0.34] | 73.7 [2.90] |
| 202A063 | 37.8 [1.49] | 27.4 [1.08] | 21.3 [0.84] | 9.4 [0.37] | 99.1 [3.90] |
| 202A074 | 47.0 [1.85] | 35.3 [1.39] | 35.6 [1.40] | 16.0 [0.63] | 130.3 [5.13] |
| 202A085 | 59.4 [2.34] | 43.7 [1.72] | 43.7 [1.72] | 19.6 [0.77] | 161.3 [6.35] |
| 202A096 | 81.3 [3.20] | 57.2 [2.25] | 55.6 [2.19] | 26.9 [1.06] | 212.6 [8.37] |



## Nonlipped Molded Parts (continued)

### 222A Right-Angle Parts

| Part No. | H | | J | | P ±10% | R ±10% |
|---|---|---|---|---|---|---|
| | Min. | Max. | Min. | Max. | | |
| | a | b | a | b | b | b |
| 222A011 | 10.7 [0.42] | 7.9 [0.31] | 8.4 [0.33] | 3.8 [0.15] | 17.3 ]0.68] | 20.1 [0.79] |
| 222A021 | 13.7 [0.54] | 10.4 [0.41] | 11.7 [0.46] | 5.6 [0.22] | 21.3 [0.84] | 22.6 [0.89] |
| 222A032 | 19.3 [0.76] | 14.2 [0.56] | 14.2 [0.56] | 6.6 [0.26] | 26.9 [1.08] | 24.1 [0.85] |
| 222A042 | 23.9 [0.94] | 17.8 [0.70] | 15.5 [0.61] | 7.1 [0.28] | 36.6 [1.44] | 30.5 [1.20] |
| 222A052 | 30.0 [1.18] | 22.4 [0.88] | 18.0 [0.71] | 8.4 [0.33] | 43.7 [1.72] | 34.1 [1.38] |
| 222A063 | 37.8 [1.49] | 28.2 [1.11] | 21.3 [0.84] | 9.9 [0.39] | 53.6 [2.11] | 43.9 [1.73] |
| 222A074 | 47.0 [1.47] | 35.1 [1.38] | 35.6 [1.40] | 15.7 [0.62] | 78.0 [3.07] | 52.8 [2.08] |
| 222A085 | 59.4 [2.34] | 44.5 [1.75] | 43.7 [1.72] | 20.3 [0.80] | 97.5 [3.84] | 66.0 [2.60] |
| 222A096 | 81.3 [3.20] | 57.2 [2.35] | 55.6 [2.19] | 26.7 [1.05] | 128.0 [5.04] | 79.2 [3.12] |

## Lipped, Low-Profile Boots

### 202D2 Straight Boots: Mil Spec Variants

| Part No. | H | | J | | P ±10% |
|---|---|---|---|---|---|
| | Min. | Max. | Min. | Max. | |
| | a | b | a | b | b |
| 202D211 | 22.4 [.88] | 11.4 [.45] | 22.4 [.88] | 6.4 [.25] | 105.9 [4.17] |
| 202D221 | 25.7 [1.01] | 15.0 [.59] | 25.7 [1.01] | 7.4 [.29] | 121.2 [4.77] |
| 202D232 | 29.5 [1.16] | 18.8 [.74] | 29.5 [1.16] | 8.4 [.33] | 138.7 [5.46] |
| 202D242 | 34.0 [1.34] | 22.9 [.90] | 34.0 [1.34] | 9.7 [.38] | 159.5 [6.28] |
| 202D253 | 37.3 [1.47] | 29.5 [1.16] | 37.3 [1.47] | 10.4 [.41] | 177.8 [7.00] |
| 202D263 | 43.7 [1.72] | 34.0 [1.34] | 43.7 [1.72] | 12.2 [.48] | 203.2 [8.00] |
| 202D274 | 50.0 [1.97] | 41.2 [1.62] | 50.0 [1.97] | 14.2 [.56] | 203.2 [8.00] |
| 202D285 | 62.7 [2.47] | 47.0 [1.85] | 62.7 [2.47] | 17.5 [.69] | 203.2 [8.00] |
| 202D296 | 69.3 [2.73] | 59.7 [2.35] | 69.3 [2.73] | 19.6 [.77] | 203.2 [8.00] |
| 202D299 | 81.8 [3.22] | 67.1 [2.64] | 81.8 [3.22] | 22.9 [.90] | 203.2 [8.00] |

### 222D2 Right Angle Boots: Mil Spec Variants

| Part No. | H | | J | | P ±10% | R Ref. |
|---|---|---|---|---|---|---|
| | Min. | Max. | Min. -3, -4, -25 | Max. | | |
| | a | b | a | b | b | b |
| 222D211 | 22.4 [.88] | 11.4 [.45] | 22.4 [.88] | 6.4 [.25] | 105.2 [4.14] | 18.5 [.73] |
| 222D221 | 25.7 [1.01] | 15.0 [.59] | 25.7 [1.01] | 7.4 [.29] | 124.0 [4.88] | 19.8 [.78] |
| 222D232 | 29.5 [1.16] | 18.8 [.74] | 29.5 [1.16] | 8.4 [.33] | 146.3 [5.76] | 20.8 [.82] |
| 222D242 | 34.0 [1.34] | 22.9 [.90] | 34.0 [1.34] | 9.7 [.38] | 172.2 [6.78] | 21.8 [.86] |
| 222D253 | 37.3 [1.47] | 29.5 [1.16] | 37.3 [1.47] | 10.4 [.41] | 185.2 [7.29] | 24.4 [.96] |
| 222D263 | 43.7 [1.72] | 34.0 [1.34] | 43.7 [1.72] | 12.2 [.48] | 213.6 [8.41] | 27.4 [1.08] |
| 222D274 | 50.0 [1.97] | 41.1 [1.62] | 50.0 [1.97] | 14.2 [.56] | 224.5 [8.84] | 29.5 [1.16] |
| 222D285 | 62.7 [2.45] | 47.0 [1.85] | 62.7 [2.47] | 17.5 [.69] | 227.3 [8.95] | 33.3 [1.31] |
| 222D296 | 69.3 [2.73] | 59.7 [2.35] | 69.3 [2.73] | 19.6 [.77] | 233.4 [9.19] | 35.1 [1.38] |
| 222D299 | 81.8 [3.22] | 67.1 [2.64] | 81.8 [3.22] | 22.9 [.90] | 237.0 [9.33] | 44.5 [1.75] |

# Lipped, Bulbous Boots

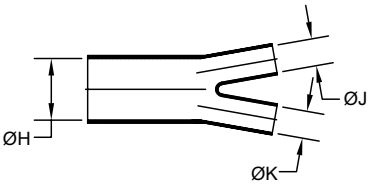
## 202D1 Straight Boots: Mil Spec Variants

| Part No. | H | | J | | P ±10% |
|---|---|---|---|---|---|
| | Min. | Max. | Min. | Max. | |
| | a | b | a | b | b |
| 202D121 | 23.3 [0.92] | 10.5 [0.41] | 23.3 [0.92] | 5.6 [0.22] | 38.1 [1.50] |
| 202D132 | 28.4 [1.12] | 14.3 [0.56] | 28.4 [1.12] | 6.6 [0.26] | 54.9 [2.16] |
| 202D142 | 31.0 [1.22] | 17.8 [0.70] | 31.0 [1.22] | 7.2 [0.28] | 66.8 [2.63] |
| 202D153 | 36.0 [1.42] | 22.4 [0.88] | 36.0 [1.42] | 8.4 [0.33] | 80.0 [3.15] |
| 202D163 | 42.7 [1.68] | 28.2 [1.11] | 42.7 [1.68] | 9.9 [0.39] | 103.6 [4.08] |
| 202D174 | 51.8 [2.04] | 35.1 [1.38] | 51.8 [2.04] | 15.8 [0.62] | 130.3 [5.13] |
| 202D185 | 66.0 [2.60] | 44.5 [1.75] | 66.0 [2.60] | 20.4 [0.80] | 165.1 [6.50] |
| 202D196 | 81.7 [3.22] | 57.6 [2.27] | 81.7 [3.22] | 25.4 [1.00] | 177.8 [7.00] |

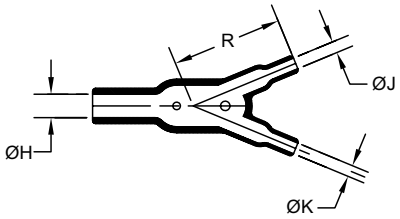
## 222D1 Right-Angle Boots: Mil Spec Variants

| Part No. | H | | J | | P ±10% | R ±10% |
|---|---|---|---|---|---|---|
| | Min. | Max. | Min. | Max. | | |
| | a | b | a | b | b | b |
| 222D121 | 23.4 [0.92] | 10.4 [0.41] | 23.4 [0.92] | 5.6 [0.22] | 21.3 [0.84] | 22.6 [0.89] |
| 222D132 | 28.4 [1.12] | 14.2 [0.56] | 28.4 [1.12] | 6.6 [0.26] | 33.8 [1.33] | 27.2 [1.07] |
| 222D142 | 31.0 [1.22] | 17.8 [0.70] | 31.0 [1.22] | 7.1 [0.28] | 36.6 [1.44] | 31.0 [1.22] |
| 222D152 | 36.0 [1.42] | 22.4 [0.88] | 36.0 [1.42] | 8.4 [0.33] | 43.7 [1.72] | 35.1 [1.38] |
| 222D163 | 42.7 [1.68] | 28.2 [1.11] | 42.7 [1.68] | 9.9 [0.39] | 53.6 [2.11] | 43.9 [1.73] |
| 222D174 | 51.8 [2.04] | 35.1 [1.38] | 51.8 [2.04] | 15.7 [0.62] | 78.0 [3.07] | 52.8 [2.08] |
| 222D185 | 66.0 [2.60] | 44.5 [1.75] | 66.0 [2.60] | 20.3 [0.80] | 97.5 [3.84] | 66.0 [2.60] |
| 222D196 | 81.8 [3.22] | 60.5 [2.38] | 81.8 [3.22] | 25.4 [1.00] | 117.9 [4.64] | 83.8 [3.30] |

# Transitions




**a)** Part as supplied




**b)** Part after unrestricted recovery

| Part No. | H | | J | | K | | P ±10% | R ±10% |
|---|---|---|---|---|---|---|---|---|
| | Min. | Max. | Min. | Max. | Min. | Max. | | |
| | a | b | a | b | a | b | b | b |
| 382A012 | 13.2 [0.52] | 6.10 [0.24] | 6.6 [0.26] | 3.3 [0.13] | 6.6 [0.26] | 3.3 [0.13] | 22.4 [0.88] | 19.3 [0.76] |
| 382A023 | 26.9 [1.06] | 12.4 [0.49] | 13.2 [0.52] | 6.10 [0.24] | 13.2 [0.52] | 6.10 [0.24] | 38.1 [1.50] | 43.2 [1.70] |
| 382A034 | 38.6 [1.52] | 18 [0.71] | 26.9 [1.06] | 12.4 [0.49] | 26.9 [1.06] | 12.4 [0.49] | 65.5 [2.58] | 78.7 [3.10] |
| 382A046 | 55.6 [2.19] | 25.9 [1.02] | 26.9 [1.06] | 12.7 [0.50] | 26.9 [1.06] | 12.7 [0.50] | 85.1 [3.35] | 94 [3.70] |

# Micro-Molded Parts

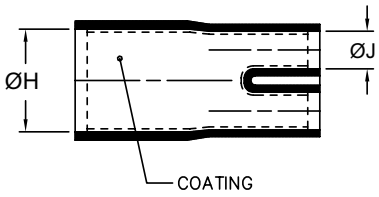
## Straight Micro-Molded Parts

| Part No. | H | | J | | P ±10% |
|---|---|---|---|---|---|
| | Min. | Max. | Min. | Max. | |
| | a | b | a | b | b |
| 204W201 | 10 [0.39] | 5.2 [0.20] | 9 [0.35] | 1.5 [0.06] | 20 [0.79] |
| 203W301 | 10 [0.39] | 5.8 [0.23] | 10 [0.39] | 2.2 [0.09] | 29 [1.14] |
| 203W301-*-G02 | 10 [0.39] | 5.8 [0.23] | 6.0 [0.24] | 2.2 [0.09] | 19 [0.75] |
| 202K111-*-01 | 17 [0.67] | 6.9 [0.27] | 17 [0.67] | 3.0 [0.12] | 29 [1.14] |
| 202A111-X-G07 | 17 [0.67] | 7.9 [0.31] | 17 [0.67] | 2.2 [0.09] | 25 [0.98] |
| 204W221 | 11 [0.43] | 9.3 [0.37] | 11 [0.43] | 2.1 [0.08] | 19 [0.75] |

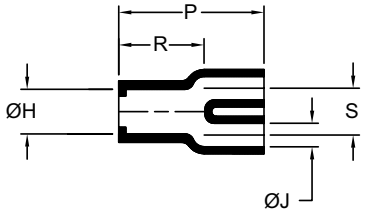
## Right-Angled Micro-Molded Parts

| Part No. | H | | J | | P ±10% | R ±10% |
|---|---|---|---|---|---|---|
| | Min. | Max. | Min. | Max. | | |
| | a | b | a | b | b | b |
| 224W201 | 11 [0.43] | 5.2 [0.20] | 9 [0.35] | 1.6 [0.06] | 13 [0.51] | 11.5 [0.45] |
| 223W601 | 10 [0.39] | 6.3 [0.25] | 6 [0.24] | 2 [0.08] | 12.5 [0.49] | 11.5 [0.45] |
| 224W221 | 11 [0.43] | 9.3 [0.37] | 11 [0.43] | 2.1 [0.08] | 12.3 [0.48] | 13 [0.51] |
| 222A511 | 2.3 [0.09] | 1.7 [0.07] | 2.3 [0.09] | 1 [0.04] | 12.7 [0.50] | 6.1 [0.24] |
| 203W301 | 10 [0.39] | 5.8 [0.23] | 10 [0.39] | 2.2 [0.09] | 29 [1.14] | 21 [0.83] |

# Micro-Molded Transitions




**a)** Part as supplied




**b)** Part after unrestricted recovery

| Part No. | H | | J | | P ±10% | R ±10% | S ±10% |
|---|---|---|---|---|---|---|---|
| | Min. | Max. | Min. | Max. | | | |
| | a | b | a | b | b | b | b |
| 302A115-X-XX | 11.05 [0.44] | 6.35 [0.25] | 5.59 [0.22] | 2.54 [0.10] | 20.62 [0.81] | 14.27 [0.56] | 4.77 [0.19] |

# Raychem Application Tooling

## The Tools to Make Every Connection Count

### HIGH QUALITY

- Manufactured to TE Connectivity's strict quality standards
- Tools are designed to make every job easy and trouble-free
- Made from the highest quality materials for low cost of ownership

### EASY TO USE

- Designed and developed with the operator in mind
- Convenient, easy to use features make installations faster and easier
- More choice in tooling, from simple hand tools to advanced, automatic operation

### APPLICATION SPECIFIC

- Tools offered by TE are designed to aid in the installation of TE wire and cable products
- Decades of experience are applied to the development of all TE installation tools
- Choose from a wide range of tools for any cable management task

**For more information on tooling, order our Raychem Application Tooling brochure, literature number 1-1773872-1. Or visit te.com/raychem-tooling**

TE Connectivity (TE) offers a variety of dependable hand and bench-mount tools for crimping Raychem devices and heating heat-shrinkable products. The tools help give you more accuracy in terminations—increasing productivity, reducing rework, and taking the guesswork out of procedures. With easy-to-use controls and ergonomic design, Raychem tools help make the job go faster and easier.



**CV1981 and CV1983 Series ThermoGun Heating Tools**
ThermoGun heating tools are used for installation of TE heat-shrink products, molded parts, and SolderSleeve terminations.




**Raychem Heat Guns**
Tools are designed for installation of TE heat-shrink products and SolderSleeve devices.

## LET'S CONNECT

We make it easy to connect with our experts and are ready to provide all the support you need. Just call your local support number or visit www.te.com/industrial to chat with a Product Information Specialist.

## Technical Support

te.com/support-center

| | | | |
|---|---|---|---|
| North America | +1 800 522 6752 | Asia Pacific | +86 400 820 6015 |
| North America (Toll) | +1 717 986 7777 | Japan | +81 044 844 8180 |
| EMEA/South Africa | +800 0440 5100 | Australia | +61 2 9554 2695 |
| EMEA (Toll) | +31 73 624 6999 | New Zealand | +64 (0) 9 634 4580 |
| India (Toll-Free) | +800 440 5100 | | |

# te.com/moldedparts

AMP, AGASTAT, CII, DEUTSCH, HARTMAN, INSTALITE, KILOVAC, LL ROWE, MICRODOT, NANONICS, POLAMCO, Rayaten, Raychem, SEACON, SolderSleeve, Tinel-Lock, Uniboot, VERSAFIT, Zerohal, TE, TE Connectivity and the TE connectivity (logo) are trademarks of the TE Connectivity Ltd. family of companies. Other products, logos, and company names mentioned herein may be trademarks of their respective owners.

While TE Connectivity (TE) has made every reasonable effort to ensure the accuracy of the information herein, nothing herein constitutes any guarantee that such information is error-free, or any other representation, warranty or guarantee that the information is accurate, correct, reliable or current. The TE entity issuing this publication reserves the right to make any adjustments to the information contained herein at any time without notice. All implied warranties regarding the information contained herein, including, but not limited to, any implied warranties of merchantability or fitness for a particular purpose are expressly disclaimed. The dimensions herein are for reference purposes only and are subject to change without notice. Specifications are subject to change without notice.

Consult TE for the latest dimensions and design specifications.

© 2016 TE Connectivity Ltd. family of companies All Rights Reserved.

**1-1773853-4 12/16**

# Unikeyic Electronics

Global Electronic Components Distributor

Click to view pricing, inventory, delivery, and lifecycle information:

## TE Connectivity:

1897725-2 SMV1W220KJT 2310537-1 2380312-2 MPT100C18RF 2098557-4 1-962915-1 2-520263-2 354022KFT U5254-000005-030PA CPF0402B37K4E1 ROX05SJ18R TE50BR39J 170376-2 3631B101LL HSHC4508K2J 3-1447221-5 HT-CT-50M-1-OUT-0 SBCHE64R7K T4133012081-000 282680-1 175977-2 1903112-2 2-521104-2 2005330-1 917688-1 1393454-9 292206-2 RH73H2A40MKTN SBCHE154R7K