

UMPCO, INC.



- MANUFACTURING
- EXPERIENCE
- EXPERTISE



Manufacturing to Strict Standards

Parts produced under numbers that begin with AN, MS and NAS were originally designed for aerospace applications, although many are equally suited for industrial applications. Parts produced under numbers that begin with an "S" are UMPCO designed; some are for a specified application. All parts are produced to MIL-I-45208A inspection standards. UMPCO has received many awards throughout the industry for quality and service.

AN-MS-NAS part numbers, which are manufactured under a rigid quality control system, are under the scrutiny of the DEFENSE PROCUREMENT ORGANIZATION (DPRO, formerly DCASD). All are precisely manufactured to the applicable military standard established to ensure the highest quality parts available anywhere. Refer to the applicable part numbers for exact details, or call us at (714) 897-3531.

One - off to Millions



Our modern machining facility specializes in all facets of hardware manufacturing from prototype to production. Our professional staff of engineers can assist in every stage of the manufacturing process from initial drawing through layout, process review, programming, tooling design and ultimately, the finished product.

We expedite prototypes and small quantity orders using hand fed power tools designed and built by UMPCO. These tools make custom runs of small quantities possible from a manufacturer normally geared for volume production.



Our assembly and production are skillfully handled by UMPCO employees who are individually and collectively responsible for the parts they produce. Every employee is his or her own most critical inspector. All parts are inspected and re-checked prior to shipment to ensure that UMPCO produces only the finest clamps, clips, brackets and light stampings.

Commercial Support Clamps



General industrial and automotive applications usually require neoprene cushioned S325 and S370 support clamps. If you require a support clamp with additional width or larger mounting holes, consider our product numbers S219, S332, S463, S464, S465, S466, S467 and S468. If you have an application requiring high temperature cushion materials, see S500, S634 or call our friendly sales associates for personal assistance at (714) 897-3531.



- Single Tube Cushioned Loop Clamps
- Single Tube Plain Loop Clamps
- Cushioned Clamps with Tanglock
- Cushioned "U" Type Support Clamp
- Cushioned Loop Clamps
- Saddle Type
- Center Mount Loop Clamps
- Two Bolt Loop Clamps
- Rectangular Cushioned Loop Clamp



Brackets

A wide variety of angle and flat brackets are available to solve your application requirements. Our "off the shelf" policy can help eliminate the need and expense of custom made parts. For angle brackets, see part numbers AN743, MS9101-MS9104, MS9165-MS9168 and MS9592-MS9603. Flat brackets are represented by part numbers MS9365-MS9367, MS9551 and MS9552.

- Flat Brackets
- 90° Angle Bracket
- "Z" (Offset) Bracket



Retaining Straps

- Cushioned 2 Piece Rectangular Retaining Straps
- Cushioned Rectangular Retaining Strap
- One-Hole Retaining Straps
- Plain "U" Type Strap

Products

- Commercial Support Clamps, Clips and Clamps
- Light Stampings
- Restraining Straps
- Brackets
- U Bolts Clamp Cushions



Supporting Hardware Solutions

Umpco - A Tradition of Service

Supporting our customers with exceptional service is as much of a tradition at UMPCO as designing and producing high quality support clamps, spring clips, brackets and other metal specialties. Our promise of quality service is at the core of our development over the past five decades, and serves as the cornerstone of our growth in the future.

In a half-century of producing high quality metal parts – innovative application ideas and fastening solutions for our customers – experience has taught us that support begins and ends with understanding our customers' needs. Our experience in application and hardware solutions helps our customers solve problems involving special environments, extremes of temperature and vibration, weight, space and cost. The UMPCO name first appeared on high quality clamps, clips and brackets over 50 years ago. Originally we served the defense industry almost exclusively. As the times have changed, so has UMPCO. Today, our products are original equipment in cars, trucks, trailers, motor homes, aircraft and aerospace vehicles, and in a variety of industrial applications.

In Support of Excellence

Throughout our process, UMPCO is committed to creating superior value for our customers. All quotes are handled in the same speedy fashion. On our standard product line, pricing and delivery information can usually be given at the time of request. Mailed or faxed quotations receive prompt attention and are returned to the originator on the same-day they are received, whenever possible. Quotations on the production of new designs are also handled fast and accurately.

Same-Day Service

We maintain the largest inventory of finished parts in the industry and constantly strive to deliver same-day-service. Delivery of large lot quantities can be made within a short period of time, to coincide with your production schedule.

When we receive a Request For Quote (RFQ), our professionals respond quickly by recommending innovative ways to reduce lead times, maximize efficiency and help reduce costs associated with maintaining your product inventory. This process results in the reduction of lag time, while offering our customers greater product savings.

Support is Our Product

Our success is the product of a professional staff that is committed to meeting and exceeding the needs of our customers. Our experienced, talented specialists work to ensure we deliver the finest products available everyday - each backed with successful development, implementation and production of high quality metal products in our modern facility located in Garden Grove, California.



UMPCO, INC.

Striving for Quality

Innovation and updating our manufacturing capabilities is an ongoing process at UMPCO. To maintain our manufacturing edge, we have the most advanced technology in the industry. Metal forming is performed on high speed, automatic equipment. We manufacture our standard lines and precision specials from the smallest of shims to the largest parts requiring forming pressures up to 60 tons on these machines.

We are the only manufacturer that has reliable high speed, automated machinery to assemble support clamps. These custom fabricated machines were designed, built and perfected by UMPCO over many years. Our next generation models are now being introduced to promote even faster delivery and lower cost.

To support our high quality manufacturing, UMPCO operates a complete tool and die shop. Fabricating new tooling and keeping existing dies in optimum condition is the sole responsibility of the seasoned professionals in this critical area.




In the Final Analysis

What does this mean to you as our customer? When you need clamps, brackets and light stampings, you'll get the very finest in quality, price and delivery from UMPCO. Over 50 years of experience is at your disposal. The largest stocking program in the industry can ease your stocking requirements and save you money.

This is the UMPCO tradition. For quality metal parts, expert support, on-time delivery and excellent pricing, call (714) 897-3531. Let us solve your supporting hardware and light stamping needs.

Supporting Hardware Solutions

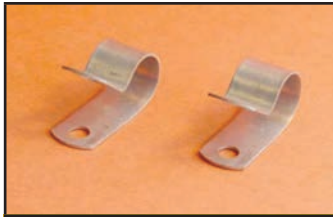
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	<p>AN735 LOOP TYPE BONDING CLAMP - See Drawing: AS7351</p> <ul style="list-style-type: none">• Material: Aluminum and Steel, 3/8 width• Hole: .204
	<p>AS5587 Clamp, Loop, Plain, Support, Aircraft</p> <ul style="list-style-type: none">• Material: Aluminum, 1/2 width, Corrosion Resistant Steel 3/8 and 1/2 width.• Hole: .204/.218
	<p>AS5874 CLAMP, LOOP TYPE, CUSHIONED SUPPORT</p> <ul style="list-style-type: none">• Cushion: Fabric Reinforced, Fluorosilicone Rubber• Hole: .228/.218
	<p>AS21919 Cushioned Loop Clamp</p> <ul style="list-style-type: none">• Material: Aluminum and CRES• Cushion: Ethylene Propylene, Nitrile, Chloroprene, Silicone, and Fluorosilicone• Hole: .228/.218
	<p>MIL-DTL-85052/1 Cushioned Loop Clamp</p> <ul style="list-style-type: none">• Material: 17-7 PH CRES• Cushion: 275 °F, Fuel and Petroleum Based Hydraulic Fluid Resistant (Nitrile)• Hole: .228/.218
	<p>MIL-DTL-85052/2 Cushioned Loop Clamp</p> <ul style="list-style-type: none">• Material: 17-7 PH CRES• Cushion: 275 °F, Phosphate Ester Fluid Resistant (Ethylene Propylene)• Hole: .228/.218
	<p>MIL-DTL-85052/3 Cushioned Loop Clamp</p> <ul style="list-style-type: none">• Material: 17-7 PH CRES• Cushion: 500 Degrees F, General Fluid Resistant (Silicone)• Hole: .228/.218
	<p>MS9025 Plain Loop Clamp</p> <ul style="list-style-type: none">• Material: CRES• Hole: .265

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	<p> MS9101 90 Degree Angle Bracket CRES AMS 5510, .190 Bolt MS9102 90 Degree Angle Bracket CRES AMS 5510, .190 x .250 Bolt MS9103 90 Degree Angle Bracket CRES AMS 5510, .190 x .312 Bolt MS9104 90 Degree Angle Bracket CRES AMS 5510, .190 x .375 Bolt </p>
	<p> MS9165 90 Degree Angle Bracket AMS 6350, .190 Bolt MS9166 90 Degree Angle Bracket AMS 6350, .190 x .250 Bolt MS9167 90 Degree Angle Bracket AMS 6350, .190 x .312 Bolt MS9168 90 Degree Angle Bracket AMS 6350, .190 x .375 Bolt </p>
	<p> MS9228 90 Degree Angle Bracket CRES AMS 5504, .190 Bolt - <i>See Drawing: AS9228</i> MS9229 90 Degree Angle Bracket CRES AMS 5504, .190 x .250 Bolt MS9230 90 Degree Angle Bracket CRES AMS 5504, .190 x .312 Bolt - <i>See Drawing: AS9230</i> MS9231 90 Degree Angle Bracket CRES AMS 5504, .190 x .375 Bolt - <i>See Drawing: AS9231</i> </p>
	<p> MS9349 Cushioned Loop Clamp - <i>See Drawing: AS9349</i> <ul style="list-style-type: none"> • Material: CRES • Cushion: Teflon, Rectangular • Hole: .204 </p>
	<p> MS9350 Cushioned Loop Clamp <ul style="list-style-type: none"> • Material: CRES • Cushion: Teflon, Rectangular • Hole: .265 </p>
	<p> MS9351 Cushioned Loop Clamp <ul style="list-style-type: none"> • Material: Aluminum • Cushion: Neoprene, Rectangular • Hole: .204 </p>
	<p> MS9352 Cushioned Loop Clamp <ul style="list-style-type: none"> • Material: Aluminum • Cushion: Neoprene, Rectangular • Hole: .265 </p>
	<p> MS9353 Plain Loop Clamp - <i>See Drawing: AS9353</i> <ul style="list-style-type: none"> • Material: Aluminum • Hole: .204 </p>



MS9354 Plain Loop Clamp - See Drawing: AS9354

- Material: Aluminum
- Hole: .265

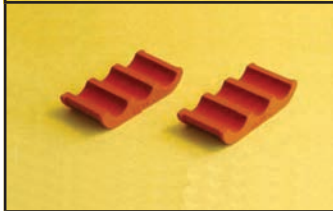


- MS9365 Flat Bracket** CRES AMS 5510, .190 Bolt
MS9366 Flat Bracket CRES AMS 5510, .190 x .250 Bolt
MS9367 Flat Bracket CRES AMS 5510, .250 Bolt



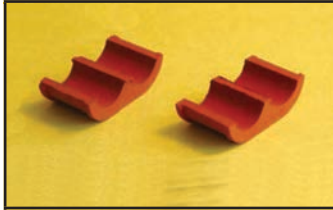
MS9391 Multiple Tube Loop Clamp - See Drawing: AS9391

- Material: CRES, 1/2 width
- Hole: .204



MS9392 Loop Clamp Cushion - See Drawing: AS9392

- Material: Silicone



MS9393 Loop Clamp Cushion - See Drawing: AS9393

- Material: Silicone



MS9394 Multiple Tube Retaining Strap - See Drawing: AS9394

- Material: CRES
- Hole: *See Drawing*



MS9395 Retaining Strap Backplate - See Drawing: AS9395

- Material: CRES
- Hole: *See Drawing*



MS9551 Flat Bracket - See Drawing: AS9551





- Material: AMS6350
- Hole: *See Drawing*

MS9552 Flat Bracket - See Drawing: AS9552


- Material: CRES
- Hole: *See Drawing*

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	<p> MS9592 90 Degree Angle Bracket AMS 5510, .190 Bolt - <i>See Dwg: AS9592</i> MS9593 90 Degree Angle Bracket AMS 5510, .190 x .250 Bolt - <i>See Dwg: AS9593</i> MS9594 90 Degree Angle Bracket AMS 5510, .190 x .312 Bolt - <i>See Dwg: AS9594</i> MS9595 90 Degree Angle Bracket AMS 5510, .190 x .375 Bolt - <i>See Dwg: AS9595</i> </p>
	<p> MS9596 90 Degree Angle Bracket AMS6350, .190 Bolt - <i>See Dwg: AS9596</i> MS9597 90 Degree Angle Bracket AMS6350, .190 x .250 Bolt - <i>See Dwg: AS9597</i> MS9598 90 Degree Angle Bracket AMS6350, .190 x .312 Bolt - <i>See Dwg: AS9598</i> MS9599 90 Degree Angle Bracket AMS6350, .190 x .375 Bolt - <i>See Dwg: AS9599</i> </p>
	<p> MS9600 90 Degree Angle Bracket AMS 5504, .190 Bolt - <i>See Dwg : AS9600</i> MS9601 90 Degree Angle Bracket AMS 5504, .190 x .250 Bolt - <i>See Dwg: AS9601</i> MS9602 90 Degree Angle Bracket AMS 5504, .190 x .312 Bolt - <i>See Dwg: AS9602</i> MS9603 90 Degree Angle Bracket AMS 5504, .190 x .375 Bolt - <i>See Dwg: AS9603</i> </p>
	<p> MS21106 Cushioned Loop Clamp <ul style="list-style-type: none"> • Material: 321 or 347 CRES • Cushion: .062 Thick Knitted Wire Mesh • Hole: .204 </p>
	<p> MS21314 Two Hole Retaining Strap - <i>See Drawing: NASM21314</i> <ul style="list-style-type: none"> • Material: Steel 1/2, 5/8, 11/16, 3/4, 7/8, 1, 1-1/8" widths • Hole: .203, .219, .281, .344, .375, .437 </p>
	<p> MS21315 Two Hole Retaining Strap - <i>See Drawing: NASM21315</i> <ul style="list-style-type: none"> • Material: Aluminum and Steel 3/8 width • Hole: .173 </p>
	<p> MS21322 Plain and Cushioned Loop Clamp - <i>See Drawing: NASM21322</i> <ul style="list-style-type: none"> • Material: Aluminum • Cushion: Neoprene or Plastisol • Hole: .203 </p>
	<p> MS21333 Plain And Cushioned Loop Clamp - <i>See Drawing NASM21333</i> <ul style="list-style-type: none"> • Material: Steel, 1/2, 9/16, 5/8 widths • Cushion: Plain, Neoprene or Plastisol • Hole: For No. 10, 1/4, 5/16, 3/8 fastener size </p>

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	<p>MS21334 Plain And Cushioned Double Loop Clamp - See Drawing NASM21334</p> <ul style="list-style-type: none"> • Material: Steel • Cushion: Plain, Neoprene or Plastisol • Hole: .203
	<p>MS122900 thru MS122939 Heat Resistant Loop Type Support Clamp - See Drawing AS122900 thru AS122939</p> <ul style="list-style-type: none"> • Material: CRES • Hole: .204
	<p>NAS1677 Two-Piece Rectangular Cushioned Restraining Strap</p> <ul style="list-style-type: none"> • Material: Aluminum and CRES • Cushion: Neoprene, Silicone, Teflon, PBI Fabric • Hole: .204, .218
	<p>NAS1711 Cushioned Rectangular Retaining Strap</p> <ul style="list-style-type: none"> • Material: Aluminum and CRES • Cushion: Neoprene, Silicone, Teflon, PBI Fabric • Hole: .204, .218
	<p>NAS1712 Rectangular Cushioned Loop Clamp</p> <ul style="list-style-type: none"> • Material: Aluminum and CRES • Cushion: Neoprene, Silicone, Teflon, PBI Fabric • Hole: .204, .218
	<p>NAS1713 Clamp Loop Cushioned-Center Mounting</p> <ul style="list-style-type: none"> • Material: Aluminum and CRES. Stiffener Ribs Both Ends • Cushion: Neoprene, Silicone, Teflon, PBI Fabric • Hole: .204, .218
	<p>NAS1714 Elongated Cushioned Loop Clamp</p> <ul style="list-style-type: none"> • Material: Aluminum and CRES. Stiffener ribs and bead • Cushion: Neoprene, Silicone, Teflon, PBI Fabric • Hole: .204, .218
	<p>NAS1715 Cushioned Loop Clamp</p> <ul style="list-style-type: none"> • Material: Aluminum, 302/321 CRES • Cushion: Neoprene, Teflon, Silicone's, PBI Fabric - Wedge Style Available • Hole: .204, .218, .265

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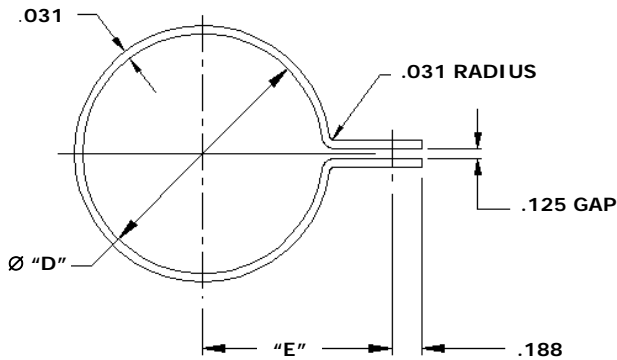
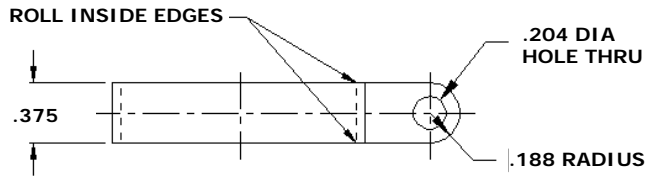
	<p>NAS1716 Saddle Style Cushioned Loop Clamp</p> <ul style="list-style-type: none"> • Material: Aluminum and CRES 1/2 and 5/8 width • Cushion: Teflon, Neoprene, PBI Fabric • Hole: .204, .218
	<p>S156 Cushioned Loop Clamp</p> <ul style="list-style-type: none"> • Material: Aluminum, 4130 CMS, 302/321 CRES, 17-7 PH CRES, Steel • Cushion: Neoprene, EPDM, Nitrile, Teflon, Silicone's, Skydrol Resistant, Glass Tubing, Ethylene Propylene, MIL-C-85052/1, MIL-C-85052/2, MIL-C-85052/3, PBI Fabric - Wedge Style Available • Hole: .204
	<p>S165 90° Angle Bracket, Plain and With Clinch Nut</p> <ul style="list-style-type: none"> • Material: Aluminum and CRES • Width: .625
	<p>S166 90° Angle Bracket, Plain and With Clinch Nut</p> <ul style="list-style-type: none"> • Material: Aluminum and CRES • Width: .750
	<p>S169 Cushioned Loop Clamp</p> <ul style="list-style-type: none"> • Material: Aluminum, 302/321 CRES • Cushion: Teflon, Wedge Style Available • Hole: .204 Width .375, .500
	<p>S179 Cushioned Loop Clamp</p> <ul style="list-style-type: none"> • Material: Aluminum, CRES, Steel • Cushion: EPDM, Neoprene, Teflon, Silicone • Hole: .204 Width .375
	<p>S219 Cushioned Loop Clamps- 1/4" Mounting Bolt</p> <ul style="list-style-type: none"> • Material: Aluminum, 302/321 CRES, Steel • Cushion: EPDM, Neoprene, Silicone • Hole: .281 x .375 Width .750
	<p>S225 Cushioned Loop Clamps</p> <ul style="list-style-type: none"> • Material: Aluminum, 302/321 CRES, Steel • Cushion: EPDM, Neoprene, Silicone, Fluorosilicone • Hole: .204 Width .375, .500

	<p>S228 Cushioned Loop Clamp for 5/16" Mounting Bolt</p> <ul style="list-style-type: none"> • Material: Aluminum, 302/321 CRES, Steel • Cushion: EPDM, Neoprene, Silicone • Hole: .344 x .438 Width .625
	<p>S230 Cushioned Loop Clamp for 1/4" Mounting Bolt</p> <ul style="list-style-type: none"> • Material: Aluminum, 302/316/321 CRES, Steel • Cushion: EPDM, Neoprene, Teflon Skydrol Resistant, Conductive, Silicone. - Wedge Style Available • Hole: .281 x .375. Width: .500
	<p>S250 Cushioned Loop Clamp</p> <ul style="list-style-type: none"> • Material: Aluminum, CRES, 4130 CMS, Steel • Cushion: EPDM, Neoprene, Silicone - Wedge Style Available • Hole: .204. Width: .500
	<p>S325 Cushioned Loop Clamp</p> <ul style="list-style-type: none"> • Material: Aluminum, 302/321 CRES, 201,316 & 430 CRES, Steel • Cushion: EPDM, Neoprene, Teflon, Silicone - Wedge Style Available • Hole: .265. Width: .500
	<p>S332 Cushioned Loop Clamp</p> <ul style="list-style-type: none"> • Material: Aluminum, 302/321 CRES, Steel • Cushion: EPDM, Neoprene, Silicone, Teflon • Hole: .531 x .625 Width .750
	<p>S340 Cushioned Loop Clamp</p> <ul style="list-style-type: none"> • Material: Aluminum, 302/321 CRES, 316 CRES, Steel • Cushion: EPDM, Neoprene, Silicone, Teflon • Hole: .406 x .500 Width .750
	<p>S342 Cushioned Loop Clamp, Commercial</p> <ul style="list-style-type: none"> • Material: Aluminum, Steel, 302/321/316 CRES, Steel • Cushion: Neoprene, EPDM, Silicone, Nitrile, Teflon • Hole: .281 x .375
	<p>S344 Cushioned Loop Clamps for Two Tubes of Equal Diameter</p> <ul style="list-style-type: none"> • Material: Aluminum, 302/321 CRES, Steel • Cushion: EPDM, Neoprene, Silicone • Hole: .406 x .500 Width .750

	<p>S346 Cushioned "U" Type Support Clamp</p> <ul style="list-style-type: none"> • Material: Aluminum, 302/321 CRES, Steel • Cushion: Neoprene, Silicone, Teflon, PBI Fabric • Hole: .204 Width .375
	<p>S370 Cushioned Loop Clamp</p> <ul style="list-style-type: none"> • Material: Aluminum, 302/321 CRES, Steel • Cushion: EPDM, Neoprene, Teflon, Silicone • Hole: .204 Width .375, .500
	<p>S446 Cushioned Loop Clamp</p> <ul style="list-style-type: none"> • Material: Aluminum, 302/321 CRES, Steel • Cushion: EPDM, Neoprene, Silicone • Hole: .173, .204, .265 Width .375, .500
	<p>S463 Cushioned Loop Clamp</p> <ul style="list-style-type: none"> • Material: Aluminum, 302/321 CRES, Steel • Cushion: EPDM, Neoprene, Silicone • Hole: .281 x .375 Width .625
	<p>S464 Cushioned Loop Clamp</p> <ul style="list-style-type: none"> • Material: Aluminum, 302/321 CRES, Steel • Cushion: EPDM, Neoprene, Silicone • Hole: .406 x .500 Width .625
	<p>S465 Cushioned Multiple Line Loop Clamp</p> <ul style="list-style-type: none"> • Material: Aluminum, 302/321 CRES, Steel • Cushion: EPDM, Neoprene, Silicone • Hole: .281 x .375 Width .625
	<p>S466 Cushioned Multiple Line Loop Clamp</p> <ul style="list-style-type: none"> • Material: Aluminum, 302/321 CRES, Steel • Cushion: EPDM, Neoprene, Silicone • Hole: .406 x .500 Width .625
	<p>S467 Cushioned Multiple Line Loop Clamp</p> <ul style="list-style-type: none"> • Material: Aluminum, 302/321 CRES, Steel • Cushion: EPDM, Neoprene, Silicone, Teflon • Hole: .531 x .625 Width .750

	<p>S468 Cushioned Loop Clamp</p> <ul style="list-style-type: none"> • Material: Aluminum, 302/321 CRES, Steel • Cushion: EPDM, Neoprene, Silicone • Hole: .469 x .562 Width .750
	<p>S470 Cushioned Loop Clamps for Two Tubes of Equal Diameter</p> <ul style="list-style-type: none"> • Material: Aluminum, 302/321 CRES, Steel • Cushion: EPDM, Neoprene, Silicone • Hole: .173, .204 Width: .375, .500
	<p>S471 Cushioned Multiple Line Loop Clamps</p> <ul style="list-style-type: none"> • Material: Aluminum, 302/321 CRES, Steel • Cushion: EPDM, Neoprene, Silicone, Teflon • Hole: .173 Width .375 Hole: .204 Width: .500
	<p>S479 Cushioned Loop Clamp</p> <ul style="list-style-type: none"> • Material: Aluminum, 302/321 CRES, Steel • Cushion: EPDM, Neoprene, Silicone • Hole: .593 x .688 Width 1.00
	<p>S482 Cushioned Loop Clamp with Tanglock</p> <ul style="list-style-type: none"> • Material: Aluminum, Steel, 304/321 CRES • Cushion: Neoprene, Nitrile, Silicone - Wedge Optional • Hole: .204 Width: .500
	<p>S500 Cushioned Loop Clamp for High Temperature Applications</p> <ul style="list-style-type: none"> • Material: CRES per AMS5510 or AMS5512 • Cushion: PBI-Polyamide Glass Blend Fabric per Boeing Spec BPS-C-155 • Hole: .204
	<p>S501 Cushioned Loop Clamp, Commercial</p> <ul style="list-style-type: none"> • Material: Aluminum, Steel, 304/321 CRES • Cushion: Neoprene, EPDM, Silicone • Hole: .406 x .500 Width .750
	<p>S502 Cushioned Multiple Line Loop Clamp</p> <ul style="list-style-type: none"> • Material: Aluminum, Steel, 304/321 CRES • Cushion: EPDM, Neoprene, Silicone • Hole: .406 x .500 Width .750

	<p>S520 Cushioned Loop Clamp, Commercial</p> <ul style="list-style-type: none"> • Material: Aluminum, Steel, 302/321 CRES, Steel • Cushion: Neoprene, EPDM, Silicone • Hole: .281 x .375
	<p>S634 Cushioned Loop Clamp</p> <ul style="list-style-type: none"> • Material: 321 CRES, 17-7 PH CRES • Cushion: Silicone, Fabric Reinforced - Wedge Optional • Hole: .204 Width: .500
	<p>S653 Cushioned Loop Clamp</p> <ul style="list-style-type: none"> • Material: 321/347 CRES • Cushion: Teflon PBI-Polyamide Glass Blend Fabric per Boeing BPS-C-155, Silicone • Hole: .265. Width: .500
	<p>S732 Full Box Style Cushioned Loop Clamp</p> <ul style="list-style-type: none"> • Material: Aluminum, 302/321 CRES, Steel • Cushion: EPDM, Neoprene, Silicone • Hole & Width: See Drawing
	<p>S733 Full Box Style, Multiple Line Cushioned Loop Clamp</p> <ul style="list-style-type: none"> • Material: Aluminum, 302/321 CRES, Steel • Cushion: EPDM, Neoprene, Silicone • Hole & Width: See Drawing
	<p>AE12 90° Angle Bracket</p> <ul style="list-style-type: none"> • Material: Aluminum, CRES, and Steel • Width: .750
	<p>ZD12 "Z" Offset Bracket</p> <ul style="list-style-type: none"> • Material: Aluminum, CRES, and Steel • Width: .750
	<p>Bulletin 100 Metal Materials</p> <ul style="list-style-type: none"> • Code • Materials • Suffix • Specification • Tensile PSI • Yield PSI • Hardness • Elongation • Temp Range



DASH NO	Size Range	"E"
-2 THRU -5	1/8" thru 5/16"	D/2 + .250
-6 THRU -15	3/8" thru 15/16"	D/2 + .281
-16 THRU -96	1" thru 6"	D/2 + .312

MATERIALS:

- 1010 LOW CARBON STEEL PER ASTM A109.
FINISH: CADMIUM PLATE PER QQ-P-416 TYPE II, CLASS 2
- C 302 STAINLESS STEEL PER MIL-S-5059 OR 321 STAINLESS STEEL PER AMS 5510.
FINISH: PASSIVATE PER AMS 2700.
- D 2024 ALUMINUM CLAD PER QQ-A-250/5.
FINISH: HEAT TREAT TO CONDITION T42 PER AMS-H-6088.
- DC 2024 ALUMINUM CLAD PER QQ-A-250/5.
FINISH: HEAT TREAT TO CONDITION T42 PER AMS-H-6088 AND CHEMICAL TREAT PER MIL-C-5541, CLASS 3 COLOR: GOLD.

EXAMPLE OF PART CALLOUT:



EXAMPLES OF PART NUMBERS:

- AN735-2 = STEEL CLAMP, .125 INSIDE DIAMETER
- AN735D2 = ALUMINUM ALLOY CLAMP, .125 INSIDE DIAMETER.
- AN735DC2 = ALUMINUM ALLOY CLAMP WITH CHEMICAL FILM, .125 INSIDE DIAMETER.
- AN735C2 = CRES, STEEL CLAMP, .125 INSIDE DIAMETER.

NOTES: ALUMINUM ALLOY CLAMPS MUST BE FORMED WITHIN ONE HOUR OF HEAT TREATMENT.

CLAMPS SHALL CHECK TO DIMENSIONS WITH ENDS HELD IN POSITION SHOWN.
BANDS SHALL HAVE ALL BURRS, SHARP EDGES AND SCALE REMOVED.

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AS7351

CLAMP, LOOP TYPE BONDING

PART NUMBER

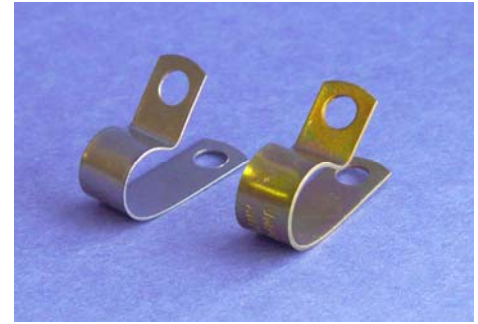
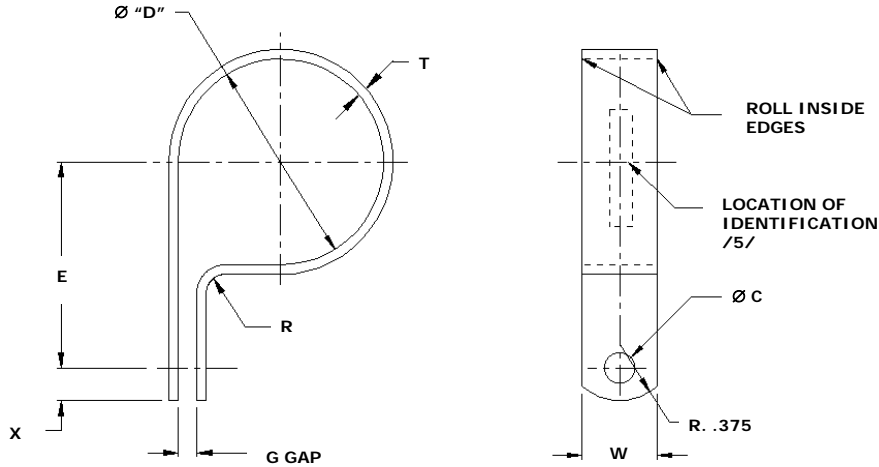


TABLE 1 - DIMENSIONS

SIZE CODE	G		R	AL ALLOY	AL ALLOY	CRES	CRES	X
RANGE	MIN	MAX	±.010	W	C	W	C	
/9/					±.005		±.005	
02 - 10	.062	.078	.062	.500	.218	.375	.204	.188
11 - 19	.062	.078	.109	.500	.218	.500	.218	.218
20 - 32	.094	.125	.125	.500	.218	.500	.218	.218
33 - 66	.125	.156	.125	.500	.218	.500	.218	.218

NOTES:

/1/ MATERIAL:

- a. CODE LETTER C - TYPE 321 CORROSION RESISTANT STEEL PER AMS 5510
- b. CODE LETTER D - 2024-O ALUMINUM ALLOY PER AMS-QQ-A-250/5

2. HEAT TREATMENT:

- a. CODE LETTER D - HEAT TREAT TO T42 TEMPER IN ACCORDANCE WITH AMS2770

3. FINISH:

- a. CODE LETTER C - PASSIVATE PER AMS2700 TYPE 6 OR 7.
- b. CODE LETTER D - CHEMICAL CONVERSION COATING PER MIL-DTL-5541, CLASS 1A. TOUCHUP IS PERMITTED WITHIN THE LIMITS SPECIFIED IN MIL-DTL-5541.

4. CLOSURE TEST: THE CLAMP SHALL BE INSTALLED ON A BAR HAVING A DIAMETER EQUAL TO THE NOMINAL D DIAMETER WITHIN ±.001. DIMENSION G (GAP) SHALL BE RESTRAINED WITHIN THE SPECIFIED TOLERANCE LIMITS AND THE HOLES SHALL BE IN ALIGNMENT WITHIN .010. THE BAND WIDTH STRAIGHTNESS (PARALLEL TO THE BAR AXIS) SHALL BE WITHIN .010.

/5/ IDENTIFICATION: MARK PART NUMBER AND MANUFACTURER'S NAME, TRADEMARK OR CAGE CODE PER AS478-2A1. DO NOT MARK IN RADIUS.

6. REMOVE BURRS AND SHARP EDGES.

7. DIMENSIONING AND TOLERANCING: ASME Y14.5M-1994.

8. DIMENSIONS IN INCHES. UNLESS OTHERWISE SPECIFIED, TOLERANCE: ±.010.

/9/ EXAMPLE OF PART NUMBER:



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AS5587

CLAMP, LOOP, PLAIN, SUPPORT, AIRCRAFT

PART NUMBER

TABLE 2 (DIMENSIONS AND SIZE CODES)

SIZE CODE /9/	TUBE DIA OD (REF)	D ±.010	AL ALLOY E	CRES E	AL ALLOY T	CRES T
02	0.125	0.125	0.360	0.360	0.032	0.020
03	0.188	0.188	0.423	0.423	0.032	0.020
04	0.250	0.250	0.457	0.457	0.032	0.020
05	0.313	0.313	0.498	0.498	0.032	0.020
06	0.375	0.375	0.529	0.529	0.032	0.020
07	0.438	0.438	0.560	0.560	0.032	0.020
08	0.500	0.500	0.592	0.592	0.032	0.020
09	0.563	0.563	0.623	0.623	0.032	0.020
10	0.625	0.625	0.654	0.654	0.032	0.020
11	0.688	0.688	0.752	0.749	0.050	0.032
12	0.750	0.750	0.783	0.780	0.050	0.032
13	0.813	0.813	0.814	0.811	0.050	0.032
14	0.875	0.875	0.845	0.842	0.050	0.032
15	0.938	0.938	0.877	0.858	0.050	0.032
16	1.000	1.000	0.908	0.899	0.050	0.032
17	1.063	1.063	0.939	0.920	0.050	0.032
18	1.125	1.125	0.970	0.951	0.050	0.032
19	1.188	1.188	1.002	0.983	0.050	0.032
20	1.250	1.250	1.062	1.030	0.062	0.032
21	1.313	1.313	1.093	1.061	0.062	0.032
22	1.375	1.375	1.124	1.092	0.062	0.032
23	1.438	1.438	1.156	1.124	0.062	0.032
24	1.500	1.500	1.187	1.155	0.062	0.032
25	1.563	1.563	1.218	1.186	0.062	0.032
26	1.625	1.625	1.249	1.217	0.062	0.032
27	1.688	1.688	1.281	1.259	0.062	0.032
28	1.750	1.750	1.312	1.280	0.062	0.032
29	1.813	1.813	1.344	1.312	0.062	0.032
30	1.875	1.875	1.374	1.342	0.062	0.032
31	1.938	1.938	1.406	1.374	0.062	0.032
32	2.000	2.000	1.437	1.405	0.062	0.032
33	2.063	2.063	1.468	1.444	0.062	0.040
34	2.125	2.125	1.499	1.475	0.062	0.040
35	2.188	2.188	1.531	1.507	0.062	0.040
36	2.250	2.250	1.562	1.538	0.062	0.040
37	2.313	2.313	1.594	1.570	0.062	0.040
38	2.375	2.375	1.624	1.600	0.062	0.040
40	2.500	2.500	1.687	1.663	0.062	0.040
42	2.625	2.625	1.752	1.728	0.062	0.040
43	2.688	2.688	1.778	1.754	0.062	0.040
44	2.750	2.750	1.812	1.788	0.062	0.040
45	2.813	2.813	1.844	1.820	0.062	0.040
46	2.875	2.875	1.875	1.851	0.062	0.040
48	3.000	3.000	1.937	1.913	0.062	0.040
50	3.125	3.125	2.000	1.976	0.062	0.040
52	3.250	3.250	2.062	2.038	0.062	0.040
54	3.375	3.375	2.125	2.101	0.062	0.040
56	3.500	3.500	2.187	2.163	0.062	0.040
58	3.625	3.625	2.250	2.226	0.062	0.040
64	4.000	4.000	2.437	2.413	0.062	0.040
66	4.125	4.125	2.500	2.476	0.062	0.040

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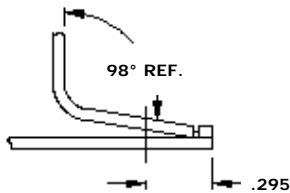
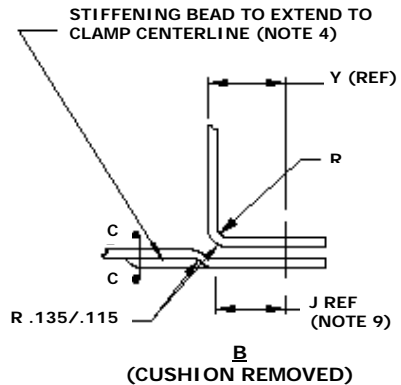
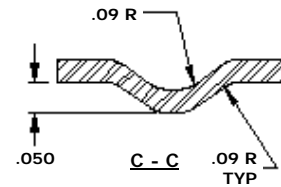
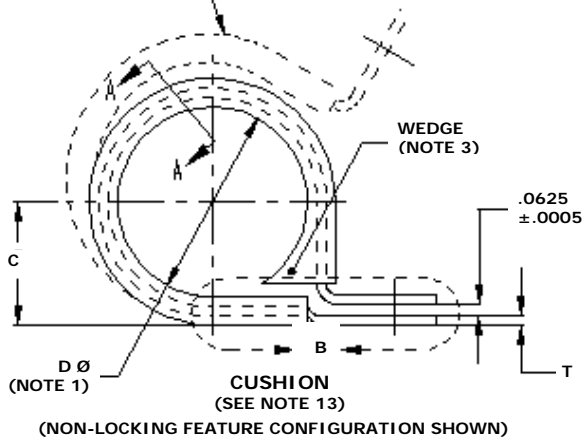
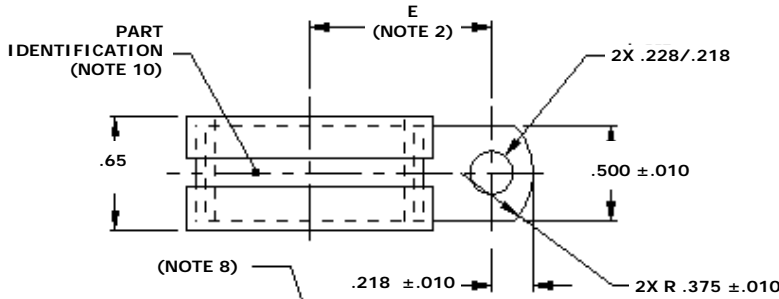
AS5587

CLAMP, LOOP, PLAIN, SUPPORT, AIRCRAFT

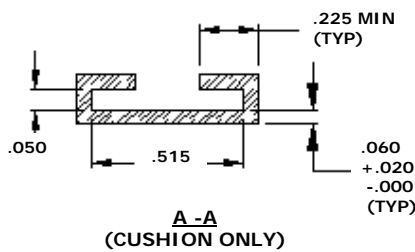
PART NUMBER

RATIONALE

THE LOOP CLAMPS DEFINED HEREIN ARE DESIGNED FOR NEW APPLICATIONS AND TO BE A DROP IN REPLACEMENT OPTION FOR THE EQUIVALENT SIZE (DASH NUMBER) M85052/1 LOOP CLAMPS. THE FLUOROSILICONE CUSHION MATERIAL DEFINED HEREIN PROVIDES A MORE ROBUST ABILITY TO RESIST CRACKS IN THE CUSHION MATERIAL CAUSED BY THE EFFECTS OF OZONE/UV COMPARED TO THE PERFORMANCE OF M85052/1



LOCKING FEATURE FOR CODE "L" ONLY. (SEE NOTE 18)



A-A (CUSHION ONLY)

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03/10/09

AS5874

CLAMP, LOOP TYPE, CUSHIONED SUPPORT

PART NUMBER

TABLE 1

BASIC NO. AS5874 SIZE CODE	C	OD (NOTE 1)	E ±.032 (NOTE 2)	J	R RADIUS ±.010	T TOLERANCE PER AMS 2242	Y
ASXXXXF2()	0.192	0.125	0.468	-	0.090	0.020	0.325
ASXXXXF3()	0.224	0.188	0.499	-			
ASXXXXF4()	0.255	0.250	0.530	0.235			
ASXXXXF5()	0.286	0.312	0.561				
ASXXXXF6()	0.318	0.375	0.592				
ASXXXXF7()	0.349	0.438	0.624				
ASXXXXF8()	0.380	0.500	0.655				
ASXXXXF9()	0.423	0.563	0.741	0.256	0.125	0.032	
ASXXXXF10()	0.454	0.625	0.772				
ASXXXXF11()	0.486	0.688	0.804				
ASXXXXF12()	0.517	0.750	0.835				
ASXXXXF13()	0.548	0.813	0.866				
ASXXXXF14()	0.580	0.875	0.898				
ASXXXXF15()	0.611	0.938	0.929	0.262	0.040	0.370	
ASXXXXF16()	0.642	1.000	0.960				
ASXXXXF17()	0.681	1.063	1.001				
ASXXXXF18()	0.712	1.125	1.032				
ASXXXXF19()	0.744	1.188	1.064				
ASXXXXF20()	0.775	1.250	1.095				
ASXXXXF21()	0.806	1.313	1.126				
ASXXXXF22()	0.838	1.375	1.158				
ASXXXXF23()	0.869	1.438	1.189				
ASXXXXF24()	0.900	1.500	1.220				
ASXXXXF32()	1.150	2.000	1.470				

MATERIAL

BAND:

PH = 17-7 PH. CORROSION RESISTANT STEEL PER MIL-S-25043 OR AMS 5528. STRESS RELIEVE AND HEAT TREAT TO TH1100 CONDITION PER MIL-H-6875, AFTER FORMING.

CUSHION (NOTE 13)

MOLDED, FABRIC REINFORCED, (NOTE 15), FLUROSILICONE RUBBER PER AMS-R-25988, TYPE II, CLASS 1, GRADE 60, COLOR: ROYAL BLUE.

FINISH

BAND: CRES, TYPE 17-7; PASSIVATE PER AMS-QQ-P-35 TYPE II.
CUSHION: NONE

CUSHION MATERIAL CODE: F = FLUROSILICONE

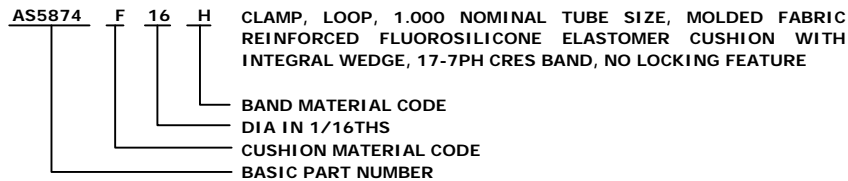
BAND MATERIAL AND LOCKING FEATURE CODE:

H = TYPE 17-17 PH CRES WITHOUT LOCKING FEATURE
L = TYPE 17-17 PH CRES WITH LOCKING FEATURE (NOTE 18)

PROCUREMENT:

THE LOOP CLAMPS DEFINED HEREIN SHALL MEET THE REQUIREMENTS DEFINED IN NOTES 12 AND 17.

EXAMPLE OF APPROVED NUMBER CALLOUT:



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AS5874

CLAMP, LOOP TYPE, CUSHIONED SUPPORT

PART NUMBER

TABLE 2 - PHYSICAL PROPERTIES

UNLESS OTHERWISE SPECIFIED, RESULTS ARE AN AVERAGE OF 5 SPECIMENS.
TOLERANCE ON TEMPERATURE IS ±5°F.

FLUID COMPATABILITY TEST	TEST METHOD	ALLOWABLE CHANGE FROM ACTUAL ORIGINAL PROPERTIES AFTER:			
		REQUIRED ORIGINAL	FUEL IMMERSION MIL-DTL-5624 JP-4 168 HOURS AT 100°F (SEE NOTE 11) 65 TO 75	HYDRAULIC IMMERSION MIL-H-5606 70 HOURS AT 156°F (SEE NOTE 11) 60 TO 75	DIP TEST (1)
HARDNESS, DUROMETER "A"	ASTM D 2240	55 TO 65 (4)			65 TO 80
TENSILE STRENGTH-PSI	ASTM D 412 (2)	720 MIN	640 MIN	610 MIN	680 MIN
ELONGATION -%	ASTM D 412 (2)	155 MIN	155 MIN	170 MIN	120 MIN
TEAR STRENGTH-PP1	ASTM D 624, DIE B	240 MIN	250 MIN	235 MIN	230 MIN
SPECIFIC GRAVITY	ASTM D 471	AS MEASURED (3)	-	-	-
VOLUME CHANGE-%	ASTM D 471				
1. AFTER CONDITIONING		-	+15% MAX	+10% MAX	±5% MAX
2. AFTER 24 HOURS AIR DRY		-	+5% MAX	+5% MAX	+5% MAX

- (1) DIP TEST: SAMPLES SHALL BE DIPPED IN P-D-680 SOLVENT AND ALLOWED TO DRY AT ROOM TEMPERATURE FOR 24 HOURS. THIS PROCEDURE SHALL BE REPEATED 10 TIMES.
- (2) TESTS SHALL BE IN CONDUCTED ACCORDANCE WITH ASTM D412 ON THE FABRIC REINFORCED CUSHION TEST SPECIMEN (1/2 INCH, WIDE STRIPS CUT FROM ACTUAL CUSHIONS FROM FABRIC WEAVE AT 45 INCHES TO THE DIRECTION OF PULL). THE TENSILE STRENGTH AND PERCENT ELONGATION SHALL BE MEASURED WHEN THE FABRIC REINFORCING MATERIAL BEGINS TO SEPARATE FROM THE ELASTOMER. TENSILE STRENGTH WILL BE BASED ON OVERALL THICKNESS OF RUBBER AND FABRIC REINFORCING MATERIAL. SPECIMEN FAILURES DUE TO FABRIC SEPARATION AT THE TEST FIXTURE JAWS SHALL BE DISREGARDED AND ANOTHER SAMPLE TESTED.
- (3) THE PERMISSIBLE VARIATION IN SPECIFIC GRAVITY DURING ACTUAL PRODUCTION FOR THAT VALUE ESTABLISHED IN FIRST ARTICLE TESTS SHALL BE ±. 03.
- (4) TABULATED HARDNESS RANGE APPLICABLE TO THE AS RECEIVED, NON-SUPPORTED CONDITION. THE REQUIRED HARDNESS, RANGE FOR THE AS MOLDED CONDITION IS 65 TO 80.

NOTES: UNLESS OTHER WISE SPECIFIED

1. DIAMETER "D" IS THE NOMINAL DIAMETER FOR WHICH A CLAMP SIZE IS INTENDED FOR USE. DIAMETER "D" SHALL BE VERIFIED BY THE "DIAMETRAL RETENTION" TEST PER MIL-C-85052.
2. DIMENSION "E" SHALL BE MEASURE WITH THE CLAMP INSTALLED ON A MANDREL OF "D" DIAMETER ±.001 AND A .0625 ±.005 SPACER BETWEEN THE UPPER AND LOWER FEET.
3. WEDGE SHALL BE REQUIRED ON -6 AND LARGER CLAMP CUSHIONS. THE WEDGE SHALL BE MOLDED AS AN INTEGRAL PART OF THE CUSHION AND CONTOURED TO FIT "D" DIAMETER. WEDGE SHALL TOUCH LOWER/BASE PORTION OF CUSHION WHEN CLAMP IS INSTALLED ON A MANDREL DEFINED IN PROCUREMENT SPECIFICATION AND WHEN THERE IS NO GAP BETWEEN BOTH FEET.
4. STIFFENING BEAD SHALL BE REQUIRED ON SIZE -4 AND LARGER CLAMPS. SIZE -2 AND -3 CLAMPS USE A PLAIN JOGGLE ONLY. ALL RADII ON THE STIFFENING BEAD SHALL BE SMOOTH AND BLENDED.
5. SEE SAE AS5874 DRAWING.
6. METAL BAND SHALL HAVE ALL BURRS, SHARP EDGES, AND SCALE REMOVED.
7. DIMENSIONAL TOLERANCES AND SYMBOLS PER ANSI Y14.5M-1982.
8. FIGURE IN PHANTOM SHOWS THE APPROXIMATE FREE STATE, I.E. THE "AS RECEIVED" POSITION/CONDITION OF THE CLAMP.
9. REFERENCE DIMENSIONS "J" AND "Y" APPLY TO FEATURES INTENDED TO PROVIDE MAXIMUM SUPPORT FOR THE LOWER FOOT BY CLOSELY FITTING THE UPPER FOOT BEND RADIUS TO THE STIFFENING BEAD RADIUS WHEN CLOSED AGAINST EACH OTHER.
10. EXCEPT FOR CLAMP BAND SIZES -2, -3 AND -4 SHALL BE THE COMPLETE VENDOR'S DESIGNATION AND MANUFACTURER'S NAME ("UMP" IS ACCEPTABLE OPTION FOR UMPCO) OR TRADEMARK OR CAGE CODE. IDENTIFICATION SHALL BE IMPRESSION STAMPED ON THE BAND IN AN AREA NOT COVERED BY THE CUSHION. ALL IDENTIFICATION SHALL BE LOCATED ABOVE THE TUBE/PAYLOAD THEORETICAL CENTERLINE.
11. PROPERTY MEASUREMENTS SHALL BE PERFORMED IMMEDIATELY AFTER REMOVAL FROM THE IMMERSION BATH.
12. IN ADDITION TO ADHERING TO THE APPLICABLE MATERIAL SPECIFICATIONS DEFINED HEREIN FOR THE CLAMP CUSHIONS AND CLAMP BANDS, THE CLAMP ASSEMBLIES (BAND AND INSTALLED CUSHION) ARE QUALIFIED BY PERFORMANCE AND SHALL HAVE SUCCESSFULLY COMPLETED THE PERFORMANCE TESTING REQUIREMENTS LISTED BELOW. THE MOLDED CUSHION MATERIAL SHALL SUCCESSFULLY COMPLETE THE FLUID COMPATIBILITY TESTING DEFINED WITHIN TABLE 2, PHYSICAL PROPERTIES.

DIAMETRAL RETENTION PER MIL-C-85052.

COMPRESSION SET PER MIL-C-85052, AIR AGE AT 212°F, NOT TO EXCEED FOR AVERAGE OF 3 SPECIMENS.

VIBRATION AND TRANSMISSIBILITY PER MIL-C-85052.

HORIZONTAL BURN TEST PER FAR 25.853 (b-3)

SPECIMEN/SLAB: APPROXIMATELY 3.00 (W) X 5.00 (L)

MAXIMUM BURN RATE: 2.5 INCHES PER MINUTE.

RETENTION OF QUALIFICATION REQUIRES THAT EACH APPROVED VENDOR IN CONJUNCTION WITH THE CUSHION MOLDER PERFORM THE ABOVE DEFINED VIBRATION TESTING AND THE FLUID COMPATIBILITY TESTING DEFINED IN TABLE 2 NO LESS THAN ONCE EVERY (6) YEARS FROM THE COMPLETION DATE OF THE INITIAL TESTING.

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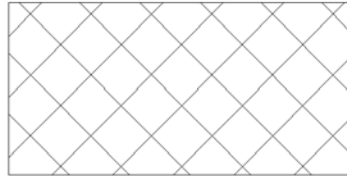
AS5874

CLAMP, LOOP TYPE, CUSHIONED SUPPORT

PART NUMBER

NOTES(CONTINUED)

- 13. CUSHION GEOMETRY SHALL BE EQUIVALENT TO THAT DEFINED BY MIL-C-85052/3. THE FABRIC REINFORCING MATERIAL SHALL BE MOLDED WITH THE CUSHION SUCH THAT IT IS ON THE BAND SIDE OF THE CLAMP CUSHION. THE LAY OF THE FABRIC WEAVE SHALL BE ORIENTED AT A 45° ANGLE AS SHOWN BELOW.



- 14. WHEN MIL-C-85052/4 CLAMP SUPPORTS ARE USED, MAXIMUM TUBE OVERHANG SHALL BE ½ TUBE OD. NOTE: THE SUPPORT CAN BE DETRIMENTAL IF THE CLAMP IS NOT FULLY SUPPORTED.
- 15. THE FABRIC SUPPORT MATERIAL SHALL BE EQUIVALENT TO THAT USED IN THE FABRICATION OF QUALIFIED M85052/3 CLAMP CUSHIONS.
- 16. ALL ASPECTS OF PRODUCTION CLAMP ASSEMBLY FABRICATION SHALL BE IN STRICT ACCORDANCE WITH THE MATERIALS, PROCESSES, AND SOURCES USED TO MANUFACTURE THE QUALIFIED CLAMP ASSEMBLIES.

CUSHIONS SHALL BE MOLDED FROM A COMBINATION OF: RAW MATERIAL SUPPLIER, FABRIC MANUFACTURER, WASH-COAT PROVIDER, AND CALENDARING OPERATION PROVIDER WHICH WAS USED TO PRODUCE CUSHIONS THAT, AS AN ASSEMBLY, SUCCESSFULLY COMPLETED THE PERFORMANCE TESTING AND PHYSICAL PROPERTIES REQUIREMENTS DEFINED HEREIN.

- 17. EACH LOT OF FLUOROSILICONE CUSHION RAW MATERIAL SHALL BE CERTIFIED TO THE HARDNESS, TENSILE STRENGTH, ELONGATION, TEAR STRENGTH, AND SPECIFIC GRAVITY REQUIREMENTS DEFINED IN TABLE 2.
- 18. LOCKING FEATURE SHALL BE ACCOMPLISHED BY A TONGUE-IN-BRIDGE METHOD LOCATED AT THE END OF THE FEET.

DESIGN INFORMATION

- 1. THE LOOP CLAMPS DEFINED HEREIN ARE DESIGNED FOR NEW APPLICATION AND TO BE A DROP-IN REPLACEMENT OPTION FOR THE EQUIVALENT SIZE (DASH NUMBER) M85052/1 LOOP CLAMPS. THE FLUOROSILICONE CUSHION MATERIAL DEFINED HEREIN PROVIDES A MORE ROBUST ABILITY TO RESIST CRACKS IN THE CUSHION MATERIAL CAUSED BY THE EFFECTS OF THE OZONE/UV AS COMPARED TO THE PERFORMANCE OF M85052/1. THE LOOP CLAMPS HEREIN ARE INTENDED TO BE USED WITHIN THE FOLLOWING SYSTEMS:

ALL AROMATIC FUEL SYSTEM APPLICATIONS REQUIRING A HIGH DEGREE OF CUSHION EXPOSURE TO SYSTEM FLUID. ALL FLUID AND ELECTRICAL SYSTEMS ON AIRCRAFT AND AEROSPACE VEHICLES USING PETROLEUM BASED HYDRAULIC SYSTEMS

NOTE: THE FLUOROSILICONE MATERIAL CUSHIONS USED ON THESE CLAMPS ARE NOT RESISTANT TO PHOSPHATE ESTER BASED FLUIDS (E.G., SKYDROL).

- 2. IT IS RECOMMENDED THAT THE LOOP CLAMPS DEFINED HEREIN BE INSTALLED IN ACCORDANCE WITH THE RECOMMENDED MOUNTING METHODS AND CORRESPONDING VIBRATION RATINGS PER ARP1897.
- 3. OPERATING TEMPERATURE RANGE: -65° TO +275°F.

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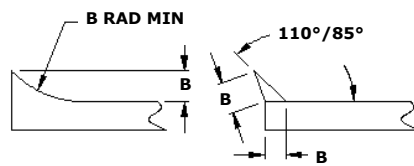
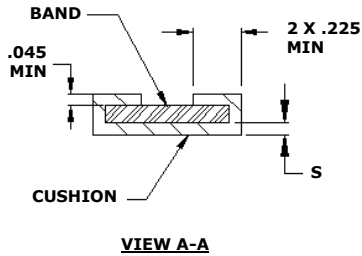
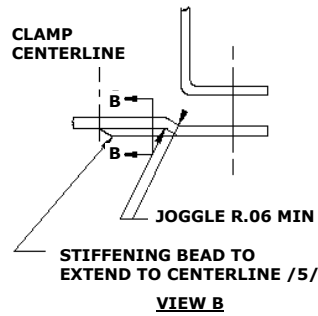
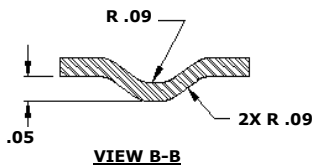
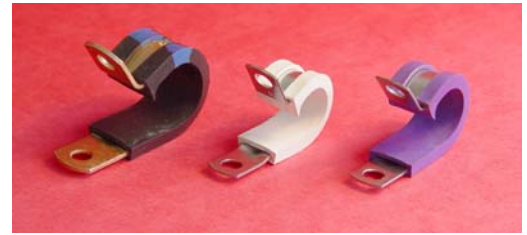
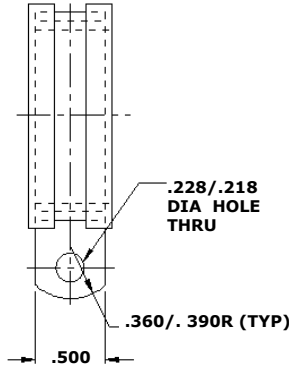
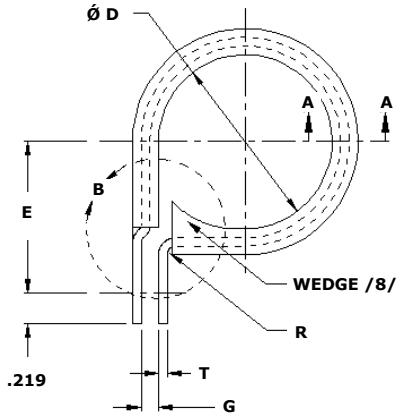
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CLAMP, LOOP TYPE, CUSHIONED SUPPORT

PART NUMBER



ENLARGED ACCEPTABLE WEDGE CONFIGURATION

TABLE 2 - DIMENSIONS

DASH NO RANGE /16/	B MIN	B MAX	G MIN	G MAX	R ±.016	S +.020 -.000
01	/8/	/8/	0.062	0.078	0.062	0.040
02 - 03	0.046	0.110				
04 - 08	0.093	0.125				
09 - 10	0.155	0.312	0.094	0.125	0.109	0.060
11 - 17						
18 - 30						
31 - 48	/8/	/8/	0.125	0.156	0.125	
50 - 66						

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CLAMP, LOOP CUSHIONED

PART NUMBER

TABLE 1 - SIZE CODE AND DIMENSIONS

SIZE CODE /16/	TUBE DIA OD (REF)	D ±.015	ALUM ALLOY E ±.015	ALUM ALLOY T	CRES E ±.015	CRES T
01	0.063	0.063	0.436	0.020	0.436	0.020
02	0.125	0.125	0.457	0.032	0.457	0.032
03	0.188	0.188	0.498	0.032	0.498	0.032
04	0.250	0.250	0.529	0.032	0.529	0.032
05	0.313	0.313	0.560	0.032	0.560	0.032
06	0.375	0.375	0.592	0.032	0.592	0.032
07	0.438	0.438	0.623	0.032	0.623	0.032
08	0.500	0.500	0.654	0.032	0.654	0.032
09	0.563	0.563	0.752	0.050	0.749	0.032
10	0.625	0.625	0.783	0.050	0.780	0.032
11	0.688	0.688	0.814	0.050	0.811	0.032
12	0.750	0.750	0.845	0.050	0.842	0.032
13	0.813	0.813	0.877	0.050	0.858	0.032
14	0.875	0.875	0.908	0.050	0.889	0.032
15	0.938	0.938	0.939	0.050	0.920	0.032
16	1.000	1.000	0.970	0.050	0.951	0.032
17	1.063	1.063	1.002	0.050	0.983	0.032
18	1.125	1.125	1.062	0.062	1.030	0.032
19	1.188	1.188	1.093	0.062	1.061	0.032
20	1.250	1.250	1.124	0.062	1.092	0.032
21	1.313	1.313	1.156	0.062	1.124	0.032
22	1.375	1.375	1.187	0.062	1.155	0.032
23	1.438	1.438	1.218	0.062	1.186	0.032
24	1.500	1.500	1.249	0.062	1.217	0.032
25	1.563	1.563	1.281	0.062	1.259	0.032
26	1.625	1.625	1.312	0.062	1.280	0.032
27	1.688	1.688	1.344	0.062	1.312	0.032
28	1.750	1.750	1.374	0.062	1.342	0.032
29	1.813	1.813	1.406	0.062	1.374	0.032
30	1.875	1.875	1.437	0.062	1.405	0.032
31	1.938	1.938	1.468	0.062	1.444	0.040
32	2.000	2.000	1.499	0.062	1.475	0.040
33	2.063	2.063	1.531	0.062	1.507	0.040
34	2.125	2.125	1.562	0.062	1.538	0.040
35	2.188	2.188	1.594	0.062	1.570	0.040
36	2.250	2.250	1.624	0.062	1.600	0.040
37	2.313	2.313	1.655	0.062	1.631	0.040
38	2.375	2.375	1.687	0.062	1.663	0.040
40	2.500	2.500	1.752	0.062	1.728	0.040
42	2.625	2.625	1.812	0.062	1.788	0.040
43	2.688	2.688	1.844	0.062	1.820	0.040
44	2.750	2.750	1.875	0.062	1.851	0.040
45	2.813	2.813	1.906	0.062	1.882	0.040
46	2.875	2.875	1.937	0.062	1.913	0.040
48	3.000	3.000	2.000	0.062	1.976	0.040
50	3.125	3.125	2.062	0.062	2.038	0.040
52	3.250	3.250	2.125	0.062	2.101	0.040
54	3.375	3.375	2.187	0.062	2.163	0.040
56	3.500	3.500	2.250	0.062	2.226	0.040
58	3.625	3.625	2.312	0.062	2.288	0.040
64	4.000	4.000	2.500	0.062	2.476	0.040
66	4.125	4.125	2.562	0.062	2.538	0.040

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CLAMP, LOOP CUSHIONED

PART NUMBER

NOTES:

1. MATERIAL:

BAND:

- a. CODE LETTER C - TYPE 321 CORROSION RESISTANT STEEL PER AMS 5510
- b. CODE LETTER D - 2024-0 ALUMINUM ALLOY PER AMS-QQ-A-250/5

CUSHION:

- a. CODE LETTER E - ETHYLENE PROPYLENE PER MIL-C-85052/2
- b. CODE LETTER F - NITRILE PER MIL-C-85052/1
- c. CODE LETTER G - CHLOROPRENE PER AMS 3209 AND OZONE RESISTANCE REQUIREMENTS PER NOTE 11
- d. CODE LETTER H - SILICONE PER AMS 3310
- e. CODE LETTER J - FLUROSILICONE PER MIL-R-25988, TYPE II, CLASS 1, GRADE 60

2. HEAT TREATMENT:

- a. CODE LETTER D - HEAT TREAT TO T42 TEMPER IN ACCORDANCE WITH AMS-H-6088

3. FINISH:

- a. CODE LETTER C - PASSIVATE PER AMS-QQ-P-35
- b. CODE LETTER D - CHEMICAL CONVERSION COATING PER MIL-C-5541, CLASS 1A

/4/ MATERIAL COMBINATION CODES: LETTERS INDICATE BAND AND CUSHION MATERIAL CODES. DO NOT SPECIFY BAND/CUSHION COMBINATIONS NOT LISTED. MAXIMUM RECOMMENDED TEMPERATURE IS INDICATED IN PARENTHESIS.

- a. DE = ALUMINUM ALLOY BAND WITH ETHYLENE PROPYLENE CUSHION (212 °F)
- b. DF = ALUMINUM ALLOY BAND WITH NITRILE CUSHION (275 °F)
- c. DG = ALUMINUM ALLOY BAND WITH CHLOROPRENE CUSHION (212 °F)
- d. CE = CRES BAND WITH ETHYLENE PROPYLENE CUSHION (275 °F)
- e. CF = CRES BAND WITH NITRILE CUSHION (275 °F)
- f. CG = CRES BAND WITH CHLOROPRENE CUSHION (212 °F)
- g. CH = CRES BAND WITH SILICONE CUSHION (400 °F)
- h. CJ = CRES BAND WITH FLUROSILICONE CUSHION (392 °F)

/5/ STIFFENING BEAD SHALL BE REQUIRED ON SIZE -06 THRU -24. ALL RADII ON THE STIFFENING BEAD SHALL BE SMOOTH AND BLEND. NO SHARP TOOL MARKS ARE ALLOWED.

6. IDENTIFICATION: MARK PART NUMBER AND MANUFACTURER'S NAME, TRADEMARK OR CAGE CODE PER AS478-2A1. DO NOT MARK IN RADIUS.

7. CUSHION APPLICATION AND COLOR INFORMATION:

- a. CODE LETTER E - FOR USE IN AREAS EXPOSED TO PHOSPHATE ESTER HYDRAULIC FLUID. EXCELLENT OZONE RESISTANCE. NOT RESISTANT TO PETROLEUM BASED FLUIDS. COLOR SHALL BE PURPLE.
- b. CODE LETTER F - FOR USE PRIMARILY IN FUEL IMMERSION AND FUEL VAPORS. GOOD OZONE RESISTANCE. NOT RESISTANT TO PHOSPHATE ESTER BASED FLUIDS. NOT FOR USE ON TITANIUM TUBING. COLOR SHALL BE SOLID YELLOW.
- c. CODE LETTER G - FOR GENERAL PURPOSE USE IN AREAS EXPOSED TO PETROLEUM BASED HYDRAULIC FLUIDS AND OCCASIONAL FUEL SPLASH. EXCELLENT OZONE RESISTANCE. NOT RESISTANT TO PHOSPHATE ESTER BASED FLUIDS. NOT FOR USE ON TITANIUM TUBING. COLOR SHALL BE BLACK WITH A BLUE IDENTIFIER. SEE NOTE 10.
- d. CODE LETTER H - FOR ELEVATED TEMPERATURE USAGE IN AREAS EXPOSED TO PHOSPHATE ESTER BASED FLUID AND OTHER SYNTHETIC FLUIDS. UNAFFECTED BY OZONE. NOT RESISTANT TO PETROLEUM BASED FLUIDS. COLOR SHALL BE NATURAL WHITE.
- e. CODE LETTER J - FOR ELEVATED TEMPERATURE USAGE IN AREAS EXPOSED TO PETROLEUM BASED FLUIDS. UNAFFECTED BY OZONE. NOT RESISTANT TO PHOSPHATE ESTER BASED FLUIDS. COLOR SHALL BE SOLID BLUE.

/8/ CODE LETTER "W" INDICATES WEDGE TYPE CUSHION. WEDGE IS MANDATORY FOR -02 THRU -48 SIZE CLAMPS. WEDGE IS PROHIBITED ON -01 AND -50 THRU -66 SIZE CLAMPS. WEDGE SHALL BE INTERGRALLY MOLDED TO CUSHION OR VULCANIZED USING PRESSURE AND HEAT TO ACCOMPLISH A BOND BETWEEN CUSHION AND WEDGE. WEDGE SHALL OVERLAP AND TOUCH OPPOSITE END OF CUSHION WHEN CLAMP MOUNTING HOLES ARE ALIGNED AND DIMENSION G IS 0.00 (CLAMP COMPLETELY CLOSED).

9. CLOSURE TEST: THE CLAMP SHALL BE INSTALLED ON A BAR HAVING A DIAMETER EQUAL TO THE NOMINAL D DIMENSION WITHIN ± .001. DIMENSION G (GAP) SHALL BE RESTRAINED WITHIN THE SPECIFIED TOLERANCE LIMITS AND THE HOLES SHALL BE IN ALIGNMENT WITHIN .010. THE BAND WIDTH STRAIGHTNESS (PARALLEL TO THE BAR AXIS) SHALL BE WITHIN .010 EXCEPT IN THE AREA OF THE STIFFENING BEAD.

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CLAMP, LOOP CUSHIONED

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/10/ EXTRUDED MATERIAL SHALL BE IDENTIFIED BY A BLUE STRIPE EXTENDING LENGTHWISE ALONG BOTH EDGES OF THE CUSHION. THE STRIPE WIDTH SHALL BE EQUAL TO THE WIDTH OF THE CUSHION EDGE. MOLDED MATERIAL SHALL BE IDENTIFIED BY A BLUE AREA AT THE WEDGE END. THE BLUE AREA SHALL BE ON ONE OR BOTH EDGES OF THE CUSHION AND MAY INCLUDE THE WEDGE AND SHALL HAVE A MINIMUM LENGTH OF .125 IN TO A MAXIMUM OF .750 IN. THE BLUE AREA SHALL BE LOCATED WITHIN AN AREA NOT TO EXCEED 1.50 IN OR 50% OF THE TOTAL CUSHION LENGTH, WHICHEVER IS SMALLER, WHEN MEASURED FROM THE WEDGE END. IN NO CASE SHALL THE BLUE AREA EXTEND BEYOND 50% OF THE CUSHION LENGTH. THE MATERIAL USED FOR THE BLUE IDENTIFIER SHALL BE THE SAME AS THE CUSHION MATERIAL EXCEPT COLOR BLUE. INKING OR OTHER SURFACE COLORING METHODS SHALL NOT BE USED.

/11/ CHLOROPRENE RUBBER MATERIAL SHALL BE SUBJECTED TO THE OZONE RESISTANCE AS FOLLOWS:

- a. THE TEST SPECIMEN SHALL BE CUT FROM AN ACTUAL CLAMP CUSHION. IF THE PARTICULAR CLAMP CUSHION IS NOT SUFFICIENTLY LONG TO OBTAIN THE SPECIMEN, A LONGER SECTION MAY BE USED AS LONG AS IT IS VERIFIED THAT THE LONGER SECTION COMES FROM THE SAME LOT AND CURE AS THE SHORT CUSHION SECTION.
- b. THE TEST SPECIMEN SHALL BE CONDITIONED BY EXPOSURE TO DRY AIR AT A TEMPERATURE OF 212 °F ± 5 °F FOR A PERIOD OF 70 h.
- c. THE TEST SPECIMEN SHALL BE CUT PARALLEL TO THE LONGITUDINAL DIRECTION OF THE CLAMP CUSHION. THE SPECIMEN SHALL BE A DUMBBELL SHAPE AND SHALL HAVE A REDUCED SECTION WIDTH OF .075 IN ± .010 IN AND A REDUCED SECTION LENGTH OF 1.0, 1.5, OR 2.0 IN.
- d. THE INITIAL THICKNESS OF THE SPECIMENS SHALL BE MEASURED AND RECORDED. MOUNT THE SPECIMENS IN A SUITABLE FIXTURE AND LONGITUDINALLY STRAIN TO 70% ± 3%. THE FIXTURE HOLDING THE STRAINED TEST SPECIMENS SHALL BE PLACED IN A TEST CHAMBER HAVING AN OZONE CONCENTRATION OF 600 ± 30 PARTS PER HUNDRED MILLION AND A TEMPERATURE OF 125 °F ± 5 °F. THE OZONE GENERATION AND MEASUREMENT TECHNIQUE SHALL BE IN ACCORDANCE WITH ASTM D 1149. THE DURATION OF THE TEST FOR VARIOUS THICKNESS SHALL BE AS FOLLOWS:

TABLE 3

UNSTRAINED SPECIMEN THICKNESS	EXPOSURE TIME
.041 IN TO .050 IN	2 H 50 MIN
.051 IN TO .060 IN	3 H 30 MIN
.061 IN TO .070 IN	4 H 10 MIN
.071 IN TO .080 IN	4 H 50 MIN

NOTES (Continued):

- e. CRITERIA FOR CONFORMANCE TO THE CHLOROPRENE OZONE RESISTANCE TEST IS THE ABILITY OF THE STRAINED SPECIMEN TO MEET THE REQUIREMENTS OF THE TEST WITHOUT COMPLETE BREAKAGE. SURFACE DETEIORATION OR SEVERE CRACK PROPAGATION WITHOUT COMPLETE BREAKAGE SHALL NOT BE CAUSE FOR FAILURE.

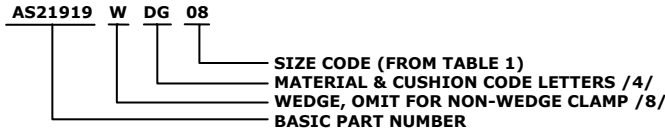
12. REMOVE BURRS AND SHARP EDGES.

13. DIMENSIONING AND TOLERANCING: ASME Y14.5M-1994.

14. DIMENSIONS IN INCHES. UNLESS OTHERWISE SPECIFIED, TOLERANCES: .XX ± .010, .XX ± .03.

15. INTENDED USE: THESE CLAMPS ARE INTENDED FOR GENERAL PURPOSE CLAMPING APPLICATIONS INCLUDING ELECTRICAL WIRE BUNDLE CLAMPING. FOR HIGH PERFORMANCE LOOP STYLE CLAMPS FOR USE IN MIL-H-5540 HYDRAULIC SYSTEMS SEE MIL-C-85052.

/16/ EXAMPLE OF PART NUMBER:



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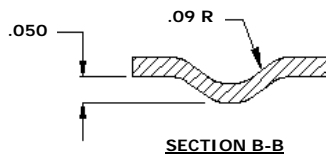
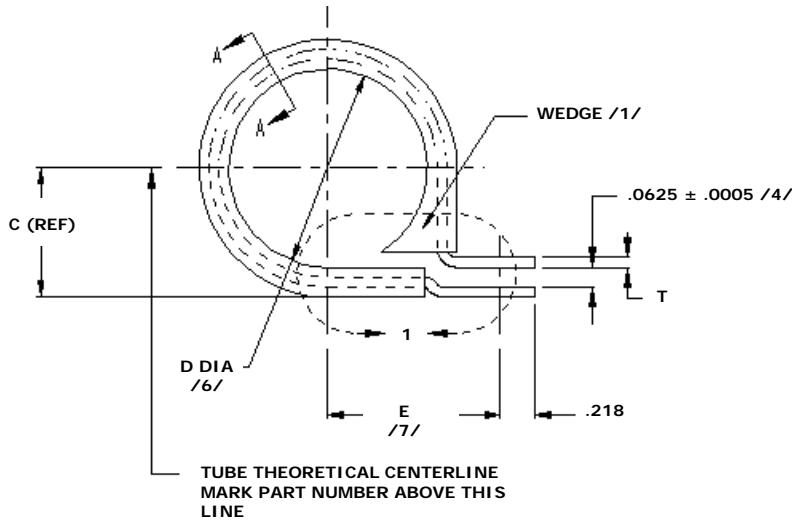
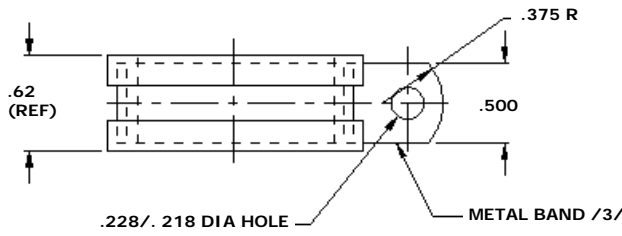
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AS21919

CLAMP, LOOP CUSHIONED

PART NUMBER

CLAMP, LOOP, TUBE-17-7 PH CRES, 275 °F, FUEL AND PETROLEUM BASED HYDRAULIC FLUID RESISTANT



STIFFENING BEAD TO EXTEND TO CLAMP CENTERLINE (REF) /2/

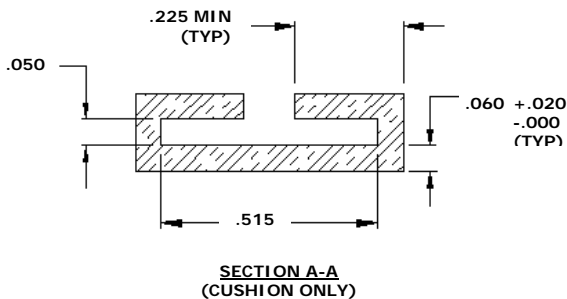
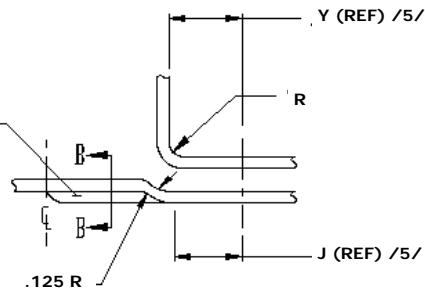


FIGURE 1
CLAMP DESIGN AND CONSTRUCTION

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CLAMP, LOOP, CUSHIONED

PART NUMBER

NOTES:

- /1/ WEDGE SHALL BE REQUIRED ON SIZE -6 AND LARGER. THE WEDGE SHALL BE MOLDED AS AN INTEGRAL PART OF THE CUSHION AND CONTOURED TO FIT D DIAMETER.
- /2/ STIFFENING BEAD SHALL BE REQUIRED ON SIZE -4 AND LARGER. ALL RADII ON THE STIFFENING BEAD SHALL BE SMOOTH AND BLENDED. NO SHARP TOOL MARKS ARE ALLOWED.
- /3/ METAL BAND SHALL HAVE ALL BURRS, SHARP EDGES, AND SCALE REMOVED.
- /4/ WEDGE SHALL TOUCH CUSHION ON LOWER FOOT WITH CLAMP INSTALLED ON MANDREL WITHOUT SPACER.
- /5/ REFERENCE DIMENSIONS Y AND J ARE PROVIDED TO GAIN MAXIMUM SUPPORT FOR THE LOWER FOOT BY CLOSELY FITTING THE UPPER FOOT BEND RADIUS TO THE STIFFENING BEAD BLEND RADIUS WHEN CLOSED AGAINST EACH OTHER.
- /6/ DIAMETER D IS THE NOMINAL DIAMETER FOR WHICH A CLAMP SIZE IS INTENDED FOR USE. DIAMETER D SHALL BE VERIFIED BY THE DIAMETRAL RETENTION TEST SPECIFIED IN THE GENERAL SPECIFICATION (SEE MIL-DTL-85052 4.4.4.1).
- /7/ DIMENSION E SHALL BE MEASURED WITH THE CLAMP INSTALLED ON A MANDREL OF D DIAMETER + .001, AND .0625 + .0005 SPACER BETWEEN THE UPPER AND LOWER FOOT AS SHOWN.
- 8 UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES, TOLERANCES + .03 FOR TWO DECIMALS AND + .010 FOR THREE DECIMALS.

Table I. Clamp dimensions. /8/

Dash No.	C (Ref)	D Dia /6/	E ±.032 /7/	J (Ref) /5/	R ±.010	T	Y (Ref) /5/
2	0.192	0.125	0.468	0.235	0.090	.020 ± .002	0.325
3	0.224	0.188	0.499				
4	0.255	0.250	0.530				
5	0.286	0.312	0.561				
6	0.318	0.375	0.592				
7	0.349	0.438	0.624				
8	0.380	0.500	0.655				
9	0.423	0.562	0.741				
10	0.454	0.625	0.772	0.256	0.125	.032 ± .002	0.368
11	0.486	0.688	0.804				
12	0.517	0.750	0.835				
13	0.548	0.812	0.866				
14	0.580	0.875	0.898				
15	0.611	0.938	0.929				
16	0.642	1.000	0.960				
17	0.681	1.062	1.001				
18	0.712	1.125	1.032	0.262	0.125	.040 ± .003	0.370
19	0.744	1.188	1.064				
20	0.775	1.250	1.095				
21	0.806	1.312	1.126				
22	0.838	1.375	1.158				
23	0.869	1.438	1.189				
24	0.900	1.500	1.220				

REQUIREMENTS:

MARKING

BAND. THE COMPLETE STANDARD PART NUMBER AND MANUFACTURE'S NAME, TRADEMARK, OR CONTRACTOR AND GOVERNMENT ENTITY (CAGE) CODE SHALL BE IMPRESSION STAMPED ON THE BAND IN AN AREA NOT COVERED BY THE CUSHION. ALL MARKING SHALL BE ABOVE TUBE THEORETICAL CENTERLINE. CLAMP BANDS OF - 2, -3, - 4 SIZES MAY BE MARKED WITH THE MANUFACTURER'S IDENTIFICATION, THE SIZE, AND THE SPECIFICATION SHEET NUMBER ACCORDING TO SPACE LIMITATIONS.

CUSHION. NONE

MATERIALS

METAL BAND. 17-7PH CORROSION RESISTANT STEEL IN ACCORDANCE WITH SAE-AMS5528 OR SAE-AMS5529, ANNEALED, STRESS RELIEVED, AND HEAT-TREATED TO TH1100 CONDITION IN ACCORDANCE WITH SAE-AMS-H-6875 AFTER FORMING.

REQUIREMENTS (CONTINUED)

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M85052/1

CLAMP, LOOP, CUSHIONED

PART NUMBER

CUSHION. NITRILE BUTADIENE RUBBER, 65-75 DUROMETER, COLOR YELLOW PER MIL-DTL-85052/1.

FINISH

METAL BAND. PASSIVATE IN ACCORDANCE WITH SAE-AMS-QQ-P-35, TYPE II

CUSHION. NONE

CUSHION REQUIREMENTS:

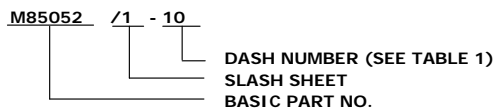
- PHYSICAL PROPERTIES.** PHYSICAL PROPERTIES SHALL BE AS SPECIFIED IN TABLE II. UNLESS OTHERWISE SPECIFIED, RESULTS ARE AN AVERAGE OF 5 SPECIMENS AND TOLERANCE ON TEMPERATURE + 5 °F.
- OZONE RESISTANCE.** REQUIRED PER MIL-DTL-85052.
- COMPRESSION SET.** SEE MIL-DTL-85052.
 - AIR AGE AT 212 °F.
 - NOT TO EXCEED 55 PERCENT AVERAGE OF 3 SPECIMENS.
- FLAMMABILITY.** SEE MIL-DTL-85052.
 - SPECIMENS - 16 SIZE CLAMP ASSEMBLIES UNBENT UNTIL FLAT.
 - VERTICAL BURN TEST.

TABLE II. PHYSICAL PROPERTIES

Test	Test Method	Required Original Properties	Allowable change from actual original properties after:		
			Fuel Immersion MIL-DTL-5624, JP-4, 163 hrs at +100 °F /1/	Hydraulic Fluid Immersion MIL-PRF-5606 70 hrs at +156 °F /1/	Heat Aging 70 hrs at +275 °F
Hardness durometer "A"	ASTM-D2240	65-75	- 20 Max	- 15 Max	+ 10 Max
Tensile strength (PSI)	ASTM-D412	2000 Min	- 30% Max	- 10% Max	-40% Max
Elongation (%)	ASTM-D412	500 Min	- 10% Max	- 10% Max	-75% Max
Tear strength (PPI)	ASTM-D624 DIE "B"	300 Min	- 35% Max	- 10% Max	-40% Max
Specific gravity	-	As measured	-	-	±2%
Volume change (%) 1. After conditioning 2. After 24 hrs air dry	ASTM-D471				
	-	-	+15% Max	+10% Max	-10% Max
	-	-	+10% Max	+10% Max	-

1/ Unless otherwise specified, property measurements shall be performed immediately after removal from immersion bath.

EXAMPLE OF THE PART CALLOUT:



INTENDED USE:

THESE CLAMPS ARE INTENDED FOR USE AS FOLLOWS:

TEMPERATURE RANGE: - 65 TO + 275 °F (FOR HIGHER TEMPERATURE RATED CLAMPS, SEE MIL-DTL-85052/3).

SYSTEMS:

- ALL AROMATIC FUEL SYSTEM APPLICATIONS REQUIRING A HIGH DEGREE OF CUSHION EXPOSURE TO SYSTEM FLUID.
- ALL FLUID AND ELECTRICAL SYSTEMS ON AIRCRAFT AND AEROSPACE VEHICLES USING PETROLEUM BASED HYDRAULIC SYSTEMS.

VIBRATION RATING. CLAMPS ARE USED AT LOW, MEDIUM, AND HIGH VIBRATION AREAS DEPENDING ON MOUNTING METHODS. THE RECOMMENDED MOUNTING METHODS FOR VARIOUS VIBRATION AREAS ARE SPECIFIED IN 6.4 OF MIL-DTL-85052.

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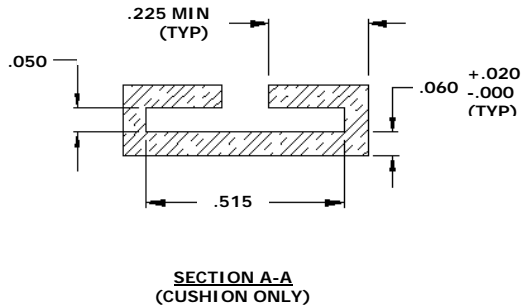
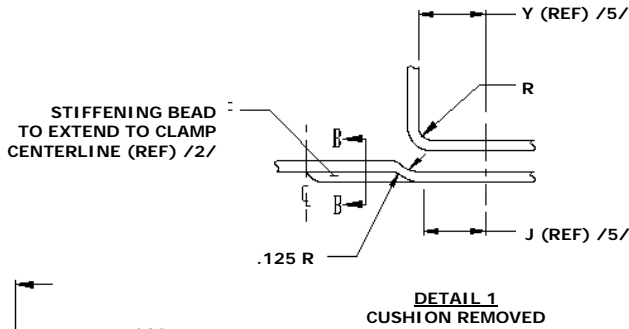
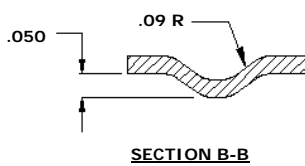
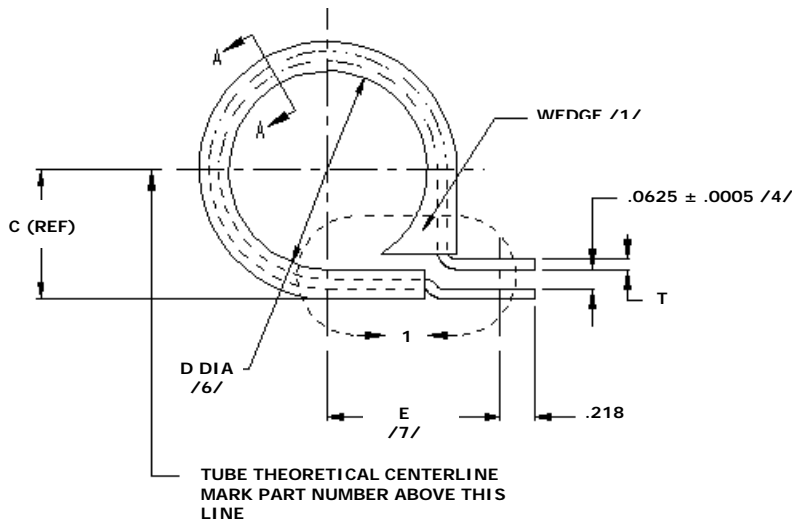
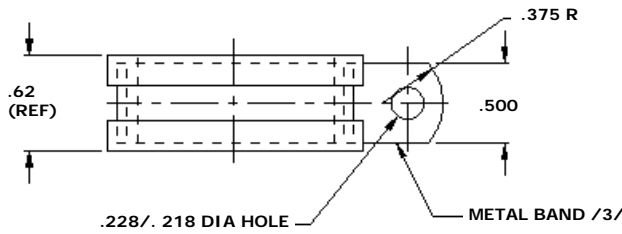
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M85052/1

CLAMP, LOOP, CUSHIONED

PART NUMBER

**CLAMP, LOOP, TUBE-17-7 PH CRES, 275 °F, PHOSPHATE ESTER
FLUID RESISTANT**



**FIGURE 1
CLAMP DESIGN AND CONSTRUCTION**

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M85052/2

CLAMP, LOOP, CUSHIONED

PART NUMBER

NOTES:

- /1/ WEDGE SHALL BE REQUIRED ON SIZE -6 AND LARGER. THE WEDGE SHALL BE MOLDED AS AN INTEGRAL PART OF THE CUSHION AND CONTOURED TO FIT D DIAMETER.
- /2/ STIFFENING BEAD SHALL BE REQUIRED ON SIZE -4 AND LARGER. ALL RADII ON THE STIFFENING BEAD SHALL BE SMOOTH AND BLENDED. NO SHARP TOOL MARKS ARE ALLOWED.
- /3/ METAL BAND SHALL HAVE ALL BURRS, SHARP EDGES, AND SCALE REMOVED.
- /4/ WEDGE SHALL TOUCH CUSHION ON LOWER FOOT WITH CLAMP INSTALLED ON MANDREL WITHOUT SPACER.
- /5/ REFERENCE DIMENSIONS Y AND J ARE PROVIDED TO GAIN MAXIMUM SUPPORT FOR THE LOWER FOOT BY CLOSELY FITTING THE UPPER FOOT BEND RADIUS TO THE STIFFENING BEAD BLEND RADIUS WHEN CLOSED AGAINST EACH OTHER.
- /6/ DIAMETER D IS THE NOMINAL DIAMETER FOR WHICH A CLAMP SIZE IS INTENDED FOR USE. DIAMETER D SHALL BE VERIFIED BY THE DIAMETRAL RETENTION TEST SPECIFIED IN THE GENERAL SPECIFICATION (SEE MIL-DTL-85052 4.4.4.1).
- /7/ DIMENSION E SHALL BE MEASURED WITH THE CLAMP INSTALLED ON A MANDREL OF D DIAMETER + .001, AND .0625 + .0005 SPACER BETWEEN THE UPPER AND LOWER FOOT AS SHOWN.
- 8 UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES, TOLERANCES + .03 FOR TWO DECIMALS AND + .010 FOR THREE DECIMALS.

Table I. Clamp dimensions. /8/

Dash No.	C (Ref)	D Dia /6/	E ± .032 /7/	J (Ref) /5/	R ± .010	T	Y (Ref) /5/		
2	0.192	0.125	0.468	-	0.090	.020 ± .002	0.325		
3	0.224	0.188	0.499						
4	0.255	0.250	0.530						
5	0.286	0.312	0.561						
6	0.318	0.375	0.592						
7	0.349	0.438	0.624						
8	0.380	0.500	0.655						
9	0.423	0.562	0.741						
10	0.454	0.625	0.772	0.256	0.125	.032 ± .002	0.368		
11	0.486	0.688	0.804						
12	0.517	0.750	0.835						
13	0.548	0.812	0.866						
14	0.580	0.875	0.898						
15	0.611	0.938	0.929						
16	0.642	1.000	0.960						
17	0.681	1.062	1.001						
18	0.712	1.125	1.032	0.262				.040 ± .003	0.370
19	0.744	1.188	1.064						
20	0.775	1.250	1.095						
21	0.806	1.312	1.126						
22	0.838	1.375	1.158						
23	0.869	1.438	1.189						
24	0.900	1.500	1.220						

REQUIREMENTS:

MARKING

BAND. THE COMPLETE STANDARD PART NUMBER AND MANUFACTURE'S NAME, TRADEMARK, OR CONTRACTOR AND GOVERNMENT ENTITY (CAGE) CODE SHALL BE IMPRESSION STAMPED ON THE BAND IN AN AREA NOT COVERED BY THE CUSHION. ALL MARKING SHALL BE ABOVE TUBE THEORETICAL CENTERLINE. CLAMP BANDS OF - 2, -3, - 4 SIZES MAY BE MARKED WITH THE MANUFACTURER'S IDENTIFICATION, THE SIZE, AND THE SPECIFICATION SHEET NUMBER ACCORDING TO SPACE LIMITATIONS.

CUSHION. NONE

MATERIALS

METAL BAND. 17-7PH CORROSION RESISTANT STEEL IN ACCORDANCE WITH SAE-AMS5528 OR SAE-AMS5529, ANNEALED, STRESS RELIEVED, AND HEAT-TREATED TO TH1100 CONDITION IN ACCORDANCE WITH SAE-AMS-H-6875 AFTER FORMING.

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CLAMP, LOOP, CUSHIONED

PART NUMBER

REQUIREMENTS (CONTINUED)

CUSHION. ETHYLENE PROPYLENE RUBBER, 65-75 DUROMETER, COLOR PURPLE PER MIL-DTL-85052/2.

FINISH

METAL BAND. PASSIVATE IN ACCORDANCE WITH SAE-AMS-QQ-P-35, TYPE II

CUSHION. NONE

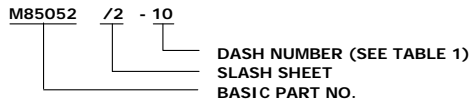
CUSHION REQUIREMENTS:

- PHYSICAL PROPERTIES.** PHYSICAL PROPERTIES SHALL BE AS SPECIFIED IN TABLE II. UNLESS OTHERWISE SPECIFIED, RESULTS ARE AN AVERAGE OF 5 SPECIMENS AND TOLERANCE ON TEMPERATURE + 5 °F.
- COMPRESSION SET.** SEE MIL-DTL-85052.
 - AIR AGE AT 212 °F.
 - NOT TO EXCEED 30 PERCENT AVERAGE OF 3 SPECIMENS.
- FLAMMABILITY.** SEE MIL-DTL-85052.
 - SPECIMENS STANDARD ASTM TEST LAB VERTICAL BURN TEST.

TABLE II. PHYSICAL PROPERTIES

Test	Test Method	Required Original Properties	Allowable change from actual original properties after:	
			Immersion Hydraulic Fluid (Skydrol) - 500B, 22 hrs at +275 °F /1/	Heat Aging 70 hrs at +275 °F
Hardness durometer "A"	ASTM-D2240	65-75	- 20 Max	+ 10 Max
Tensile strength (PSI)	ASTM-D412	2000 Min	- 50% Max	-20% Max
Elongation (%)	ASTM-D412	400 Min	- 25% Max	-40% Max
Tear strength (PPI)	ASTM-D624 DIE "B"	200 Min	- 40% Max	-40% Max
Specific gravity	ASTM-D297	Report	-	±2%
Volume change (%)	ASTM-D471	-	+30% Max	-10% Max

EXAMPLE OF THE PART CALLOUT:



1/ Unless otherwise specified, property measurements shall be performed immediately after removal from immersion bath.

INTENDED USE:

THESE CLAMPS ARE INTENDED FOR USE AS FOLLOWS:

TEMPERATURE RANGE: - 65 TO + 275 °F (FOR HIGHER TEMPERATURE RATED CLAMPS, SEE MIL-DTL-85052/3).

SYSTEMS:

- ALL AROMATIC FUEL SYSTEM APPLICATIONS REQUIRING A HIGH DEGREE OF CUSHION EXPOSURE TO SYSTEM FLUID.
- ALL FLUID AND ELECTRICAL SYSTEMS ON AIRCRAFT AND AEROSPACE VEHICLES USING PETROLEUM BASED HYDRAULIC SYSTEMS.

VIBRATION RATING. CLAMPS ARE USED AT LOW, MEDIUM, AND HIGH VIBRATION AREAS DEPENDING ON MOUNTING METHODS. THE RECOMMENDED MOUNTING METHODS FOR VARIOUS VIBRATION AREAS ARE SPECIFIED IN 6.4 OF MIL-DTL-85052.

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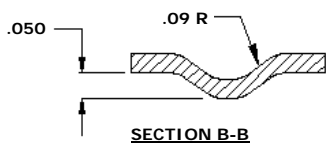
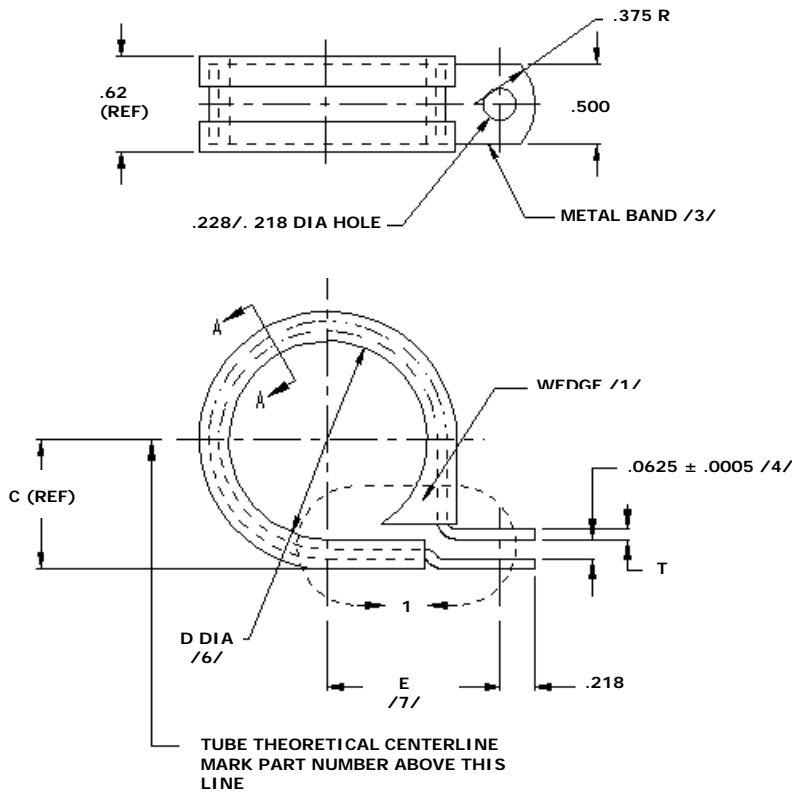
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CLAMP, LOOP, CUSHIONED

PART NUMBER

CLAMP, LOOP, TUBE-17-7 PH CRES, 500 °F



STIFFENING BEAD
TO EXTEND TO CLAMP
CENTERLINE (REF) /2/

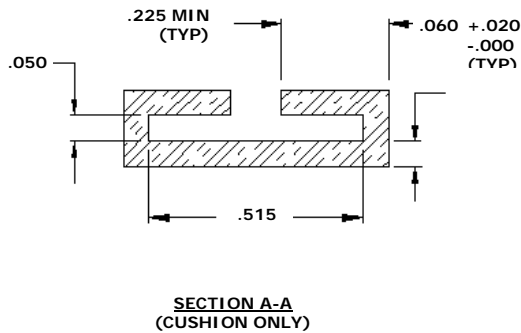
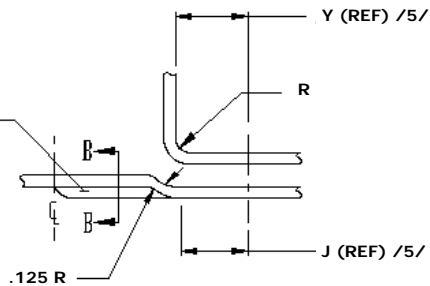


FIGURE 1
CLAMP DESIGN AND CONSTRUCTION

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M85052/3

CLAMP, LOOP, CUSHIONED

PART NUMBER

NOTES:

- /1/ WEDGE SHALL BE REQUIRED ON SIZE -6 AND LARGER. THE WEDGE SHALL BE MOLDED AS AN INTEGRAL PART OF THE CUSHION AND CONTOURED TO FIT D DIAMETER.
- /2/ STIFFENING BEAD SHALL BE REQUIRED ON SIZE -4 AND LARGER. ALL RADII ON THE STIFFENING BEAD SHALL BE SMOOTH AND BLENDED. NO SHARP TOOL MARKS ARE ALLOWED.
- /3/ METAL BAND SHALL HAVE ALL BURRS, SHARP EDGES, AND SCALE REMOVED.
- /4/ WEDGE SHALL TOUCH CUSHION ON LOWER FOOT WITH CLAMP INSTALLED ON MANDREL WITHOUT SPACER.
- /5/ REFERENCE DIMENSIONS Y AND J ARE PROVIDED TO GAIN MAXIMUM SUPPORT FOR THE LOWER FOOT BY CLOSELY FITTING THE UPPER FOOT BEND RADIUS TO THE STIFFENING BEAD BLEND RADIUS WHEN CLOSED AGAINST EACH OTHER.
- /6/ DIAMETER D IS THE NOMINAL DIAMETER FOR WHICH A CLAMP SIZE IS INTENDED FOR USE. DIAMETER D SHALL BE VERIFIED BY THE DIAMETRAL RETENTION TEST SPECIFIED IN THE GENERAL SPECIFICATION (SEE MIL-DTL-85052 4.4.4.1).
- /7/ DIMENSION E SHALL BE MEASURED WITH THE CLAMP INSTALLED ON A MANDREL OF D DIAMETER + .001, AND .0625 + .0005 SPACER BETWEEN THE UPPER AND LOWER FOOT AS SHOWN.
- 8 UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES, TOLERANCES + .03 FOR TWO DECIMALS AND + .010 FOR THREE DECIMALS.

Table I. Clamp dimensions. /8/

Dash No.	C (Ref)	D Dia /6/	E ± .032 /7/	J (Ref) /5/	R ± .010	T	Y (Ref) /5/
2	0.192	0.125	0.468	0.235	0.090	.020 ± .002	0.325
3	0.224	0.188	0.499				
4	0.255	0.250	0.530				
5	0.286	0.312	0.561				
6	0.318	0.375	0.592				
7	0.349	0.438	0.624				
8	0.380	0.500	0.655				
9	0.423	0.562	0.741				
10	0.454	0.625	0.772	0.256	0.125	.032 ± .002	0.368
11	0.486	0.688	0.804				
12	0.517	0.750	0.835				
13	0.548	0.812	0.866				
14	0.580	0.875	0.898				
15	0.611	0.938	0.929				
16	0.642	1.000	0.960				
17	0.681	1.062	1.001				
18	0.712	1.125	1.032	0.262	0.125	.040 ± .003	0.370
19	0.744	1.188	1.064				
20	0.775	1.250	1.095				
21	0.806	1.312	1.126				
22	0.838	1.375	1.158				
23	0.869	1.438	1.189				
24	0.900	1.500	1.220				

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M85052/3

CLAMP, LOOP, CUSHIONED

PART NUMBER

REQUIREMENTS:

MARKING

BAND. THE COMPLETE STANDARD PART NUMBER AND MANUFACTURE'S NAME, TRADEMARK, OR CONTRACTOR AND GOVERNMENT ENTITY (CAGE) CODE SHALL BE IMPRESSION STAMPED ON THE BAND IN AN AREA NOT COVERED BY THE CUSHION. ALL MARKING SHALL BE ABOVE TUBE THEORETICAL CENTERLINE. CLAMP BANDS OF - 2, -3, - 4 SIZES MAY BE MARKED WITH THE MANUFACTURER'S IDENTIFICATION, THE SIZE, AND THE SPECIFICATION SHEET NUMBER ACCORDING TO SPACE LIMITATIONS.

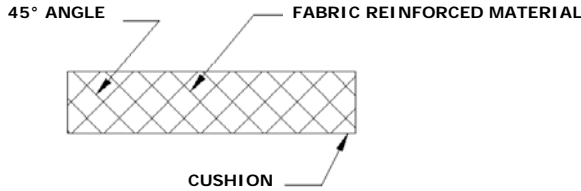
CUSHION. NONE

MATERIALS

METAL BAND. 17-7PH CORROSION RESISTANT STEEL IN ACCORDANCE WITH SAE-AMS5528 OR SAE-AMS5529, ANNEALED, STRESS RELIEVED, AND HEAT-TREATED TO TH1100 CONDITION IN ACCORDANCE WITH SAE-AMS-H-6875 AFTER FORMING.

REQUIREMENTS (CONTINUED)

CUSHION. FABRIC REINFORCED SILICONE RUBBER, 65-75 DUROMETER, ON UNREINFORCED MATERIAL, COLOR LIGHT BLUE CONFORMING TO SAE-ARP1527 WITH ADDITIONAL REQUIREMENTS SPECIFIED HEREIN. THE FABRIC REINFORCING MATERIAL SHALL BE MOLDED INTO THE BAND SIDE OF THE CLAMP CUSHION AT A 45° ANGLE SHOWN BELOW.



FINISH

METAL BAND. PASSIVATE IN ACCORDANCE WITH SAE-AMS-QQ-P-35, TYPE II

CUSHION. NONE

CUSHION REQUIREMENTS:

1. **PHYSICAL PROPERTIES.** PHYSICAL PROPERTIES SHALL BE AS SPECIFIED IN TABLE II. UNLESS OTHERWISE SPECIFIED, RESULTS ARE AN AVERAGE OF 5 SPECIMENS AND TOLERANCE ON TEMPERATURE + 5 °F.
2. **COMPRESSION SET.** SEE MIL-DTL-85052.
 - AIR AGE AT 302 °F.
 - NOT TO EXCEED 30 PERCENT AVERAGE OF 3 SPECIMENS.
3. **FLAMMABILITY.** SEE MIL-DTL-85052.
 - SPECIMENS – 16 SIZE CLAMP ASSEMBLIES UNBENT UNTIL FLAT.
 - VERTICAL BURN TEST.

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CLAMP, LOOP, CUSHIONED

PART NUMBER

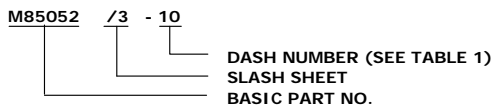
TABLE II. PHYSICAL PROPERTIES

Test	Test Method	Required Original Properties	Allowable change from actual original properties after:		
			Heat Aging 70 hrs at 500 °F	Oil Immersion in MIL-PRF-7808 70 hrs at + 302 °F	DIP test 1/
Hardness durometer "A"	ASTM-D2240	65-75	+ 10 PTS Max	- 30 PTS Max	+ 5 PTS
Tensile strength (PSI)	ASTM-D412 2/	1200 Min	1000 Min	300 Min	800 Min
Elongation (%)	ASTM-D412 2/	30 Min	30 Min	30 Min	30 Min
Tear strength (PPI)	ASTM-D624 (DIE "B")	300 Min	300 Min	300 Min	300 Min
Volume change (%)	ASTM-D471	-	-	+ 45 % Max	5% Max
Weight change (%)	ASTM-D471	Report	-5% Max	-	-
Specific gravity	ASTM-D471	Report	-	-	-

1/ DIP TEST: TEST SAMPLE SHALL BE DIPPED IN ASTM-D235, TYPE I SOLVENT AND ALLOWED TO DRY AT ROOM TEMPERATURE FOR 24 HRS. THIS PROCEDURE SHALL BE REPEATED 10 TIMES.

2/ TEST SHALL BE CONDUCTED IN ACCORDANCE WITH ASTM-D412 ON THE FABRIC REINFORCED CUSHION TEST SPECIMEN. EXCEPT AS NOTED HEREIN, DIE "A" DUMBBELL SPECIMENS SHALL BE CUT FROM THE ACTUAL CUSHION WITH THE FABRIC WEAVE AT 45° TO THE DIRECTION OF PULL AND WITH THE EARS FOLDED OUT TO FLATTEN THE SPECIMEN. THE RATE OF SEPARATION OF THE JAWS SHALL BE 12 INCHES PER MINUTE. THE TENSILE STRENGTH AND PERCENT LOCATION SHALL BE MEASURED WHEN THE FABRIC REINFORCED MATERIAL BEGINS TO SEPARATE FROM THE ELASTOMER OR THE SPECIMEN BREAKS COMPLETELY. TENSILE STRENGTH SHALL BE BASED ON OVERALL THICKNESS OF RUBBER AND FABRIC REINFORCING MATERIAL. SPECIMEN FAILURE DUE TO FABRIC SEPARATION AT THE TEST FIXTURE JAWS SHALL BE DISCARDED AND ANOTHER SAMPLE TESTED.

EXAMPLE OF THE PART CALLOUT:



INTENDED USE:
THESE CLAMPS ARE INTENDED FOR USE AS FOLLOWS:

TEMPERATURE RANGE: - 65 TO + 500 °F. THESE CLAMPS HAVE CUSHIONS, WHICH HAVE BEEN COMPOUNDED FOR HIGH TEMPERATURE CAPABILITY AT THE SACRIFICE OF FLUID RESISTANCE. IT IS RECOMMENDED FOR USE ONLY IN THOSE AREAS WITH OPERATING TEMPERATURES FROM 275 °F TO 500 °F WHERE FLUID EXPOSURE IS MINIMAL. FOR APPLICATION BELOW 275 °F, THE USE OF CLAMPS WITH A HIGHER DEGREE OF FLUID RESISTANCE IS RECOMMENDED SUCH AS SC85052/1 OR SC85052/2 CLAMPS.

SYSTEMS: ALL FLUID AND ELECTRICAL SYSTEMS APPLICATION IN HIGH TEMPERATURE AREAS.

VIBRATION RATING. CLAMPS ARE USED AT LOW, MEDIUM, AND HIGH VIBRATION AREAS DEPENDING ON MOUNTING METHODS. THE RECOMMENDED MOUNTING METHODS FOR VARIOUS VIBRATION AREAS ARE SPECIFIED IN 6.4 OF MIL-DTL-85052.

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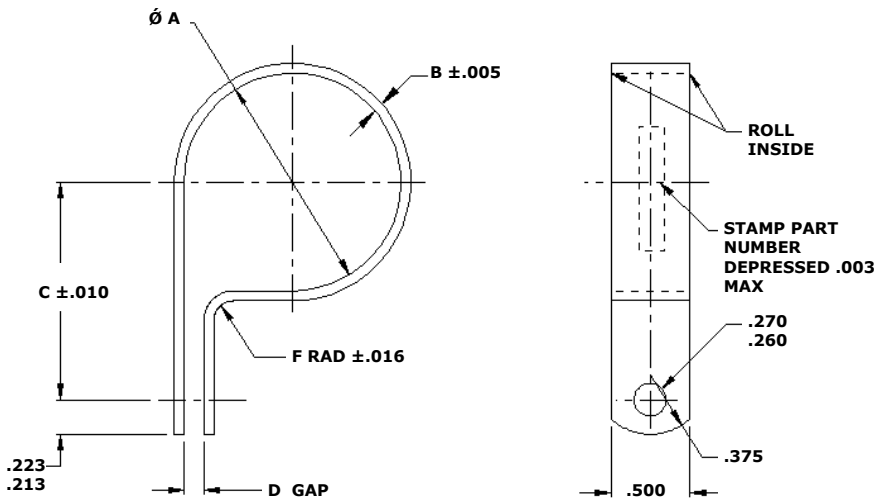
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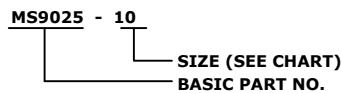
CLAMP, LOOP, CUSHIONED

PART NUMBER



PART NO.	A DIA	B	C	D GAP	F RAD
MS9025-01	0.125	0.031	0.360	.062 .078	0.062
MS9025-02	0.188		0.423		
MS9025-03	0.250		0.457		
MS9025-04	0.312		0.498		
MS9025-05	0.375		0.529		
MS9025-06	0.438		0.560		
MS9025-07	0.500		0.592		
MS9025-08	0.562		0.623		
MS9025-09	0.625		0.654		
MS9025-10	0.688		0.051		
MS9025-11	0.750	0.783			
MS9025-12	0.812	0.814			
MS9025-13	0.875	0.845			
MS9025-14	0.938	0.877			
MS9025-15	1.000	0.908			
MS9025-16	1.062	0.939			
MS9025-17	1.125	0.970			
MS9025-18	1.188	1.002			
MS9025-19	1.250	1.062		.094 .125	0.125
MS9025-20	1.312	1.093			
MS9025-21	1.375	1.125			
MS9025-22	1.438	1.156			
MS9025-23	1.500	1.188			
MS9025-24	1.562	1.219			
MS9025-25	1.625	1.250			
MS9025-26	1.750	1.312			
MS9025-27	1.875	1.375			
MS9025-28	2.000	1.438			

EXAMPLE OF PART NO.



MATERIAL:
CORROSION RESISTANT STEEL AMS5510
FINISH: NONE

NOTES:
INSPECT PER MIL-C-8603 CLOUSURE TEST.

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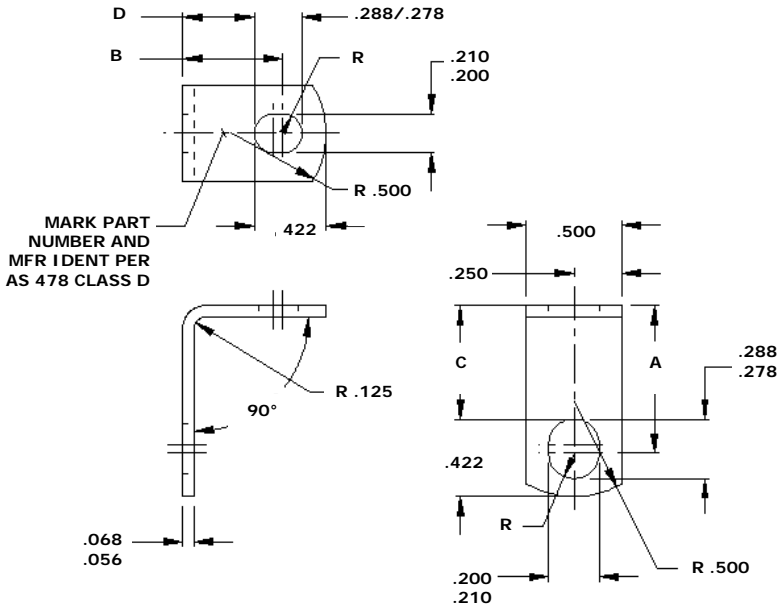
UMPCO, INC
CAGE CODE No. 18076

REV
N/C
01/30/09

MS9025

CLAMP, LOOP TYPE SUPPORT (HEAT RESISTANT) .265 HOLE

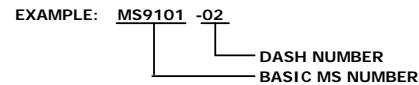
PART NUMBER



DASH NO	A REF	B REF	C ±.010	D ±.010
MS9101-01	0.500	0.500	0.328	0.328
MS9101-02	0.500	0.625	0.328	0.453
MS9101-03	0.500	0.750	0.328	0.578
MS9101-04	0.500	0.875	0.328	0.703
MS9101-05	0.500	1.000	0.328	0.828
MS9101-06	0.500	1.250	0.328	1.078
MS9101-07	0.500	1.500	0.328	1.328
MS9101-08	0.500	1.750	0.328	1.578
MS9101-10	0.625	0.625	0.453	0.453
MS9101-11	0.625	0.750	0.453	0.578
MS9101-12	0.625	0.875	0.453	0.703
MS9101-13	0.625	1.000	0.453	0.828
MS9101-14	0.625	1.250	0.453	1.078
MS9101-15	0.625	1.500	0.453	1.328
MS9101-16	0.625	1.750	0.453	1.578
MS9101-20	0.750	0.750	0.578	0.578
MS9101-21	0.750	0.875	0.578	0.703
MS9101-22	0.750	1.000	0.578	0.828
MS9101-23	0.750	1.250	0.578	1.078
MS9101-24	0.750	1.500	0.578	1.328
MS9101-25	0.750	1.750	0.578	1.578
MS9101-30	0.875	0.875	0.703	0.703
MS9101-31	0.875	1.000	0.703	0.828
MS9101-32	0.875	1.250	0.703	1.078
MS9101-33	0.875	1.500	0.703	1.328
MS9101-34	0.875	1.750	0.703	1.578
MS9101-40	1.000	1.000	0.828	0.828
MS9101-41	1.000	1.250	0.828	1.078
MS9101-42	1.000	1.500	0.828	1.328
MS9101-43	1.000	1.750	0.828	1.578
MS9101-44	1.000	2.000	0.828	1.828

REQUIREMENTS:

1. MATERIAL: CORROSION RESISTANT STEEL IN ACCORDANCE WITH AMS 5510.
2. DIMENSIONING AND TOLERANCING: DIMENSIONING AND TOLERANCING SHALL BE IN ACCORDANCE WITH ANSI Y14 5M
3. TOLERANCE: UNLESS OTHERWISE SPECIFIED, TOLERANCES SHALL BE FOR LINEAR DIMENSION $\pm .015$, ANGULAR $\pm 2^\circ$.
4. PART NUMBER: THE PART NUMBER SHALL CONSIST OF THE BASIC MS NUMBER FOLLOWED BY A DASH NUMBER FROM THE TABLE.



NOTES:

1. ALL DIMENSIONS ARE IN INCHES.
2. DO NOT USE UNASSIGNED PART NUMBERS.
3. REMOVE BURRS AND BREAK SHARP EDGES.

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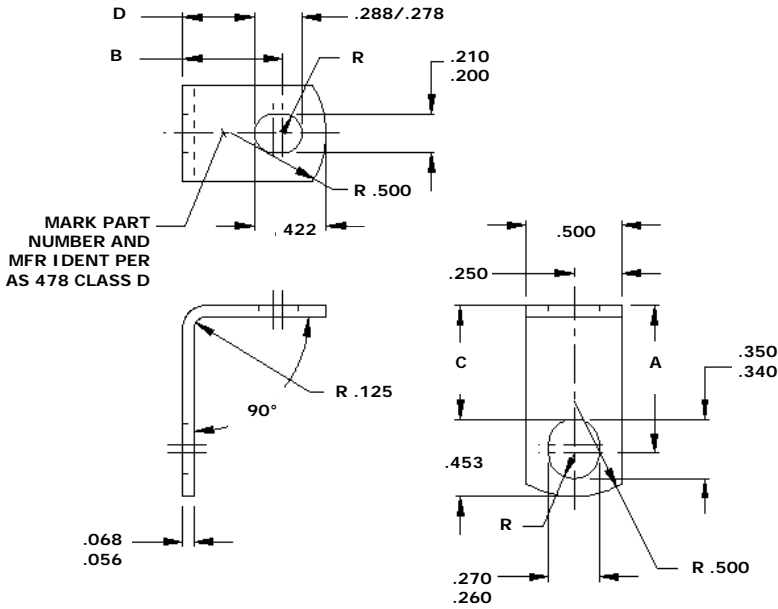
UMPCO, INC
CAGE CODE No. 18076

REV
N/C
01/30/09

MS9101

BRACKET, ANGLE 90°, .190 BOLT

PART NUMBER



DASH NO.	A REF	B REF	C ±.010	D ±.010
MS9102-01	0.562	0.500	0.359	0.328
MS9102-02	0.562	0.625	0.359	0.453
MS9102-03	0.562	0.750	0.359	0.578
MS9102-04	0.562	0.875	0.359	0.703
MS9102-05	0.562	1.000	0.359	0.828
MS9102-06	0.562	1.250	0.359	1.078
MS9102-07	0.562	1.500	0.359	1.328
MS9102-10	0.688	0.500	0.484	0.328
MS9102-11	0.688	0.625	0.484	0.453
MS9102-12	0.688	0.750	0.484	0.578
MS9102-13	0.688	0.875	0.484	0.703
MS9102-14	0.688	1.000	0.484	0.828
MS9102-15	0.688	1.250	0.484	1.078
MS9102-16	0.688	1.500	0.484	1.328
MS9102-20	0.812	0.500	0.609	0.328
MS9102-21	0.812	0.625	0.609	0.453
MS9102-22	0.812	0.750	0.609	0.578
MS9102-23	0.812	0.875	0.609	0.703
MS9102-24	0.812	1.000	0.609	0.828
MS9102-25	0.812	1.250	0.609	1.078
MS9102-26	0.812	1.500	0.609	1.328
MS9102-30	0.938	0.500	0.734	0.328
MS9102-31	0.938	0.625	0.734	0.453
MS9102-32	0.938	0.750	0.734	0.578
MS9102-33	0.938	0.875	0.734	0.703
MS9102-34	0.938	1.000	0.734	0.828
MS9102-35	0.938	1.250	0.734	1.078
MS9102-36	0.938	1.500	0.734	1.328

DASH NO.	A REF	B REF	C ±.010	D ±.010
MS9102-40	1.062	0.500	0.859	0.328
MS9102-41	1.062	0.625	0.859	0.453
MS9102-42	1.062	0.750	0.859	0.578
MS9102-43	1.062	0.875	0.859	0.703
MS9102-44	1.062	1.000	0.859	0.828
MS9102-45	1.062	1.250	0.859	1.078
MS9102-46	1.062	1.500	0.859	1.328
MS9102-50	1.312	0.500	1.109	0.328
MS9102-51	1.312	0.625	1.109	0.453
MS9102-52	1.312	0.750	1.109	0.578
MS9102-53	1.312	0.875	1.109	0.703
MS9102-54	1.312	1.000	1.109	0.828
MS9102-55	1.312	1.250	1.109	1.078
MS9102-56	1.312	1.500	1.109	1.328
MS9102-60	1.562	0.500	1.359	0.328
MS9102-61	1.562	0.625	1.359	0.453
MS9102-62	1.562	0.750	1.359	0.578
MS9102-63	1.562	0.875	1.359	0.703
MS9102-64	1.562	1.000	1.359	0.828
MS9102-65	1.562	1.250	1.359	1.078
MS9102-66	1.562	1.500	1.359	1.328
MS9102-70	1.812	0.500	1.609	0.328
MS9102-71	1.812	0.625	1.609	0.453
MS9102-72	1.812	0.750	1.609	0.578
MS9102-73	1.812	0.875	1.609	0.703
MS9102-74	1.812	1.000	1.609	0.828
MS9102-75	1.812	1.250	1.609	1.078
MS9102-76	1.812	1.500	1.609	1.328

REQUIREMENTS:

- MATERIAL: CORROSION RESISTANT STEEL IN ACCORDANCE WITH AMS 5510.
- DIMENSIONING AND TOLERANCING: DIMENSIONING AND TOLERANCING SHALL BE IN ACCORDANCE WITH ANSI Y14 5M.
- TOLERANCE: UNLESS OTHERWISE SPECIFIED, TOLERANCES SHALL BE FOR LINEAR DIMENSION ±.015, ANGULAR ±2°.
- PART NUMBER: THE PART NUMBER SHALL CONSIST OF THE BASIC MS NUMBER FOLLOWED BY A DASH NUMBER FROM THE TABLE.

NOTES:

- ALL DIMENSIONS ARE IN INCHES.
- DO NOT USE UNASSIGNED DASH NUMBERS.
- REMOVE BURRS AND BREAK SHARP EDGES.

EXAMPLE: MS9102 -02

— DASH NUMBER
— BASIC MS NUMBER

MS9102-02 INDICATES – BRACKET, 90° ANGLE, LENGTH A, .562, LENGTH B, .625

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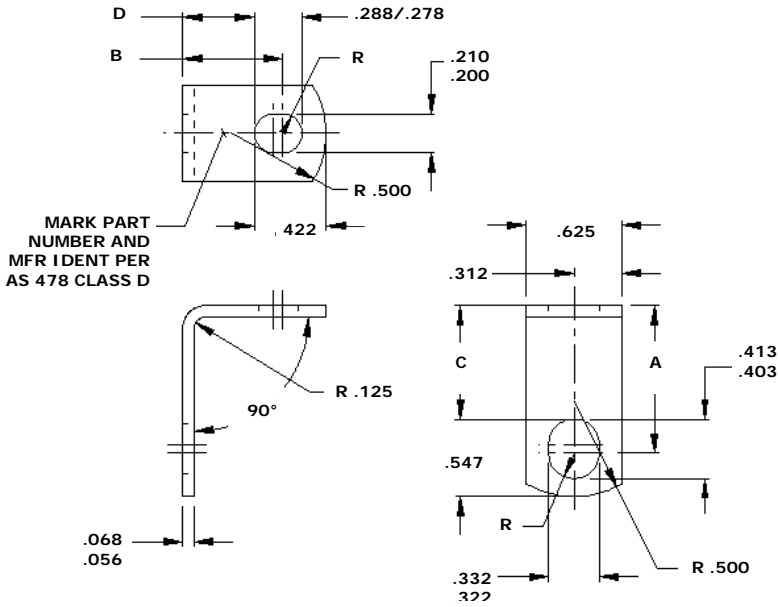
UMPCO, INC
CAGE CODE No. 18076

REV
N/C
01/30/09

MS9102

BRACKET-ANGLE 90°, .190 X .250 BOLT

PART NUMBER



DASH NO.	A REF	B REF	C ±.010	D ±.010
MS9103-01	0.562	0.500	0.328	0.328
MS9103-02	0.562	0.625	0.328	0.453
MS9103-03	0.562	0.750	0.328	0.578
MS9103-04	0.562	0.875	0.328	0.703
MS9103-05	0.562	1.000	0.328	0.828
MS9103-06	0.562	1.250	0.328	1.078
MS9103-07	0.562	1.500	0.328	1.328
MS9103-10	0.688	0.500	0.453	0.328
MS9103-11	0.688	0.625	0.453	0.453
MS9103-12	0.688	0.750	0.453	0.578
MS9103-13	0.688	0.875	0.453	0.703
MS9103-14	0.688	1.000	0.453	0.828
MS9103-15	0.688	1.250	0.453	1.078
MS9103-16	0.688	1.500	0.453	1.328
MS9103-20	0.812	0.500	0.578	0.328
MS9103-21	0.812	0.625	0.578	0.453
MS9103-22	0.812	0.750	0.578	0.578
MS9103-23	0.812	0.875	0.578	0.703
MS9103-24	0.812	1.000	0.578	0.828
MS9103-25	0.812	1.250	0.578	1.078
MS9103-26	0.812	1.500	0.578	1.328
MS9103-30	0.938	0.500	0.703	0.328
MS9103-31	0.938	0.625	0.703	0.453
MS9103-32	0.938	0.750	0.703	0.578
MS9103-33	0.938	0.875	0.703	0.703
MS9103-34	0.938	1.000	0.703	0.828
MS9103-35	0.938	1.250	0.703	1.078
MS9103-36	0.938	1.500	0.703	1.328

DASH NO.	A REF	B REF	C ±.010	D ±.010
MS9103-40	1.062	0.500	0.828	0.328
MS9103-41	1.062	0.625	0.828	0.453
MS9103-42	1.062	0.750	0.828	0.578
MS9103-43	1.062	0.875	0.828	0.703
MS9103-44	1.062	1.000	0.828	0.828
MS9103-45	1.062	1.250	0.828	1.078
MS9103-46	1.062	1.500	0.828	1.328
MS9103-50	1.312	0.500	1.078	0.328
MS9103-51	1.312	0.625	1.078	0.453
MS9103-52	1.312	0.750	1.078	0.578
MS9103-53	1.312	0.875	1.078	0.703
MS9103-54	1.312	1.000	1.078	0.828
MS9103-55	1.312	1.250	1.078	1.078
MS9103-56	1.312	1.500	1.078	1.328
MS9103-60	1.562	0.500	1.328	0.328
MS9103-61	1.562	0.625	1.328	0.453
MS9103-62	1.562	0.750	1.328	0.578
MS9103-63	1.562	0.875	1.328	0.703
MS9103-64	1.562	1.000	1.328	0.828
MS9103-65	1.562	1.250	1.328	1.078
MS9103-66	1.562	1.500	1.328	1.328
MS9103-70	1.812	0.500	1.578	0.328
MS9103-71	1.812	0.625	1.578	0.453
MS9103-72	1.812	0.750	1.578	0.578
MS9103-73	1.812	0.875	1.578	0.703
MS9103-74	1.812	1.000	1.578	0.828
MS9103-75	1.812	1.250	1.578	1.078
MS9103-76	1.812	1.500	1.578	1.328

REQUIREMENTS:

- MATERIAL: CORROSION RESISTANT STEEL IN ACCORDANCE WITH AMS 5510.
- DIMENSIONING AND TOLERANCING: DIMENSIONING AND TOLERANCING SHALL BE IN ACCORDANCE WITH ANSI Y14.5M TOLERANCE: UNLESS OTHERWISE SPECIFIED, TOLERANCES SHALL BE FOR LINEAR DIMENSION ±.015, ANGULAR ±2°.
- PART NUMBER: THE PART NUMBER SHALL CONSIST OF THE BASIC MS NUMBER FOLLOWED BY A DASH NUMBER FROM THE TABLE.

NOTES:

- ALL DIMENSIONS ARE IN INCHES.
- DO NOT USE UNASSIGNED PART NUMBERS.
- REMOVE BURRS AND BREAK SHARP EDGES.

EXAMPLE: MS9103 -02
 MS9103 — BASIC MS NUMBER
 -02 — DASH NUMBER

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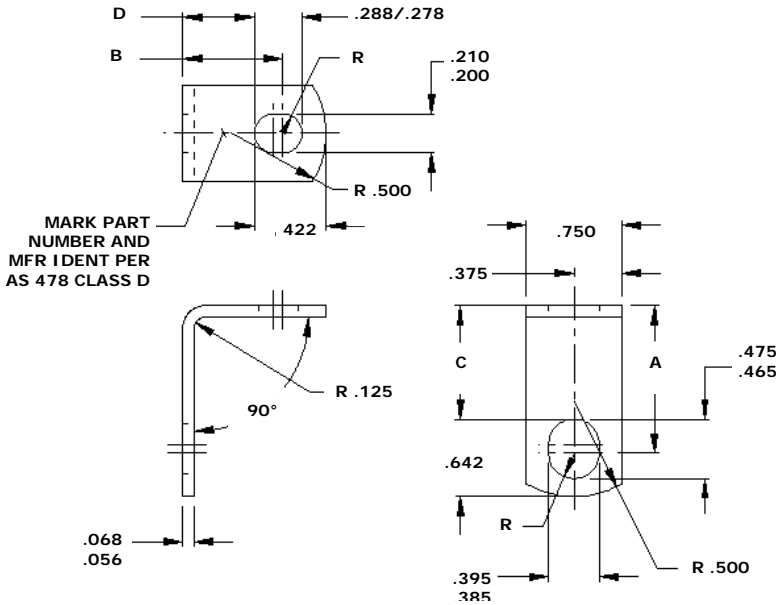
UMPCO, INC
 CAGE CODE No. 18076

REV N/C
 01/30/09

MS9103

BRACKET-ANGLE 90°, .190 X .312 BOLT

PART NUMBER



DASH NO.	A REF	B REF	C ±.010	D ±.010
MS9104-01	0.625	0.500	0.359	0.328
MS9104-02	0.625	0.625	0.359	0.453
MS9104-03	0.625	0.750	0.359	0.578
MS9104-04	0.625	0.875	0.359	0.703
MS9104-05	0.625	1.000	0.359	0.828
MS9104-06	0.625	1.250	0.359	1.078
MS9104-07	0.625	1.500	0.359	1.328
MS9104-10	0.750	0.500	0.484	0.328
MS9104-11	0.750	0.625	0.484	0.453
MS9104-12	0.750	0.750	0.484	0.578
MS9104-13	0.750	0.875	0.484	0.703
MS9104-14	0.750	1.000	0.484	0.828
MS9104-15	0.750	1.250	0.484	1.078
MS9104-16	0.750	1.500	0.484	1.328
MS9104-20	0.875	0.500	0.609	0.328
MS9104-21	0.875	0.625	0.609	0.453
MS9104-22	0.875	0.750	0.609	0.578
MS9104-23	0.875	0.875	0.609	0.703
MS9104-24	0.875	1.000	0.609	0.828
MS9104-25	0.875	1.250	0.609	1.078
MS9104-26	0.875	1.500	0.609	1.328
MS9104-30	1.000	0.500	0.734	0.328
MS9104-31	1.000	0.625	0.734	0.453
MS9104-32	1.000	0.750	0.734	0.578
MS9104-33	1.000	0.875	0.734	0.703
MS9104-34	1.000	1.000	0.734	0.828
MS9104-35	1.000	1.250	0.734	1.078
MS9104-36	1.000	1.500	0.734	1.328

DASH NO.	A REF	B REF	C ±.010	D ±.010
MS9104-40	1.250	0.500	0.984	0.328
MS9104-41	1.250	0.625	0.984	0.453
MS9104-42	1.250	0.750	0.984	0.578
MS9104-43	1.250	0.875	0.984	0.703
MS9104-44	1.250	1.000	0.984	0.828
MS9104-45	1.250	1.250	0.984	1.078
MS9104-46	1.250	1.500	0.984	1.328
MS9104-50	1.500	0.500	1.234	0.328
MS9104-51	1.500	0.625	1.234	0.453
MS9104-52	1.500	0.750	1.234	0.578
MS9104-53	1.500	0.875	1.234	0.703
MS9104-54	1.500	1.000	1.234	0.828
MS9104-55	1.500	1.250	1.234	1.078
MS9104-56	1.500	1.500	1.234	1.328
MS9104-60	1.750	0.500	1.484	0.328
MS9104-61	1.750	0.625	1.484	0.453
MS9104-62	1.750	0.750	1.484	0.578
MS9104-63	1.750	0.875	1.484	0.703
MS9104-64	1.750	1.000	1.484	0.828
MS9104-65	1.750	1.250	1.484	1.078
MS9104-66	1.750	1.500	1.484	1.328
MS9104-70	2.000	0.500	1.734	0.328
MS9104-71	2.000	0.625	1.734	0.453
MS9104-72	2.000	0.750	1.734	0.578
MS9104-73	2.000	0.875	1.734	0.703
MS9104-74	2.000	1.000	1.734	0.828
MS9104-75	2.000	1.250	1.734	1.078
MS9104-76	2.000	1.500	1.734	1.328

REQUIREMENTS:

- MATERIAL: CORROSION RESISTANT STEEL IN ACCORDANCE WITH AMS 5510.
- DIMENSIONING AND TOLERANCING: DIMENSIONING AND TOLERANCING SHALL BE IN ACCORDANCE WITH ANSI Y14.5M TOLERANCE: UNLESS OTHERWISE SPECIFIED, TOLERANCES SHALL BE FOR LINEAR DIMENSION ±.015, ANGULAR ±2°.
- PART NUMBER: THE PART NUMBER SHALL CONSIST OF THE BASIC MS NUMBER FOLLOWED BY A DASH NUMBER FROM THE TABLE.

EXAMPLE: MS9104 -02
 BASIC MS NUMBER DASH NUMBER

NOTES:

- ALL DIMENSIONS ARE IN INCHES.
- DO NOT USE UNASSIGNED PART NUMBERS.
- REMOVE BURRS AND BREAK SHARP EDGES.

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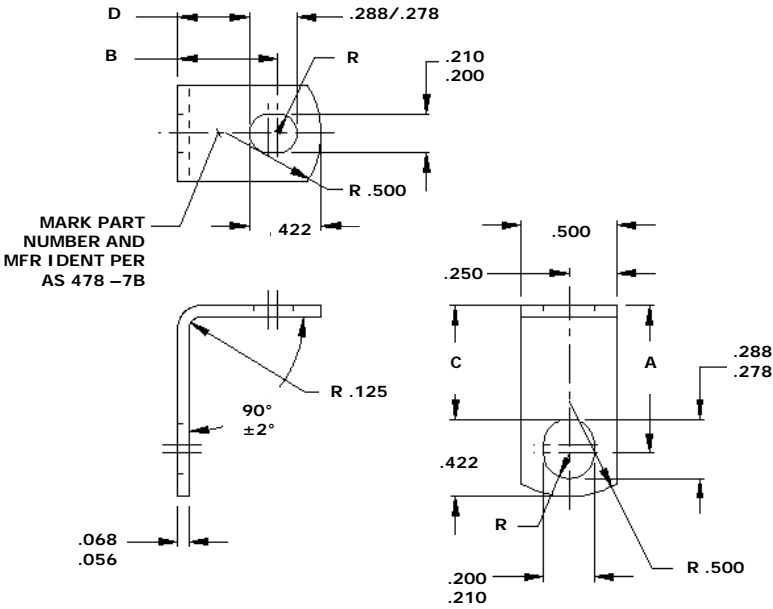
UMPCO, INC
 CAGE CODE No. 18076

REV N/C
 01/30/09

MS9104

BRACKET-ANGLE 90°, .190 X .375 BOLT

PART NUMBER



DASH NO.	A REF	B REF	C ±.010	D ±.010
MS9165-01	0.500	0.500	0.328	0.328
MS9165-02	0.500	0.625	0.328	0.453
MS9165-03	0.500	0.750	0.328	0.578
MS9165-04	0.500	0.875	0.328	0.703
MS9165-05	0.500	1.000	0.328	0.828
MS9165-06	0.500	1.250	0.328	1.078
MS9165-07	0.500	1.500	0.328	1.328
MS9165-08	0.500	1.750	0.328	1.578
MS9165-10	0.625	0.625	0.453	0.453
MS9165-11	0.625	0.750	0.453	0.578
MS9165-12	0.625	0.875	0.453	0.703
MS9165-13	0.625	1.000	0.453	0.828
MS9165-14	0.625	1.250	0.453	1.078
MS9165-15	0.625	1.500	0.453	1.328
MS9165-16	0.625	1.750	0.453	1.578
MS9165-20	0.750	0.750	0.578	0.578
MS9165-21	0.750	0.875	0.578	0.703
MS9165-22	0.750	1.000	0.578	0.828
MS9165-23	0.750	1.250	0.578	1.078
MS9165-24	0.750	1.500	0.578	1.328
MS9165-25	0.750	1.750	0.578	1.578
MS9165-30	0.875	0.875	0.703	0.703
MS9165-31	0.875	1.000	0.703	0.828
MS9165-32	0.875	1.250	0.703	1.078
MS9165-33	0.875	1.500	0.703	1.328
MS9165-34	0.875	1.750	0.703	1.578
MS9165-40	1.000	1.000	0.828	0.828
MS9165-41	1.000	1.250	0.828	1.078
MS9165-42	1.000	1.500	0.828	1.328
MS9165-43	1.000	1.750	0.828	1.578
MS9165-44	1.000	2.000	0.828	1.828

REQUIREMENTS:

MATERIAL: STEEL AMS 6350. HARDEN (OIL QUENCH) AND TEMPER TO ROCKWELL C 32-38.

FINISH: CADMIUM PLATE PER AMS 2400. DIMENSIONS SPECIFIED ARE AFTER PLATING

REMOVE BURRS AND BREAK SHARP EDGES.

ALL DIMENSIONS ARE IN INCHES. UNLESS OTHERWISE SPECIFIED: TOLERANCES; LINEAR ±.015

DO NOT USE UNASSIGNED PART NUMBERS.

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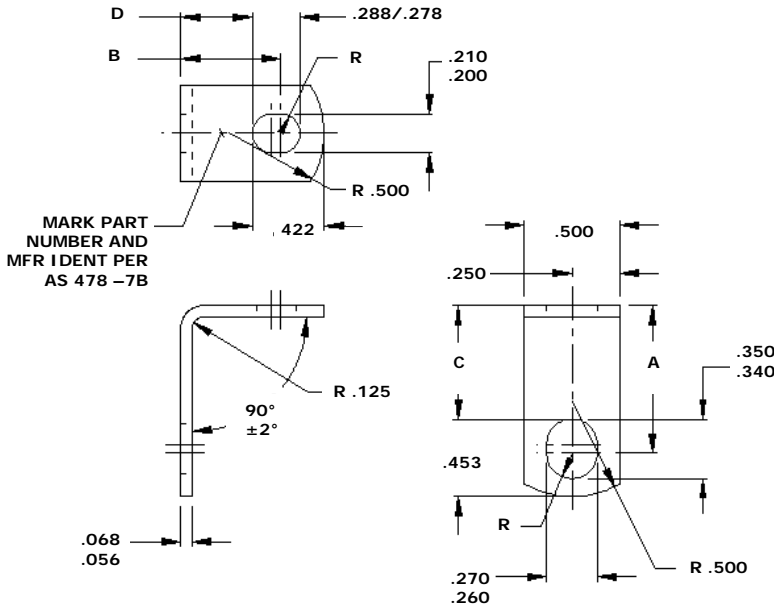
UMPCO, INC
CAGE CODE No. 18076

REV
N/C
01/30/09

MS9165

BRACKET, 90° ANGLE, AMS 6350, .190 BOLT

PART NUMBER



DASH NO.	A REF	B REF	C ±.010	D ±.010
MS9166-01	0.562	0.500	0.359	0.328
MS9166-02	0.562	0.625	0.359	0.453
MS9166-03	0.562	0.750	0.359	0.578
MS9166-04	0.562	0.875	0.359	0.703
MS9166-05	0.562	1.000	0.359	0.828
MS9166-06	0.562	1.250	0.359	1.078
MS9166-07	0.562	1.500	0.359	1.328
MS9166-10	0.688	0.500	0.484	0.328
MS9166-11	0.688	0.625	0.484	0.453
MS9166-12	0.688	0.750	0.484	0.578
MS9166-13	0.688	0.875	0.484	0.703
MS9166-14	0.688	1.000	0.484	0.828
MS9166-15	0.688	1.250	0.484	1.078
MS9166-16	0.688	1.500	0.484	1.328
MS9166-20	0.812	0.500	0.609	0.328
MS9166-21	0.812	0.625	0.609	0.453
MS9166-22	0.812	0.750	0.609	0.578
MS9166-23	0.812	0.875	0.609	0.703
MS9166-24	0.812	1.000	0.609	0.828
MS9166-25	0.812	1.250	0.609	1.078
MS9166-26	0.812	1.500	0.609	1.328
MS9166-30	0.938	0.500	0.734	0.328
MS9166-31	0.938	0.625	0.734	0.453
MS9166-32	0.938	0.750	0.734	0.578
MS9166-33	0.938	0.875	0.734	0.703
MS9166-34	0.938	1.000	0.734	0.828
MS9166-35	0.938	1.250	0.734	1.078
MS9166-36	0.938	1.500	0.734	1.328

DASH NO.	A REF	B REF	C ±.010	D ±.010
MS9166-40	1.062	0.500	0.859	0.328
MS9166-41	1.062	0.625	0.859	0.453
MS9166-42	1.062	0.750	0.859	0.578
MS9166-43	1.062	0.875	0.859	0.703
MS9166-44	1.062	1.000	0.859	0.828
MS9166-45	1.062	1.250	0.859	1.078
MS9166-46	1.062	1.500	0.859	1.328
MS9166-50	1.312	0.500	1.109	0.328
MS9166-51	1.312	0.625	1.109	0.453
MS9166-52	1.312	0.750	1.109	0.578
MS9166-53	1.312	0.875	1.109	0.703
MS9166-54	1.312	1.000	1.109	0.828
MS9166-55	1.312	1.250	1.109	1.078
MS9166-56	1.312	1.500	1.109	1.328
MS9166-60	1.562	0.500	1.359	0.328
MS9166-61	1.562	0.625	1.359	0.453
MS9166-62	1.562	0.750	1.359	0.578
MS9166-63	1.562	0.875	1.359	0.703
MS9166-64	1.562	1.000	1.359	0.828
MS9166-65	1.562	1.250	1.359	1.078
MS9166-66	1.562	1.500	1.359	1.328
MS9166-70	1.812	0.500	1.609	0.328
MS9166-71	1.812	0.625	1.609	0.453
MS9166-72	1.812	0.750	1.609	0.578
MS9166-73	1.812	0.875	1.609	0.703
MS9166-74	1.812	1.000	1.609	0.828
MS9166-75	1.812	1.250	1.609	1.078
MS9166-76	1.812	1.500	1.609	1.328

REQUIREMENTS:

MATERIAL: STEEL AMS 6350. HARDEN (OIL QUANCH) AND TEMPER TO ROCKWELL C 32-38.

FINISH: CADMIUM PLATE PER AMS 2400. DIMENSIONS SPECIFIED ARE AFTER PLATING

REMOVE BURRS AND BREAK SHARP EDGES.

ALL DIMENSIONS ARE IN INCHES. UNLESS OTHERWISE SPECIFIED: TOLERANCES; LINEAR ±.015

DO NOT USE UNASSIGNED PART NUMBERS.

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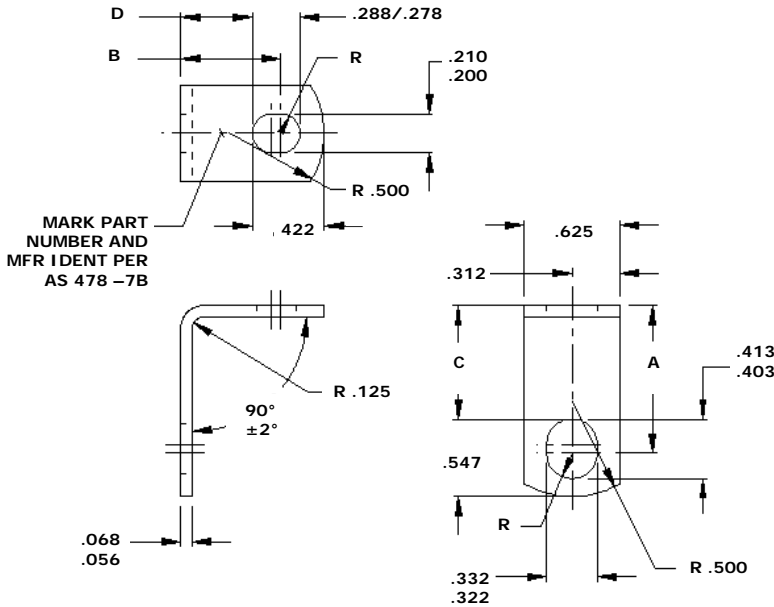
UMPCO, INC
CAGE CODE No. 18076

REV
N/C
01/30/09

MS9166

BRACKET, 90° ANGLE, AMS 6350, .190 X .250 BOLT

PART NUMBER



DASH NO.	A REF	B REF	C ±.010	D ±.010
MS9167-01	0.562	0.500	0.328	0.328
MS9167-02	0.562	0.625	0.328	0.453
MS9167-03	0.562	0.750	0.328	0.578
MS9167-04	0.562	0.875	0.328	0.703
MS9167-05	0.562	1.000	0.328	0.828
MS9167-06	0.562	1.250	0.328	1.078
MS9167-07	0.562	1.500	0.328	1.328
MS9167-10	0.688	0.500	0.453	0.328
MS9167-11	0.688	0.625	0.453	0.453
MS9167-12	0.688	0.750	0.453	0.578
MS9167-13	0.688	0.875	0.453	0.703
MS9167-14	0.688	1.000	0.453	0.828
MS9167-15	0.688	1.250	0.453	1.078
MS9167-16	0.688	1.500	0.453	1.328
MS9167-20	0.812	0.500	0.578	0.328
MS9167-21	0.812	0.625	0.578	0.453
MS9167-22	0.812	0.750	0.578	0.578
MS9167-23	0.812	0.875	0.578	0.703
MS9167-24	0.812	1.000	0.578	0.828
MS9167-25	0.812	1.250	0.578	1.078
MS9167-26	0.812	1.500	0.578	1.328
MS9167-30	0.938	0.500	0.703	0.328
MS9167-31	0.938	0.625	0.703	0.453
MS9167-32	0.938	0.750	0.703	0.578
MS9167-33	0.938	0.875	0.703	0.703
MS9167-34	0.938	1.000	0.703	0.828
MS9167-35	0.938	1.250	0.703	1.078
MS9167-36	0.938	1.500	0.703	1.328

DASH NO.	A REF	B REF	C ±.010	D ±.010
MS9167-40	1.062	0.500	0.828	0.328
MS9167-41	1.062	0.625	0.828	0.453
MS9167-42	1.062	0.750	0.828	0.578
MS9167-43	1.062	0.875	0.828	0.703
MS9167-44	1.062	1.000	0.828	0.828
MS9167-45	1.062	1.250	0.828	1.078
MS9167-46	1.062	1.500	0.828	1.328
MS9167-50	1.312	0.500	1.078	0.328
MS9167-51	1.312	0.625	1.078	0.453
MS9167-52	1.312	0.750	1.078	0.578
MS9167-53	1.312	0.875	1.078	0.703
MS9167-54	1.312	1.000	1.078	0.828
MS9167-55	1.312	1.250	1.078	1.078
MS9167-56	1.312	1.500	1.078	1.328
MS9167-60	1.562	0.500	1.328	0.328
MS9167-61	1.562	0.625	1.328	0.453
MS9167-62	1.562	0.750	1.328	0.578
MS9167-63	1.562	0.875	1.328	0.703
MS9167-64	1.562	1.000	1.328	0.828
MS9167-65	1.562	1.250	1.328	1.078
MS9167-66	1.562	1.500	1.328	1.328
MS9167-70	1.812	0.500	1.578	0.328
MS9167-71	1.812	0.625	1.578	0.453
MS9167-72	1.812	0.750	1.578	0.578
MS9167-73	1.812	0.875	1.578	0.703
MS9167-74	1.812	1.000	1.578	0.828
MS9167-75	1.812	1.250	1.578	1.078
MS9167-76	1.812	1.500	1.578	1.328

REQUIREMENTS:

MATERIAL: STEEL AMS 6350. HARDEN (OIL QUANCH) AND TEMPER TO ROCKWELL C 32-38.

FINISH: CADMIUM PLATE PER AMS 2400. DIMENSIONS SPECIFIED ARE AFTER PLATING

REMOVE BURRS AND BREAK SHARP EDGES.

ALL DIMENSIONS ARE IN INCHES. UNLESS OTHERWISE SPECIFIED: TOLERANCES; LINEAR ±.015

DO NOT USE UNASSIGNED PART NUMBERS.

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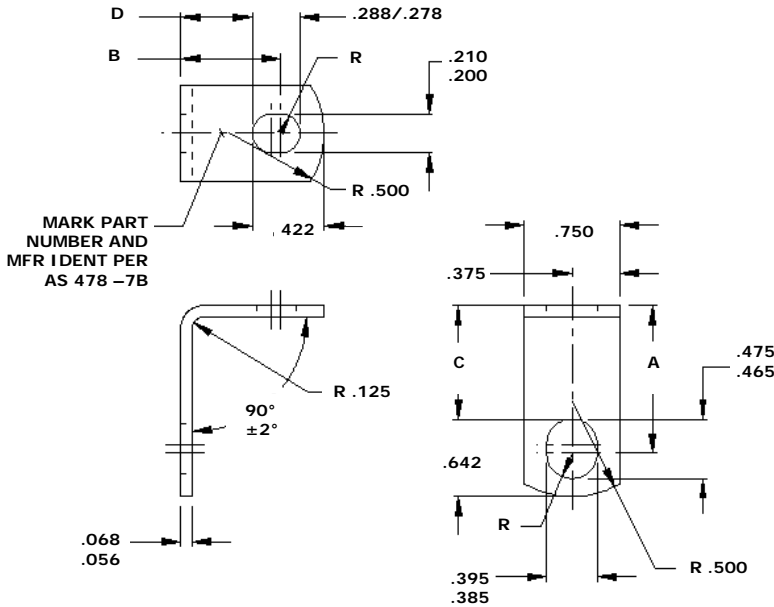
UMPCO, INC
CAGE CODE No. 18076

REV
N/C
01/30/09

MS9167

BRACKET, 90° ANGLE, AMS 6350, .190 X .312 BOLT

PART NUMBER



DASH NO.	A REF	B REF	C ±.010	D ±.010
MS9168-01	0.625	0.500	0.359	0.328
MS9168-02	0.625	0.625	0.359	0.453
MS9168-03	0.625	0.750	0.359	0.578
MS9168-04	0.625	0.875	0.359	0.703
MS9168-05	0.625	1.000	0.359	0.828
MS9168-06	0.625	1.250	0.359	1.078
MS9168-07	0.625	1.500	0.359	1.328
MS9168-10	0.750	0.500	0.484	0.328
MS9168-11	0.750	0.625	0.484	0.453
MS9168-12	0.750	0.750	0.484	0.578
MS9168-13	0.750	0.875	0.484	0.703
MS9168-14	0.750	1.000	0.484	0.828
MS9168-15	0.750	1.250	0.484	1.078
MS9168-16	0.750	1.500	0.484	1.328
MS9168-20	0.875	0.500	0.609	0.328
MS9168-21	0.875	0.625	0.609	0.453
MS9168-22	0.875	0.750	0.609	0.578
MS9168-23	0.875	0.875	0.609	0.703
MS9168-24	0.875	1.000	0.609	0.828
MS9168-25	0.875	1.250	0.609	1.078
MS9168-26	0.875	1.500	0.609	1.328
MS9168-30	1.000	0.500	0.734	0.328
MS9168-31	1.000	0.625	0.734	0.453
MS9168-32	1.000	0.750	0.734	0.578
MS9168-33	1.000	0.875	0.734	0.703
MS9168-34	1.000	1.000	0.734	0.828
MS9168-35	1.000	1.250	0.734	1.078
MS9168-36	1.000	1.500	0.734	1.328

DASH NO.	A REF	B REF	C ±.010	D ±.010
MS9168-40	1.250	0.500	0.984	0.328
MS9168-41	1.250	0.625	0.984	0.453
MS9168-42	1.250	0.750	0.984	0.578
MS9168-43	1.250	0.875	0.984	0.703
MS9168-44	1.250	1.000	0.984	0.828
MS9168-45	1.250	1.250	0.984	1.078
MS9168-46	1.250	1.500	0.984	1.328
MS9168-50	1.500	0.500	1.234	0.328
MS9168-51	1.500	0.625	1.234	0.453
MS9168-52	1.500	0.750	1.234	0.578
MS9168-53	1.500	0.875	1.234	0.703
MS9168-54	1.500	1.000	1.234	0.828
MS9168-55	1.500	1.250	1.234	1.078
MS9168-56	1.500	1.500	1.234	1.328
MS9168-60	1.750	0.500	1.484	0.328
MS9168-61	1.750	0.625	1.484	0.453
MS9168-62	1.750	0.750	1.484	0.578
MS9168-63	1.750	0.875	1.484	0.703
MS9168-64	1.750	1.000	1.484	0.828
MS9168-65	1.750	1.250	1.484	1.078
MS9168-66	1.750	1.500	1.484	1.328
MS9168-70	2.000	0.500	1.734	0.328
MS9168-71	2.000	0.625	1.734	0.453
MS9168-72	2.000	0.750	1.734	0.578
MS9168-73	2.000	0.875	1.734	0.703
MS9168-74	2.000	1.000	1.734	0.828
MS9168-75	2.000	1.250	1.734	1.078
MS9168-76	2.000	1.500	1.734	1.328

REQUIREMENTS:

MATERIAL: STEEL AMS 6350. HARDEN (OIL QUANCH) AND TEMPER TO ROCKWELL C 32-38.

FINISH: CADMIUM PLATE PER AMS 2400. DIMENSIONS SPECIFIED ARE AFTER PLATING

REMOVE BURRS AND BREAK SHARP EDGES.

ALL DIMENSIONS ARE IN INCHES. UNLESS OTHERWISE SPECIFIED: TOLERANCES; LINEAR ±.015

DO NOT USE UNASSIGNED PART NUMBERS.

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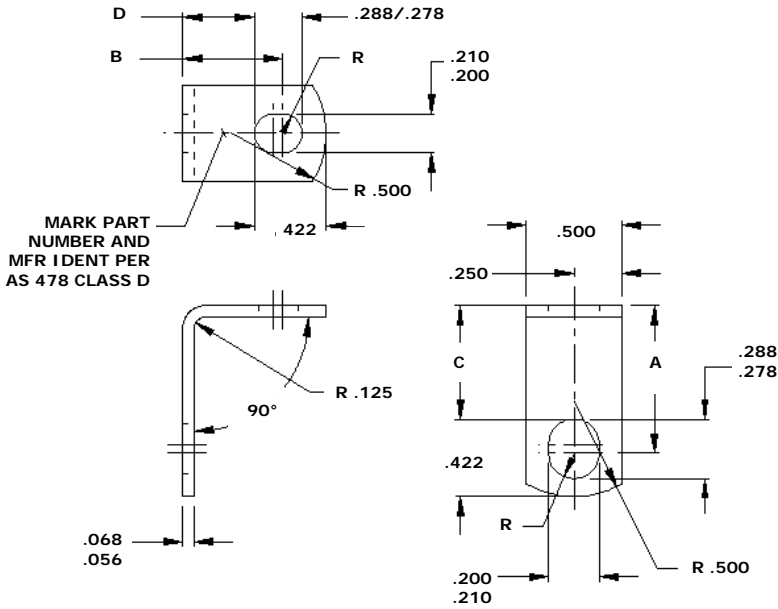
UMPCO, INC
CAGE CODE No. 18076

REV
N/C
01/30/09

MS9168

BRACKET, 90° ANGLE, AMS 6350, .190 X .375 BOLT

PART NUMBER



DASH NO.	A REF	B REF	C ±.010	D ±.010
MS9228-01	0.500	0.500	0.328	0.328
MS9228-02	0.500	0.625	0.328	0.453
MS9228-03	0.500	0.750	0.328	0.578
MS9228-04	0.500	0.875	0.328	0.703
MS9228-05	0.500	1.000	0.328	0.828
MS9228-06	0.500	1.250	0.328	1.078
MS9228-07	0.500	1.500	0.328	1.328
MS9228-08	0.500	1.750	0.328	1.578
MS9228-10	0.625	0.625	0.453	0.453
MS9228-11	0.625	0.750	0.453	0.578
MS9228-12	0.625	0.875	0.453	0.703
MS9228-13	0.625	1.000	0.453	0.828
MS9228-14	0.625	1.250	0.453	1.078
MS9228-15	0.625	1.500	0.453	1.328
MS9228-16	0.625	1.750	0.453	1.578
MS9228-20	0.750	0.750	0.578	0.578
MS9228-21	0.750	0.875	0.578	0.703
MS9228-22	0.750	1.000	0.578	0.828
MS9228-23	0.750	1.250	0.578	1.078
MS9228-24	0.750	1.500	0.578	1.328
MS9228-25	0.750	1.750	0.578	1.578
MS9228-30	0.875	0.875	0.703	0.703
MS9228-31	0.875	1.000	0.703	0.828
MS9228-32	0.875	1.250	0.703	1.078
MS9228-33	0.875	1.500	0.703	1.328
MS9228-34	0.875	1.750	0.703	1.578
MS9228-40	1.000	1.000	0.828	0.828
MS9228-41	1.000	1.250	0.828	1.078
MS9228-42	1.000	1.500	0.828	1.328
MS9228-43	1.000	1.750	0.828	1.578
MS9228-44	1.000	2.000	0.828	1.828

REQUIREMENTS:

1. MATERIAL: CORRISON RESISTANT STEEL IN ACCORDNACE WITH AMS 5504.
2. HEAT TREATMENT AND CLEANING: HEAT TREATMENT AND CLEANING IN ACCORDANCE WITH AMS 2550.
3. HARDNESS: 30-38 HRC.
4. DIMENSIONING AND TOLERANCING: DIMENSIONING AND TOLERANCING SHALL BE IN ACCORDANCE WITH ANSI Y14. 5M.
5. TOLERANCE: UNLESS OTHERWISE SPECIFIED, TOLERANCES SHALL BE FOR LINEAR DIMENSION ±.015, ANGULAR ±2°.
6. PART NUMBER: THE PART NUMBER SHALL CONSIST OF THE BASIC MS NUMBER FOLLOWED BY A DASH NUMBER FROM THE TABLE.

EXAMPLE: MS9228 -02

└── DASH NUMBER
└── BASIC MS NUMBER

NOTES:

1. ALL DIMENSIONS ARE IN INCHES.
2. DO NOT USE UNASSIGNED PART NUMBERS.
3. REMOVE BURRS AND BREAK SHARP EDGES.

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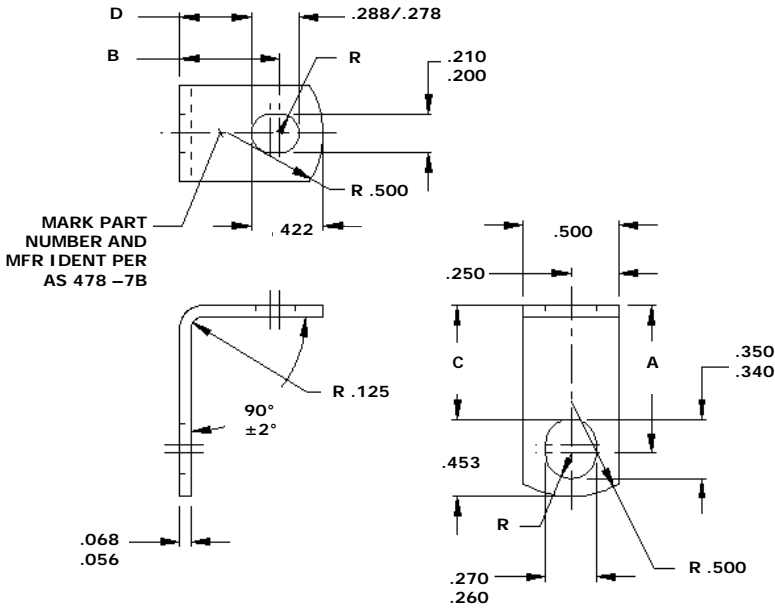
UMPCO, INC
CAGE CODE No. 18076

REV
N/C
01/30/09

AS9228

BRACKET, ANGLE 90°, .190 BOLT

PART NUMBER



DASH NO.	A REF	B REF	C ±.010	D ±.010
MS9229-01	0.562	0.500	0.359	0.328
MS9229-02	0.562	0.625	0.359	0.453
MS9229-03	0.562	0.750	0.359	0.578
MS9229-04	0.562	0.875	0.359	0.703
MS9229-05	0.562	1.000	0.359	0.828
MS9229-06	0.562	1.250	0.359	1.078
MS9229-07	0.562	1.500	0.359	1.328
MS9229-10	0.688	0.500	0.484	0.328
MS9229-11	0.688	0.625	0.484	0.453
MS9229-12	0.688	0.750	0.484	0.578
MS9229-13	0.688	0.875	0.484	0.703
MS9229-14	0.688	1.000	0.484	0.828
MS9229-15	0.688	1.250	0.484	1.078
MS9229-16	0.688	1.500	0.484	1.328
MS9229-20	0.812	0.500	0.609	0.328
MS9229-21	0.812	0.625	0.609	0.453
MS9229-22	0.812	0.750	0.609	0.578
MS9229-23	0.812	0.875	0.609	0.703
MS9229-24	0.812	1.000	0.609	0.828
MS9229-25	0.812	1.250	0.609	1.078
MS9229-26	0.812	1.500	0.609	1.328
MS9229-30	0.938	0.500	0.734	0.328
MS9229-31	0.938	0.625	0.734	0.453
MS9229-32	0.938	0.750	0.734	0.578
MS9229-33	0.938	0.875	0.734	0.703
MS9229-34	0.938	1.000	0.734	0.828
MS9229-35	0.938	1.250	0.734	1.078
MS9229-36	0.938	1.500	0.734	1.328

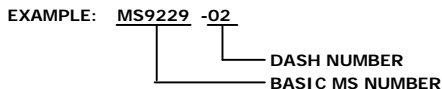
DASH NO.	A REF	B REF	C ±.010	D ±.010
MS9229-40	1.062	0.500	0.859	0.328
MS9229-41	1.062	0.625	0.859	0.453
MS9229-42	1.062	0.750	0.859	0.578
MS9229-43	1.062	0.875	0.859	0.703
MS9229-44	1.062	1.000	0.859	0.828
MS9229-45	1.062	1.250	0.859	1.078
MS9229-46	1.062	1.500	0.859	1.328
MS9229-50	1.312	0.500	1.109	0.328
MS9229-51	1.312	0.625	1.109	0.453
MS9229-52	1.312	0.750	1.109	0.578
MS9229-53	1.312	0.875	1.109	0.703
MS9229-54	1.312	1.000	1.109	0.828
MS9229-55	1.312	1.250	1.109	1.078
MS9229-56	1.312	1.500	1.109	1.328
MS9229-60	1.562	0.500	1.359	0.328
MS9229-61	1.562	0.625	1.359	0.453
MS9229-62	1.562	0.750	1.359	0.578
MS9229-63	1.562	0.875	1.359	0.703
MS9229-64	1.562	1.000	1.359	0.828
MS9229-65	1.562	1.250	1.359	1.078
MS9229-66	1.562	1.500	1.359	1.328
MS9229-70	1.812	0.500	1.609	0.328
MS9229-71	1.812	0.625	1.609	0.453
MS9229-72	1.812	0.750	1.609	0.578
MS9229-73	1.812	0.875	1.609	0.703
MS9229-74	1.812	1.000	1.609	0.828
MS9229-75	1.812	1.250	1.609	1.078
MS9229-76	1.812	1.500	1.609	1.328

REQUIREMENTS:

- MATERIAL: CORROSION RESISTANT STEEL IN ACCORDANCE WITH AMS 5504.
- HEAT TREATMENT AND CLEANING: HEAT TREATMENT AND CLEANING IN ACCORDANCE WITH AMS 2550.
- HARDNESS: 30-38 HRC.
- DIMENSIONING AND TOLERANCING: DIMENSIONING AND TOLERANCING SHALL BE IN ACCORDANCE WITH ANSI Y14.5M.
- TOLERANCE: UNLESS OTHERWISE SPECIFIED, TOLERANCES SHALL BE FOR LINEAR DIMENSION ±.015.
- PART NUMBER: THE PART NUMBER SHALL CONSIST OF THE BASIC MS NUMBER FOLLOWED BY A DASH NUMBER FROM THE TABLE.

NOTES:

- ALL DIMENSIONS ARE IN INCHES.
- DO NOT USE UNASSIGNED PART NUMBERS.
- REMOVE BURRS AND BREAK SHARP EDGES.



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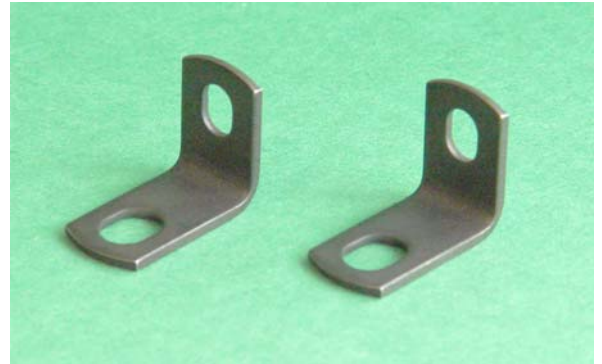
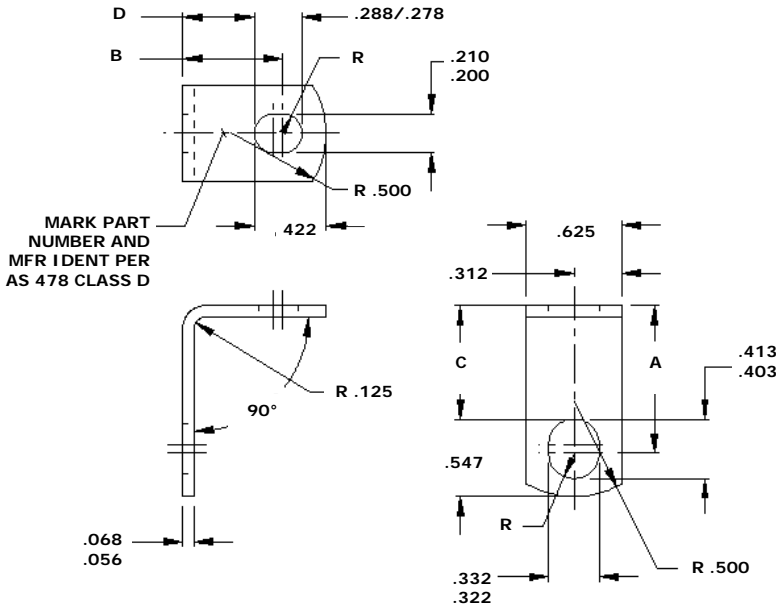
UMPCO, INC
CAGE CODE No. 18076

REV N/C
01/30/09

MS9229

BRACKET-ANGLE 90°, AMS 5504, .190 X .250 BOLT

PART NUMBER



DASH NO.	A REF	B REF	C ±.010	D ±.010
MS9230-01	0.562	0.500	0.328	0.328
MS9230-02	0.562	0.625	0.328	0.453
MS9230-03	0.562	0.750	0.328	0.578
MS9230-04	0.562	0.875	0.328	0.703
MS9230-05	0.562	1.000	0.328	0.828
MS9230-06	0.562	1.250	0.328	1.078
MS9230-07	0.562	1.500	0.328	1.328
MS9230-10	0.688	0.500	0.453	0.328
MS9230-11	0.688	0.625	0.453	0.453
MS9230-12	0.688	0.750	0.453	0.578
MS9230-13	0.688	0.875	0.453	0.703
MS9230-14	0.688	1.000	0.453	0.828
MS9230-15	0.688	1.250	0.453	1.078
MS9230-16	0.688	1.500	0.453	1.328
MS9230-20	0.812	0.500	0.578	0.328
MS9230-21	0.812	0.625	0.578	0.453
MS9230-22	0.812	0.750	0.578	0.578
MS9230-23	0.812	0.875	0.578	0.703
MS9230-24	0.812	1.000	0.578	0.828
MS9230-25	0.812	1.250	0.578	1.078
MS9230-26	0.812	1.500	0.578	1.328
MS9230-30	0.938	0.500	0.703	0.328
MS9230-31	0.938	0.625	0.703	0.453
MS9230-32	0.938	0.750	0.703	0.578
MS9230-33	0.938	0.875	0.703	0.703
MS9230-34	0.938	1.000	0.703	0.828
MS9230-35	0.938	1.250	0.703	1.078
MS9230-36	0.938	1.500	0.703	1.328

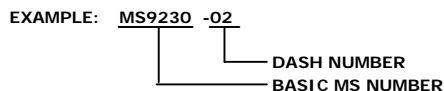
DASH NO.	A REF	B REF	C ±.010	D ±.010
MS9230-40	1.062	0.500	0.828	0.328
MS9230-41	1.062	0.625	0.828	0.453
MS9230-42	1.062	0.750	0.828	0.578
MS9230-43	1.062	0.875	0.828	0.703
MS9230-44	1.062	1.000	0.828	0.828
MS9230-45	1.062	1.250	0.828	1.078
MS9230-46	1.062	1.500	0.828	1.328
MS9230-50	1.312	0.500	1.078	0.328
MS9230-51	1.312	0.625	1.078	0.453
MS9230-52	1.312	0.750	1.078	0.578
MS9230-53	1.312	0.875	1.078	0.703
MS9230-54	1.312	1.000	1.078	0.828
MS9230-55	1.312	1.250	1.078	1.078
MS9230-56	1.312	1.500	1.078	1.328
MS9230-60	1.562	0.500	1.328	0.328
MS9230-61	1.562	0.625	1.328	0.453
MS9230-62	1.562	0.750	1.328	0.578
MS9230-63	1.562	0.875	1.328	0.703
MS9230-64	1.562	1.000	1.328	0.828
MS9230-65	1.562	1.250	1.328	1.078
MS9230-66	1.562	1.500	1.328	1.328
MS9230-70	1.812	0.500	1.578	0.328
MS9230-71	1.812	0.625	1.578	0.453
MS9230-72	1.812	0.750	1.578	0.578
MS9230-73	1.812	0.875	1.578	0.703
MS9230-74	1.812	1.000	1.578	0.828
MS9230-75	1.812	1.250	1.578	1.078
MS9230-76	1.812	1.500	1.578	1.328

REQUIREMENTS:

1. MATERIAL: CORROSION RESISTANT STEEL IN ACCORDANCE WITH AMS 5504.
2. HEAT TREATMENT AND CLEANING: HEAT TREATMENT AND CLEANING IN ACCORDANCE WITH AMS 2550.
3. HARDNESS: 30-38 HRC.
4. DIMENSIONING AND TOLERANCING: DIMENSIONING AND TOLERANCING SHALL BE IN ACCORDANCE WITH ANSI Y14.5M.
5. TOLERANCE: UNLESS OTHERWISE SPECIFIED, TOLERANCES SHALL BE FOR LINEAR DIMENSION ±.015, ANGULAR ±2°.
6. PART NUMBER: THE PART NUMBER SHALL CONSIST OF THE BASIC MS NUMBER FOLLOWED BY A DASH NUMBER FROM THE TABLE.

NOTES:

1. ALL DIMENSIONS ARE IN INCHES.
2. DO NOT USE UNASSIGNED PART NUMBERS.
3. REMOVE BURRS AND BREAK SHARP EDGES.



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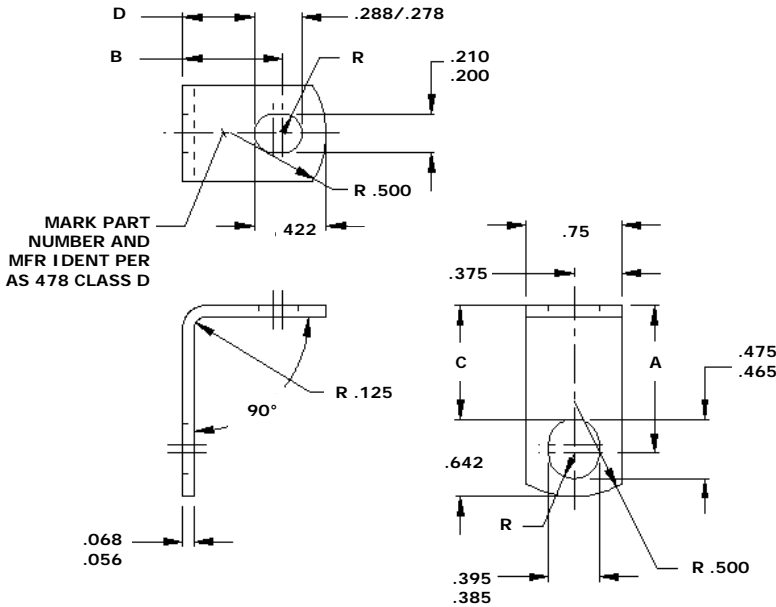
UMPCO, INC
CAGE CODE No. 18076

REV
N/C
01/30/09

AS9230

BRACKET-ANGLE 90°, .190 X .312 BOLT

PART NUMBER



DASH NO.	A REF	B REF	C ±.010	D ±.010
MS9231-01	0.625	0.500	0.359	0.328
MS9231-02	0.625	0.625	0.359	0.453
MS9231-03	0.625	0.750	0.359	0.578
MS9231-04	0.625	0.875	0.359	0.703
MS9231-05	0.625	1.000	0.359	0.828
MS9231-06	0.625	1.250	0.359	1.078
MS9231-07	0.625	1.500	0.359	1.328
MS9231-10	0.750	0.500	0.484	0.328
MS9231-11	0.750	0.625	0.484	0.453
MS9231-12	0.750	0.750	0.484	0.578
MS9231-13	0.750	0.875	0.484	0.703
MS9231-14	0.750	1.000	0.484	0.828
MS9231-15	0.750	1.250	0.484	1.078
MS9231-16	0.750	1.500	0.484	1.328
MS9231-20	0.875	0.500	0.609	0.328
MS9231-21	0.875	0.625	0.609	0.453
MS9231-22	0.875	0.750	0.609	0.578
MS9231-23	0.875	0.875	0.609	0.703
MS9231-24	0.875	1.000	0.609	0.828
MS9231-25	0.875	1.250	0.609	1.078
MS9231-26	0.875	1.500	0.609	1.328
MS9231-30	1.000	0.500	0.734	0.328
MS9231-31	1.000	0.625	0.734	0.453
MS9231-32	1.000	0.750	0.734	0.578
MS9231-33	1.000	0.875	0.734	0.703
MS9231-34	1.000	1.000	0.734	0.828
MS9231-35	1.000	1.250	0.734	1.078
MS9231-36	1.000	1.500	0.734	1.328

DASH NO.	A REF	B REF	C ±.010	D ±.010
MS9231-40	1.250	0.500	0.984	0.328
MS9231-41	1.250	0.625	0.984	0.453
MS9231-42	1.250	0.750	0.984	0.578
MS9231-43	1.250	0.875	0.984	0.703
MS9231-44	1.250	1.000	0.984	0.828
MS9231-45	1.250	1.250	0.984	1.078
MS9231-46	1.250	1.500	0.984	1.328
MS9231-50	1.500	0.500	1.234	0.328
MS9231-51	1.500	0.625	1.234	0.453
MS9231-52	1.500	0.750	1.234	0.578
MS9231-53	1.500	0.875	1.234	0.703
MS9231-54	1.500	1.000	1.234	0.828
MS9231-55	1.500	1.250	1.234	1.078
MS9231-56	1.500	1.500	1.234	1.328
MS9231-60	1.750	0.500	1.484	0.328
MS9231-61	1.750	0.625	1.484	0.453
MS9231-62	1.750	0.750	1.484	0.578
MS9231-63	1.750	0.875	1.484	0.703
MS9231-64	1.750	1.000	1.484	0.828
MS9231-65	1.750	1.250	1.484	1.078
MS9231-66	1.750	1.500	1.484	1.328
MS9231-70	2.000	0.500	1.734	0.328
MS9231-71	2.000	0.625	1.734	0.453
MS9231-72	2.000	0.750	1.734	0.578
MS9231-73	2.000	0.875	1.734	0.703
MS9231-74	2.000	1.000	1.734	0.828
MS9231-75	2.000	1.250	1.734	1.078
MS9231-76	2.000	1.500	1.734	1.328

REQUIREMENTS:

- MATERIAL: CORROSION RESISTANT STEEL IN ACCORDANCE WITH AMS 5504.
- HEAT TREATMENT AND CLEANING: HEAT TREATMENT AND CLEANING IN ACCORDANCE WITH AMS 2550.
- HARDNESS: 30-38 HRC.
- DIMENSIONING AND TOLERANCING: DIMENSIONING AND TOLERANCING SHALL BE IN ACCORDANCE WITH ANSI Y14.5M.
- TOLERANCE: UNLESS OTHERWISE SPECIFIED, TOLERANCES SHALL BE FOR LINEAR DIMENSION ±.015, ANGULAR ±2°.
- PART NUMBER: THE PART NUMBER SHALL CONSIST OF THE BASIC MS NUMBER FOLLOWED BY A DASH NUMBER FROM THE TABLE.

EXAMPLE: MS9231 - 02

DASH NUMBER
BASIC MS NUMBER

NOTES:

- ALL DIMENSIONS ARE IN INCHES.
- DO NOT USE UNASSIGNED PART NUMBERS.
- REMOVE BURRS AND BREAK SHARP EDGES.

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REV
N/C
01/30/09

AS9231

BRACKET-ANGLE 90°, .190 X .375 BOLT

PART NUMBER

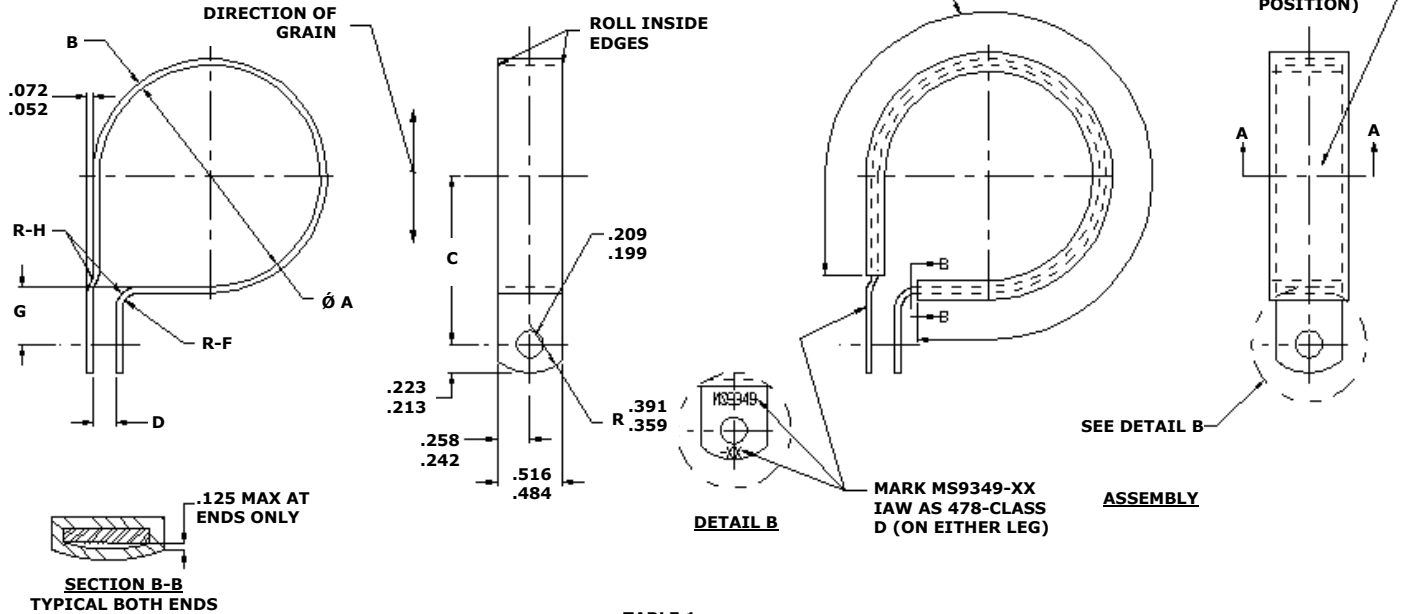
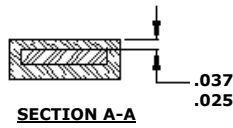
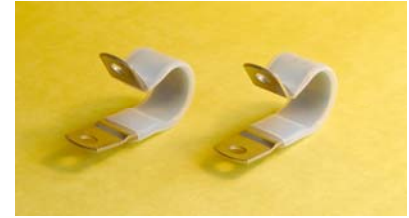


TABLE 1

DASH NUMBER	TUBE OUTSIDE DIAMETER NOM	A BASIC	B ±.006	C ±.010	D	F RADIUS ±.016	G ±.016	H RADIUS ±.016	L +.040 -0.000
MS9349-01	0.125	0.188	0.031	0.423	.125-.141	0.062	0.312	0.062	0.505
MS9349-02	0.188	0.250	0.031	0.457	.125-.141	0.062	0.312	0.062	0.679
MS9349-03	0.250	0.312	0.031	0.498	.125-.141	0.062	0.312	0.062	0.908
MS9349-04	0.312	0.375	0.031	0.529	.125-.141	0.062	0.312	0.062	1.097
MS9349-05	0.375	0.438	0.031	0.560	.125-.141	0.062	0.312	0.062	1.306
MS9349-06	0.438	0.500	0.031	0.592	.125-.141	0.062	0.312	0.062	1.515
MS9349-07	0.500	0.562	0.031	0.623	.125-.141	0.062	0.312	0.062	1.724
MS9349-08	0.562	0.625	0.031	0.654	.125-.141	0.062	0.312	0.062	1.930
MS9349-09	0.625	0.688	0.051	0.752	.125-.141	0.109	0.375	0.094	2.092
MS9349-10	0.688	0.750	0.051	0.783	.125-.141	0.109	0.375	0.094	2.299
MS9349-11	0.750	0.812	0.051	0.814	.125-.141	0.109	0.375	0.094	2.506
MS9349-12	0.812	0.875	0.051	0.845	.125-.141	0.109	0.375	0.094	2.721
MS9349-13	0.875	0.938	0.051	0.877	.125-.141	0.109	0.375	0.094	2.929
MS9349-14	0.938	1.000	0.051	0.908	.125-.141	0.109	0.375	0.094	3.136
MS9349-15	1.000	1.062	0.051	0.939	.125-.141	0.109	0.375	0.094	3.343
MS9349-16	1.062	1.125	0.051	0.970	.125-.141	0.109	0.375	0.094	3.555
MS9349-17	1.125	1.188	0.051	1.002	.125-.141	0.109	0.375	0.094	3.769
MS9349-18	1.188	1.250	0.064	1.062	.156-.172	0.125	0.406	0.125	3.914
MS9349-19	1.250	1.312	0.064	1.093	.156-.172	0.125	0.406	0.125	4.125
MS9349-20	1.312	1.375	0.064	1.125	.156-.172	0.125	0.406	0.125	4.339
MS9349-21	1.375	1.438	0.064	1.156	.156-.172	0.125	0.406	0.125	4.551
MS9349-22	1.438	1.500	0.064	1.188	.156-.172	0.125	0.406	0.125	4.754
MS9349-23	1.500	1.562	0.064	1.219	.156-.172	0.125	0.406	0.125	5.066
MS9349-24	1.562	1.625	0.064	1.250	.156-.172	0.125	0.406	0.125	5.173
MS9349-25	1.625	1.688	0.064	1.281	.156-.172	0.125	0.406	0.125	5.386
MS9349-26	1.688	1.750	0.064	1.312	.156-.188	0.125	0.406	0.125	5.585
MS9349-27	1.750	1.812	0.064	1.344	.156-.188	0.125	0.406	0.125	5.798
MS9349-28	1.812	1.875	0.064	1.375	.156-.188	0.125	0.406	0.125	6.011
MS9349-29	1.875	1.938	0.064	1.406	.156-.188	0.125	0.406	0.125	6.223
MS9349-30	1.938	2.000	0.064	1.438	.156-.188	0.125	0.406	0.125	6.436
MS9349-31	2.000	2.062	0.064	1.469	.156-.188	0.125	0.406	0.125	6.643

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UMPCO, INC
CAGE CODE No. 18076

REV N/C
03/01/11

AS9349

CLAMP, LOOP CUSHIONED, JOGGLED, CRES, .204 HOLE

PART NUMBER

REQUIREMENTS:

1. **MATERIAL:** CLAMP-CORRISION RESISTANT STEEL IN ACCORDANCE WITH AMS 5510.
CUSHION-POLYTETRAFLUOROETHYLENE IN ACCORDANCE WITH AMS 3651.
2. **CLAMP FORM:** CLAMP SHALL BE FORMED AS SHOWN. DIMENSION "D" SHALL FALL WITHIN THE SPECIFIED LIMITS WHEN CLAMP IS ASSEMBLED ON A BAR THE DIAMETER OF WHICH IS EQUAL TO THE NOMINAL TUBE OD WITHIN ±.001. HOLES SHALL BE IN ALIGNMENT WITHIN .010 AND CLAMP SHALL BE FLAT WITHIN .010 THRU THE CLAMP WIDTH WHEN ASSEMBLED ON TEST BAR. IN THE FREE POSITION, CLAMP MAY SPRING OPEN PROVIDED THE ABOVE CONDITIONS ARE MET.
3. **EDGES:** REMOVE BURRS AND SHARP EDGES
4. **PART NUMBER:** THE PART NUMBER SHALL CONSIST OF THE BASIC MS NUMBER FOLLOWED BY A DASH NUMBER FROM TABLE 1

EXAMPLE: MS9349 -01



MS9349-01 INDICATES - CLAMP, LOOP CUSHIONED, JOGGLED, CRES, .204 HOLE; TUBE OUTSIDE DIAMETER NOMINAL, .125, BASIC DIAMETER .188.

NOTES:

1. ALL DIMENSIONS ARE IN INCHES.
2. DO NOT USE UNASSIGNED PART NUMBERS.

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UMPCO, INC
CAGE CODE No. 18076

REV
N/C
03/01/11

AS9349

CLAMP, LOOP CUSHIONED, JOGGLED, CRES, .204 HOLE

PART NUMBER

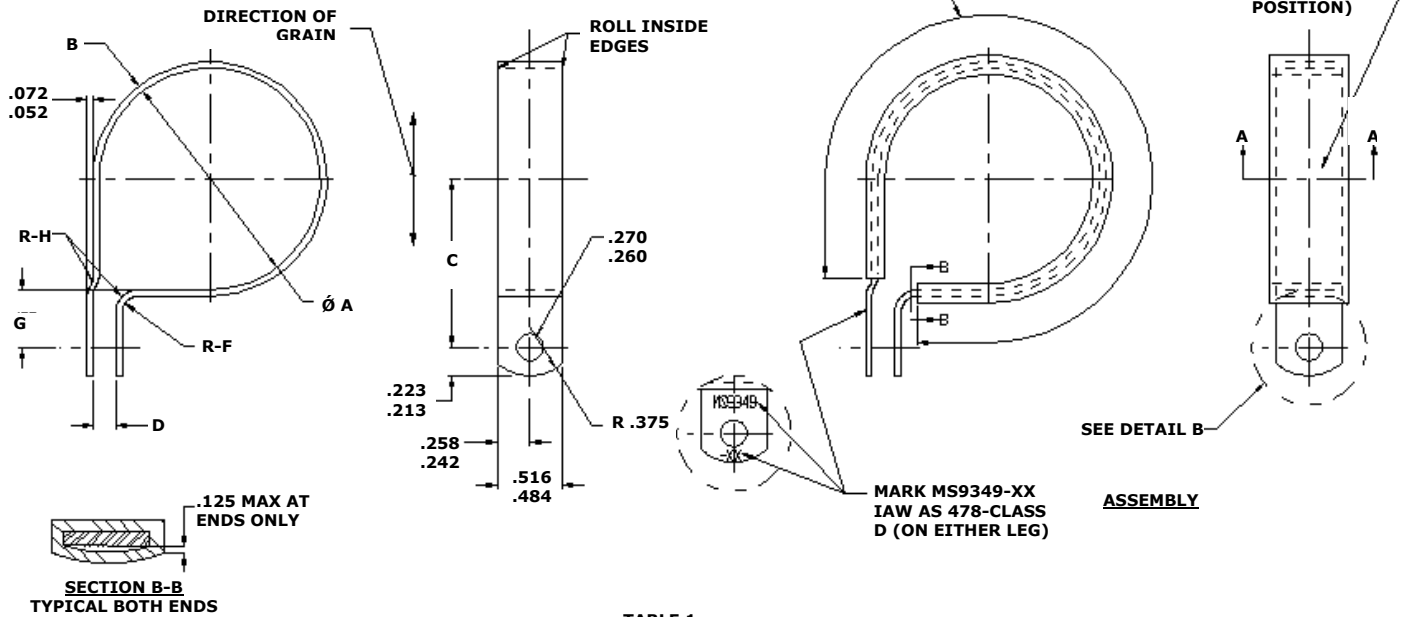
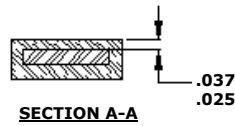


TABLE 1

DASH NUMBER	TUBE OUTSIDE DIAMETER NOM	A BASIC	B ±.006	C ±.010	D	F RADIUS ±.016	G ±.016	H RADIUS ±.016	L +.040 -0.000
MS9350-01	0.125	0.188	0.031	0.423	.125-.141	0.062	0.312	0.062	0.505
MS9350-02	0.188	0.250	0.031	0.457	.125-.141	0.062	0.312	0.062	0.679
MS9350-03	0.250	0.312	0.031	0.498	.125-.141	0.062	0.312	0.062	0.908
MS9350-04	0.312	0.375	0.031	0.529	.125-.141	0.062	0.312	0.062	1.097
MS9350-05	0.375	0.438	0.031	0.560	.125-.141	0.062	0.312	0.062	1.306
MS9350-06	0.438	0.500	0.031	0.592	.125-.141	0.062	0.312	0.062	1.515
MS9350-07	0.500	0.562	0.031	0.623	.125-.141	0.062	0.312	0.062	1.724
MS9350-08	0.562	0.625	0.031	0.654	.125-.141	0.062	0.312	0.062	1.930
MS9350-09	0.625	0.688	0.051	0.752	.125-.141	0.109	0.375	0.094	2.092
MS9350-10	0.688	0.750	0.051	0.783	.125-.141	0.109	0.375	0.094	2.299
MS9350-11	0.750	0.812	0.051	0.814	.125-.141	0.109	0.375	0.094	2.506
MS9350-12	0.812	0.875	0.051	0.845	.125-.141	0.109	0.375	0.094	2.721
MS9350-13	0.875	0.938	0.051	0.877	.125-.141	0.109	0.375	0.094	2.929
MS9350-14	0.938	1.000	0.051	0.908	.125-.141	0.109	0.375	0.094	3.136
MS9350-15	1.000	1.062	0.051	0.939	.125-.141	0.109	0.375	0.094	3.343
MS9350-16	1.062	1.125	0.051	0.970	.125-.141	0.109	0.375	0.094	3.555
MS9350-17	1.125	1.188	0.051	1.002	.125-.141	0.109	0.375	0.094	3.769
MS9350-18	1.188	1.250	0.064	1.062	.156-.172	0.125	0.406	0.125	3.914
MS9350-19	1.250	1.312	0.064	1.093	.156-.172	0.125	0.406	0.125	4.125
MS9350-20	1.312	1.375	0.064	1.125	.156-.172	0.125	0.406	0.125	4.339
MS9350-21	1.375	1.438	0.064	1.156	.156-.172	0.125	0.406	0.125	4.551
MS9350-22	1.438	1.500	0.064	1.188	.156-.172	0.125	0.406	0.125	4.754
MS9350-23	1.500	1.562	0.064	1.219	.156-.172	0.125	0.406	0.125	5.066
MS9350-24	1.562	1.625	0.064	1.250	.156-.172	0.125	0.406	0.125	5.173
MS9350-25	1.625	1.688	0.064	1.281	.156-.172	0.125	0.406	0.125	5.386
MS9350-26	1.688	1.750	0.064	1.312	.156-.188	0.125	0.406	0.125	5.585
MS9350-27	1.750	1.812	0.064	1.344	.156-.188	0.125	0.406	0.125	5.798
MS9350-28	1.812	1.875	0.064	1.375	.156-.188	0.125	0.406	0.125	6.011
MS9350-29	1.875	1.938	0.064	1.406	.156-.188	0.125	0.406	0.125	6.223
MS9350-30	1.938	2.000	0.064	1.438	.156-.188	0.125	0.406	0.125	6.436
MS9350-31	2.000	2.062	0.064	1.469	.156-.188	0.125	0.406	0.125	6.643

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02/04/09

MS9350

CLAMP, LOOP CUSHIONED, JOGGLED, CRES, .265 HOLE

PART NUMBER

REQUIREMENTS:

1. **MATERIAL:** CLAMP-CORRISION RESISTANT STEEL IN ACCORDANCE WITH AMS 5510.
CUSHION-POLYTETRAFLUOROETHYLENE IN ACCORDANCE WITH AMS 3651.
2. **CLAMP FORM:** CLAMP SHALL BE FORMED AS SHOWN. DIMENSION "D" SHALL FALL WITHIN THE SPECIFIED LIMITS WHEN CLAMP IS ASSEMBLED ON A BAR THE DIAMETER OF WHICH IS EQUAL TO THE NOMINAL TUBE OD WITHIN $\pm .001$. HOLES SHALL BE IN ALIGNMENT WITHIN .010 AND CLAMP SHALL BE FLAT WITHIN .010 THRU THE CLAMP WIDTH WHEN ASSEMBLED ON TEST BAR. IN THE FREE POSITION, CLAMP MAY SPRING OPEN PROVIDED THE ABOVE CONDITIONS ARE MET.
3. **EDGES:** REMOVE BURSS AND SHARP EDGES
4. **PART NUMBER:** THE PART NUMBER SHALL CONSIST OF THE BASIC MS NUMBER FOLLOWED BY A DASH NUMBER FROM TABLE 1

EXAMPLE: MS9350 -01



MS9349-01 INDICATES - CLAMP, LOOP CUSHIONED, JOGGLED, CRES, .265 HOLE; TUBE OUTSIDE DIAMETER NOMINAL, .125, BASIC DIAMETER .188.

NOTES:

1. ALL DIMENSIONS ARE IN INCHES.
2. DO NOT USE UNASSIGNED PART NUMBERS.

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02/04/09

MS9350

CLAMP, LOOP CUSHIONED, JOGGLED, CRES, .265 HOLE

PART NUMBER

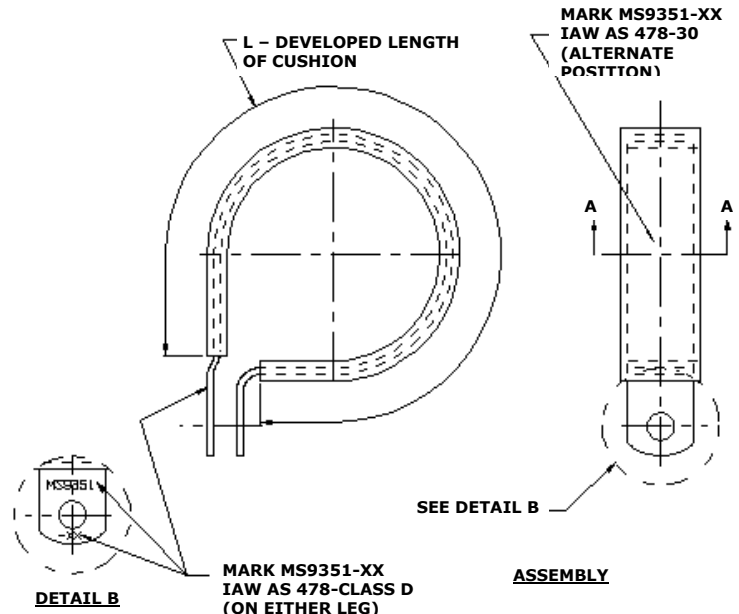
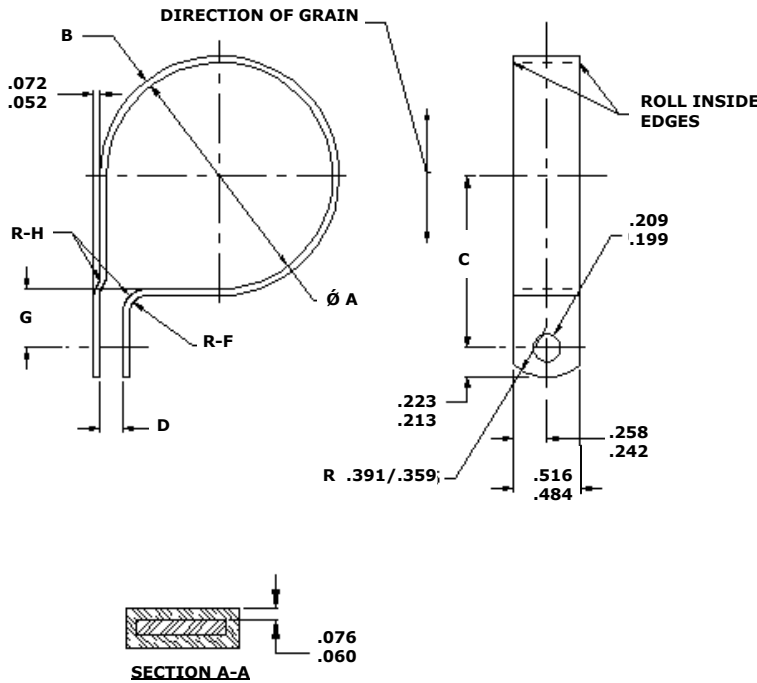


TABLE 1. DASH NUMBERS AND DIMENSIONS

DASH NUMBER	TUBE OUTSIDE DIAMETER NOM	A BASIC	B ±.006	C ±.010	D	F RAD ±.016	G ±.016	H RAD ±.016	L +.040 - .000
MS9351-01	0.125	0.250	0.031	0.457	.125-.141	0.062	0.312	0.062	0.679
MS9351-02	0.188	0.313	0.031	0.498	.125-.141	0.062	0.312	0.062	0.908
MS9351-03	0.250	0.375	0.031	0.529	.125-.141	0.062	0.312	0.062	1.097
MS9351-04	0.312	0.437	0.031	0.560	.125-.141	0.062	0.312	0.062	1.306
MS9351-05	0.375	0.500	0.031	0.592	.125-.141	0.062	0.312	0.062	1.515
MS9351-06	0.438	0.563	0.031	0.623	.125-.141	0.062	0.312	0.062	1.724
MS9351-07	0.500	0.625	0.031	0.654	.125-.141	0.062	0.312	0.062	1.930
MS9351-08	0.562	0.687	0.051	0.752	.125-.141	0.109	0.375	0.094	2.092
MS9351-09	0.625	0.750	0.051	0.783	.125-.141	0.109	0.375	0.094	2.299
MS9351-10	0.688	0.813	0.051	0.814	.125-.141	0.109	0.375	0.094	2.506
MS9351-11	0.750	0.875	0.051	0.845	.125-.141	0.109	0.375	0.094	2.721
MS9351-12	0.812	0.937	0.051	0.877	.125-.141	0.109	0.375	0.094	2.929
MS9351-13	0.875	1.000	0.051	0.908	.125-.141	0.109	0.375	0.094	3.136
MS9351-14	0.938	1.063	0.051	0.939	.125-.141	0.109	0.375	0.094	3.343
MS9351-15	1.000	1.125	0.051	0.970	.125-.141	0.109	0.375	0.094	3.555
MS9351-16	1.062	1.187	0.051	1.002	.125-.141	0.109	0.375	0.094	3.769
MS9351-17	1.125	1.250	0.064	1.062	.156-.172	0.125	0.406	0.125	3.914
MS9351-18	1.188	1.313	0.064	1.093	.156-.172	0.125	0.406	0.125	4.125
MS9351-19	1.250	1.375	0.064	1.125	.156-.172	0.125	0.406	0.125	4.339
MS9351-20	1.312	1.437	0.064	1.156	.156-.172	0.125	0.406	0.125	4.551
MS9351-21	1.375	1.500	0.064	1.188	.156-.172	0.125	0.406	0.125	4.754
MS9351-22	1.438	1.563	0.064	1.219	.156-.172	0.125	0.406	0.125	5.066
MS9351-23	1.500	1.625	0.064	1.250	.156-.172	0.125	0.406	0.125	5.173
MS9351-24	1.562	1.687	0.064	1.281	.156-.172	0.125	0.406	0.125	5.386
MS9351-25	1.625	1.750	0.064	1.312	.156-.188	0.125	0.406	0.125	5.585
MS9351-26	1.688	1.813	0.064	1.344	.156-.188	0.125	0.406	0.125	5.798
MS9351-27	1.750	1.875	0.064	1.375	.156-.188	0.125	0.406	0.125	6.011
MS9351-28	1.812	1.937	0.064	1.406	.156-.188	0.125	0.406	0.125	6.223
MS9351-29	1.875	2.000	0.064	1.438	.156-.188	0.125	0.406	0.125	6.436
MS9351-30	1.938	2.063	0.064	1.469	.156-.188	0.125	0.406	0.125	6.643
MS9351-31	2.000	2.125	0.064	1.500	.156-.188	0.125	0.406	0.125	6.840

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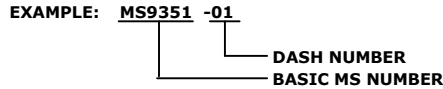
MS9351

CLAMP, LOOP CUSHIONED, JOGGLED, ALUMINUM, .204 HOLE

PART NUMBER

REQUIREMENTS:

1. **MATERIAL:** CLAMP-ALUMINUM IN ACCORDANCE WITH AMS 4041-79
CUSHION-RUBBER IN ACCORDANCE WITH AMS 3209
2. **CLAMP FORM:** CLAMP SHALL BE FORMED AS SHOWN. DIMENSION "D" SHALL FALL WITHIN THE SPECIFIED LIMITS WHEN CLAMP IS ASSEMBLED ON A BAR THE DIAMETER OF WHICH IS EQUAL TO THE NOMINAL TUBE OD WITHIN $\pm .001$. HOLES SHALL BE IN ALIGNMENT WITHIN .010 AND CLAMP SHALL BE FLAT WITHIN .010 THRU THE CLAMP WIDTH WHEN ASSEMBLED ON TEST BAR. IN THE FREE POSITION, CLAMP MAY SPRING OPEN PROVIDED THE ABOVE CONDITIONS ARE MET.
3. **EDGES:** REMOVE BURRS AND SHARP EDGES
4. **PART NUMBER:** THE PART NUMBER SHALL CONSIST OF THE BASIC MS NUMBER FOLLOWED BY A DASH NUMBER FROM TABLE 1



MS9351-01 INDICATES - CLAMP, LOOP CUSHIONED, JOGGLED, ALUMINUM, .204 HOLE; TUBE OUTSIDE DIAMETER NOMINAL, .125, BASIC DIAMETER .250.

NOTES:

1. ALL DIMENSIONS ARE IN INCHES.
2. DO NOT USE UNASSIGNED PART NUMBERS.

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MS9351

CLAMP, LOOP CUSHIONED, JOGGLED, ALUMINUM, .204 HOLE

PART NUMBER

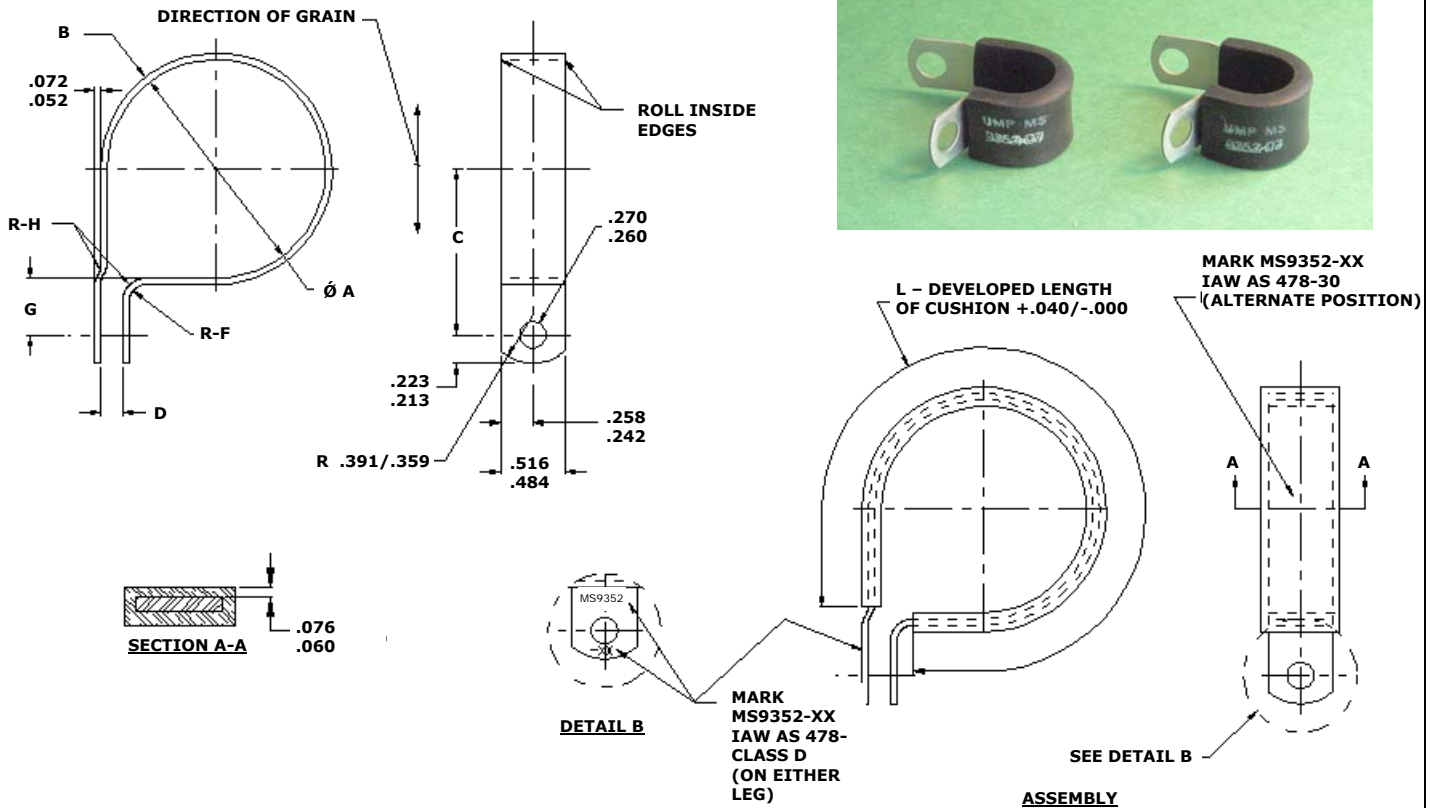


TABLE 1 DASH NUMBERS AND DIMENSIONS

DASH NUMBER	TUBE OUTSIDE DIAMETER NOM	A	B	C	D	F	G	H	L
		BASIC	±.006	±.010		RAD ±.016	±.016	RAD ±.016	
MS9352-01	0.125	0.250	0.031	0.457	.125-.141	0.062	0.312	0.062	0.679
MS9352-02	0.188	0.313	0.031	0.498	.125-.141	0.062	0.312	0.062	0.906
MS9352-03	0.250	0.375	0.031	0.529	.125-.141	0.062	0.312	0.062	1.097
MS9352-04	0.312	0.437	0.031	0.560	.125-.141	0.062	0.312	0.062	1.306
MS9352-05	0.375	0.500	0.031	0.592	.125-.141	0.062	0.312	0.062	1.515
MS9352-06	0.438	0.563	0.031	0.623	.125-.141	0.062	0.312	0.062	1.724
MS9352-07	0.500	0.625	0.031	0.654	.125-.141	0.062	0.312	0.062	1.930
MS9352-08	0.562	0.687	0.051	0.752	.125-.141	0.109	0.375	0.094	2.092
MS9352-09	0.625	0.750	0.051	0.783	.125-.141	0.109	0.375	0.094	2.299
MS9352-10	0.688	0.813	0.051	0.814	.125-.141	0.109	0.375	0.094	2.506
MS9352-11	0.750	0.875	0.051	0.845	.125-.141	0.109	0.375	0.094	2.721
MS9352-12	0.812	0.937	0.051	0.877	.125-.141	0.109	0.375	0.094	2.929
MS9352-13	0.875	1.000	0.051	0.908	.125-.141	0.109	0.375	0.094	3.136
MS9352-14	0.938	1.063	0.051	0.939	.125-.141	0.109	0.375	0.094	3.343
MS9352-15	1.000	1.125	0.051	0.970	.125-.141	0.109	0.375	0.094	3.555
MS9352-16	1.062	1.187	0.051	1.002	.125-.141	0.109	0.375	0.094	3.769
MS9352-17	1.125	1.250	0.064	1.062	.156-.172	0.125	0.406	0.125	3.914
MS9352-18	1.188	1.313	0.064	1.093	.156-.172	0.125	0.406	0.125	4.125
MS9352-19	1.250	1.375	0.064	1.125	.156-.172	0.125	0.406	0.125	4.339
MS9352-20	1.312	1.437	0.064	1.156	.156-.172	0.125	0.406	0.125	4.551
MS9352-21	1.375	1.500	0.064	1.188	.156-.172	0.125	0.406	0.125	4.754
MS9352-22	1.438	1.563	0.064	1.219	.156-.172	0.125	0.406	0.125	5.066
MS9352-23	1.500	1.625	0.064	1.250	.156-.172	0.125	0.406	0.125	5.173
MS9352-24	1.562	1.687	0.064	1.281	.156-.172	0.125	0.406	0.125	5.386
MS9352-25	1.625	1.750	0.064	1.312	.156-.188	0.125	0.406	0.125	5.585
MS9352-26	1.688	1.813	0.064	1.344	.156-.188	0.125	0.406	0.125	5.798
MS9352-27	1.750	1.875	0.064	1.375	.156-.188	0.125	0.406	0.125	6.011
MS9352-28	1.812	1.937	0.064	1.406	.156-.188	0.125	0.406	0.125	6.223
MS9352-29	1.875	2.000	0.064	1.438	.156-.188	0.125	0.406	0.125	6.436
MS9352-30	1.938	2.063	0.064	1.469	.156-.188	0.125	0.406	0.125	6.643

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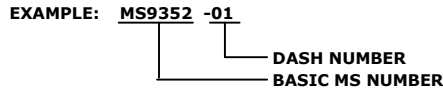
MS9352

CLAMP, LOOP CUSHIONED, JOGGLED, ALUMINUM, .265 HOLE

PART NUMBER

REQUIREMENTS:

1. **MATERIAL:** CLAMP-ALUMINUM IN ACCORDANCE WITH AMS4041-79
CUSHION-RUBBER IN ACCORDANCE WITH AMS 3209
2. **CLAMP FORM:** CLAMP SHALL BE FORMED AS SHOWN. DIMENSION "D" SHALL FALL WITHIN THE SPECIFIED LIMITS WHEN CLAMP IS ASSEMBLED ON A BAR THE DIAMETER OF WHICH IS EQUAL TO THE NOMINAL TUBE OD WITHIN $\pm .001$. HOLES SHALL BE IN ALIGNMENT WITHIN .010 AND CLAMP SHALL BE FLAT WITHIN .010 THRU THE CLAMP WIDTH WHEN ASSEMBLED ON TEST BAR. IN THE FREE POSITION, CLAMP MAY SPRING OPEN PROVIDED THE ABOVE CONDITIONS ARE MET.
3. **EDGES:** REMOVE BURRS AND SHARP EDGES
4. **PART NUMBER:** THE PART NUMBER SHALL CONSIST OF THE BASIC MS NUMBER FOLLOWED BY A DASH NUMBER FROM TABLE 1



MS9352-01 INDICATES - CLAMP, LOOP CUSHIONED, JOGGLED, ALUMINUM, .265 HOLE; TUBE OUTSIDE DIAMETER NOMINAL, .125, BASIC DIAMETER .250.

NOTES:

1. ALL DIMENSIONS ARE IN INCHES.
2. DO NOT USE UNASSIGNED PART NUMBERS.

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MS9352

CLAMP, LOOP CUSHIONED, JOGGLED, ALUMINUM, .265 HOLE

PART NUMBER

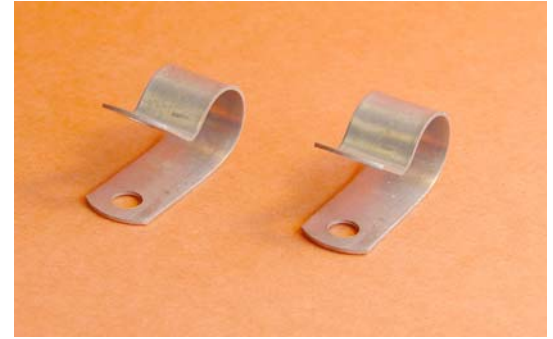
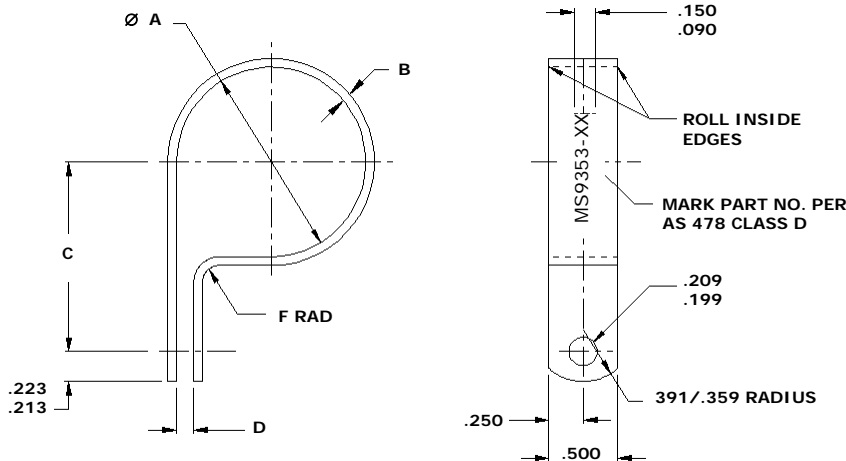


TABLE 1 – DIMENSIONS AND PART NUMBERS

PART NO.	NOM TUBE OD	A DIA BASIC	B ±.005	C ±.010	D	F RAD ±.016
MS9353-01	0.125	0.125	0.031	0.360	.062/.078	0.062
MS9353-02	0.188	0.188		0.423		
MS9353-03	0.250	0.250		0.457		
MS9353-04	0.312	0.312		0.498		
MS9353-05	0.375	0.375		0.529		
MS9353-06	0.438	0.438		0.560		
MS9353-07	0.500	0.500		0.592		
MS9353-08	0.562	0.562		0.623		
MS9353-09	0.625	0.625		0.654		
MS9353-10	0.688	0.688		0.752		
MS9353-11	0.750	0.750	0.783			
MS9353-12	0.812	0.812	0.814			
MS9353-13	0.875	0.875	0.845			
MS9353-14	0.938	0.938	0.877			
MS9353-15	1.000	1.000	0.908			
MS9353-16	1.062	1.062	0.939			
MS9353-17	1.125	1.125	0.970			
MS9353-18	1.188	1.188	1.002			
MS9353-19	1.250	1.250	1.062	.094-.125	0.125	
MS9353-20	1.312	1.312	1.093			
MS9353-21	1.375	1.375	1.125			
MS9353-22	1.438	1.438	1.156			
MS9353-23	1.500	1.500	1.188			
MS9353-24	1.562	1.562	1.219			
MS9353-25	1.625	1.625	1.250			
MS9353-26	1.688	1.688	1.281			
MS9353-27	1.750	1.750	1.312			
MS9353-28	1.812	1.812	1.344			
MS9353-29	1.875	1.875	1.375			
MS9353-30	1.938	1.938	1.406			
MS9353-31	2.000	2.000	1.438			

MATERIAL: ALUMINUM PER AMS 4041

1. REMOVE BURRS AND SHARP EDGES
2. DIMENSIONS ARE IN INCHES
3. CLAMP SHALL BE FORMED AS SHOWN. DIMENSION "D" SHALL FALL WITHIN THE SPECIFIED LIMITS WHEN CLAMP IS ASSEMBLED ON A BAR, THE DIAMETER OF WHICH IS EQUAL TO THE NOMINAL TUBE OD WITHIN ±.001.
4. HOLES SHALL BE IN ALIGNMENT WITHIN .010 AND CLAMP SHALL BE FLAT WITHIN .010 THRU THE CLAMP WIDTH WHEN ASSEMBLED ON A TEST BAR. IN THE FREE POSITION, CLAMP MAY SPRING OPEN PROVIDED THE ABOVE CONDITIONS ARE MET.
5. DO NOT USE UNASSIGNED PART NUMBERS.

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AS9353

CLAMP, LOOP-ALUMINUM, .204 HOLE

PART NUMBER

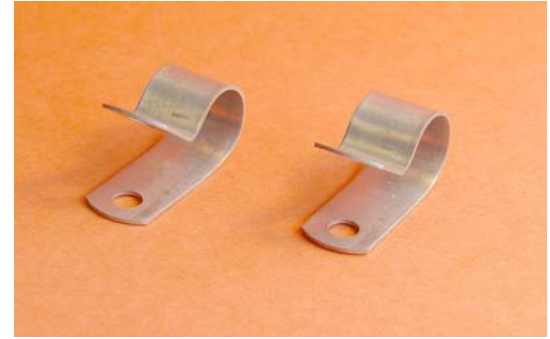
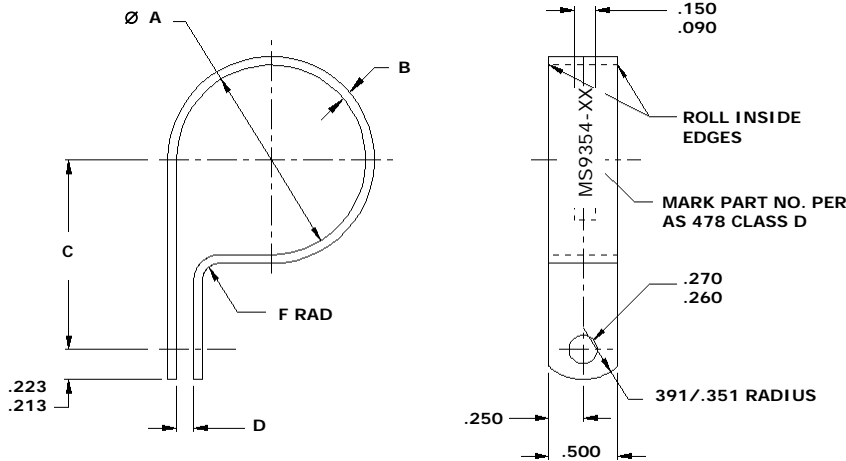


TABLE 1 – DIMENSIONS AND PART NUMBERS

PART NO.	NOM TUBE OD	A DIA BASIC	B ±.005	C ±.015	D	F RAD ±.016
MS9354-01	0.125	0.125	0.031	0.360	.062/.078	0.062
MS9354-02	0.188	0.188		0.423		
MS9354-03	0.250	0.250		0.457		
MS9354-04	0.312	0.312		0.498		
MS9354-05	0.375	0.375		0.529		
MS9354-06	0.438	0.438		0.560		
MS9354-07	0.500	0.500		0.592		
MS9354-08	0.562	0.562		0.623		
MS9354-09	0.625	0.625		0.654		
MS9354-10	0.688	0.688		0.752		
MS9354-11	0.750	0.750	0.783			
MS9354-12	0.812	0.812	0.814			
MS9354-13	0.875	0.875	0.845			
MS9354-14	0.938	0.938	0.877			
MS9354-15	1.000	1.000	0.908			
MS9354-16	1.062	1.062	0.939			
MS9354-17	1.125	1.125	0.970			
MS9354-18	1.188	1.188	1.002			
MS9354-19	1.250	1.250	1.062	.094-.125	0.125	
MS9354-20	1.312	1.312	1.093			
MS9354-21	1.375	1.375	1.125			
MS9354-22	1.438	1.438	1.156			
MS9354-23	1.500	1.500	1.188			
MS9354-24	1.562	1.562	1.219			
MS9354-25	1.625	1.625	1.250			
MS9354-26	1.688	1.688	1.281			
MS9354-27	1.750	1.750	1.312			
MS9354-28	1.812	1.812	1.344			
MS9354-29	1.875	1.875	1.375			
MS9354-30	1.938	1.938	1.406			
MS9354-31	2.000	2.000	1.438			

MATERIAL: ALUMINUM PER AMS 4041

- REMOVE BURRS AND SHARP EDGES
- DIMENSIONS ARE IN INCHES
- CLAMP SHALL BE FORMED AS SHOWN. DIMENSION "D" SHALL FALL WITHIN THE SPECIFIED LIMITS WHEN CLAMP IS ASSEMBLED ON A BAR, THE DIAMETER OF WHICH IS EQUAL TO THE NOMINAL TUBE OD WITHIN ±.001.
- HOLES SHALL BE IN ALIGNMENT WITHIN .010 AND CLAMP SHALL BE FLAT WITHIN .010 THRU THE CLAMP WIDTH WHEN ASSEMBLED ON A TEST BAR. IN THE FREE POSITION, CLAMP MAY SPRING OPEN PROVIDED THE ABOVE CONDITIONS ARE MET.
- DO NOT USE UNASSIGNED PART NUMBERS.

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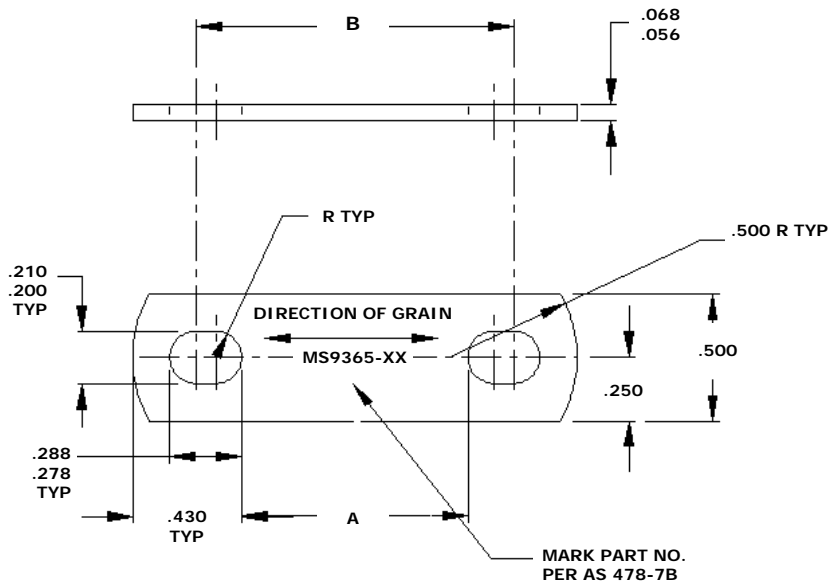
UMPCO, INC
CAGE CODE No. 18076

REV N/C
02/05/09

AS9354

CLAMP, LOOP-ALUMINUM, .265 HOLE

PART NUMBER



PART NO.	A ±.010	B REF
MS9365-01	0.390	0.750
MS9365-02	0.515	0.875
MS9365-03	0.640	1.000
MS9365-04	0.765	1.125
MS9365-05	0.890	1.250
MS9365-06	1.015	1.375
MS9365-07	1.140	1.500
MS9365-08	1.265	1.625
MS9365-09	1.390	1.750
MS9365-10	1.515	1.875
MS9365-11	1.640	2.000
MS9365-12	1.765	2.125
MS9365-13	1.890	2.250
MS9365-14	2.015	2.375
MS9365-15	2.140	2.500
MS9365-16	2.265	2.625
MS9365-17	2.390	2.750
MS9365-18	2.515	2.875
MS9365-19	2.640	3.000
MS9365-20	2.765	3.125

MATERIAL: CORROSION RESISTANT STEEL PER AMS 5510

REMOVE BURRS AND SHARP EDGES

DIMENSIONS ARE IN INCHES. UNLESS OTHERWISE SPECIFIED: TOLERANCES; LINEAR DIMENSIONS ±.015

DO NOT USE UNASSIGNED PART NUMBERS

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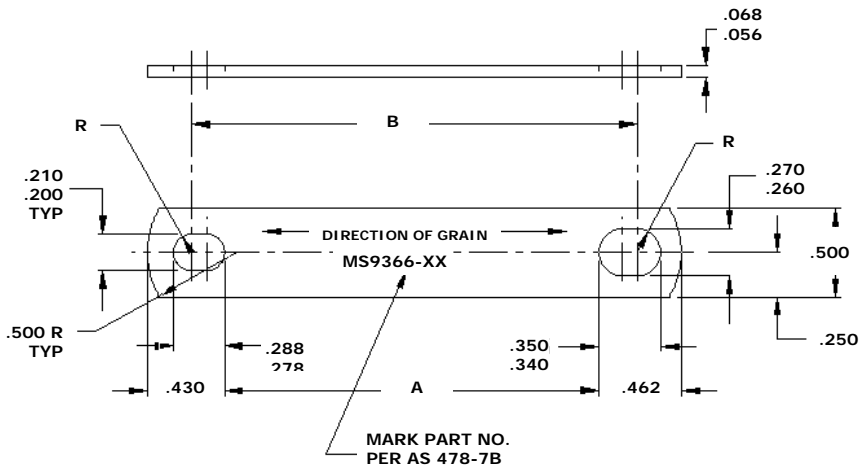
UMPCO, INC
CAGE CODE No. 18076

REV
N/C
02/05/09

MS9365

BRACKET-FLAT, CRES AMS 5510, .190 BOLT

PART NUMBER



PART NO.	A ±.010	B REF
MS9366-01	0.420	0.812
MS9366-02	0.545	0.938
MS9366-03	0.670	1.062
MS9366-04	0.795	1.188
MS9366-05	0.920	1.312
MS9366-06	1.045	1.438
MS9366-07	1.170	1.562
MS9366-08	1.295	1.688
MS9366-09	1.420	1.812
MS9366-10	1.545	1.938
MS9366-11	1.670	2.062
MS9366-12	1.795	2.188
MS9366-13	1.920	2.312
MS9366-14	2.045	2.438
MS9366-15	2.170	2.562
MS9366-16	2.295	2.688
MS9366-17	2.420	2.812
MS9366-18	2.545	2.938
MS9366-19	2.670	3.062
MS9366-20	2.795	3.188

MATERIAL: CORROSION RESISTANT STEEL PER AMS 5510

REMOVE BURRS AND SHARP EDGES

DIMENSIONS ARE IN INCHES. UNLESS OTHERWISE SPECIFIED: TOLERANCES; LINEAR DIMENSIONS ±.015

DO NOT USE UNASSIGNED PART NUMBERS

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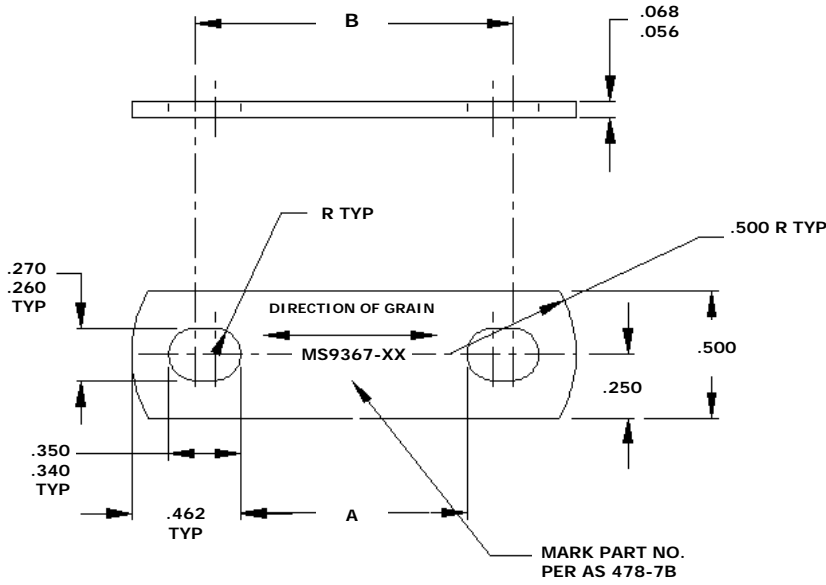
UMPCO, INC
CAGE CODE No. 18076

REV
N/C
02/05/09

MS9366

BRACKET-FLAT, CRES AMS 5510, .190 x .250 BOLT

PART NUMBER



PART NO.	A ±.010	B REF
MS9367-01	0.450	0.875
MS9367-02	0.575	1.000
MS9367-03	0.700	1.125
MS9367-04	0.825	1.250
MS9367-05	0.950	1.375
MS9367-06	1.075	1.500
MS9367-07	1.200	1.625
MS9367-08	1.325	1.750
MS9367-09	1.450	1.875
MS9367-10	1.575	2.000
MS9367-11	1.700	2.125
MS9367-12	1.825	2.250
MS9367-13	1.950	2.375
MS9367-14	2.075	2.500
MS9367-15	2.200	2.625
MS9367-16	2.325	2.750
MS9367-17	2.450	2.875
MS9367-18	2.575	3.000
MS9367-19	2.700	3.125
MS9367-20	2.825	3.250

MATERIAL: CORROSION RESISTANT STEEL PER AMS 5510

REMOVE BURRS AND SHARP EDGES

DIMENSIONS ARE IN INCHES. UNLESS OTHERWISE SPECIFIED: TOLERANCES; LINEAR DIMENSIONS ±.015

DO NOT USE UNASSIGNED PART NUMBERS

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UMPCO, INC
CAGE CODE No. 18076

REV
N/C
02/05/09

MS9367

BRACKET-FLAT, CRES AMS 5510, .250 BOLT

PART NUMBER

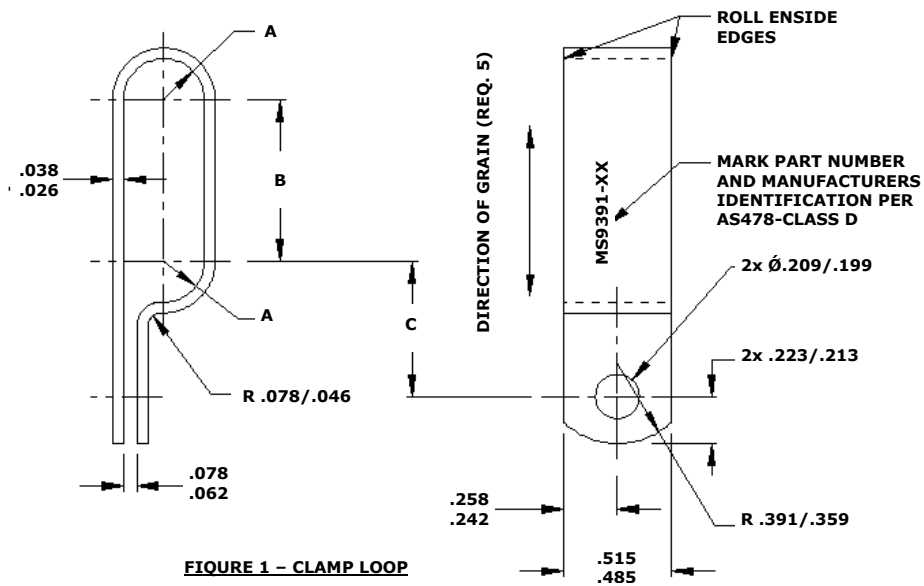


FIGURE 1 - CLAMP LOOP

TABLE 1 - DASH NUMBERS AND DIMENSIONS

PART NO.	NOM TUBE OD	NO. OF TUBES	A RAD ±.010	B ±.005	C ±.010
MS9391-01	0.125	2	0.125	0.188	0.457
MS9391-02	0.125	3	0.125	0.375	0.457
MS9391-03	0.188	2	0.156	0.250	0.498
MS9391-04	0.188	3	0.156	0.500	0.498
MS9391-05	0.250	2	0.219	0.344	0.560
MS9391-06	0.250	3	0.219	0.688	0.560
MS9391-07	0.312	2	0.250	0.406	0.592
MS9391-08	0.312	3	0.250	0.812	0.592
MS9391-09	0.375	2	0.281	0.469	0.623
MS9391-10	0.375	3	0.281	0.938	0.623

REQUIREMENTS:

1. MATERIAL: CORROSION RESISTANT STEEL PER AMS 5510.
2. REMOVE BURRS AND SHARP EDGES.
3. CLAMP SHALL BE FORMED AS SHOWN. DIMENSION .062-.078 SHALL FALL WITHIN THE SPECIFIED LIMITS WHEN CLAMP IS CLOSED OVER BARS CONFORMING TO NOMINAL INSIDE CONFIGURATION WITHIN ±.001.
4. HOLES SHALL BE IN ALIGNMENT WITHIN .010 AND CLAMPS SHALL BE FLAT WITHIN .005 THRU CLAMP WIDTH WHEN LEGS ARE CLOSED TO DIMENSION SPECIFIED BEFORE BEING ASSEMBLED ON TEST BARS. IN THE FREE POSITION, CLAMP MAY SPRING OPEN PROVIDED THE ABOVE CONDITIONS ARE MET.
5. GRAIN FLOW SHOULD BE PARALLEL WITH THE ROLLING DIRECTION.
6. PART NUMBER: THE MS PART NUMBER WILL BE AS SHOWN IN TABLE 1.
7. ALL DIMENSIONS ARE IN INCHES.

THIS CATALOG PAGE IS FOR REFERENCE ONLY. REQUEST A CERTIFIED UMPCO DRAWING FOR ACTUAL SPECIFICATIONS. ANY CONFLICT BETWEEN THIS DOCUMENT AND THE CERTIFIED DRAWING, THE CERTIFIED DRAWING WILL TAKE PRECEDENCE. IF THE DOCUMENT IS CONTROLLED BY ANY OTHER SOURCE THAN UMPCO, THE CERTIFIED DRAWING MUST BE PURCHASED THROUGH THAT ORGANIZATION.

UMPCO, INC
CAGE CODE No. 18076

REV
N/C
02/04/09

AS9391

CLAMP, LOOP-MULTIPLE TUBE, DETACHABLE CUSHION, AMS 5510

PART NUMBER

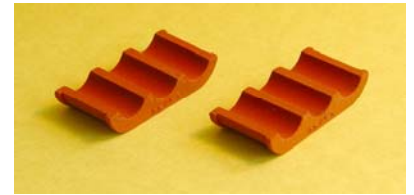
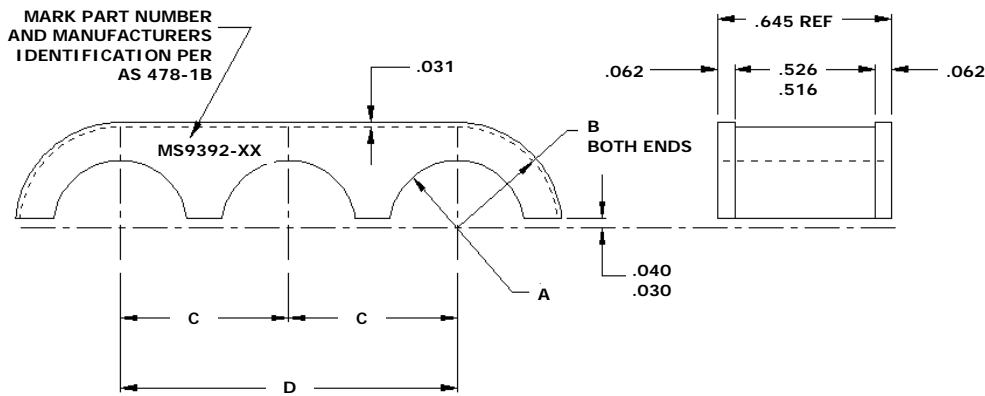


FIGURE 1 – CLAMP LOOP CUSHION

TABLE 1 - DASH NUMBERS AND DIMENSIONS

PART NO.	NOM TUBE SIZE	A RAD	B RAD	C ±.005	D REF
		+.010/- .000	±.005		
MS9392-01	0.125	0.062	0.125	0.188	0.375
MS9392-02	0.188	0.094	0.156	0.250	0.500
MS9392-03	0.250	0.125	0.219	0.344	0.688
MS9392-04	0.312	0.156	0.250	0.406	0.812
MS9392-05	0.375	0.188	0.281	0.469	0.938
MS9392-06	0.438	0.219	0.312	0.531	1.062
MS9392-07	0.500	0.250	0.375	0.625	1.250
MS9392-08	0.262	0.281	0.406	0.688	1.375
MS9392-09	0.625	0.312	0.438	0.750	1.500
MS9392-10	0.688	0.344	0.469	0.812	1.625
MS9392-11	0.750	0.375	0.500	0.875	1.750
MS9392-12	0.812	0.406	0.531	0.938	1.875
MS9392-13	0.875	0.438	0.562	1.000	2.000
MS9392-14	0.938	0.469	0.594	1.062	2.125
MS9392-15	1.000	0.500	0.625	1.125	2.250

1. MATERIAL: SILICONE RUBBER AMS 3303.
2. DIMENSIONS ARE IN INCHES. UNLESS OTHERWISE SPECIFIED; TOLERANCES: LINEAR DIMENSIONS ±.010
3. DO NOT USE UNASSIGNED PART NUMBERS

THIS CATALOG PAGE IS FOR REFERENCE ONLY. REQUEST A CERTIFIED UMPCO DRAWING FOR ACTUAL SPECIFICATIONS. ANY CONFLICT BETWEEN THIS DOCUMENT AND THE CERTIFIED DRAWING, THE CERTIFIED DRAWING WILL TAKE PRECEDENCE. IF THE DOCUMENT IS CONTROLLED BY ANY OTHER SOURCE THAN UMPCO, THE CERTIFIED DRAWING MUST BE PURCHASED THROUGH THAT ORGANIZATION.

UMPCO, INC
CAGE CODE No. 18076

REV
N/C
02/06/09

AS9392

CUSHIONED, LOOP CLAMP – MULTIPLE, 3-TUBE, AMS 3303

PART NUMBER

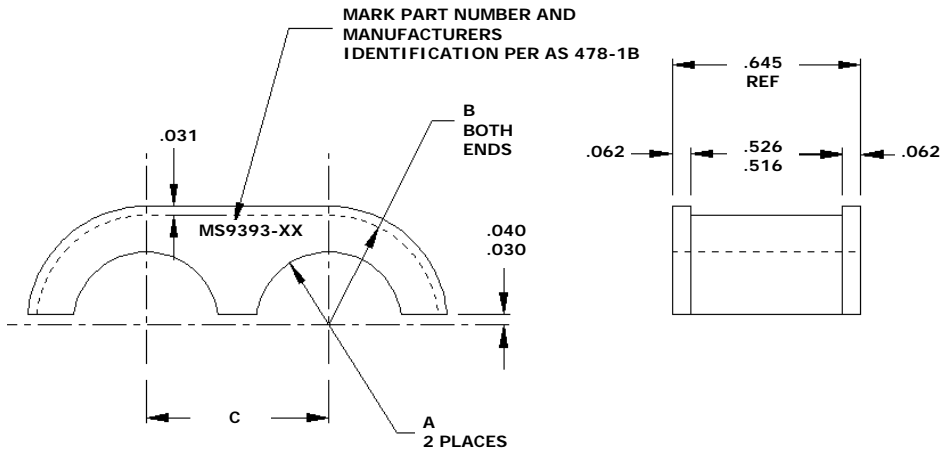


FIGURE 1 – CLAMP LOOP CUSHION

TABLE 1 - DASH NUMBERS AND DIMENSIONS

PART NO.	NOM TUBE SIZE	A RAD +.010/-.000	B RAD ±.005	C ±.005
MS9393-01	0.125	0.062	0.125	0.188
MS9393-02	0.188	0.094	0.156	0.250
MS9393-03	0.250	0.125	0.219	0.344
MS9393-04	0.312	0.156	0.250	0.406
MS9393-05	0.375	0.188	0.281	0.469
MS9393-06	0.438	0.219	0.312	0.531
MS9393-07	0.500	0.250	0.375	0.625
MS9393-08	0.262	0.281	0.406	0.658
MS9393-09	0.625	0.312	0.438	0.750
MS9393-10	0.688	0.344	0.469	0.812
MS9393-11	0.750	0.375	0.500	0.875
MS9393-12	0.812	0.406	0.531	0.938
MS9393-13	0.875	0.438	0.562	1.000
MS9393-14	0.938	0.469	0.594	1.062
MS9393-15	1.000	0.500	0.625	1.125

1. MATERIAL: SILICONE RUBBER AMS 3303.
2. DIMENSIONS ARE IN INCHES. UNLESS OTHERWISE SPECIFIED; TOLERANCES: LINEAR DIMENSIONS ±.010
3. DO NOT USE UNASSIGNED PART NUMBERS

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UMPCO, INC
CAGE CODE No. 18076

REV
N/C
02/05/09

AS9393

CUSHIONED, LOOP CLAMP – MULTIPLE, 2-TUBE, AMS 3303

PART NUMBER

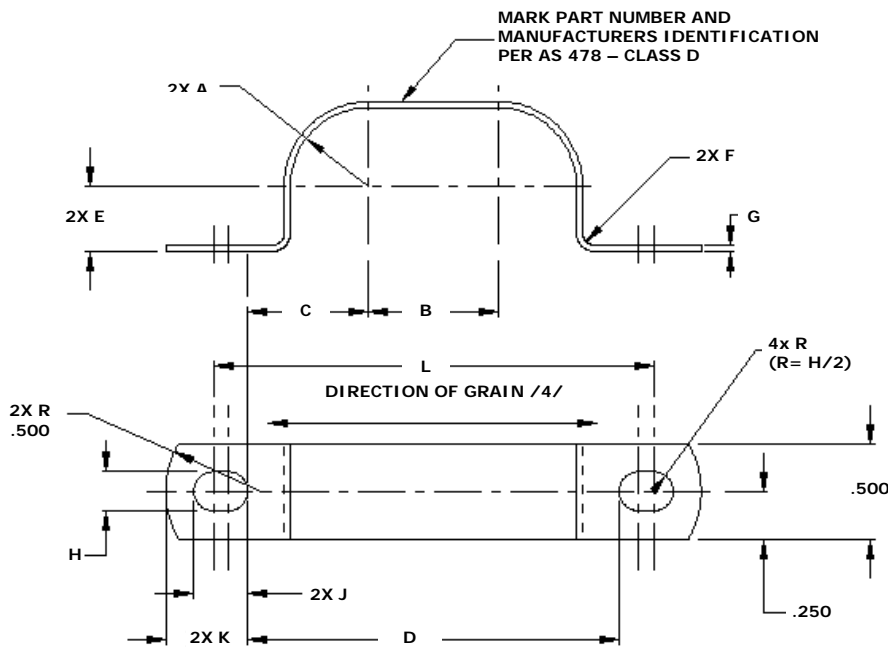


FIGURE 1 - RETAINING STRAP

TABLE 1 - PART NUMBERS AND DIMENSIONS

PART NO.	NOM TUBE OD	NO. OF TUBES	A RAD ±.010	B ±.005	C ±.010	D ±.010	E ±.010	F RAD	G ±.005	H	J
MS9394-01	0.438	2	0.312	0.531	0.552	1.635	0.250	0.062	0.032	.200-.210	.278-.288
MS9394-02	0.435	3	0.312	1.062	0.552	2.166	0.250	0.062	0.032	.200-.210	.278-.288
MS9394-03	0.500	2	0.375	0.625	0.614	1.853	0.313	0.062	0.032	.200-.210	.278-.288
MS9394-04	0.500	3	0.375	1.250	0.614	2.478	0.313	0.062	0.032	.200-.210	.278-.288
MS9394-05	0.562	2	0.406	0.688	0.645	1.978	0.344	0.062	0.032	.200-.210	.278-.288
MS9394-06	0.562	3	0.406	1.375	0.645	2.665	0.344	0.062	0.032	.200-.210	.278-.288
MS9394-07	0.625	2	0.438	0.750	0.712	2.174	0.375	0.109	0.050	.260-.270	.340-.350
MS9394-08	0.625	3	0.438	1.500	0.712	2.824	0.375	0.109	0.050	.260-.270	.340-.350
MS9394-09	0.683	2	0.469	0.812	0.744	2.300	0.407	0.109	0.050	.260-.270	.340-.350
MS9394-10	0.688	3	0.469	1.625	0.744	3.113	0.407	0.109	0.050	.260-.270	.340-.350
MS9394-11	0.750	2	0.500	0.875	0.775	2.425	0.438	0.109	0.050	.260-.270	.340-.350
MS9394-12	0.750	3	0.500	1.750	0.775	3.300	0.438	0.109	0.050	.260-.270	.340-.350
MS9394-13	0.812	2	0.531	0.938	0.806	2.550	0.469	0.109	0.050	.260-.270	.340-.350
MS9394-14	0.812	3	0.531	1.875	0.806	3.487	0.469	0.109	0.050	.260-.270	.340-.350
MS9394-15	0.875	2	0.582	1.000	0.837	2.674	0.500	0.109	0.050	.260-.270	.340-.350
MS9394-16	0.875	3	0.582	2.000	0.837	3.674	0.500	0.109	0.050	.260-.270	.340-.350
MS9394-17	0.935	2	0.594	1.062	0.869	2.800	0.531	0.109	0.050	.260-.270	.340-.350
MS9394-18	0.933	3	0.594	2.125	0.869	3.863	0.531	0.109	0.050	.260-.270	.340-.350
MS9394-19	1.000	2	0.625	1.125	0.900	2.925	0.562	0.109	0.050	.260-.270	.340-.350
MS9394-20	1.000	3	0.625	2.250	0.900	4.050	0.562	0.109	0.050	.260-.270	.340-.350

REQUIREMENTS:

1. MATERIAL: CORROSION RESISTANT STEEL IN ACCORDANCE WITH AMS 5510.
2. REMOVE BURRS AND SHARP EDGES.
3. TOLERANCES: UNLESS OTHERWISE SPECIFIED, LINEAR DIMENSIONS ±.015.
4. GRAIN FLOW SHOULD BE PARALLEL WITH ROLLING DIRECTION.
5. PART NUMBER: THE MS PART NUMBER SHALL BE AS SHOWN IN TABLE 1.

NOTES:

1. ALL DIMENSIONS ARE IN INCHES.
2. STRAPS SHOULD BE USED WITH MS9395 AND DASH NUMBERS ARE THE SAME.

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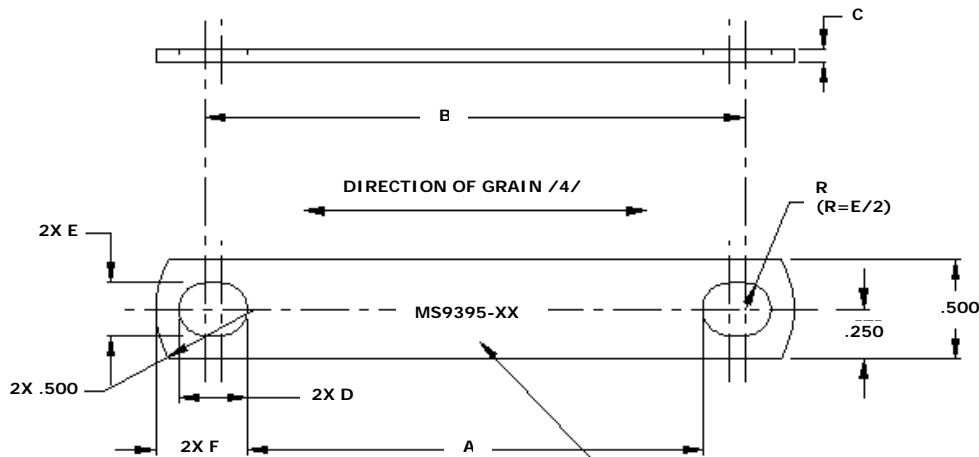
UMPCO, INC
CAGE CODE No. 18076

REV N/C
02/05/09

AS9394

STRAP, RETAINING-MULTIPLE TUBE, DETACHABLE CUSHION, AMS 5510

PART NUMBER



MARK PART NUMBER AND MANUFACTURERS IDENTIFICATION PER AS 478 – CLASS D

TABLE 1 – PART NUMBERS AND DIMENSIONS

PART NO.	NOM TUBE SIZE	NO. OF TUBES	A ±.010	B REF	C ±.005	D	E	F
MS9395-01	0.438	2	1.635	1.996	0.032	.278-.288	.200-.210	0.430
MS9395-02	0.438	3	2.166	2.527	0.032	.278-.288	.200-.210	0.430
MS9395-03	0.500	2	1.853	2.214	0.032	.278-.288	.200-.210	0.430
MS9395-04	0.500	3	2.478	2.839	0.032	.278-.288	.200-.210	0.430
MS9395-05	0.562	2	1.978	2.339	0.032	.278-.288	.200-.210	0.430
MS9395-06	0.562	3	2.665	3.026	0.032	.278-.288	.200-.210	0.430
MS9395-07	0.625	2	2.174	2.599	0.050	.340-.350	.260-.270	0.462
MS9395-08	0.625	3	2.924	3.349	0.050	.340-.350	.260-.270	0.462
MS9395-09	0.688	2	2.300	2.725	0.050	.340-.350	.260-.270	0.462
MS9395-10	0.688	3	3.113	3.538	0.050	.340-.350	.260-.270	0.462
MS9395-11	0.750	2	2.425	2.850	0.050	.340-.350	.260-.270	0.462
MS9395-12	0.750	3	3.300	3.725	0.050	.340-.350	.260-.270	0.462
MS9395-13	0.812	2	2.550	2.975	0.050	.340-.350	.260-.270	0.462
MS9395-14	0.812	3	3.487	3.912	0.050	.340-.350	.260-.270	0.462
MS9395-15	0.875	2	2.674	3.099	0.050	.340-.350	.260-.270	0.462
MS9395-16	0.875	3	3.674	4.099	0.050	.340-.350	.260-.270	0.462
MS9395-17	0.938	2	2.800	3.225	0.050	.340-.350	.260-.270	0.462
MS9395-18	0.938	3	3.863	4.288	0.050	.340-.350	.260-.270	0.462
MS9395-19	1.000	2	2.925	3.350	0.050	.340-.350	.260-.270	0.462
MS9395-20	1.000	3	4.050	4.475	0.050	.340-.350	.260-.270	0.462

REQUIREMENTS:

1. MATERIAL: CORRISSION RESISTANT STEEL IN ACCORDANCE WITH AMS 5510.
2. REMOVE BURRS AND SHARP EDGES.
3. TOLERANCES: UNLESS OTHERWISE SPECIFIED, LINEAR DIMENSIONS ±.015.
4. GRAIN FLOW SHOULD BE PARALLEL WITH ROLLING DIRECTION.
5. PART NUMBER: THE MS PART NUMBER SHALL BE AS SHOWN IN TABLE 1.

NOTES:

1. ALL DIMENSIONS ARE IN INCHES.
2. BACKPLATE SHOULD BE USED WITH MS9594 AND DASH NUMBERS ARE THE SAME.

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UMPCO, INC
CAGE CODE No. 18076

REV
N/C
02/05/09

AS9395

BACKPLATE, RETAINING STRAP, AMS 5510

PART NUMBER

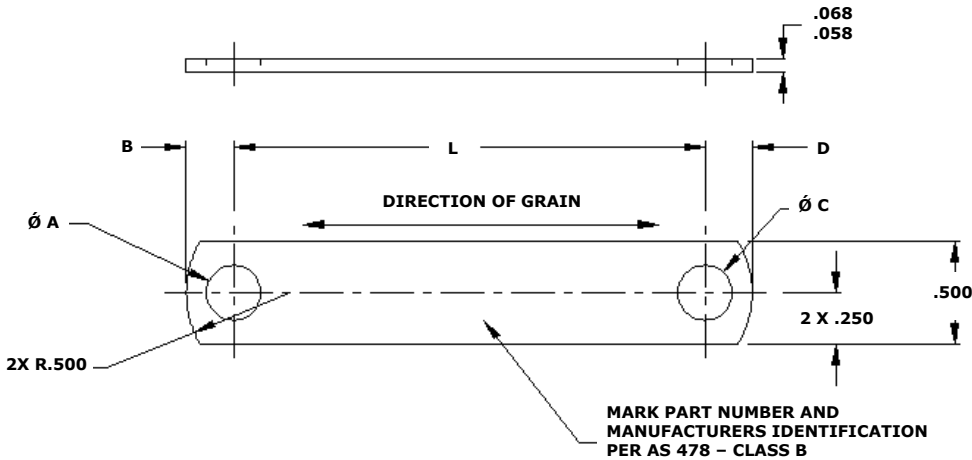


TABLE 1 - BOLT SIZES AND DIMENSIONS

PART NUMBER	NOMINAL BOLT SIZE	A DIAMETER	B	C DIAMETER	D
MS9551-004 THRU -045	.190 X .190	.200-.210	.195-.205	.200-.210	.195-.205
MS9551-105 THRU -145	.190 X .250	.200-.210	.195-.205	.260-.270	.225-.235
MS9551-206 THRU -245	.250 X .250	.260-.270	.225-.235	.260-.270	.225-.235

TABLE 2 - PART NUMBERS AND DIMENSIONS

L LENGTH	.190 x .190 PART NUMBER	.190 x .250 PART NUMBER	.250 x .250 PART NUMBER
0.625	MS9551-004		
0.688	MS9551-005	MS9551-105	
0.750	MS9551-006	MS9551-106	MS9551-206
0.812	MS9551-007	MS9551-107	MS9551-207
0.875	MS9551-008	MS9551-108	MS9551-208
0.938	MS9551-009	MS9551-109	MS9551-209
1.000	MS9551-010	MS9551-110	MS9551-210
1.062	MS9551-011	MS9551-111	MS9551-211
1.125	MS9551-012	MS9551-112	MS9551-212
1.188	MS9551-013	MS9551-113	MS9551-213
1.250	MS9551-014	MS9551-114	MS9551-214
1.312	MS9551-015	MS9551-115	MS9551-215
1.375	MS9551-016	MS9551-116	MS9551-216
1.438	MS9551-017	MS9551-117	MS9551-217
1.500	MS9551-018	MS9551-118	MS9551-218
1.562	MS9551-019	MS9551-119	MS9551-219
1.625	MS9551-020	MS9551-120	MS9551-220
1.688	MS9551-021	MS9551-121	MS9551-221
1.750	MS9551-022	MS9551-122	MS9551-222
1.812	MS9551-023	MS9551-123	MS9551-223
1.875	MS9551-024	MS9551-124	MS9551-224
1.938	MS9551-025	MS9551-125	MS9551-225
2.000	MS9551-026	MS9551-126	MS9551-226
2.062	MS9551-027	MS9551-127	MS9551-227
2.125	MS9551-028	MS9551-128	MS9551-228
2.188	MS9551-029	MS9551-129	MS9551-229
2.250	MS9551-030	MS9551-130	MS9551-230
2.312	MS9551-031	MS9551-131	MS9551-231
2.375	MS9551-032	MS9551-132	MS9551-232
2.438	MS9551-033	MS9551-133	MS9551-233
2.500	MS9551-034	MS9551-134	MS9551-234
2.562	MS9551-035	MS9551-135	MS9551-235
2.625	MS9551-036	MS9551-136	MS9551-236
2.688	MS9551-037	MS9551-137	MS9551-237
2.750	MS9551-038	MS9551-138	MS9551-238
2.812	MS9551-039	MS9551-139	MS9551-239
2.875	MS9551-040	MS9551-140	MS9551-240
2.938	MS9551-041	MS9551-141	MS9551-241
3.000	MS9551-042	MS9551-142	MS9551-242
3.062	MS9551-043	MS9551-143	MS9551-243
3.125	MS9551-044	MS9551-144	MS9551-244
3.188	MS9551-045	MS9551-145	MS9551-245

REQUIREMENTS:

1. MATERIAL: STEEL AMS 6350. HARDEN (OIL QUENCH) AND TEMPER TO ROCKWELL 32-38 HRC PER ASTM E18.
2. FINISH: CADMIUM PLATE PER AMS 2400. DIMENSIONS SPECIFIED ARE AFTER PLATING.
3. REMOVE BURRS AND SHARP EDGES.
4. TOLERANCES: UNLESS OTHERWISE SPECIFIED, LINEAR DIMENSIONS ±.010.
5. GRAIN FLOW SHOULD BE PARALLEL WITH THE ROLLING DIRECTION.
6. PART NUMBER: THE MS PART NUMBER SHALL BE AS SHOWN IN TABLE 2.

NOTES:

1. ALL DIMENSIONS ARE IN INCHES.

WARNING:

THIS DOCUMENT INCLUDES CADMIUM AS A PLATING MATERIAL. THE USE OF CADMIUM HAS BEEN RESTRICTED AND/OR BANNED FOR USE IN MANY COUNTRIES DUE TO ENVIRONMENTAL AND HEALTH CONCERNS. THE USER SHOULD CONSULT WITH LOCAL OFFICIALS ON THE ENVIRONMENTAL AND HEALTH REGULATIONS REGARDING ITS USE.

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7/28/2011

AS9551

BRACKET, FLAT STEEL, UNS G41300, CADMIUM PLATED

PART NUMBER

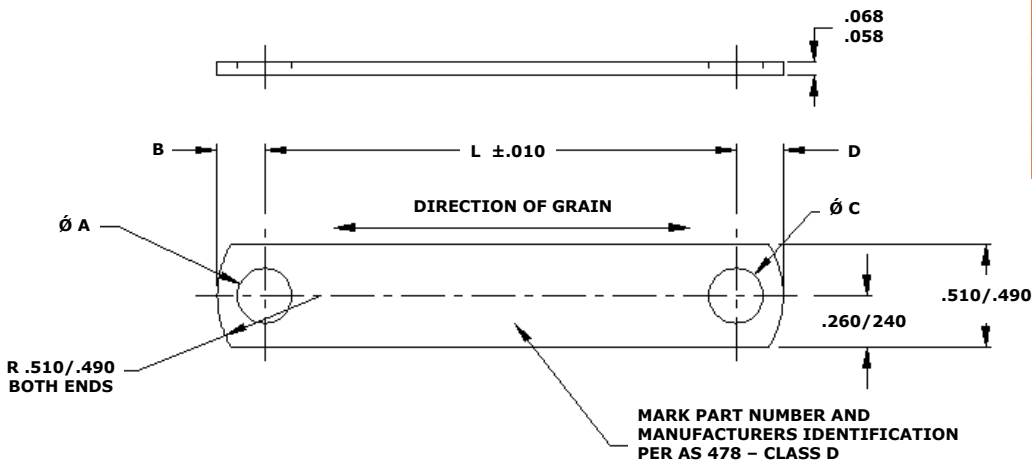


TABLE 1 - BOLT SIZES AND DIMENSIONS

PART NUMBER	NOMINAL BOLT SIZE	A	B	C	D
MS9552-004 THRU -045	.190 X .190	.200-.210	.195-.205	.200-.210	.195-.205
MS9552-105 THRU -145	.190 X .250	.200-.210	.195-.205	.260-.270	.225-.235
MS9552-206 THRU -245	.250 X .250	.260-.270	.225-.235	.260-.270	.225-.235

TABLE 2 - PART NUMBERS AND LENGTH (L) DIMENSIONS

L LENGTH	BOLT .190 X .190 PART NUMBER	BOLT .190 X .250 PART NUMBER	BOLT .250 X .250 PART NUMBER
0.625	MS9552-004		
0.688	MS9552-005	MS9552-105	
0.750	MS9552-006	MS9552-106	MS9552-206
0.812	MS9552-007	MS9552-107	MS9552-207
0.875	MS9552-008	MS9552-108	MS9552-208
0.938	MS9552-009	MS9552-109	MS9552-209
1.000	MS9552-010	MS9552-110	MS9552-210
1.062	MS9552-011	MS9552-111	MS9552-211
1.125	MS9552-012	MS9552-112	MS9552-212
1.188	MS9552-013	MS9552-113	MS9552-213
1.250	MS9552-014	MS9552-114	MS9552-214
1.312	MS9552-015	MS9552-115	MS9552-215
1.375	MS9552-016	MS9552-116	MS9552-216
1.438	MS9552-017	MS9552-117	MS9552-217
1.500	MS9552-018	MS9552-118	MS9552-218
1.562	MS9552-019	MS9552-119	MS9552-219
1.625	MS9552-020	MS9552-120	MS9552-220
1.688	MS9552-021	MS9552-121	MS9552-221
1.750	MS9552-022	MS9552-122	MS9552-222
1.812	MS9552-023	MS9552-123	MS9552-223
1.875	MS9552-024	MS9552-124	MS9552-224
1.938	MS9552-025	MS9552-125	MS9552-225
2.000	MS9552-026	MS9552-126	MS9552-226
2.062	MS9552-027	MS9552-127	MS9552-227
2.125	MS9552-028	MS9552-128	MS9552-228
2.188	MS9552-029	MS9552-129	MS9552-229
2.250	MS9552-030	MS9552-130	MS9552-230
2.312	MS9552-031	MS9552-131	MS9552-231
2.375	MS9552-032	MS9552-132	MS9552-232
2.438	MS9552-033	MS9552-133	MS9552-233
2.500	MS9552-034	MS9552-134	MS9552-234
2.562	MS9552-035	MS9552-135	MS9552-235
2.625	MS9552-036	MS9552-136	MS9552-236
2.688	MS9552-037	MS9552-137	MS9552-237
2.750	MS9552-038	MS9552-138	MS9552-238
2.812	MS9552-039	MS9552-139	MS9552-239
2.875	MS9552-040	MS9552-140	MS9552-240
2.938	MS9552-041	MS9552-141	MS9552-241
3.000	MS9552-042	MS9552-142	MS9552-242
3.062	MS9552-043	MS9552-143	MS9552-243
3.125	MS9552-044	MS9552-144	MS9552-244
3.188	MS9552-045	MS9552-145	MS9552-245

NOTES:

1. MATERIAL: CORROSION RESISTANT STEEL PER AMS 5510 (UNS S32100).
2. GRAIN FLOW SHOULD BE PARALLEL WITH THE ROLLING DIRECTION.
3. REMOVE BURRS AND BREAK EDGES .003 TO .015 UNLESS OTHERWISE SPECIFIED.
4. DIMENSIONS AND TOLERANCING PER ANSI Y14.5M-1982.
5. ALL DIMENSIONS ARE IN INCHES.

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BRACKET, FLAT CRES UNS S32100

PART NUMBER

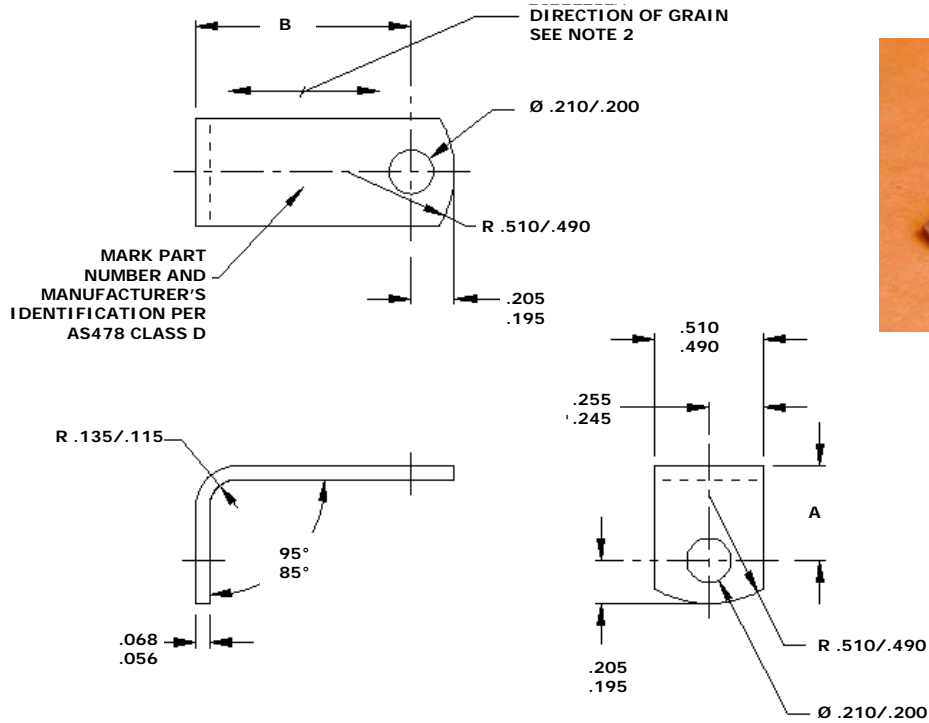


FIGURE 1 ANGLE BRACKET

TABLE 1 – PART NUMBERS AND DIMENSIONS

B LENGTH	A-LENGTH			
	0.428 - 0.448 PART NUMBER	0.490 - 0.510 PART NUMBER	0.552 - 0.572 PART NUMBER	0.615 - 0.635 PART NUMBER
0.428 - 0.448	MS9592-005			
0.490 - 0.510	MS9592-006	MS9592-046		
0.552 - 0.572	MS9592-007	MS9592-047	MS9592-087	
0.615 - 0.635	MS9592-008	MS9592-048	MS9592-088	MS9592-128
0.678 - 0.698	MS9592-009	MS9592-049	MS9592-089	MS9592-129
0.740 - 0.760	MS9592-010	MS9592-050	MS9592-090	MS9592-130
0.802 - 0.822	MS9592-011	MS9592-051	MS9592-091	MS9592-131
0.865 - 0.885	MS9592-012	MS9592-052	MS9592-092	MS9592-132
0.928 - 0.948	MS9592-013	MS9592-053	MS9592-093	MS9592-133
0.990 - 1.010	MS9592-014	MS9592-054	MS9592-094	MS9592-134
1.052 - 1.072	MS9592-015	MS9592-055	MS9592-095	MS9592-135
1.115 - 1.135	MS9592-016	MS9592-056	MS9592-096	MS9592-136
1.178 - 1.198	MS9592-017	MS9592-057	MS9592-097	MS9592-137
1.240 - 1.260	MS9592-018	MS9592-058	MS9592-098	MS9592-138
1.302 - 1.322	MS9592-019	MS9592-059	MS9592-099	MS9592-139
1.365 - 1.385	MS9592-020	MS9592-060	MS9592-100	MS9592-140
1.428 - 1.448	MS9592-021	MS9592-061	MS9592-101	MS9592-141
1.490 - 1.510	MS9592-022	MS9592-062	MS9592-102	MS9592-142
1.552 - 1.572	MS9592-023	MS9592-063	MS9592-103	MS9592-143
1.615 - 1.635	MS9592-024	MS9592-064	MS9592-104	MS9592-144
1.678 - 1.698	MS9592-025	MS9592-065	MS9592-105	MS9592-145
1.740 - 1.760	MS9592-026	MS9592-066	MS9592-106	MS9592-146
1.865 - 1.885	MS9592-027	MS9592-067	MS9592-107	MS9592-147

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BRACKET, ANGLE, 90°, CRES UNS S32100, .190 BOLT

PART NUMBER

TABLE 1 – PART NUMBERS AND DIMENSIONS (CONTINUED)

B LENGTH	A-LENGTH		
	0.678 - 0.698 PART NUMBER	0.740 - 0.760 PART NUMBER	0.802 - 0.822 PART NUMBER
0.678 - 0.698	MS9592-169		
0.740 - 0.760	MS9592-170	MS9592-210	
0.802 - 0.822	MS9592-171	MS9592-211	MS9592-251
0.865 - 0.885	MS9592-172	MS9592-212	MS9592-252
0.928 - 0.948	MS9592-173	MS9592-213	MS9592-253
0.990 - 1.010	MS9592-174	MS9592-214	MS9592-254
1.052 - 1.072	MS9592-175	MS9592-215	MS9592-255
1.115 - 1.135	MS9592-176	MS9592-216	MS9592-256
1.178 - 1.198	MS9592-177	MS9592-217	MS9592-257
1.240 - 1.260	MS9592-178	MS9592-218	MS9592-258
1.302 - 1.322	MS9592-179	MS9592-219	MS9592-259
1.365 - 1.385	MS9592-180	MS9592-220	MS9592-260
1.428 - 1.448	MS9592-181	MS9592-221	MS9592-261
1.490 - 1.510	MS9592-182	MS9592-222	MS9592-262
1.552 - 1.572	MS9592-183	MS9592-223	MS9592-263
1.615 - 1.635	MS9592-184	MS9592-224	MS9592-264
1.678 - 1.698	MS9592-185	MS9592-225	MS9592-265
1.740 - 1.760	MS9592-186	MS9592-226	MS9592-266
1.865 - 1.885	MS9592-187	MS9592-227	MS9592-267

B LENGTH	A-LENGTH		
	0.865 - 0.885 PART NUMBER	0.928 - 0.948 PART NUMBER	0.990 - 1.010 PART NUMBER
0.865 - 0.885	MS9592-292		
0.928 - 0.948	MS9592-293	MS9592-333	
0.990 - 1.010	MS9592-294	MS9592-334	MS9592-374
1.052 - 1.072	MS9592-295	MS9592-335	MS9592-375
1.115 - 1.135	MS9592-296	MS9592-336	MS9592-376
1.178 - 1.198	MS9592-297	MS9592-337	MS9592-377
1.240 - 1.260	MS9592-298	MS9592-338	MS9592-378
1.302 - 1.322	MS9592-299	MS9592-339	MS9592-379
1.365 - 1.385	MS9592-300	MS9592-340	MS9592-380
1.428 - 1.448	MS9592-301	MS9592-341	MS9592-381
1.490 - 1.510	MS9592-302	MS9592-342	MS9592-382
1.552 - 1.572	MS9592-303	MS9592-343	MS9592-383
1.615 - 1.635	MS9592-304	MS9592-344	MS9592-384
1.678 - 1.698	MS9592-305	MS9592-345	MS9592-385
1.740 - 1.760	MS9592-306	MS9592-346	MS9592-386
1.865 - 1.885	MS9592-307	MS9592-347	MS9592-387

NOTES:

1. MATERIAL: CRES PER AMS 5510 (UNS S32100)
2. GRAIN FLOW SHALL BE PARALLEL WITH ROLLING DIRECTION
3. REMOVE BURRS AND BREAK EDGES .003 TO .015, UNLESS OTHERWISE SPECIFIED.
4. DIMENSIONING AND TOLERANCES PER ANSI Y14.5M-1982 (ASME PUBLICATION)
5. DIMENSIONS ARE IN INCHES.
6. DO NOT USE UNASSIGNED PART NUMBERS

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BRACKET, ANGLE, 90°, CRES UNS S32100, .190 BOLT

PART NUMBER

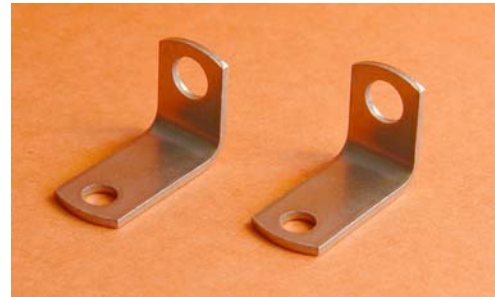
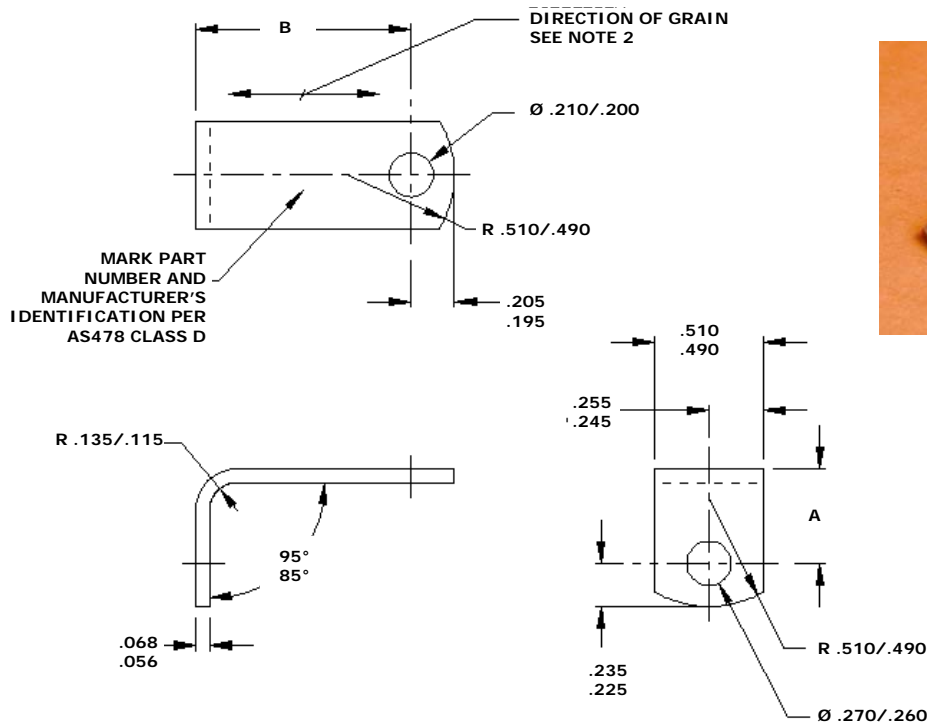


FIGURE 1 ANGLE BRACKET

NOTES:

1. MATERIAL: ALLOY STEEL PER AMS 5510 (UNS S32100)
2. GRAIN FLOW SHALL BE PARALLEL WITH ROLLING DIRECTION
3. REMOVE BURRS AND BREAK EDGES .003 TO .015, UNLESS OTHERWISE SPECIFIED.
4. DIMENSIONING AND TOLERANCES PER ANSI Y14.5M-1982 (ASME PUBLICATION)
5. DIMENSIONS ARE IN INCHES.
6. DO NOT USE UNASSIGNED PART NUMBERS

TABLE 1 – PART NUMBERS AND DIMENSIONS

B LENGTH	A - LENGTH				
	.490 - .510 PART NUMBER	.552 - .572 PART NUMBER	.615 - .635 PART NUMBER	.678 - .698 PART NUMBER	.740 - .760 PART NUMBER
0.428 - 0.448	MS9593-005	MS9593-035	MS9593-065	MS9593-095	MS9593-125
0.490 - 0.510	MS9593-006	MS9593-036	MS9593-066	MS9593-096	MS9593-126
0.552 - 0.572	MS9593-007	MS9593-037	MS9593-067	MS9593-097	MS9593-127
0.615 - 0.635	MS9593-008	MS9593-038	MS9593-068	MS9593-098	MS9593-128
0.678 - 0.698	MS9593-009	MS9593-039	MS9593-069	MS9593-099	MS9593-129
0.740 - 0.760	MS9593-010	MS9593-040	MS9593-070	MS9593-100	MS9593-130
0.802 - 0.822	MS9593-011	MS9593-041	MS9593-071	MS9593-101	MS9593-131
0.865 - 0.885	MS9593-012	MS9593-042	MS9593-072	MS9593-102	MS9593-132
0.928 - 0.948	MS9593-013	MS9593-043	MS9593-073	MS9593-103	MS9593-133
0.990 - 1.010	MS9593-014	MS9593-044	MS9593-074	MS9593-104	MS9593-134
1.052 - 1.072	MS9593-015	MS9593-045	MS9593-075	MS9593-105	MS9593-135
1.115 - 1.135	MS9593-016	MS9593-046	MS9593-076	MS9593-106	MS9593-136
1.178 - 1.198	MS9593-017	MS9593-047	MS9593-077	MS9593-107	MS9593-137
1.240 - 1.260	MS9593-018	MS9593-048	MS9593-078	MS9593-108	MS9593-138
1.302 - 1.322	MS9593-019	MS9593-049	MS9593-079	MS9593-109	MS9593-139
1.365 - 1.385	MS9593-020	MS9593-050	MS9593-080	MS9593-110	MS9593-140
1.428 - 1.448	MS9593-021	MS9593-051	MS9593-081	MS9593-111	MS9593-141
1.490 - 1.510	MS9593-022	MS9593-052	MS9593-082	MS9593-112	MS9593-142

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BRACKET, ANGLE, 90°, CRES UNS S32100, .190 X .250 BOLT

PART NUMBER

TABLE 1 – PART NUMBERS AND DIMENSIONS (CONTINUED)

B LENGTH	A - LENGTH				
	.802 - .822 PART NUMBER	.865 - .885 PART NUMBER	.928 - .948 PART NUMBER	.990 - 1.010 PART NUMBER	1.115 - 1.135 PART NUMBER
0.428 - 0.448	MS9593-155	MS9593-185	MS9593-215	MS9593-245	MS9593-305
0.490 - 0.510	MS9593-156	MS9593-186	MS9593-216	MS9593-246	MS9593-306
0.552 - 0.572	MS9593-157	MS9593-187	MS9593-217	MS9593-247	MS9593-307
0.615 - 0.635	MS9593-158	MS9593-188	MS9593-218	MS9593-248	MS9593-308
0.678 - 0.698	MS9593-159	MS9593-189	MS9593-219	MS9593-249	MS9593-309
0.740 - 0.760	MS9593-160	MS9593-190	MS9593-220	MS9593-250	MS9593-310
0.802 - 0.822	MS9593-161	MS9593-191	MS9593-221	MS9593-251	MS9593-311
0.865 - 0.885	MS9593-162	MS9593-192	MS9593-222	MS9593-252	MS9593-312
0.928 - 0.948	MS9593-163	MS9593-193	MS9593-223	MS9593-253	MS9593-313
0.990 - 1.010	MS9593-164	MS9593-194	MS9593-224	MS9593-254	MS9593-314
1.052 - 1.072	MS9593-165	MS9593-195	MS9593-225	MS9593-255	MS9593-315
1.115 - 1.135	MS9593-166	MS9593-196	MS9593-226	MS9593-256	MS9593-316
1.178 - 1.198	MS9593-167	MS9593-197	MS9593-227	MS9593-257	MS9593-317
1.240 - 1.260	MS9593-168	MS9593-198	MS9593-228	MS9593-258	MS9593-318
1.302 - 1.322	MS9593-169	MS9593-199	MS9593-229	MS9593-259	MS9593-319
1.365 - 1.385	MS9593-170	MS9593-200	MS9593-230	MS9593-260	MS9593-320
1.428 - 1.448	MS9593-171	MS9593-201	MS9593-231	MS9593-261	MS9593-321
1.490 - 1.510	MS9593-172	MS9593-202	MS9593-232	MS9593-262	MS9593-322

B LENGTH	A - LENGTH		
	1.240 - 1.260 PART NUMBER	1.365 - 1.385 PART NUMBER	1.490 - 1.510 PART NUMBER
0.428 - 0.448	MS9593-365	MS9593-425	MS9593-485
0.490 - 0.510	MS9593-366	MS9593-426	MS9593-486
0.552 - 0.572	MS9593-367	MS9593-427	MS9593-487
0.615 - 0.635	MS9593-368	MS9593-428	MS9593-488
0.678 - 0.698	MS9593-369	MS9593-429	MS9593-489
0.740 - 0.760	MS9593-370	MS9593-430	MS9593-490
0.802 - 0.822	MS9593-371	MS9593-431	MS9593-491
0.865 - 0.885	MS9593-372	MS9593-432	MS9593-492
0.928 - 0.948	MS9593-373	MS9593-433	MS9593-493
0.990 - 1.010	MS9593-374	MS9593-434	MS9593-494
1.052 - 1.072	MS9593-375	MS9593-435	MS9593-495
1.115 - 1.135	MS9593-376	MS9593-436	MS9593-496
1.178 - 1.198	MS9593-377	MS9593-437	MS9593-497
1.240 - 1.260	MS9593-378	MS9593-438	MS9593-498
1.302 - 1.322	MS9593-379	MS9593-439	MS9593-499
1.365 - 1.385	MS9593-380	MS9593-440	MS9593-500
1.428 - 1.448	MS9593-381	MS9593-441	MS9593-501
1.490 - 1.510	MS9593-382	MS9593-442	MS9593-502

B LENGTH	A - LENGTH		
	1.615 - 1.635 PART NUMBER	1.740 - 1.760 PART NUMBER	1.865 - 1.885 PART NUMBER
0.428 - 0.448	MS9593-545	MS9593-605	MS9593-665
0.490 - 0.510	MS9593-546	MS9593-606	MS9593-666
0.552 - 0.572	MS9593-547	MS9593-607	MS9593-667
0.615 - 0.635	MS9593-548	MS9593-608	MS9593-668
0.678 - 0.698	MS9593-549	MS9593-609	MS9593-669
0.740 - 0.760	MS9593-550	MS9593-610	MS9593-670
0.802 - 0.822	MS9593-551	MS9593-611	MS9593-671
0.865 - 0.885	MS9593-552	MS9593-612	MS9593-672
0.928 - 0.948	MS9593-553	MS9593-613	MS9593-673
0.990 - 1.010	MS9593-554	MS9593-614	MS9593-674
1.052 - 1.072	MS9593-555	MS9593-615	MS9593-675
1.115 - 1.135	MS9593-556	MS9593-616	MS9593-676
1.178 - 1.198	MS9593-557	MS9593-617	MS9593-677
1.240 - 1.260	MS9593-558	MS9593-618	MS9593-678
1.302 - 1.322	MS9593-559	MS9593-619	MS9593-679
1.365 - 1.385	MS9593-560	MS9593-620	MS9593-680
1.428 - 1.448	MS9593-561	MS9593-621	MS9593-681
1.490 - 1.510	MS9593-562	MS9593-622	MS9593-682

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BRACKET, ANGLE, 90°, CRES UNS S32100, .190 X .250 BOLT

PART NUMBER

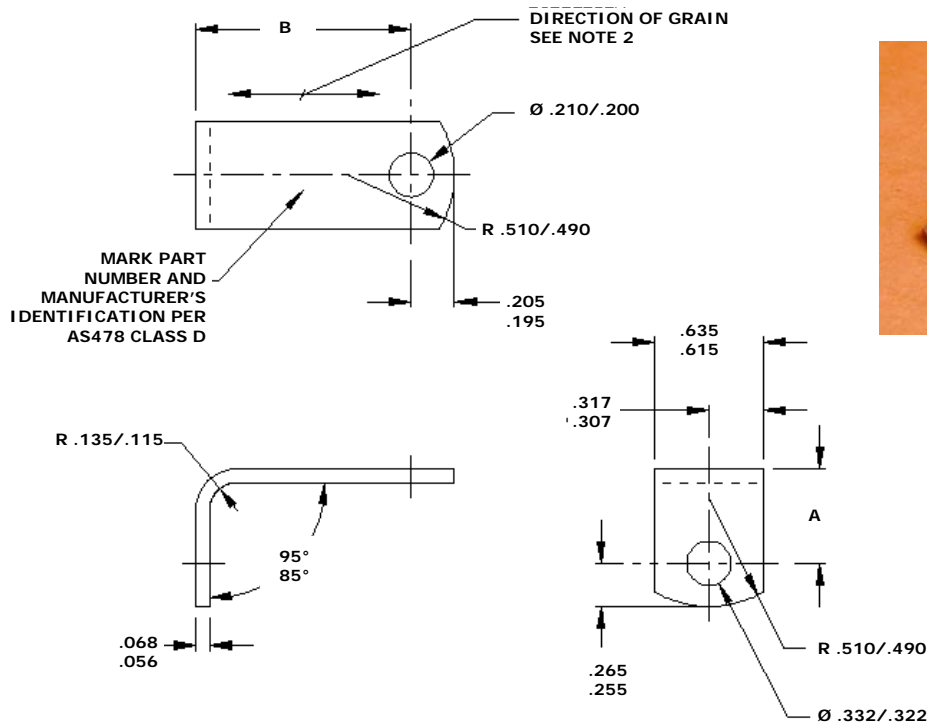


FIGURE 1 ANGLE BRACKET

NOTES:

1. MATERIAL: CORROSION RESISTANT STEEL PER AMS 5510 (UNS S32100)
2. GRAIN FLOW SHALL BE PARALLEL WITH ROLLING DIRECTION
3. REMOVE BURRS AND BREAK EDGES .003 TO .015, UNLESS OTHERWISE SPECIFIED.
4. DIMENSIONING AND TOLERANCES PER ANSI Y14.5M-1982 (ASME PUBLICATION)
5. DIMENSIONS ARE IN INCHES.
6. DO NOT USE UNASSIGNED PART NUMBERS

TABLE 1 – PART NUMBERS AND DIMENSIONS

B LENGTH	A - LENGTH				
	.490 - .510	.552 - .572	.615 - .635	.678 - .698	.740 - .760
	PART NUMBER	PART NUMBER	PART NUMBER	PART NUMBER	PART NUMBER
0.428 - 0.448	MS9594-005	MS9594-035	MS9594-065	MS9594-095	MS9594-125
0.490 - 0.510	MS9594-006	MS9594-036	MS9594-066	MS9594-096	MS9594-126
0.552 - 0.572	MS9594-007	MS9594-037	MS9594-067	MS9594-097	MS9594-127
0.615 - 0.635	MS9594-008	MS9594-038	MS9594-068	MS9594-098	MS9594-128
0.678 - 0.698	MS9594-009	MS9594-039	MS9594-069	MS9594-099	MS9594-129
0.740 - 0.760	MS9594-010	MS9594-040	MS9594-070	MS9594-100	MS9594-130
0.802 - 0.822	MS9594-011	MS9594-041	MS9594-071	MS9594-101	MS9594-131
0.865 - 0.885	MS9594-012	MS9594-042	MS9594-072	MS9594-102	MS9594-132
0.928 - 0.948	MS9594-013	MS9594-043	MS9594-073	MS9594-103	MS9594-133
0.990 - 1.010	MS9594-014	MS9594-044	MS9594-074	MS9594-104	MS9594-134
1.052 - 1.072	MS9594-015	MS9594-045	MS9594-075	MS9594-105	MS9594-135
1.115 - 1.135	MS9594-016	MS9594-046	MS9594-076	MS9594-106	MS9594-136
1.178 - 1.198	MS9594-017	MS9594-047	MS9594-077	MS9594-107	MS9594-137
1.240 - 1.260	MS9594-018	MS9594-048	MS9594-078	MS9594-108	MS9594-138
1.302 - 1.322	MS9594-019	MS9594-049	MS9594-079	MS9594-109	MS9594-139
1.365 - 1.385	MS9594-020	MS9594-050	MS9594-080	MS9594-110	MS9594-140
1.428 - 1.448	MS9594-021	MS9594-051	MS9594-081	MS9594-111	MS9594-141
1.490 - 1.510	MS9594-022	MS9594-052	MS9594-082	MS9594-112	MS9594-142

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BRACKET, ANGLE, 90°, CRES UNS S32100, .190 X .312 BOLT

PART NUMBER

TABLE 1 – PART NUMBERS AND DIMENSIONS (CONTINUED)

B LENGTH	A - LENGTH				
	.802 - .822 PART NUMBER	.865 - .885 PART NUMBER	.928 - .948 PART NUMBER	.990 - 1.010 PART NUMBER	1.115 - 1.135 PART NUMBER
0.428 - 0.448	MS9594-155	MS9594-185	MS9594-215	MS9594-245	MS9594-305
0.490 - 0.510	MS9594-156	MS9594-186	MS9594-216	MS9594-246	MS9594-306
0.552 - 0.572	MS9594-157	MS9594-187	MS9594-217	MS9594-247	MS9594-307
0.615 - 0.635	MS9594-158	MS9594-188	MS9594-218	MS9594-248	MS9594-308
0.678 - 0.698	MS9594-159	MS9594-189	MS9594-219	MS9594-249	MS9594-309
0.740 - 0.760	MS9594-160	MS9594-190	MS9594-220	MS9594-250	MS9594-310
0.802 - 0.822	MS9594-161	MS9594-191	MS9594-221	MS9594-251	MS9594-311
0.865 - 0.885	MS9594-162	MS9594-192	MS9594-222	MS9594-252	MS9594-312
0.928 - 0.948	MS9594-163	MS9594-193	MS9594-223	MS9594-253	MS9594-313
0.990 - 1.010	MS9594-164	MS9594-194	MS9594-224	MS9594-254	MS9594-314
1.052 - 1.072	MS9594-165	MS9594-195	MS9594-225	MS9594-255	MS9594-315
1.115 - 1.135	MS9594-166	MS9594-196	MS9594-226	MS9594-256	MS9594-316
1.178 - 1.198	MS9594-167	MS9594-197	MS9594-227	MS9594-257	MS9594-317
1.240 - 1.260	MS9594-168	MS9594-198	MS9594-228	MS9594-258	MS9594-318
1.302 - 1.322	MS9594-169	MS9594-199	MS9594-229	MS9594-259	MS9594-319
1.365 - 1.385	MS9594-170	MS9594-200	MS9594-230	MS9594-260	MS9594-320
1.428 - 1.448	MS9594-171	MS9594-201	MS9594-231	MS9594-261	MS9594-321
1.490 - 1.510	MS9594-172	MS9594-202	MS9594-232	MS9594-262	MS9594-322

B LENGTH	A - LENGTH		
	1.240 - 1.260 PART NUMBER	1.365 - 1.385 PART NUMBER	1.490 - 1.510 PART NUMBER
0.428 - 0.448	MS9594-365	MS9594-425	MS9594-485
0.490 - 0.510	MS9594-366	MS9594-426	MS9594-486
0.552 - 0.572	MS9594-367	MS9594-427	MS9594-487
0.615 - 0.635	MS9594-368	MS9594-428	MS9594-488
0.678 - 0.698	MS9594-369	MS9594-429	MS9594-489
0.740 - 0.760	MS9594-370	MS9594-430	MS9594-490
0.802 - 0.822	MS9594-371	MS9594-431	MS9594-491
0.865 - 0.885	MS9594-372	MS9594-432	MS9594-492
0.928 - 0.948	MS9594-373	MS9594-433	MS9594-493
0.990 - 1.010	MS9594-374	MS9594-434	MS9594-494
1.052 - 1.072	MS9594-375	MS9594-435	MS9594-495
1.115 - 1.135	MS9594-376	MS9594-436	MS9594-496
1.178 - 1.198	MS9594-377	MS9594-437	MS9594-497
1.240 - 1.260	MS9594-378	MS9594-438	MS9594-498
1.302 - 1.322	MS9594-379	MS9594-439	MS9594-499
1.365 - 1.385	MS9594-380	MS9594-440	MS9594-500
1.428 - 1.448	MS9594-381	MS9594-441	MS9594-501
1.490 - 1.510	MS9594-382	MS9594-442	MS9594-502

B LENGTH	A - LENGTH		
	1.615 - 1.635 PART NUMBER	1.740 - 1.760 PART NUMBER	1.865 - 1.885 PART NUMBER
0.428 - 0.448	MS9594-545	MS9594-605	MS9594-665
0.490 - 0.510	MS9594-546	MS9594-606	MS9594-666
0.552 - 0.572	MS9594-547	MS9594-607	MS9594-667
0.615 - 0.635	MS9594-548	MS9594-608	MS9594-668
0.678 - 0.698	MS9594-549	MS9594-609	MS9594-669
0.740 - 0.760	MS9594-550	MS9594-610	MS9594-670
0.802 - 0.822	MS9594-551	MS9594-611	MS9594-671
0.865 - 0.885	MS9594-552	MS9594-612	MS9594-672
0.928 - 0.948	MS9594-553	MS9594-613	MS9594-673
0.990 - 1.010	MS9594-554	MS9594-614	MS9594-674
1.052 - 1.072	MS9594-555	MS9594-615	MS9594-675
1.115 - 1.135	MS9594-556	MS9594-616	MS9594-676
1.178 - 1.198	MS9594-557	MS9594-617	MS9594-677
1.240 - 1.260	MS9594-558	MS9594-618	MS9594-678
1.302 - 1.322	MS9594-559	MS9594-619	MS9594-679
1.365 - 1.385	MS9594-560	MS9594-620	MS9594-680
1.428 - 1.448	MS9594-561	MS9594-621	MS9594-681
1.490 - 1.510	MS9594-562	MS9594-622	MS9594-682

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BRACKET, ANGLE, 90°, CRES UNS S32100, .190 X .312 BOLT

PART NUMBER

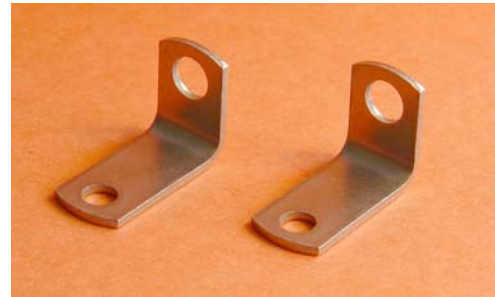
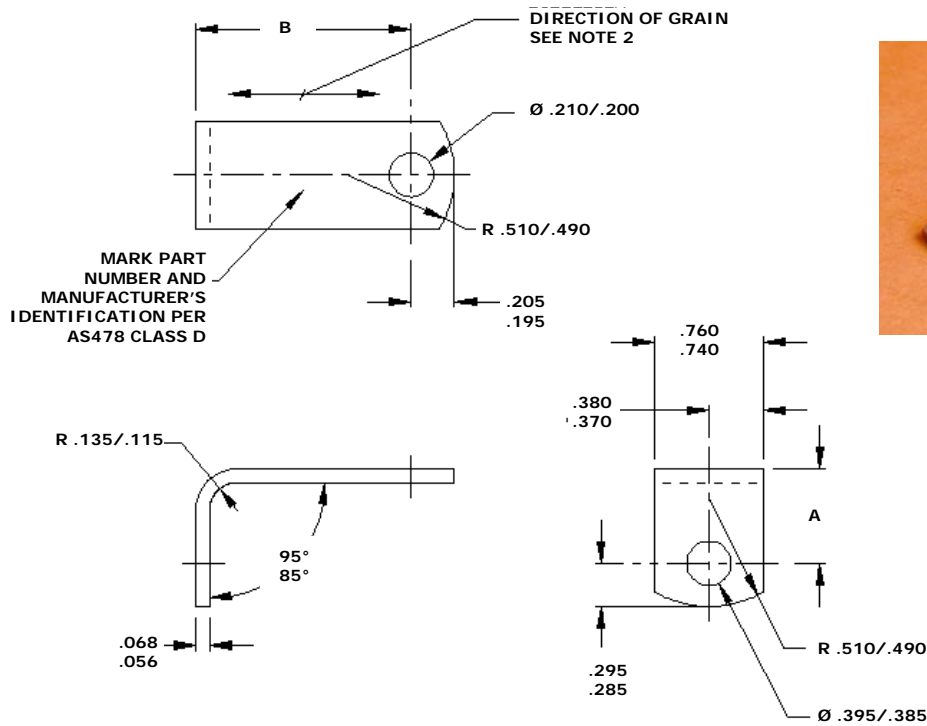


FIGURE 1 ANGLE BRACKET

NOTES:

1. MATERIAL: CORROSION RESISTANT STEEL PER AMS 5510 (UNS A32100)
2. GRAIN FLOW SHALL BE PARALLEL WITH ROLLING DIRECTION
3. REMOVE BURRS AND BREAK EDGES .003 TO .015, UNLESS OTHERWISE SPECIFIED.
4. DIMENSIONING AND TOLERANCES PER ANSI Y14.5M-1982 (ASME PUBLICATION)
5. DIMENSIONS ARE IN INCHES.
6. DO NOT USE UNASSIGNED PART NUMBERS

TABLE 1 – PART NUMBERS AND DIMENSIONS

B LENGTH	A - LENGTH				
	.552 - .572 PART NUMBER	.615 - .635 PART NUMBER	.678 - .698 PART NUMBER	.740 - .760 PART NUMBER	.802 - .822 PART NUMBER
0.428 - 0.448	MS9595-005	MS9595-035	MS9595-065	MS9595-095	MS9595-125
0.490 - 0.510	MS9595-006	MS9595-036	MS9595-066	MS9595-096	MS9595-126
0.552 - 0.572	MS9595-007	MS9595-037	MS9595-067	MS9595-097	MS9595-127
0.615 - 0.635	MS9595-008	MS9595-038	MS9595-068	MS9595-098	MS9595-128
0.678 - 0.698	MS9595-009	MS9595-039	MS9595-069	MS9595-099	MS9595-129
0.740 - 0.760	MS9595-010	MS9595-040	MS9595-070	MS9595-100	MS9595-130
0.802 - 0.822	MS9595-011	MS9595-041	MS9595-071	MS9595-101	MS9595-131
0.865 - 0.885	MS9595-012	MS9595-042	MS9595-072	MS9595-102	MS9595-132
0.928 - 0.948	MS9595-013	MS9595-043	MS9595-073	MS9595-103	MS9595-133
0.990 - 1.010	MS9595-014	MS9595-044	MS9595-074	MS9595-104	MS9595-134
1.052 - 1.072	MS9595-015	MS9595-045	MS9595-075	MS9595-105	MS9595-135
1.115 - 1.135	MS9595-016	MS9595-046	MS9595-076	MS9595-106	MS9595-136
1.178 - 1.198	MS9595-017	MS9595-047	MS9595-077	MS9595-107	MS9595-137
1.240 - 1.260	MS9595-018	MS9595-048	MS9595-078	MS9595-108	MS9595-138
1.302 - 1.322	MS9595-019	MS9595-049	MS9595-079	MS9595-109	MS9595-139
1.365 - 1.385	MS9595-020	MS9595-050	MS9595-080	MS9595-110	MS9595-140
1.428 - 1.448	MS9595-021	MS9595-051	MS9595-081	MS9595-111	MS9595-141
1.490 - 1.510	MS9595-022	MS9595-052	MS9595-082	MS9595-112	MS9595-142

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BRACKET, ANGLE, 90°, CRES UNS S32100, .190 X .375 BOLT

PART NUMBER

TABLE 1 – PART NUMBERS AND DIMENSIONS (CONTINUED)

B LENGTH	A - LENGTH				
	.865 - .885 PART NUMBER	.928 - .948 PART NUMBER	.990 - 1.010 PART NUMBER	1.052 - 1.072 PART NUMBER	1.115 - 1.135 PART NUMBER
0.428 - 0.448	MS9595-155	MS9595-185	MS9595-215	MS9595-245	MS9595-275
0.490 - 0.510	MS9595-156	MS9595-186	MS9595-216	MS9595-246	MS9595-276
0.552 - 0.572	MS9595-157	MS9595-187	MS9595-217	MS9595-247	MS9595-277
0.615 - 0.635	MS9595-158	MS9595-188	MS9595-218	MS9595-248	MS9595-278
0.678 - 0.698	MS9595-159	MS9595-189	MS9595-219	MS9595-249	MS9595-279
0.740 - 0.760	MS9595-160	MS9595-190	MS9595-220	MS9595-250	MS9595-280
0.802 - 0.822	MS9595-161	MS9595-191	MS9595-221	MS9595-251	MS9595-281
0.865 - 0.885	MS9595-162	MS9595-192	MS9595-222	MS9595-252	MS9595-282
0.928 - 0.948	MS9595-163	MS9595-193	MS9595-223	MS9595-253	MS9595-283
0.990 - 1.010	MS9595-164	MS9595-194	MS9595-224	MS9595-254	MS9595-284
1.052 - 1.072	MS9595-165	MS9595-195	MS9595-225	MS9595-255	MS9595-285
1.115 - 1.135	MS9595-166	MS9595-196	MS9595-226	MS9595-256	MS9595-286
1.178 - 1.198	MS9595-167	MS9595-197	MS9595-227	MS9595-257	MS9595-287
1.240 - 1.260	MS9595-168	MS9595-198	MS9595-228	MS9595-258	MS9595-288
1.302 - 1.322	MS9595-169	MS9595-199	MS9595-229	MS9595-259	MS9595-289
1.365 - 1.385	MS9595-170	MS9595-200	MS9595-230	MS9595-260	MS9595-290
1.428 - 1.448	MS9595-171	MS9595-201	MS9595-231	MS9595-261	MS9595-291
1.490 - 1.510	MS9595-172	MS9595-202	MS9595-232	MS9595-262	MS9595-292

B LENGTH	A - LENGTH				
	1.178 - 1.198 PART NUMBER	1.240 - 1.260 PART NUMBER	1.302 - 1.322 PART NUMBER	1.365 - 1.385 PART NUMBER	1.428 - 1.448 PART NUMBER
0.428 - 0.448	MS9595-305	MS9595-335	MS9595-365	MS9595-395	MS9595-425
0.490 - 0.510	MS9595-306	MS9595-336	MS9595-366	MS9595-396	MS9595-426
0.552 - 0.572	MS9595-307	MS9595-337	MS9595-367	MS9595-397	MS9595-427
0.615 - 0.635	MS9595-308	MS9595-338	MS9595-368	MS9595-398	MS9595-428
0.678 - 0.698	MS9595-309	MS9595-339	MS9595-369	MS9595-399	MS9595-429
0.740 - 0.760	MS9595-310	MS9595-340	MS9595-370	MS9595-400	MS9595-430
0.802 - 0.822	MS9595-311	MS9595-341	MS9595-371	MS9595-401	MS9595-431
0.865 - 0.885	MS9595-312	MS9595-342	MS9595-372	MS9595-402	MS9595-432
0.928 - 0.948	MS9595-313	MS9595-343	MS9595-373	MS9595-403	MS9595-433
0.990 - 1.010	MS9595-314	MS9595-344	MS9595-374	MS9595-404	MS9595-434
1.052 - 1.072	MS9595-315	MS9595-345	MS9595-375	MS9595-405	MS9595-435
1.115 - 1.135	MS9595-316	MS9595-346	MS9595-376	MS9595-406	MS9595-436
1.178 - 1.198	MS9595-317	MS9595-347	MS9595-377	MS9595-407	MS9595-437
1.240 - 1.260	MS9595-318	MS9595-348	MS9595-378	MS9595-408	MS9595-438
1.302 - 1.322	MS9595-319	MS9595-349	MS9595-379	MS9595-409	MS9595-439
1.365 - 1.385	MS9595-320	MS9595-350	MS9595-380	MS9595-410	MS9595-440
1.428 - 1.448	MS9595-321	MS9595-351	MS9595-381	MS9595-411	MS9595-441
1.490 - 1.510	MS9595-322	MS9595-352	MS9595-382	MS9595-412	MS9595-442

B LENGTH	A - LENGTH				
	1.490 - 1.510 PART NUMBER	1.615 - 1.635 PART NUMBER	1.740 - 1.760 PART NUMBER	1.865 - 1.885 PART NUMBER	1.990 - 2.010 PART NUMBER
0.428 - 0.448	MS9595-455	MS9595-515	MS9595-575	MS9595-635	MS9595-695
0.490 - 0.510	MS9595-456	MS9595-516	MS9595-576	MS9595-636	MS9595-696
0.552 - 0.572	MS9595-457	MS9595-517	MS9595-577	MS9595-637	MS9595-697
0.615 - 0.635	MS9595-458	MS9595-518	MS9595-578	MS9595-638	MS9595-698
0.678 - 0.698	MS9595-459	MS9595-519	MS9595-579	MS9595-639	MS9595-699
0.740 - 0.760	MS9595-460	MS9595-520	MS9595-580	MS9595-640	MS9595-700
0.802 - 0.822	MS9595-461	MS9595-521	MS9595-581	MS9595-641	MS9595-701
0.865 - 0.885	MS9595-462	MS9595-522	MS9595-582	MS9595-642	MS9595-702
0.928 - 0.948	MS9595-463	MS9595-523	MS9595-583	MS9595-643	MS9595-703
0.990 - 1.010	MS9595-464	MS9595-524	MS9595-584	MS9595-644	MS9595-704
1.052 - 1.072	MS9595-465	MS9595-525	MS9595-585	MS9595-645	MS9595-705
1.115 - 1.135	MS9595-466	MS9595-526	MS9595-586	MS9595-646	MS9595-706
1.178 - 1.198	MS9595-467	MS9595-527	MS9595-587	MS9595-647	MS9595-707
1.240 - 1.260	MS9595-468	MS9595-528	MS9595-588	MS9595-648	MS9595-708
1.302 - 1.322	MS9595-469	MS9595-529	MS9595-589	MS9595-649	MS9595-709
1.365 - 1.385	MS9595-470	MS9595-530	MS9595-590	MS9595-650	MS9595-710
1.428 - 1.448	MS9595-471	MS9595-531	MS9595-591	MS9595-651	MS9595-711
1.490 - 1.510	MS9595-472	MS9595-532	MS9595-592	MS9595-652	MS9595-712

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PART NUMBER

BRACKET, ANGLE, 90°, CRES UNS S32100, .190 X .375 BOLT

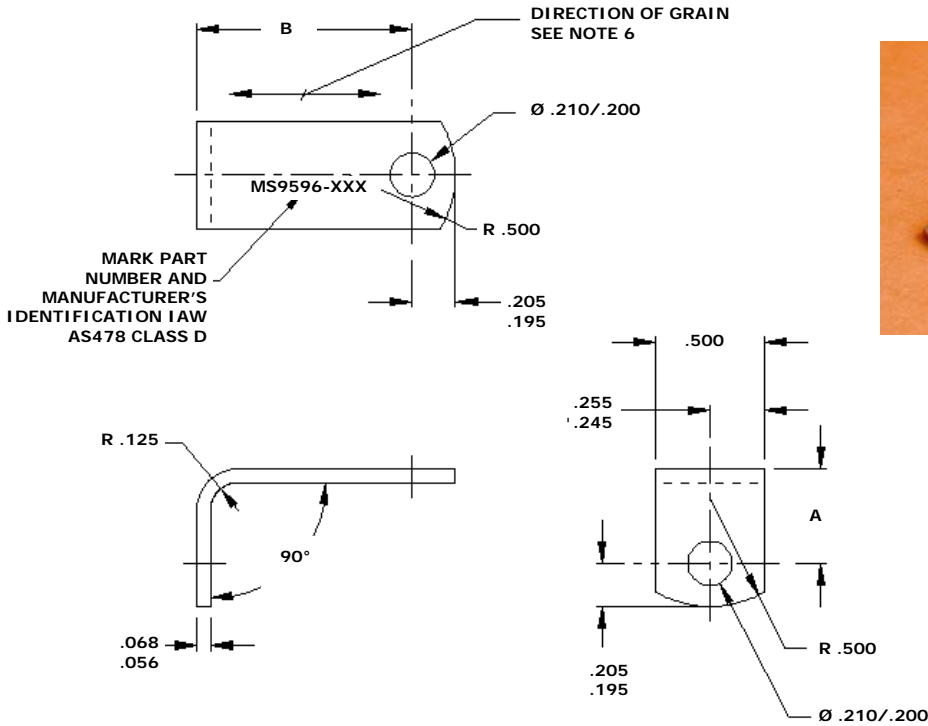


FIGURE 1 ANGLE BRACKET

REQUIREMENTS:

1. MATERIAL: STEEL IN ACCORDANCE WITH AMS 6350, HARDEN (OIL QUENCH) AND TEMPER TO ROCKWELL 32-38 HRC PER ASTM E18.
2. FINISH: CADMIUM PLATE IN ACCORDANCE WITH AMS 2400. DIMENSIONS SPECIFIED ARE AFTER PLATING.
3. REMOVE BURRS AND BREAK EDGES
4. APPROXIMATE WEIGHT LB/100 = $.877 (A+B) + .157$.
5. TOLERANCES UNLESS OTHERWISE SPECIFIED, TOLERANCES SHALL BE FOR LINEAR DIMENSIONS $\pm .010$, ANGULAR $\pm 5^\circ$.
6. GRAIN FLOW SHALL BE PARALLEL WITH ROLLING DIRECTION
7. PART NUMBER: THE PART NUMBER SHALL CONSIST OF THE BASIC MS NUMBER FOLLOWED BY A DASH NUMBER FROM TABLE 1.

EXAMPLE: MS9596-005



MS9596-005 INDICATES - BRACKET, ANGLE, 90°, STEEL, .190 BOLT, LENGTH A, .438, LENGTH B, .438.

NOTES:

1. DIMENSIONS ARE IN INCHES.

WARNING:

THIS DOCUMENT INCLUDES CADMIUM AS A PLATING MATERIAL. THE USE OF CADMIUM HAS BEEN RESTRICTED AND/OR BANNED FOR USE IN MANY COUNTRIES DUE TO ENVIRONMENTAL AND HEALTH CONCERNS. THE USER SHOULD CONSULT WITH LOCAL OFFICIALS ON THE ENVIRONMENTAL AND HEALTH REGULATIONS REGARDING ITS USE.

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7/28/2011

AS9596

BRACKET, ANGLE, 90°, CADMIUM PLATED STEEL, UNSG41300, .190 BOLT

PART NUMBER

TABLE 1 – PART NUMBERS AND DIMENSIONS

B LENGTH	A - LENGTH					
	.438	0.500	0.562	0.625	0.688	0.750
	Dash Numbers					
0.438	-005					
0.500	-006	-046				
0.562	-007	-047	-087			
0.625	-008	-048	-088	-128		
0.688	-009	-049	-089	-129	-169	
0.750	-010	-050	-090	-130	-170	-210
0.812	-011	-051	-091	-131	-171	-211
0.875	-012	-052	-092	-132	-172	-212
0.938	-013	-053	-093	-133	-173	-213
1.000	-014	-054	-094	-134	-174	-214
1.062	-015	-055	-095	-135	-175	-215
1.125	-016	-056	-096	-136	-176	-216
1.188	-017	-057	-097	-137	-177	-217
1.250	-018	-058	-098	-138	-178	-218
1.312	-019	-059	-099	-139	-179	-219
1.375	-020	-060	-100	-140	-180	-220
1.438	-021	-061	-101	-141	-181	-221
1.500	-022	-062	-102	-142	-182	-222
1.562	-023	-063	-103	-143	-183	-223
1.625	-024	-064	-104	-144	-184	-224
1.688	-025	-065	-105	-145	-185	-225
1.750	-026	-066	-106	-146	-186	-226
1.875	-027	-067	-107	-147	-187	-227

B LENGTH	A - LENGTH			
	.812	0.875	0.938	1.000
	Dash Numbers			
0.812	-251			
0.875	-252	-292		
0.938	-253	-293	-333	
1.000	-254	-294	-334	-374
1.062	-255	-295	-335	-375
1.125	-256	-296	-336	-376
1.188	-257	-297	-337	-377
1.250	-258	-298	-338	-378
1.312	-259	-299	-339	-379
1.375	-260	-300	-340	-380
1.438	-261	-301	-341	-381
1.500	-262	-302	-342	-382
1.562	-263	-303	-343	-383
1.625	-264	-304	-344	-384
1.688	-265	-305	-345	-385
1.750	-266	-306	-346	-386
1.875	-267	-307	-347	-387

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BRACKET, ANGLE, 90°, CADMIUM PLATED STEEL, UNSG41300, .190 BOLT

PART NUMBER

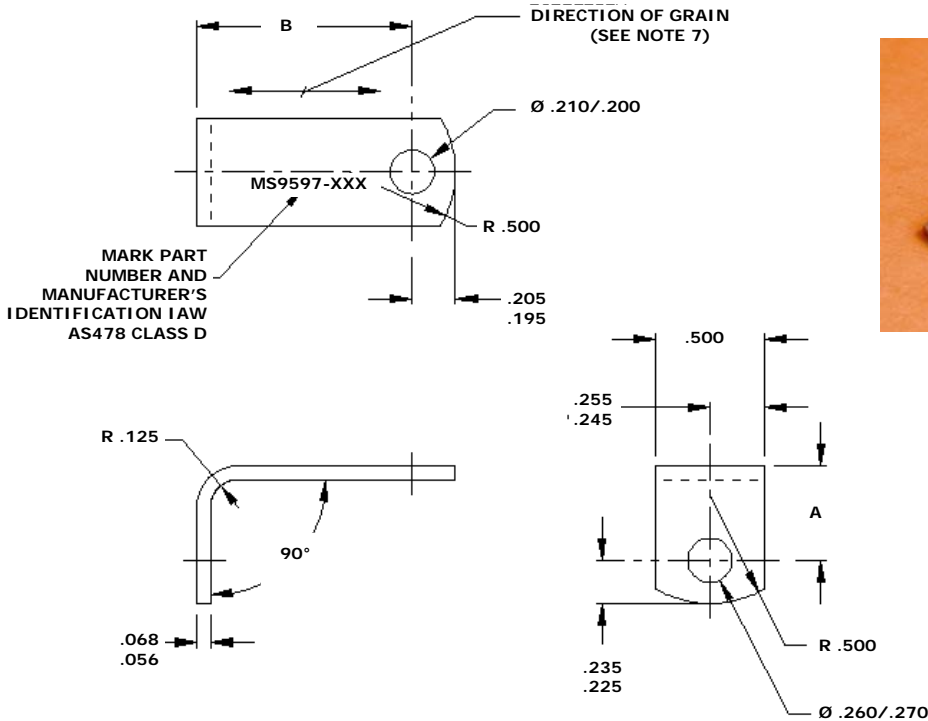


FIGURE 1 ANGLE BRACKET

REQUIREMENTS:

1. MATERIAL: STEEL IN ACCORDANCE WITH AMS 6350.
2. HARDNESS: HARDEN (OIL QUENCH) AND TEMPER TO ROCKWELL 32-38 HRC PER ASTM E18.
3. FINISH: CADMIUM PLATE IN ACCORDANCE WITH AMS 2400. DIMENSIONS SPECIFIED ARE AFTER PLATING.
4. REMOVE BURRS AND BREAK EDGES
5. APPROXIMATE WEIGHT LB/100 = $.877 (A+B) + .145$.
6. EDGES: BREAK SHARP EDGES $.003-.015$ UNLESS OTHERWISE SPECIFIED.
7. GRAIN FLOW SHALL BE PARALLEL WITH ROLLING DIRECTION
8. PART NUMBER: THE PART NUMBER SHALL CONSIST OF THE BASIC MS NUMBER FOLLOWED BY A DASH NUMBER FROM TABLE 1.

EXAMPLE: MS9597-005

\swarrow DASH NUMBER
 \swarrow BASIC MS NUMBER
 MS9597-005 INDICATES - BRACKET, ANGLE, 90°, CADMIUM PLATED, .190 BOLT, .438 LONG X .250 BOLT, .500 LONG

NOTES:

1. DIMENSIONS ARE IN INCHES.

WARNING:

THIS DOCUMENT INCLUDES CADMIUM AS A PLATING MATERIAL. THE USE OF CADMIUM HAS BEEN RESTRICTED AND/OR BANNED FOR USE IN MANY COUNTRIES DUE TO ENVIRONMENTAL AND HEALTH CONCERNS. THE USER SHOULD CONSULT WITH LOCAL OFFICIALS ON THE ENVIRONMENTAL AND HEALTH REGULATIONS REGARDING ITS USE.

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BRACKET, ANGLE, 90°, CADMIUM PLATED, STEEL, UNSG41300, .190 X .250 BOLT

PART NUMBER

TABLE 1 – PART NUMBERS AND DIMENSIONS

B LENGTH	A-LENGTH						
	.500	0.562	0.625	0.688	0.750	0.812	0.875
DASH NUMBERS							
0.438	-005	-035	-065	-095	-125	-155	-185
0.500	-006	-036	-066	-096	-126	-156	-186
0.562	-007	-037	-067	-097	-127	-157	-187
0.625	-008	-038	-068	-098	-128	-158	-188
0.688	-009	-039	-069	-099	-129	-159	-189
0.750	-010	-040	-070	-100	-130	-160	-190
0.812	-011	-041	-071	-101	-131	-161	-191
0.875	-012	-042	-072	-102	-132	-162	-192
0.938	-013	-043	-073	-103	-133	-163	-193
1.000	-014	-044	-074	-104	-134	-164	-194
1.062	-015	-045	-075	-105	-135	-165	-195
1.125	-016	-046	-076	-106	-136	-166	-196
1.188	-017	-047	-077	-107	-137	-167	-197
1.250	-018	-048	-078	-108	-138	-168	-198
1.312	-019	-049	-079	-109	-139	-169	-199
1.375	-020	-050	-080	-110	-140	-170	-200
1.438	-021	-051	-081	-111	-141	-171	-201
1.500	-022	-052	-082	-112	-142	-172	-202

B LENGTH	A-LENGTH								
	0.938	1.000	1.125	1.250	1.375	1.500	1.625	1.750	1.875
DASH NUMBERS									
0.438	-215	-245	-305	-365	-425	-485	-545	-605	-665
0.500	-216	-246	-306	-366	-426	-486	-546	-606	-666
0.562	-217	-247	-307	-367	-427	-487	-547	-607	-667
0.625	-218	-248	-308	-368	-428	-488	-548	-608	-668
0.688	-219	-249	-309	-369	-429	-489	-549	-609	-669
0.750	-220	-250	-310	-370	-430	-490	-550	-610	-670
0.812	-221	-251	-311	-371	-431	-491	-551	-611	-671
0.875	-222	-252	-312	-372	-432	-492	-552	-612	-672
0.938	-223	-253	-313	-373	-433	-493	-553	-613	-673
1.000	-224	-254	-314	-374	-434	-494	-554	-614	-674
1.062	-225	-255	-315	-375	-435	-495	-555	-615	-675
1.125	-226	-256	-316	-376	-436	-496	-556	-616	-676
1.188	-227	-257	-317	-377	-437	-497	-557	-617	-677
1.250	-228	-258	-318	-378	-438	-498	-558	-618	-678
1.312	-229	-259	-319	-379	-439	-499	-559	-619	-679
1.375	-230	-260	-320	-380	-440	-500	-560	-620	-680
1.438	-231	-261	-321	-381	-441	-501	-561	-621	-681
1.500	-232	-262	-322	-382	-442	-502	-562	-622	-682

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BRACKET, ANGLE, 90°, CADMIUM PLATED, STEEL, UNSG41300, .190 X .250 BOLT

PART NUMBER

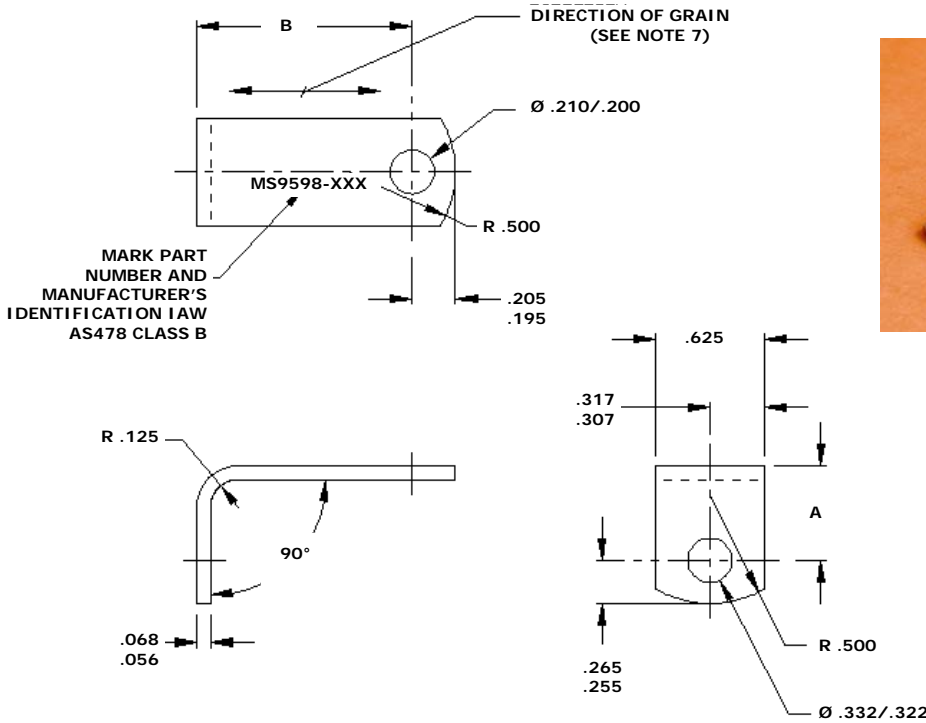


FIGURE 1 ANGLE BRACKET

REQUIREMENTS:

1. MATERIAL: STEEL IN ACCORDANCE WITH AMS 6350.
2. HARDNESS: HARDEN (OIL QUENCH) AND TEMPER TO ROCKWELL 32-38 HRC PER ASTM E18.
3. FINISH: CADMIUM PLATE IN ACCORDANCE WITH AMS 2400. DIMENSIONS SPECIFIED ARE AFTER PLATING.
4. APPROXIMATE WEIGHT LB/100 = 1.097 (A+B) + .187.
5. TOLERANCES UNLESS OTHERWISE SPECIFIED, TOLERANCES SHALL BE FOR LINEAR DIMENSIONS $\pm .010$, ANGULAR $\pm 5^\circ$.
6. BREAK SHARP EDGES .003-.015 UNLESS OTHERWISE SPECIFIED.
7. GRAIN FLOW SHALL BE PARALLEL WITH ROLLING DIRECTION
8. PART NUMBER: THE PART NUMBER SHALL CONSIST OF THE BASIC MS NUMBER FOLLOWED BY A DASH NUMBER FROM TABLE 1.

EXAMPLE: MS9598-005

DASH NUMBER
BASIC MS NUMBER

MS9598-005 INDICATES - BRACKET, ANGLE, 90°, CADMIUM PLATED, .190 BOLT, .438 LONG X .312 BOLT, .500 LONG.

NOTES:

1. DIMENSIONS ARE IN INCHES.

WARNING:

THIS DOCUMENT INCLUDES CADMIUM AS A PLATING MATERIAL. THE USE OF CADMIUM HAS BEEN RESTRICTED AND/OR BANNED FOR USE IN MANY COUNTRIES DUE TO ENVIRONMENTAL AND HEALTH CONCERNS. THE USER SHOULD CONSULT WITH LOCAL OFFICIALS ON THE ENVIRONMENTAL AND HEALTH REGULATIONS REGARDING ITS USE.

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BRACKET, ANGLE, 90°, CADMIUM PLATED,
ALLOY STEEL UNS G41300, .190 X .312 BOLT

PART NUMBER

TABLE 1 – PART NUMBERS AND DIMENSIONS

B LENGTH	A-LENGTH						
	.500	0.562	0.625	0.688	0.750	0.812	0.875
	DASH NUMBERS						
0.438	-005	-035	-065	-095	-125	-155	-185
0.500	-006	-036	-066	-096	-126	-156	-186
0.562	-007	-037	-067	-097	-127	-157	-187
0.625	-008	-038	-068	-098	-128	-158	-188
0.688	-009	-039	-069	-099	-129	-159	-189
0.750	-010	-040	-070	-100	-130	-160	-190
0.812	-011	-041	-071	-101	-131	-161	-191
0.875	-012	-042	-072	-102	-132	-162	-192
0.938	-013	-043	-073	-103	-133	-163	-193
1.000	-014	-044	-074	-104	-134	-164	-194
1.062	-015	-045	-075	-105	-135	-165	-195
1.125	-016	-046	-076	-106	-136	-166	-196
1.188	-017	-047	-077	-107	-137	-167	-197
1.250	-018	-048	-078	-108	-138	-168	-198
1.312	-019	-049	-079	-109	-139	-169	-199
1.375	-020	-050	-080	-110	-140	-170	-200
1.438	-021	-051	-081	-111	-141	-171	-201
1.500	-022	-052	-082	-112	-142	-172	-202

B LENGTH	A-LENGTH								
	0.938	1.000	1.125	1.250	1.375	1.500	1.625	1.750	1.875
	DASH NUMBERS								
0.438	-215	-245	-305	-365	-425	-485	-545	-605	-665
0.500	-216	-246	-306	-366	-426	-486	-546	-606	-666
0.562	-217	-247	-307	-367	-427	-487	-547	-607	-667
0.625	-218	-248	-308	-368	-428	-488	-548	-608	-668
0.688	-219	-249	-309	-369	-429	-489	-549	-609	-669
0.750	-220	-250	-310	-370	-430	-490	-550	-610	-670
0.812	-221	-251	-311	-371	-431	-491	-551	-611	-671
0.875	-222	-252	-312	-372	-432	-492	-552	-612	-672
0.938	-223	-253	-313	-373	-433	-493	-553	-613	-673
1.000	-224	-254	-314	-374	-434	-494	-554	-614	-674
1.062	-225	-255	-315	-375	-435	-495	-555	-615	-675
1.125	-226	-256	-316	-376	-436	-496	-556	-616	-676
1.188	-227	-257	-317	-377	-437	-497	-557	-617	-677
1.250	-228	-258	-318	-378	-438	-498	-558	-618	-678
1.312	-229	-259	-319	-379	-439	-499	-559	-619	-679
1.375	-230	-260	-320	-380	-440	-500	-560	-620	-680
1.438	-231	-261	-321	-381	-441	-501	-561	-621	-681
1.500	-232	-262	-322	-382	-442	-502	-562	-622	-682

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BRACKET, ANGLE, 90°, CADMIUM PLATED,
ALLOY STEEL UNS G41300, .190 X .312 BOLT

PART NUMBER

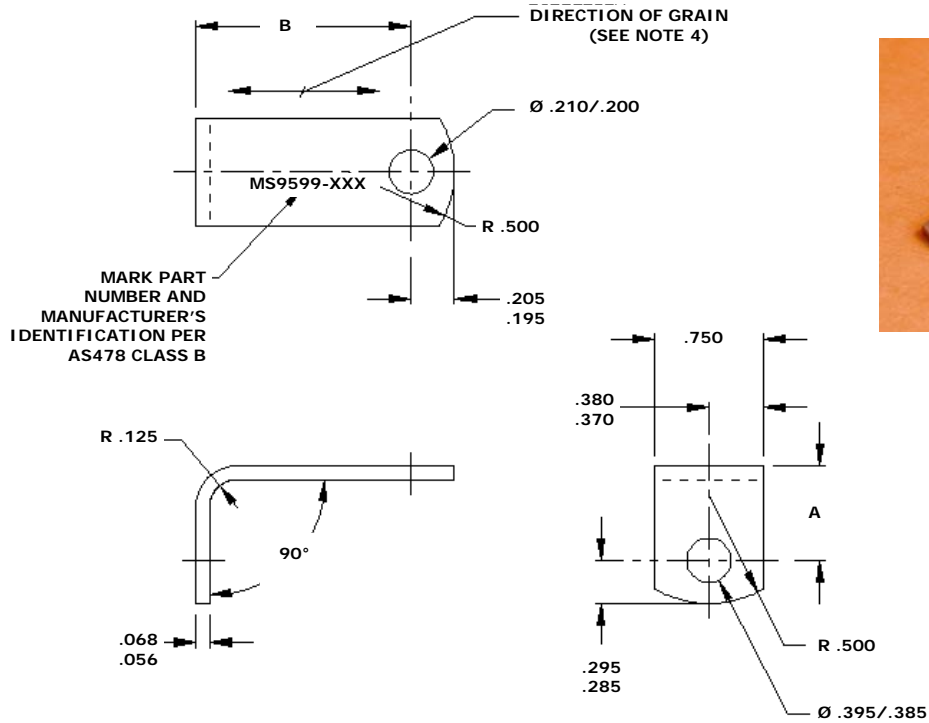


FIGURE 1 ANGLE BRACKET

NOTES:

1. MATERIAL: ALLOY STEEL PER AMS 6350 (UNS G41300).
2. HARDNESS: HARDEN (OIL QUENCH) AND TEMPER TO 32-38 HRC PER ASTM E18.
3. FINISH: CADMIUM PLATE PER AMS 2400. DIMENSIONS SPECIFIED ARE AFTER PLATING.
4. GRAIN FLOW SHALL BE PARALLEL WITH ROLLING DIRECTION
5. BREAK SHARP EDGES .003 -.015, UNLESS OTHERWISE SPECIFIED.
6. DIMENSIONS ARE IN INCHES.
7. TOLERANCES UNLESS OTHERWISE SPECIFIED, TOLERANCES SHALL BE FOR LINEAR DIMENSIONS $\pm .010$, ANGULAR $\pm 5^\circ$.
8. DIMENSIONS AND TOLERANCING PER ANSI Y14.5M-1982.
9. PART NUMBER: THE PART NUMBER SHALL CONSIST OF THE BASIC "MS" PART NUMBER FOLLOWED BY A DASH NUMBER FROM TABLE 1.

EXAMPLE: MS9599 - 005

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DASH NUMBER
BASIC "MS" NUMBER

10. APPROXIMATE MASS LB/100 = 1.316 (A+B) + .221.
11. DO NOT USE UNASSIGNED PART NUMBERS.

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BRACKET, ANGLE, 90°, ALLOY STEEL UNS G41300,
CADMIUM PLATED .190 X .375 BOLT

PART NUMBER

TABLE 1 - DASH NUMBERS AND DIMENSIONS

B LENGTH	A-LENGTH									
	0.562	0.625	0.688	0.750	0.812	0.875	0.875	1.000	1.062	1.125
	DASH NUMBERS									
0.438	-005	-035	-065	-095	-125	-155	-185	-215	-245	-275
0.500	-006	-036	-066	-096	-126	-156	-186	-216	-246	-276
0.562	-007	-037	-067	-097	-127	-157	-187	-217	-247	-277
0.625	-008	-038	-068	-098	-128	-158	-188	-218	-248	-278
0.688	-009	-039	-069	-099	-129	-159	-189	-219	-249	-279
0.750	-010	-040	-070	-100	-130	-160	-190	-220	-250	-280
0.812	-011	-041	-071	-101	-131	-161	-191	-221	-251	-281
0.875	-012	-042	-072	-102	-132	-162	-192	-222	-252	-282
0.938	-013	-043	-073	-103	-133	-163	-193	-223	-253	-283
1.000	-014	-044	-074	-104	-134	-164	-194	-224	-254	-284
1.062	-015	-045	-075	-105	-135	-165	-195	-225	-255	-285
1.125	-016	-046	-076	-106	-136	-166	-196	-226	-256	-286
1.188	-017	-047	-077	-107	-137	-167	-197	-227	-257	-287
1.250	-018	-048	-078	-108	-138	-168	-198	-228	-258	-288
1.312	-019	-049	-079	-109	-139	-169	-199	-229	-259	-289
1.375	-020	-050	-080	-110	-140	-170	-200	-230	-260	-290
1.438	-021	-051	-081	-111	-141	-171	-201	-231	-261	-291
1.500	-022	-052	-082	-112	-142	-172	-202	-232	-262	-292

B LENGTH	A-LENGTH									
	1.188	1.250	1.312	1.375	1.438	1.500	1.625	1.750	1.875	2.000
	DASH NUMBERS									
0.438	-305	-335	-365	-395	-425	-455	-515	-575	-635	-695
0.500	-306	-336	-366	-396	-426	-456	-516	-576	-636	-696
0.562	-307	-337	-367	-397	-427	-457	-517	-577	-637	-697
0.625	-308	-338	-368	-398	-428	-458	-518	-578	-638	-698
0.688	-309	-339	-369	-399	-429	-459	-519	-579	-639	-699
0.750	-310	-340	-370	-400	-430	-460	-520	-580	-640	-700
0.812	-311	-341	-371	-401	-431	-461	-521	-581	-641	-701
0.875	-312	-342	-372	-402	-432	-462	-522	-582	-642	-702
0.938	-313	-343	-373	-403	-433	-463	-523	-583	-643	-703
1.000	-314	-344	-374	-404	-434	-464	-524	-584	-644	-704
1.062	-315	-345	-375	-405	-435	-465	-525	-585	-645	-705
1.125	-316	-346	-376	-406	-436	-466	-526	-586	-646	-706
1.188	-317	-347	-377	-407	-437	-467	-527	-587	-647	-707
1.250	-318	-348	-378	-408	-438	-468	-528	-588	-648	-708
1.312	-319	-349	-379	-409	-439	-469	-529	-589	-649	-709
1.375	-320	-350	-380	-410	-440	-470	-530	-590	-650	-710
1.438	-321	-351	-381	-411	-441	-471	-531	-591	-651	-711
1.500	-322	-352	-382	-412	-442	-472	-532	-592	-652	-712

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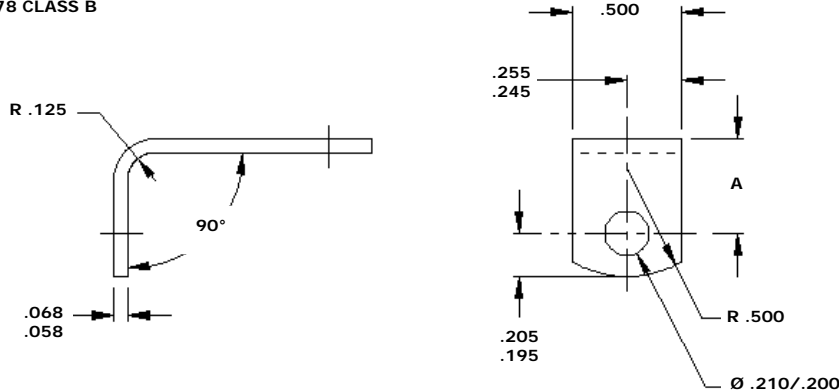
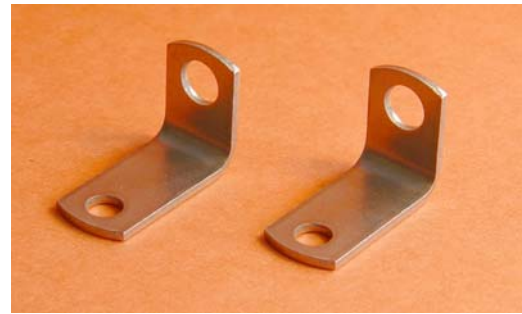
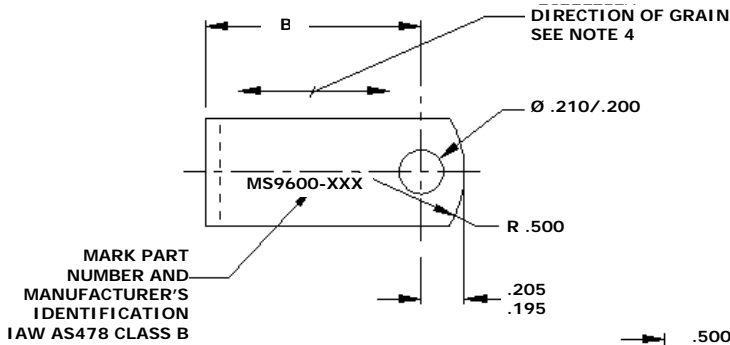
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02/13/09

AS9599

BRACKET, ANGLE, 90°, ALLOY STEEL UNS G41300,
CADMIUM PLATED .190 X .375 BOLT

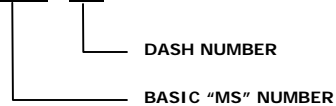
PART NUMBER



NOTES:

1. MATERIAL: CORROSION AND HEAT RESISTANT STEEL PER AMS 5504 (UNS S41000).
2. HARDNESS: 30-38 HRC.
3. FINISH: HEAT TREATMENT AND CLEANING IN ACCORDANCE WITH AMS 2550.
4. GRAIN FLOW SHALL BE PARALLEL WITH ROLLING DIRECTION.
5. BREAK SHARP EDGES .003 -.015, UNLESS OTHERWISE SPECIFIED.
6. DIMENSIONS ARE IN INCHES
7. TOLERANCES UNLESS OTHERWISE SPECIFIED, TOLERANCES SHALL BE FOR LINEAR DIMENSIONS $\pm .010$, ANGULAR $\pm 5^\circ$.
8. DIMENSIONING AND TOLERANCES PER ANSI Y14.5M-1982 (ASME PUBLICATION)
9. PART NUMBER: THE PART NUMBER SHALL CONSIST OF THE BASIC "MS" PART NUMBER FOLLOWED BY A DASH NUMBER FROM TABLE 1.

EXAMPLE: MS9600 - 005



MS9600-005 INDICATES - BRACKET, ANGLE 90°, CRES, .190 BOLT, .438 X .438 LONG.

10. DO NOT USE UNASSIGNED PART NUMBERS

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REV
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02/05/09

AS9600

BRACKET,, ANGLE 90°, CORROSION AND HEAT RESISTANT
STEEL UNS S41000, .190 BOLT

PART NUMBER

TABLE 1 - DASH NUMBERS AND DIMENSIONS

B LENGTH	A - LENGTH									
	0.438	0.500	0.562	0.625	0.688	0.750	0.812	0.875	0.938	1.000
	DASH NUMBERS									
0.438	-005									
0.500	-006	-046								
0.562	-007	-047	-087							
0.625	-008	-048	-088	-128						
0.688	-009	-049	-089	-129	-169					
0.750	-010	-050	-090	-130	-170	-210				
0.812	-011	-051	-091	-131	-171	-211	-251			
0.875	-012	-052	-092	-132	-172	-212	-252	-292		
0.938	-013	-053	-093	-133	-173	-213	-253	-293	-333	
1.000	-014	-054	-094	-134	-174	-214	-254	-294	-334	-374
1.062	-015	-055	-095	-135	-175	-215	-255	-295	-335	-375
1.125	-016	-056	-096	-136	-176	-216	-256	-296	-336	-376
1.188	-017	-057	-097	-137	-177	-217	-257	-297	-337	-377
1.250	-018	-058	-098	-138	-178	-218	-258	-298	-338	-378
1.312	-019	-059	-099	-139	-179	-219	-259	-299	-339	-379
1.375	-020	-060	-100	-140	-180	-220	-260	-300	-340	-380
1.438	-021	-061	-101	-141	-181	-221	-261	-301	-341	-381
1.500	-022	-062	-102	-142	-182	-222	-262	-302	-342	-382
1.562	-023	-063	-103	-143	-183	-223	-263	-303	-343	-383
1.625	-024	-064	-104	-144	-184	-224	-264	-304	-344	-384
1.688	-025	-065	-105	-145	-185	-225	-265	-305	-345	-385
1.750	-026	-066	-106	-146	-186	-226	-266	-306	-346	-386
1.875	-027	-067	-107	-147	-187	-227	-267	-307	-347	-387

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UMPCO, INC
CAGE CODE No. 18076

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02/05/09

AS9600

BRACKET,, ANGLE 90°, CORROSION AND HEAT RESISTANT
STEEL UNS S41000, .190 BOLT

PART NUMBER

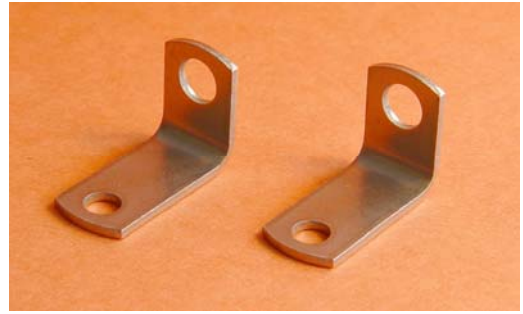
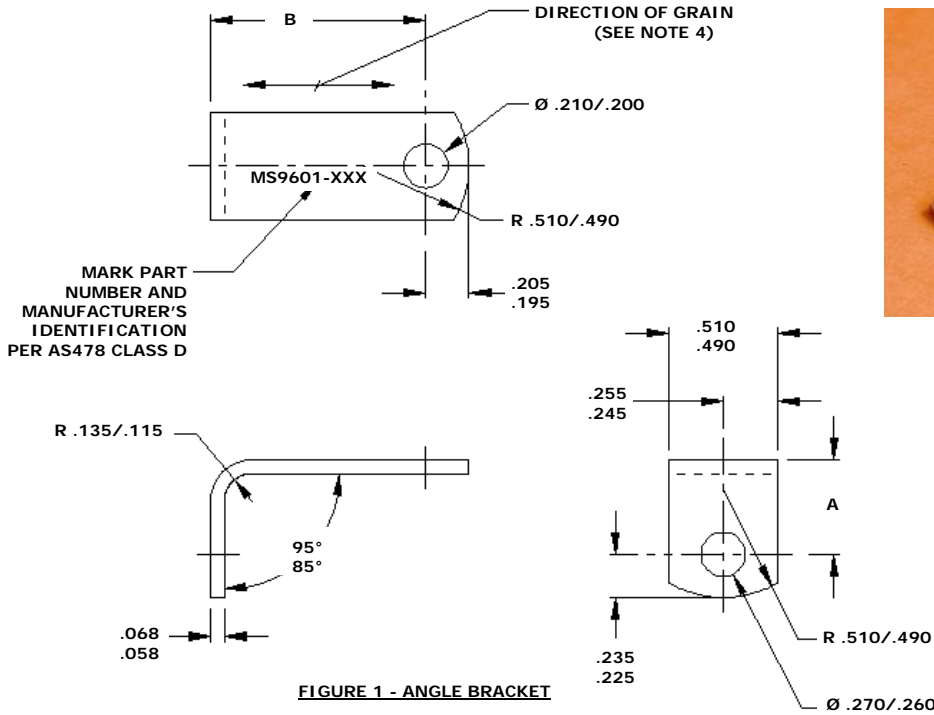


FIGURE 1 - ANGLE BRACKET

NOTES:

1. MATERIAL: CORROSION RESISTANT STEEL PER AMS 5504 (UNS S41000).
2. HARDNESS: 30-38 HRC.
3. FINISH: HEAT TREATMENT AND CLEANING IN ACCORDANCE WITH AMS 2550.
4. GRAIN FLOW SHALL BE PARALLEL WITH ROLLING DIRECTION.
5. REMOVE BURRS AND BREAK SHARP EDGES .003 -.015, UNLESS OTHERWISE SPECIFIED.
6. DIMENSIONING AND TOLERANCES PER ANSI Y14.5M-1982
7. DIMENSIONS ARE IN INCHES
8. DO NOT USE UNASSIGNED PART NUMBERS
9. APPROXIMATE MASS LB/100 = .877 (A+B) + .145

TABLE 1 -PART NUMBERS AND DIMENSIONS

B LENGTH	A - LENGTH				
	.490 - .510	.552 - .572	.615 - .635	.678 - .698	.740 - .760
	PART NUMBER	PART NUMBER	PART NUMBER	PART NUMBER	PART NUMBER
0.428 - 0.448	MS9601-005	MS9601-035	MS9601-065	MS9601-095	MS9601-125
0.490 - 0.510	MS9601-006	MS9601-036	MS9601-066	MS9601-096	MS9601-126
0.552 - 0.572	MS9601-007	MS9601-037	MS9601-067	MS9601-097	MS9601-127
0.615 - 0.635	MS9601-008	MS9601-038	MS9601-068	MS9601-098	MS9601-128
0.678 - 0.698	MS9601-009	MS9601-039	MS9601-069	MS9601-099	MS9601-129
0.740 - 0.760	MS9601-010	MS9601-040	MS9601-070	MS9601-100	MS9601-130
0.802 - 0.822	MS9601-011	MS9601-041	MS9601-071	MS9601-101	MS9601-131
0.865 - 0.885	MS9601-012	MS9601-042	MS9601-072	MS9601-102	MS9601-132
0.928 - 0.948	MS9601-013	MS9601-043	MS9601-073	MS9601-103	MS9601-133
0.990 - 1.010	MS9601-014	MS9601-044	MS9601-074	MS9601-104	MS9601-134
1.052 - 1.072	MS9601-015	MS9601-045	MS9601-075	MS9601-105	MS9601-135
1.115 - 1.135	MS9601-016	MS9601-046	MS9601-076	MS9601-106	MS9601-136
1.178 - 1.198	MS9601-017	MS9601-047	MS9601-077	MS9601-107	MS9601-137
1.240 - 1.260	MS9601-018	MS9601-048	MS9601-078	MS9601-108	MS9601-138
1.302 - 1.322	MS9601-019	MS9601-049	MS9601-079	MS9601-109	MS9601-139
1.365 - 1.385	MS9601-020	MS9601-050	MS9601-080	MS9601-110	MS9601-140
1.428 - 1.448	MS9601-021	MS9601-051	MS9601-081	MS9601-111	MS9601-141
1.490 - 1.510	MS9601-022	MS9601-052	MS9601-082	MS9601-112	MS9601-142

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UMPCO, INC
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AS9601

BRACKET, ANGLE 90°, CRES UNS S41000
.190 X .250 BOLT

PART NUMBER

TABLE 1 -PART NUMBERS AND DIMENSIONS CONTINUED

B LENGTH	A - LENGTH				
	.802 - .822	.865 - .885	.928 - .948	.990- 1.010	1.115 - 1.135
	PART NUMBER	PART NUMBER	PART NUMBER	PART NUMBER	PART NUMBER
0.428 - 0.448	MS9601-155	MS9601-185	MS9601-215	MS9601-245	MS9601-305
0.490 - 0.510	MS9601-156	MS9601-186	MS9601-216	MS9601-246	MS9601-306
0.552 - 0.572	MS9601-157	MS9601-187	MS9601-217	MS9601-247	MS9601-307
0.615 - 0.635	MS9601-158	MS9601-188	MS9601-218	MS9601-248	MS9601-308
0.678 - 0.698	MS9601-159	MS9601-189	MS9601-219	MS9601-249	MS9601-309
0.740 - 0.760	MS9601-160	MS9601-190	MS9601-220	MS9601-250	MS9601-310
0.802 - 0.822	MS9601-161	MS9601-191	MS9601-221	MS9601-251	MS9601-311
0.865 - 0.885	MS9601-162	MS9601-192	MS9601-222	MS9601-252	MS9601-312
0.928 - 0.948	MS9601-163	MS9601-193	MS9601-223	MS9601-253	MS9601-313
0.990 - 1.010	MS9601-164	MS9601-194	MS9601-224	MS9601-254	MS9601-314
1.052 - 1.072	MS9601-165	MS9601-195	MS9601-225	MS9601-255	MS9601-315
1.115 - 1.135	MS9601-166	MS9601-196	MS9601-226	MS9601-256	MS9601-316
1.178 - 1.198	MS9601-167	MS9601-197	MS9601-227	MS9601-257	MS9601-317
1.240 - 1.260	MS9601-168	MS9601-198	MS9601-228	MS9601-258	MS9601-318
1.302 - 1.322	MS9601-169	MS9601-199	MS9601-229	MS9601-259	MS9601-319
1.365 - 1.385	MS9601-170	MS9601-200	MS9601-230	MS9601-260	MS9601-320
1.428 - 1.448	MS9601-171	MS9601-201	MS9601-231	MS9601-261	MS9601-321
1.490 - 1.510	MS9601-172	MS9601-202	MS9601-232	MS9601-262	MS9601-322

B LENGTH	A - LENGTH		
	1.240 - 1.260	1.365 - 1.385	1.490 - 1.510
	PART NUMBER	PART NUMBER	PART NUMBER
0.428 - 0.448	MS9601-365	MS9601-425	MS9601-485
0.490 - 0.510	MS9601-366	MS9601-426	MS9601-486
0.552 - 0.572	MS9601-367	MS9601-427	MS9601-487
0.615 - 0.635	MS9601-368	MS9601-428	MS9601-488
0.678 - 0.698	MS9601-369	MS9601-429	MS9601-489
0.740 - 0.760	MS9601-370	MS9601-430	MS9601-490
0.802 - 0.822	MS9601-371	MS9601-431	MS9601-491
0.865 - 0.885	MS9601-372	MS9601-432	MS9601-492
0.928 - 0.948	MS9601-373	MS9601-433	MS9601-493
0.990 - 1.010	MS9601-374	MS9601-434	MS9601-494
1.052 - 1.072	MS9601-375	MS9601-435	MS9601-495
1.115 - 1.135	MS9601-376	MS9601-436	MS9601-496
1.178 - 1.198	MS9601-377	MS9601-437	MS9601-497
1.240 - 1.260	MS9601-378	MS9601-438	MS9601-498
1.302 - 1.322	MS9601-379	MS9601-439	MS9601-499
1.365 - 1.385	MS9601-380	MS9601-440	MS9601-500
1.428 - 1.448	MS9601-381	MS9601-441	MS9601-501
1.490 - 1.510	MS9601-382	MS9601-442	MS9601-502

B LENGTH	A - LENGTH		
	1.615 - 1.635	1.740 - 1.760	1.865 - 1.885
	PART NUMBER	PART NUMBER	PART NUMBER
0.428 - 0.448	MS9601-545	MS9601-605	MS9601-665
0.490 - 0.510	MS9601-546	MS9601-606	MS9601-666
0.552 - 0.572	MS9601-547	MS9601-607	MS9601-667
0.615 - 0.635	MS9601-548	MS9601-608	MS9601-668
0.678 - 0.698	MS9601-549	MS9601-609	MS9601-669
0.740 - 0.760	MS9601-550	MS9601-610	MS9601-670
0.802 - 0.822	MS9601-551	MS9601-611	MS9601-671
0.865 - 0.885	MS9601-552	MS9601-612	MS9601-672
0.928 - 0.948	MS9601-553	MS9601-613	MS9601-673
0.990 - 1.010	MS9601-554	MS9601-614	MS9601-674
1.052 - 1.072	MS9601-555	MS9601-615	MS9601-675
1.115 - 1.135	MS9601-556	MS9601-616	MS9601-676
1.178 - 1.198	MS9601-557	MS9601-617	MS9601-677
1.240 - 1.260	MS9601-558	MS9601-618	MS9601-678
1.302 - 1.322	MS9601-559	MS9601-619	MS9601-679
1.365 - 1.385	MS9601-560	MS9601-620	MS9601-680
1.428 - 1.448	MS9601-561	MS9601-621	MS9601-681
1.490 - 1.510	MS9601-562	MS9601-622	MS9601-682

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AS9601

BRACKET, ANGLE 90°, CRES UNS S41000
.190 X .250 BOLT

PART NUMBER

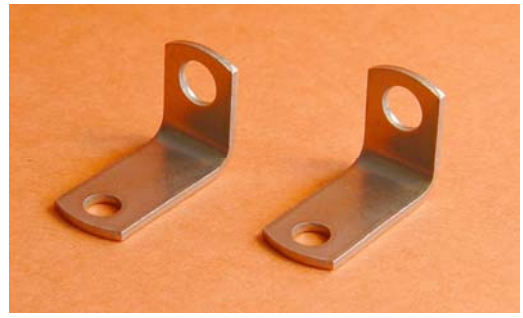
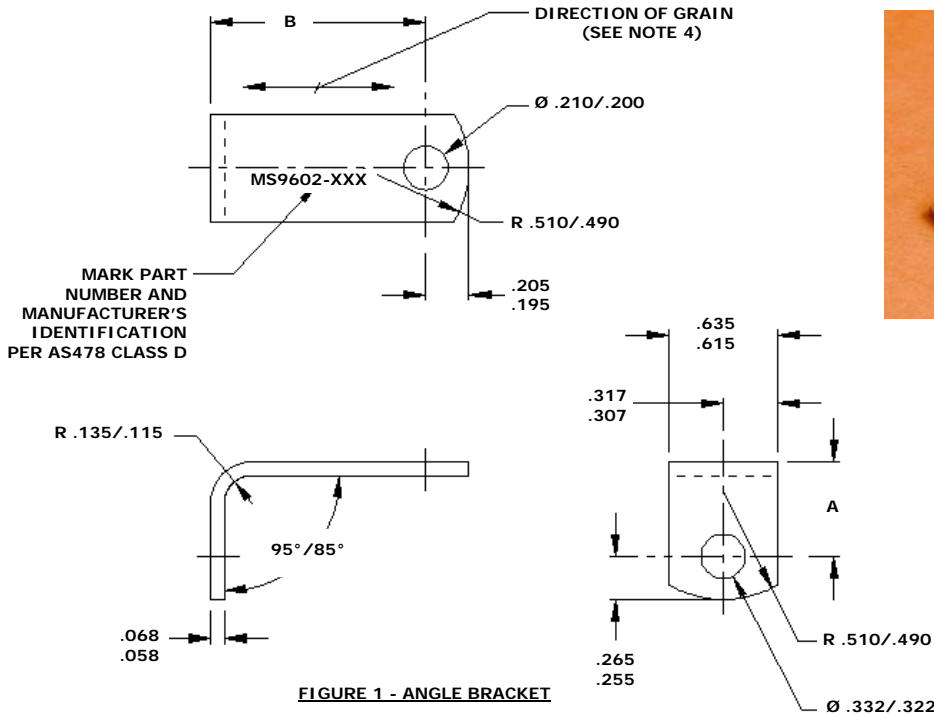


FIGURE 1 - ANGLE BRACKET

NOTES:

1. MATERIAL: CORROSION RESISTANT STEEL PER AMS 5504 (UNS S41000).
2. HARDNESS: 30-38 HRC.
3. FINISH: HEAT TREATMENT AND CLEANING IN ACCORDANCE WITH AMS 2550.
4. GRAIN FLOW SHALL BE PARALLEL WITH ROLLING DIRECTION.
5. REMOVE BURRS AND BREAK SHARP EDGES .003 -.015, UNLESS OTHERWISE SPECIFIED.
6. DIMENSIONING AND TOLERANCES PER ANSI Y14.5M-1982 (ASME PUBLICATION)
7. DIMENSIONS ARE IN INCHES
8. DO NOT USE UNASSIGNED PART NUMBERS
9. APPROXIMATE MASS LB/100 = 1.097 (A+B) + .187

TABLE 1 -PART NUMBERS AND DIMENSIONS

B LENGTH	A - LENGTH				
	.490 - .510	.552 - .572	.615 - .635	.678 - .698	.740 - .760
	PART NUMBER	PART NUMBER	PART NUMBER	PART NUMBER	PART NUMBER
0.428 - 0.448	MS9602-005	MS9602-035	MS9602-065	MS9602-095	MS9602-125
0.490 - 0.510	MS9602-006	MS9602-036	MS9602-066	MS9602-096	MS9602-126
0.552 - 0.572	MS9602-007	MS9602-037	MS9602-067	MS9602-097	MS9602-127
0.615 - 0.635	MS9602-008	MS9602-038	MS9602-068	MS9602-098	MS9602-128
0.678 - 0.698	MS9602-009	MS9602-039	MS9602-069	MS9602-099	MS9602-129
0.740 - 0.760	MS9602-010	MS9602-040	MS9602-070	MS9602-100	MS9602-130
0.802 - 0.822	MS9602-011	MS9602-041	MS9602-071	MS9602-101	MS9602-131
0.865 - 0.885	MS9602-012	MS9602-042	MS9602-072	MS9602-102	MS9602-132
0.928 - 0.948	MS9602-013	MS9602-043	MS9602-073	MS9602-103	MS9602-133
0.990 - 1.010	MS9602-014	MS9602-044	MS9602-074	MS9602-104	MS9602-134
1.052 - 1.072	MS9602-015	MS9602-045	MS9602-075	MS9602-105	MS9602-135
1.115 - 1.135	MS9602-016	MS9602-046	MS9602-076	MS9602-106	MS9602-136
1.178 - 1.198	MS9602-017	MS9602-047	MS9602-077	MS9602-107	MS9602-137
1.240 - 1.260	MS9602-018	MS9602-048	MS9602-078	MS9602-108	MS9602-138
1.302 - 1.322	MS9602-019	MS9602-049	MS9602-079	MS9602-109	MS9602-139
1.365 - 1.385	MS9602-020	MS9602-050	MS9602-080	MS9602-110	MS9602-140
1.428 - 1.448	MS9602-021	MS9602-051	MS9602-081	MS9602-111	MS9602-141
1.490 - 1.510	MS9602-022	MS9602-052	MS9602-082	MS9602-112	MS9602-142

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02/05/09

AS9602

BRACKET, ANGLE 90°, CRES UNS S41000
.190 X .312 BOLT

PART NUMBER

TABLE 1 -PART NUMBERS AND DIMENSIONS CONTINUED

B LENGTH	A - LENGTH				
	.802 - .822 PART NUMBER	.865 - .885 PART NUMBER	.928 - .948 PART NUMBER	.990 - 1.010 PART NUMBER	1.115 - 1.135 PART NUMBER
0.428 - 0.448	MS9602-155	MS9602-185	MS9602-215	MS9602-245	MS9602-305
0.490 - 0.510	MS9602-156	MS9602-186	MS9602-216	MS9602-246	MS9602-306
0.552 - 0.572	MS9602-157	MS9602-187	MS9602-217	MS9602-247	MS9602-307
0.615 - 0.635	MS9602-158	MS9602-188	MS9602-218	MS9602-248	MS9602-308
0.678 - 0.698	MS9602-159	MS9602-189	MS9602-219	MS9602-249	MS9602-309
0.740 - 0.760	MS9602-160	MS9602-190	MS9602-220	MS9602-250	MS9602-310
0.802 - 0.822	MS9602-161	MS9602-191	MS9602-221	MS9602-251	MS9602-311
0.865 - 0.885	MS9602-162	MS9602-192	MS9602-222	MS9602-252	MS9602-312
0.928 - 0.948	MS9602-163	MS9602-193	MS9602-223	MS9602-253	MS9602-313
0.990 - 1.010	MS9602-164	MS9602-194	MS9602-224	MS9602-254	MS9602-314
1.052 - 1.072	MS9602-165	MS9602-195	MS9602-225	MS9602-255	MS9602-315
1.115 - 1.135	MS9602-166	MS9602-196	MS9602-226	MS9602-256	MS9602-316
1.178 - 1.198	MS9602-167	MS9602-197	MS9602-227	MS9602-257	MS9602-317
1.240 - 1.260	MS9602-168	MS9602-198	MS9602-228	MS9602-258	MS9602-318
1.302 - 1.322	MS9602-169	MS9602-199	MS9602-229	MS9602-259	MS9602-319
1.365 - 1.385	MS9602-170	MS9602-200	MS9602-230	MS9602-260	MS9602-320
1.428 - 1.448	MS9602-171	MS9602-201	MS9602-231	MS9602-261	MS9602-321
1.490 - 1.510	MS9602-172	MS9602-202	MS9602-232	MS9602-262	MS9602-322

B LENGTH	A - LENGTH		
	1.240 - 1.260 PART NUMBER	1.365 - 1.385 PART NUMBER	1.490 - 1.510 PART NUMBER
0.428 - 0.448	MS9602-365	MS9602-425	MS9602-485
0.490 - 0.510	MS9602-366	MS9602-426	MS9602-486
0.552 - 0.572	MS9602-367	MS9602-427	MS9602-487
0.615 - 0.635	MS9602-368	MS9602-428	MS9602-488
0.678 - 0.698	MS9602-369	MS9602-429	MS9602-489
0.740 - 0.760	MS9602-370	MS9602-430	MS9602-490
0.802 - 0.822	MS9602-371	MS9602-431	MS9602-491
0.865 - 0.885	MS9602-372	MS9602-432	MS9602-492
0.928 - 0.948	MS9602-373	MS9602-433	MS9602-493
0.990 - 1.010	MS9602-374	MS9602-434	MS9602-494
1.052 - 1.072	MS9602-375	MS9602-435	MS9602-495
1.115 - 1.135	MS9602-376	MS9602-436	MS9602-496
1.178 - 1.198	MS9602-377	MS9602-437	MS9602-497
1.240 - 1.260	MS9602-378	MS9602-438	MS9602-498
1.302 - 1.322	MS9602-379	MS9602-439	MS9602-499
1.365 - 1.385	MS9602-380	MS9602-440	MS9602-500
1.428 - 1.448	MS9602-381	MS9602-441	MS9602-501
1.490 - 1.510	MS9602-382	MS9602-442	MS9602-502

B LENGTH	A - LENGTH		
	1.615 - 1.635 PART NUMBER	1.740 - 1.760 PART NUMBER	1.865 - 1.885 PART NUMBER
0.428 - 0.448	MS9602-545	MS9602-605	MS9602-665
0.490 - 0.510	MS9602-546	MS9602-606	MS9602-666
0.552 - 0.572	MS9602-547	MS9602-607	MS9602-667
0.615 - 0.635	MS9602-548	MS9602-608	MS9602-668
0.678 - 0.698	MS9602-549	MS9602-609	MS9602-669
0.740 - 0.760	MS9602-550	MS9602-610	MS9602-670
0.802 - 0.822	MS9602-551	MS9602-611	MS9602-671
0.865 - 0.885	MS9602-552	MS9602-612	MS9602-672
0.928 - 0.948	MS9602-553	MS9602-613	MS9602-673
0.990 - 1.010	MS9602-554	MS9602-614	MS9602-674
1.052 - 1.072	MS9602-555	MS9602-615	MS9602-675
1.115 - 1.135	MS9602-556	MS9602-616	MS9602-676
1.178 - 1.198	MS9602-557	MS9602-617	MS9602-677
1.240 - 1.260	MS9602-558	MS9602-618	MS9602-678
1.302 - 1.322	MS9602-559	MS9602-619	MS9602-679
1.365 - 1.385	MS9602-560	MS9602-620	MS9602-680
1.428 - 1.448	MS9602-561	MS9602-621	MS9602-681
1.490 - 1.510	MS9602-562	MS9602-622	MS9602-682

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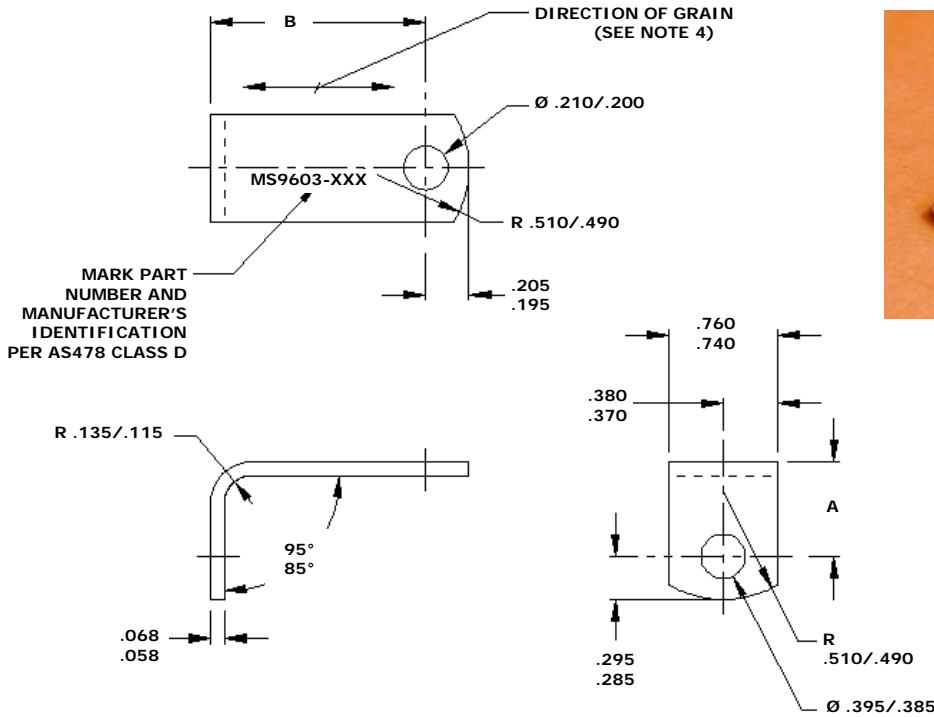
UMPCO, INC
CAGE CODE No. 18076

REV
N/C
02/05/09

AS9602

BRACKET, ANGLE 90°, CRES UNS S41000
.190 X .312 BOLT

PART NUMBER



NOTES:

1. MATERIAL: CORROSION RESISTANT STEEL PER AMS 5504 (UNS S41000).
2. HARDNESS: 30-38 HRC.
3. FINISH: HEAT TREATMENT AND CLEANING IN ACCORDANCE WITH AMS 2550.
4. GRAIN FLOW SHALL BE PARALLEL WITH ROLLING DIRECTION.
5. REMOVE BURRS AND BREAK SHARP EDGES .003 -.015, UNLESS OTHERWISE SPECIFIED.
6. DIMENSIONING AND TOLERANCES PER ANSI Y14.5M-1982 (ASME PUBLICATION)
7. DIMENSIONS ARE IN INCHES
8. DO NOT USE UNASSIGNED PART NUMBERS.
9. APPROXIMATE MASS LB/100 = 1.316 (A+B) + .221

TABLE 1 -PART NUMBERS AND DIMENSIONS

B LENGTH	A - LENGTH				
	.552 - .572	.615 - .635	.678 - .698	.740 - .760	.802 - .822
	PART NUMBER	PART NUMBER	PART NUMBER	PART NUMBER	PART NUMBER
0.428 - 0.448	MS9603-005	MS9603-035	MS9603-065	MS9603-095	MS9603-125
0.490 - 0.510	MS9603-006	MS9603-036	MS9603-066	MS9603-096	MS9603-126
0.552 - 0.572	MS9603-007	MS9603-037	MS9603-067	MS9603-097	MS9603-127
0.615 - 0.635	MS9603-008	MS9603-038	MS9603-068	MS9603-098	MS9603-128
0.678 - 0.698	MS9603-009	MS9603-039	MS9603-069	MS9603-099	MS9603-129
0.740 - 0.760	MS9603-010	MS9603-040	MS9603-070	MS9603-100	MS9603-130
0.802 - 0.822	MS9603-011	MS9603-041	MS9603-071	MS9603-101	MS9603-131
0.865 - 0.885	MS9603-012	MS9603-042	MS9603-072	MS9603-102	MS9603-132
0.928 - 0.948	MS9603-013	MS9603-043	MS9603-073	MS9603-103	MS9603-133
0.990 - 1.010	MS9603-014	MS9603-044	MS9603-074	MS9603-104	MS9603-134
1.052 - 1.072	MS9603-015	MS9603-045	MS9603-075	MS9603-105	MS9603-135
1.115 - 1.135	MS9603-016	MS9603-046	MS9603-076	MS9603-106	MS9603-136
1.178 - 1.198	MS9603-017	MS9603-047	MS9603-077	MS9603-107	MS9603-137
1.240 - 1.260	MS9603-018	MS9603-048	MS9603-078	MS9603-108	MS9603-138
1.302 - 1.322	MS9603-019	MS9603-049	MS9603-079	MS9603-109	MS9603-139
1.365 - 1.385	MS9603-020	MS9603-050	MS9603-080	MS9603-110	MS9603-140
1.428 - 1.448	MS9603-021	MS9603-051	MS9603-081	MS9603-111	MS9603-141
1.490 - 1.510	MS9603-022	MS9603-052	MS9603-082	MS9603-112	MS9603-142

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AS9603

BRACKET, ANGLE 90°, CRES
UNS S41000, .190 X .375 BOLT

PART NUMBER

TABLE 1 -PART NUMBERS AND DIMENSIONS CONTINUED

B LENGTH	A - LENGTH				
	.865 - .885 PART NUMBER	.928 - .948 PART NUMBER	.990 - 1.010 PART NUMBER	1.052 - 1.072 PART NUMBER	1.115 - 1.135 PART NUMBER
0.428 - 0.448	MS9603-155	MS9603-185	MS9603-215	MS9603-245	MS9603-275
0.490 - 0.510	MS9603-156	MS9603-186	MS9603-216	MS9603-246	MS9603-276
0.552 - 0.572	MS9603-157	MS9603-187	MS9603-217	MS9603-247	MS9603-277
0.615 - 0.635	MS9603-158	MS9603-188	MS9603-218	MS9603-248	MS9603-278
0.678 - 0.698	MS9603-159	MS9603-189	MS9603-219	MS9603-249	MS9603-279
0.740 - 0.760	MS9603-160	MS9603-190	MS9603-220	MS9603-250	MS9603-280
0.802 - 0.822	MS9603-161	MS9603-191	MS9603-221	MS9603-251	MS9603-281
0.865 - 0.885	MS9603-162	MS9603-192	MS9603-222	MS9603-252	MS9603-282
0.928 - 0.948	MS9603-163	MS9603-193	MS9603-223	MS9603-253	MS9603-283
0.990 - 1.010	MS9603-164	MS9603-194	MS9603-224	MS9603-254	MS9603-284
1.052 - 1.072	MS9603-165	MS9603-195	MS9603-225	MS9603-255	MS9603-285
1.115 - 1.135	MS9603-166	MS9603-196	MS9603-226	MS9603-256	MS9603-286
1.178 - 1.198	MS9603-167	MS9603-197	MS9603-227	MS9603-257	MS9603-287
1.240 - 1.260	MS9603-168	MS9603-198	MS9603-228	MS9603-258	MS9603-288
1.302 - 1.322	MS9603-169	MS9603-199	MS9603-229	MS9603-259	MS9603-289
1.365 - 1.385	MS9603-170	MS9603-200	MS9603-230	MS9603-260	MS9603-290
1.428 - 1.448	MS9603-171	MS9603-201	MS9603-231	MS9603-261	MS9603-291
1.490 - 1.510	MS9603-172	MS9603-202	MS9603-232	MS9603-262	MS9603-292

B LENGTH	A - LENGTH				
	1.178 - 1.198 PART NUMBER	1.240 - 1.260 PART NUMBER	1.302 - 1.322 PART NUMBER	1.365 - 1.385 PART NUMBER	1.428 - 1.448 PART NUMBER
0.428 - 0.448	MS9603-305	MS9603-335	MS9603-365	MS9603-395	MS9603-425
0.490 - 0.510	MS9603-306	MS9603-336	MS9603-366	MS9603-396	MS9603-426
0.552 - 0.572	MS9603-307	MS9603-337	MS9603-367	MS9603-397	MS9603-427
0.615 - 0.635	MS9603-308	MS9603-338	MS9603-368	MS9603-398	MS9603-428
0.678 - 0.698	MS9603-309	MS9603-339	MS9603-369	MS9603-399	MS9603-429
0.740 - 0.760	MS9603-310	MS9603-340	MS9603-370	MS9603-400	MS9603-430
0.802 - 0.822	MS9603-311	MS9603-341	MS9603-371	MS9603-401	MS9603-431
0.865 - 0.885	MS9603-312	MS9603-342	MS9603-372	MS9603-402	MS9603-432
0.928 - 0.948	MS9603-313	MS9603-343	MS9603-373	MS9603-403	MS9603-433
0.990 - 1.010	MS9603-314	MS9603-344	MS9603-374	MS9603-404	MS9603-434
1.052 - 1.072	MS9603-315	MS9603-345	MS9603-375	MS9603-405	MS9603-435
1.115 - 1.135	MS9603-316	MS9603-346	MS9603-376	MS9603-406	MS9603-436
1.178 - 1.198	MS9603-317	MS9603-347	MS9603-377	MS9603-407	MS9603-437
1.240 - 1.260	MS9603-318	MS9603-348	MS9603-378	MS9603-408	MS9603-438
1.302 - 1.322	MS9603-319	MS9603-349	MS9603-379	MS9603-409	MS9603-439
1.365 - 1.385	MS9603-320	MS9603-350	MS9603-380	MS9603-410	MS9603-440
1.428 - 1.448	MS9603-321	MS9603-351	MS9603-381	MS9603-411	MS9603-441
1.490 - 1.510	MS9603-322	MS9603-352	MS9603-382	MS9603-412	MS9603-442

B LENGTH	A - LENGTH				
	1.490 - 1.510 PART NUMBER	1.615 - 1.635 PART NUMBER	1.740 - 1.760 PART NUMBER	1.865 - 1.885 PART NUMBER	1.990 - 2.010 PART NUMBER
0.428 - 0.448	MS9603-455	MS9603-515	MS9603-575	MS9603-635	MS9603-695
0.490 - 0.510	MS9603-456	MS9603-516	MS9603-576	MS9603-636	MS9603-696
0.552 - 0.572	MS9603-457	MS9603-517	MS9603-577	MS9603-637	MS9603-697
0.615 - 0.635	MS9603-458	MS9603-518	MS9603-578	MS9603-638	MS9603-698
0.678 - 0.698	MS9603-459	MS9603-519	MS9603-579	MS9603-639	MS9603-699
0.740 - 0.760	MS9603-460	MS9603-520	MS9603-580	MS9603-640	MS9603-700
0.802 - 0.822	MS9603-461	MS9603-521	MS9603-581	MS9603-641	MS9603-701
0.865 - 0.885	MS9603-462	MS9603-522	MS9603-582	MS9603-642	MS9603-702
0.928 - 0.948	MS9603-463	MS9603-523	MS9603-583	MS9603-643	MS9603-703
0.990 - 1.010	MS9603-464	MS9603-524	MS9603-584	MS9603-644	MS9603-704
1.052 - 1.072	MS9603-465	MS9603-525	MS9603-585	MS9603-645	MS9603-705
1.115 - 1.135	MS9603-466	MS9603-526	MS9603-586	MS9603-646	MS9603-706
1.178 - 1.198	MS9603-467	MS9603-527	MS9603-587	MS9603-647	MS9603-707
1.240 - 1.260	MS9603-468	MS9603-528	MS9603-588	MS9603-648	MS9603-708
1.302 - 1.322	MS9603-469	MS9603-529	MS9603-589	MS9603-649	MS9603-709
1.365 - 1.385	MS9603-470	MS9603-530	MS9603-590	MS9603-650	MS9603-710
1.428 - 1.448	MS9603-471	MS9603-531	MS9603-591	MS9603-651	MS9603-711
1.490 - 1.510	MS9603-472	MS9603-532	MS9603-592	MS9603-652	MS9603-712

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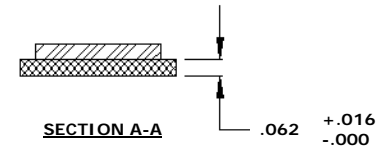
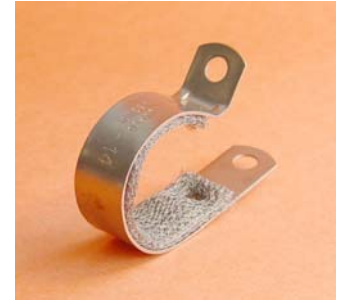
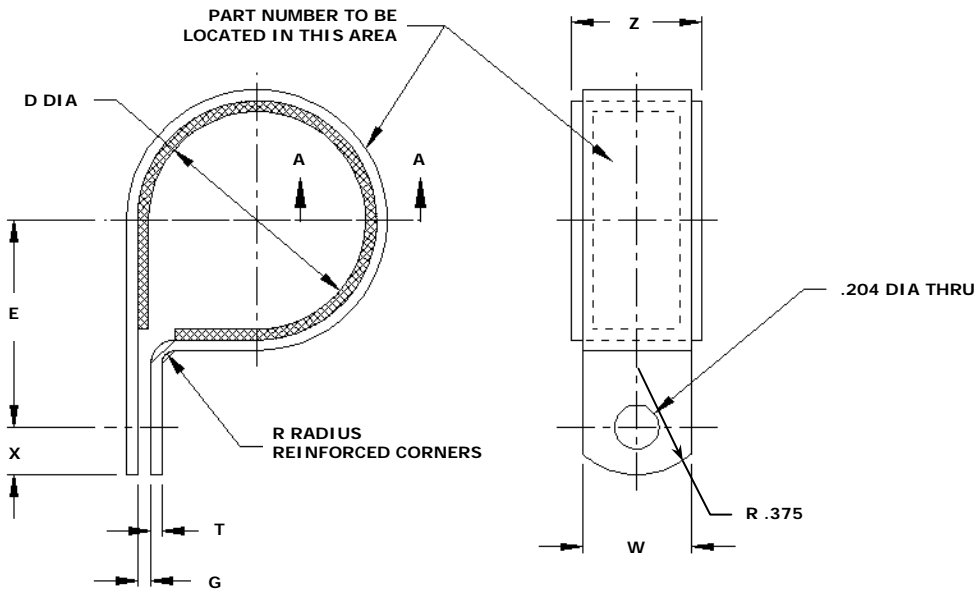
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AS9603

BRACKET, ANGLE 90°, CRES
UNS S41000, .190 X .375 BOLT

PART NUMBER



NOTES

1. CLAMP BAND: CORROSION RESISTANT STEEL TYPE 321 IN ACCORDANCE WITH SAE AMS 5510, ANNEALED.
CUSHION: CORROSION RESISTANT STEEL, TYPE 321 OR 347 IN ACCRDANCE WITH AMS5510 OR AMS5512.
2. PROTECTIVE TREATMENT: PASSIVATE PER AMS2700.
3. REMOVE ALL BURRS AND SHARP EDGES
4. DIMENSIONS IN INCHES. UNLESS OTHERWISE SPECIFIED, TOLERANCES, DECIMALS $\pm .015$.
5. DIMENSION D IS APPLICABLE IN CLOSED POSITION ONLY.
6. EXAMPLE OF PART NUMBER: MS21106-8 = CUSHION CLAMP, CRES, .500 ID, 1200°F.
7. THE MS PART NUMBER, INCLUDING DASH NUMBER, AND MANUFACTER'S IDENTIFICATION, SHALL BE MARKED ON EACH CLAMP.
8. CLAMPS SHALL BE FURNISHED IN THE OPEN POSITION.
9. METHOD OF CUSHION ATTACHMENT TO BAND IS OPTIONAL
10. REINFORCED CORNER IS MANDATORY.

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MS21106

CLAMP, LOOP CUSHIONED, 1200°F, CRESS TYPE IV, CLASS B

PART NUMBER

DIMENSIONS

DASH NUMBERS	RIGID TUBE NOMINAL OD (REF)	D ±.015 DIA	E ±.015	G	R ±.016 RAD	T	W ±.015	X ±.015	Z MAX
-2	1/8	0.125	0.457	0.062 +.016 -.000	0.062		0.375	0.188	0.497
-3	3/16	0.188	0.498						
-4	1/4	0.250	0.529						
-5	5/16	0.313	0.560						
-6	3/8	0.375	0.592						
-7	7/16	0.438	0.623						
-8	1/2	0.500	0.654						
-9	9/16	0.563	0.749						
-10	5/8	0.625	0.780						
-11	11/16	0.688	0.811						
-12	3/4	0.750	0.842	0.094 +.031 -.000	0.109	0.032 ±.0035	0.500	0.218	0.622
-13	13/16	0.813	0.858						
-14	7/8	0.875	0.889						
-15	15/16	0.938	0.920						
-16	1	1.000	0.951						
-17	1 1/16	1.063	0.983						
-18	1 1/8	1.125	1.030						
-19	1 3/16	1.188	1.061						
-20	1 1/4	1.250	1.092						
-21	1 5/16	1.313	1.124						
-22	1 3/8	1.375	1.155	0.125 +.031 -.000	0.125	0.040 ±.004	0.500	0.218	0.656
-23	1 7/16	1.438	1.186						
-24	1 1/2	1.500	1.217						
-25	1 9/16	1.563	1.259						
-26	1 5/8	1.625	1.280						
-27	1 11/16	1.688	1.312						
-28	1 3/4	1.750	1.342						
-29	1 13/16	1.813	1.374						
-30	1 7/8	1.875	1.405						
-31	1 15/16	1.938	1.444						
-32	2	2.000	1.475						
-33	2 1/16	2.062	1.507						
-34	2 1/8	2.125	1.538						
-35	2 3/16	2.188	1.570						
-36	2 1/4	2.250	1.600						
-37	2 5/16	2.312	1.631						
-38	2 3/8	2.375	1.663						
-40	2 1/2	2.500	1.728						
-42	2 5/8	2.625	1.788						
-43	2 11/16	2.688	1.820						
-44	2 3/4	2.750	1.851						
-45	2 13/16	2.812	1.882						
-46	2 7/8	2.875	1.913						
-48	3	3.000	1.976						
-50	3 1/8	3.125	2.038						
-52	3 1/4	3.250	2.101						
-54	3 3/8	3.375	2.163						
-56	3 1/2	3.500	2.226						
-58	3 5/8	3.625	2.288						
-64	4	4.000	2.476						
-66		4.125	2.538						

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MS21106

CLAMP, LOOP CUSHIONED, 1200°F, CRESS TYPE IV, CLASS B

PART NUMBER

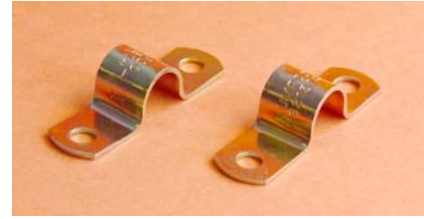
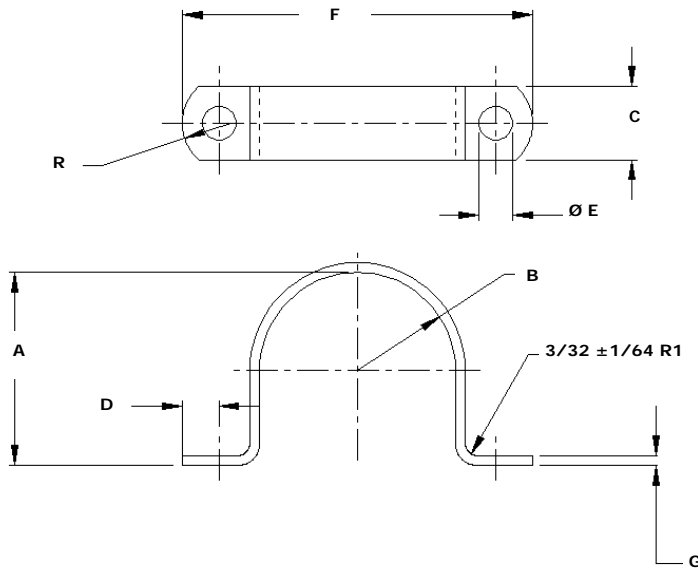


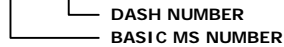
TABLE 1 DASH NUMBERS AND DIMENSIONS

DASH NUMBER	PIPE OR CONDUIT SIZE	A ±.010	B ±.010	C +.125 -.000	D ±.062	E +.031 -.016	F ±.125	G ±.015	R ±.125
1	1/8	0.406	0.203	0.500	0.219	0.203	1.750	0.048	0.375
2	1/4	0.540	0.270						
3		0.562	0.281						
4		0.625	0.312						
5	3/8	0.688	0.344	0.625	0.375	0.281	2.375	0.063	0.500
6		0.750	0.375						
7	1/2	0.844	0.422						
8		1.000	0.500						
9	3/4	1.062	0.531						
10		1.125	0.562	0.750	0.875	0.344	2.875	0.080	0.562
11	1	1.315	0.657						
12		1.500	0.750						
13	1 1/4	1.660	0.830						
14		1.750	0.875						
15	1 1/2	1.906	0.953						
16	2	2.375	1.187	1.000	0.500	0.375	5.500	0.125	0.750
17	2 1/2	2.875	1.437						
18	3	3.500	1.750						
19	3 1/2	4.000	2.000						
20	4	4.500	2.250						
				1.125	0.600	0.437	7.250	0.187	0.813

REQUIREMENTS

- MATERIAL:** STEEL, CARBON, SHEET OR STRIP IN ACCORDANCE WITH PROCUREMENT SPECIFICATION.
- PROTECTIVE COATING:** STEEL, CADMIUM PLATED, IN ACCORDANCE WITH QQ-P-416, CLASS 1, TYPE II; ZINC COATED IN ACCORDANCE WITH ASTM B 633 TYPE II Fe/Zn 13
- STRAP SHALL BE FREE OF BURRS AND SHARP EDGES. .010 RADIUS MAXIMUM.
- PART NUMBER:** THE MS PART NUMBER SHALL CONSIST OF THE BASIC MS NUMBER FOLLOWED BY A DASH NUMBER FROM TABLE I.

EXAMPLE: MS21314 -8



MS21314-8 INDICATES- STRAP, RETAINING, TWO HOLE, A DIMENSION 1.000. B DIMENSION .500. CADMIUM PLATED OR ZINC COATED.

NOTES:

- ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.
- STRAP CORRESPONDS TO TYPE II, STYLE A, PIPE, CONDUIT OR CABLE IN ACCORDANCE WITH PROCUREMENT SPECIFICATION.

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NASM21314

STRAP, RETAINING, TWO HOLE, FOR TUBING

PART NUMBER

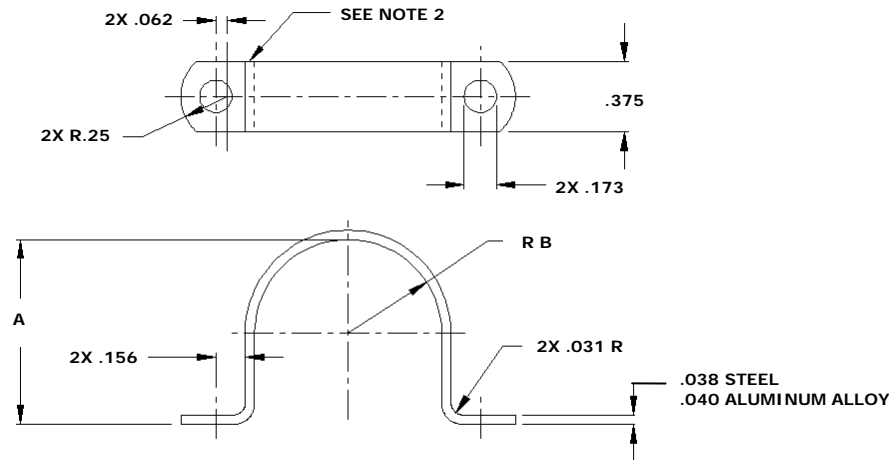


TABLE 1 - DIMENSIONS

DASH NUMBER		NOMINAL TUBE SIZE	A	B RADIUS
STEEL	ALUMINUM ALLOY			
1	2	0.125	0.109	0.062
3	4	0.188	0.172	0.094
5	6	0.250	0.234	0.125
7	8	0.312	0.297	0.156
9	10	0.375	0.359	0.188
11	12	0.438	0.422	0.219
13	14	0.500	0.484	0.250
15	16	0.562	0.547	0.281
17	18	0.625	0.609	0.312
19	20	0.688	0.672	0.344
21	22	0.750	0.734	0.375
23	24	0.812	0.797	0.406
25	26	0.875	0.859	0.438
27	28	0.938	0.922	0.469
29	30	1.000	0.984	0.500
31	32	1.250	1.234	0.625
33	34	1.500	1.484	0.750
35	36	1.750	1.734	0.875
37	38	2.000	1.984	1.000

MATERIAL: CARBON STEEL, SHEET OR STRIP, IN ACCORDANCE WITH PROCUREMENT SPECIFICATION.
ALUMINUM ALLOY, PLATE OR SHEET, IN ACCORDANCE WITH PROCUREMENT SPECIFICATION.

FINISH: STEEL: CADMIUM PLATE IN ACCORDANCE WITH AMS-QQ-P-416, TYPE II, CLASS 3.
ALUMINUM: ANODIZED IN ACCORDANCE WITH MIL-A-8625, TYPE II, CLASS I.

DIMENSIONS: ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.

PART NUMBER: THE MS PART NUMBER CONSISTS OF THE MS NUMBER, PLUS THE DASH NUMBER. EXAMPLE: MS21315-1.

NOTES:

1. STRAPS SHALL BE FREE OF BURRS AND SHARP EDGES. .010 RADIUS MAXIMUM.
2. EDGES SHALL BE ROLLED.
3. TOLERANCES UNLESS OTHERWISE SPECIFIED: DECIMALS ± .010.
4. DIMENSION APPLY AFTER FINISH UNLESS OTHERWISE SPECIFIED

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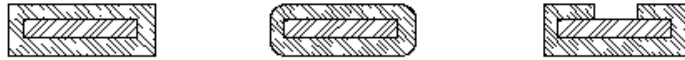
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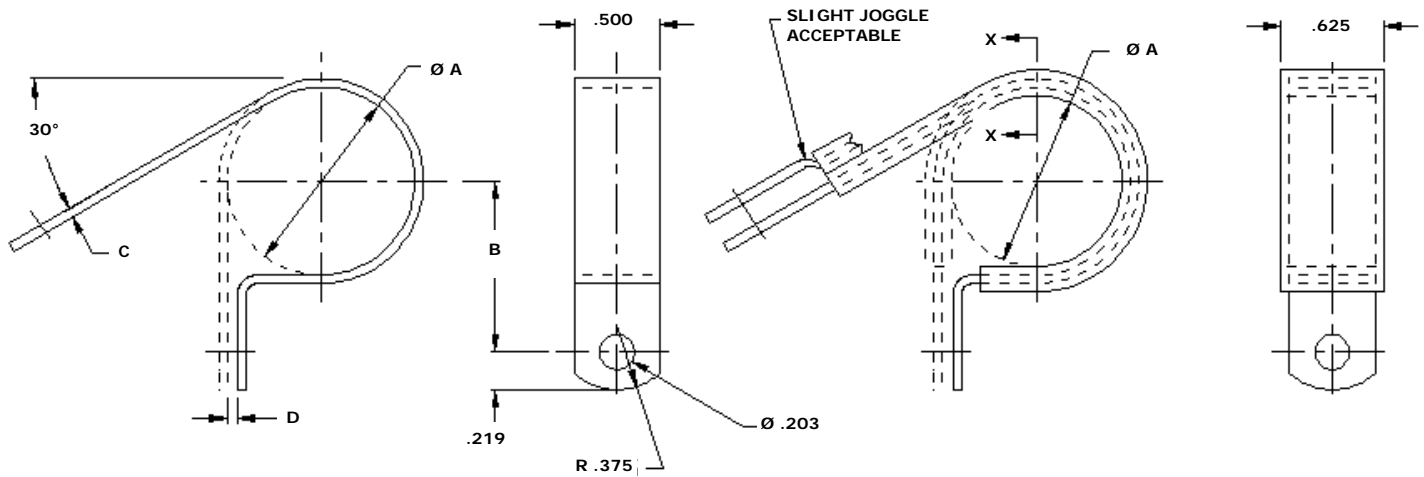
NASM21315

STRAP, RETAINING, TWO HOLE FOR TUBING

PART NUMBER



SECTION X-X
OPTIONAL CUSHION DESIGN



PLAIN CLAMP

CUSHIONED CLAMP

DASH NUMBER		A		B		C	D
PLAIN	CUSHIONED	NOM DIA	PLAIN	CUSHIONED			
1	32	0.125	0.344	0.406	0.032	0.062	
2	33	0.188	0.375	0.438			
3	34	0.250	0.406	0.469			
4	35	0.312	0.438	0.500			
5	36	0.375	0.469	0.531			
6	37	0.438	0.500	0.562			
7	38	0.500	0.531	0.594			
8	39	0.562	0.562	0.625			
9	40	0.625	0.594	0.656			
10	41	0.688	0.641	0.703			
11	42	0.750	0.672	0.734	0.051	0.094	
12	43	0.875	0.734	0.797			
13	44	1.000	0.797	0.859			
14	45	1.125	0.859	0.922			
15	46	1.250	0.922	0.984			
16	47	1.375	1.000	1.062			
17	48	1.500	1.062	1.125	0.064	0.125	
18	49	1.625	1.125	1.188			
19	50	1.750	1.188	1.250			
20	51	1.875	1.250	1.312			
21	52	2.000	1.312	1.375			
22	53	2.125	1.375	1.438			
23	54	2.250	1.438	1.500			
24	55	2.375	1.500	1.562			
25	56	2.500	1.562	1.625			
26	57	2.750	1.688	1.750			
27	58	3.000	1.812	1.875			
28	59	3.250	1.938	2.000			
29	60	3.500	2.062	2.125			
30	61	3.750	2.188	2.250			
31	62	4.000	2.312	2.375			

NOTES:

- MATERIAL:** CLAMP – ALUMINUM ALLOY IN ACCORDANCE WITH QQ-A-250/5, ALCLAD 2024, TEMPER T3 OR T4.
CUSHION - CUSHION-SYNTHETIC RUBBER IN ACCORDANCE WITH MIL-R-3065, GRADE SC515A1B1E3F2 OR PLASTISOL IN ACCORDANCE WITH MIL-P-20689, .062 INCHES THICK OR .032 INCHES THICK.
- PROTECTIVE COATING:** CLAMP – ANODIZED IN ACCORDANCE WITH MIL-A-8625, TYPE II, CLASS 1.
- DIMENSIONS AND TOLERANCES:** ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED. DECIMALS ±.010, ANGLES ±5°.
- PART NUMBER:** THE MS PART NUMBER CONSISTS OF THE MS NUMBER PLUS THE DASH NUMBER.
EXAMPLE: MS21322-1
- CLAMP SHALL BE FREE OF BURRS AND SHARP EDGES, .010 R MAX.

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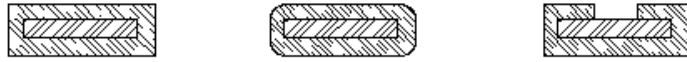
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02/16/09

NASM21322

CLAMP, LOOP-ALUMINUM, PLAIN AND CUSHIONED

PART NUMBER



SECTION X-X
OPTIONAL CUSHION DESIGN

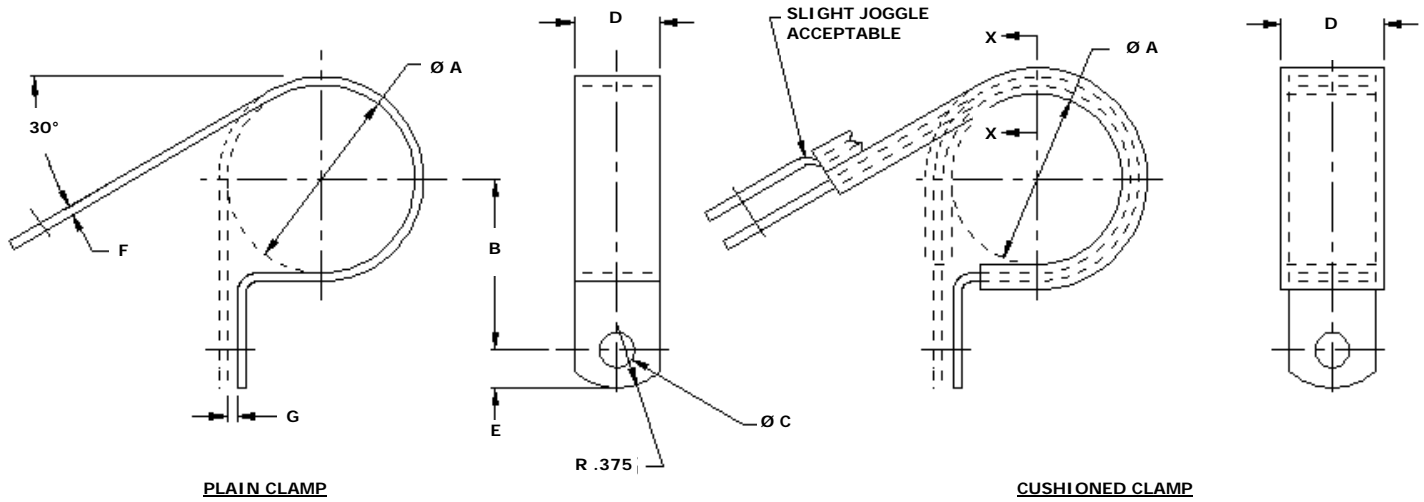


TABLE 1. DASH NUMBER AND DIMENSIONS

DASH NUMBER		DIA A NOM	B		C DIA	D		E	F	G	REC. FASTENER SIZE
PLAIN	CUSHIONED		PLAIN	CUSHIONED		PLAIN	CUSHIONED				
-1	-65	0.125	0.344	0.406	0.203	0.500	0.625	0.219	0.032	0.062	0.190
-2	-66	0.188	0.375	0.438							
-3	-67	0.250	0.406	0.469							
-4	-68	0.312	0.438	0.500							
-5	-69	0.375	0.469	0.531							
-6	-70	0.438	0.500	0.562							
-7	-71	0.500	0.531	0.594							
-8	-72	0.562	0.562	0.625							
-9	-73	0.625	0.594	0.656							
-10	-74	0.688	0.625	0.688							
-11	-75	0.750	0.656	0.719							
-12	-76	0.875	0.719	0.781							
-13	-77	1.000	0.781	0.844							
-14	-78	1.125	0.844	0.906							
-15	-79	1.250	0.906	0.969							
-16	-80	1.375	0.969	1.031							
-17	-81	1.500	1.031	1.094							
-18	-82	1.625	1.094	1.156							
-19	-83	1.750	1.156	1.219							
-20	-84	1.875	1.219	1.281							
-21	-85	2.000	1.281	1.344							

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12/06/12

NASM21333

CLAMP, LOOP-STEEL, PLAIN AND CUSHIONED

PART NUMBER

TABLE 1. DASH NUMBER AND DIMENSIONS-CONTINUED

DASH NUMBER		DIA A	B		C	D		E	F	G	REC. FASTENER SIZE
PLAIN	CUSHIONED		PLAIN	CUSHIONED	DIA	PLAIN	CUSHIONED				
-22	-86	2.125	1.344	1.406	0.203			0.219	0.040	0.125	0.190
-23	-87	2.250	1.406	1.469							
-24	-88	2.375	1.469	1.531							
-25	-89	2.500	1.531	1.594							
-26	-90	2.750	1.656	1.719							
-27	-91	3.000	1.781	1.844							
-28	-92	3.250	1.906	1.969							
-29	-93	3.500	2.031	2.094							
-30	-94	3.750	2.156	2.219							
-31	-95	4.000	2.281	2.344							
-32	-96	0.125	0.469	0.531	0.281	0.500	0.625			0.250	0.250
-33	-97	0.188	0.469	0.531							
-34	-98	0.250	0.500	0.562							
-35	-99	0.312	0.531	0.594							
-36	-100	0.375	0.562	0.625							
-37	-101	0.438	0.594	0.656							
-38	-102	0.500	0.625	0.688							
-39	-103	0.562	0.650	0.719							
-40	-104	0.625	0.688	0.750							
-41	-105	0.750	0.750	0.812							
-42	-106	0.875	0.812	0.875	0.344	0.562	0.688	0.281	0.032	0.062	0.312
-43	-107	1.000	0.875	0.938							
-44	-108	0.125	0.500	0.562							
-45	-109	0.250	0.531	0.594							
-46	-110	0.312	0.562	0.625							
-47	-111	0.375	0.594	0.656							
-48	-112	0.500	0.656	0.719							
-49	-113	0.625	0.719	0.781							
-50	-114	0.750	0.781	0.844							
-51	-115	0.875	0.844	0.906							
-52	-116	1.188	1.000	1.062	0.406	0.625	0.750	0.312			0.375
-53	-117	0.125	0.562	0.625							
-54	-118	0.188	0.562	0.625							
-55	-119	0.250	0.594	0.656							
-56	-120	0.312	0.625	0.688							
-57	-121	0.375	0.656	0.719							
-58	-122	0.438	0.688	0.750							
-59	-123	0.500	0.719	0.781							
-60	-124	0.562	0.750	0.812							
-61	-125	0.625	0.781	0.844							
-62	-126	0.750	0.844	0.906							
-63	-127	0.875	0.906	0.969							
-64	-128	1.000	0.969	1.031							
	-129	1.250		1.094							

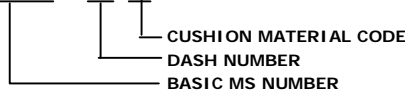
REQUIREMENTS:

- MATERIAL:** STEEL, CARBON, GRADES 1005 (UNS G10050) THRU 1020 (UNS G1020), TEMPER HALF-HARD, QUARTER HARD, SKIN PASSED OR DEAD SOFT IN ACCORDANCE WITH ASTM A109/A109M. CUSHION-SYNTHETIC RUBBER IN ACCORDANCE WITH ASTM 2000 BC515 A14 B24 E034 F19 OR PLASTISOL IN ACCORDANCE WITH A-A 59464, .062 INCHES THICK OR .032 INCH THICK.
- PROTECTIVE COATING AND SURFACE TREATMENT:** STEEL, CARBON SHALL BE CADMIUM PLATED IN ACCORDANCE WITH QQ-P-416 TYPE II, CLASS 3 OR ZINC COATED IN ACCORDANCE WITH ASTM B633 Fe/Zn 8, TYPE II.
- PART NUMBER:** THE PART NUMBER SHALL CONSIST OF THE BASIC MS NUMBER, FOLLOWED BY A DASH NUMBER FROM TABLE I AND WHEN APPLICABLE A CUSHION MATERIAL CODE.

CUSHION MATERIAL CODE

A - PLASTIC .032 INCH THICK
 NO CODE - PLASTISOL, .062 INCH THICK OR SYNTHETIC RUBBER

EXAMPLE: MS21333 - 66 A



MS21333-66A INDICATES, CLAMP, LOOP-STEEL, CUSHIONED, .188 NOMINAL DIAMETER, PLASTISOL CUSHION, .032 INCHES THICK

NOTES:

- DIMENSIONS IN INCHES AND APPLY AFTER FINISH UNLESS OTHERWISE SPECIFIED.
- REMOVE ALL BURRS AND SHARP EDGES, .010R MAX.
- TOLERANCES UNLESS OTHERWISE SPECIFIED: DECIMALS ±.010, ANGLES ±5°.
- DIMENSIONING AND TOLERANCES PER ANSI Y14.5M-1982.

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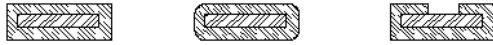
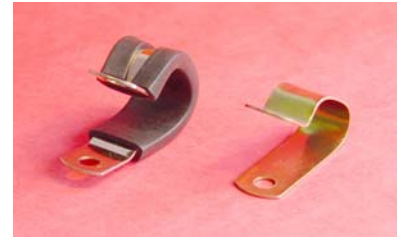
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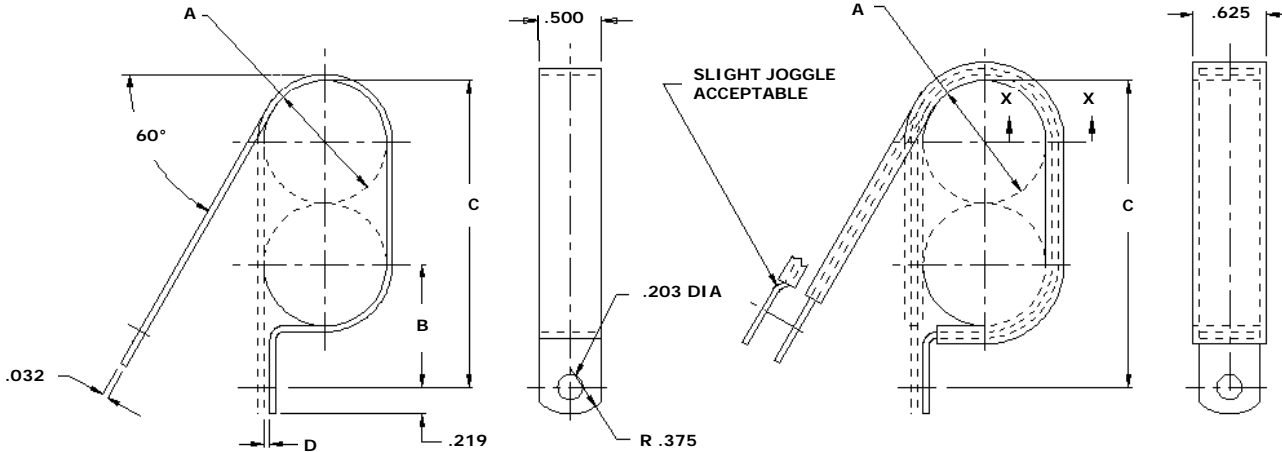
NASM21333

CLAMP, LOOP-STEEL, PLAIN AND CUSHIONED

PART NUMBER



SECTION X-X
OPTIONAL CUSHION DESIGN



PLAIN CLAMP

CUSHIONED CLAMP

DASH NUMBER		A NOM DIA	B		C		D
PLAIN	CUSHIONED		PLAIN	CUSHIONED	PLAIN	CUSHIONED	
1	22	0.125	0.344	0.406	0.531	0.594	0.062
2	23	0.188	0.375	0.438	0.637	0.719	
3	24	0.250	0.406	0.469	0.781	0.844	
4	25	0.312	0.438	0.500	0.906	0.969	
5	26	0.375	0.469	0.531	1.031	1.094	
6	27	0.438	0.500	0.562	1.157	1.219	
7	28	0.500	0.531	0.594	1.281	1.344	
8	29	0.562	0.562	0.625	1.404	1.469	
9	30	0.625	0.594	0.656	1.531	1.594	
10	31	0.688	0.625	0.688	1.657	1.719	
11	32	0.750	0.656	0.719	1.761	1.844	
12	33	0.875	0.719	0.781	2.031	2.094	
13	34	1.000	0.781	0.844	2.281	2.344	
14	35	1.125	0.844	0.906	2.531	2.594	
15	36	1.250	0.906	0.969	2.761	2.844	
16	37	1.375	0.969	1.031	3.031	3.094	0.094
17	38	1.500	1.031	1.094	3.281	3.344	
18	39	1.625	1.094	1.156	3.531	3.594	
19	40	1.750	1.156	1.219	3.761	3.844	
20	41	1.875	1.219	1.281	4.031	4.094	
21	42	2.000	1.261	1.344	4.251	4.344	

NOTES:

- MATERIAL:** BASE – STEEL, CARBON IN ACCORDANCE WITH FED. STD. NO 66, AISI 1005 THRU AISI 1020. TEMPER HALF-HARD, QUARTER HARD, SKIN PASSED OR DEAD SOFT.
CUSHION – SYNTHETIC RUBBER IN ACCORDANCE WITH MIL-R-3065 GRADE SC515A1B1E3F2 OR PLASTISOL IN ACCORDANCE WITH MIL-P-20689, .062 THICK.
- PROTECTIVE COATING:** STEEL CADMIUM PLATED IN ACCORDANCE WITH QQ-P-416, TYPE II, CLASS 3 OR ZINC COATED IN ACCORDANCE WITH QQ-Z-325, TYPE II, CLASS 3.
- DIMENSIONS AND TOLERANCES:** ALL DIMENSIONS ARE IN INCHES, UNLESS OTHERWISE SPECIFIED. DECIMAL ±.010, ANGLES ±5°.
- PART NUMBER:** THE MS PART NUMBER SHALL CONSIST OF THE MS NUMBER, PLUS THE DASH NUMBER:
EXAMPLE: MS21334-1.
- CLAMPS SHALL BE FREE OF BURRS AND SHARP EDGES, .010 R MAX.

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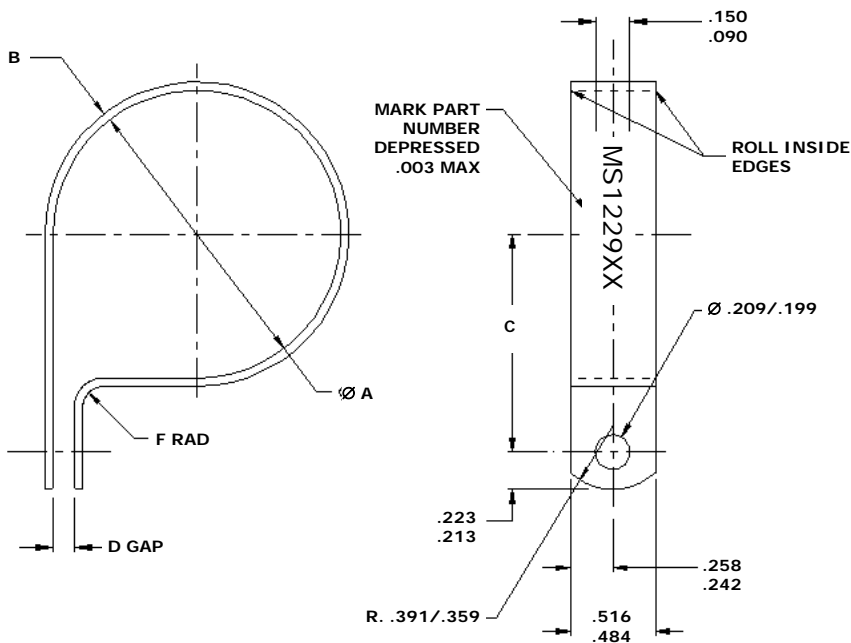
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02/18/09

NASM21334

CLAMP, LOOP-DOUBLE, CABLE OR TUBE,
STEEL, PLAIN AND CUSHIONED

PART NUMBER



PART NUMBER	NOM TUBE OD	A DIA BASIC	B ±.005	C ±.010	D	F RAD ±.016
MS122900	0.125	0.125	0.031	0.360	.062-.078	0.062
MS122901	0.188	0.188		0.423		
MS122902	0.250	0.250		0.457		
MS122903	0.312	0.312		0.498		
MS122904	0.375	0.375		0.529		
MS122905	0.438	0.438		0.560		
MS122906	0.500	0.500		0.592		
MS122907	0.562	0.562		0.623		
MS122908	0.625	0.625		0.654		
MS122909	0.688	0.688	0.752	.094-.110	0.109	
MS122910	0.750	0.750	0.783			
MS122911	0.812	0.812	0.814			
MS122912	0.875	0.875	0.845			
MS122913	0.938	0.938	0.877			
MS122914	1.000	1.000	0.908			
MS122915	1.062	1.062	0.939			
MS122916	1.125	1.125	0.970			
MS122917	1.188	1.188	1.002			.094-.125
MS122918	1.250	1.250	1.062			
MS122919	1.312	1.312	1.093			
MS122920	1.375	1.375	1.125			
MS122921	1.438	1.438	1.156			
MS122922	1.500	1.500	1.188			
MS122923	1.562	1.562	1.219			
MS122924	1.625	1.625	1.250			
MS122925	1.750	1.750	1.312			
MS122926	1.875	1.875	1.375			
MS122927	2.000	2.000	1.438			

1. MATERIAL: CORROSION RESISTANT STEEL PER AMS 5510
2. REMOVE BURRS AND SHARP EDGES.
3. DIMENSIONS IN INCHES
4. CLAMP SHALL BE FORMED AS SHOWN. DIMENSION "D" SHALL FALL WITHIN THE SPECIFIED LIMITS WHEN CLAMP IS ASSEMBLED ON A BAR THE DIA OF WHICH IS EQUAL TO THE NOMINAL TUBE OD WITHIN ±.001.
5. HOLES SHALL BE IN ALIGNMENT WITHIN .010 AND CLAMP SHALL BE FLAT WITHIN .010 THRU CLAMP WIDTH WHEN ASSEMBLED ON A TEST BAR. IN THE FREE POSITION CLAMP MAY SPRING OPEN PROVIDED THE ABOVE CONDITIONS ARE MET.
6. DO NOT USE UNASSIGNED PART NUMBER.

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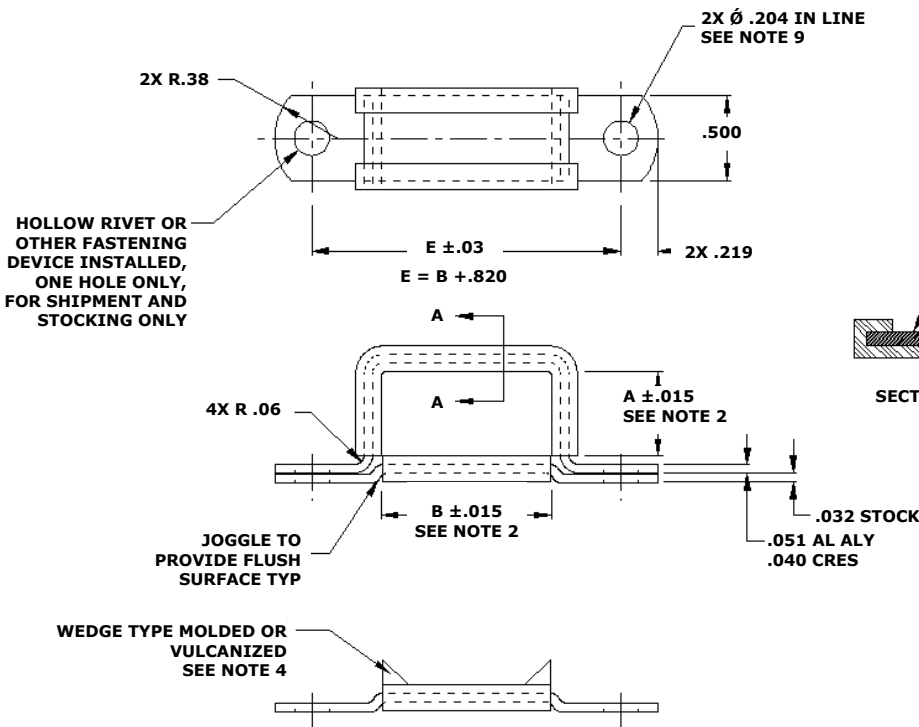
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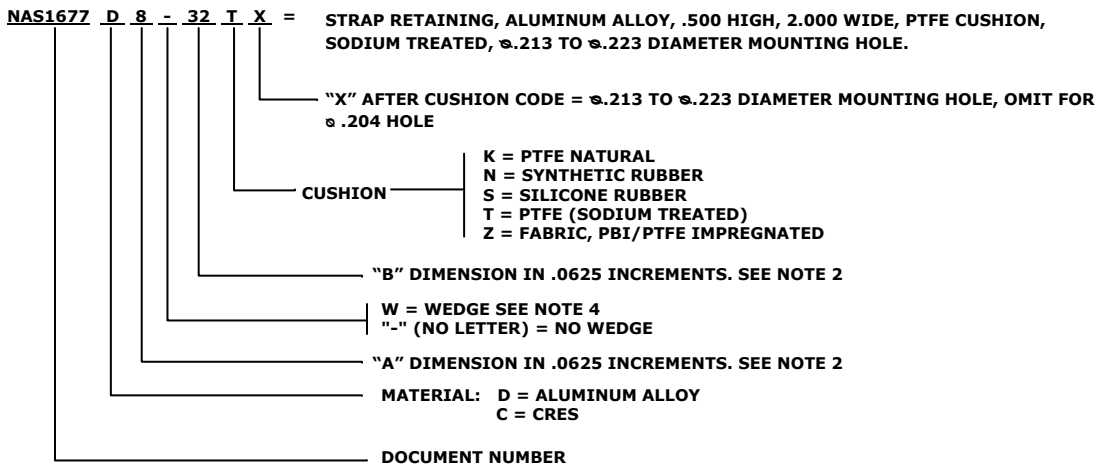
CLAMP, LOOP, TYPE SUPPORT, (HEAT RESISTANT) .204 HOLE

PART NUMBER



- MATERIAL:**
- STRAP - 2024 ALUMINUM ALLOY (UNS A82024), ALCLAD PER AMSQQ-A-250/5, CONDITION T4 OR T42. CORROSION RESISTANT STEEL 302 (UNS S30200) PER AMS 5516 OR 321 (UNS 32100) PER AMS 5510 OR 304 UNS S30400) PER AMS 5513
 - CUSHION - SYNTHETIC RUBBER, CHLOROPRENE TYPE (NEOPRENE) PER AMS3209. SILICONE RUBBER PER AMS3303. POLYTETRAFLUOROETHYLENE (PTFE) PER AMS3652. FABRIC POLYBENZIMIDAZOLE (PBI) FIBERGLASS POLYTETRAFLUOROETHYLENE (PTFE) IMPREGNATED PER AMS3677.
- FINISH:**
- CRES - PASSIVATE PER AMS2700, METHOD 1, CLASS 4
 - ALUMINUM - NONE
 - PTFE - SODIUM TREATED (DECREASED SLIPPAGE CHARACTERISTICS)
 - PTFE - NONE (NATURAL)

EXAMPLE OF PART NUMBER:



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NOTES:

1. **TEMPERATURE RANGE:**
CUSHION: SYNTHETIC RUBBER -40°F TO +212°F
 SILICONE RUBBER -80°F TO +450°F (SHORT DURATION EXCURSIONS TO 500°F)
 PTFE -320°F TO +500°F
 FABRIC +554°F

STRAP ALUMINUM -320°F TO +200°F
 CRES -320°F TO +600°F
2. **STANDARD SIZE LIMITATIONS:** A DIMENSION -4 MINIMUM, -16 MAXIMUM
 B DIMENSION -8 MINIMUM, -32 MAXIMUM
LARGER SIZES MAY BE SPECIFIED BY APPROPRIATE CODE
3. METAL STRAP SHALL BE FREE OF BURRS AND SHARP EDGES
4. WEDGE AVAILABLE WITH SYNTHETIC RUBBER AND SILICONE CUSHION ONLY.
5. NAS PART NUMBER AND MANUFACTURERS IDENTIFICATION SHALL BE MARKED ON EACH STRAP IN AN AREA NOT COVERED BY CUSHION OR MOUNTING HARDWARE.
6. DIMENSIONS IN INCHES. TOLERANCES UNLESS OTHERWISE SPECIFIED: 2 PLACES ±.03; 3 PLACES ±.010.
7. CUSHION TYPES A AND M ARE INACTIVE FOR DESIGN AFTER MARCH 31, 1994. SUPERCEDED BY TYPE Z. FOR DESCRIPTION OF STATUE NOTES SEE NAS380.
8. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1982.
9. .213 TO .223 DIAMETER OPTION AVAILABLE WHEN SPECIFIED BY PART NUMBER.

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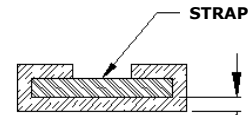
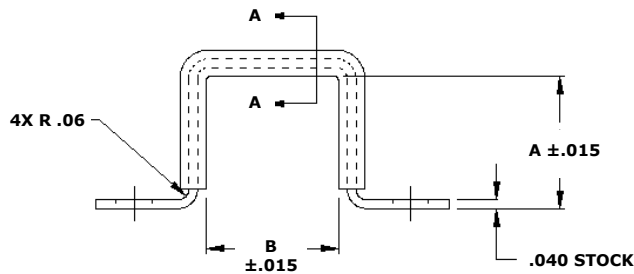
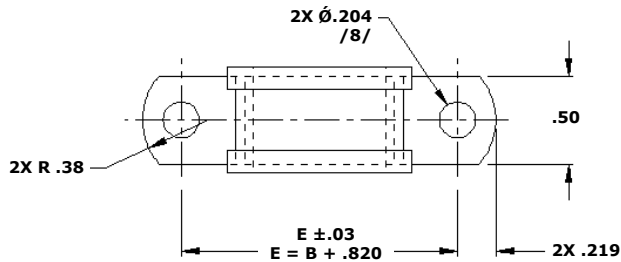
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07/21/11

NAS1677

STRAP, RETAINING- CUSHIONED, RECTANGULAR, 2 PIECE

PART NUMBER

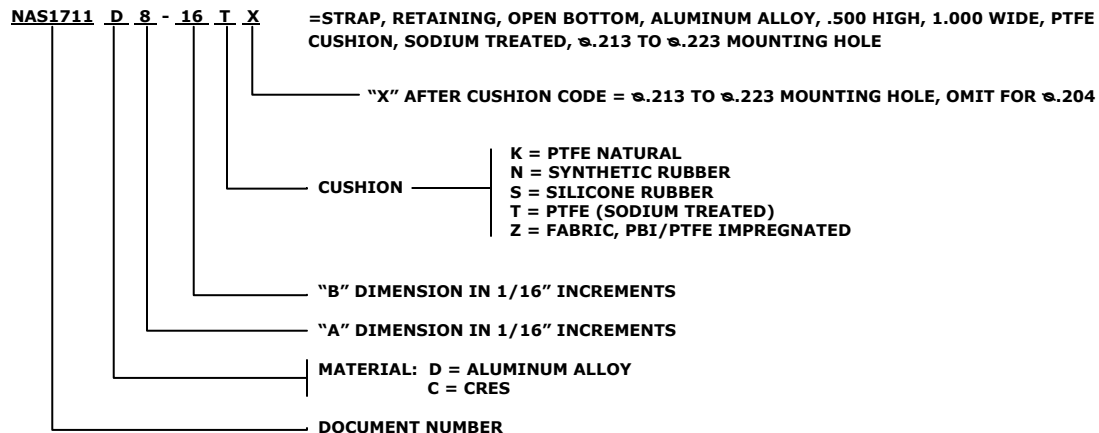


RUBBER .062
 FABRIC .062
 PTFE .020 +.008
 -.004

SECTION A-A

- MATERIAL:**
- STRAP - 2024 ALUMINUM ALLOY (UNS A82024), ALCLAD PER AMSQQ-A-250/5, CONDITION T4 OR T42. CORROSION RESISTANT STEEL 302 (UNS S30200) PER AMS 5516 OR 321 (UNS 32100) PER AMS 5510 OR 304 (UNS S30400) PER AMS 5513
 - CUSHION - SYNTHETIC RUBBER, CHLOROPRENE TYPE (NEOPRENE) PER AMS3209. SILICONE RUBBER PER AMS3303. POLYTETRAFLUOROETHYLENE (PTFE) PER AMS3652. FABRIC POLYBENZIMIDAZOLE (PBI) POLYAMIDE FIBERGLASS POLYTETRAFLUOROETHYLENE (PTFE) IMPREGNATED PER AMS3677.
- FINISH:**
- CRES - PASSIVATE PER AMS2700, METHOD 1, CLASS 4
 - ALUMINUM - NONE
 - PTFE - SODIUM TREATED (DECREASED SLIPPAGE CHARACTERISTICS)
 - PTFE - NONE (NATURAL)

EXAMPLE OF PART NUMBER



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REV
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 07/22/11

NAS1711

STRAP, RETAINING-CUSHIONED, RECTANGULAR, OPEN BOTTOM

PART NUMBER

- NOTES:**
- TEMPERATURE RANGE:**
CUSHION: SYNTHETIC RUBBER -40°F TO +212°F
SILICONE RUBBER -80°F TO +450°F (SHORT DURATION EXCURSIONS TO 500°F)
PTFE -320°F TO +500°F
FABRIC +554°F
STRAP ALUMINUM -320°F TO +200°F
CRES -320°F TO +600°F
 - STANDARD SIZE LIMITATIONS:**
A DIM: -4 MINIMUM
B DIM: -8 MINIMUM
 - METAL STRAP SHALL BE FREE OF BURRS AND SHARP EDGES
 - NAS PART NUMBER, AND MANUFACTURERS IDENTIFICATION SHALL BE MARKED ON EACH STRAP IN AN AREA NOT COVERED BY CUSHION OR MOUNTING HARDWARE.
 - DIMENSIONS IN INCHES.
 - TOLERANCES UNLESS OTHERWISE SPECIFIED: 2 PLACES ±.03, 3 PLACES ±.010.
 - CUSHION TYPES A AND M ARE INACTIVE FOR DESIGN AFTER MAY 1, 1990. SUPERCEDED BY TYPE Z. FOR DESCRIPTION OF STATUS NOTES SEE NAS380.
 - .213 TO .223 DIAMETER OPTION AVAILABLE WHEN SPECIFIED BY PART NUMBER.
 - DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1982.

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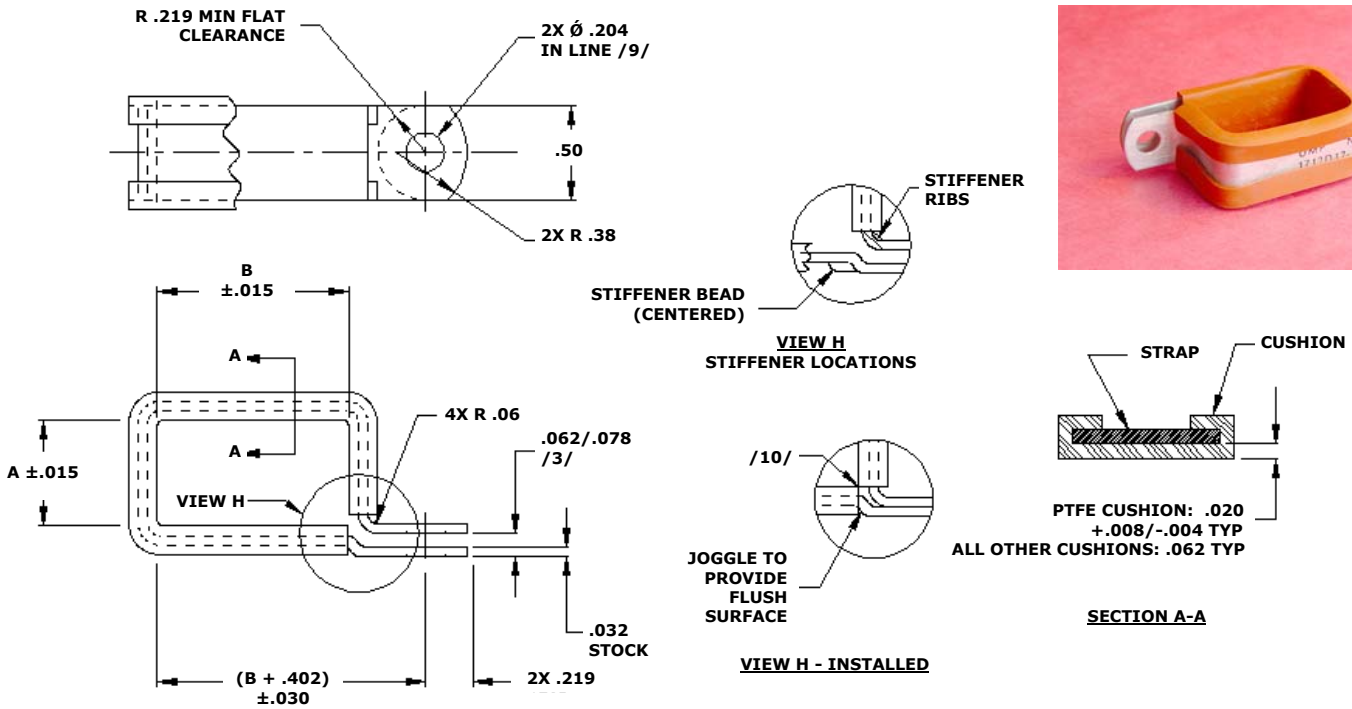
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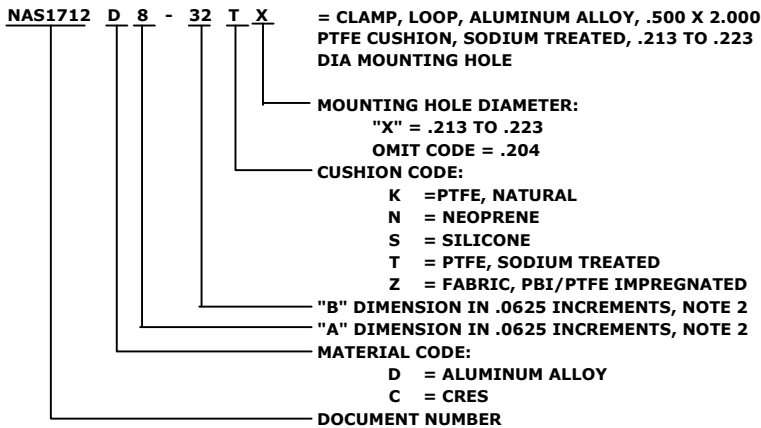
STRAP, RETAINING-CUSHIONED, RECTANGULAR, OPEN BOTTOM

PART NUMBER



- MATERIAL:** STRAP ALUMINUM ALLOY - 2024 (UNS A82024), ALCLAD PER AMS-QQ-A-250/5. CONDITION T4 OR T42
 CRES - 302, (UNS S30200) PER AMS 5516, OR 321 (UNS S32100) PER AMS 5510 OR MIL-S-6721, OR 304 (UNS S30400) PER AMS5513
- CUSHION** CHLOROPRENE RUBBER (CR) PER AMS 3209
 SILICONE RUBBER PER AMS 3303
 POLYTETRAFLUOROETHYLENE (PTFE) PER AMS 3652
 FABRIC POLYBENZIMIDAZOLE (PBI) FIBERGLASS POLYTETRAFLUOROETHYLENE (PTFE) IMPREGNATED PER NAS3677
- FINISH:** CRES PASSIVATE PER AMS2700, METHOD 1, CLASS 4
 ALUMINUM NONE
 PTFE SODIUM TREATED (DECREASED SLIPPAGE CHARACTERISTICS).
 PTFE NONE (NATURAL)

EXAMPLE OF PART NUMBER:



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CLAMP, LOOP CUSHIONED, RECTANGULAR

PART NUMBER

- NOTES:**
1. **TEMPERATURE RANGE:**

CUSHION:	CHLOROPRENE RUBBER	-40°F TO +212°F
	SILICONE RUBBER	-80°F TO +450°F (SHORT DURATION EXCURSIONS TO 500°F)
	PTFE	-320°F TO +500°F
	FABRIC	+554°F
STRAP	ALUMINUM ALLOY	-320°F TO +200°F
	CRES	-320°F TO +600°F

 - /2/ **STANDARD SIZE LIMITATIONS:**

"A" DIMENSION:	-4 MINIMUM
"B" DIMENSION:	-6 MINIMUM

 - /3/ **CLAMP SHALL CHECK TO DIMENSIONS WITH ENDS HELD IN POSITION SHOWN.**

 4. **METAL STRAP SHALL BE FREE OF BURRS AND SHARP EDGES**

 5. **NAS PART NUMBER AND MANUFACTURERS IDENTIFICATION SHALL BE MARKED ON EACH STRAP IN AN AREA NOT COVERED BY CUSHION OR MOUNTING HARDWARE.**

 6. **DIMENSIONS IN INCHES**

 - /7/ **CUSHION TYPE A AND M ARE CANCELLED AFTER MARCH 2008. SUPERCEDED BY TYPE Z.**

 8. **DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1982.**

 - /9/ **.213 TO .223 DIAMETER OPTION AVAILABLE WHEN SPECIFIED BY PART NUMBER.**

 - /10/ **THE ENDS OF THE CUSHION SHALL MEET WHEN THE CLAMP IS IN THE INSTALLED POSITION. (WILL NOT APPLY TO CUSHION CODES "K" AND "T").**

 11. **TOLERANCES UNLESS OTHERWISE SPECIFIED, 2 PLACES ±.030, 3 PLACES ±.010.**

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CLAMP, LOOP CUSHIONED, RECTANGULAR

PART NUMBER

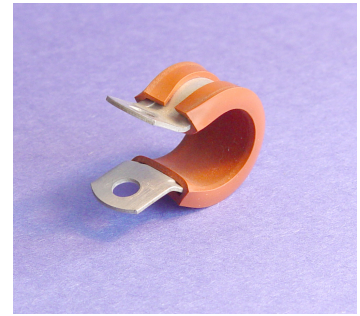
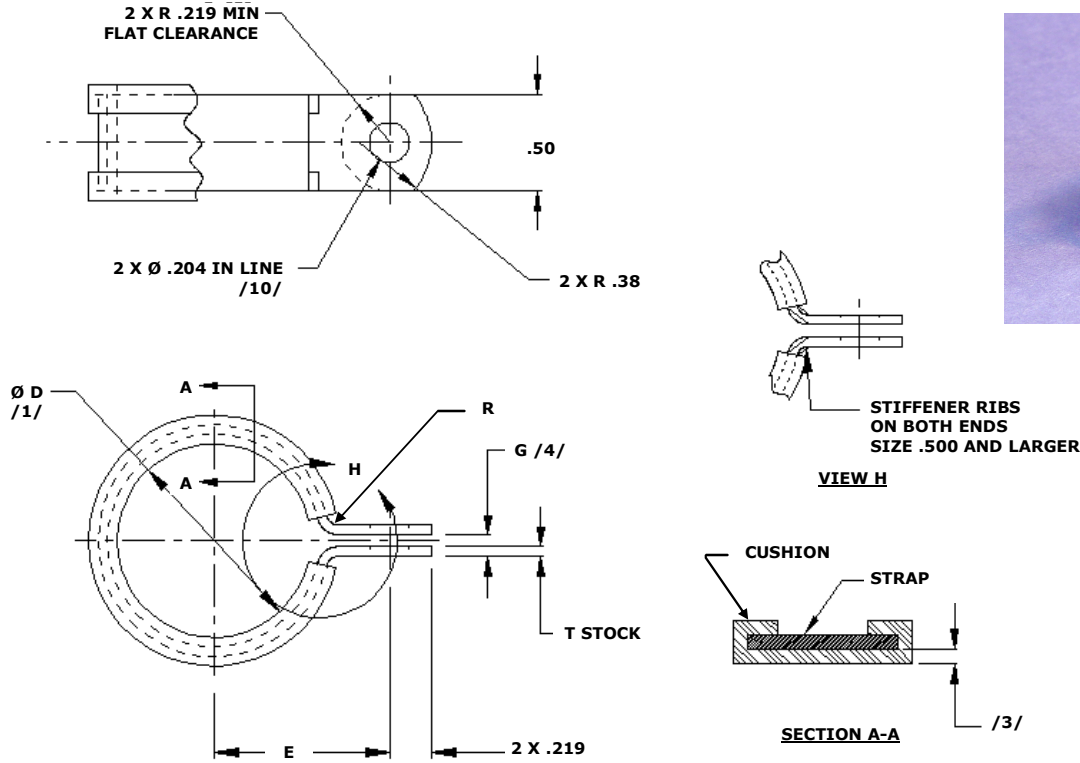


TABLE 1

DASH NO Ø D ±.015	MATERIAL		E ±.015	G +.031 -.000	R	T STOCK
	AL ALLOY	CRES				
4 THRU 16	DT	CT	D/2 +.390	.062	.062	.020
4 THRU 7	D	C	D/2 +.402		.062	.032
8 THRU 16	D	C	D/2 +.410		.062	.040
17 THRU 32	D	C	D/2 +.490	.125	.135	.051
34 THRU 64	D	C	D/2 +.534		.135	.064

MATERIAL: STRAP ALUMINUM ALLOY - 2024 (UNS A82024), ALCLAD PER AMS-QQ-A-250/5. CONDITION T4 OR T42
CRES - 302, (UNS S30200) PER AMS 5516, OR 321 (UNS S32100) PER AMS 5510, OR 304 (UNS S30400) PER AMS 5513

CUSHION CHLOROPRENE RUBBER (CR) PER AMS 3209
SILICONE RUBBER PER AMS 3303
POLYTETRAFLUOROETHYLENE (PTFE) PER AMS 3652
FABRIC POLYBENZIMIDAZOLE (PBI) FIBERGLASS POLYTETRAFLUOROETHYLENE (PTFE) IMPREGNATED PER AMS3677.

FINISH: CRES PASSIVATE PER AMS2700, METHOD 1, CLASS 4
ALUMINUM NONE
PTFE SODIUM TREATED (DECREASED SLIPPAGE CHARACTERISTICS).
PTFE NONE (NATURAL)

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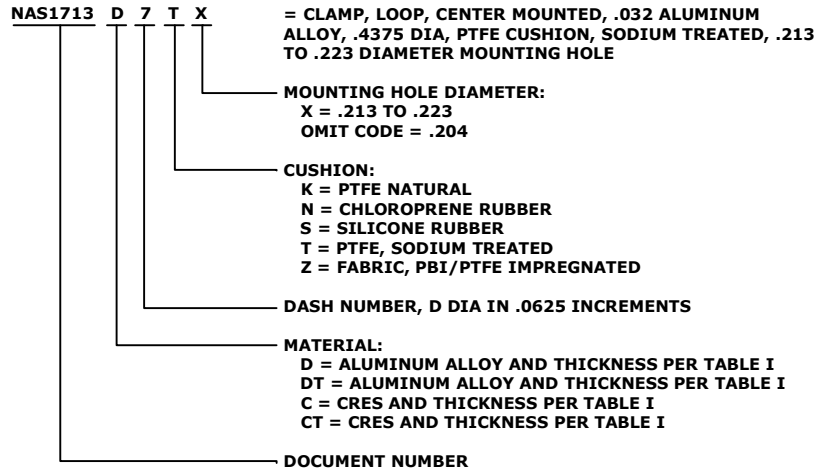
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CLAMP, LOOP-CUSHIONED
CENTER MOUNTING

PART NUMBER

EXAMPLE OF PART NUMBER:



- NOTES**
- /1/ **STANDARD DIAMETER LIMITATIONS:**
 - .250 THRU 1.500 BY .0625 INCREMENTS
 - 1.625 THRU 2.500 BY .125 INCREMENTS
 - 2.750 THRU 4.000 BY .250 INCREMENTS
 - 2. **TEMPERATURE RANGE:**
 - CUSHION:**
 - CHLOROPRENE RUBBER -40°F TO +212°F
 - SILICONE RUBBER -80°F TO +450°F (SHORT DURATION EXCURSIONS TO 500°F)
 - PTFE -320°F TO +500°F
 - FABRIC +554°F
 - STRAP:**
 - ALUMINUM ALLOY -320°F TO +200°F
 - CRES -320°F TO +600°F
 - /3/ **CUSHION THICKNESS:**
 - ALL SIZES FABRIC .062
 - SIZES THRU -8, RUBBER .045
 - SIZES -9 THRU -64, RUBBER, .062
 - ALL SIZES PTFE .020 +.008/- .004
 - /4/ CLAMP SHALL CHECK TO DIMENSIONS WITH ENDS HELD IN POSITION SHOWN.
 - 5. METAL STRAP SHALL BE FREE OF BURRS AND SHARP EDGES.
 - 6. COMPLETE NAS PART NUMBER, AND MANUFACTURER'S IDENTIFICATION SHALL BE MARKED ON EACH CLAMP IN AN AREA NOT COVERED BY CUSHION OR MOUNTING HARDWARE EXCEPT SIZE -4, WHICH SHALL BE IDENTIFIED BY STRAP MATERIAL, DASH NUMBER, CUSHION MATERIAL AND MANUFACTURER'S IDENTIFICATION, e.g., D4T XX
 - 7. DIMENSIONS IN INCHES.
 - /8/ CUSHION TYPES "A" AND "M" ARE INACTIVE FOR DESIGN AFTER MARCH 31, 1994. SUPERSEDED BY TYPE "Z". FOR DESCRIPTION OF STATUS NOTES SEE NAS380.
 - 9. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1982.
 - /10/ .213 TO .223 DIAMETER OPTION AVAILABLE WHEN SPECIFIED BY PART NUMBER.
 - 11. UNLESS OTHERWISE SPECIFIED, PART INVENTORY MANUFACTURED TO PREVIOUS REVISIONS OF THE APPLICABLE DRAWING OR SPECIFICATION MAY BE PROCURED AND USED UNTIL STOCK IS DEPLETED.
 - 12. TOLERANCES UNLESS OTHERWISE SPECIFIED: 2 PLACES ±.03, 3 PLACES ±.010.
 - 13. THIS STANDARD TAKES PRECEDENCE OVER DOCUMENTS REFERENCED HEREIN.
 - 14. REFERENCED DOCUMENTS SHALL BE THE ISSUE IN EFFECT ON DATE OF INVITATIONS FOR BID.

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NAS1713

CLAMP, LOOP-CUSHIONED
CENTER MOUNTING

PART NUMBER

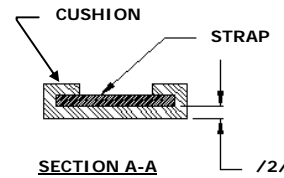
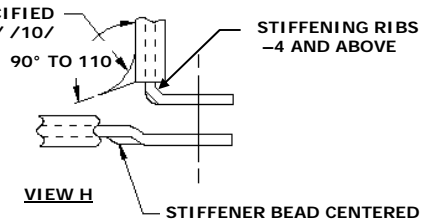
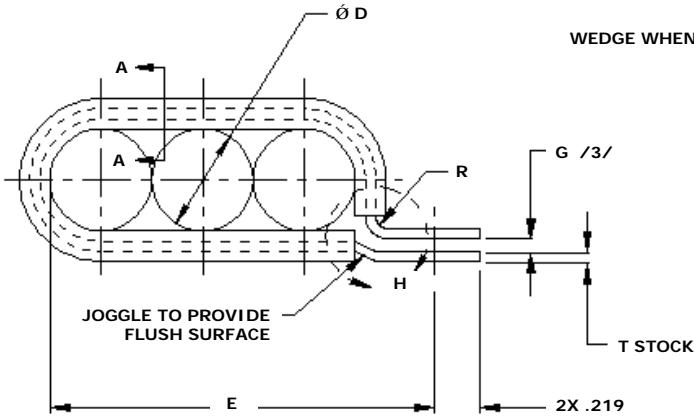
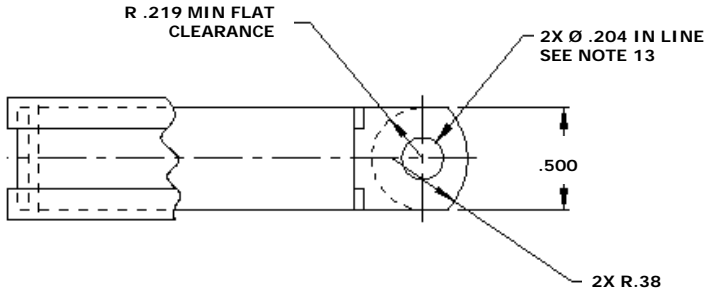


TABLE 1

DASH NO D DIA ± .015	MATERIAL		E (SEE NOTE 8) ±.015	G	R ±.015	T STOCK
	AL ALY	CRES				
2 THRU 8	DT	CT	D X NO. WIRES OR TUBES +.391	0.062	+.015	0.062
2 THRU 8	D	C	D X NO. WIRES OR TUBES +.402			-.000
9 THRU 16	D	C	D X NO. WIRES OR TUBES +.490	0.094	+.031	0.125
17 THRU 32	D	C	D X NO. WIRES OR TUBES +.534			-.000

MATERIAL: STRAP - ALUMINUM ALLOY - 2024 (UNS A82024), ALCLAD PER AMSQQ-A-250/5, CONDITION T4 OR T42.
CRES - 302 (UNS S30200) PER AMS 5516 OR 321 (UNS 32100) PER AMS 5510, OR 304 UNS S30400) PER AMS 5513

CUSHION - CHLOROPRENE RUBBER TYPE (CR) PER AMS3209.
SILICONE RUBBER PER AMS3303
POLYTETRAFLUOROETHYLENE (PTFE) PER AMS3660 OR AMS3652
FABRIC POLYBENZIMIDAZOLE (PBI) FIBERGLASS POLYTETRAFLUOROETHYLENE (PTFE) IMPREGNATED PER AMS3677.

FINISH: CRES - PASSIVATE PER AMS2700 METHOD 1, CLASS 4
ALUMINUM - NONE
PTFE - SODIUM TREATED (DECREASED SLIPPAGE CHARACTERISTICS)
PTFE - NONE (NATURAL)

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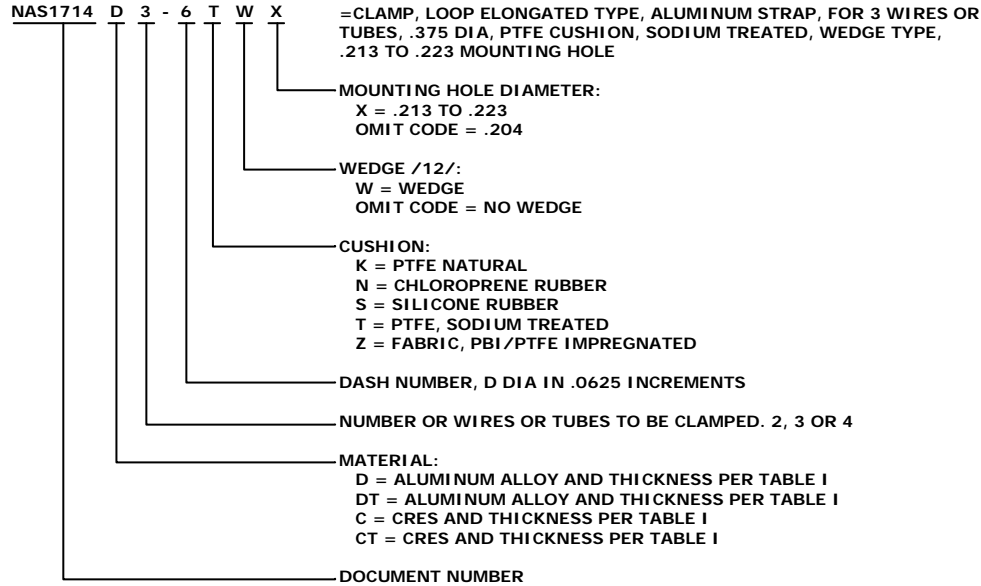
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NAS1714

CLAMP, LOOP CUSHIONED, ELONGATED

PART NUMBER

EXAMPLE OF PART NUMBER:



NOTES:

1. TEMPERATURE RANGE:
CUSHION: CHLOROPRENE RUBBER -40°F TO +212°F
SILICONE -80°F TO +450°F (SHORT DURATION EXCURSIONS TO 500°F)
PTFE -320°F TO +500°F
FABRIC +554°F

STRAP ALUMINUM -320°F TO +200°F
CRES -320°F TO +600°F
- /2/ CUSHION THICKNESS
ALL SIZES FABRIC .062
SIZES THRU -8, RUBBER, .045
SIZES -9 THRU -32 RUBBER, .062
ALL SIZES PTFE .020 +.008/- .004
- /3/ CLAMP SHALL CHECK TO DIMENSIONS WITH ENDS HELD IN POSITION SHOWN.
- /4/ WEDGE MAY BE INTEGRALLY MOLDED TO CUSHION OR VULCANIZED TO CUSHION.
5. METAL STRAP SHALL BE FREE OF BURRS AND SHARP EDGES
6. COMPLETE NAS PART NUMBER, AND MANUFACTURERS IDENTIFICATION SHALL BE MARKED ON EACH CLAMP IN AN AREA NOT COVERED BY CUSHION OR MOUNTING HARDWARE EXCEPT SIZES 2-2, AND 2-3, WHICH SIZES SHALL BE IDENTIFIED BY STRAP MATERIAL, NUMBER OF BUNDLES, SIZE DASH NUMBER, CUSHION MATERIAL AND MANUFACTURER'S IDENTIFICATION, e.g. D2-2T XX.
7. DIMENSIONS IN INCHES.
8. TOLERANCES ON DIA ARE NOT CUMULATIVE.
9. DELETED
- /10/ CUSHION TYPES A AND M ARE INACTIVE FOR DESIGN AFTER MARCH 31, 1994. SUPERSEDED BY TYPE Z. FOR DESCRIPTION OF STATUS NOTE SEE NAS380.
11. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1982.
- /12/ WEDGE NOT AVAILABLE ON FABRIC CUSHIONED CLAMP, CODE "Z".
- /13/ .213 TO .223 DIAMETER OPTION AVAILABLE WHEN SPECIFIED BY PART NUMBER.
14. TOLERANCES UNLESS OTHERWISE SPECIFIED, 2 PLACES ±.030, 3 PLACES ±.010.

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NAS1714

CLAMP, LOOP CUSHIONED, ELONGATED

PART NUMBER

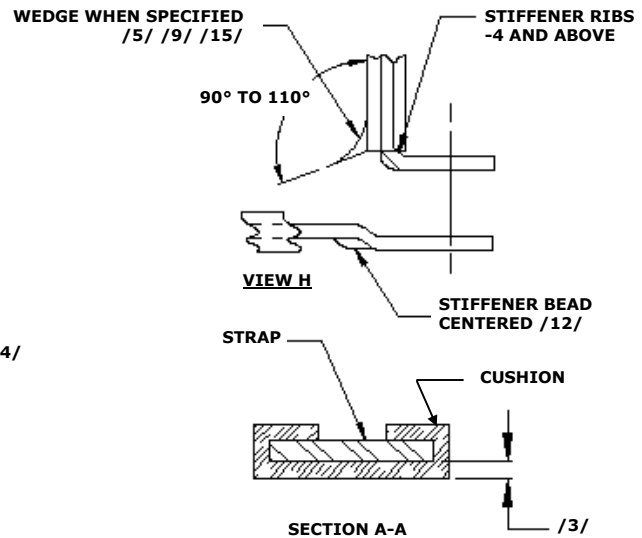
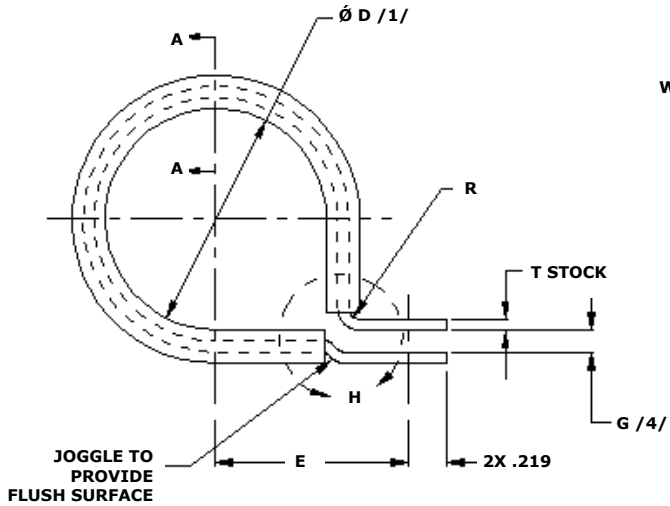
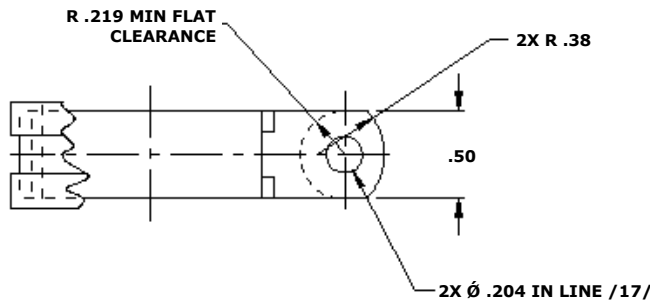


TABLE 1

DASH NO. D DIA ±.015	MATERIAL		E ±.015	G		R ±.015	T STOCK
	AL ALY	CRES					
2 THRU 20	DT	CT	D/2 +.390	.062	+.015	.062	0.020
2 THRU 10	D	C	D/2 +.402				
11 THRU 20	D	C	D/2 +.490	.094	+.031	.125	0.051
21 THRU 32	D	C	D/2 +.490				
33 THRU 66	D	C	D/2 +.534				

MATERIAL: STRAP ALUMINUM ALLOY - 2024 (UNS A82024), ALCLAD PER AMSQ-A-250/5 CONDITION T4 AND T42. CRES - 304 (UNS S30400) PER AMS 5513, OR 321 (UNS 32100) PER AMS 5510, OR.302 (UNS S30200) PER AMS 5516.

CUSHION: CHLOROPRENE RUBBER (CR) PER AMS3209. SILICONE RUBBER PER AMS3303. POLYTETRAFLUOROETHYLENE (PTFE) PER AMS3660 OR AMS3652. FABRIC POLYBENZIMIDAZOLE (PBI) FIBERGLASS POLYTETRAFLUOROETHYLENE (PTFE) IMPREGNATED PER NAS3677

FINISH: CRES PASSIVATE PER AMS2700, METHOD 1, TYPE 6 OR 7, CLASS 4. ALUMINUM NONE. PTFE SODIUM TREATED (DECREASED SLIPPAGE CHARACTERISTICS). PTFE NONE (NATURAL)

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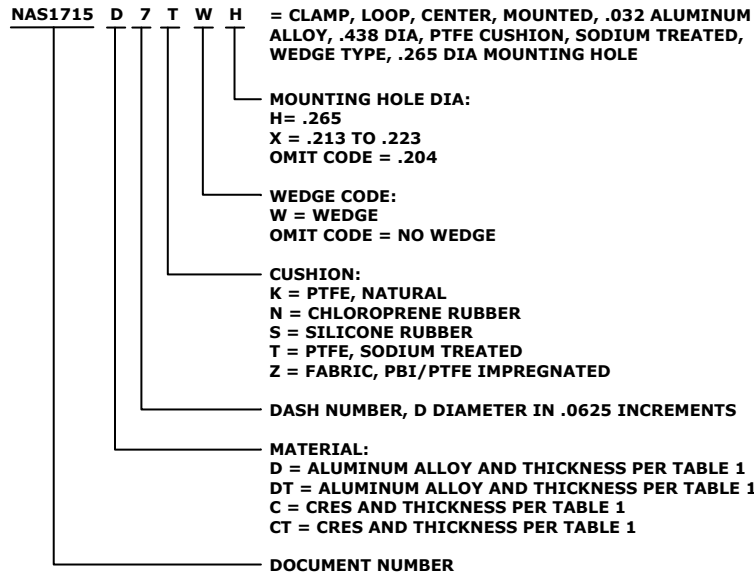
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NAS1715

CLAMP, LOOP CUSHIONED

PART NUMBER

EXAMPLE OF PART NUMBER:



- NOTES:**
- /1/ **STANDARD SIZE LIMITATIONS:**
 - .125 THRU 1.500 BY .0625 INCREMENTS
 - 1.625 THRU 2.500 BY .125 INCREMENTS
 - 2.750 AND ABOVE BY .250 INCREMENTS
 - 2. **TEMPERATURE RANGE:**
 - CUSHION:**
 - CHLOROPRENE RUBBER -40°F TO +212°F
 - SILICONE RUBBER -80°F TO +450°F (SHORT DURATION EXCURSIONS TO 500°F)
 - PTFE -320°F TO +500°F
 - FABRIC +554°F
 - STRAP:**
 - ALUMINUM -320 °F TO +200 °F
 - CRES -320 °F TO +600 °F
 - /3/ **CUSHION THICKNESS:**
 - ALL SIZES FABRIC .062
 - SIZES THRU -8, RUBBER .045
 - SIZES -9 THRU -66, RUBBER, .062
 - PTFE, CODE "K" & "T" (NON-WEDGE) .020 +.008/-0.004
 - PTFE, CODE "KW" & "TW" (WEDGE TYPE) .030 +.011/-0.005
 - /4/ CLAMP SHALL CHECK TO DIMENSIONS WITH ENDS HELD IN POSITION SHOWN BY DIMENSION G.
 - /5/ WEDGE MAY BE INTEGRALLY MOLDED TO CUSHION OR VULCANIZED TO CUSHION.
 - 6. METAL STRAP SHALL BE FREE OF BURRS AND SHARP EDGES.
 - 7. COMPLETE NAS PART NUMBER, AND MANUFACTURER'S IDENTIFICATION SHALL BE MARKED ON EACH CLAMP IN AN AREA NOT COVERED BY CUSHION OR MOUNTING HARDWARE EXCEPT SIZES -2, -3, AND -4, WHICH SIZES SHALL BE IDENTIFIED BY STRAP MATERIAL, DASH NUMBER, CUSHION MATERIAL AND MANUFACTURER'S IDENTIFICATION, E.G. D2T XX
 - 8. DIMENSIONS IN INCHES.
 - /9/ WEDGE NOT AVAILABLE ON PTFE CUSHION CLAMP, CODE "K" AND "T" ON SIZES 2 THRU 5.
 - 10. DELETED
 - 11. DELETED
 - /12/ STIFFENER BEAD CONSTRUCTION ON CLAMP SIZES 5 AND ABOVE
 - 13. DELETED
 - /14/ CUSHION TYPES "A" AND "M" ARE INACTIVE FOR DESIGN AFTER MARCH 31, 1994. SUPERSEDED BY TYPE "Z". FOR DESCRIPTION OF STATUS NOTES SEE NAS380.
 - /15/ WEDGE NOT AVAILABLE ON FABRIC CUSHIONED CLAMP, CODE "Z".
 - 16. DIMENSIONING AND TOLERANCES PER ANSI Y14.5M-1982.
 - /17/ .265 DIAMETER OR .213 TO .223 DIAMETER OPTION AVAILABLE WHEN SPECIFIED BY PART NUMBER.
 - 18. TOLERANCES UNLESS OTHERWISE SPECIFIED: 2 PLACES ±.03, 3 PLACES ±.010.

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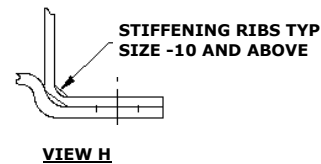
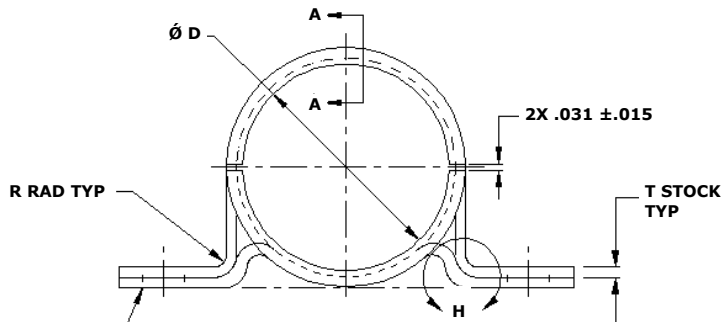
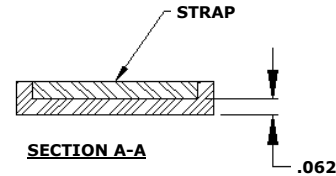
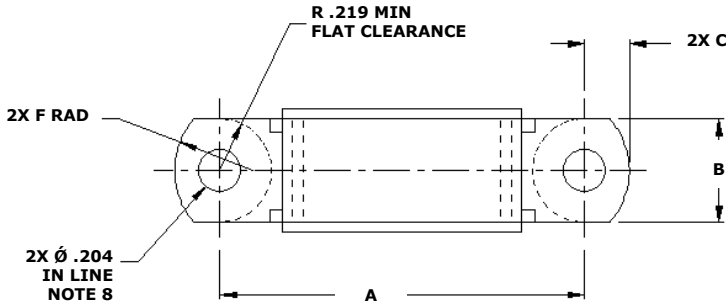
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NAS1715

CLAMP, LOOP CUSHIONED

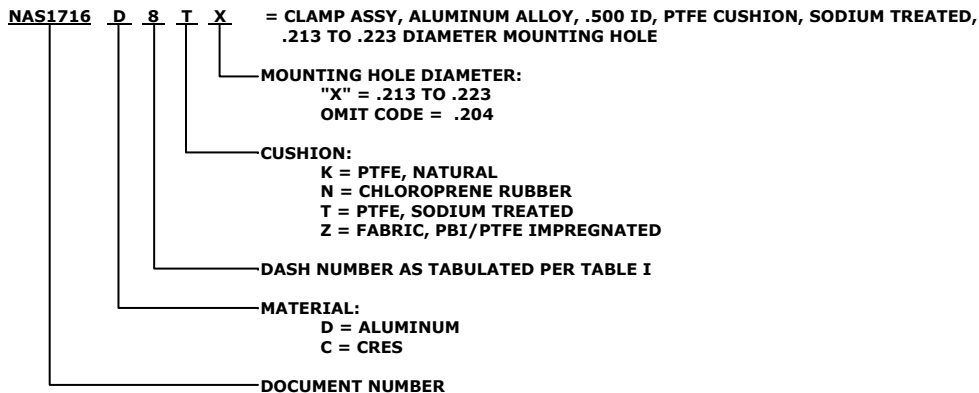
PART NUMBER



HOLLOW RIVET OR OTHER TYPE FASTENING DEVICE FOR SHIPMENT AND STOCKING ONLY BOTH ENDS

- MATERIAL:**
- STRAP - 2024 ALUMINUM ALLOY -2024 (UNS A82024), ALCLAD PER AMSQQ-A-250/5, CONDITION T4 OR T42.
 - CRES - CORROSION RESISTANT STEEL 302 (UNS S30200) PER AMS 5516 OR 321 (UNS 32100) PER AMS 5510 OR 304 UNS S30400) PER AMS 5513
- CUSHION -**
- POLYTETRAFLUOROETHYLENE (PTFE) PER AMS3652
 - FABRIC POLYBENZIMIDAZOLE (PBI) POLYIMIDE FIBERGLASS POLYTETRAFLUOROETHYLENE (PTFE) IMPREGNATED PER AMS3677.
 - SYNTHETIC RUBBER PER AMS3209.
- FINISH:**
- CRES - PASSIVATE PER AMS2700, METHOD 1, CLASS 4.
 - ALUMINUM - NONE
 - PTFE - SODIUM TREATED (DECREASED SLIPPAGE CHARACTERISTICS).
 - PTFE - NONE (NATURAL)

EXAMPLE OF THE PART NUMBER:



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REV
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NAS1716

CLAMP, LOOP CUSHIONED, SADDLE

PART NUMBER

TABLE 1

Dash No	D ±.015	A ±.015	B	C	F RAD	R RAD	T STOCK			
4	0.250	1.001	0.50	0.218	0.38	0.062	0.032			
5	0.313	1.063								
6	0.375	1.126								
7	0.438	1.188								
8	0.500	1.251								
9	0.563	1.314								
10	0.625	1.392					0.62	0.250	0.50	0.109
11	0.688	1.455								
12	0.750	1.517								
13	0.813	1.579								
14	0.875	1.642								
15	0.938	1.705								
16	1.000	1.767								
17	1.063	1.837								
18	1.125	1.900								
19	1.188	1.963								
20	1.250	2.039								
21	1.313	2.101								
22	1.375	2.164								
23	1.438	2.227								
24	1.500	2.289								
25	1.563	2.351								
26	1.625	2.414								
27	1.688	2.477								
28	1.750	2.539								
29	1.813	2.601								
30	1.875	2.664								
31	1.938	2.727								
32	2.000	2.789								
34	2.125	2.914								
36	2.250	3.039								
38	2.375	3.164								
40	2.500	3.289								
42	2.625	3.414								
44	2.750	3.539								
46	2.875	3.664								
48	3.000	3.789								
50	3.125	3.914								
52	3.250	4.039								
54	3.375	4.164								
56	3.500	4.289								

NOTES:

- TEMPERATURE RANGE:
 CUSHION: CHLOROPRENE RUBBER -40°F TO +212°F
 PTFE -320°F TO +500°F
 FABRIC +554°F
 STRAP ALUMINUM -320°F TO +200°F
 CRES -320°F TO +600°F
- METAL STRAP SHALL BE FREE OF BURRS AND SHARP EDGES
- NAS PART NUMBER, AND MANUFACTURER'S IDENTIFICATION SHALL BE MARKED ON BOTH CLAMP AND BASE IN AN AREA NOT COVERED BY CUSHION OR MOUNTING HARDWARE.
- DIMENSIONS IN INCHES.
- BASE STRAP TO CONTACT CUSHION IN ARC OF APPROXIMATELY 50°
- CUSHION TYPES A AND M ARE INACTIVE FOR DESIGN AFTER MARCH 31, 1994. SUPERSEDED BY TYPE Z. FOR DESCRIPTION OF STATUS NOTES SEE NAS380.
- DIMENSIONING AND TOLERANCING IS PER ANSI Y14.5M-1982.
- .213 TO .223 DIAMETER OPTION AVAILABLE WHEN SPECIFIED BY PART NUMBER.
- TOLERANCES UNLESS OTHERWISE SPECIFIED, 2 PLACES ±.03, 3 PLACES ±.010

THIS CATALOG PAGE IS FOR REFERENCE ONLY. REQUEST A CERTIFIED UMPCO DRAWING FOR ACTUAL SPECIFICATIONS. ANY CONFLICT BETWEEN THIS DOCUMENT AND THE CERTIFIED DRAWING, THE CERTIFIED DRAWING WILL TAKE PRECEDENCE. IF THE DOCUMENT IS CONTROLLED BY ANY OTHER SOURCE THAN UMPCO, THE CERTIFIED DRAWING MUST BE PURCHASED THROUGH THAT ORGANIZATION.

UMPCO, INC
CAGE CODE No. 18076

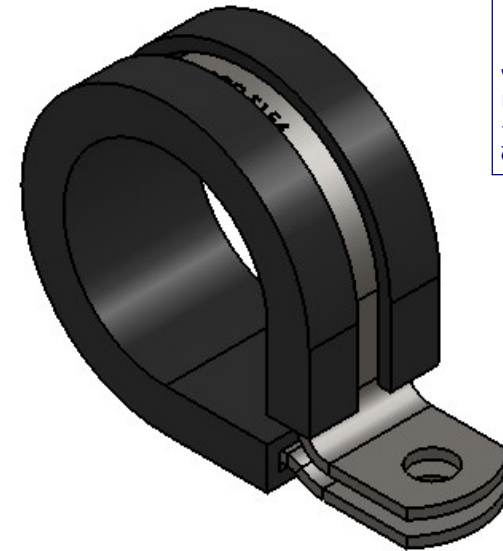
REV
A
01/25/12

NAS1716

CLAMP, LOOP CUSHIONED, SADDLE

PART NUMBER

1	2	3	4	5	6	7	8
BASIC PART NUMBER	DASH NO. RANGE	"D" DIA. RANGE	"E" DIMENSION	"G" GAP	"R" RADIUS	"T" GAUGE	
S156L	-2 THRU -32	1/8" TO 2"	"D"/2 + .390	.070	.062	.020	
S156	-2 THRU -10	1/8" TO 5/8"	"D"/2 + .402			.032	
S156	-11 THRU -20	11/16" TO 1-1/4"	"D"/2 + .490	.100	.125	.050	
S156	-21 THRU -32	1-5/16" TO 2"				.062	
S156	-33 THRU -96	2-1/16" TO 6"	"D"/2 + .534	.125			

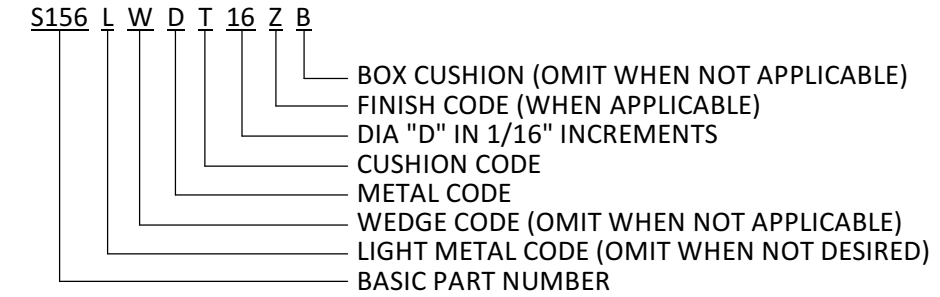


S156

REV.	CHANGE	DATE	BY	CHK'D	APPR
V	SEE DRAWING CHANGE RECORD ON FILE.	09/25/13	HAD	KWE	HAD

EXAMPLE OF PART CALLOUT:

1" DIA. CLAMP, 2024-T42 ALUM., .020 THK., ANODIZED, W/WEDGED TEFLON

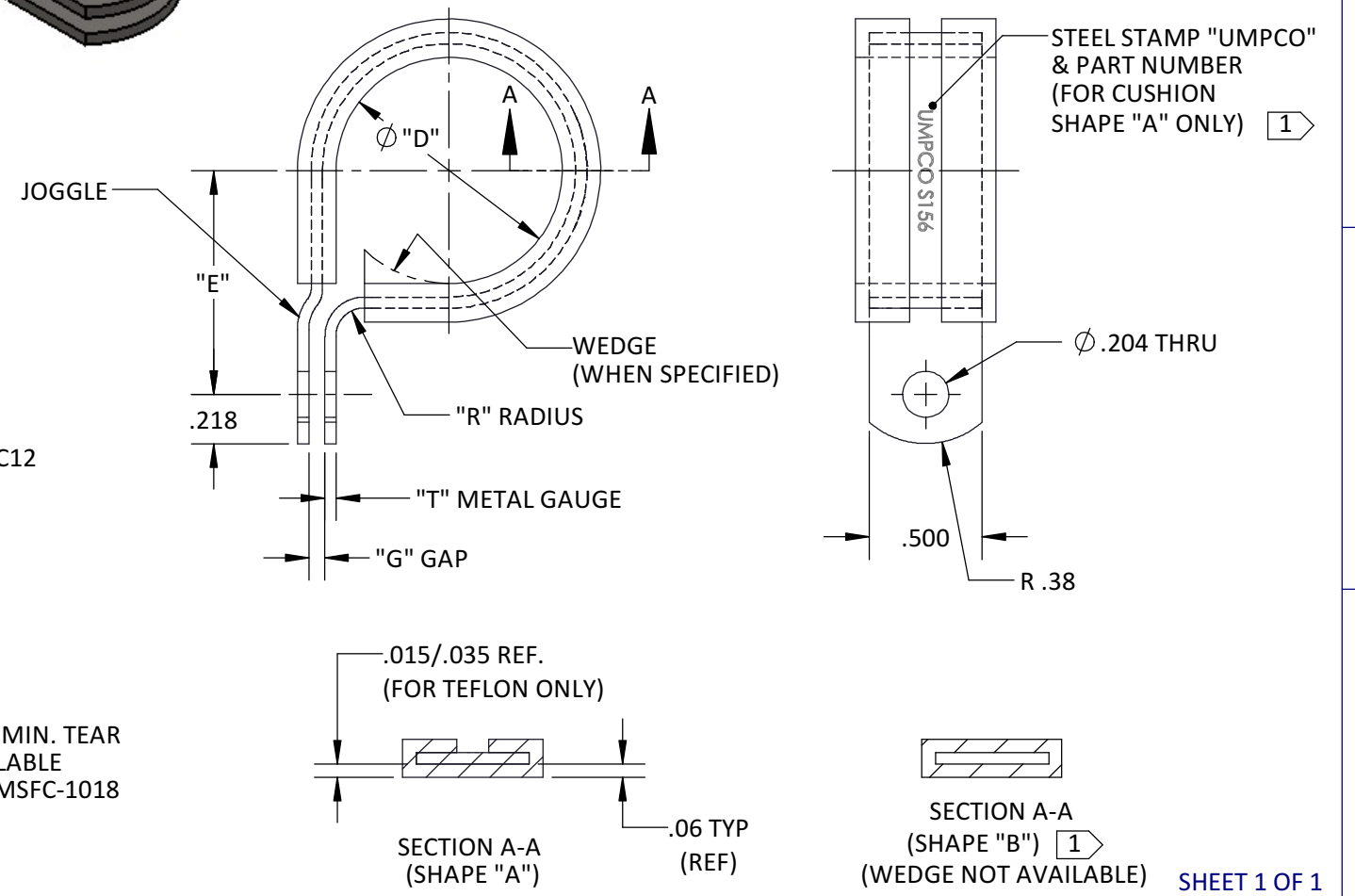


MATERIAL & FINISH CODES:

- METAL:** "NO CODE" 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109 & QQ-S-698
 "S" 4130 ALLOY (CMS) STEEL, ANNEALED PER MIL-S-18729 & AMS 6350
- FINISHES:** "NO CODE" CADMIUM PLATE BRIGHT PER AMS-QQ-P-416, TY. I, CL. 2
 "V" ZINC PLATE BRIGHT PER ASTM B 633, FE/ZN 13, TY. III
- METAL:** "P" 17-7 PH STAINLESS STEEL PER AMS 5528
 "C" 302/304 STAINLESS STEEL PER AMS 5516/AMS 5513 [2]
 "SS" 321 STAINLESS STEEL PER AMS 5510 [2]
- FINISHES:** BALL BURNISH AND PASSIVATE PER AMS 2700, CL. 1, METHOD 1, TY. 6
- METAL:** "D" 2024-T42 ALUMINUM CLAD PER AMS-QQ-A-250/5
 "Z" ANODIZE CLEAR PER MIL-A-8625, TY. II, CL. 1
 "C" CHEMICAL FILM, GOLD PER MIL-DTL-5541, CL. 1A
- METAL:** "DK" 5052-H32 1/4 HARD ALUMINUM PER AMS-QQ-A-250/8
 "FINISHES:" NONE [3]

CUSHION:

- | | |
|---|---|
| "E" ETHYLENE PROPYLENE PER MIL-C-8603.
COLOR: PURPLE, SHAPES: A, WEDGE AVAILABLE | "Y" NITRILE BUTADIENE PER MIL-C-85052/1.
COLOR: YELLOW, SHAPES: A, WEDGE AVAILABLE |
| "F" NITRILE BUTADIENE PER AMS 3215.
COLOR: YELLOW, SHAPES: A, WEDGE AVAILABLE | "AG" GENERAL PURPOSE EPDM PER SAE J200 M3BA710, C12
COLOR: BLACK, SHAPES: A |
| "G" GENERAL PURPOSE NEOPRENE PER AMS 3209.
COLOR: BLACK, SHAPES: A & B, WEDGE AVAILABLE | "EP" ETHYLENE PROPYLENE PER MIL-C-85052/2
COLOR: PURPLE, SHAPES: A, WEDGE AVAILABLE |
| "H" GENERAL PURPOSE SILICONE PER AMS 3303 WITH 100 PSI MIN. TEAR
COLOR: RED/ORANGE/WHITE, SHAPES: A & B, WEDGE AVAILABLE | "FG" BRAIDED GLASS FIBER
COLOR: SILVERY GRAY |
| "P" PTFE IMPREGNATED PBI POLYIMIDE-GLASS BLEND FABRIC
PER BPS-C-155 & AMS 3677.
COLOR: BROWN, SHAPES: A | "HA" SILICONE PER BMS-163, BMS-172
COLOR: WHITE, SHAPES: A |
| "R" ETHYLENE PROPYLENE PER DMS 1849, TY. 1, CL. II
COLOR: BLACK, SHAPES: A | "HB" SILICONE PER AMS 3352, PWA36450
COLOR: BROWN, SHAPES: A, WEDGE AVAILABLE |
| "T" TEFLON SKIVED PER AMS 3652.
COLOR: WHITE, SHAPES: A, WEDGE AVAILABLE | "HL" SILICONE PER MIL-C-8603, AMS 3303 WITH 100 PSI MIN. TEAR
COLOR: NATURAL WHITE, SHAPES: A, WEDGE AVAILABLE |
| "X" TEFLON ANTI-SLIP PER AMS 3652
FINISH: SODIUM TREAT PER AMS 2491
COLOR: BROWN, SHAPES: A, WEDGE AVAILABLE | "HR" SILICONE PER AMS-R-3065 TA612, B3, E1, F3, GMZ MSFC-1018
COLOR: PINK, SHAPES: A, WEDGE AVAILABLE |
| | "HT" SILICONE PER MIL-C-85052/3, AMS 3316
COLOR: LIGHT BLUE, SHAPES: A, WEDGE AVAILABLE |



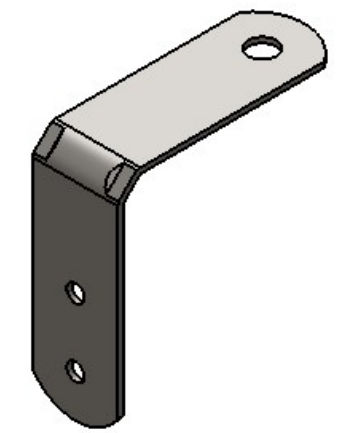
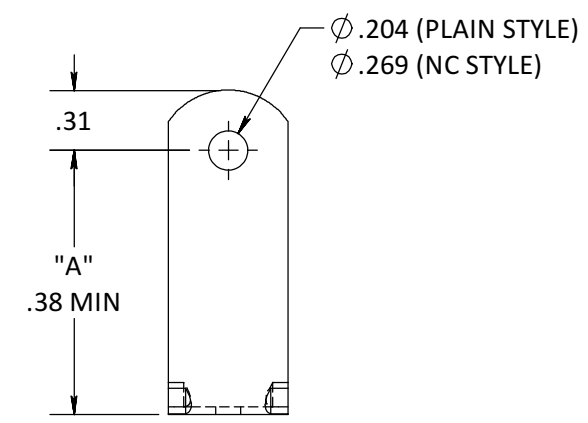
- NOTES:**
- FOR SHAPE (B) STYLE CUSHIONS (BOX), PARTS SHALL BE PACKAGE IDENTIFIED IN MULTIPLES OF 10, NOT TO EXCEED 100.
 - FOR 302/304 METAL, 321 STAINLESS MAY BE SUBSTITUTED. 321 STAINLESS WILL NOT BE REPLACED BY 302/304 STAINLESS GRADES.
 - CAUSTIC ETCH TO CLEAN AS NEEDED.
 - CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.
 - INSPECT PER MIL-C-8603 CLOSURE TEST.

REFERENCES:		ANGULAR: X ± 5°		 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846		FSCM/CAGE CODE No. 18076	
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:		DECIMAL: .XX ± .03 .XXX ± .015				KEL	SMJ
GENERAL MACHINE FINISHES EXCEPT AS NOTED:		PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.		12/11/64	04/21/99	04/21/99	
INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M		ACT. WGHT. -		DRAWN	CHECKED	ENGR	
REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX		CALC. WGHT. -		SCALE: NONE			
CLAMP, LOOP-CUSHIONED				SIZE			
PART AND/OR ASSEMBLY DESCRIPTION				B		S156	
						PRINT NUMBER	

DASH NUMBERS, "A" DIM			DASH NUMBERS, "B" DIM											"T" GAUGE	
PLAIN STYLE	NC STYLE (CLINCH NUT)	"A" DIM.	.38	.44	.50	.56	.63	.69	.75	.81	.88	.94	1.00	.040	.063
-6	-6NC	.38													
-7	-7NC	.44													
-8	-8NC	.50													
-9	-9NC	.56													
-10	-10NC	.63													
-11	-11NC	.69	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	-16	1	2
-12	-12NC	.75													
-13	-13NC	.81													
-14	-14NC	.88													
-15	-15NC	.94													
-16	-16NC	1.00													

S165

REV.	CHANGE	DATE	BY	CHK'D	APPR
P	SEE DRAWING CHANGE RECORD ON FILE.	06/04/13	HAD	KWE	HAD



CLINCH NUT USAGE CODES 1

CODE	NUT PART NO.	THREAD	"T"
NC5	27FP2-832	8-32	.040
NC6	27FP3-832	8-32	.063
NC7	27FP2-1032	10-32	.040
NC8	27FP3-1032	10-32	.063

MATERIAL & FINISH CODES:

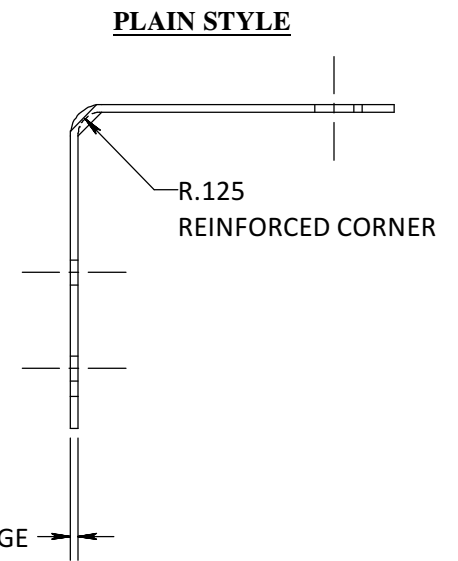
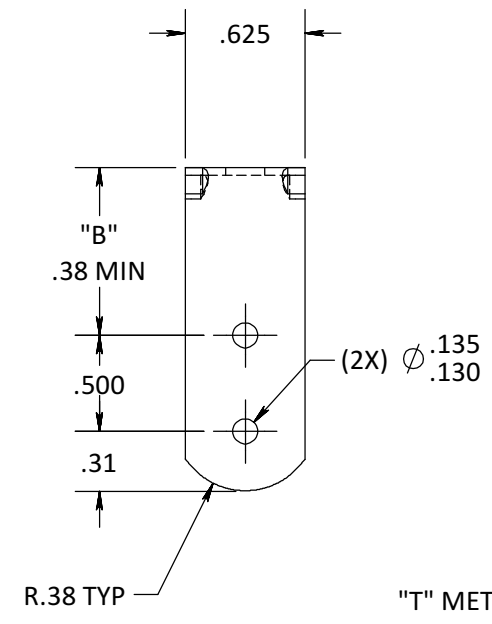
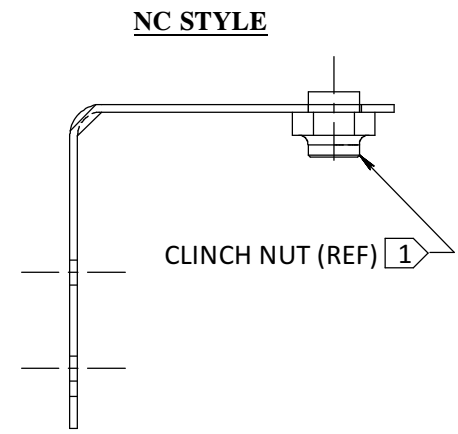
METAL: "D" 2024-T42 ALUMINUM CLAD PER AMS-QQ-A-250/5
FINISH: NONE
"C" 304/321 STAINLESS STEEL PER AMS 5513/ AMS 5510
FINISH: BALL BURNISH AND PASSIVATE PER AMS 2700, CL. 1, METHOD 1, TY. 6
"DC" 2024-T42 ALUMINUM CLAD PER AMS-QQ-A-250/5
FINISH: CHEMICAL FILM GOLD PER MIL-DTL-5541, TY. 1, CL. 1A

EXAMPLE OF PART CALLOUT:

90 DEGREE, .04 THK. ALUMINUM ANGLE BRACKET W/ 8-32 CLINCH NUT

S165 C1 - 10 NC5 - 16

"B" DIMENSION IN 1/16th INCREMENTS
CLINCH NUT CODE (OMIT FOR PLAIN STYLE)
"A" DIMENSION IN 1/16th INCREMENTS
METAL CODE & GAUGE "T"
BASIC PART NUMBER



SHEET 1 OF 1

NOTES:

- CLINCH NUT, STANDARD PRESSED STEEL CO., (SPS), OR EQUIVALENT. TEMPERATURE LIMIT 450°F. USE STYLE TABLE TO SELECT NUTS BY METAL GAUGE AND THREAD DESIGN.
- PERMANENTLY IDENTIFY IN 1/16th INCH HIGH CHARACTERS, LOCATION OPTIONAL.
- LARGER SIZES ARE AVAILABLE BY SPECIFYING "A" & "B" DIMENSIONS IN 1/16th INCH INCREMENTS.

REFERENCES:		LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:		GENERAL MACHINE FINISHES EXCEPT AS NOTED:			REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX		
ANGULAR:	X	± 5°	DECIMAL:	.XX	± .03	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.			
				.XXX	± .015	INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M			
				ACT. WGHT. - CALC. WGHT. -			ACT. WGHT. - CALC. WGHT. -		
				UMPCO . INC. 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846			FSCM/CAGE CODE No. 18076 KEL SMJ SMJ 08/30/57 04/21/99 04/21/99 DRAWN CHECKED ENGR		
				ANGLE BRACKET, 90 DEGREE, PLAIN OR W/CLINCH NUT			SCALE: NONE		
				PART AND/OR ASSEMBLY DESCRIPTION			PRINT NUMBER		

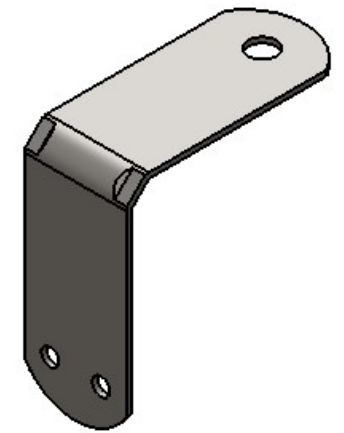
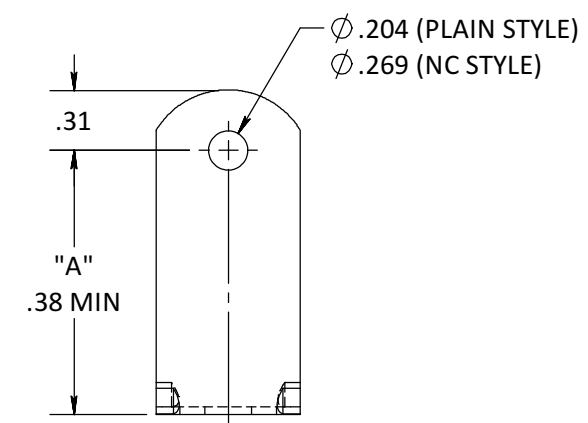
B

S165

DASH NUMBERS, "A" DIM			DASH NUMBERS, "B" DIM										"T" GAUGE		
PLAIN STYLE	NC STYLE (CLINCH NUT)	"A" DIM.	.38	.44	.50	.56	.63	.69	.75	.81	.88	.94	1.00	.040	.063
-6	-6NC	.38													
-7	-7NC	.44													
-8	-8NC	.50													
-9	-9NC	.56													
-10	-10NC	.63													
-11	-11NC	.69	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	-16	1	2
-12	-12NC	.75													
-13	-13NC	.81													
-14	-14NC	.88													
-15	-15NC	.94													
-16	-16NC	1.00													

S166

REV.	CHANGE	DATE	BY	CHK'D	APPR
Q	SEE DRAWING CHANGE RECORD ON FILE.	06/04/13	HAD	KWE	HAD

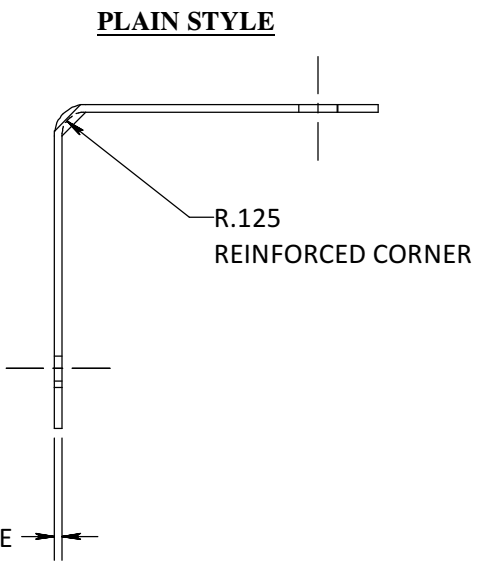
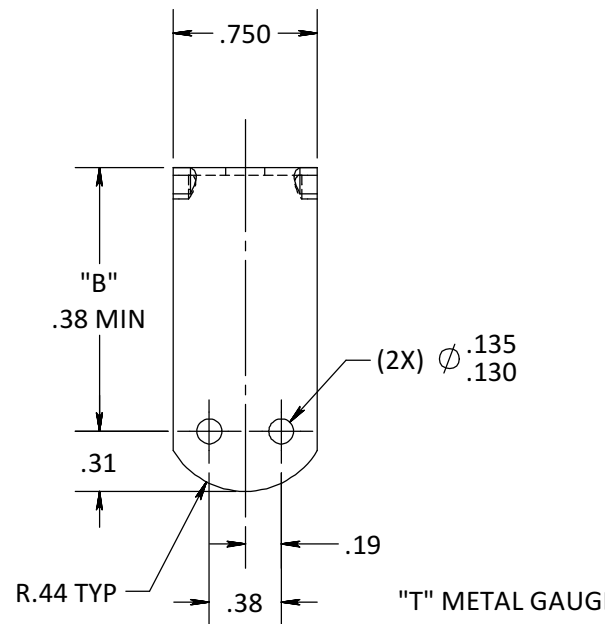
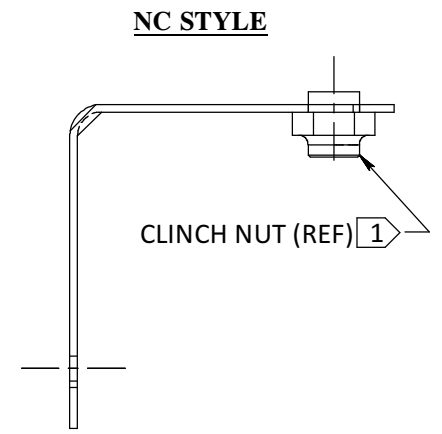


CLINCH NUT USAGE CODES 1

CODE	NUT PART NO.	THREAD	"T"
NC5	27FP2-832	8-32	.040
NC6	27FP3-832	8-32	.063
NC7	27FP2-1032	10-32	.040
NC8	27FP3-1032	10-32	.063

MATERIAL & FINISH CODES:

METAL: "D" 2024-T42 ALUMINUM CLAD PER AMS-QQ-A-250/5
FINISH: NONE
"C" 304/321 STAINLESS STEEL PER AMS 5513/AMS 5510
FINISH: BALL BURNISH AND PASSIVATE PER AMS 2700, CL. 1, METHOD 1, TY. 6
"DC" 2024-T42 ALUMINUM CLAD PER AMS-QQ-A-250/5
FINISH: CHEMICAL FILM GOLD PER MIL-DTL-5541, TY. 1, CL. 1A



EXAMPLE OF PART CALLOUT:

90 DEGREE, .04 THK. ALUMINUM ANGLE BRACKET W/ 8-32 CLINCH NUT

S166 C1 - 10 NC5 - 16

"B" DIMENSION IN 1/16th INCREMENTS
CLINCH NUT CODE (WHEN APPLICABLE)
"A" DIMENSION IN 1/16th INCREMENTS
METAL CODE & GAUGE "T"
BASIC PART NUMBER

SHEET 1 OF 1

NOTES:

1) CLINCH NUT, STANDARD PRESSED STEEL CO., (SPS), OR EQUIVALENT. TEMPERATURE LIMIT 450°F. USE STYLE TABLE TO SELECT NUTS BY METAL GAUGE AND THREAD DESIGN.

2) PERMANENTLY IDENTIFY IN 1/16th INCH HIGH CHARACTERS, LOCATION OPTIONAL.

3) LARGER SIZES ARE AVAILABLE BY SPECIFYING "A" & "B" DIMENSIONS IN 1/16th INCH INCREMENTS.

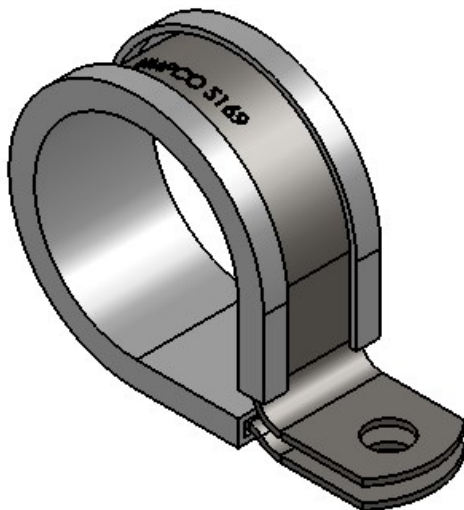
REFERENCES:		LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:		GENERAL MACHINE FINISHES EXCEPT AS NOTED:			REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX		
ANGULAR:	X	± 5°	DECIMAL:	.XX	± .03	INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M			
				.XXX	± .015	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.			
						ACT. WGHT.	-		
						CALC. WGHT.	-		



FSCM/CAGE CODE No. 18076		
KEL	SMJ	SMJ
08/30/57	04/21/99	04/21/99
DRAWN	CHECKED	ENGR

ANGLE BRACKET, 90 DEGREE, PLAIN OR W/CLINCH NUT	SIZE	SCALE: NONE
	B	S166
PART AND/OR ASSEMBLY DESCRIPTION	PRINT NUMBER	

DASH NO. RANGE	"D" DIA. RANGE	METAL TYPE	CUSHION STYLE	MAX. OPERATING TEMP.
DT2 TO DT66	1/8" TO 4-1/8"	ALUMINUM	PLAIN	250° F
WDT2 TO WDT30	1/8" TO 1-7/8"	ALUMINUM	WEDGE	250° F
SST2 TO SST66	1/8" TO 4-1/8"	STAINLESS	PLAIN	450° F
WSST2 TO WSST30	1/8" TO 1-7/8"	STAINLESS	WEDGE	450° F



S169

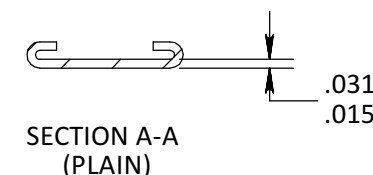
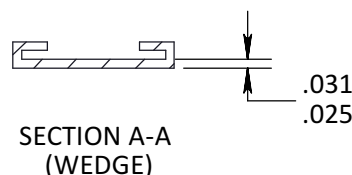
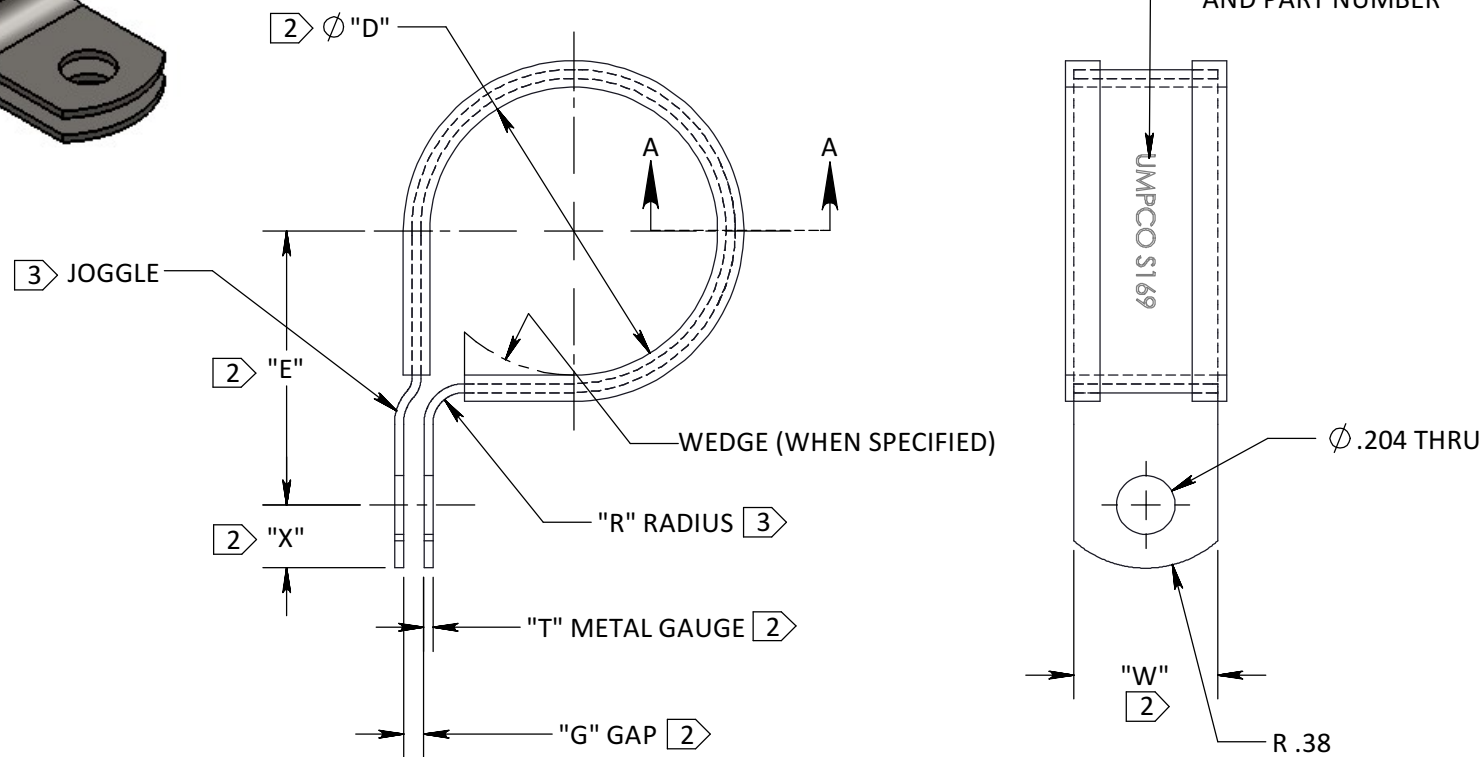
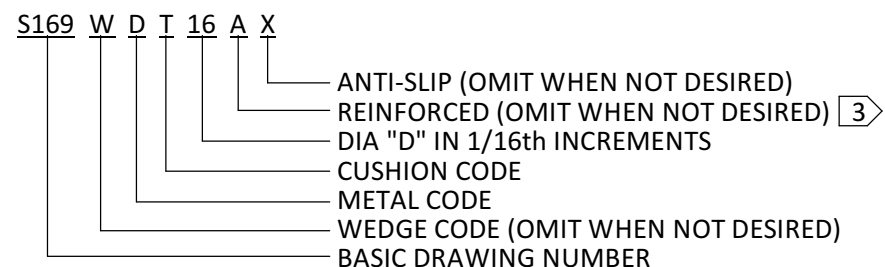
REV.	CHANGE	DATE	BY	CHK'D	APPR
R	SEE DRAWING CHANGE RECORD ON FILE.	06/04/13	HAD	KWE	HAD

MATERIAL & FINISH CODES:

METAL:	"D"	2024-T42 ALUMINUM CLAD PER AMS-QQ-A-250/5 FINISH: NONE
	"DK"	5052-H32 1/4 HARD ALUMINUM ALLOY PER AMS-QQ-A-250/8 FINISH: NONE [4]
	"SS"	302/304 STAINLESS STEEL PER AMS 5516/AMS 5513 FINISH: NONE
	"C"	302/304 STAINLESS STEEL PER AMS 5516/AMS 5513 FINISH: BALL BURNISH AND PASSIVATE PER AMS 2700, METHOD 1, CL. 1, TY. 6
	"S"	321/347 STAINLESS STEEL PER AMS 5510/AMS 5512 FINISH: BALL BURNISH AND PASSIVATE PER AMS 2700, METHOD 1, CL. 1, TY. 6
CUSHION:	"T"	TEFLON, SKIVED PER AMS 3652 [1] COLOR: WHITE
	"W()T"	TEFLON, MACHINED PER AMS 3660 [1] COLOR: WHITE

EXAMPLE OF PART CALLOUT:

1" DIA. REINFORCED ALUM. CLAMP, W/ WEDGED ANTI-SLIP TEFLON



NOTES:



- [1] FOR ANTI-SLIP APPLICATIONS COLOR WILL BE LIGHT TO DARK BROWN.
- [2] SEE SHEET 2 OF 2 FOR CLAMP DIMENSIONS.
- [3] REINFORCED CORNERS & BEADED JOGGLE PER DS1010 WHEN SPECIFIED.
- [4] LIGHT CAUSTIC ETCH TO CLEAN AS NEEDED.
- 5) CLAMP SIZES IN ACCORDANCE WITH MS21919.
- 6) CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.
- 7) INSPECT PER MIL-C-8603 CLOSURE TEST.

SHEET 1 OF 2

REFERENCES:							
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	$\pm 5^\circ$	UMPCO . INC. 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846			
	DECIMAL:	.XX	$\pm .03$				FSCM/CAGE CODE No. 18076
GENERAL MACHINE FINISHES EXCEPT AS NOTED: INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M	<small>PROPRIETARY AND CONFIDENTIAL</small> <small>THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.</small>			KEL	KEL	LJS	
	REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	ACT. WGHT.	-	06/12/58	06/12/58	04/21/99	
	CALC. WGHT.	-	DRAWN			CHECKED	ENGR
			CLAMP, LOOP-CUSHIONED			SCALE: NONE	
			PART AND/OR ASSEMBLY DESCRIPTION			<div style="font-size: 2em; font-weight: bold; text-align: center;">S169</div>	
						PRINT NUMBER	

DASH NUMBER	DIMENSIONS										REV.	CHANGE	DATE	BY	CHK'D	APPR		
	"D" DIA. ±.015	"E" DIM.		"G" GAP	"R" RADIUS ±.016	"T" THICKNESS		"W" WIDTH		"X" DIM.								
		ALUM. ALLOY	STEEL			ALUM. ALLOY	STEEL	ALUM. ALLOY	STEEL	ALUM. ALLOY							STEEL	
-2	.125	.457	.457	.062	.062	.032	.375	.188	.125	.031	.000	.125	.062	.040	.500	.500	.218	.218
-3	.188	.498	.498															
-4	.250	.529	.529															
-5	.313	.560	.560															
-6	.375	.592	.592															
-7	.438	.623	.623															
-8	.500	.654	.654															
-9	.563	.752	.749															
-10	.625	.783	.780	.109	.050	.032	.500	.218	.125	.031	.000	.125	.062	.040	.500	.500	.218	.218
-11	.688	.814	.811															
-12	.750	.845	.842															
-13	.813	.877	.858															
-14	.875	.908	.889															
-15	.938	.939	.920															
-16	1.000	.970	.951															
-17	1.063	1.002	.983															
-18	1.125	1.062	1.030	.094	.125	.062	.500	.218	.125	.031	.000	.125	.062	.040	.500	.500	.218	.218
-19	1.188	1.093	1.061															
-20	1.250	1.124	1.092															
-21	1.313	1.156	1.124															
-22	1.375	1.187	1.155															
-23	1.438	1.218	1.186															
-24	1.500	1.249	1.217															
-25	1.563	1.281	1.259															
-26	1.625	1.312	1.280															
-27	1.688	1.344	1.312															
-28	1.750	1.374	1.342															
-29	1.813	1.406	1.374															
-30	1.875	1.437	1.405															
-31	1.938	1.468	1.444	.062	.032	.375	.188	.125	.031	.000	.125	.062	.040	.500	.500	.218	.218	
-32	2.000	1.499	1.475															
-33	2.062	1.531	1.507															
-34	2.125	1.562	1.538															
-35	2.188	1.594	1.570															
-36	2.250	1.624	1.600															
-37	2.313	1.655	1.631															
-38	2.375	1.687	1.663															
-40	2.500	1.752	1.728															
-42	2.625	1.812	1.788															
-43	2.688	1.844	1.820															
-44	2.750	1.875	1.851															
-45	2.813	1.906	1.882															
-46	2.875	1.937	1.913															
-48	3.000	2.000	1.976															
-50	3.125	2.062	2.038															
-52	3.250	2.125	2.101															
-54	3.375	2.187	2.163															
-56	3.500	2.250	2.226															
-58	3.625	2.312	2.288															
-64	4.000	2.500	2.476															
-66	4.125	2.562	2.538															

S169

REFERENCES:			
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR: X ± 5° DECIMAL: .XX ± .03 .XXX ± .015	 UMPCO . INC. 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846	FSCM/CAGE CODE No. 18076
GENERAL MACHINE FINISHES EXCEPT AS NOTED:  INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M	<small>PROPRIETARY AND CONFIDENTIAL</small> <small>THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.</small>		KEL KEL LJS 06/12/58 06/12/58 04/21/99 DRAWN CHECKED ENGR
REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	ACT. WGHT. - CALC. WGHT. -		CLAMP, LOOP-CUSHIONED PART AND/OR ASSEMBLY DESCRIPTION

DASH NO. RANGE	"D" DIA. RANGE	"E" DIMENSION	"G" GAP	"T" GAUGE
T[]2 THRU T[]20	1/8" TO 1-1/4"	"D"/2 + .312	.06	.020
-2 THRU -20		"D"/2 + .322		.031
-21 THRU -32	1-5/16" TO 2"		.12	

MATERIAL & FINISH CODES:

METAL: "NO CODE" 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
 FINISH: ZINC PLATE GOLD PER ASTM B 633, Fe/Zn 8, TY. II 1

"D" 2024-T42 ALUMINUM CLAD PER AMS-QQ-A-250/5
 FINISH: NONE

"DC" 2024-T42 ALUMINUM CLAD PER AMS-QQ-A-250/5
 FINISH: CHEMICAL FILM GOLD PER MIL-DTL-5541, TY. I, CL. 1A

"DZ" 2024-T42 ALUMINUM CLAD PER AMS-QQ-A-250/5
 FINISH: ANODIZE CLEAR PER MIL-A-8625, TY. II, CL. 1

"SS" 302/321 STAINLESS STEEL PER AMS 5516/AMS 5510
 FINISH: NONE

CUSHION: "A" GENERAL PURPOSE EPDM PER SAE J200 M3 BA 710 C12
 COLOR: BLACK

"G" GENERAL PURPOSE NEOPRENE PER AMS 3209
 COLOR: BLACK 2

"H" GENERAL PURPOSE SILICONE PER AMS 3303 WITH 100 PSI MIN. TEAR
 COLOR: RED/ORANGE

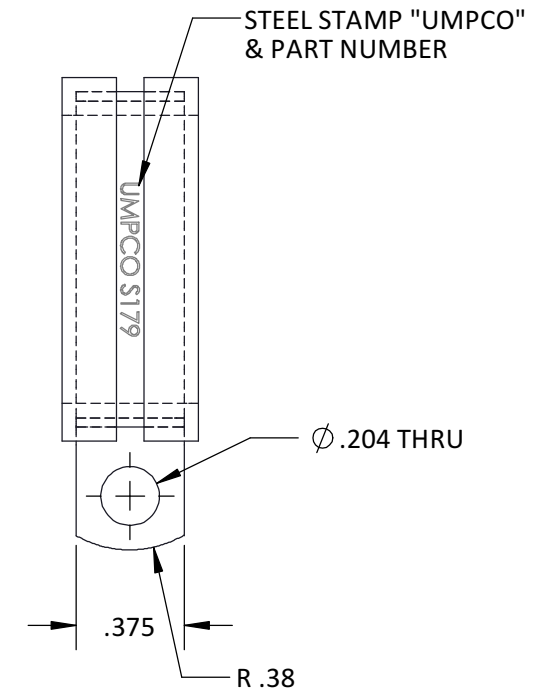
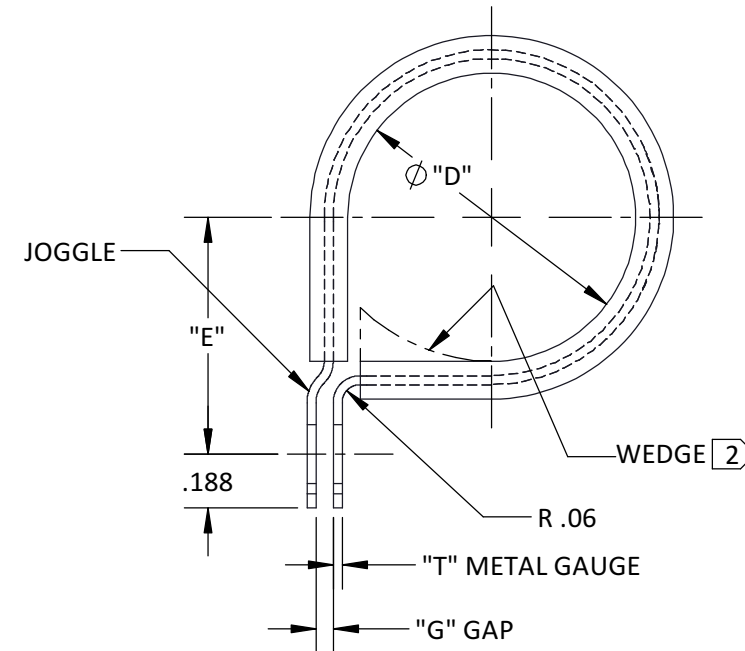
"HL" SILICONE PER AMS 3303 & MIL-C-8603 WITH 100 PSI MIN. TEAR
 COLOR: NATURAL WHITE

"T" TEFLON SKIVED PER AMS 3652
 COLOR: WHITE

"X" TEFLON ANTI-SLIP PER AMS 3652 & AMS 2491
 COLOR: BROWN



S179



EXAMPLE OF PART CALLOUT:

1" DIA., .020 THK., ALUM. CLAMP W/WEDGED ANTI-SLIP TEFLON

S179 T W D X 16

- DIA. "D" IN 1/16th INCREMENTS
- CUSHION CODE
- METAL CODE (OMIT FOR "NO CODE")
- WEDGE CODE (OMIT IF NOT DESIRED)
- REDUCED METAL (OMIT IF NOT DESIRED)
- BASIC DRAWING NUMBER

NOTES:

- 1 OPTIONAL FINISH: CADMIUM PLATE GOLD PER AMS-QQ-P-416, TY. II, CL. 2
- 2 CUSHION "G" W/WEDGE, WILL BE BLACK W/BLUE LINE IDENTIFIER.
- 3) LOCKHEED APPLICATIONS ARE SILICONE ONLY AND MUST USE INTEGRAL MOLDED CUSHION, COLOR: WHITE
- 4) CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.
- 5) INSPECT PER MIL-C-8603 CLOSURE TEST.

SHEET 1 OF 1

REFERENCES:							
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	± 5°	UMPCO . INC. 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846		FSCM/CAGE CODE No. 18076	
	DECIMAL:	.XX	± .03			SCT	KEL
GENERAL MACHINE FINISHES EXCEPT AS NOTED:	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.			09/02/87		09/03/87	
	INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M			04/21/99		ENGR	
REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	ACT. WGHT.	-		DRAWN		CHECKED	
	CALC. WGHT.	-		ENGR		SCALE: NONE	
				CLAMP, LOOP-CUSHIONED, COMMERCIAL, #10 MOUNTING SCREW		SIZE B	
				PART AND/OR ASSEMBLY DESCRIPTION		PRINT NUMBER S179	

DASH NO. RANGE	"D" DIA. RANGE	"E" DIMENSION	"R" RADIUS	"T" GAUGE
-4 THRU -16	1/4" TO 1"	"D"/2 + .514	.062	.031
-17 THRU -96	1-1/16" TO 6"	"D"/2 + .534	.109	.050

REV.	CHANGE	DATE	BY	CHK'D	APPR
P	SEE DRAWING CHANGE RECORD ON FILE.	09/25/13	HAD	KWE	HAD

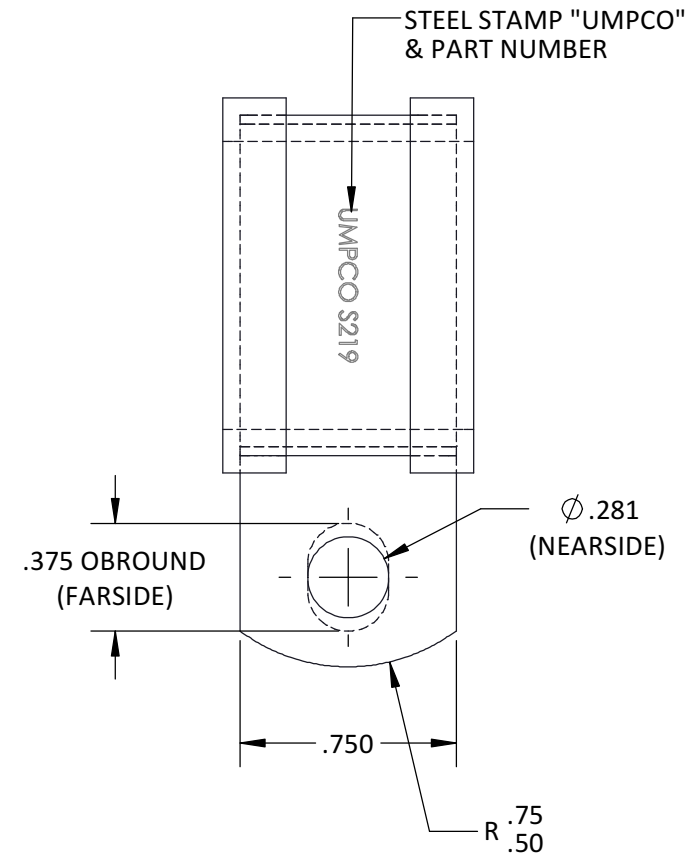
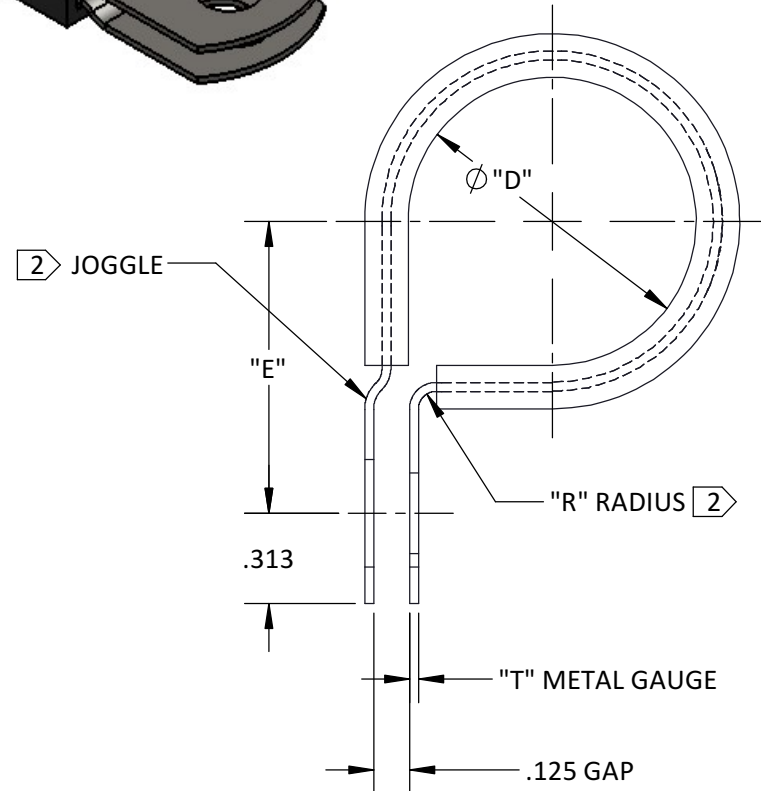
MATERIAL & FINISH CODES:

METAL: "NO CODE" 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
 FINISH: ZINC PLATE BRIGHT PER ASTM B 633, Fe/Zn 8, TY. III ①
 "P" 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
 FINISH: ZINC PLATE GOLD PLUS SEALER PER ASTM B 633, Fe/Zn 13, TY. II
 "D" 2024-T42 ALUMINUM ALLOY PER AMS-QQ-A-250/5
 FINISH: NONE
 "SS" 304/321 STAINLESS STEEL PER AMS 5513/AMS 5510
 FINISH: NONE

CUSHION: "G" GENERAL PURPOSE EPDM PER SAE J200 M3 BA 710 C12
 COLOR: BLACK
 "H" GENERAL PURPOSE SILICONE PER AMS 3303 WITH 100 PSI MIN. TEAR
 COLOR: RED/ORANGE
 "N" GENERAL PURPOSE NEOPRENE PER AMS 3209
 COLOR: BLACK
 "T" TEFLON SKIVED PER AMS 3652
 COLOR: WHITE

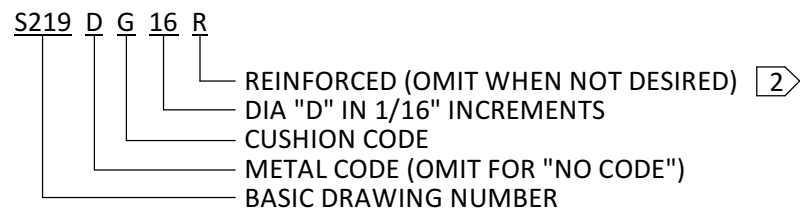


S219



EXAMPLE OF PART CALLOUT:

1" DIA. REINFORCED ALUM. CLAMP W/EPDM CUSHION



SHEET 1 OF 1

NOTES:

- ① OPTIONAL FINISH: CADMIUM PLATE BRIGHT PER AMS-QQ-P-416, TY. 1, CL. 2
- ② REINFORCED CORNERS AND BEADED JOGGLE PER DS1010 WHEN SPECIFIED.
- 3) CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.
- 4) INSPECT PER MIL-C-8603 CLOSURE TEST.

REFERENCES:							
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	± 5°	 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846		FSCM/CAGE CODE No. 18076	
	DECIMAL:	.XX	± .03			KEL	KEL
		.XXX	± .015			03/06/78	03/06/78
GENERAL MACHINE FINISHES EXCEPT AS NOTED:	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.			CLAMP, LOOP-CUSHIONED		SIZE	SCALE: NONE
REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	ACT. WGHT.	-		PART AND/OR ASSEMBLY DESCRIPTION	B	S219	
	CALC. WGHT.	-				PRINT NUMBER	

DASH NO. RANGE	"D" DIA. RANGE	"E" DIMENSION		"G" GAP	"R" RADIUS	"T" GAUGE		"W" WIDTH		"X" DIMENSION	
		ALUM.	STEEL			ALUM.	STEEL	ALUM.	STEEL	ALUM.	STEEL
		-2	1/8"			"D"/2 + .395	"D"/2 + .395	.078 .062	.062	.032	.375
-3 THRU -8	3/16" TO 1/2"	"D"/2 + .404	"D"/2 + .404								
-9 THRU -12	9/16" TO 3/4"	"D"/2 + .470	"D"/2 + .468	.109	.050	.032	.500	.500	.218	.218	
-13 THRU -17	13/16" TO 1-1/16"		"D"/2 + .452								
-18 THRU -30	1-1/8" TO 1-7/8"	"D"/2 + .500	"D"/2 + .468	.109	.125	.062	.040				
-31 THRU -66	1-15/16" TO 4-1/8"		"D"/2 + .476								.140

S225



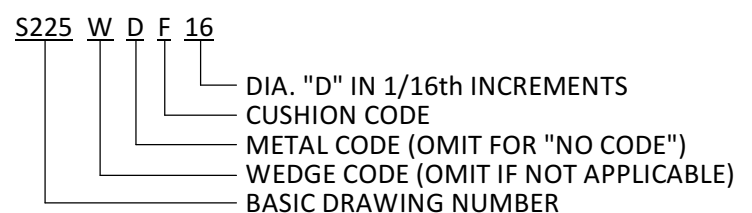
MATERIAL & FINISH CODES:

METAL: "NO CODE" 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
 FINISH: CAD PLATE BRIGHT PER AMS-QQ-P-416, TY. I, CL. 2 1
 "D" 2024-T42 ALUMINUM CLAD PER AMS-QQ-A-250/5
 "DK" 5052-H32 1/4 HARD ALUMINUM CLAD PER AMS-QQ-A-250/8
 FINISH: NONE
 "C" 321 STAINLESS STEEL PER AMS 5510
 "SS" 302/304 STAINLESS STEEL PER AMS 5516/AMS 5513
 FINISH: BALL BURNISH & PASSIVATE
 PER ASTM A 967 & AMS 2700, METHOD 1, TY. 6

CUSHION: "E" GENERAL PURPOSE EPDM PER SAE J200 M3 BA 710 C12 (WEDGE NOT AVAILABLE)
 COLOR: BLACK
 "F" NITRILE BUTADIENE PER AMS 3215 (WEDGE ONLY)
 COLOR: YELLOW
 "G" GENERAL PURPOSE NEOPRENE PER AMS 3209
 COLOR: BLACK
 "H" GENERAL PURPOSE SILICONE PER AMS 3303 WITH 100 PSI MIN. TEAR (WEDGE NOT AVAILABLE)
 COLOR: RED/ORANGE
 "J" FLUROSILICONE PER MIL-R-25988, TY. II, CL. 1, GRADE 60
 COLOR: SOLID BLUE
 "EL" ETHYLENE PROPYLENE PER SAE J200 M3 BA 710 C12
 COLOR: WHITE
 "JS" FLUROSILICONE PER MIL-R-25988, TY. II, CL. 2, GRADE 50
 COLOR: SOLID BLUE

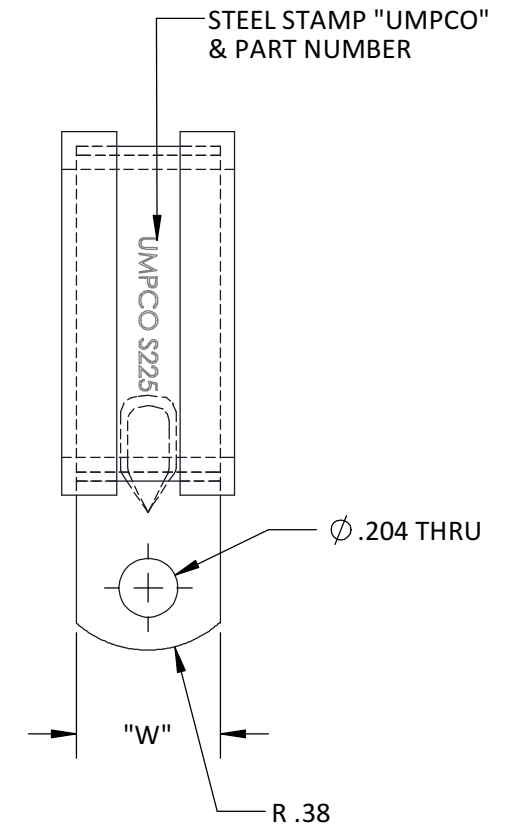
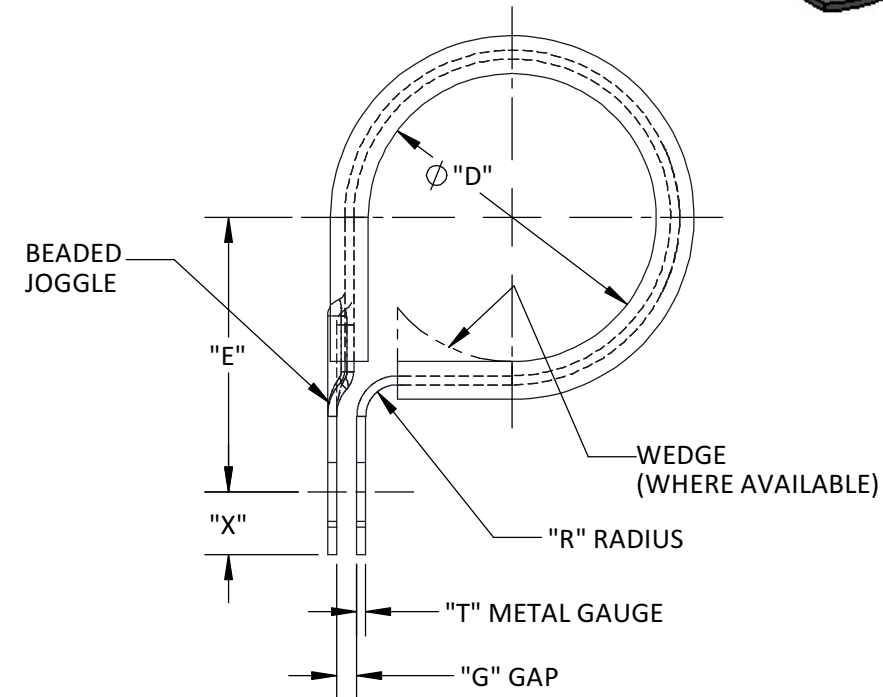
EXAMPLE OF PART CALLOUT:

1" DIA. ALUM. CLAMP W/WEDGED NITRILE CUSHION



NOTES:

- 1) OPTIONAL FINISH: HEXAVALENT ZINC PLATE BRIGHT PER ASTM B 633, Fe/Zn 13, TY. III
- 2) REF: MS21919 REV. "E" (F,G,H,DF,DG,DH,DJ,CF,CG,CH, SERIES; WEDGE AVAILABLE IF REQUIRED). MIL-C-8603 "NC" & AMENDMENT 1.
- 3) CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.
- 4) INSPECT PER MIL-C-8603 CLOSURE TEST.



SHEET 1 OF 1

REFERENCES:							
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	± 5°	UMPCO . INC. 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846		FSCM/CAGE CODE No. 18076	
	DECIMAL:	.XX	± .03			KEL	KEL
GENERAL MACHINE FINISHES EXCEPT AS NOTED:	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.			12/20/82		12/20/82	
	INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M			04/21/99		ENGR	
REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	ACT. WGHT.	-		CLAMP, LOOP-CUSHIONED, #8 OR #10 MOUNTING SCREW		SCALE: NONE	
	CALC. WGHT.	-		PART AND/OR ASSEMBLY DESCRIPTION		PRINT NUMBER	

B

S225

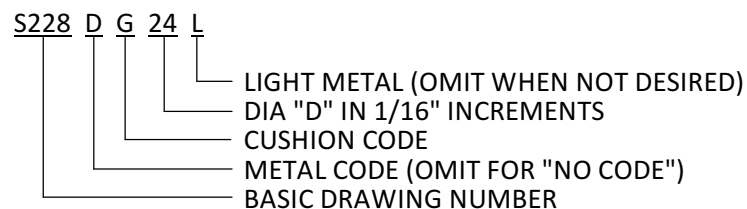
DASH NO. RANGE	"D" DIA. RANGE	"E" DIMENSION	"R" RADIUS	"T" GAUGE
-4 THRU -16	1/4" TO 1"	"D"/2 + .514	.06	.030
-17 THRU -96	1-1/16" TO 6"	"D"/2 + .534	.11	.050
-17L THRU -96L		"D"/2 + .514	.06	.030

MATERIAL & FINISH CODES:

METAL:	"NO CODE"	1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
	"D"	2024-T42 ALUMINUM PER AMS-QQ-A-250/5 FINISH: ZINC PLATE GOLD PER ASTM B 633, Fe/Zn 13, TY. II ①
	"DK"	5052-H32 1/4 HARD ALUMINUM PER AMS-QQ-A-250/8 FINISH: NONE ②
	"DL"	6061-T6 ALUMINUM PER AMS-QQ-A-250/11 FINISH: NONE ②
	"SS"	304/321 STAINLESS STEEL PER AMS 5513/AMS 5510 FINISH: NONE
CUSHION:	"G"	GENERAL PURPOSE EPDM PER SAE J200 M3 BA 710 C12 COLOR : BLACK
	"H"	GENERAL PURPOSE SILICONE PER AMS 3303 WITH 100 PSI MIN. TEAR COLOR: RED/ORANGE
	"N"	GENERAL PURPOSE NEOPRENE PER AMS 3209 COLOR: BLACK
	"T"	TEFLON SKIVED PER AMS 3652 COLOR: WHITE

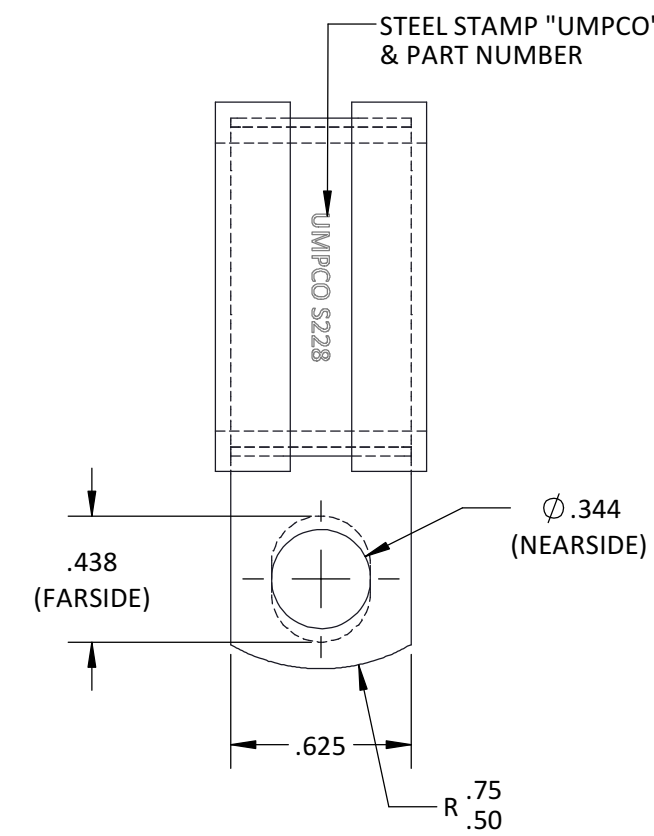
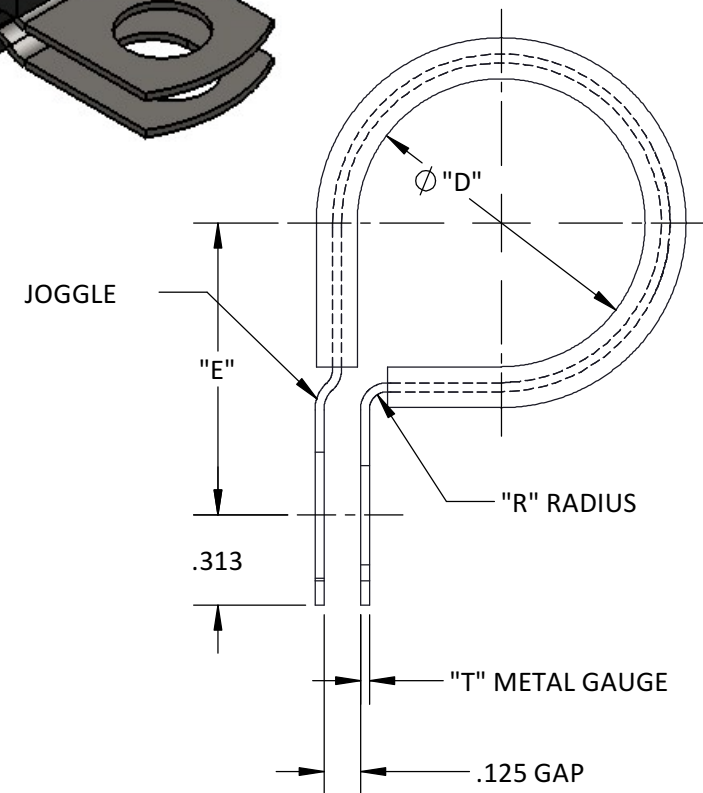
EXAMPLE OF PART CALLOUT:

1.5" DIA., .03 THK., ALUM. CLAMP W/EPDM CUSHION



NOTES:

- ① OPTIONAL FINISH: CADMIUM PLATE GOLD PER AMS-QQ-P-416, TY. II, CL. 2
- ② CAUSTIC ETCH TO CLEAN AS NEEDED
- 3) CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.
- 4) INSPECT PER MIL-C-8603 CLOSURE TEST.



S228

REV.	CHANGE	DATE	BY	CHK'D	APPR
M	SEE DRAWING CHANGE RECORD ON FILE.	09/25/13	HAD	KWE	HAD

REFERENCES:						
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	± 5°	UMPCO . INC. 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846		
	DECIMAL:	.XX	± .03			
GENERAL MACHINE FINISHES EXCEPT AS NOTED:	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.			FSCM/CAGE CODE No. 18076		
	INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M			KEL	KEL	SMJ
REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	ACT. WGHT.	-		11/05/76	11/05/76	04/21/99
	CALC. WGHT.	-		DRAWN	CHECKED	ENGR
PART AND/OR ASSEMBLY DESCRIPTION				SCALE: NONE		
CLAMP, LOOP-CUSHIONED, 5/16" MOUNTING HOLE				SIZE B		
				PRINT NUMBER S228		

DASH NO. RANGE	"D" DIA. RANGE	"E" DIMENSION	"R" RADIUS	"T" GAUGE
-2 THRU -16	1/8" TO 1"	"D"/2 + .514	.06	.031
-17 THRU -64	1-1/16" TO 4"	"D"/2 + .534	.11	.050

MATERIAL & FINISH CODES:

METAL:	"NO CODE"	1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698 FINISH: ZINC PLATE BRIGHT PER ASTM B 633, Fe/Zn 8, TY. III ①
	"D"	2024-T42 ALUMINUM ALLOY PER AMS-QQ-A-250/5 FINISH: NONE
	"DC"	2024-T42 ALUMINUM ALLOY PER AMS-QQ-A-250/5 FINISH: CHEMICAL FILM GOLD PER MIL-DTL-5541, TY. 1, CL. 1A
	"C"	304 STAINLESS STEEL PER AMS 5513
	"LC"	316 STAINLESS STEEL PER AMS 5524
	"SS"	321 STAINLESS STEEL PER AMS 5510 FINISH: PASSIVATE PER AMS 2700, METHOD 1, TY. 6, CL. 1
CUSHION:	"F"	NITRILE BUTADIENE PER MIL-C-85052/1 COLOR: YELLOW, SHAPES: A, WEDGE AVAILABLE
	"G"	GENERAL PURPOSE EPDM PER SAE J200 M3 BA 710 C12 COLOR: BLACK, SHAPES: A & B
	"H"	GENERAL PURPOSE SILICONE PER AMS 3303 WITH 100 PSI MIN. TEAR COLOR: RED/ORANGE, SHAPES: A & B
	"HL"	GENERAL PURPOSE SILICONE PER AMS 3303 & MIL-C-8603 WITH 100 PSI MIN. TEAR COLOR: NATURAL WHITE, SHAPES: A, WEDGE AVAILABLE
	"J"	FLUROSILICONE PER MIL-R-25988, TY. II, CL. 1, GRADE 60 COLOR: SOLID BLUE, SHAPES: A & B, WEDGE AVAILABLE
	"N"	GENERAL PURPOSE NEOPRENE PER AMS 3209 COLOR: BLACK, SHAPES: A & B, WEDGE AVAILABLE
	"P"	PTFE IMPREGNATED PBI POLYIMIDE - GLASS BLEND FABRIC PER BPS-C-155 & AMS 3677 COLOR: BROWN, SHAPES: A
	"T"	TEFLON SKIVED PER AMS 3652 COLOR: WHITE, SHAPES: A, WEDGE AVAILABLE
	"X"	TEFLON ANTI-SLIP PER AMS 3652 FINISH: SODIUM TREAT PER AMS 2491 COLOR: BROWN, SHAPES: A, WEDGE AVAILABLE

EXAMPLE OF PART CALLOUT:

ANODIZED 1" DIA., REINFORCED ALUM. CLAMP W/WEDGED TEFLON

S230 W D B T R 16 Z

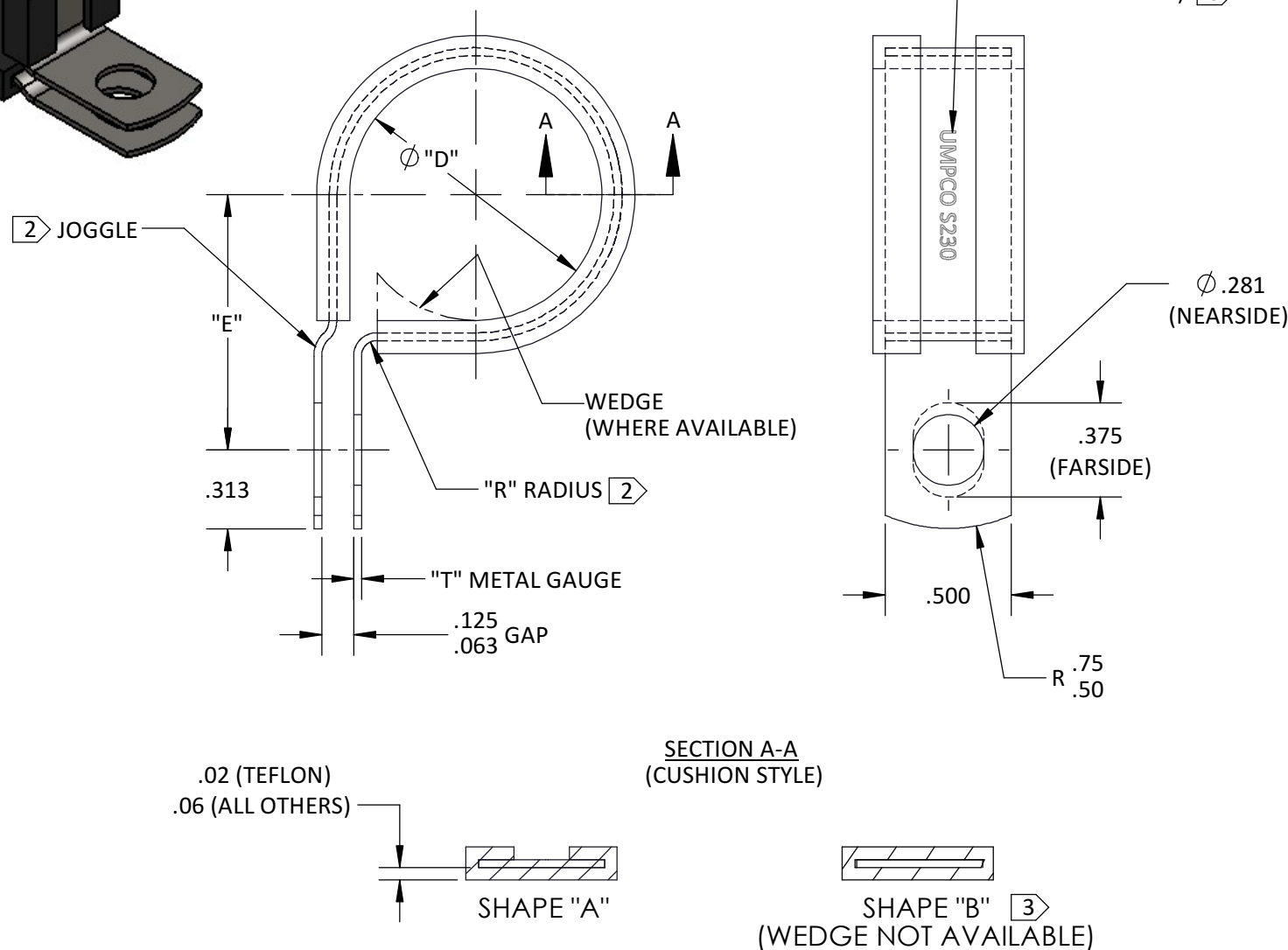
- ANODIZE CLEAR PER MIL-A-8625, TY. II, CL. 1 (OMIT WHEN NOT APPLICABLE)
- DIA "D" IN 1/16" INCREMENTS
- RECTANGULAR CUSHION (OMIT WHEN NOT APPLICABLE)
- CUSHION CODE
- REINFORCED (OMIT WHEN NOT DESIRED) ②
- METAL CODE (OMIT FOR "NO CODE")
- WEDGE CODE (OMIT WHEN NOT APPLICABLE)
- BASIC DRAWING NUMBER

NOTES:

- ① OPTIONAL FINISH: CADMIUM PLATE BRIGHT PER AMS-QQ-P-416, TY. I, CL. 2
- ② REINFORCED CORNERS AND BEADED JOGGLE PER DS1010 WHEN SPECIFIED.
- ③ FOR SHAPE (B) STYLE CUSHIONS (BOX), PARTS SHALL BE PACKAGE IDENTIFIED IN MULTIPLES OF 10, NOT TO EXCEED 100.
- 4) CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.
- 5) INSPECT PER MIL-C-8603 CLOSURE TEST.



S230



REFERENCES:				
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	± 5°	
	DECIMAL:	.XX	± .03	
GENERAL MACHINE FINISHES EXCEPT AS NOTED:		.XXX	± .015	
	✓	INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M		
REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	ACT. WGHT.	-		
	CALC. WGHT.	-		
CLAMP, LOOP, SUPPORT, CUSHIONED, 1/4" MOUNTING HOLE		SIZE	SCALE: NONE	
PART AND/OR ASSEMBLY DESCRIPTION		B	S230	
		PRINT NUMBER		



FSCM/CAGE CODE No. 18076		
KEL	KEL	EHK
03/01/65	03/01/65	03/01/65
DRAWN	CHECKED	ENGR

DASH NO. RANGE	"D" DIA. RANGE	"E" DIMENSION	"R" RADIUS	"T" GAUGE
-2 THRU -4	1/8" TO 1/4"	"D"/2 + .422	.06	.032
-5 THRU -8	5/16" TO 1/2"			.040
-9 THRU -11	9/16" TO 11/16"	"D"/2 + .406	.11	.050
-12 THRU -16	3/4" TO 1"			.062
-17 THRU -96	1-1/16" TO 6"	"D"/2 + .409	.12	.062

MATERIAL & FINISH CODES:

METAL: "NO CODE" 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
 FINISH: ZINC PLATE GOLD PER ASTM B 633, Fe/Zn 8, TY. II 1
 "S" 4130 ALLOY (CMS) STEEL PER MIL-S-18729 & AMS 6350
 FINISH: CADMIUM PLATE BRIGHT PER AMS-QQ-P-416, TY. I, CL. 2
 "SS" 304/321 STAINLESS STEEL PER AMS 5513/AMS 5510
 FINISH: NONE
 "D" 2024-T42 ALUMINUM CLAD PER AMS-QQ-A-250/5
 "DK" 5052-H32 1/4 HARD ALUMINUM CLAD PER AMS-QQ-A-250/8
 FINISH: NONE

CUSHION: "NO CODE" GENERAL PURPOSE NEOPRENE PER AMS 3209 2
 COLOR: BLACK
 "G" GENERAL PURPOSE EPDM PER SAE J200 M3 BA 710 C12
 COLOR: BLACK, (WEDGE NOT AVAILABLE)
 "H" GENERAL PURPOSE SILICONE PER AMS 3303 WITH 100 PSI MIN. TEAR
 COLOR: RED/ORANGE, (WEDGE NOT AVAILABLE)
 "HL" GENERAL PURPOSE SILICONE PER AMS 3303 & MIL-C-8603 WITH 100 PSI MIN. TEAR
 COLOR: NATURAL WHITE
 "HS" GLASS FABRIC REINFORCED SILICONE PER AMS 3303
 COLOR: RED/ORANGE

EXAMPLE OF PART CALLOUT:

1" DIA. CLAMP, 2024-T42 ALUM., W/WEDGED WHITE SILICONE

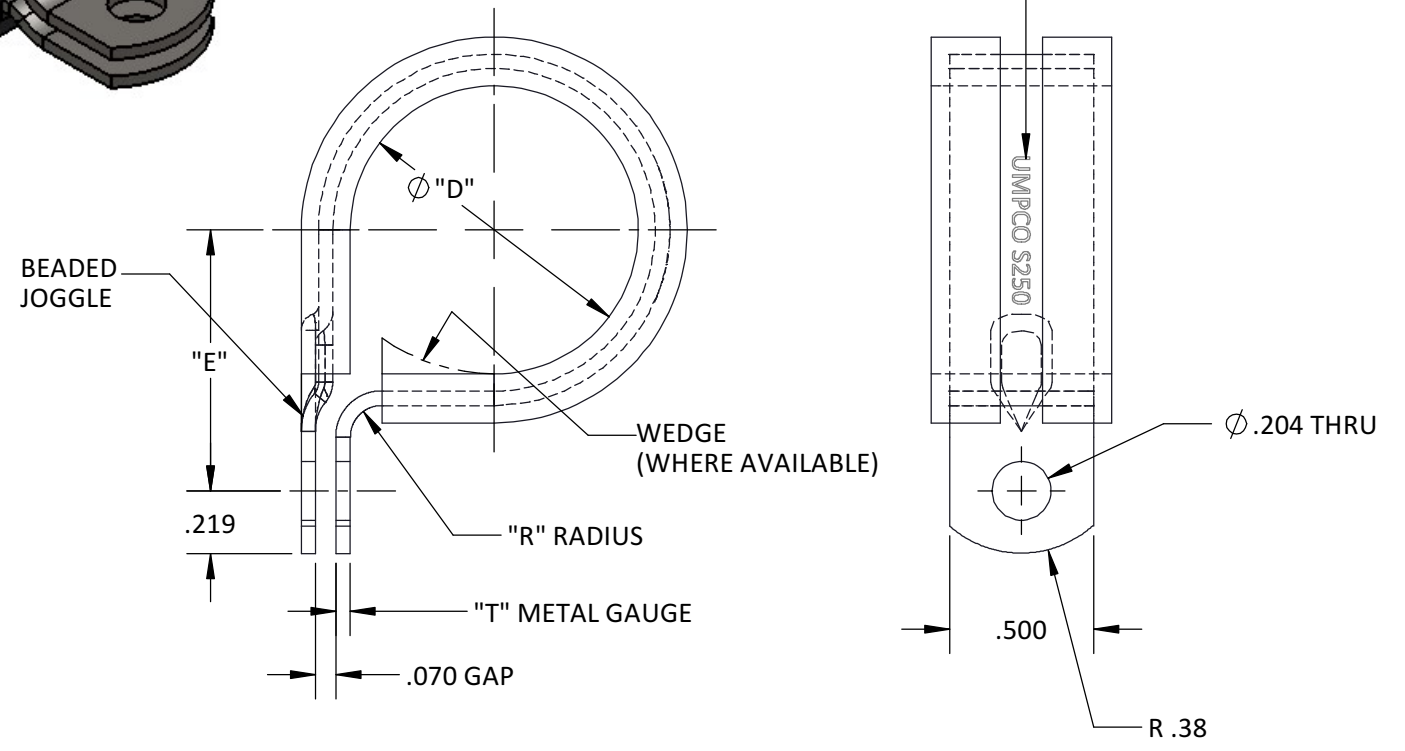
S250 W D HL 16
 DIA "D" IN 1/16" INCREMENTS
 CUSHION CODE 2
 METAL CODE (OMIT FOR "NO CODE")
 WEDGE CODE (OMIT WHEN NOT APPLICABLE)
 BASIC PART NUMBER

NOTES:

- 1 OPTIONAL FINISH: CADMIUM PLATE GOLD PER AMS-QQ-P-416, TY. II, CL. 2
- 2 USE A (-) FOR "NO CODE" CUSHION WHEN USED WITH "NO CODE" METAL.
- 3) CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.
- 4) INSPECT PER MIL-C-8603 CLOSURE TEST.



S250



STEEL STAMP "UMPCO" & PART NUMBER

SHEET 1 OF 1

REFERENCES:							
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	± 5°	UMPCO . INC. 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846		FSCM/CAGE CODE No. 18076	
	DECIMAL:	.XX	± .03			KEL	KEL
GENERAL MACHINE FINISHES EXCEPT AS NOTED:	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.			03/10/82		03/10/82	
	INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M			04/21/99		ENGR	
REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	ACT. WGHT.	-		CLAMP, LOOP-CUSHIONED, #10 MOUNTING SCREW		SIZE	SCALE: NONE
	CALC. WGHT.	-		PART AND/OR ASSEMBLY DESCRIPTION		B	S250
						PRINT NUMBER	

DASH NO. RANGE	"D" DIA. RANGE	"E" DIMENSION		"G" GAP	"R" RADIUS	"T" GAUGE	
		ALUMINUM	STEEL			ALUM.	STEEL
-2	1/8"	"D"/2 + .395	"D"/2 + .395	.062/.078	.062	.032	.032
-3 THRU -8	3/16" TO 1/2"	"D"/2 + .405	"D"/2 + .405				
-9 THRU -12	9/16" TO 3/4"	"D"/2 + .471	"D"/2 + .468	.109	.050		
-13 THRU -17	13/16" TO 1-1/16"		"D"/2 + .452				
-18 THRU -30	1-1/8" TO 1-7/8"	"D"/2 + .500	"D"/2 + .468	.094/.125	.125	.062	
-31 THRU -96	1-15/16" TO 6"		"D"/2 + .476				.125/.156

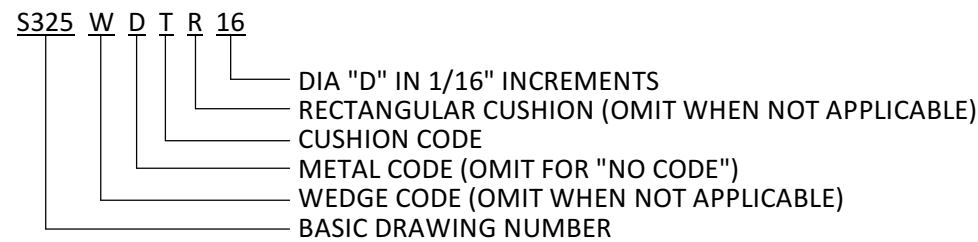
MATERIAL & FINISH CODES:

METAL: "NO CODE" 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
 FINISH: ZINC PLATE BRIGHT PER ASTM B 633, Fe/Zn 13, TY. III ①
 "D" 2024-T42 ALUMINUM ALLOY PER AMS-QQ-A-250/5
 "DK" 5052-H32 1/4 HARD ALUMINUM ALLOY PER AMS-QQ-A-250/8 ③
 "DL" 6061-T6 ALUMINUM ALLOY PER AMS-QQ-A-250/11
 FINISH: NONE
 "C" 316 STAINLESS STEEL PER AMS 5524
 "CV" 201 STAINLESS STEEL PER ASTM A 666
 "SS" 304/321 STAINLESS STEEL PER AMS 5513/AMS 5510
 "SV" 430 STAINLESS STEEL PER AMS 5503
 FINISH: NONE

CUSHION: "F" NITRILE BUTADIENE PER AMS 3215
 COLOR: YELLOW, SHAPES: A, WEDGE AVAILABLE
 "G" GENERAL PURPOSE EPDM PER SAE J200 M3 BA 710 C12
 COLOR: BLACK, SHAPES: A & B
 "EL" ETHYLENE PROPYLENE PER SAE J200 M3 BA 710 C12
 COLOR: WHITE, SHAPES: A & B
 "H" GENERAL PURPOSE SILICONE PER AMS 3303
 WITH 100 PSI MIN. TEAR
 COLOR: RED/ORANGE, SHAPES: A & B
 "HL" GENERAL PURPOSE SILICONE PER AMS 3303 & MIL-C-8603
 WITH 100 PSI MIN. TEAR
 COLOR: NATURAL WHITE, SHAPES: A, WEDGE AVAILABLE

EXAMPLE OF PART CALLOUT:

1" DIA., ALUM. CLAMP W/WEDGED TEFLON

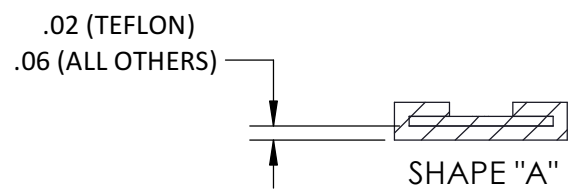
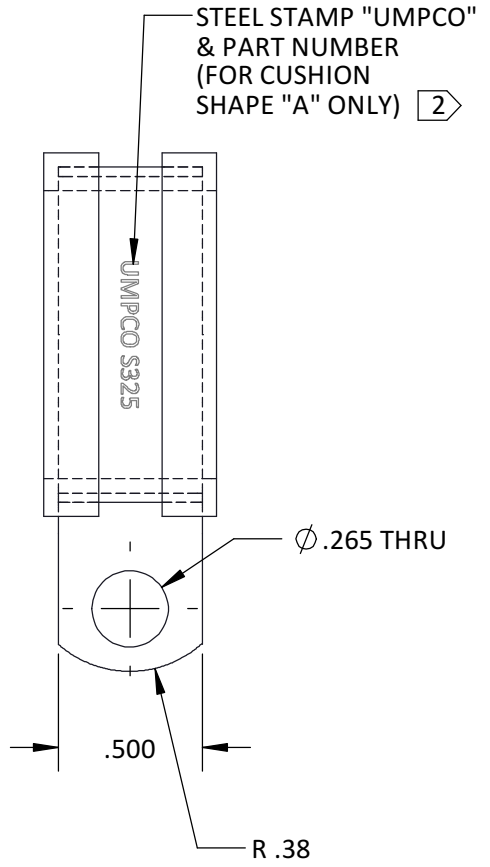
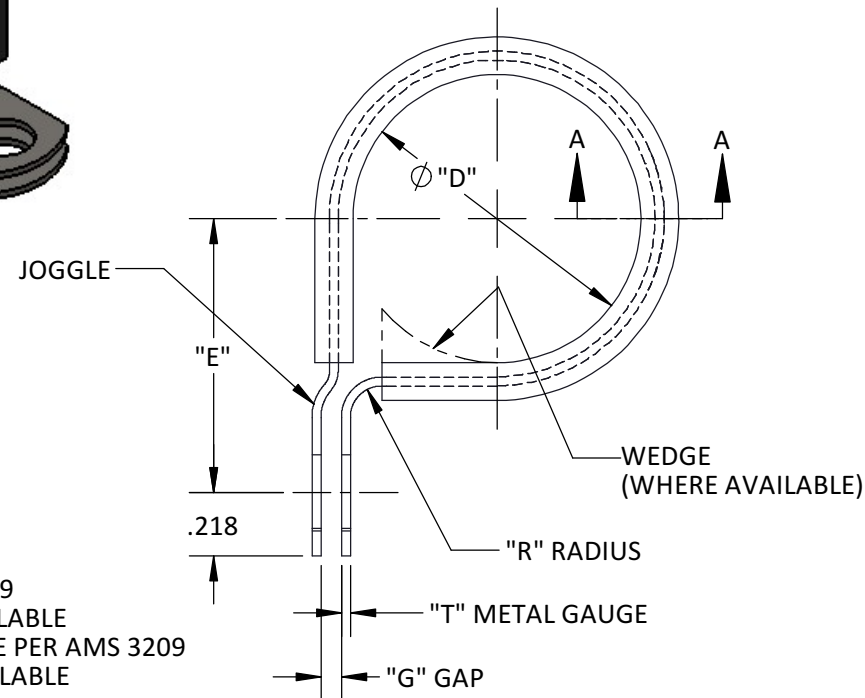


NOTES:

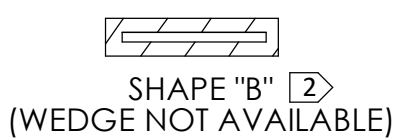
- ① OPTIONAL FINISH: CADMIUM PLATE BRIGHT PER AMS-QQ-P-416, TY. I, CL. 2
- ② FOR SHAPE (B) STYLE CUSHIONS (BOX), PARTS SHALL BE PACKAGE IDENTIFIED IN MULTIPLES OF 10, NOT TO EXCEED 100.
- ③ CAUSTIC ETCH TO CLEAN AS NEEDED.
- 4) CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.
- 5) INSPECT PER MIL-C-8603 CLOSURE TEST.



S325



SECTION A-A (CUSHION STYLE)



REFERENCES:								
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	± 5°			FSCM/CAGE CODE No. 18076		
	DECIMAL:	.XX	± .03			KEL	LJS	KWE
GENERAL MACHINE FINISHES EXCEPT AS NOTED:		.XXX	± .015	7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846		09/30/55	07/24/06	07/24/06
	INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.		CLAMP, LOOP, SUPPORT, CUSHIONED, 1/4" MOUNTING HOLE, LIGHT/MEDIUM DUTY		DRAWN	CHECKED	ENGR
REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	ACT. WGHT.	-		PART AND/OR ASSEMBLY DESCRIPTION	SIZE	SCALE: NONE		
	CALC. WGHT.	-			B	S325		
						PRINT NUMBER		

DASH NO. RANGE	"D" DIA. RANGE	"E" DIMENSION	"R" RADIUS	"G" GAP	"T" GAUGE
-4 THRU -6	1/4" TO 3/8"	"D"/2 + .623	.06	.06	.031
-7 THRU -16	7/16" TO 1"				
-17 THRU -96	1-1/16" TO 6"	"D"/2 + .643	.12	.12	.050

MATERIAL & FINISH CODES:

METAL: "NO CODE" 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
 FINISH: ZINC PLATE GOLD PER ASTM B 633, Fe/Zn 8, TY. II 1

"P" 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
 FINISH: ZINC PLATE GOLD PLUS SEALER PER ASTM B 633, Fe/Zn 13, TY. II

"D" 2024-T42 ALUMINUM ALLOY PER AMS-QQ-A-250/5
 FINISH: NONE

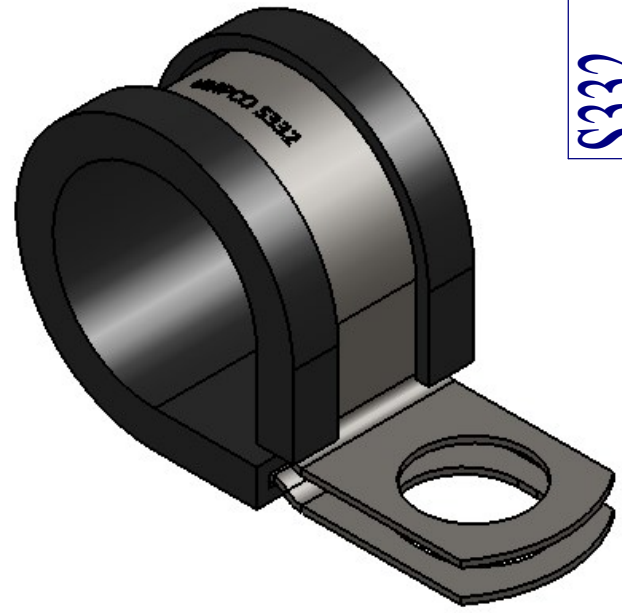
"SS" 304/321 STAINLESS STEEL PER AMS 5513/AMS 5510
 FINISH: NONE

CUSHION: "G" GENERAL PURPOSE EPDM PER SAE J200 M3 BA 710 C12
 COLOR: BLACK

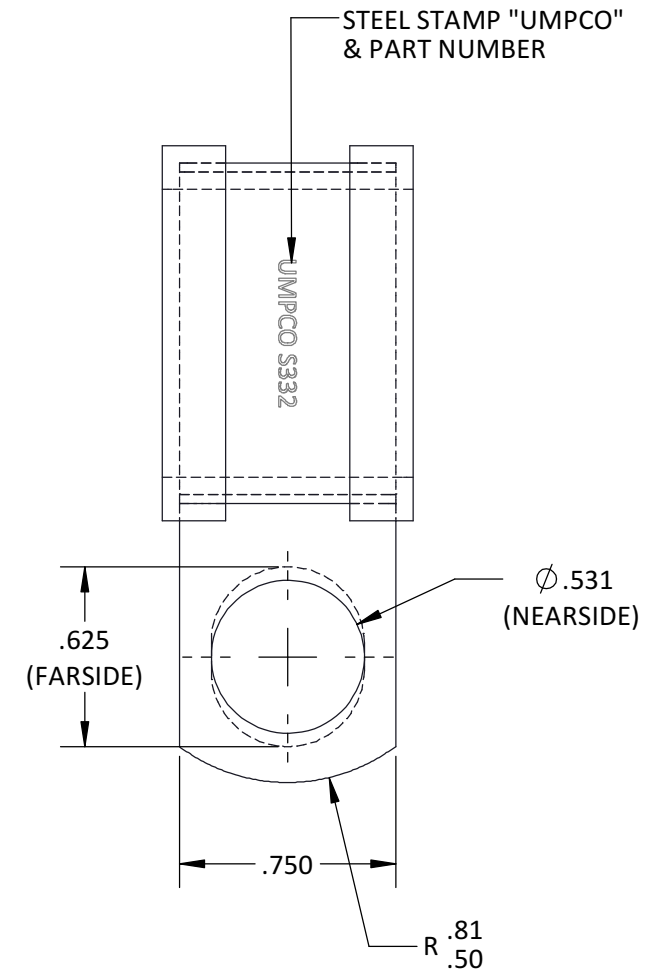
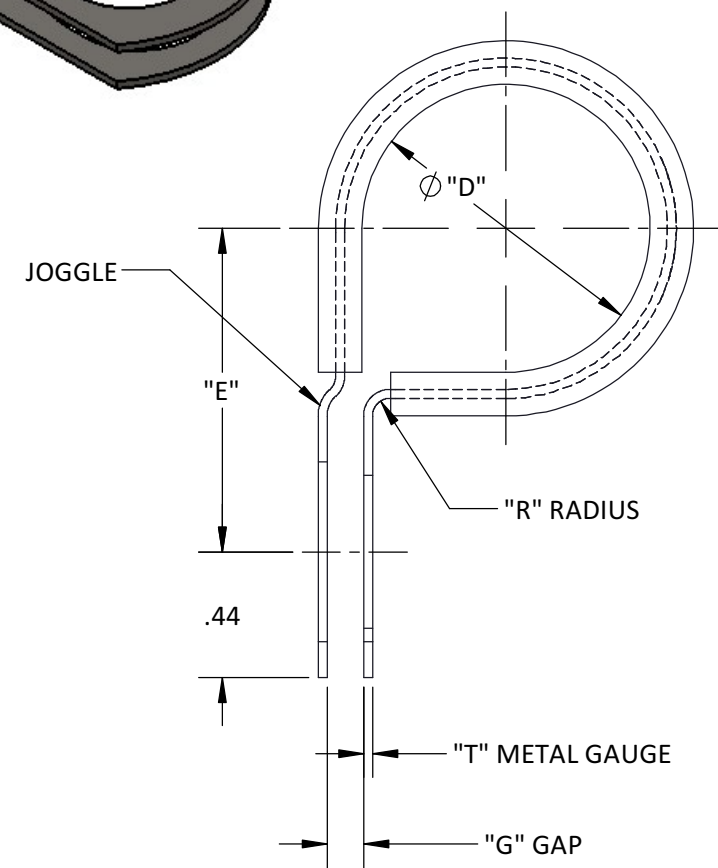
"H" GENERAL PURPOSE SILICONE PER AMS 3303 WITH 100 PSI MIN. TEAR
 COLOR: RED/ORANGE

"N" GENERAL PURPOSE NEOPRENE PER AMS 3209
 COLOR: BLACK

"T" TEFLON SKIVED PER AMS 3652
 COLOR: WHITE

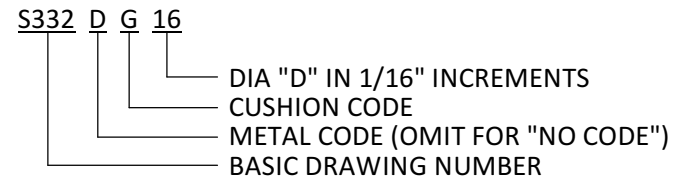


S332



EXAMPLE OF PART CALLOUT:

1" DIA. ALUM. CLAMP W/EPDM CUSHION



NOTES:

- 1 OPTIONAL FINISH: CADMIUM PLATE GOLD PER AMS-QQ-P-416, TY. II, CL. 2
- 2) CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.
- 3) INSPECT PER MIL-C-8603 CLOSURE TEST.

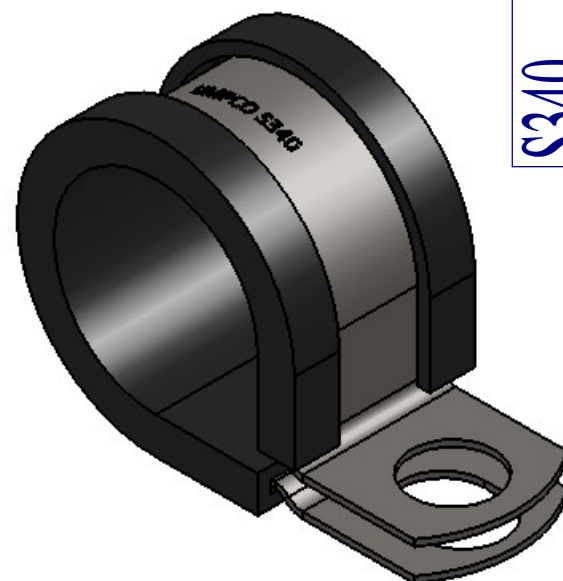
SHEET 1 OF 1

REFERENCES:							
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	± 5°	UMPCO . INC. 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846		FSCM/CAGE CODE No. 18076	
	DECIMAL:	.XX	± .03			KEL	KEL
GENERAL MACHINE FINISHES EXCEPT AS NOTED:	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.			11/01/76 11/01/76 04/22/99		11/01/76 11/01/76 04/22/99	
	INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M			DRAWN CHECKED ENGR		SCALE: NONE	
REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	ACT. WGHT.	-		CLAMP, LOOP-CUSHIONED, 1/2" MOUNTING SCREW		SIZE B	
	CALC. WGHT.	-				SCALE: NONE S332	
				PART AND/OR ASSEMBLY DESCRIPTION		PRINT NUMBER	

DASH NO. RANGE	"D" DIA. RANGE	"E" DIMENSION	"R" RADIUS	"T" GAUGE
-4 THRU -16	1/4" TO 1"	"D"/2 + .514	.062	.031
-17 THRU -96	1-1/16" TO 6"	"D"/2 + .534	.109	.050

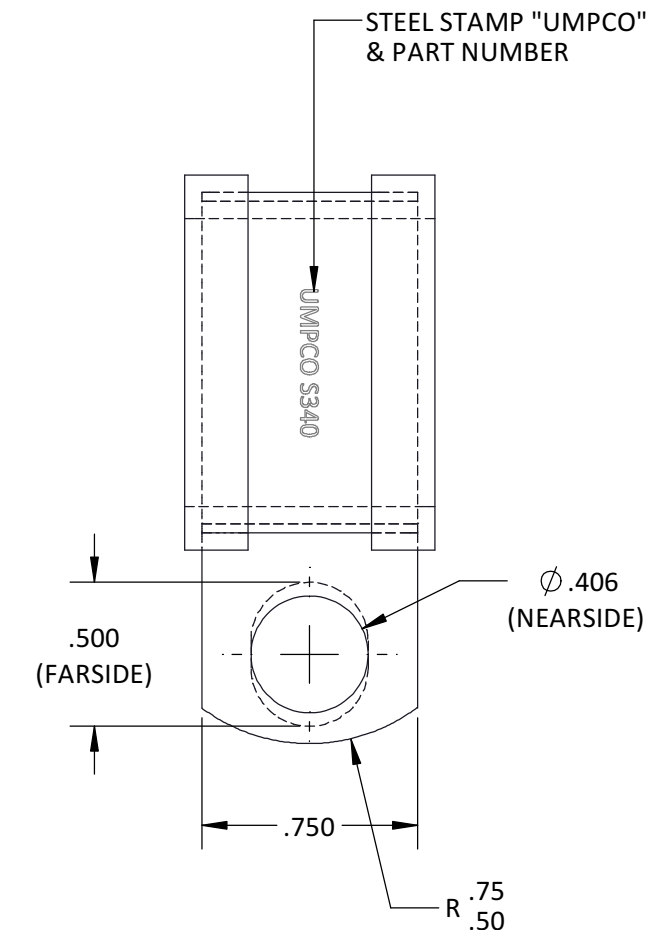
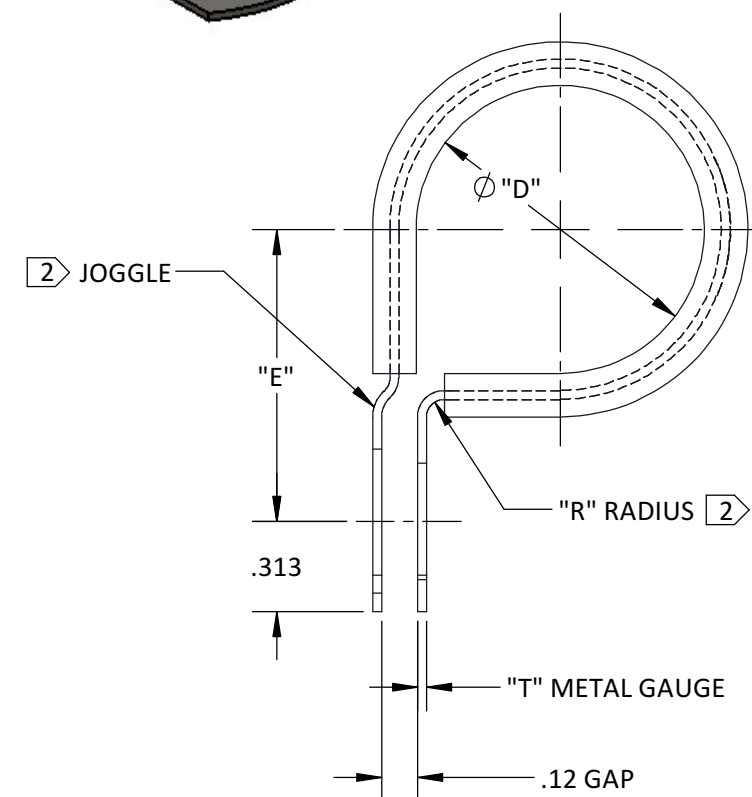
MATERIAL & FINISH CODES:

METAL:	"NO CODE"	1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
	"P"	1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698 FINISH: ZINC PLATE GOLD PER ASTM B 633, Fe/Zn 8, TY. II 1
	"D"	2024-T42 ALUMINUM ALLOY PER AMS-QQ-A-250/5 FINISH: NONE
	"SS"	304/321 STAINLESS STEEL PER AMS 5513/AMS 5510 FINISH: NONE
	"C"	316 STAINLESS STEEL PER AMS 5524 FINISH: NONE
CUSHION:	"G"	GENERAL PURPOSE EPDM PER SAE J200 M3 BA 710 C12 COLOR: BLACK
	"H"	GENERAL PURPOSE SILICONE PER AMS 3303 WITH 100 PSI MIN. TEAR COLOR: RED/ORANGE
	"N"	GENERAL PURPOSE NEOPRENE PER AMS 3209 COLOR: BLACK
	"T"	TEFLON SKIVED PER AMS 3652 COLOR: WHITE



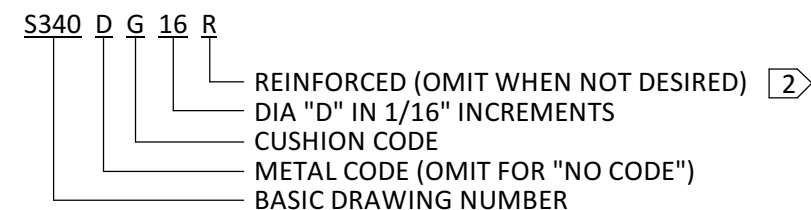
S340

REV.	CHANGE	DATE	BY	CHK'D	APPR
S	SEE DRAWING CHANGE RECORD ON FILE.	09/25/13	HAD	KWE	HAD



EXAMPLE OF PART CALLOUT:

1" DIA. REINFORCED ALUM. CLAMP W/EPDM CUSHION



NOTES:

- 1 OPTIONAL FINISH: CADMIUM PLATE GOLD PER AMS-QQ-P-416, TY. II, CL. 2
- 2 REINFORCED CORNERS AND BEADED JOGGLE PER DS1010 WHEN SPECIFIED.
- 3) CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.
- 4) INSPECT PER MIL-C-8603 CLOSURE TEST.

REFERENCES:																	
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	± 5°	UMPCO . INC. 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846													
	DECIMAL:	.XX	± .03														
GENERAL MACHINE FINISHES EXCEPT AS NOTED: INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M	<small>PROPRIETARY AND CONFIDENTIAL</small> <small>THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.</small>		<table border="1"> <tr> <td colspan="3">FSCM/CAGE CODE No. 18076</td> </tr> <tr> <td>RJE</td> <td>KEL</td> <td>LJS</td> </tr> <tr> <td>11/01/76</td> <td>11/01/76</td> <td>04/22/99</td> </tr> <tr> <td>DRAWN</td> <td>CHECKED</td> <td>ENGR</td> </tr> </table>			FSCM/CAGE CODE No. 18076			RJE	KEL	LJS	11/01/76	11/01/76	04/22/99	DRAWN	CHECKED	ENGR
	FSCM/CAGE CODE No. 18076																
RJE	KEL	LJS															
11/01/76	11/01/76	04/22/99															
DRAWN	CHECKED	ENGR															
REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	ACT. WGHT.	-		CLAMP, LOOP-CUSHIONED PART AND/OR ASSEMBLY DESCRIPTION													
	CALC. WGHT.	-															
				SIZE	SCALE: NONE												
				B	S340												
						PRINT NUMBER											

DASH NO. RANGE	"D" DIA. RANGE	"E" DIMENSION	"R" RADIUS	"T" GAUGE	"G" GAP
-2 THRU -16	1/8" TO 1"	"D"/2 + .500	.06	.031	.06
-17 THRU -96	1-1/16" TO 6"	"D"/2 + .520	.11	.050	.12
-2A THRU -16A	1/8" TO 1"	"D"/2 + .500			

MATERIAL & FINISH CODES:

METAL:	"NO CODE"	1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698 FINISH: ZINC PLATE BRIGHT PER ASTM B 633, Fe/Zn 13, TY. III [1]
	"P"	1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698 FINISH: ZINC PLATE GOLD PLUS SEALER PER ASTM B 633, Fe/Zn 13, TY. II
	"D"	2024-T42 ALUMINUM ALLOY PER AMS-QQ-A-250/5 FINISH: NONE
	"DK"	5052-H32 1/4 HARD ALUMINUM PER AMS-QQ-A-250/8 FINISH: NONE [4]
	"SS"	304/321 STAINLESS STEEL PER AMS 5513/AMS 5510 FINISH: NONE
	"C"	316 STAINLESS STEEL PER AMS 5524 FINISH: NONE
CUSHION:	"G"	GENERAL PURPOSE EPDM PER SAE J200 M3 BA 710 C12 COLOR: BLACK
	"H"	GENERAL PURPOSE SILICONE PER AMS 3303 WITH 100 PSI MIN. TEAR COLOR: RED/ORANGE
	"N"	GENERAL PURPOSE NEOPRENE PER AMS 3209 COLOR: BLACK
	"F"	NITRILE BUTADIENE PER MIL-C-85052/1 [5] COLOR: YELLOW
	"T"	TEFLON SKIVED PER AMS 3652 [6] COLOR: WHITE
	"HL"	GENERAL PURPOSE SILICONE PER AMS 3303 & MIL-C-8603 WITH 100 PSI MIN. TEAR [6] COLOR: NATURAL WHITE
	"S"	GENERAL PURPOSE SILICONE PER AMS 3347 & A-A-59588-3A50 [6] COLOR: RED/ORANGE

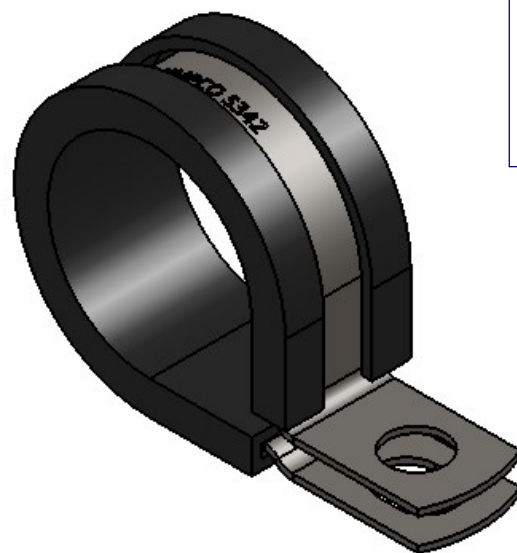
EXAMPLE OF PART CALLOUT:

1" DIA., .050 THK., REINFORCED ALUM. CLAMP W/WEDGED EPDM CUSHION

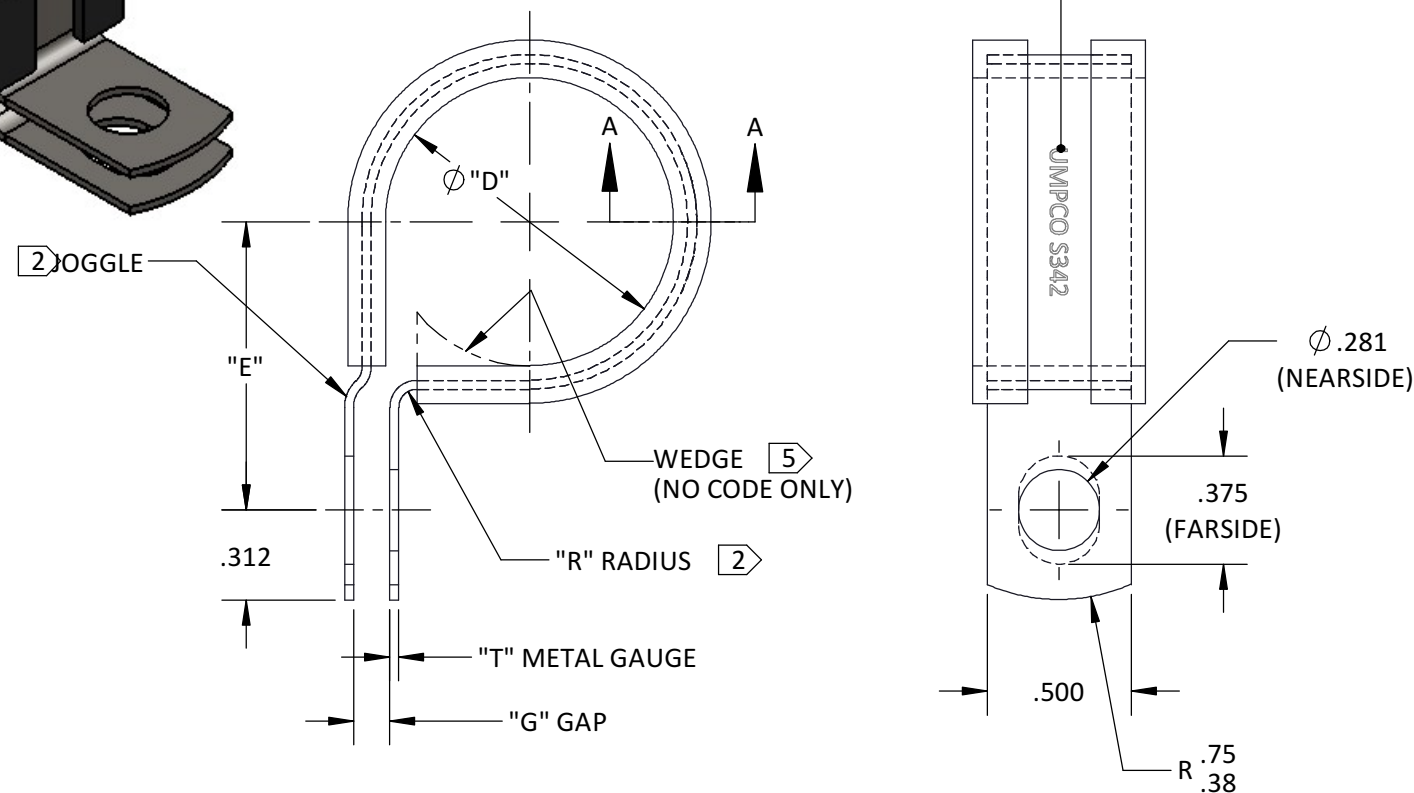
S342	W	D	G	16	A	B	R	
								REINFORCED (OMIT WHEN NOT DESIRED) [2]
								BOX CUSHION (OMIT WHEN NOT APPLICABLE)
								INCREASED METAL GAUGE (-2A THRU -16A ONLY)
								DIA "D" IN 1/16" INCREMENTS
								CUSHION CODE
								METAL CODE (OMIT FOR "NO CODE")
								WEDGE CODE (OMIT WHEN NOT APPLICABLE)
								BASIC DRAWING NUMBER

NOTES:

- [1] OPTIONAL FINISH: CADMIUM PLATE BRIGHT PER AMS-QQ-P-416, TY. I, CL. 2
- [2] REINFORCED CORNERS AND BEADED JOGGLE PER DS1010 WHEN SPECIFIED.
- [3] FOR CODE (B) STYLE CUSHIONS (BOX), PARTS SHALL BE PACKAGE IDENTIFIED IN MULTIPLES OF 10, NOT TO EXCEED 100.
- [4] CAUSTIC ETCH TO CLEAN AS NEEDED.
- [5] NITRILE CUSHION CODE "F" IS ONLY AVAILABLE WITH WEDGE. REF. MIL-C-8603. AVAILABLE IN SIZES -2 THRU -48 ONLY.
- [6] CODE "B" CUSHION NOT AVAILABLE AT THIS TIME.
- 7) CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.
- 8) INSPECT PER MIL-C-8603 CLOSURE TEST.



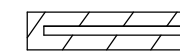
S342



SECTION A-A
(CUSHION STYLE)



NO CODE



CODE "B" [3]
(WEDGE NOT AVAILABLE)

SHEET 1 OF 1

REFERENCES:								
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	± 5°			FSCM/CAGE CODE No. 18076		
	DECIMAL:	.XX	± .03			RJE	RJE	LJS
GENERAL MACHINE FINISHES EXCEPT AS NOTED:	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.			7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846		11/01/76	11/01/76	04/22/99
	INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M			CLAMP, LOOP-CUSHIONED		DRAWN	CHECKED	ENGR
REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	ACT. WGHT.	-		PART AND/OR ASSEMBLY DESCRIPTION		SCALE: NONE		
	CALC. WGHT.	-				B	S342	
						PRINT NUMBER		

1

2

3

4

5

6

7

8

DASH NO. RANGE	"D" DIA. RANGE	"E" DIMENSION	"R" RADIUS	"T" GAUGE
-4 THRU -16	1/4" TO 1"	"D"/2 + .514	.06	.031
-17 THRU -96	1-1/16" TO 6"	"D"/2 + .534	.11	.050

MATERIAL & FINISH CODES:

METAL: "NO CODE" 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
 FINISH: ZINC PLATE GOLD PER ASTM B 633, Fe/Zn 8, TY. II ¹

"P" 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
 FINISH: ZINC PLATE GOLD PLUS SEALER PER ASTM B 633, Fe/Zn 13, TY. II

"D" 2024-T42 ALUMINUM ALLOY PER AMS-QQ-A-250/5
 FINISH: NONE

"SS" 304/321 STAINLESS STEEL PER AMS 5513/AMS 5510
 FINISH: NONE

CUSHION: "G" GENERAL PURPOSE EPDM PER SAE J200 M3 BA 710 C12
 COLOR: BLACK

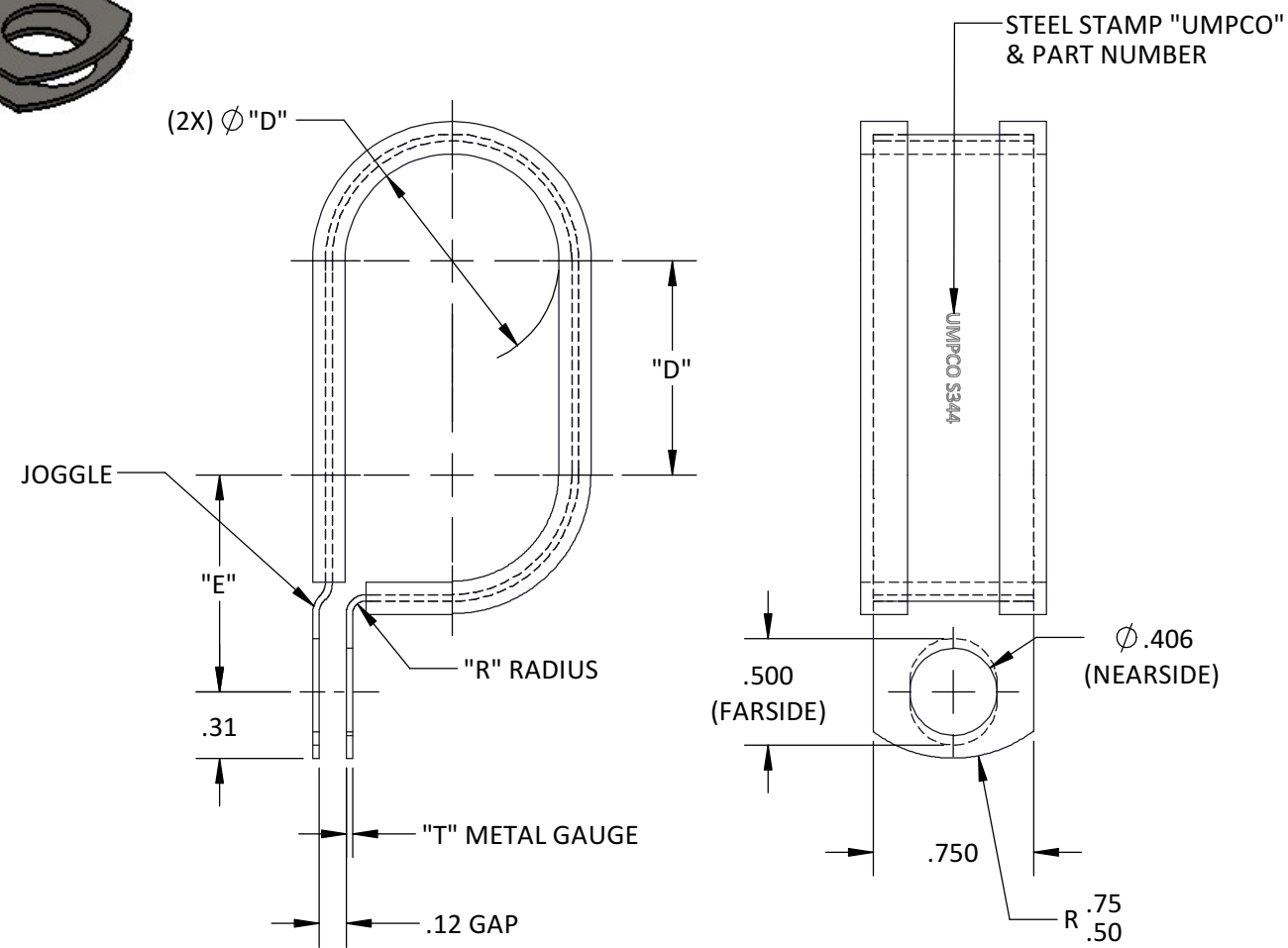
"H" GENERAL PURPOSE SILICONE PER AMS 3303 WITH 100 PSI MIN. TEAR
 COLOR: RED/ORANGE

"N" GENERAL PURPOSE NEOPRENE PER AMS 3209
 COLOR: BLACK



S344

REV.	CHANGE	DATE	BY	CHK'D	APPR
N	SEE DRAWING CHANGE RECORD ON FILE.	09/25/13	HAD	KWE	HAD



EXAMPLE OF PART CALLOUT:

1" DIA. ALUM. CLAMP W/EPDM CUSHION


S344 D G 16

DIA "D" IN 1/16" INCREMENTS
 CUSHION CODE
 METAL CODE (OMIT FOR "NO CODE")
 BASIC DRAWING NUMBER

NOTES:

- ¹ OPTIONAL FINISH: CADMIUM PLATE GOLD PER AMS-QQ-P-416, TY. II, CL. 2
- 2) CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.
- 3) INSPECT PER MIL-C-8603 CLOSURE TEST.

SHEET 1 OF 1

REFERENCES:								
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	± 5°	 UMPCO, INC. 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846		FSCM/CAGE CODE No. 18076		
	DECIMAL:	.XX	± .03			RJE	KEL	LJS
GENERAL MACHINE FINISHES EXCEPT AS NOTED:	¹ INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M			PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.		11/06/76	11/06/76	04/22/99
	REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	ACT. WGHT.	-			DRAWN	CHECKED	ENGR
	CALC. WGHT.	-		CLAMP, LOOP-CUSHIONED, MULTIPLE LINE FOR TWO TUBES OF EQUAL DIAMETER 3/8 MOUNTING SCREW		SCALE: NONE	S344	
				PART AND/OR ASSEMBLY DESCRIPTION		PRINT NUMBER		

1

2

3

4

5

6

7

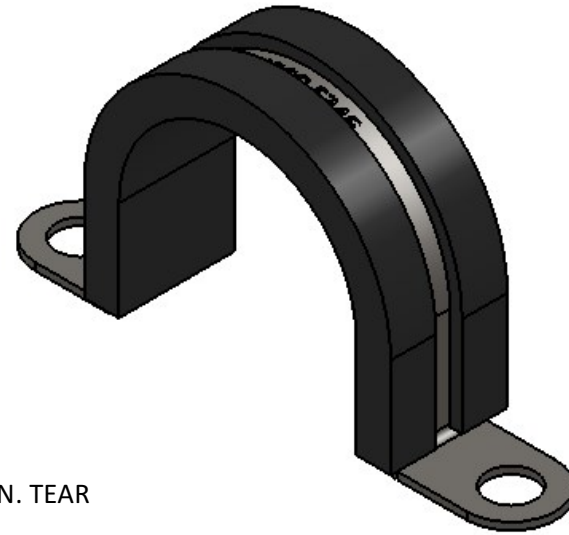
8

DASH NO. RANGE	"D" DIA. RANGE	"E" DIMENSION
-6 THRU -32	3/8" TO 2"	"D" + .812

MATERIAL & FINISH CODES:

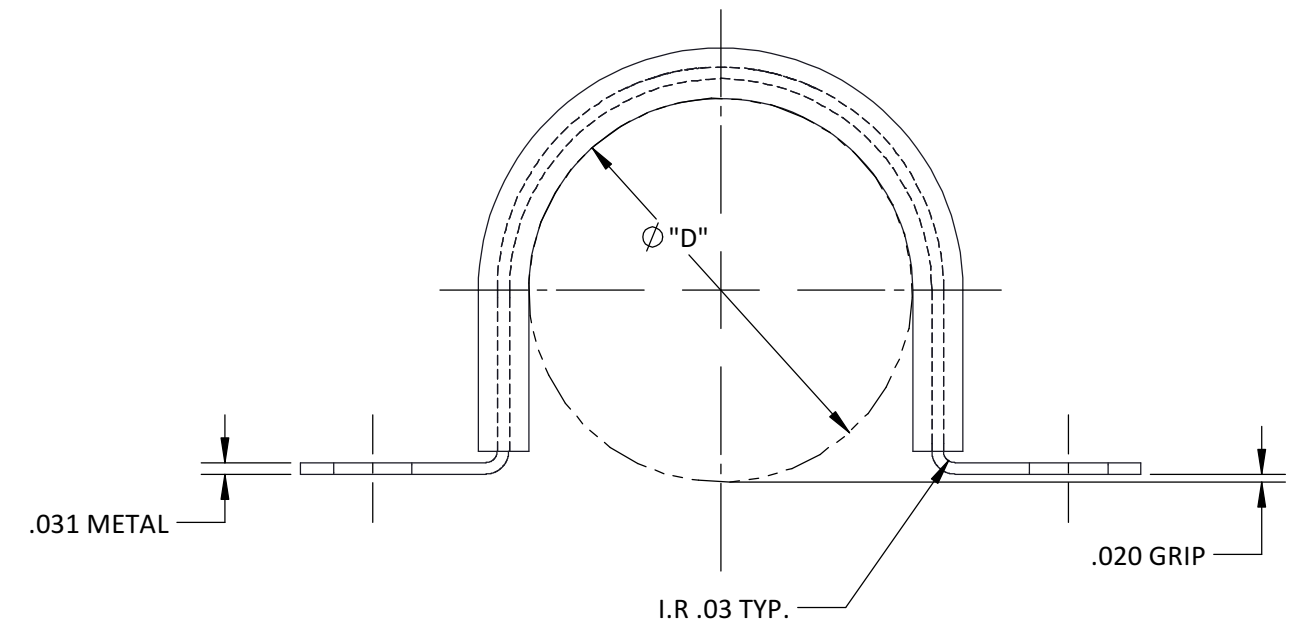
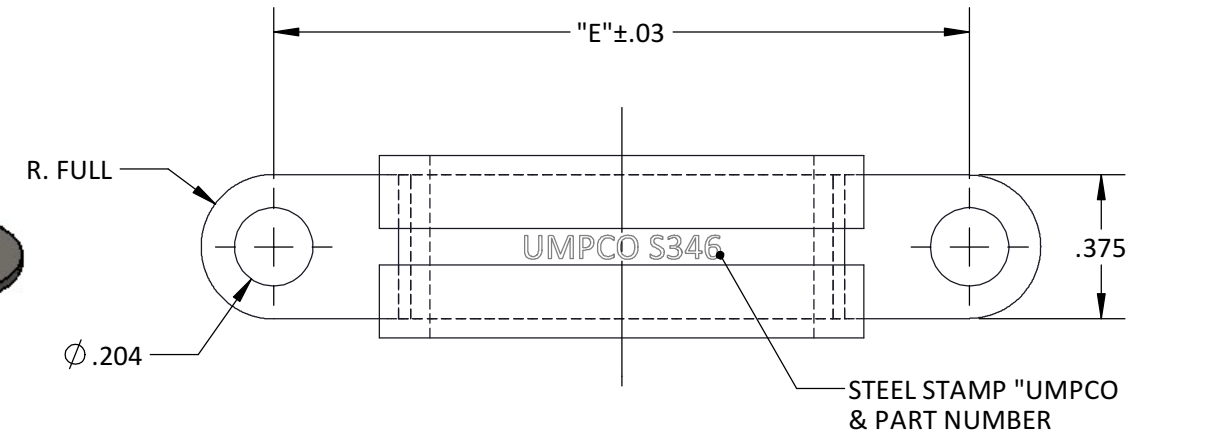
METAL: "NO CODE" 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
 FINISH: ZINC PLATE GOLD PER ASTM B 633, Fe/Zn 8, TY. II ¹
 "D" 2024-T42 ALUMINUM ALLOY PER AMS-QQ-A-250/5
 FINISH: NONE
 "SS" 304/321 STAINLESS STEEL PER AMS 5513/AMS 5510
 FINISH: NONE

CUSHION: "G" GENERAL PURPOSE NEOPRENE PER AMS 3209
 COLOR: BLACK
 "H" GENERAL PURPOSE SILICONE PER AMS 3303 WITH 100 PSI MIN. TEAR
 COLOR: RED/ORANGE
 "HL" GENERAL PURPOSE SILICONE PER AMS 3303 & MIL-C-8603 WITH 100 PSI MIN. TEAR
 COLOR: NATURAL WHITE
 "P" PTFE IMPREGNATED PBI POLYIMIDE GLASS BLEND FABRIC PER BPS-C-155, AMS 3677
 COLOR: BROWN
 "T" TEFLON SKIVED PER AMS 3652
 COLOR: WHITE



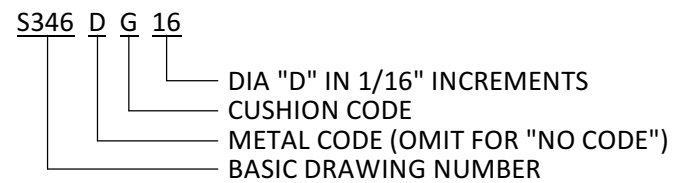
S346

REV.	CHANGE	DATE	BY	CHK'D	APPR
L	SEE DRAWING CHANGE RECORD ON FILE.	09/25/13	HAD	KWE	HAD



EXAMPLE OF PART CALLOUT:

1" DIA. ALUM. CLAMP W/NEOPRENE CUSHION



SHEET 1 OF 1

NOTES:
¹ OPTIONAL FINISH: CADMIUM PLATE GOLD PER AMS-QQ-P-416, TY. II, CL. 2

REFERENCES:				
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	± 5°	
	DECIMAL:	.XX	± .03	
GENERAL MACHINE FINISHES EXCEPT AS NOTED: INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M	<small>PROPRIETARY AND CONFIDENTIAL</small> <small>THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.</small>		UMPCO . INC. 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846	
	REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	ACT. WGHT.	-	
	CALC. WGHT.	-		
SUPPORT CLAMP, "U"-TYPE, CUSHIONED			SIZE	SCALE: NONE
PART AND/OR ASSEMBLY DESCRIPTION			B	S346
			PRINT NUMBER	

FSCM/CAGE CODE No. 18076		
KEL	KEL	LJS
04/21/69	04/21/69	04/26/99
DRAWN	CHECKED	ENGR

DASH NO. RANGE	"D" DIA. RANGE	"E" DIMENSION	"G" GAP	"R" RADIUS	"W" WIDTH	"X" DIMENSION
-2	1/8"	D/2 + .395	.062/.078	.062	.375	.188
-3 THRU -8	3/16" TO 1/2"	D/2 + .404				
-9 THRU -12	9/16" TO 3/4"	D/2 + .468				
-13 THRU -17	13/16" TO 1-1/16"	D/2 + .452	.094/.125	.109	.500	.218
-18 THRU -24	1-1/8" TO 1-1/2"	D/2 + .468				
-25	1-9/16"	D/2 + .478				
-26 THRU -30	1-5/8" TO 1-7/8"	D/2 + .468				
-31 THRU -96	1-15/16" TO 6"	D/2 + .475				

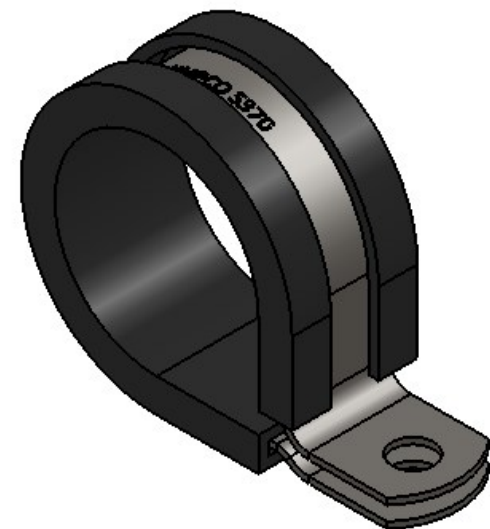
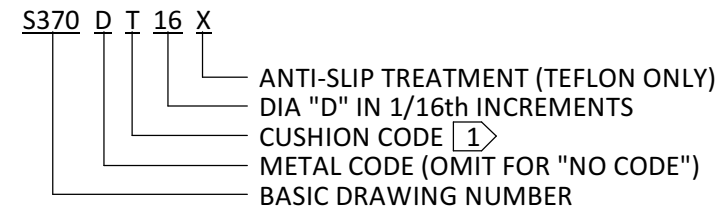
MATERIAL & FINISH CODES:

METAL:	"NO CODE"	1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698 FINISH: ZINC PLATE GOLD PER ASTM B 633, Fe/Zn 13, TY. II
	"P"	1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698 FINISH: ZINC PLATE GOLD PLUS SEALER PER ASTM B 633, Fe/Zn 13, TY. II
	"D"	2024-T42 ALUMINUM CLAD PER AMS-QQ-A-250/5 FINISH: NONE
	"SS"	304/321 STAINLESS STEEL PER AMS 5513/AMS 5510 FINISH: NONE

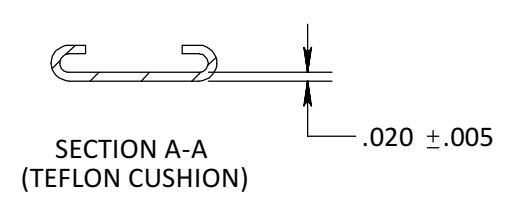
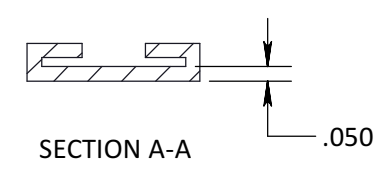
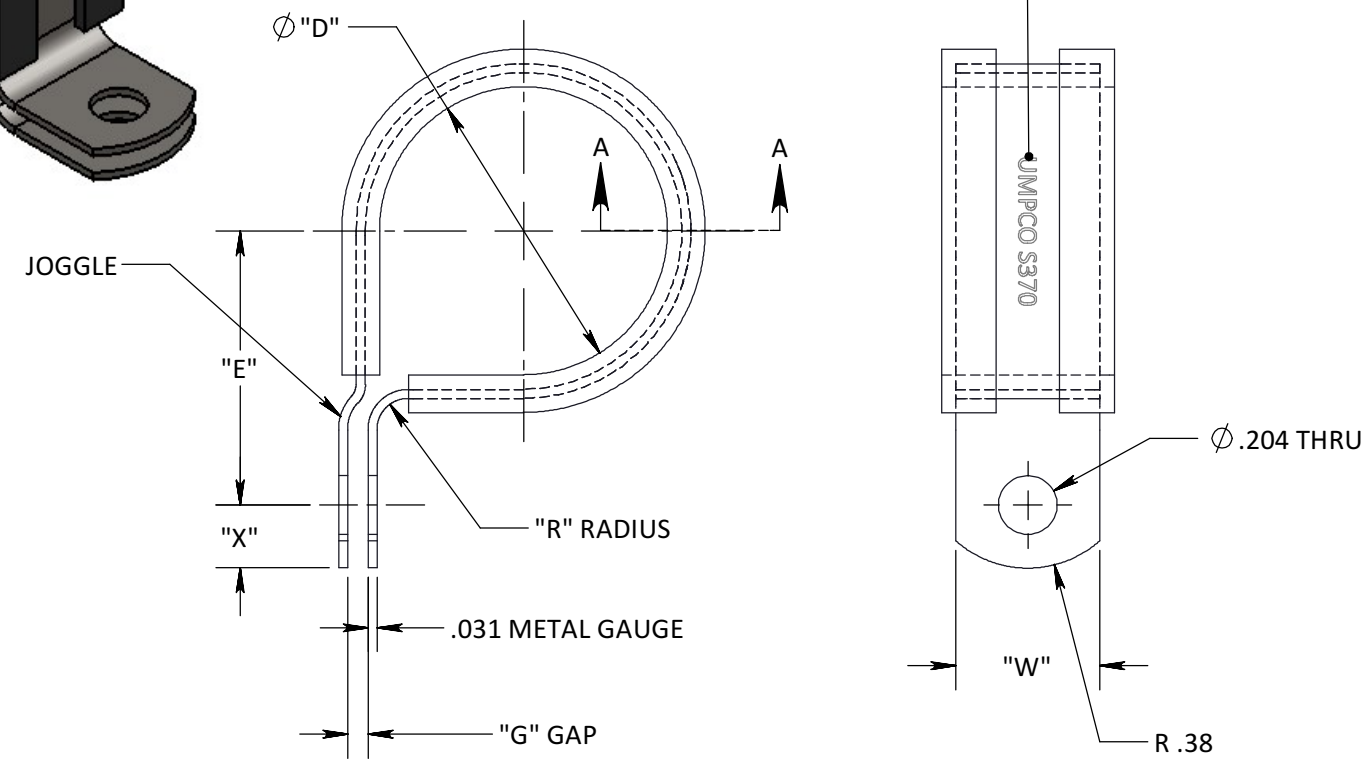
CUSHION:	"G" OR "NO CODE"	GENERAL PURPOSE EPDM PER SAE J200 M3 BA 710 C12 1
	"H"	GENERAL PURPOSE SILICONE PER AMS 3303 WITH 100 PSI MIN. TEAR COLOR: RED/ORANGE
	"N"	GENERAL PURPOSE NEOPRENE PER AMS 3209 COLOR: BLACK
	"T"	TEFLON, SKIVED PER AMS 3652 COLOR: WHITE

EXAMPLE OF PART CALLOUT:

1" DIA. ALUM. CLAMP, W/ ANTI-SLIP TEFLON



S370



- NOTES:**
- USE A (-) FOR "NO CODE" EPDM CUSHION WHEN USED WITH "NO CODE" METAL. ALL OTHER METALS USE "G" CODE.
 - CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.
 - INSPECT PER MIL-C-8603 CLOSURE TEST.

REFERENCES:								
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	± 5°			FSCM/CAGE CODE No. 18076		
	DECIMAL:	.XX	± .03			KEL	KEL	LJS
GENERAL MACHINE FINISHES EXCEPT AS NOTED:	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.			7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846		06/09/70	06/09/70	04/26/99
	INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M			CLAMP, LOOP TYPE, SUPPORT, CUSHIONED, FOR #8 OR #10 MOUNTING SCREW		DRAWN	CHECKED	ENGR
REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	ACT. WGHT.	-		PART AND/OR ASSEMBLY DESCRIPTION		SCALE: NONE		
	CALC. WGHT.	-				B		S370
						PRINT NUMBER		

DASH NO. RANGE	"D" DIA. RANGE	"E" DIMENSION	"G" GAP	"H" HOLE	"R" RADIUS	"T" THICKNESS		"W" WIDTH	"X" DIMENSION	SCREW SIZE
						ALUM.	STEEL			
L2 THRU L8	1/8" TO 1/2"	D/2 + .300	.03	.173	.03	.020	.020	.375	.188	#8
-2 THRU -8						.031				
-9 THRU -10	9/16" TO 5/8"	D/2 + .365	.06	.204	.06	.050		.500	.218	#10
-11 THRU -17	11/16" TO 1-1/16"					.062				
-18 THRU -32	1-1/8" TO 2"	D/2 + .375	.06	.265	.03	.031		.375	.188	1/4"
-2-1 THRU -10-1	1/8" TO 5/8"					.031				
-2-2 THRU -10-2										

MATERIAL & FINISH CODES:

METAL: "NO CODE" 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
 FINISH: ZINC PLATE GOLD PER ASTM B 633, Fe/Zn 8, TY. II 1
 "D" 2024-T42 ALUMINUM CLAD PER AMS-QQ-A-250/5
 FINISH: NONE
 "SS" 304/321 STAINLESS STEEL PER AMS 5513/AMS 5510
 FINISH: NONE

CUSHION: "AG" GENERAL PURPOSE EPDM PER SAE J200 M3 BA 710 C12
 COLOR: BLACK
 "EL" ETHYLENE PROPYLENE PER SAE J200 M3 BA 710 C12
 COLOR: WHITE
 "H" GENERAL PURPOSE SILICONE PER AMS 3303 WITH 100 PSI MIN. TEAR
 COLOR: RED/ORANGE
 "G" GENERAL PURPOSE NEOPRENE PER AMS 3209
 COLOR: BLACK
 "T" TEFLON, SKIVED PER AMS 3652
 COLOR: WHITE

EXAMPLE OF PART CALLOUT:

5/8" DIA. LIGHT WEIGHT ALUM. CLAMP, W/NEOPRENE CUSHION & #10 MOUNTING SCREW

S446 L D G 10 -1

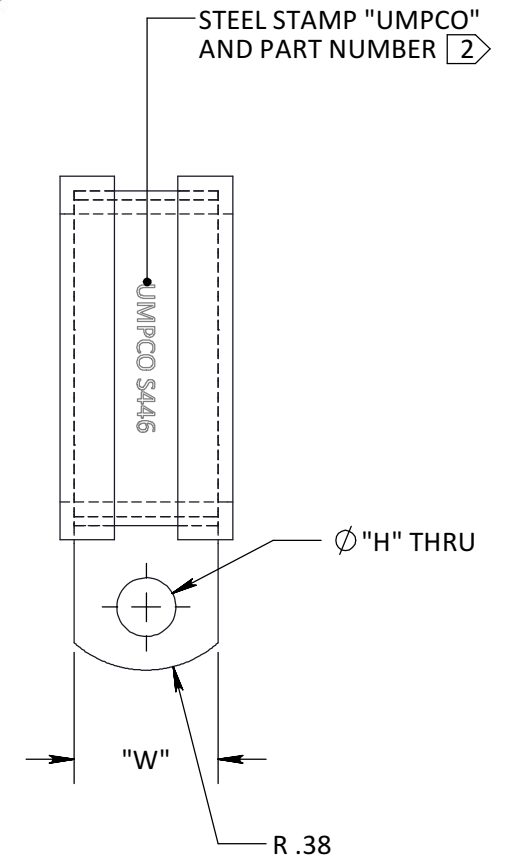
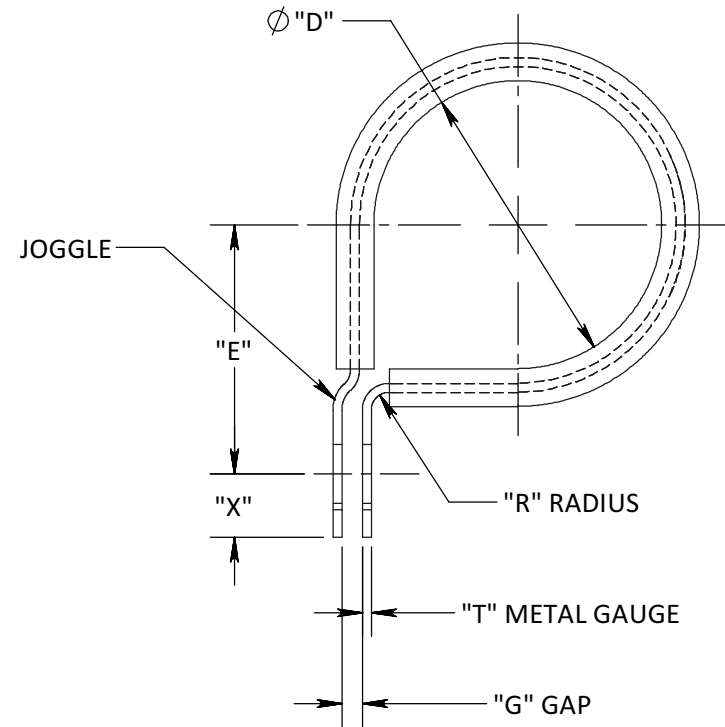
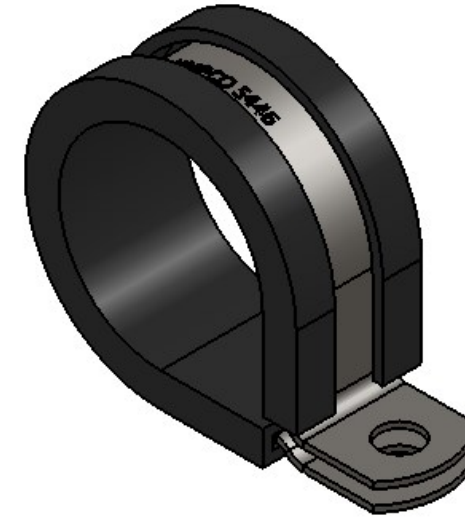
MOUNTING HOLE SIZE: (FOR CLAMP DIA'S -2 THRU -10 ONLY, SEE CHART)
 "BLANK" = #8 SCREW HOLE
 -1 = #10 SCREW HOLE
 -2 = 1/4" SCREW HOLE

DIA "D" IN 1/16th INCREMENTS
 CUSHION CODE
 METAL CODE (OMIT FOR "NO CODE")
 LIGHT WEIGHT METAL (SIZES -2 THRU -8 ONLY, SEE CHART)
 BASIC DRAWING NUMBER

NOTES:

- 1) OPTIONAL FINISH: CADMIUM PLATE GOLD PER AMS-QQ-P-416, TY. II, CL. 2
- 2) OPTIONAL IDENTIFICATION: PACKAGE I.D. IN MULTIPLES OF 100 EACH.
- 3) CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.
- 4) INSPECT PER MIL-C-8603 CLOSURE TEST.

S446



SHEET 1 OF 1

REFERENCES:							
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	± 5°	UMPCO . INC. 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846		FSCM/CAGE CODE No. 18076	
	DECIMAL:	.XX	± .03			KEL	KEL
GENERAL MACHINE FINISHES EXCEPT AS NOTED:	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.			08/26/74		08/26/74	06/19/06
	INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M			DRAWN	CHECKED	ENGR	
REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	ACT. WGHT.	-		CLAMP, LOOP TYPE, SUPPORT, CUSHIONED, FOR #8, #10 OR 1/4" MOUNTING SCREW		SCALE: NONE	
	CALC. WGHT.	-				B S446	
				PART AND/OR ASSEMBLY DESCRIPTION			

DASH NO. RANGE	"D" DIA. RANGE	"E" DIMENSION	"R" RADIUS	"T" GAUGE
-2 THRU -16	1/8" TO 1"	"D"/2 + .514	.06	.031
-17 THRU -96	1-1/16" TO 6"	"D"/2 + .534	.11	.050

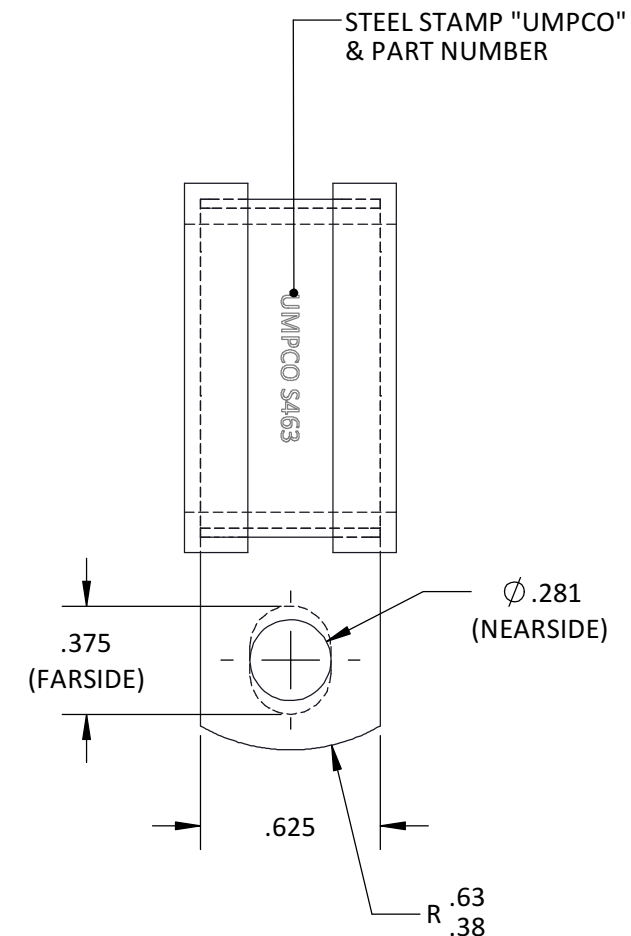
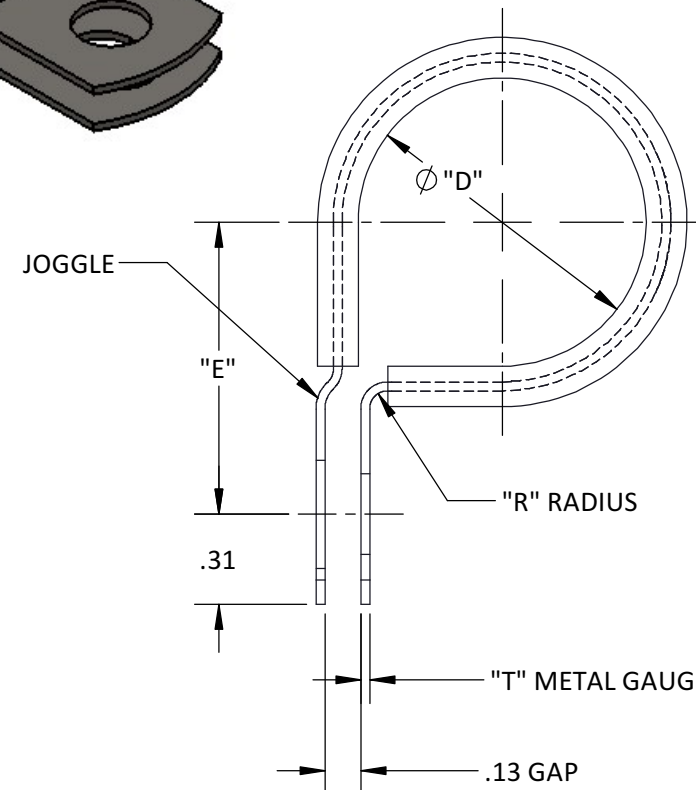
REV.	CHANGE	DATE	BY	CHK'D	APPR
N	SEE DRAWING CHANGE RECORD ON FILE.	09/25/13	HAD	KWE	HAD

S463

MATERIAL & FINISH CODES:

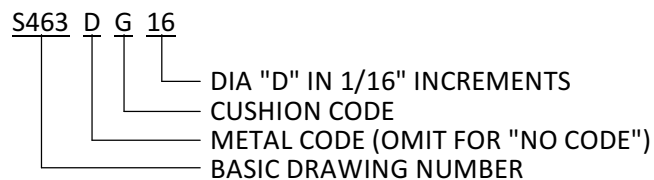
METAL: "NO CODE" 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
 FINISH: ZINC PLATE GOLD PER ASTM B 633, Fe/Zn 13, TY. II 1
 "P" 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
 FINISH: ZINC PLATE GOLD PLUS SEALER PER ASTM B 633, Fe/Zn 13, TY. II
 "D" 2024-T42 ALUMINUM ALLOY PER AMS-QQ-A-250/5
 FINISH: NONE
 "SS" 304/321 STAINLESS STEEL PER AMS 5513/AMS 5510
 FINISH: NONE

CUSHION: "G" GENERAL PURPOSE EPDM PER SAE J200 M3 BA 710 C12
 COLOR: BLACK
 "H" GENERAL PURPOSE SILICONE PER AMS 3303 WITH 100 PSI MIN. TEAR
 COLOR: RED/ORANGE
 "N" GENERAL PURPOSE NEOPRENE PER AMS 3209
 COLOR: BLACK
 "T" TEFLON SKIVED PER AMS 3652
 COLOR: WHITE



EXAMPLE OF PART CALLOUT:

1" DIA. REINFORCED ALUM. CLAMP W/EPDM CUSHION



NOTES:

- 1 OPTIONAL FINISH: CADMIUM PLATE GOLD PER AMS-QQ-P-416, TY. II, CL. 2
- 2) CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.
- 3) INSPECT PER MIL-C-8603 CLOSURE TEST.

SHEET 1 OF 1

REFERENCES:							
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	± 5°	UMPCO . INC. 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846		FSCM/CAGE CODE No. 18076	
	DECIMAL:	.XX	± .03			KEL	KEL
GENERAL MACHINE FINISHES EXCEPT AS NOTED:	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.			03/27/78		03/27/78	03/27/78
	INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M			DRAWN	CHECKED	ENGR	
REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	ACT. WGHT.	-		CLAMP, LOOP-CUSHIONED, 1/4" MOUNTING HOLE		SCALE: NONE	
	CALC. WGHT.	-				B	
				PART AND/OR ASSEMBLY DESCRIPTION			

DASH NO. RANGE	"D" DIA. RANGE	"E" DIMENSION	"R" RADIUS	"T" GAUGE
-2 THRU -16	1/8" TO 1"	"D"/2 + .514	.06	.030
-17 THRU -96	1-1/16" TO 6"	"D"/2 + .534	.11	.050
-10A THRU -16A	5/8" TO 1"	"D"/2 + .514	.06	

MATERIAL & FINISH CODES:

METAL: "NO CODE" 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
 FINISH: ZINC PLATE GOLD PER ASTM B 633, Fe/Zn 13, TY. II ①
 "D" 2024-T42 ALUMINUM PER AMS-QQ-A-250/5
 FINISH: NONE
 "DK" 5052-H32 1/4 HARD ALUMINUM PER AMS-QQ-A-250/8
 FINISH: NONE ②
 "SS" 304/321 STAINLESS STEEL PER AMS 5513/AMS 5510
 FINISH: NONE

CUSHION: "G" GENERAL PURPOSE EPDM PER SAE J200 M3 BA 710 C12
 COLOR: BLACK
 "H" GENERAL PURPOSE SILICONE PER AMS 3303 WITH 100 PSI MIN. TEAR
 COLOR: RED/ORANGE
 "N" GENERAL PURPOSE NEOPRENE PER AMS 3209
 COLOR: BLACK
 "T" TEFLON SKIVED PER AMS 3652
 COLOR: WHITE

EXAMPLE OF PART CALLOUT:

1" DIA., .05 THK., ALUM. CLAMP W/EPDM CUSHION

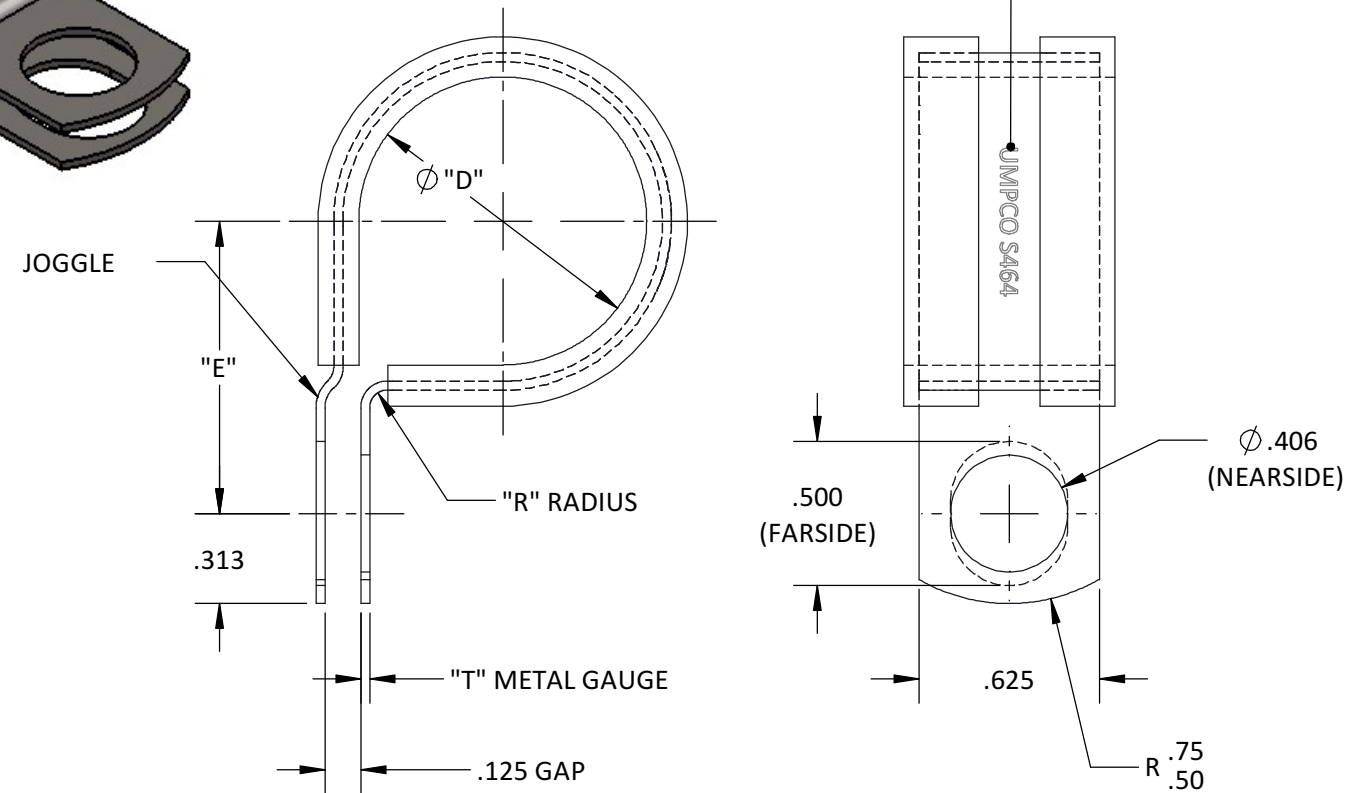
S464 D G 16 A
 INCREASED METAL GAUGE (-10A THRU -16A ONLY)
 DIA "D" IN 1/16" INCREMENTS
 CUSHION CODE
 METAL CODE (OMIT FOR "NO CODE")
 BASIC DRAWING NUMBER

NOTES:

- ① OPTIONAL FINISH: CADMIUM PLATE GOLD PER AMS-QQ-P-416, TY. II, CL. 2
- ② CAUSTIC ETCH TO CLEAN AS NEEDED
- 3) CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.
- 4) INSPECT PER MIL-C-8603 CLOSURE TEST.



S464



SHEET 1 OF 1

REFERENCES:							
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	± 5°	UMPCO . INC. 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846		FSCM/CAGE CODE No. 18076	
	DECIMAL:	.XX	± .03			KEL	KEL
GENERAL MACHINE FINISHES EXCEPT AS NOTED:	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.			03/27/78 03/27/78 03/27/78		DRAWN CHECKED ENGR	
	INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M			CLAMP, LOOP-CUSHIONED, 3/8" MOUNTING HOLE		SCALE: NONE	
REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	ACT. WGHT.	-		PART AND/OR ASSEMBLY DESCRIPTION		SIZE B	
	CALC. WGHT.	-					

DASH NO. RANGE	"D" DIA. RANGE	"E" DIMENSION	"R" RADIUS	"T" GAUGE	"G" GAP
-4 THRU -8	1/4" TO 1/2"	"D"/2 + .514	.06	.031	.06
-9 THRU -16	9/16" TO 1"				
-17 THRU -40	1-1/16" TO 2-1/2"	"D"/2 + .534	.12	.050	.12
-9A THRU -16A	9/16" TO 1"				

MATERIAL & FINISH CODES:

METAL: "NO CODE" 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
 FINISH: ZINC PLATE GOLD PER ASTM B 633, Fe/Zn 8, TY. II 1

"D" 2024-T42 ALUMINUM ALLOY PER AMS-QQ-A-250/5
 FINISH: NONE

"SS" 304/321 STAINLESS STEEL PER AMS 5513/AMS 5510
 FINISH: NONE

CUSHION: "G" GENERAL PURPOSE EPDM PER SAE J200 M3 BA 710 C12
 COLOR: BLACK

"H" GENERAL PURPOSE SILICONE PER AMS 3303 WITH 100 PSI MIN. TEAR
 COLOR: RED/ORANGE

"N" GENERAL PURPOSE NEOPRENE PER AMS 3209
 COLOR: BLACK

"T" TEFLON SKIVED PER AMS 3652
 COLOR: WHITE

EXAMPLE OF PART CALLOUT:

3 TUBE ALUM. CLAMP, 1" DIA., .050 THK. W/EPDM CUSHION

S465 D G 16 - 3 A

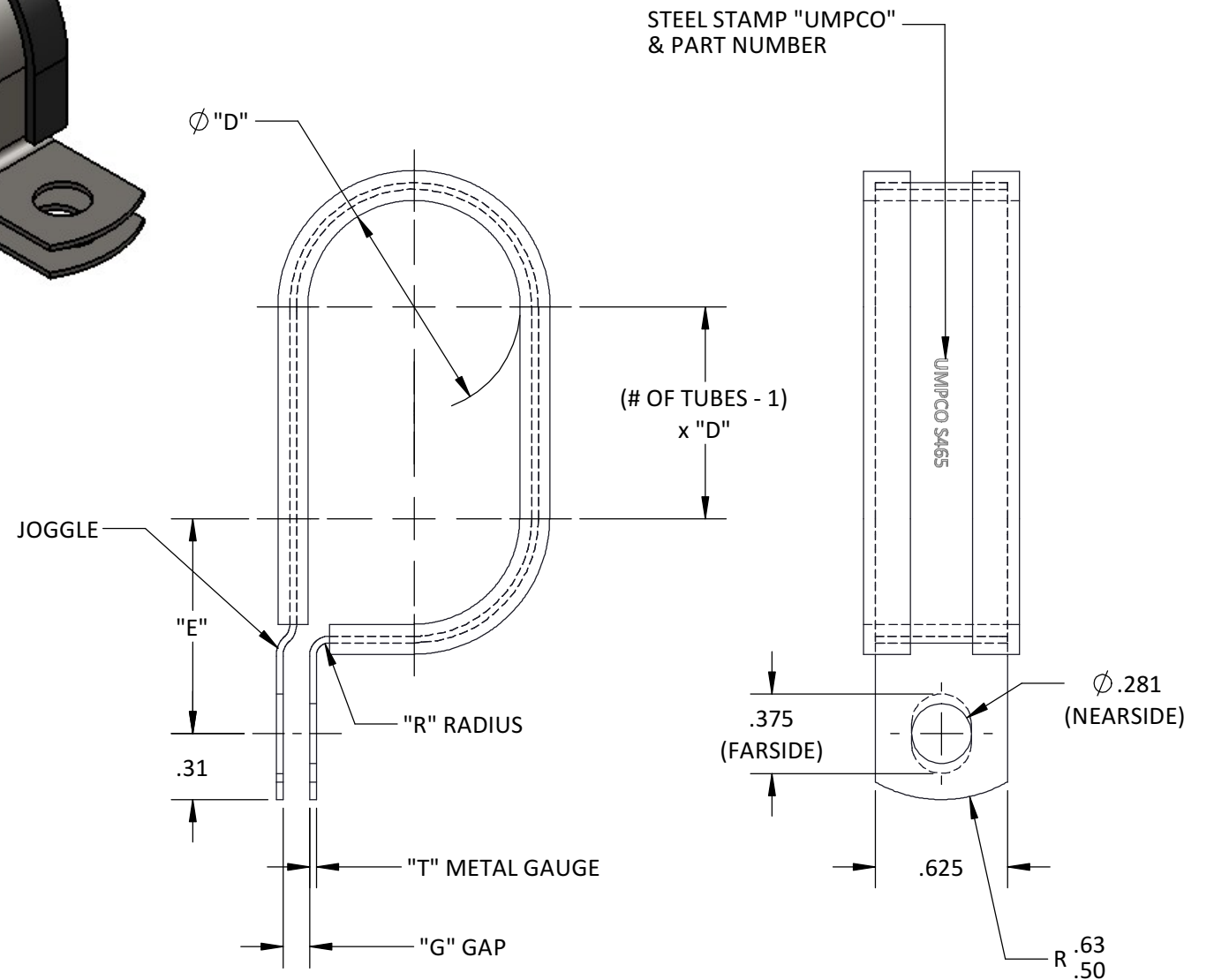
INCREASED METAL GAUGE (-9A THRU -16A ONLY)
 NUMBER OF TUBES
 DIA "D" IN 1/16" INCREMENTS
 CUSHION CODE
 METAL CODE (OMIT FOR "NO CODE")
 BASIC DRAWING NUMBER

NOTES:

- 1 OPTIONAL FINISH: CADMIUM PLATE GOLD PER AMS-QQ-P-416, TY. II, CL. 2
- 2) CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.
- 3) INSPECT PER MIL-C-8603 CLOSURE TEST.



S465



SHEET 1 OF 1

REFERENCES:				
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	± 5°	
	DECIMAL:	.XX	± .03	
GENERAL MACHINE FINISHES EXCEPT AS NOTED:		.XXX	± .015	
	INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M	<small>PROPRIETARY AND CONFIDENTIAL</small> <small>THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.</small>		
REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	ACT. WGHT.	-		
	CALC. WGHT.	-		
		 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846		
		CLAMP, LOOP-CUSHIONED, MULTI-LINE, EQUAL DIAMETER, 1/4" MOUNTING HOLE		
		SIZE	SCALE: NONE	
		B	S465	
			PRINT NUMBER	
		FSCM/CAGE CODE No. 18076 KEL KEL EHK 04/14/70 04/14/70 04/14/70 DRAWN CHECKED ENGR		
		PART AND/OR ASSEMBLY DESCRIPTION		

DASH NO. RANGE	"D" DIA. RANGE	"E" DIMENSION	"R" RADIUS	"T" GAUGE	"G" GAP
-4 THRU -8	1/4" TO 1/2"	"D"/2 + .514	.06	.031	.06
-9 THRU -16	9/16" TO 1"				
-17 THRU -40	1-1/16" TO 2-1/2"	"D"/2 + .534	.12	.050	.12
-9A THRU -16A	9/16" TO 1"				



S466

REV.	CHANGE	DATE	BY	CHK'D	APPR
L	SEE DRAWING CHANGE RECORD ON FILE.	09/25/13	HAD	KWE	HAD

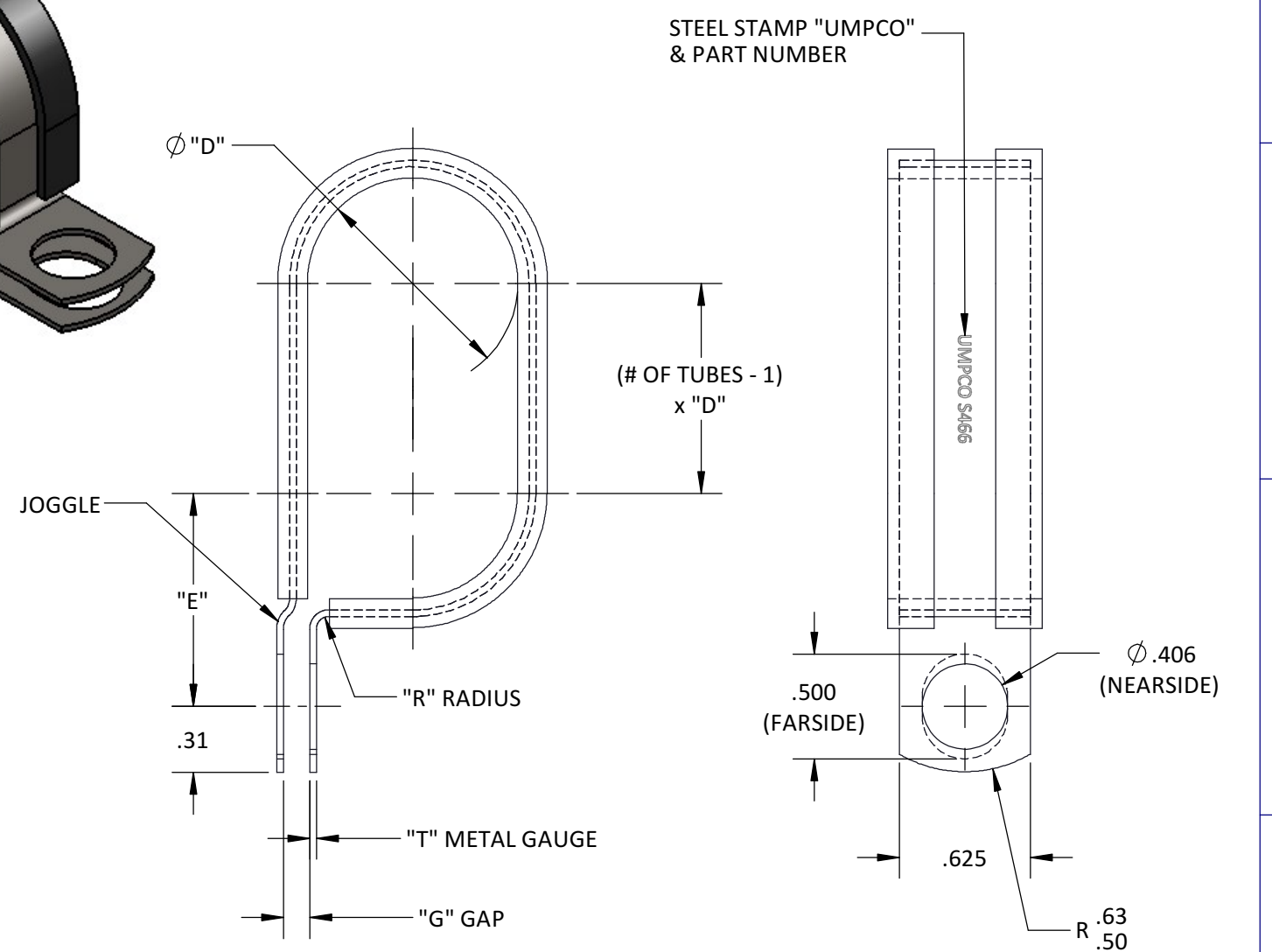
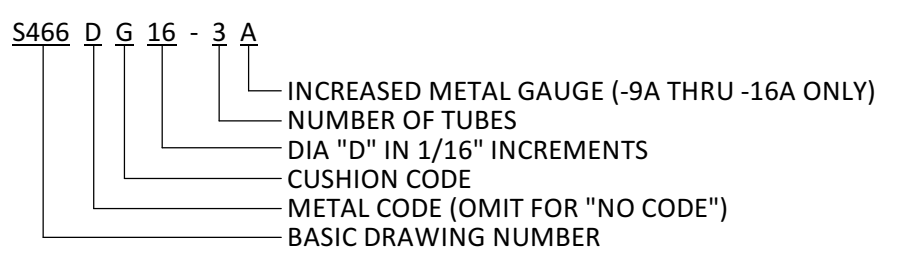
MATERIAL & FINISH CODES:

METAL: "NO CODE" 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
 FINISH: ZINC PLATE GOLD PER ASTM B 633, Fe/Zn 13, TY. II ①
 "D" 2024-T42 ALUMINUM ALLOY PER AMS-QQ-A-250/5
 FINISH: NONE
 "SS" 304/321 STAINLESS STEEL PER AMS 5513/AMS 5510
 FINISH: NONE

CUSHION: "G" GENERAL PURPOSE EPDM PER SAE J200 M3 BA 710 C12
 COLOR: BLACK
 "H" GENERAL PURPOSE SILICONE PER AMS 3303 WITH 100 PSI MIN. TEAR
 COLOR: RED/ORANGE
 "N" GENERAL PURPOSE NEOPRENE PER AMS 3209
 COLOR: BLACK
 "T" TEFLON SKIVED PER AMS 3652
 COLOR: WHITE

EXAMPLE OF PART CALLOUT:

3 TUBE ALUM. CLAMP, 1" DIA., .050 THK. W/EPDM CUSHION



NOTES:

① OPTIONAL FINISH: CADMIUM PLATE GOLD PER AMS-QQ-P-416, TY. II, CL. 2

2) CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.

3) INSPECT PER MIL-C-8603 CLOSURE TEST.

SHEET 1 OF 1

REFERENCES:													
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	± 5°	UMPCO . INC. 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846									
	DECIMAL:	.XX	± .03										
GENERAL MACHINE FINISHES EXCEPT AS NOTED:	INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M		<small>PROPRIETARY AND CONFIDENTIAL</small> <small>THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.</small>		FSCM/CAGE CODE No. 18076								
	REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	ACT. WGHT.	-	CLAMP, LOOP-CUSHIONED, MULTI-LINE, EQUAL DIAMETER, 3/8" MOUNTING HOLE PART AND/OR ASSEMBLY DESCRIPTION	<table border="1"> <tr> <td>KEL</td> <td>KEL</td> <td>EHK</td> </tr> <tr> <td>04/14/70</td> <td>04/14/70</td> <td>04/14/70</td> </tr> <tr> <td>DRAWN</td> <td>CHECKED</td> <td>ENGR</td> </tr> </table>	KEL	KEL	EHK	04/14/70	04/14/70	04/14/70	DRAWN	CHECKED
KEL	KEL	EHK											
04/14/70	04/14/70	04/14/70											
DRAWN	CHECKED	ENGR											
	CALC. WGHT.	-	SIZE B	SCALE: NONE S466									
				PRINT NUMBER									

DASH NO. RANGE	"D" DIA. RANGE	"E" DIMENSION	"R" RADIUS	"T" GAUGE
-6 THRU -16	3/8" TO 1"	"D"/2 + .623	.06	.031
-17 THRU -32	1-1/16" TO 2"	"D"/2 + .643	.12	.050

MATERIAL & FINISH CODES:

METAL: "NO CODE" 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
 FINISH: ZINC PLATE GOLD PER ASTM B 633, Fe/Zn 13, TY. II ①
 "D" 2024-T42 ALUMINUM ALLOY PER AMS-QQ-A-250/5
 FINISH: NONE
 "SS" 304/321 STAINLESS STEEL PER AMS 5513/AMS 5510
 FINISH: NONE

CUSHION: "G" GENERAL PURPOSE EPDM PER SAE J200 M3 BA 710 C12
 COLOR: BLACK
 "H" GENERAL PURPOSE SILICONE PER AMS 3303 WITH 100 PSI MIN. TEAR
 COLOR: RED/ORANGE
 "N" GENERAL PURPOSE NEOPRENE PER AMS 3209
 COLOR: BLACK
 "T" TEFLON SKIVED PER AMS 3652
 COLOR: WHITE

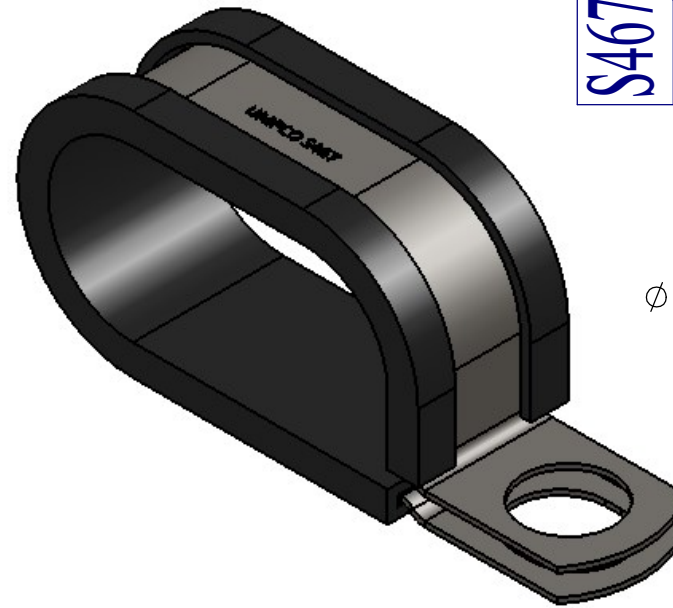
EXAMPLE OF PART CALLOUT:

3 TUBE ALUM. CLAMP, 1" DIA. W/EPDM CUSHION

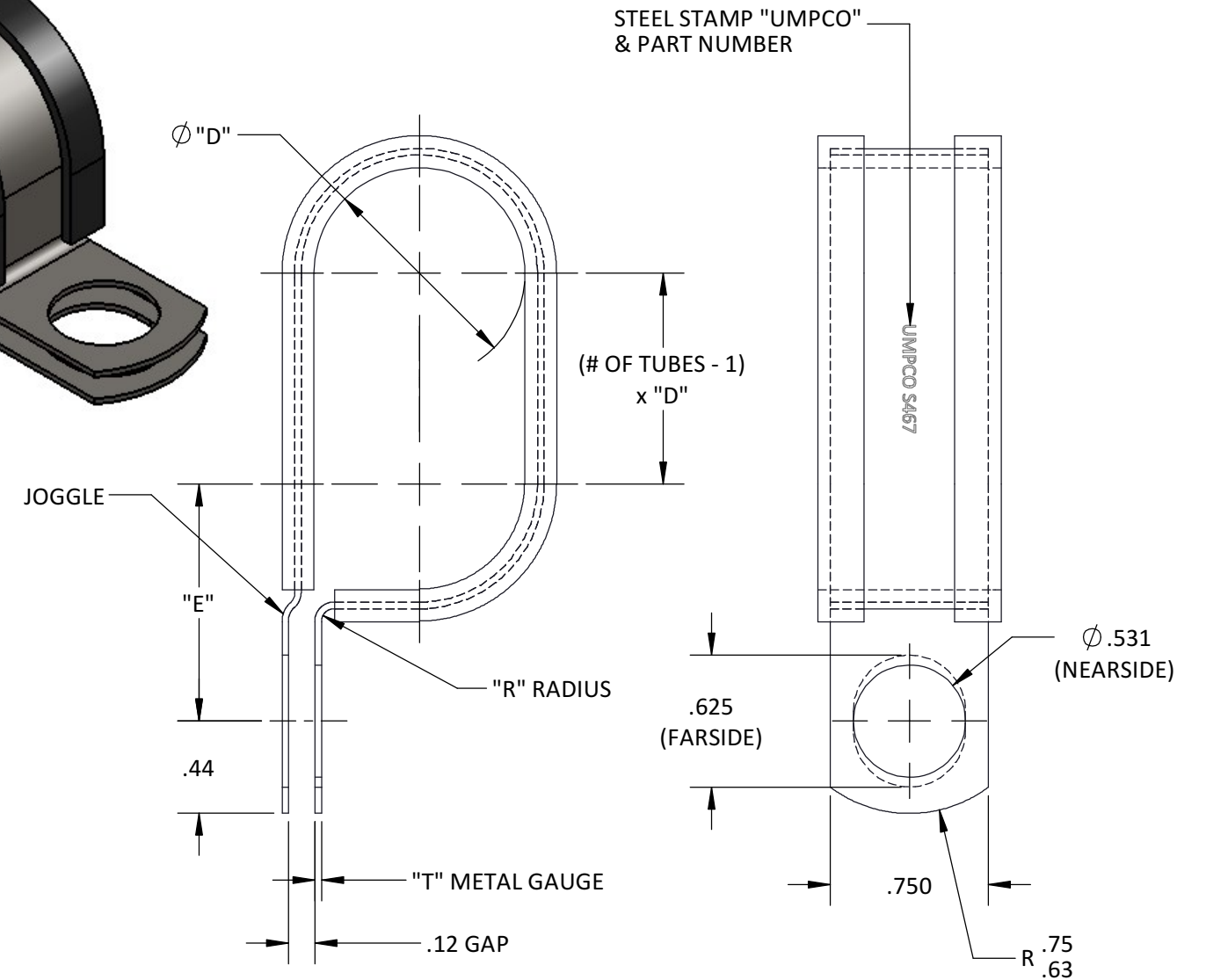
S467 D G 16 - 3
 NUMBER OF TUBES
 DIA "D" IN 1/16" INCREMENTS
 CUSHION CODE
 METAL CODE (OMIT FOR "NO CODE")
 BASIC DRAWING NUMBER

NOTES:



- OPTIONAL FINISH: CADMIUM PLATE GOLD PER AMS-QQ-P-416, TY. II, CL. 2
- CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.
- INSPECT PER MIL-C-8603 CLOSURE TEST.



S467



SHEET 1 OF 1

REFERENCES:								
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	± 5°				FSCM/CAGE CODE No. 18076	
	DECIMAL:	.XX	± .03				KEL	KEL
GENERAL MACHINE FINISHES EXCEPT AS NOTED:  INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M	<small>PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.</small>			7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846		11/01/76	11/01/76	11/01/76
	REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	ACT. WGHT.	-		CLAMP, LOOP-CUSHIONED, MULTI-LINE, EQUAL DIAMETER, 1/2" MOUNTING HOLE		DRAWN	CHECKED
	CALC. WGHT.	-		PART AND/OR ASSEMBLY DESCRIPTION		SCALE: NONE		
				SIZE B		PRINT NUMBER S467		

DASH NO. RANGE	"D" DIA. RANGE	"E" DIMENSION	"R" RADIUS	"T" GAUGE
-4 THRU -16	1/4" TO 1"	"D"/2 + .562	.06	.031
-17 THRU -96	1-1/16" TO 6"	"D"/2 + .582	.11	.050

MATERIAL & FINISH CODES:

METAL: "NO CODE" 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
 FINISH: ZINC PLATE GOLD PER ASTM B 633, Fe/Zn 8, TY. II 1
 "P" 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
 FINISH: ZINC PLATE GOLD PLUS SEALER PER ASTM B 633, Fe/Zn 13, TY. II
 "D" 2024-T42 ALUMINUM ALLOY PER AMS-QQ-A-250/5
 FINISH: NONE
 "SS" 304/321 STAINLESS STEEL PER AMS 5513/AMS 5510
 FINISH: NONE

CUSHION: "G" GENERAL PURPOSE EPDM PER SAE J200 M3 BA 710 C12
 COLOR: BLACK
 "H" GENERAL PURPOSE SILICONE PER AMS 3303 WITH 100 PSI MIN. TEAR
 COLOR: RED/ORANGE
 "N" GENERAL PURPOSE NEOPRENE PER AMS 3209
 COLOR: BLACK
 "T" TEFLON SKIVED PER AMS 3652
 COLOR: WHITE

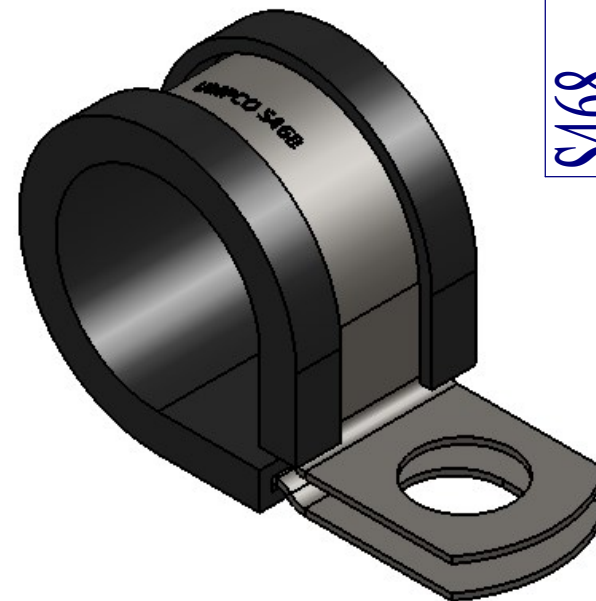
EXAMPLE OF PART CALLOUT:

1" DIA. ALUM. CLAMP W/EPDM CUSHION

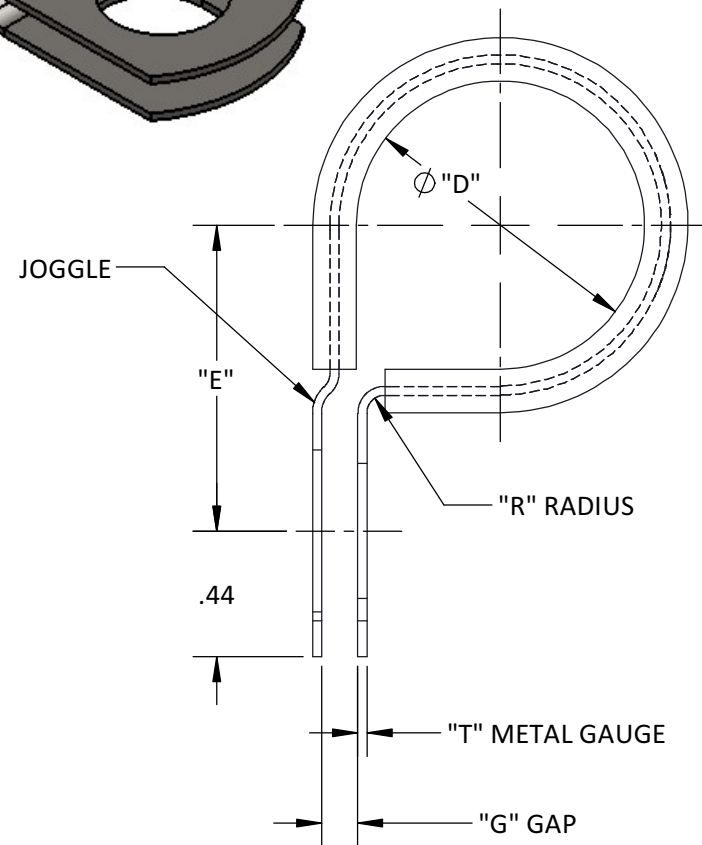
S468 D G 16
 ———— DIA "D" IN 1/16" INCREMENTS
 ———— CUSHION CODE
 ———— METAL CODE (OMIT FOR "NO CODE")
 ———— BASIC DRAWING NUMBER

NOTES:

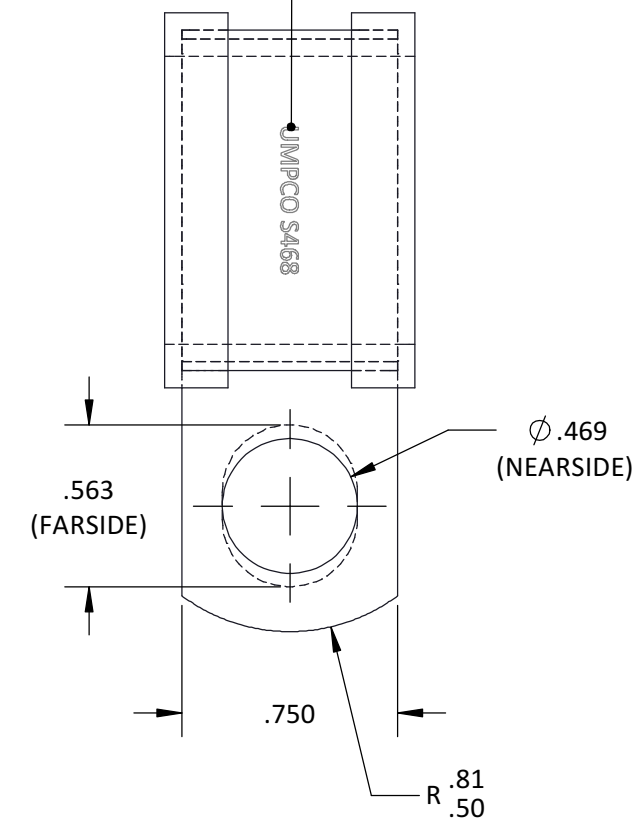
- 1 OPTIONAL FINISH: CADMIUM PLATE GOLD PER AMS-QQ-P-416, TY. II, CL. 2
- 2) CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.
- 3) INSPECT PER MIL-C-8603 CLOSURE TEST.



S468



STEEL STAMP "UMPCO" & PART NUMBER



SHEET 1 OF 1

REFERENCES:								
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	± 5°	UMPCO . INC. 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846		FSCM/CAGE CODE No. 18076		
	DECIMAL:	.XX	± .03			KEL	KEL	EHK
GENERAL MACHINE FINISHES EXCEPT AS NOTED:	INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M			PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.		11/05/76	11/05/76	11/05/76
	REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX					ACT. WGHT.	-	DRAWN
		ACT. WGHT.	-	CLAMP, LOOP-CUSHIONED PART AND/OR ASSEMBLY DESCRIPTION		SCALE: NONE		
		CALC. WGHT.	-			<div style="font-size: 2em; font-weight: bold; border: 1px solid black; padding: 2px;">B</div>	<div style="font-size: 2em; font-weight: bold;">S468</div>	
						PRINT NUMBER		

A

B

C

D

E

A

B

C

D

E

DASH NO. RANGE	"D" DIA. RANGE	"E" DIMENSION	"G" GAP	"H" HOLE	"R" RADIUS	"T" GAUGE		"W" WIDTH	"X" DIMENSION
						ALUM.	STEEL		
-2 THRU -8 ²	1/8" TO 1/2"	"D"/2 + .300	.03	.173	.03	.032	.031	.375	.188
-9 THRU -10 ²	9/16" TO 5/8"		.06						
-11 THRU -17	11/16" TO 1-1/16"	"D"/2 + .365	.050						
-18 THRU -32	1-1/8" TO 2"	"D"/2 + .375	.063	.06	.063	.500	.218		

S470

MATERIAL & FINISH CODES:

METAL: "NO CODE" 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
 FINISH: ZINC PLATE GOLD PER ASTM B 633, Fe/Zn 8, TY. II ¹

"D" 2024-T42 ALUMINUM ALLOY PER AMS-QQ-A-250/5
 FINISH: NONE

"DK" 5052-H32 1/4 HARD ALUMINUM ALLOY PER AMS-QQ-A-250/8
 FINISH: NONE ³

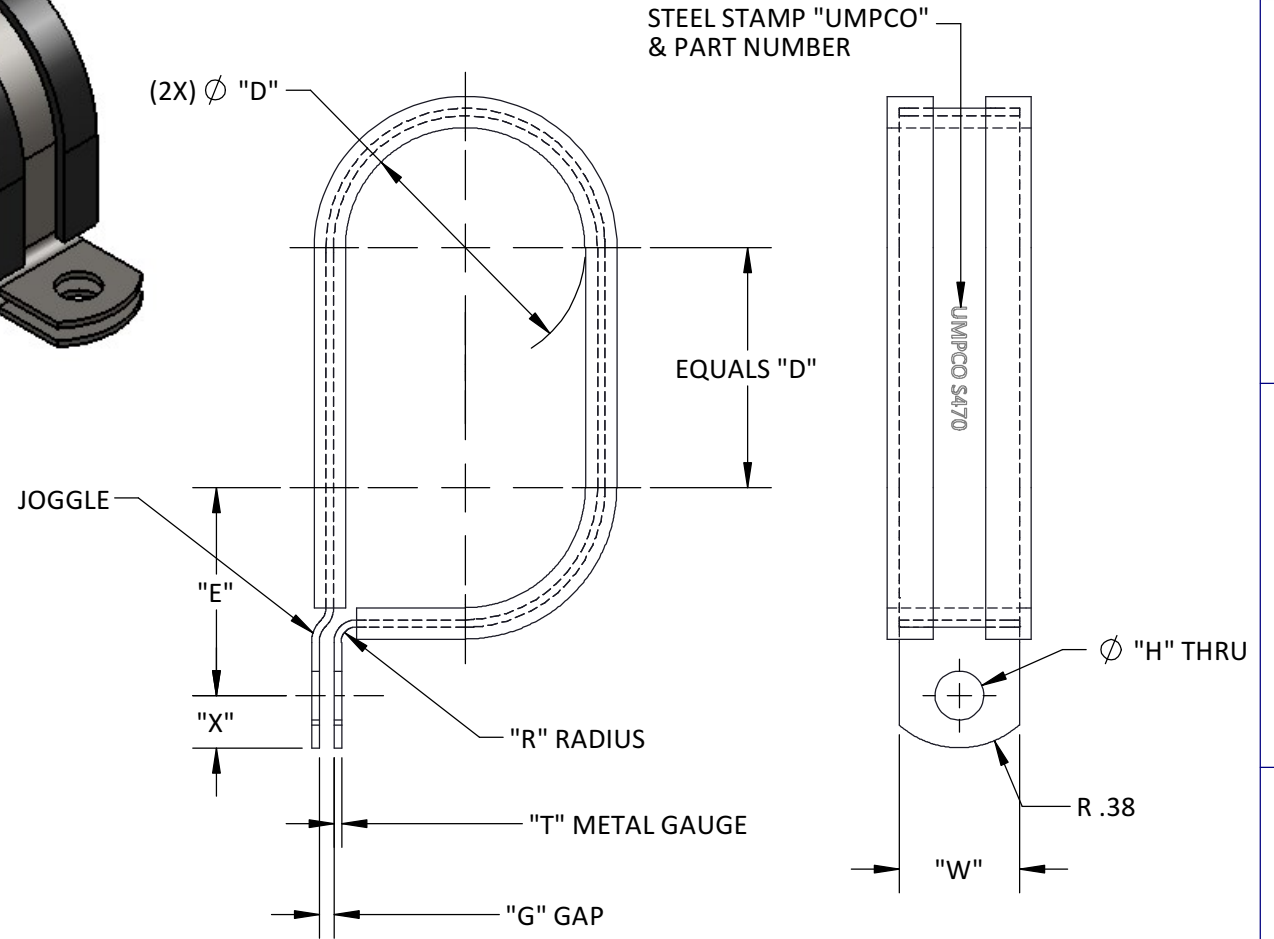
"SS" 304/321 STAINLESS STEEL PER AMS 5513/AMS 5510
 FINISH: NONE

CUSHION: "G" GENERAL PURPOSE EPDM PER SAE J200 M3 BA 710 C12
 COLOR: BLACK

"H" GENERAL PURPOSE SILICONE PER AMS 3303 WITH 100 PSI MIN. TEAR
 COLOR: RED/ORANGE

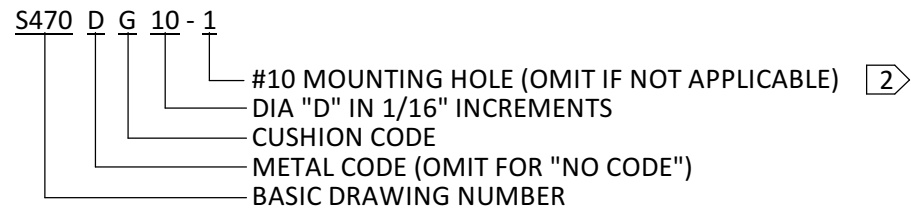
"N" GENERAL PURPOSE NEOPRENE PER AMS 3209
 COLOR: BLACK

"T" TEFLON SKIVED PER AMS 3652
 COLOR: WHITE



EXAMPLE OF PART CALLOUT:

5/8" DIA. ALUM. CLAMP W/EPDM CUSHION AND #10 MNT'G HOLE OPTION



NOTES:

- ¹ OPTIONAL FINISH: CADMIUM PLATE GOLD PER AMS-QQ-P-416, TY. II, CL. 2
- ² FOR SIZES -2 THRU -10 ONLY, SPECIFY A (-1) AT THE END OF PART # FOR .204 DIAMETER MNT'G HOLE.
- ³ CAUSTIC ETCH TO CLEAN AS NEEDED.
- 4) CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.
- 5) INSPECT PER MIL-C-8603 CLOSURE TEST.

SHEET 1 OF 1

REFERENCES:							
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	± 5°	UMPCO . INC. 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846		FSCM/CAGE CODE No. 18076	
	DECIMAL:	.XX	± .03			KEL	KEL
GENERAL MACHINE FINISHES EXCEPT AS NOTED: INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M	<small>PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.</small>			05/09/77		05/09/77	05/09/77
	ACT. WGHT.	-		DRAWN	CHECKED	ENGR	
REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	CALC. WGHT.	-		CLAMP, LOOP-CUSHIONED, MULTI-LINE, EQUAL DIAMETER, #8 & #10 MOUNTING HOLE		SCALE: NONE	<div style="font-size: 2em; font-weight: bold; text-align: center;">S470</div>
				PART AND/OR ASSEMBLY DESCRIPTION		PRINT NUMBER	

DASH NO. RANGE	"D" DIA. RANGE	"E" DIMENSION	"G" GAP	"H" HOLE	"R" RADIUS	"T" GAUGE		"W" WIDTH	"X" DIMENSION
						ALUM.	STEEL		
-2 THRU -8 ²	1/8" TO 1/2"	"D"/2 + .300	.03	.173	.03	.032	.031	.375	.188
-9 THRU -10 ²	9/16" TO 5/8"		.06						
-11 THRU -17	11/16" TO 1-1/16"	"D"/2 + .365	.050	.204	.06	.063		.500	.218
-18 THRU -32	1-1/8" TO 2"	"D"/2 + .375	.09			.063			

S471

MATERIAL & FINISH CODES:

METAL: "NO CODE" 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
 FINISH: ZINC PLATE GOLD PER ASTM B 633, Fe/Zn 8, TY. II ¹

"D" 2024-T42 ALUMINUM ALLOY PER AMS-QQ-A-250/5
 FINISH: NONE

"DK" 5052-H32 1/4 HARD ALUMINUM ALLOY PER AMS-QQ-A-250/8
 FINISH: NONE ³

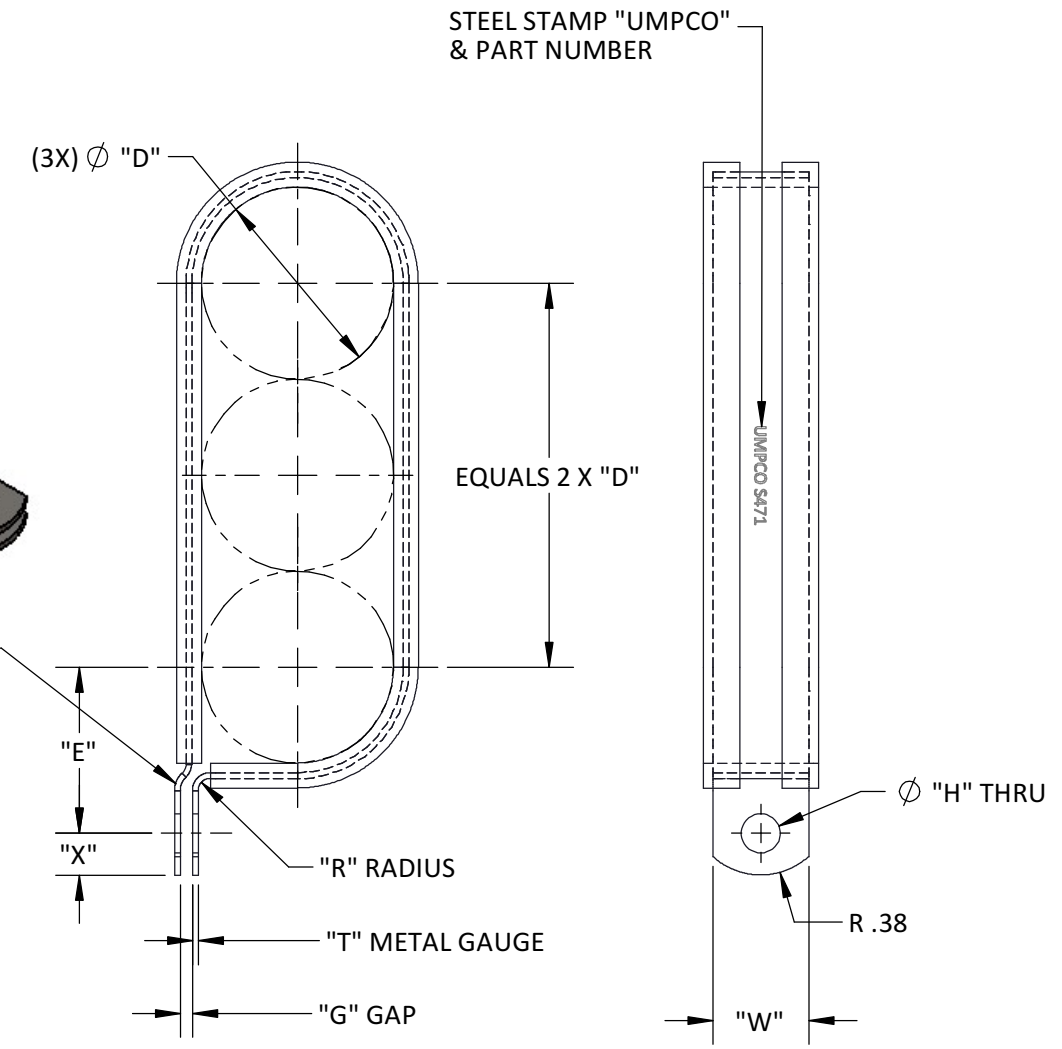
"SS" 304/321 STAINLESS STEEL PER AMS 5513/AMS 5510
 FINISH: NONE

CUSHION: "G" GENERAL PURPOSE EPDM PER SAE J200 M3 BA 710 C12
 COLOR: BLACK

"H" GENERAL PURPOSE SILICONE PER AMS 3303 WITH 100 PSI MIN. TEAR
 COLOR: RED/ORANGE

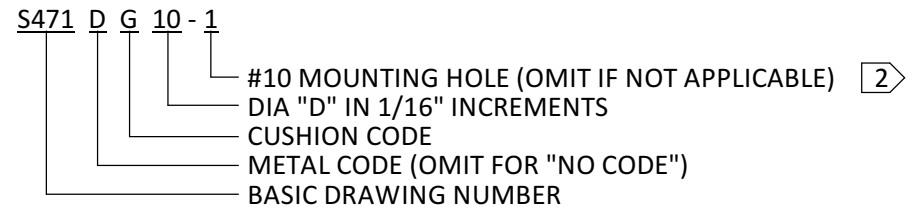
"N" GENERAL PURPOSE NEOPRENE PER AMS 3209
 COLOR: BLACK

"T" TEFLON SKIVED PER AMS 3652
 COLOR: WHITE



EXAMPLE OF PART CALLOUT:

5/8" DIA. ALUM. CLAMP W/EPDM CUSHION AND #10 MNT'G HOLE OPTION



- NOTES:**
- ¹ OPTIONAL FINISH: CADMIUM PLATE GOLD PER AMS-QQ-P-416, TY. II, CL. 2
 - ² FOR SIZES -2 THRU -10 ONLY, SPECIFY A (-1) AT THE END OF PART # FOR .204 DIAMETER MNT'G HOLE.
 - ³ CAUSTIC ETCH TO CLEAN AS NEEDED.
 - CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.
 - INSPECT PER MIL-C-8603 CLOSURE TEST.

SHEET 1 OF 1

REFERENCES:								
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	$\pm 5^\circ$			FSCM/CAGE CODE No. 18076		
	DECIMAL:	.XX	$\pm .03$			KEL	KEL	EHK
GENERAL MACHINE FINISHES EXCEPT AS NOTED:	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.			7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846		05/09/77	05/09/77	05/09/77
	INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M			CLAMP, LOOP-CUSHIONED, MULTI-LINE, 3 TUBE, EQUAL DIAMETER, #8 & #10 MOUNTING HOLE		DRAWN	CHECKED	ENGR
REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	ACT. WGHT.	-		PART AND/OR ASSEMBLY DESCRIPTION		SCALE: NONE		
	CALC. WGHT.	-				SIZE	S471	
						PRINT NUMBER		

DASH NO. RANGE	"D" DIA. RANGE	"E" DIMENSION	"R" RADIUS	"T" GAUGE
-4 THRU -16	1/4" TO 1"	"D"/2 + .673	.06	.040
-17 THRU -96	1-1/16" TO 6"	"D"/2 + .693	.11	.050
-17L THRU -32L	1-1/16" TO 2"	"D"/2 + .673	.06	.040

MATERIAL & FINISH CODES:

METAL: "NO CODE" 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
 FINISH: ZINC PLATE GOLD PER ASTM B 633, Fe/Zn 8, TY. II 1

"D" 2024-T42 ALUMINUM PER AMS-QQ-A-250/5
 FINISH: NONE

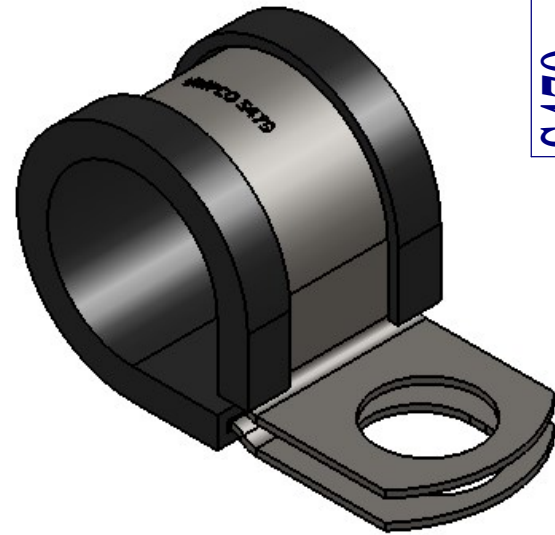
"SS" 304/321 STAINLESS STEEL PER AMS 5513/AMS 5510
 FINISH: NONE

CUSHION: "G" GENERAL PURPOSE EPDM PER SAE J200 M3 BA 710 C12
 COLOR: BLACK

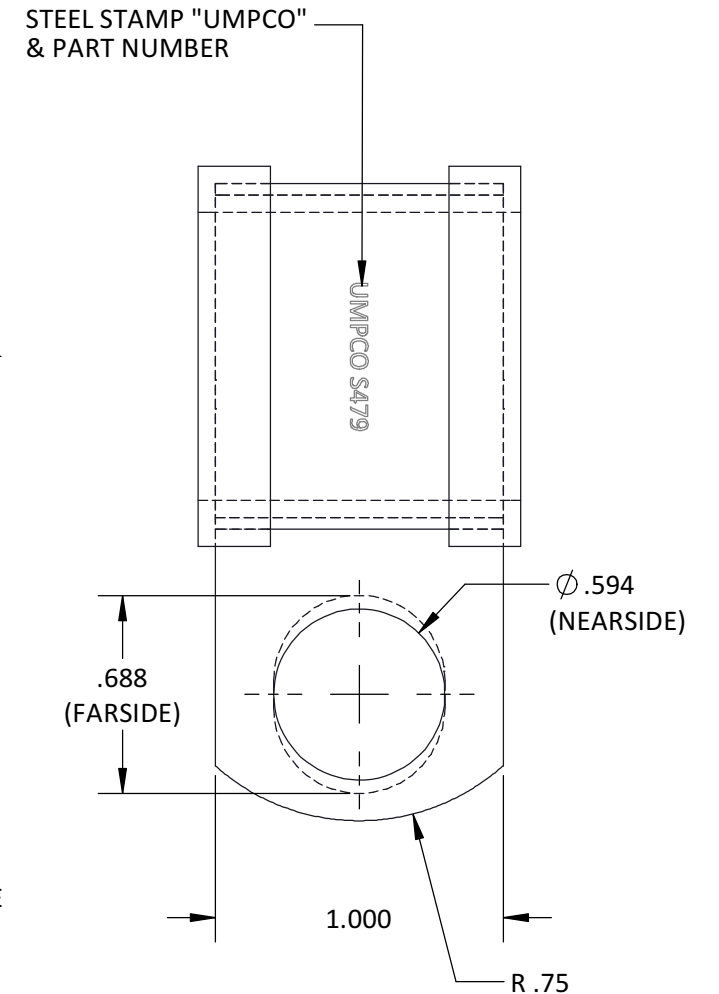
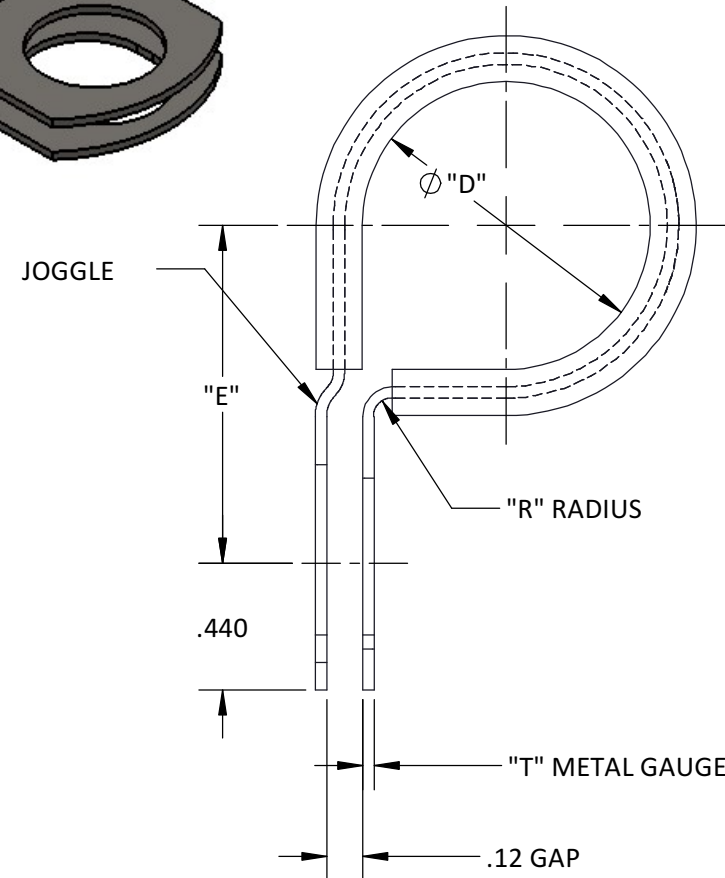
"H" GENERAL PURPOSE SILICONE PER AMS 3303 WITH 100 PSI MIN. TEAR
 COLOR: RED/ORANGE

"N" GENERAL PURPOSE NEOPRENE PER AMS 3209
 COLOR: BLACK

"T" TEFLON SKIVED PER AMS 3652
 COLOR: WHITE

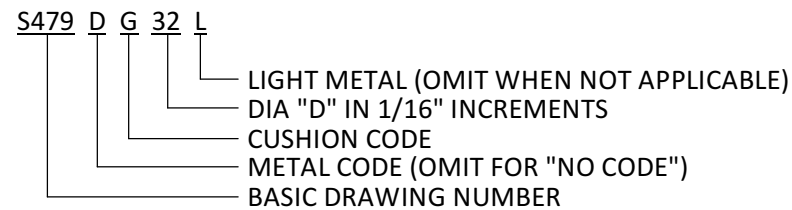


S479



EXAMPLE OF PART CALLOUT:

2" DIA., .04 THK., ALUM. CLAMP W/EPDM CUSHION



NOTES:

- 1 OPTIONAL FINISH: CADMIUM PLATE GOLD PER AMS-QQ-P-416, TY. II, CL. 2
- 2) CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.
- 3) INSPECT PER MIL-C-8603 CLOSURE TEST.

SHEET 1 OF 1

REFERENCES:				
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	$\pm 5^\circ$	
	DECIMAL:	.XX	$\pm .03$	
GENERAL MACHINE FINISHES EXCEPT AS NOTED:		.XXX	$\pm .015$	
	INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M	UMPCO . INC. 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846		
REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	ACT. WGHT.	-		
	CALC. WGHT.	-		
CLAMP, LOOP-CUSHIONED, 5/16TH MOUNTING HOLE		SIZE	SCALE: NONE	
PART AND/OR ASSEMBLY DESCRIPTION		B	S479	
		PRINT NUMBER		

DASH NO. RANGE	"D" DIA. RANGE	"E" DIMENSION		"G" GAP	"R" RADIUS	"T" GAUGE		"S" +.016 - .000
		ALUM.	STEEL			ALUM.	STEEL	
-2	1/8"	"D"/2 + .395	"D"/2 + .395	.078	.062	.032	.032	.045
-3 THRU -8	3/16" TO 1/2"	"D"/2 + .404	"D"/2 + .404					
-9 THRU -12	9/16" TO 3/4"	"D"/2 + .470	"D"/2 + .468	.062	.109	.050	.032	.045
-13 THRU -17	13/16" TO 1-1/16"		"D"/2 + .452					
-18 THRU -30	1-1/8" TO 1-7/8"	"D"/2 + .500	"D"/2 + .468	.109	.125	.062	.040	.060
-31 THRU -66	1-15/16" TO 4-1/8"		"D"/2 + .476					



S482

REV.	CHANGE	DATE	BY	CHK'D	APPR
G	SEE DRAWING CHANGE RECORD ON FILE.	09/25/13	HAD	KWE	HAD

MATERIAL & FINISH CODES:

METAL: "NO CODE" 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
 FINISH: CAD PLATE BRIGHT PER AMS-QQ-P-416, TY. I, CL. 2
 "D" 2024-T42 ALUMINUM CLAD PER AMS-QQ-A-250/5
 FINISH: CHEMICAL FILM GOLD PER MIL-DTL-5541, TY. I, CL. 1A
 "SS" 304/321 STAINLESS STEEL PER AMS 5513/AMS 5510
 FINISH: BALL BURNISH & PASSIVATE
 PER ASTM A 967 & AMS 2700, METHOD 1, TY. 6

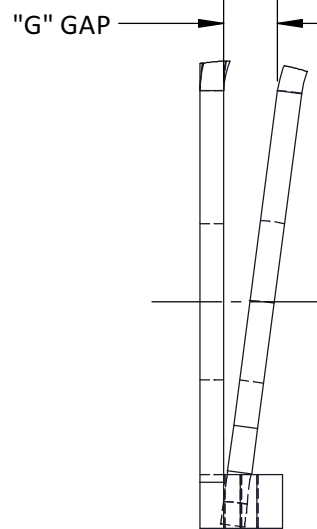
CUSHION: "F" NITRILE BUTADIENE PER AMS 3215
 COLOR: YELLOW
 "G" NEOPRENE PER AMS 3209 & MIL-C-8603
 COLOR: BLACK W/BLEU IDENTIFIER
 "H" SILICONE PER AMS 3303 & MIL-C-8603 WITH 100 PSI MIN. TEAR
 COLOR: NATURAL WHITE

EXAMPLE OF PART CALLOUT:

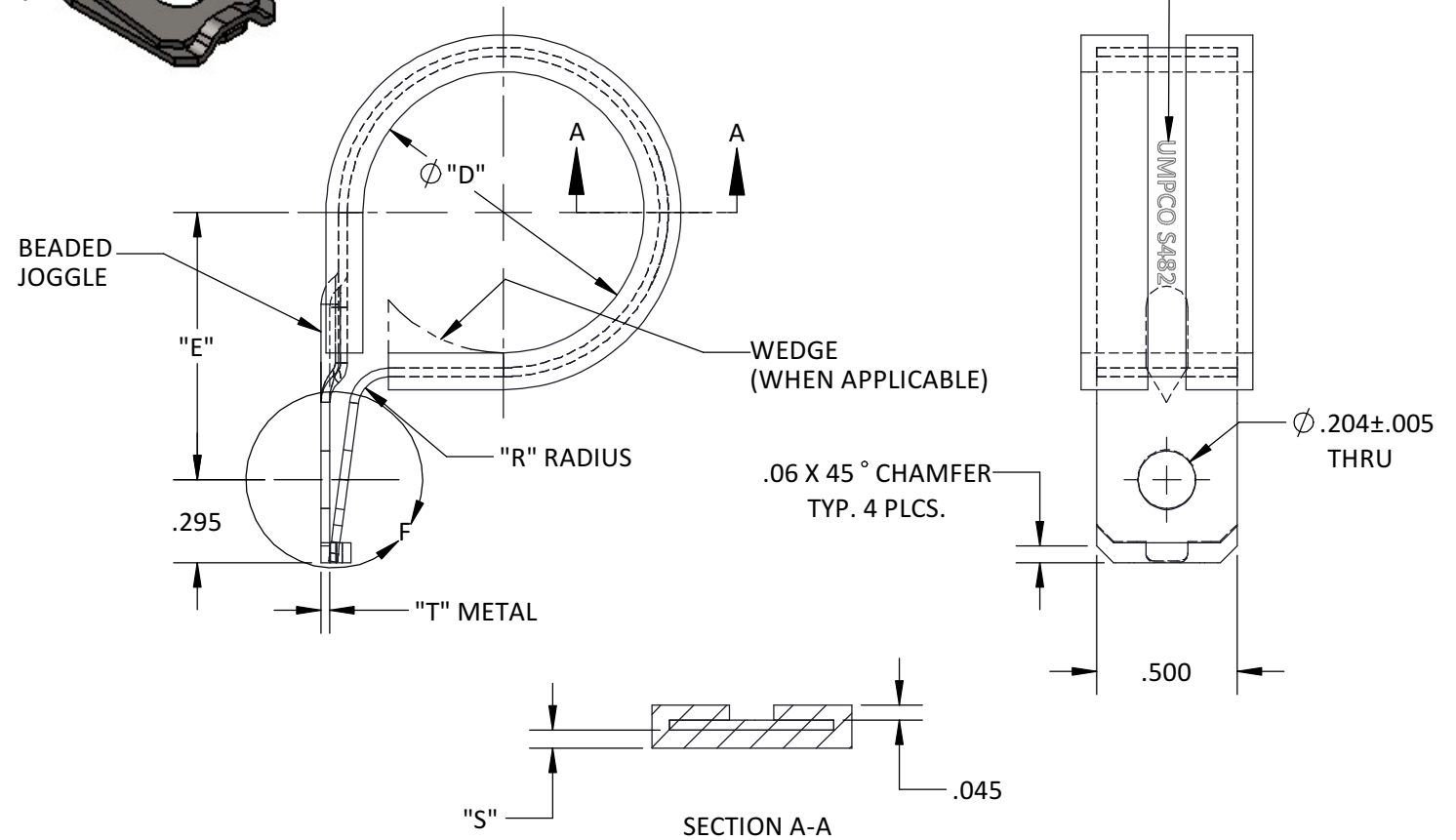
1" DIA. STAINLESS STEEL CLAMP W/WEDGED NEOPRENE CUSHION

S482 W SS G 16

- DIA. "D" IN 1/16th INCREMENTS
- CUSHION CODE
- METAL CODE (OMIT FOR "NO CODE")
- WEDGE CODE (OMIT IF NOT APPLICABLE)
- BASIC DRAWING NUMBER



DETAIL F
TANG LOCK DETAIL
PER DS1016



SHEET 1 OF 1

NOTES:

- 1) WEDGE IS AVAILABLE FOR SIZES -2 THRU -48 ONLY.
- 2) WEDGE SHALL BE INTEGRALLY MOLDED OR VULCANIZED.
- 3) ALL DIMENSIONS ARE IN INCHES.
- 4) CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.
- 5) INSPECT PER MIL-C-8603 CLOSURE TEST.

REFERENCES:		LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:		GENERAL MACHINE FINISHES EXCEPT AS NOTED:			REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX		
ANGULAR:	X	± 5°	DECIMAL:	.XX	± .03	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.			
				.XXX	± .015	INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M			
				ACT. WGHT. - CALC. WGHT. -			ACT. WGHT. - CALC. WGHT. -		



FSCM/CAGE CODE No. 18076		
KEL	KEL	EHK
02/07/78	02/07/78	02/07/78
DRAWN	CHECKED	ENGR

CLAMP, LOOP-CUSHIONED, TANG LOCK, FOR #10 MOUNTING SCREW

SIZE	SCALE: NONE
B	S482
PART AND/OR ASSEMBLY DESCRIPTION	
PRINT NUMBER	

DASH NO. RANGE	"D" DIA. RANGE	"E" DIMENSION	"G" GAP	"R" RADIUS	"T" GAUGE
-2 THRU -8	1/8" TO 1/2"	"D"/2 + .404	.070	.062	.032
-9 THRU -17	9/16" TO 1-1/16"	"D"/2 + .471		.109	.050
-18 THRU -25	1-1/8" TO 1-9/16"	"D"/2 + .500	.100	.125	.062
-26 THRU -32	1-5/8" TO 2"		.104		
-33 THRU -48	2-1/16" TO 3"		.125		

MATERIAL & FINISH CODES:

METAL: 321/347 STAINLESS STEEL PER AMS 5510/AMS 5512
FINISH: NONE

CUSHION: PTFE IMPREGNATED PBI POLYAMIDE - GLASS BLEND FABRIC ¹
PER AMS 3677, BPS-C-155
COLOR: BROWN

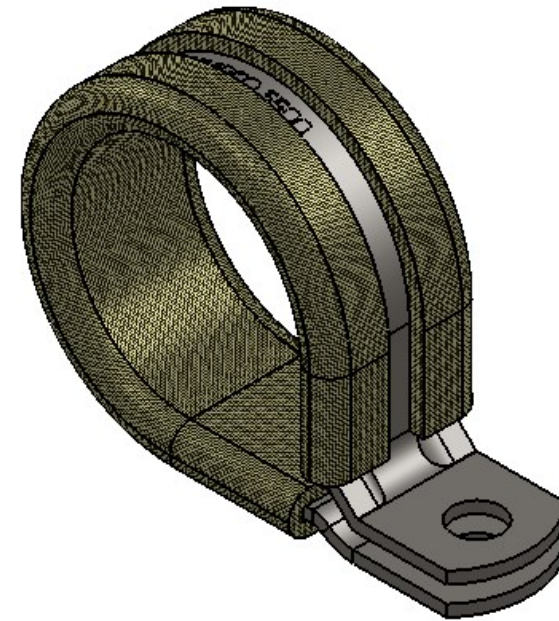
EXAMPLE OF PART CALLOUT:

1" DIA. CLAMP, .05 THK., STAINLESS STEEL W/GLASS BLEND FABRIC CUSHION

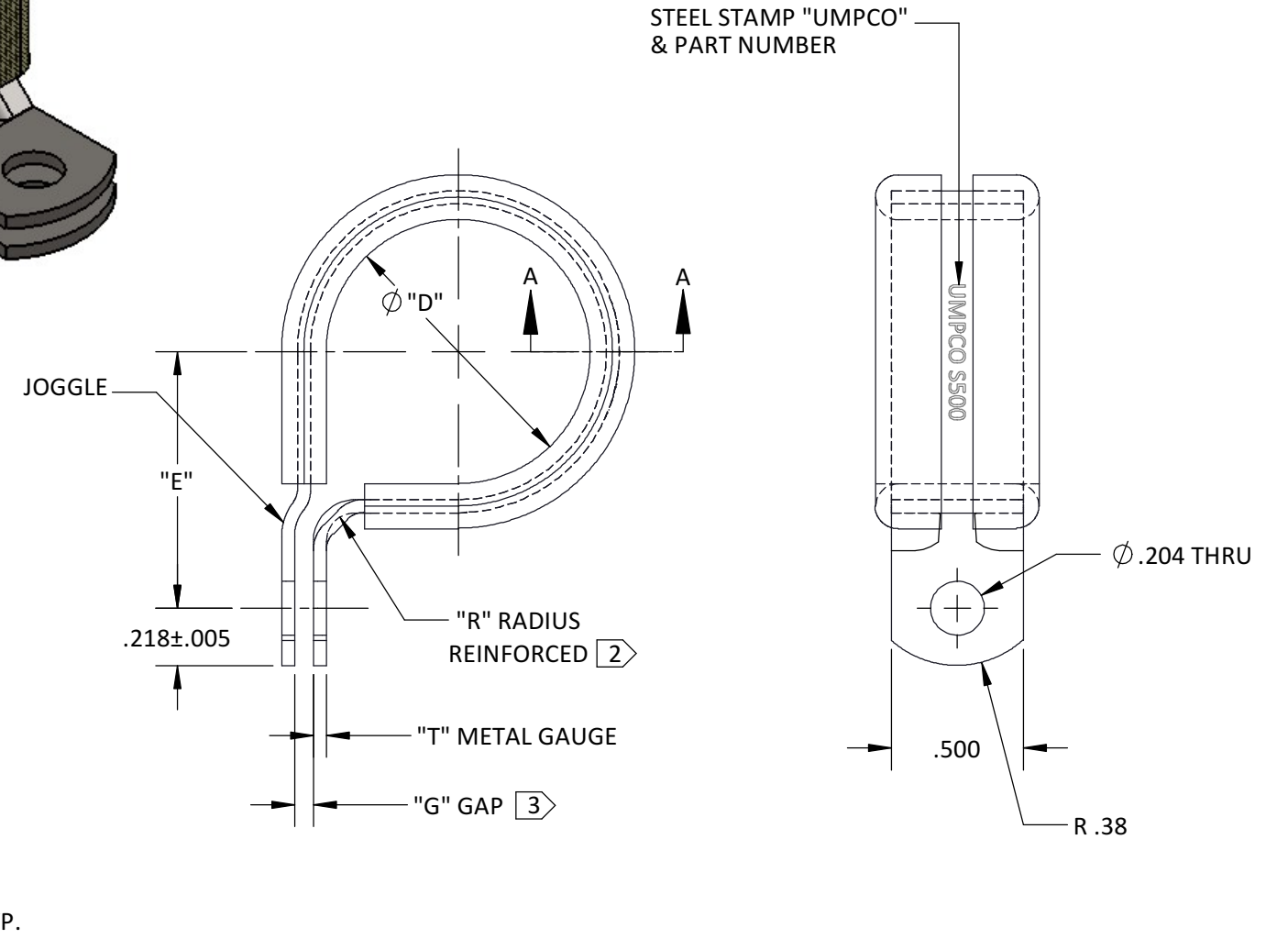
S500 - 16
DIA "D" IN 1/16" INCREMENTS
BASIC PART NUMBER

NOTES:

- ¹ APPROVED CUSHION SOURCE: TA MFG. VALENCIA, CA. 91355
SPLITS, TEARS OR SEPARATIONS IN THE CUSHION FABRIC SHALL NOT EXCEED .03 INCHES WIDTH ON THE FORMED CLAMP.
MAX. OPERATING TEMPERATURE 600°F (315°C).
- ² THERE SHALL BE NO SHARP EDGES OR EVIDENCE OF CRACKING IN THE FORMED AREA.
- ³ DIMENSION "G" MUST BE WITHIN SPECIFIED LIMITS WHEN THE CLAMP IS CLOSED TO THE "D" DIAMETER.
- 4) CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.



S500



SHEET 1 OF 1

REFERENCES: BACC10HS									
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	± 5°	UMPCO . INC. 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846			FSCM/CAGE CODE No. 18076		
	DECIMAL:	.XX	± .03				KEL	EHK	EHK
GENERAL MACHINE FINISHES EXCEPT AS NOTED: INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M	<small>PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.</small>			07/23/85	07/23/85	07/23/85			
	REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX			ACT. WGHT.	-	DRAWN		CHECKED	ENGR
			CALC. WGHT.	-	SCALE: NONE				
			CLAMP, SUPPORT, LOOP-TYPE, HIGH TEMP (600°F, 315°C) CUSHION			SIZE		SCALE: NONE	
			PART AND/OR ASSEMBLY DESCRIPTION			B		S500	
								PRINT NUMBER	

DASH NO. RANGE	"D" DIA. RANGE	"E" DIMENSION	"R" RADIUS	"T" GAUGE
-8 THRU -16	1/2" TO 1"	"D"/2 + .514	.06	.050
-17 THRU -32	1-1/16" TO 2"	"D"/2 + .534	.11	.062

MATERIAL & FINISH CODES:

METAL: "NO CODE" 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
 FINISH: ZINC PLATE GOLD PER ASTM B 633, Fe/Zn 8, TY. II
 "P" 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
 FINISH: ZINC PLATE GOLD PLUS SEALER PER ASTM B 633, Fe/Zn 13, TY. II
 "D" 2024-T42 ALUMINUM ALLOY PER AMS-QQ-A-250/5
 FINISH: NONE
 "SS" 304/321 STAINLESS STEEL PER AMS 5513/AMS 5510
 FINISH: NONE

CUSHION: "G" GENERAL PURPOSE EPDM PER SAE J200 M3 BA 710 C12
 COLOR: BLACK
 "H" GENERAL PURPOSE SILICONE PER AMS 3303 WITH 100 PSI MIN. TEAR
 COLOR: RED/ORANGE
 "N" GENERAL PURPOSE NEOPRENE PER AMS 3209
 COLOR: BLACK

EXAMPLE OF PART CALLOUT:

1" DIA., 2 TUBE, ALUM. CLAMP W/EPDM CUSHION

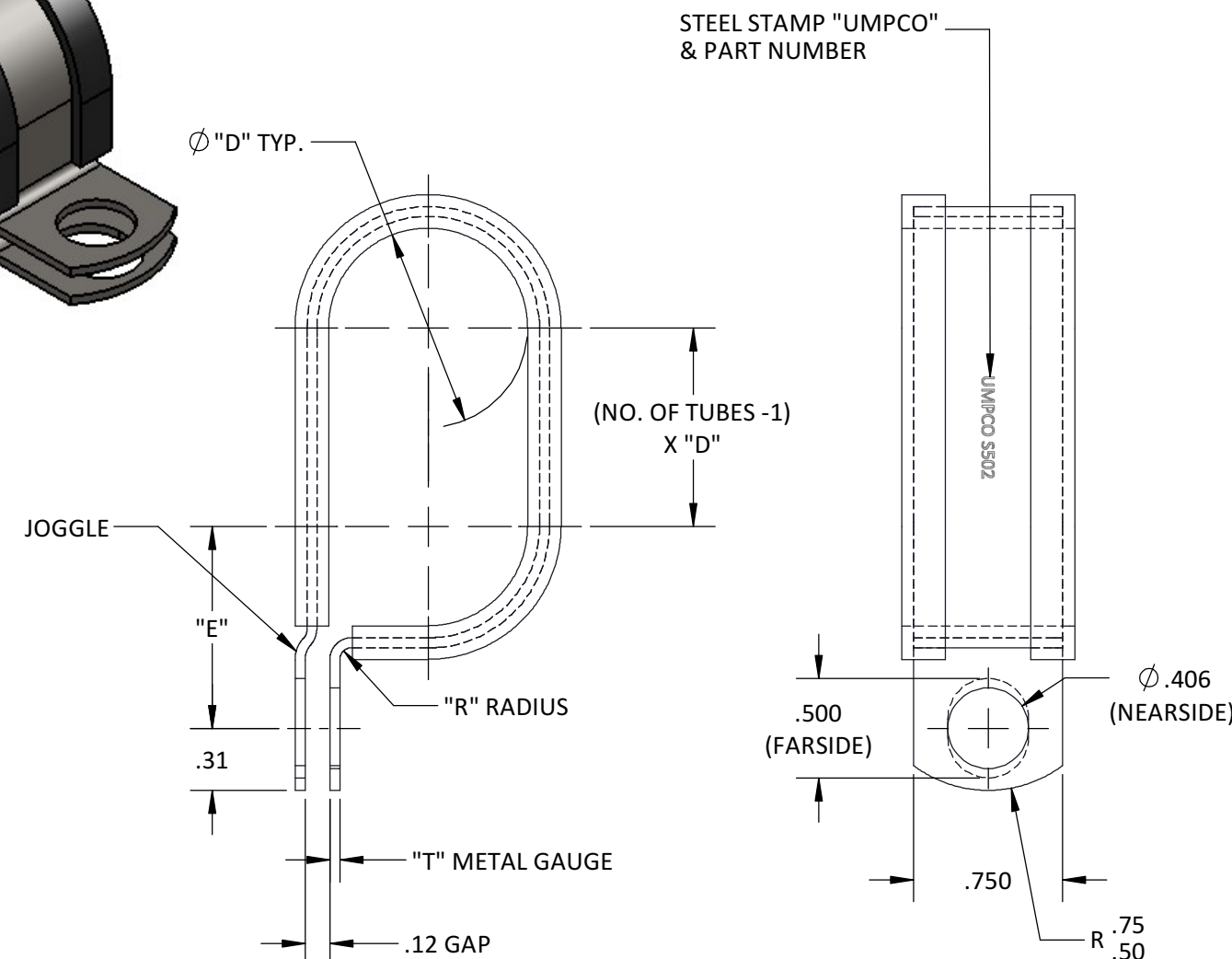
S502 D G 16 - 2
 NUMBER OF TUBES
 DIA "D" IN 1/16" INCREMENTS
 CUSHION CODE
 METAL CODE (OMIT FOR "NO CODE")
 BASIC DRAWING NUMBER

NOTES:



- 1) CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.
- 2) INSPECT PER MIL-C-8603 CLOSURE TEST.



S502



SHEET 1 OF 1

REFERENCES:									
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	± 5°	 UMPCO . INC. 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846			FSCM/CAGE CODE No. 18076		
	DECIMAL:	.XX	± .03				KEL	KEL	KEL
GENERAL MACHINE FINISHES EXCEPT AS NOTED:  INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M	<small>PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.</small>			03/27/78 03/27/95 03/27/95					
	REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	ACT. WGHT.	-	CLAMP, LOOP-CUSHIONED, MULTI-LINE, FOR 3/8 MOUNTING BOLT			SCALE: NONE		
	CALC. WGHT.	-	PART AND/OR ASSEMBLY DESCRIPTION			SIZE B	PRINT NUMBER S502		

DASH NO. RANGE	"D" DIA. RANGE	"E" DIMENSION	"G" GAP	"R" RADIUS	"T" GAUGE
-2L THRU -8L	1/8" TO 1/2"	"D"/2 + .505	.06	.08	.020
-2 THRU -8	1/8" TO 1/2"				.031
-9 THRU -12	9/16" TO 3/4"	"D"/2 + .535	.09	.11	.050
-13 THRU -23	13/16" TO 1-7/16"				.062
-24 THRU -32	1-1/2" TO 2"	"D"/2 + .530	.13	.11	.050
-33 THRU -66	2-1/16" TO 4-1/8"				.062
-33L THRU -66L					

MATERIAL & FINISH CODES:

METAL: "NO CODE" 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
 FINISH: ZINC PLATE GOLD PER ASTM B 633, Fe/Zn 8, TY. II
 "D" 2024-T42 ALUMINUM ALLOY PER AMS-QQ-A-250/5
 FINISH: NONE
 "DK" 5052-H32 1/4 HARD ALUMINUM PER AMS-QQ-A-250/8
 FINISH: NONE ①
 "SS" 304/321 STAINLESS STEEL PER AMS 5513/AMS 5510
 FINISH: NONE
 "P" 17-7PH CORROSION RESISTANT STEEL PER AMS5528
 HEAT TREAT TO TH1100 CONDITION PER AMS2759/3 AFTER FORMING
 FINISH: PASSIVATE PER AMS2700 & BAKE PER AMS2759/9

CUSHION: "G" GENERAL PURPOSE EPDM PER SAE J200 M3 BA 710 C12
 COLOR: BLACK
 "H" GENERAL PURPOSE SILICONE PER AMS 3303 WITH 100 PSI MIN. TEAR
 COLOR: RED/ORANGE
 "N" GENERAL PURPOSE NEOPRENE PER AMS 3209
 COLOR : BLACK
 "T" TEFLON SKIVED PER AMS 3652
 COLOR: WHITE

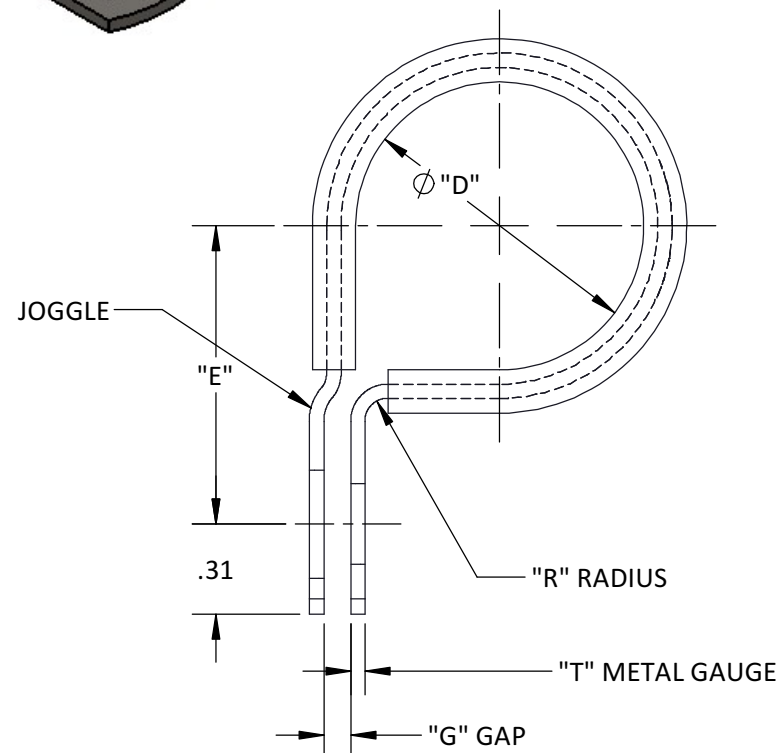
EXAMPLE OF PART CALLOUT:

1" DIA., .050 THK., ALUM. CLAMP W/ EPDM CUSHION

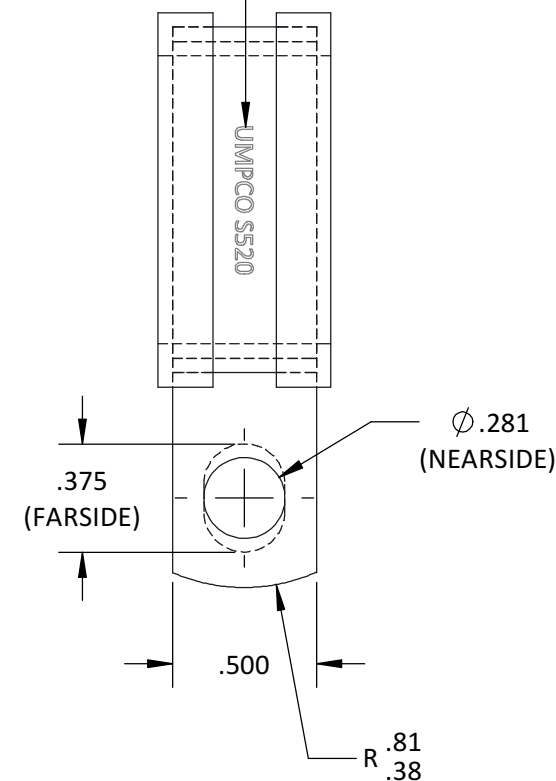
S520 D G 16 L
 LIGHT WEIGHT METAL OPTION (SEE CHART)
 DIA "D" IN 1/16" INCREMENTS
 CUSHION CODE
 METAL CODE (OMIT FOR "NO CODE")
 BASIC DRAWING NUMBER



S520



STEEL STAMP "UMPCO"
& PART NUMBER



SHEET 1 OF 1

NOTES:

- CAUSTIC ETCH TO CLEAN AS NEEDED.
- CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.
- INSPECT PER MIL-C-8603 CLOSURE TEST.

REFERENCES:							
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	± 5°	UMPCO . INC. 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846		FSCM/CAGE CODE No. 18076	
	DECIMAL:	.XX	± .03			KEL	RPD
GENERAL MACHINE FINISHES EXCEPT AS NOTED:	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.			03/12/82		03/02/05	
	INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M			03/02/95		ENGR	
REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	ACT. WGHT.	-		DRAWN		CHECKED	
	CALC. WGHT.	-		ENGR		ENGR	
CLAMP, LOOP-TYPE, SUPPORT, CUSHIONED, FOR 1/4" MOUNTING BOLT				SIZE	SCALE: NONE		
PART AND/OR ASSEMBLY DESCRIPTION				B	S520		
						PRINT NUMBER	

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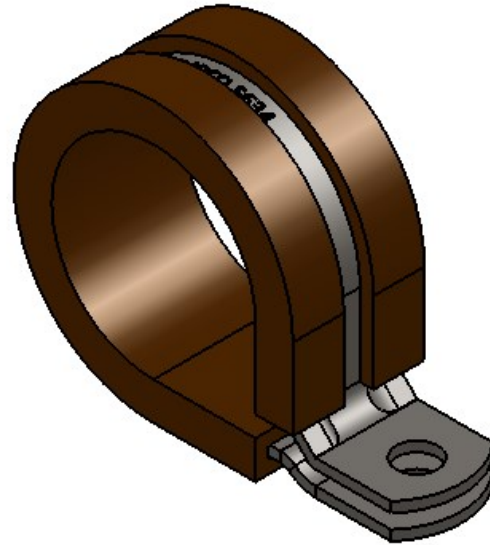
5

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DASH NO. RANGE	"D" DIA. RANGE	"E" DIMENSION	"G" GAP	"R" RADIUS	"T" GAUGE	
					"C"	"P"
-3 THRU -8	3/16" TO 1/2"	"D"/2 + .404	.07	.06	.031	.020
-9 THRU -17	9/16" TO 1-1/16"	"D"/2 + .471		.11	.050	.031
-18 THRU -32	1-1/8" TO 2"	"D"/2 + .500	.10	.13	.062	.040
-33 THRU -48	2-1/16" TO 3"		.13			.050



S634

REV.	CHANGE	DATE	BY	CHK'D	APPR
F	SEE DRAWING CHANGE RECORD ON FILE.	06/14/13	HAD	KWE	HAD

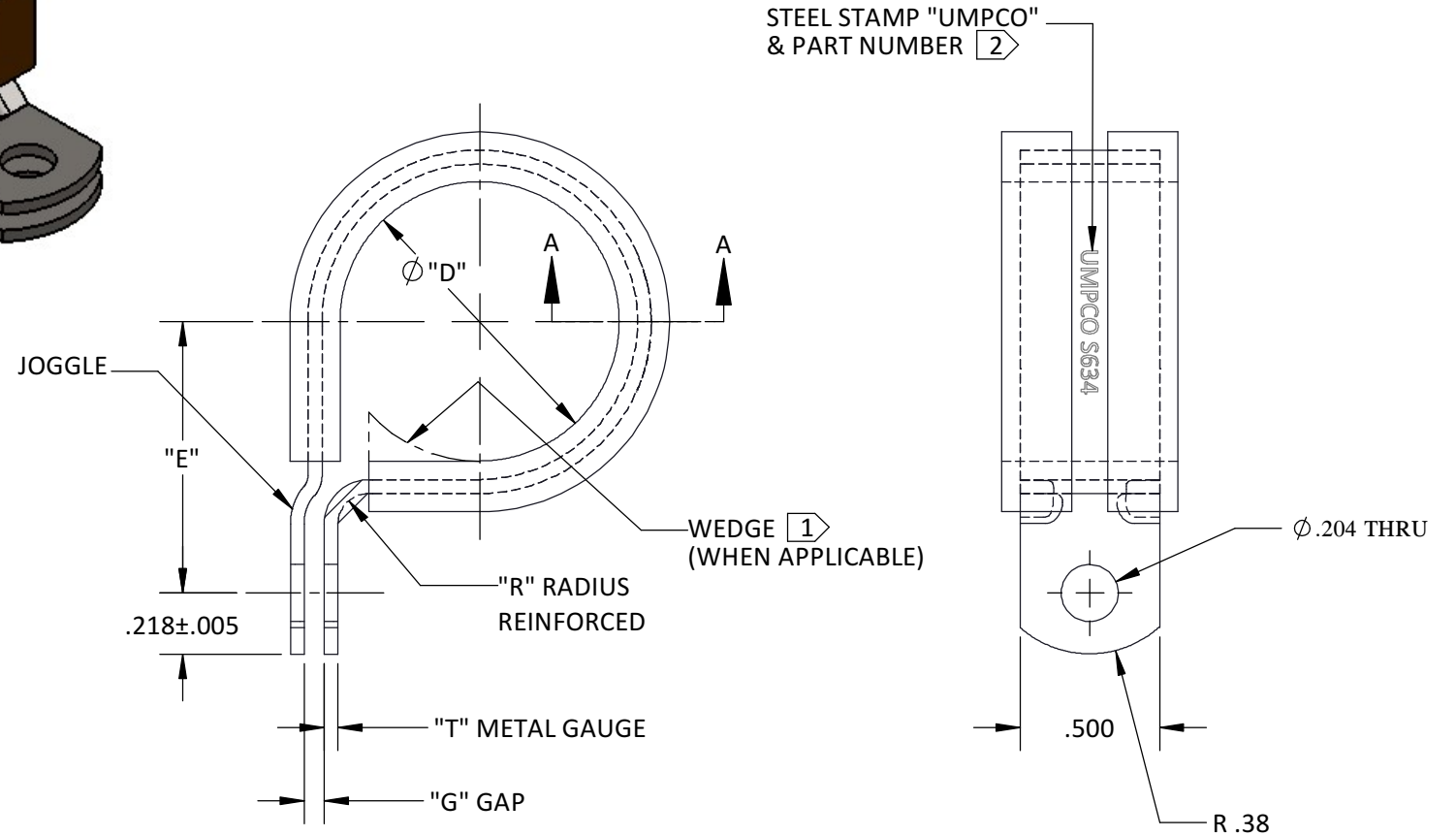
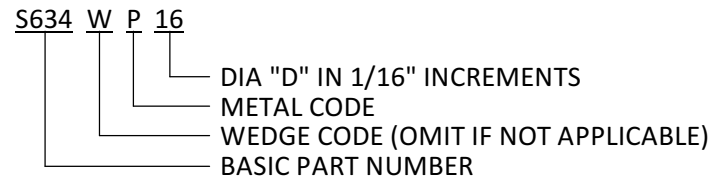
MATERIAL & FINISH CODES:

METAL: "C" 321 STAINLESS STEEL PER AMS 5510
 FINISH: PASSIVATE PER AMS 2700, METHOD 1, CL. 1, TY. 6
 "P" 17-7 PH STAINLESS STEEL PER AMS 5528
 HEAT TREAT & STRESS RELIEVE TO TH1100 CONDITION
 PER AMS 2759, AMS-H-6875, AFTER FORMING.
 FINISH: PASSIVATE PER AMS 2700, METHOD 1, CL. 1, TY. 6

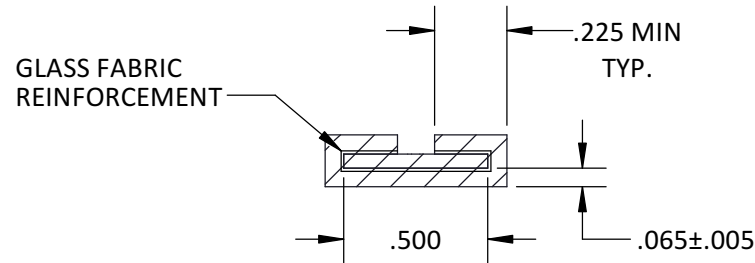
CUSHION: FIBERGLASS REINFORCED SILICONE PER AMS 3352, PWA 36450
 COLOR: BROWN

EXAMPLE OF PART CALLOUT:

1" DIA. CLAMP, 17-7 PH STAINLESS STEEL W/WEDGED CUSHION



SECTION A-A
SCALE 1.5 : 1



SHEET 1 OF 1

NOTES:

- 1) INTEGRALLY MOLDED WEDGE IS FULL CONTOUR FROM -6 TO -24. FOR SIZES -25 THRU -48, USE -24 WEDGE.
- 2) FOR BOEING PROCUREMENT, THE COMPLETE BOEING NUMBER AND "UMPCO" SHALL BE PERMANENTLY MARKED IN THIS AREA.
- 3) CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.
- 4) INSPECT PER MIL-C-8603 CLOSURE TEST.

REFERENCES: BACC10HM	ANGULAR: X ± 5°	<p>7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846</p>	FSCM/CAGE CODE No. 18076		
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	DECIMAL: .XX ± .03 .XXX ± .015		KEL	RPD	KEL
GENERAL MACHINE FINISHES EXCEPT AS NOTED:	<p>PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.</p> <p>✓ INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M</p>		03/22/88	07/08/96	03/22/88
REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	ACT. WGHT. - CALC. WGHT. -	CLAMP, SUPPORT, LOOP-TYPE, HIGH TEMP (600°F, 315°C) CUSHIONED			SCALE: NONE
		PART AND/OR ASSEMBLY DESCRIPTION			SIZE B
					PRINT NUMBER S634

DASH NO. RANGE	"D" DIA. RANGE	"E" DIMENSION	"G" GAP	"R" RADIUS	"T" GAUGE
-4 THRU -8	1/4" TO 1/2"	"D"/2 + .404	.070	.062	.032
-9 THRU -17	9/16" TO 1-1/16"	"D"/2 + .471		.109	.050
-18 THRU -25	1-1/8" TO 1-9/16"	"D"/2 + .500	.100	.125	.062
-26 THRU -32	1-5/8" TO 2"		.104		
-33 THRU -48	2-1/16" TO 3"		.125		

MATERIAL & FINISH CODES:

METAL: 321/347 STAINLESS STEEL PER AMS 5510/AMS 5512
FINISH: NONE

CUSHION: "HB" GLASS FABRIC SUPPORTED SILICONE PER AMS 3352, PWA 36450
COLOR: BROWN
"P" PTFE IMPREGNATED PBI POLYAMIDE - GLASS BLEND FABRIC 1
PER AMS 3677, BPS-C-155
COLOR: BROWN

EXAMPLE OF PART CALLOUT:

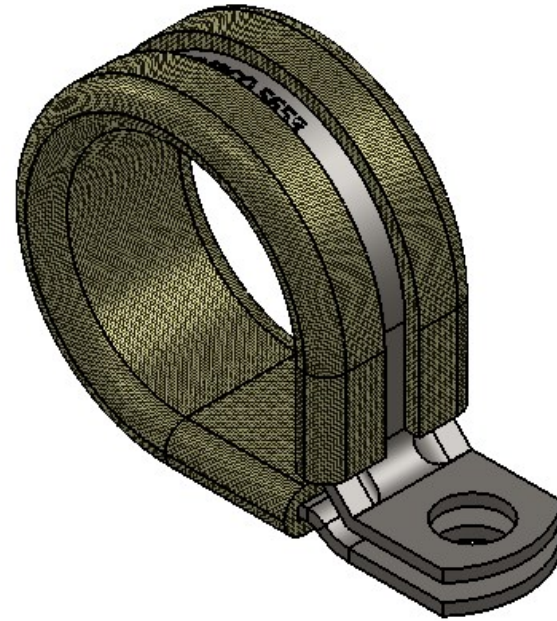
1" DIA. CLAMP, .05 THK., STAINLESS STEEL W/GLASS BLEND FABRIC CUSHION

S653 W HB 16

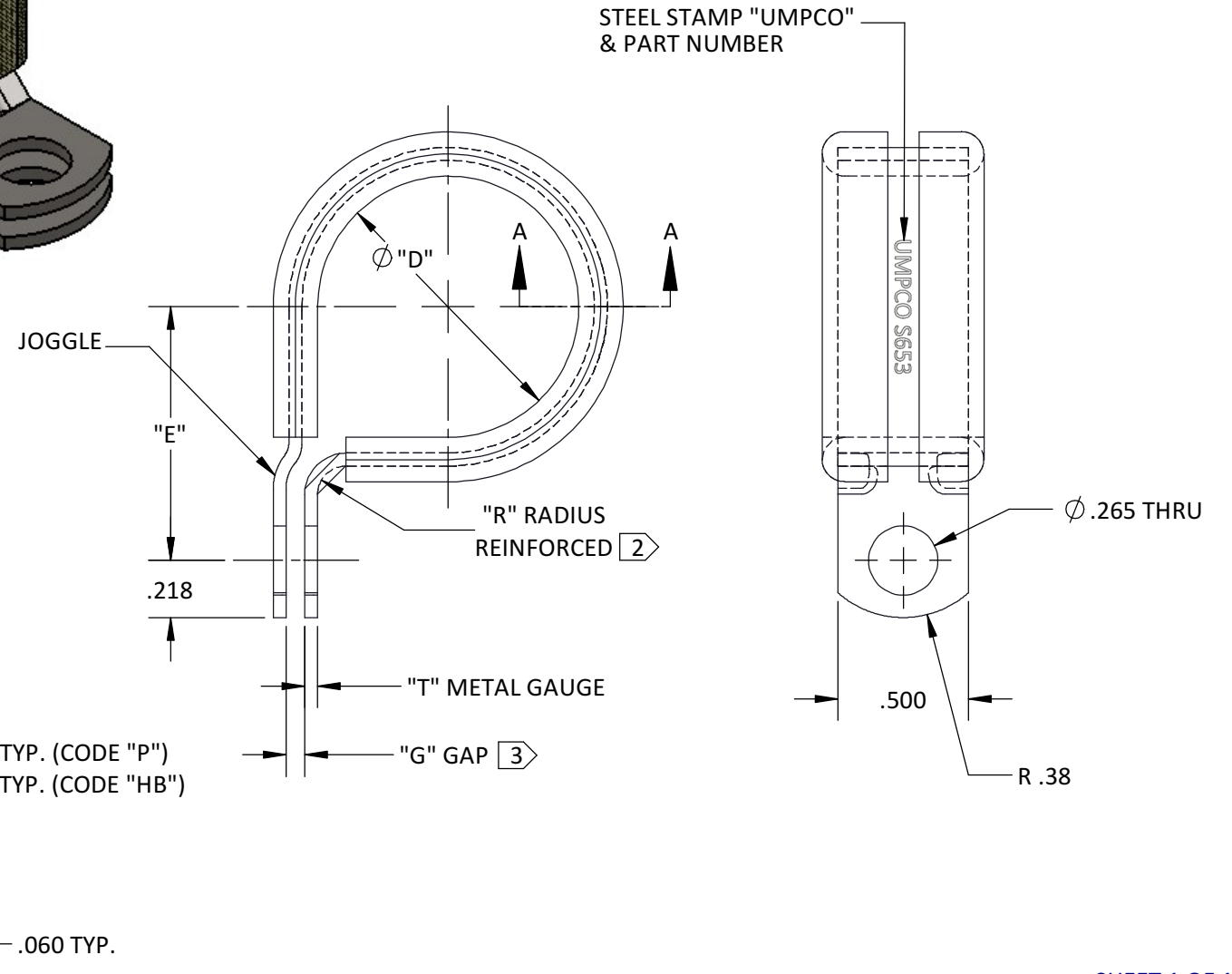
- DIA "D" IN 1/16" INCREMENTS
- CUSHION CODE
- WEDGE CODE ("HB" CUSHION ONLY, OMIT WHEN NOT APPLICABLE)
- BASIC PART NUMBER

NOTES:

- 1 APPROVED CUSHION SOURCE: TA MFG. VALENCIA, CA. 91355
SPLITS, TEARS OR SEPARATIONS IN THE CUSHION FABRIC SHALL NOT EXCEED .03 INCHES WIDTH ON THE FORMED CLAMP.
MAX. OPERATING TEMPERATURE 600°F (315°C).
- 2 THERE SHALL BE NO SHARP EDGES OR EVIDENCE OF CRACKING IN THE FORMED AREA.
- 3 DIMENSION "G" MUST BE WITHIN SPECIFIED LIMITS WHEN THE CLAMP IS CLOSED TO THE "D" DIAMETER.
- 4) CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.
- 5) INSPECT PER MIL-C-8603 CLOSURE TEST.



S653



SHEET 1 OF 1

REFERENCES:							
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	± 5°	UMPCO . INC. 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846		FSCM/CAGE CODE No. 18076	
	DECIMAL:	.XX	± .03			J.A.	SCT
GENERAL MACHINE FINISHES EXCEPT AS NOTED:	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.			09/20/89		09/20/89	09/20/89
	INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M			DRAWN	CHECKED	ENGR	
REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	ACT. WGHT.	-		CLAMP, SUPPORT, LOOP-TYPE, HIGH TEMP (600°F, 315°C) CUSHIONED		SCALE: NONE	
	CALC. WGHT.	-		PART AND/OR ASSEMBLY DESCRIPTION		PRINT NUMBER	
				B		S653	

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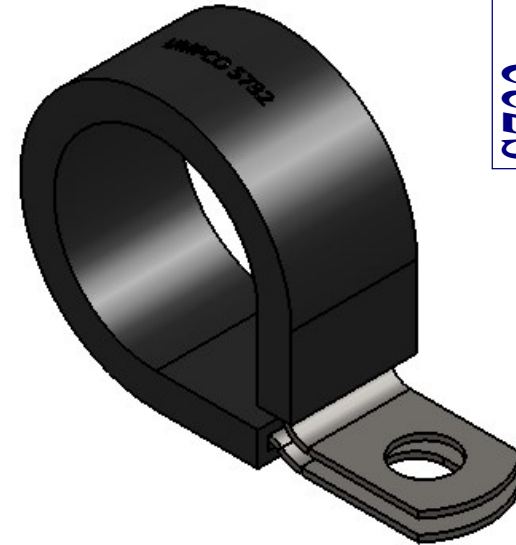
7

8

MATERIAL & FINISH CODES:

METAL: "NO CODE" 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
 FINISH: ZINC PLATE GOLD PER ASTM B 633 FE/ZN 8, TY II
 "P" 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
 FINISH: ZINC PLATE GOLD PLUS SEALER PER ASTM B 633 FE/ZN 8, TY II
 "D" 2024-T42 ALUMINUM CLAD PER AMS-QQ-A-250/5
 FINISH: NONE
 "SS" 304/321 STAINLESS STEEL PER AMS 5513/AMS 5510
 FINISH: NONE

CUSHION: "G" GENERAL PURPOSE EPDM PER SAE J200M3BA710C12
 COLOR: BLACK
 "H" GENERAL PURPOSE SILICONE PER AMS 3303 WITH 100 PSI MIN. TEAR
 COLOR: RED/ORANGE
 "N" GENERAL PURPOSE NEOPRENE PER AMS 3209
 COLOR: BLACK

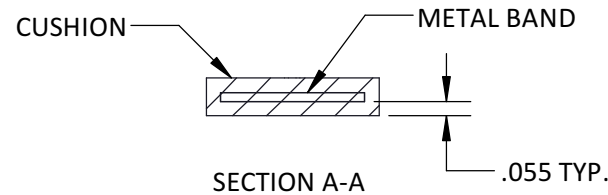
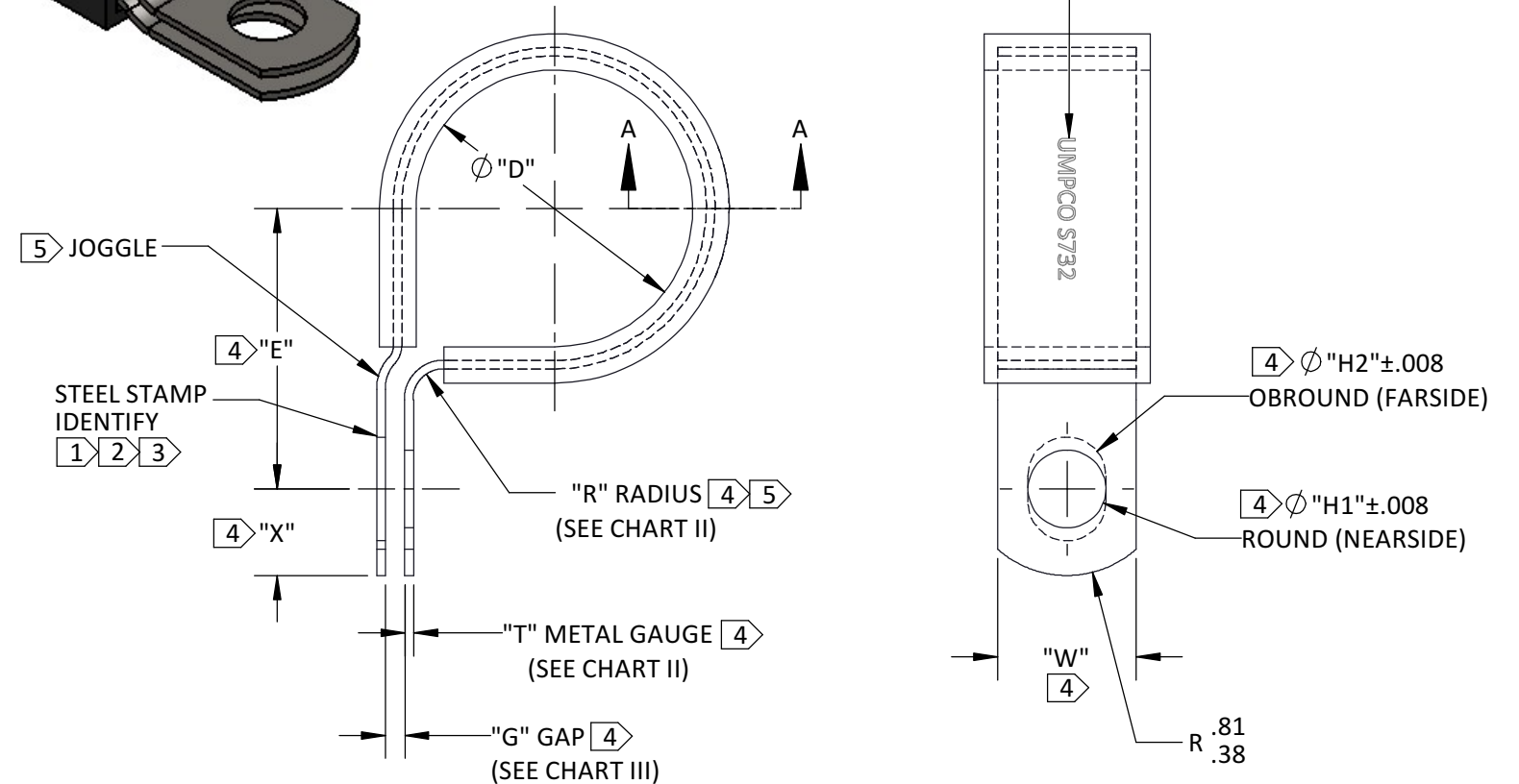
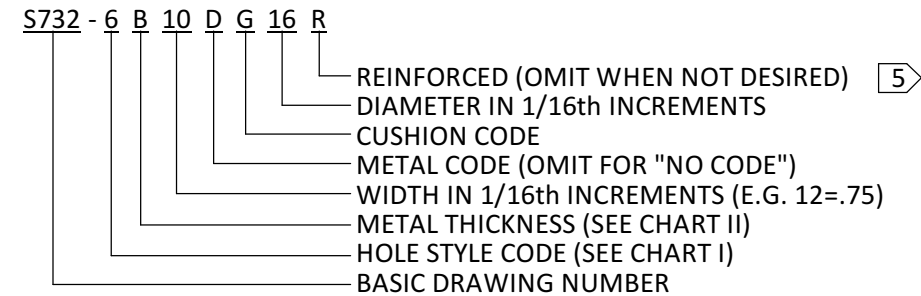


S732

REV.	CHANGE	DATE	BY	CHK'D	APPR
H	SEE DRAWING CHANGE RECORD ON FILE.	09/25/13	HAD	KWE	HAD

EXAMPLE OF PART CALLOUT:

.281 HOLE, .030 THK., .625 WIDE, 1" DIA., REINFORCED ALUM. BAND W/ EPDM



NOTES:

- 1 IDENTIFICATION NOT TO ENCR OACH ON HOLES. 2 3
- 2 IF IDENTIFICATION IS NOT POSSIBLE DUE TO SIZE LIMITATIONS, ONLY "UMPCO" AND DASH NUMBER TO APPEAR OR DASH NUMBER ONLY.
- 3 ALTERNATE IDENTIFICATION OPTIONS:
 -RUBBER (INK) STAMP IDENTIFY.
 -BULK PACKAGE IDENTIFY WITH "UMPCO" & PART NUMBER AS ACCEPTABLE ALTERNATE METHOD. ADDITIONAL INFO. MAY BE REQ'D, REFER TO CUSTOMER'S REQUIREMENTS.
- 4 SEE SHEET 2 OF 2 FOR CLAMP DIMENSIONS.
- 5 REINFORCED CORNERS & BEADED JOGGLE PER DS1010 WHEN SPECIFIED.
- 6 CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.
- 7 INSPECT PER MIL-C-8603 CLOSURE TEST.

SHEET 1 OF 2

REFERENCES:						
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	± 5°	 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846		
	DECIMAL:	.XX	± .03			
GENERAL MACHINE FINISHES EXCEPT AS NOTED: INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.		FSCM/CAGE CODE No. 18076 SMJ LJS JLC 04/29/96 06/23/96 05/23/96 DRAWN CHECKED ENGR			
	REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	ACT. WGHT.	-		CLAMP, LOOP-CUSHIONED, "FULL BOX" STYLE SIZE: B SCALE: NONE S732	
	CALC. WGHT.	-		PART AND/OR ASSEMBLY DESCRIPTION PRINT NUMBER		

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CHART I												
HOLE STYLE CODES & DIMENSIONS												
CODE	HOLE STYLE 1	HOLE STYLE 2	HOLE STYLE 3	HOLE STYLE 4	HOLE STYLE 5	HOLE STYLE 6	HOLE STYLE 7	HOLE STYLE 8	HOLE STYLE 9	HOLE STYLE 10	HOLE STYLE 11	HOLE STYLE 12
"H 1"	.173 THRU	.204 THRU	.204 THRU	.218 THRU	.265 THRU	.281	.281	.344	.406	.438	.468	.531
"H 2"	-	-	-	-	-	.375	.375	.438	.500	.531	.562	.625
"W"	6	6	8	8	8	8, 10,12	8, 10, 12	8, 10, 12	10,12	10, 12	12, 16	12, 16
"X"	.188	.188	.218	.218	.218	.312	.375	.312	.312	.440	.440	.440
∅ "D" DASH NO.	"E" ±.015	"E" ±.015	"E" ±.015	"E" ±.015	"E" ±.015	"E" ±.015	"E" ±.015	"E" ±.015	"E" ±.015	"E" ±.015	"E" ±.015	"E" ±.015
-2	"D"/2 + .312	"D"/2 + .395	"D"/2 + .395	"D"/2 + .395	"D"/2 + .395	"D"/2 + .514	"D"/2 + .514	"D"/2 + .514	"D"/2 + .514	"D"/2 + .562	"D"/2 + .562	"D"/2 + .623
-3 TO -8		"D"/2 + .405	"D"/2 + .405	"D"/2 + .405	"D"/2 + .405							
-9 TO -12		"D"/2 + .468	"D"/2 + .468	"D"/2 + .468	"D"/2 + .468							
-13 TO -16		"D"/2 + .452	"D"/2 + .452	"D"/2 + .452	"D"/2 + .452							
-17		-	-	-	-							
-18 TO -30	-	"D"/2 + .468	"D"/2 + .468	"D"/2 + .468	"D"/2 + .468	"D"/2 + .534	"D"/2 + .534	"D"/2 + .534	"D"/2 + .534	"D"/2 + .582	"D"/2 + .582	"D"/2 + .643
-31 TO -48	-	"D"/2 + .475	"D"/2 + .475	"D"/2 + .475	"D"/2 + .475	-	-	-	-	-	-	-
-64	-	-	-	-	-	-	-	-	-	-	-	-



S732

REV.	CHANGE	DATE	BY	CHK'D	APPR
H	SEE DRAWING CHANGE RECORD ON FILE.	09/25/13	HAD	KWE	HAD

CHART II		
"T" METAL GAUGE AND "R" RADIUS		
CODE	GAUGE	RADIUS
A	.020	.062
B	.030	
C	.040	
D	.050	.109
E	.060	.125

CHART III			
"G" GAP ±.015			
FOR DASH NUMBER:	HOLE STYLE CODES		
	1 THRU 5	6 THRU 8	9 THRU 12
-2 THRU -16	.070	.070	.125
-17 THRU -48	.109	.125	
-64	.109	.125	

SHEET 2 OF 2

REFERENCES:			
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR: X ± 5°	 UMPCO . INC. 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846	FSCM/CAGE CODE No. 18076
GENERAL MACHINE FINISHES EXCEPT AS NOTED:	DECIMAL: .XX ± .03 .XXX ± .015		SMJ LJS JLC
INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M 	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.		04/29/96 06/23/96 05/23/96
REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	ACT. WGHT. -	CLAMP, LOOP-CUSHIONED, "FULL BOX" STYLE	DRAWN CHECKED ENGR
	CALC. WGHT. -		SCALE: NONE
		SIZE B	PRINT NUMBER
			S732
		PART AND/OR ASSEMBLY DESCRIPTION	

1 2 3 4 5 6 7 8

MATERIAL & FINISH CODES:

METAL:	"NO CODE"	1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698 FINISH: ZINC PLATE GOLD PER ASTM B 633 FE/ZN 8, TY II
	"P"	1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698 FINISH: ZINC PLATE GOLD PLUS SEALER PER ASTM B 633 FE/ZN 8, TY II
	"D"	2024-T42 ALUMINUM CLAD PER AMS-QQ-A-250/5 FINISH: NONE
	"SS"	304/321 STAINLESS STEEL PER AMS 5513/AMS 5510 FINISH: NONE
CUSHION:	"G"	GENERAL PURPOSE EPDM PER SAE J200M3BA710C12 COLOR: BLACK
	"H"	GENERAL PURPOSE SILICONE PER AMS 3303 WITH 100 PSI MIN. TEAR COLOR: RED/ORANGE
	"N"	GENERAL PURPOSE NEOPRENE PER AMS 3209 COLOR: BLACK

EXAMPLE OF PART CALLOUT:

.281 HOLE, .030 THK., .625 WIDE, 1" DIA., REINFORCED ALUM. BAND W/ EPDM

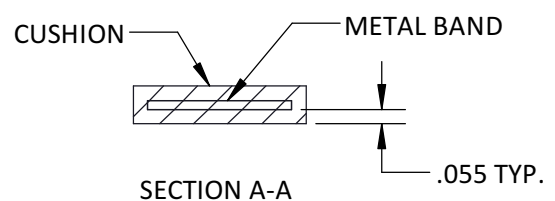
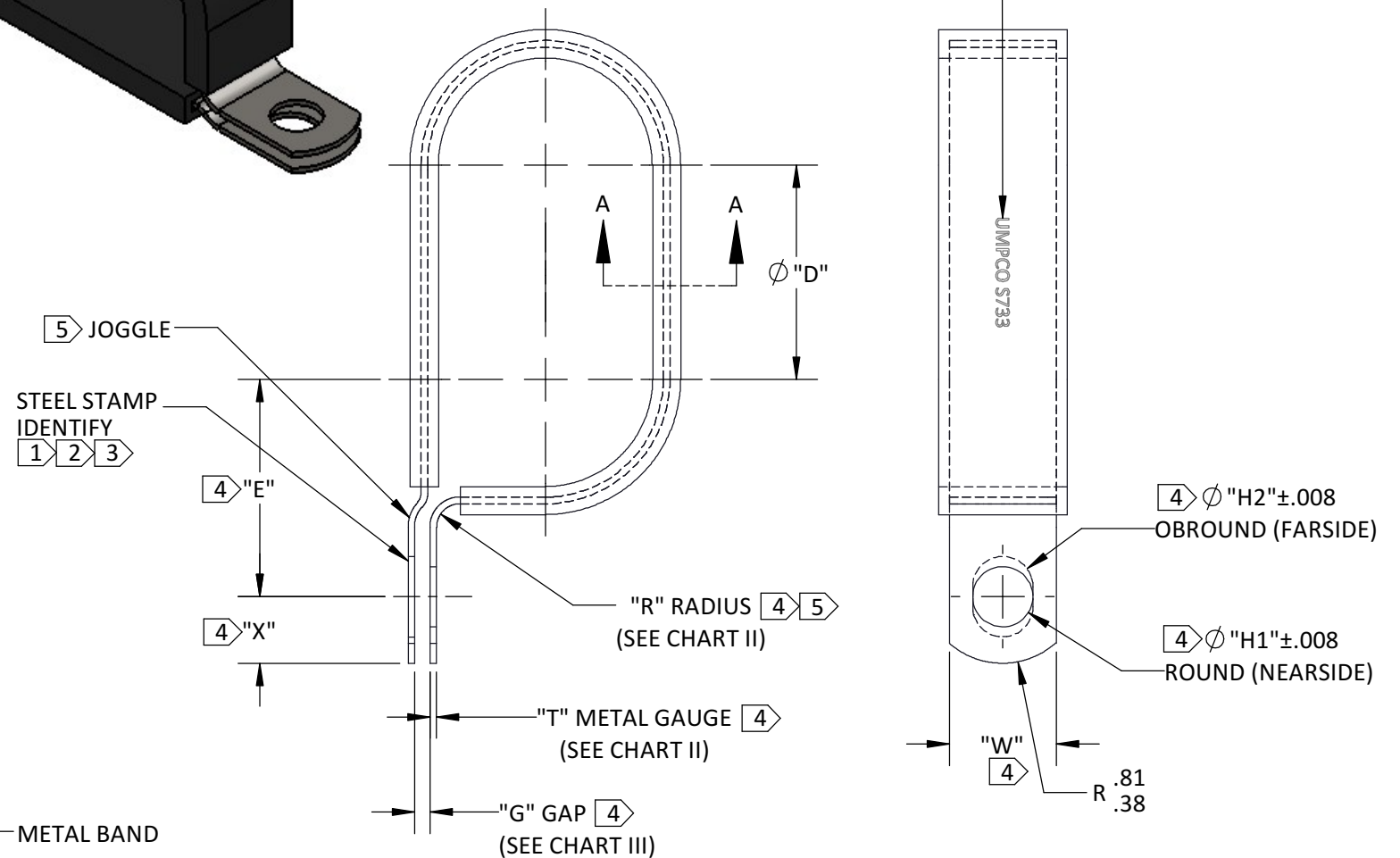
S733	-	6	B	10	D	G	16	R	
									REINFORCED (OMIT WHEN NOT DESIRED) [5]
									DIAMETER IN 1/16th INCREMENTS
									CUSHION CODE
									METAL CODE (OMIT FOR "NO CODE")
									WIDTH IN 1/16th INCREMENTS (E.G. 12=.75)
									METAL THICKNESS (SEE CHART II)
									HOLE STYLE CODE (SEE CHART I)
									BASIC DRAWING NUMBER

NOTES:

- 1 IDENTIFICATION NOT TO ENCROACH ON HOLES. 2 3
- 2 IF IDENTIFICATION IS NOT POSSIBLE DUE TO SIZE LIMITATIONS, ONLY "UMPCO" AND DASH NUMBER TO APPEAR OR DASH NUMBER ONLY.
- 3 ALTERNATE IDENTIFICATION OPTIONS:
-RUBBER (INK) STAMP IDENTIFY.
-BULK PACKAGE IDENTIFY WITH "UMPCO" & PART NUMBER AS ACCEPTABLE ALTERNATE METHOD. ADDITIONAL INFO. MAY BE REQ'D, REFER TO CUSTOMER'S REQUIREMENTS.
- 4 SEE SHEET 2 OF 2 FOR CLAMP DIMENSIONS.
- 5 REINFORCED CORNERS & BEADED JOGGLE PER DS1010 WHEN SPECIFIED.
- 6 CLAMPS FURNISHED IN THE NORMAL OPEN (SPRINGBACK) CONDITION.
- 7 INSPECT PER MIL-C-8603 CLOSURE TEST.



S733



REFERENCES:						
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	\pm 5°	UMPCO . INC. 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846		
	DECIMAL:	.XX	\pm .03			
GENERAL MACHINE FINISHES EXCEPT AS NOTED: INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.		FSCM/CAGE CODE No. 18076 SMJ LJS JLC 04/29/96 05/23/96 05/23/96 DRAWN CHECKED ENGR			
	ACT. WGHT.	-				
REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	CALC. WGHT.	-		CLAMP, MULTI-TUBE, CUSHIONED, "FULL BOX" STYLE PART AND/OR ASSEMBLY DESCRIPTION		
				SIZE	SCALE: NONE	
				B	S733	
				PRINT NUMBER		

CHART I												
HOLE STYLE CODES & DIMENSIONS												
CODE	HOLE STYLE 1	HOLE STYLE 2	HOLE STYLE 3	HOLE STYLE 4	HOLE STYLE 5	HOLE STYLE 6	HOLE STYLE 7	HOLE STYLE 8	HOLE STYLE 9	HOLE STYLE 10	HOLE STYLE 11	HOLE STYLE 12
"H 1"	.173 THRU	.204 THRU	.204 THRU	.218 THRU	.265 THRU	.281	.281	.344	.406	.438	.468	.531
"H 2"	-	-	-	-	-	.375	.375	.438	.500	.531	.562	.625
"W"	6	6	8	8	8	8, 10,12	8, 10, 12	8, 10, 12	10,12	10, 12	12, 16	12, 16
"X"	.188	.188	.218	.218	.218	.312	.375	.312	.312	.440	.440	.440
∅ "D" DASH NO.	"E" ±.015	"E" ±.015	"E" ±.015	"E" ±.015	"E" ±.015	"E" ±.015	"E" ±.015	"E" ±.015	"E" ±.015	"E" ±.015	"E" ±.015	"E" ±.015
-2	"D"/2 + .312	"D"/2 + .395	"D"/2 + .395	"D"/2 + .395	"D"/2 + .395	"D"/2 + .514	"D"/2 + .514	"D"/2 + .514	"D"/2 + .514	"D"/2 + .562	"D"/2 + .562	"D"/2 + .623
-3 TO -8		"D"/2 + .405	"D"/2 + .405	"D"/2 + .405	"D"/2 + .405							
-9 TO -12		"D"/2 + .468	"D"/2 + .468	"D"/2 + .468	"D"/2 + .468							
-13 TO -16		"D"/2 + .452	"D"/2 + .452	"D"/2 + .452	"D"/2 + .452							
-17	-	-	-	-	-	"D"/2 + .534	"D"/2 + .534	"D"/2 + .534	"D"/2 + .534	"D"/2 + .582	"D"/2 + .582	"D"/2 + .643
-18 TO -30	"D"/2 + .468	"D"/2 + .468	"D"/2 + .468	"D"/2 + .468								
-31 TO -32	"D"/2 + .475	"D"/2 + .475	"D"/2 + .475	"D"/2 + .475								

S733

REV.	CHANGE	DATE	BY	CHK'D	APPR
G	SEE DRAWING CHANGE RECORD ON FILE.	09/25/13	HAD	KWE	HAD

CHART II		
"T" METAL GAUGE AND "R" RADIUS		
CODE	GAUGE	RADIUS
A	.020	.062
B	.030	
C	.040	
D	.050	
E	.060	.125

CHART III			
"G" GAP ±.015			
FOR DASH NUMBER:	HOLE STYLE CODES		
	1 THRU 5	6 THRU 8	9 THRU 12
-2 THRU -16	.070	.070	.125
-17 THRU -32	.109	.125	

SHEET 2 OF 2


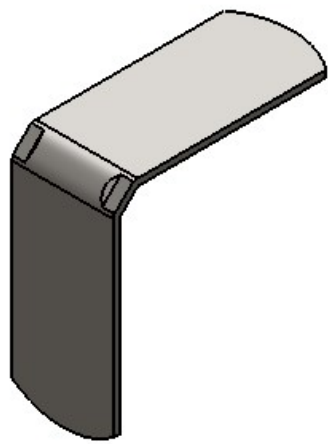
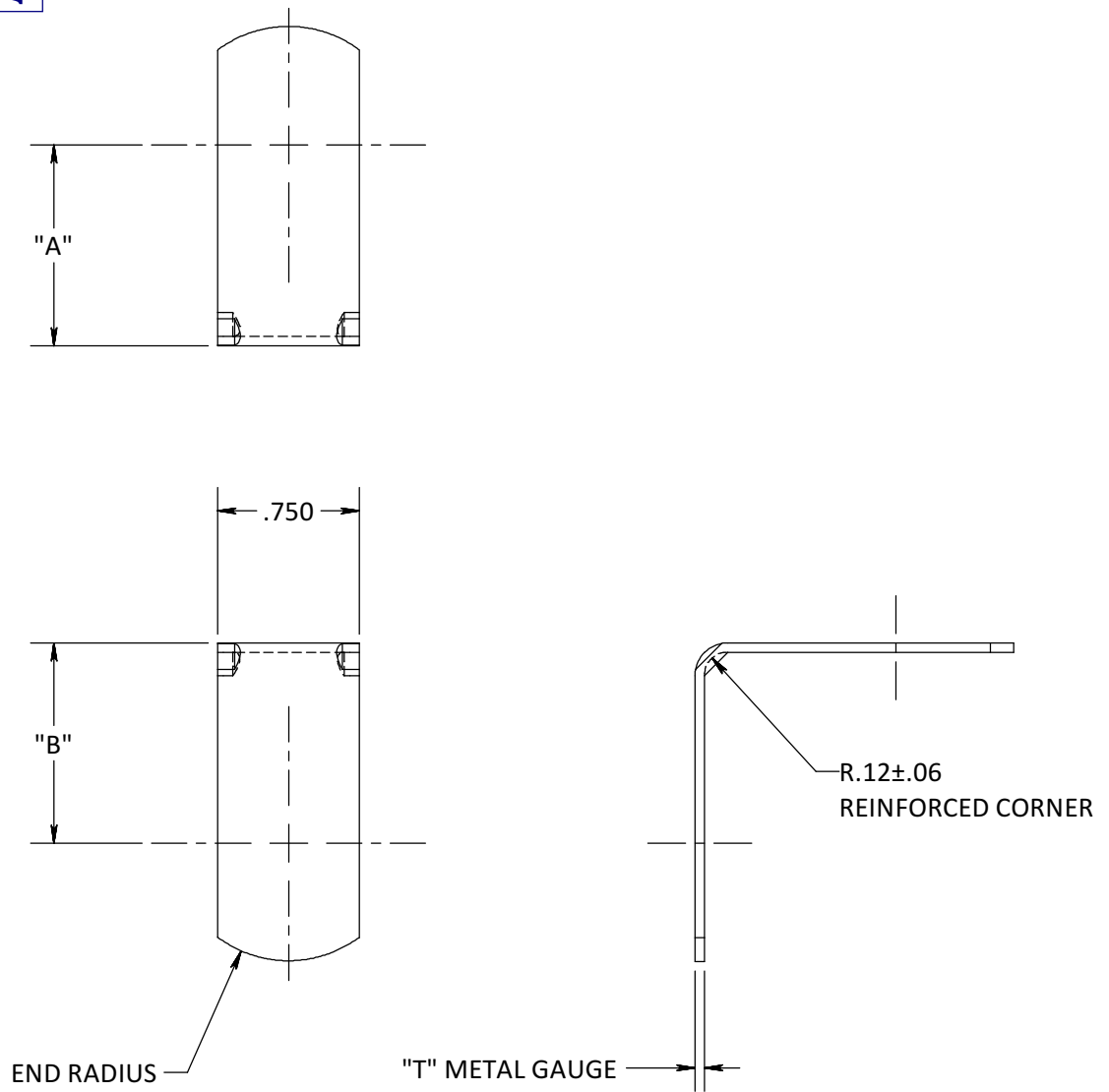
REFERENCES:			
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR: X ± 5° DECIMAL: .XX ± .03 .XXX ± .015	 UMPCO . INC. 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846	FSCM/CAGE CODE No. 18076
GENERAL MACHINE FINISHES EXCEPT AS NOTED: INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M	<small>PROPRIETARY AND CONFIDENTIAL</small> <small>THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.</small>		SMJ LJS JLC
REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	ACT. WGHT. - CALC. WGHT. -		CLAMP, MULTI-TUBE, CUSHIONED, "FULL BOX" STYLE B
		PART AND/OR ASSEMBLY DESCRIPTION	

TABLE I		
DASH NO.	"T" GAUGE	METAL CODES AVAILABLE
-1	.040	ALL
-2	.050	ALL
-3	.060	ALL
-4	.070	"D" AND "DC"



REV.	CHANGE	DATE	BY	CHK'D	APPR
F	SEE DRAWING CHANGE RECORD ON FILE.	06/04/13	HAD	KWE	HAD

AE12



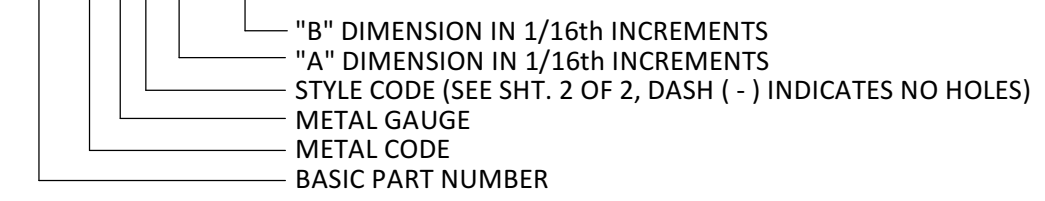
MATERIAL & FINISH CODES:

METAL: (-) 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
 FINISH: CAD PLATE GOLD PER AMS-QQ-P-416, TY. II, CL. 2
 "D" 2024-T42 ALUMINUM CLAD PER AMS-QQ-A-250/5
 FINISH: NONE
 "DC" 2024-T42 ALUMINUM CLAD PER AMS-QQ-A-250/5
 FINISH: CHEMICAL FILM GOLD PER MIL-DTL-5541, TY. 1, CL. 1A
 "SS" 321 STAINLESS STEEL PER AMS 5510
 FINISH: BALL BURNISH AND PASSIVATE PER AMS 2700, CL. 1, METHOD 1, TY. 6

EXAMPLE OF PART CALLOUT:



90 DEGREE, .06 THK. ALUMINUM ANGLE BRACKET

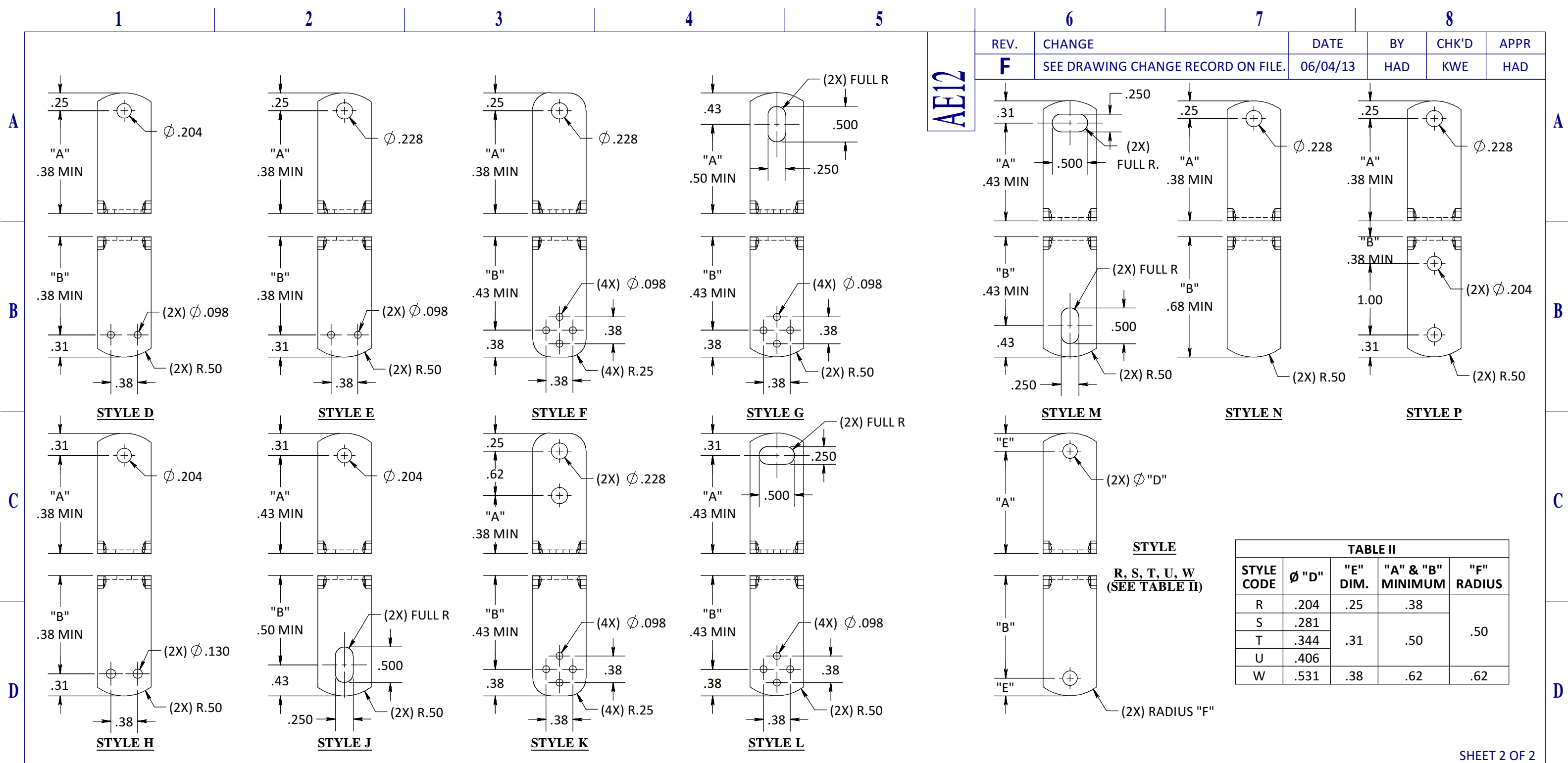
AE12 D 3 - 08 - 12



SHEET 1 OF 2

NOTES:
 1) PART IDENTIFICATION - STEEL STAMP OR RUBBER STAMP "UMPCO" AND COMPLETE PART NUMBER IN AREA AVAILABLE.

REFERENCES:							
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	± 5°	 UMPCO . INC. 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846	FSCM/CAGE CODE No. 18076		
	DECIMAL:	.XX	± .03		SCT	JLC	SCT
		.XXX	± .015		02/07/91	02/07/91	02/07/91
GENERAL MACHINE FINISHES EXCEPT AS NOTED:	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.						
 INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M	ACT. WGHT.	-		SIZE	SCALE: NONE		
	CALC. WGHT.	-		B	AE12		
REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX			ANGLE BRACKET, 90 DEGREE	PART AND/OR ASSEMBLY DESCRIPTION			
				PRINT NUMBER			



AE12

REV.	CHANGE	DATE	BY	CHK'D	APPR
F	SEE DRAWING CHANGE RECORD ON FILE.	06/04/13	HAD	KWE	HAD

SHEET 2 OF 2


<p>REFERENCES:</p> <p>LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:</p> <p>GENERAL MACHINE FINISHES EXCEPT AS NOTED:</p> <p>✓ INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M</p> <p>REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX</p>	<p>ANGULAR: X ± 5°</p> <p>DECIMAL: .XX ± .03</p> <p>.XXX ± .015</p>	 <p>UMPCO, INC.</p> <p>7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846</p>	<p>FSCM/CAGE CODE No. 18076</p>		
	<p>ACT. WGHT. -</p> <p>CALC. WGHT. -</p>		<p>SCT</p> <p>JLC</p> <p>SCT</p>		
	<p>ANGLE BRACKET, 90 DEGREE</p>		<p>02/07/91</p> <p>02/07/91</p> <p>02/07/91</p>		
	<p>PART AND/OR ASSEMBLY DESCRIPTION</p>		<p>DRAWN</p> <p>CHECKED</p> <p>ENGR</p>		
		<p>SIZE</p> <p>B</p>	<p>SCALE: NONE</p>		
		<p>AE12</p>		<p>PRINT NUMBER</p>	

TABLE I		
DASH NO.	"T" GAUGE	METAL CODES AVAILABLE
-1	.040	ALL
-2	.050	ALL
-3	.060	ALL
-4	.070	"D" AND "DC"

MATERIAL & FINISH CODES:

METAL: (-) 1008/1020 LOW CARBON STEEL PER ASTM A 1008, ASTM A 109, QQ-S-698
 FINISH: CAD PLATE GOLD PER AMS-QQ-P-416, TY. II, CL. 2
 "D" 2024-T42 ALUMINUM CLAD PER AMS-QQ-A-250/5
 FINISH: NONE
 "DC" 2024-T42 ALUMINUM CLAD PER AMS-QQ-A-250/5
 FINISH: CHEMICAL FILM GOLD PER MIL-DTL-5541, TY. 1, CL. 1A
 "SS" 321 STAINLESS STEEL PER AMS 5510
 FINISH: BALL BURNISH AND PASSIVATE PER AMS 2700, CL. 1, METHOD 1, TY. 6

EXAMPLE OF PART CALLOUT:

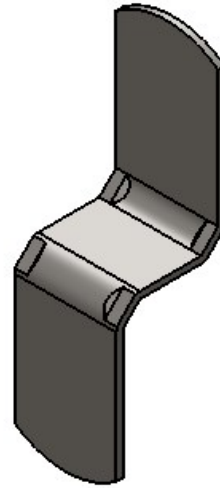
.06 THK. ALUMINUM OFFSET BRACKET

ZD12 D 3 - 08 10 12

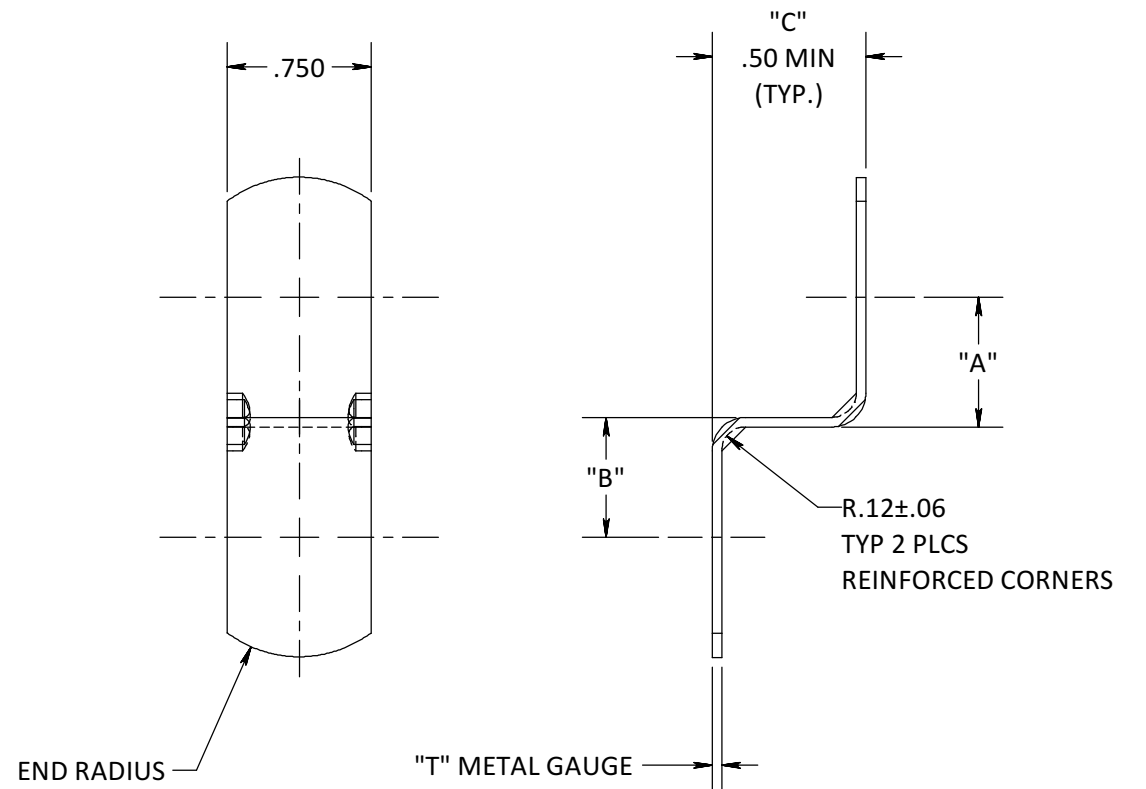
- "C" DIMENSION IN 1/16th INCREMENTS
- "B" DIMENSION IN 1/16th INCREMENTS
- "A" DIMENSION IN 1/16th INCREMENTS
- STYLE CODE (SEE SHT. 2 OF 2, DASH (-) INDICATES NO HOLES)
- METAL GAUGE
- METAL CODE
- BASIC PART NUMBER

NOTES:

- PART IDENTIFICATION - STEEL STAMP OR RUBBER STAMP "UMPCO" AND COMPLETE PART NUMBER IN AREA AVAILABLE.
- ALL BENDS ARE 90 DEGREES.

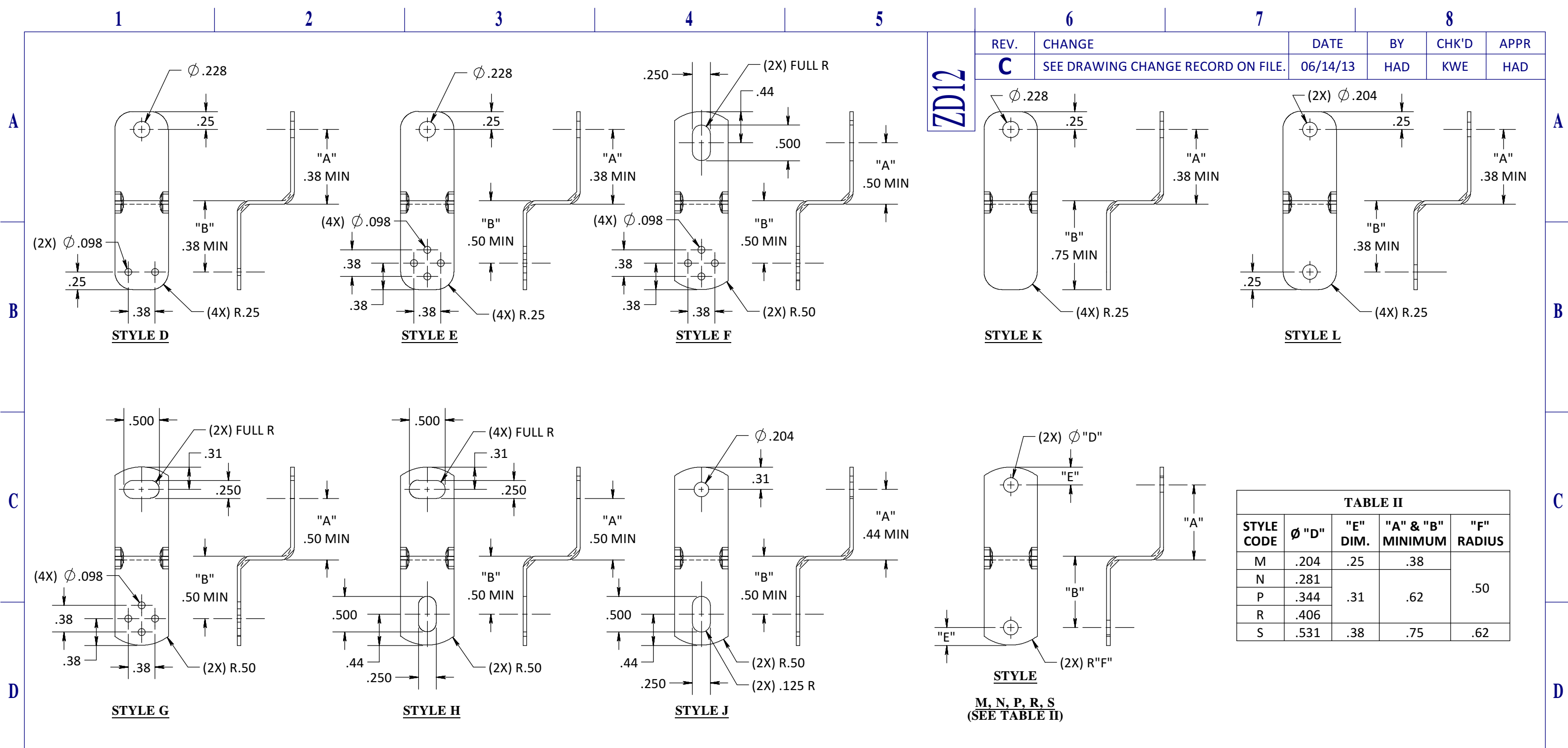


ZD12




SHEET 1 OF 2

REFERENCES:									
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	± 5°	UMPCO . INC. 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846			FSCM/CAGE CODE No. 18076		
	DECIMAL:	.XX	± .03				JLC	SCT	LJS
GENERAL MACHINE FINISHES EXCEPT AS NOTED: INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M	<small>PROPRIETARY AND CONFIDENTIAL</small> <small>THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF UMPCO, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF UMPCO, INC IS PROHIBITED.</small>			11/11/92 11/11/92 11/11/92 DRAWN CHECKED ENGR					
	REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX	ACT. WGHT.	-		"Z" (OFFSET) BRACKET, .75 INCHES WIDE			SCALE: NONE	
	CALC. WGHT.	-		PART AND/OR ASSEMBLY DESCRIPTION			B ZD12		
							PRINT NUMBER		



STYLE CODE	Ø "D"	"E" DIM.	"A" & "B" MINIMUM	"F" RADIUS
M	.204	.25	.38	.50
N	.281	.31	.62	
P	.344			.38
R	.406			
S	.531			

SHEET 2 OF 2

REFERENCES:				
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED:	ANGULAR:	X	± 5°	
	DECIMAL:	.XX	± .03	
GENERAL MACHINE FINISHES EXCEPT AS NOTED:	✓		INTERPRET GEOMETRIC TOLERANCING PER: ASME-Y14.5M	
	REMOVE ALL BURRS AND BREAK SHARP EDGES .010 MAX			
ACT. WGHT.	-	 UMPCO, INC. 7100 LAMPSON AVE. P.O. BOX 5158 GARDEN GROVE, CA. 92846		
CALC. WGHT.	-			
PART AND/OR ASSEMBLY DESCRIPTION		"Z" (OFFSET) BRACKET, .75 INCHES WIDE		
		SIZE	SCALE: NONE	
		B	ZD12	
		PRINT NUMBER		

E



BULLETIN 100
UMP-MT
METAL MATERIALS

CODE	MATERIALS	SUFFIX	SPECIFICATION	TENSILE KSI	YIELD KSI	HARDNESS	ELONGATION	TEMP. RANGE
D	2024-T42 ALUMINUM CLAD	ALU-001	AMS-QQ-A-250/5	57000 KSI	34000 KSI	57 HRB MIN	15%	-65°F to +250°F
DK	5052-H32 1/4 HARD ALUMINUM BARE	ALU-002	AMS-QQ-A-250/8, ASTM B209	34000 KSI	28000 KSI		12%	
DL	6061- T6 ALUMINUM BARE	ALU-003	AMS 4025	42000 KSI	35000 KSI	95 HRB	10%	
	2024-T42 ALUMINUM BARE	ALU-004	AMS-QQ-A-250/4	62000 KSI	38000 KSI		15%	
	2024-T851 ALUMINUM BARE	ALU-005	AMS-QQ-A-250/4	67000 KSI	58000 KSI		5%	
	2024-T4 ALUMINUM CLAD	ALU-006	AMS-QQ-A-250/5	58000 KSI	36000 KSI	57 HRB MIN	15%	
NO-CODE	1008/1020 LOW CARBON STEEL	CRS-001	ASTM A 1008, ASTM A109 QQ-S-698	48000	25000	65 HRB MAX	32%	-65°F to +400°F
	1065/1-85 SPRING STEEL	CRS-002	A-A-51142					
	1074/1095 SPRING STEEL	CRS-003	QQ-S-700, AMS 5120, ASTM A 682, ASTM A 684					
C	302/304 STAINLESS STEEL	STA-001	AMS 5516, AMS 5513, ASTM A 167	75000	36000	92 HRB	40%	-320°F to +1300°F
	304 1/4 HARD STAINLESS STEEL	STA-002	AMS 5910	125000	75000	25 HRC	12%	
	301 FULL HARD STAINLESS STEEL	STA-003	AMS 5519	185000	140000	41 HRC	9%	
	316 STAINLESS STEEL	STA-004	AMS 5524	75000	30000	95 HRB MAX	40%	-320°F to +1600°F
SS	321 STAINLESS STEEL	STA-005	AMS 5510	70000	25000	95 HRB MAX	40%	-320°F to +1500°F
	321 1/8 HARD STAINLESS STEEL	STA-006						
	347 STAINLESS STEEL	STA-007	AMS 5512	100000	30000	92 HRB MAX	40%	
CS	4130 CMS ALLOY	STA-008	MIL-S-18729, AMS 6350	125000	75000	26HRC MIN	8%	
SS	301 1/4 HARD STAINLESS STEEL	STA-009	AMS 5517	125000	75000	25 HRC	25%	
CV	201 STAINLESS STEEL	STA-010	ASTM-A-666	95000	30000	95	40%	
SV	430 STAINLESS STEEL	STA-011	AMS 5503	65000	35000	86	20%	
CV	A286 STAINLESS STEEL	STA-012	AMS 5525	105000		90 HRB MAX	25%	
P	17-7 PH STAINLESS STEEL	177-001	AMS 5528	150000		34-39 HRC	6%	-320°F to +1900°F
	#625 INCONEL	INC-001	AMS 5599	120000	60000		30%	To +2000°F

REVISION: L

SPECIFICATION NO: UMP-MT

BULLETIN 100
UMPC-M
CUSHION MATERIALS

CODE	MATERIAL	SUFFIX	SPECIFICATION	TYPE	COLOR	TEMPERATURE	APPROVED	APPLICATION DATA
						RANGE	SOURCE	
N, G	Neoprene	NEO-001	AMS3209	General Purpose	Black	-40° to 212°F		General usage cushion with excellent weather and ozone resistance and medium resistance to petroleum based hydraulic oil.
		NEO-002	AMS3209, MIL-C-8603	General Purpose Military	Black with Blue Identifier			
B		NEO-003	AMS3209, PLUS BIOCIDES	General Purpose	Black	-40° to 212°F		General usage cushion with Biocide. Excellent weather and ozone resistance and medium resistance to petroleum based hydraulic oil.
SR		NEO-004	AMS-R-3065 GRADE SC515, A1, B1, C1, E3, F2 ASTM D2000 M2BC510 A14 B14 C12 E034 F19 Z1 = 55 Shore	Ozone resistant	Black			
G		NEO-005	SAE J200 M2BC510, A14, B14, C12, E034, F17, G21	General Purpose	Black	-40° to 212°F		General usage cushion with added tear resistance. Excellent weather and ozone resistance and medium resistance to petroleum based hydraulic oil.
ER		NEO-006	AMS3209, MIL-C-8603, ASTM D 149	Dielectric	Black with Blue Identifier			
G		NEO-007	AMS3209, SAEJ200 M3BC710, C12, E034	General Purpose	Black	212°F		General usage cushion with excellent weather and ozone resistance and medium resistance to petroleum based hydraulic oil.
TP		NEO-008	ASTM D2000 2AA 708, Z1, Z2	General Purpose	Black			
G, E	Ethylene Propylene	ETH-001	SAE J200 M3BA710, C12	General Purpose Automotive	Black	-40° to 212°F		General usage cushion with excellent weather and ozone resistance and medium resistance to phosphate ester hydraulic oil.
E		ETH-002	MIL-C-8603 (EPR)	Hydraulic Fluid Resistant	Solid Purple	-65° to 275°F		For applications requiring resistance to phosphate ester hydraulic oils. Good weather and ozone resistance.
EPT		ETH-003	MIL-C-85052/2	Hydraulic Fluid / Skydrol Resistant	Solid Purple			
EL		ETH-004	SAE J200 M3BA710, C12	General Purpose Automotive	White	-40° to 212°F		General usage cushion with excellent weather and ozone resistance and medium resistance to phosphate ester hydraulic oil.
AG		ETH-005	SAE J200 M3BA510, C12	General Purpose Automotive	Black			
AGR		ETH-006	SAE J200 M3BA510, C12	General Purpose Automotive	Black	-40° to 212°F		Same as ETH-005 with additional requirements for electrical resistance of: 2 x 10 ⁹ ohms.
		ETH-007	SAE J200 M3BA610, C12	General Purpose Automotive	Black			
EC		ETH-008	SAE J200 M3BA710, C12	General Purpose Automotive	Black	-40° to 212°F		Same as ETH-001 with additional requirements for electrical resistance of: 5 MEGA ohms.
ME		ETH-009	ASTM D2000 M2BA510, A14, F17, Z	General Purpose Automotive	Black			
R		ETH-010	DMS 1849 TYPE 1 CLASS II	Hydraulic Fluid Resistant	Black	-65° to 250°F		For applications requiring resistance to phosphate ester hydraulic oils. Good weather and ozone resistance.
TE		ETH-011	ASTM D2000 2AA 708, Z1	General Purpose Automotive	Black	-40° to 212°F		Tensile Strength 800 psi min (ASTM D412) Elong @ Break 200-400 ASTM D412 Tensile Modulus @100% Elongation 400-600 psi (ASTM D412) Shore A Hardness 75 ± 5 (ASTM D2240) Specific Gravity 0.960 ± .030 gm/cm3 (ASTM D792) Z1 = Compression Set @Room Temp/Time: 22 hrs (ASTM D395B) @ 25% Max.
EE		ETH-012	ASTM D2000 M8BA707, A14, C12, F17, Z1, Z2	Electrically Resistant	Gray			
F	Nitrile Butadiene	NIT-001	AMS3215 (NBR)	Fuel Resistant	Solid Yellow	-40° to 212°F		For applications requiring resistance to aromatic fuels. Fair resistance to weather and ozone. Not recommended where subjected to light.
		NIT-002	MIL-C-8603 (NBR)	Fuel Resistant Military	Solid Yellow			
FR		NIT-003	MIL-C-85052/1	Fuel Resistant Military	Solid Yellow	-65° to 275°F		Poor resistance to sunlight, ozone, and weather. Will have extended life in fuel cells.
MR		NIT-004	AMS-R-3065, SB610, A, B, F2 ASTM D200 M5BG610, A14, B14, F19			-65° to 275°F		Low volume swell in low Aniline-point petroleum based oils or fuels.
NB		NIT-005	MIL-DTL-85052/1	Fuel Resistant Military	Solid Yellow			
FRT		NIT-006	MIL-C-85052/1	Fuel Resistant Military	Solid Yellow			Poor resistance to sunlight, ozone, and weather. Will have extended life in fuel cells. Batch Testing for Ozone and Compression sets.

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SPECIFICATION NO: UMP-CM

BULLETIN 100
UMP-CM
CUSHION MATERIALS

CODE	MATERIAL	SUFFIX	SPECIFICATION	TYPE	COLOR	TEMPERATURE		APPROVED	APPLICATION DATA
						RANGE	SOURCE		
H	Silicone	SIL-001	AMS 3303	General Purpose Heat Resistant 100 psi Minimum Tear	Red/Orange		-80° to 450°F		Excellent for moderate temperature extremes. Superior weather and ozone resistance.
HW		SIL-002	AMS3303, MIL-C-8603	General Purpose Heat Resistant Military, 100 psi Minimum Tear	Natural White				
		SIL-003	AMS3310	General Purpose Heat Resistant Military	Natural White		-80° to 400°F		
		SIL-004	GE24449	Heat and Moderate Hydraulic Fluid Resistant, High Strength High Tear	Solid Gray		-80° to 500°F		
HB		SIL-005	PWA36450, AMS3352	Military High Strength and High Temperature, Fiberglass Reinforced	Brown		-65° to 600°F		Excellent fluid, fire and corrosion resistance
HT		SIL-006	MIL-C-85052/3, AMS 3316	Military High Strength and High Temperature, Fabric Reinforced	Light Blue		-65° to 500°F		Excellent resistance to most fluids, fuels, oils.
S		SIL-007	AMS3347, A-A-59588-3A50	High strength	Red/Orange		-103° to 401°F		Resistance to weathering and high-aniline-point petroleum based oils
HL		SIL-008	BMS 1-63, BMS 1-72		White		-65° to 450°F		
		SIL-009	A-A-59588, CL.2B, GD. 50-70	Reinforced glass fabric					
		SIL-010	BMS 1-46 GRADE 50						
		SIL-011	AMS 3349		Red/Orange				
		SIL-012	BPS-C-163 TYPE I	Not supported	Solid Gray				
HR		SIL-013	AMS-R-3065 TA612, B3, E1, F3 GMZ MSFC-1018	Fabric Reinforced Flamability Requirement	Pink				Fabric Reinforced Flamability Requirement
HS		SIL-014	AMS 3303	Glass Fabric Reinforced	Red/Orange		-85° to 401°F		Glass Fabric Reinforced
HA		SIL-015	ZZ-R-765, CL.2A, GD.80 A-A-59588-2A80	General Purpose Heat Resistant Military	Red/Orange		-80° to 425°F		Resistant to extreme high temperature.
J	Fluorosilicone	FLU-001	AMS-R-25988, TY II, CL 1, GRADE 60	Fuel Resistant (Elastomeric)	Solid Blue				Good aromatic fuel resistance and oil resistance. Not recommended for hydraulic type oils.
JS		FLU-002	AMS-R-25988, TY II, CL 2, GRADE 50	Fuel Resistant (Elastomeric) High Strength	Solid Blue		-65° to 400°F		Good aromatic fuel resistance and oil resistance. Not recommended for hydraulic type oils. High Strength
JR		FLU-003	AMS-R-25988, TY II, CL 1, GRADE 60	Fuel Resistant (Elastomeric) Glass Fabric Reinforced	Solid Blue				Good aromatic fuel resistance and oil resistance. Not recommended for hydraulic type oils.
T, K	Teflon	TEF-001	AMS 3652	Fuel Resistant Plastic Skived	White				Excellent resistance to most fluids, fuels, oils, etc., within temperature limits specified. Also available anti-slip treated.
X		TEF-002	AMS3652, AMS 2491	Fuel Resistant Plastic Anti-Slip	Brown				
		TEF-003	AMS 3652	Fuel Resistant Plastic Machined Channel	White		-90° to 450°F		
T, K		TEF-004	AMS 3660	Fuel Resistant Plastic Machined Inserts	White				
		TEF-005	AMS 3660, L-P-403	Fuel Resistant Plastic Molded Wedge	White				
T		TEF-006	AMS 3656	Fuel Resistant Plastic Extruded Tubing	White				
P		TEF-007	BPS-C-155, AMS 3677	PTFE Impregnated PBI Glass Blend Fabric	Brown		550°		
		TEF-008	BAC 3112-1P	PTFE Impregnated PBI Flextra					
P	Laminate Phenolic	PHE-001	MIL-I-24768/14	Cotton fabric base Phenolic resin	Brown				Good moisture resistance and mechanical strength. Good dielectric properties.
	Plastic	PLA-001	Plastisol MIL-P-20689 (PVC), A-A-59464	General Purpose Plastic	Black		-0° to 200°F		Anti-Abrasion for general purpose applications. Available in dip coat only.
	PVC	PVC-001	AMS3630	Flexible	Black				
()	CRES	CRE-001	Knitted Wire Mesh AMS 5697	High Temperature Resistant	Silvery Gray		to 1200°F		Metallic, Type 300 series stainless steel for elevated temperature use. Somewhat abrasive.
FG	GLASS FIBER	GLS-001	Braided Glass Fiber	High Temperature Resistant With Aluminized Resin	Silvery Gray		to 1000°F		High Temperature

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BULLETIN 100
UMP-PR
MATERIAL PROCESSES

TYPE	SUFFIX	SPECIFICATION	DESCRIPTION
ANODIZE	ANO-001	MIL-A-8625	TYPE II, CLASS 1 (CLEAR)
	ANO-002		TYPE I, CLASS 1, 1 COAT PRIMER BMS 10-11 TYPE I
	ANO-003		TYPE I, CLASS 1, 2 COATS PRIMER PER TT-P-1757
	ANO-004		TYPE I, CLASS 1, FUEL TANK COAT PER MIL-C-27725
	ANO-005		TYPE I, CLASS 1 (CLEAR)
	ANO-006		TYPE I, CLASS 1 & 1 COAT PRIMER BMS 10-11 TY I (GREEN)
	ANO-007		TYPE II, CLASS 2, COLOR BLACK, FED-STD-595
	ANO-008		TYPE II, CLASS 2, COLOR BROWN #30219
	ANO-009		ONE COAT WHITE ENAMEL BMS 10-11 TYPE I #702
BALL BURNISH AND PASSIVATE	BAL-001	AMS 2700, ASTM A 967	METHOD 1, TYPE 2
	BAL-002		METHOD 1, TYPE 6
CADMIUM PLATE	CAD-001	AMS-QQ-P-416	TYPE I, CLASS 1 (BRIGHT)
	CAD-002		TYPE I, CLASS 3 (BRIGHT)
	CAD-003		TYPE I, CLASS 2 (BRIGHT)
	CAD-004		TYPE I, CLASS 1 (BRIGHT) & BAKE 3 HRS @375°
	CAD-005		TYPE I, CLASS 2 (BRIGHT) & BAKE 3 HRS @375°
	CAD-006		TYPE II, CL 2 (GOLD)
	CAD-007		TYPE I, CL 3 (GOLD)
	CAD-008		TYPE II, CL 3 (GOLD)
	CAD-009		TYPE II, CLASS 2 (GOLD) & BAKE 3 HRS @375°
	CAD-010		TYPE I, CLASS 3 (GOLD) & BAKE 3 HRS @375°
	CAD-011		AMS2400, AMS2759
CAUSTIC ETCH	CAU-001	NONE	CAUSTIC ETCH
CHEMICAL FILM	CHE-001	MIL-DTL-5541	TYPE I, CLASS 1A, (COLOR APPROX GOLD)
	CHE-002		TYPE I, CLASS 3 (COLOR GOLD)
	CHE-003		TYPE I, CLASS 1A, & 1 COAT PRIMER MMS 405, COLOR #34151 (GREEN)
	CHE-004		TYPE I, CLASS 1A, & 2 COATS PRIMER PER MIL-P-23377
	CHE-005		TYPE I, CLASS 1A & PRIME BMS10-11 TY I PER BAC5736
	CHE-006		TYPE I, CLASS 1A & ORGANIC COATING, BMS 10-20, TP II
HEAT TREAT	HEA-001	AMS 2550, AMS 2759	HEAT TREAT TO RC 30-38, DRY HONE TO CLEAN
	HEA-002		HEAT TREAT TO RC 32-36, DRY HONE TO CLEAN
	HEA-100	(AMS-H-6088), AMS 2770, AMS 2771, AMS 2772	HEAT TREAT TO CONDITION T-81, RE 69 MIN
	HEA-101		HEAT TREAT TO CONDITION T-42 RE 91 MIN
	HEA-102		HEAT TREAT TO CONDITION T-6, RE 85 MIN
	HEA-103		HEAT TREAT TO CONDITION T-6, RE 96 MIN
	HEA-104		HEAT TREAT TO CONDITION T-72 TEMPER, (62,000 PSI MIN)
	HEA-200	AMS 2759, AMS-H-6875	HEAT TREAT & NORMALIZE (SCALE FREE) RC 12-26
	HEA-201		HEAT TREAT & PRECIPITATION HARDEN RC 24 MIN
	HEA-202		HEAT TREAT & STRESS RELIEVE TO TH1100 COND., RC 32-40
	HEA-203		HEAT TREAT & STRESS RELIEVE TO TH1100 COND., RC 31 -39
	HEA-204		HEAT TREAT & STRESS RELIEVE TO TH1100 COND., RC 34-39
	HEA-205		HEAT TREAT TO RC 10-27 SCALE FREE (LITE SAND BLAST)
	HEA-206		HEAT TREAT TO RC 32-38 SCALE FREE (LITE SAND BLAST)
	HEA-207		HEAT TREAT TO RC 32-40, DRY HONE TO CLEAN
	HEA-208		HEAT TREAT TO SPRING TEMPER, RC 44-50
HEA-209	HEAT TREAT TO R15N (60/83)		
HEA-300	PWA 11-32	HEAT TREAT & PRECIPITATION HARDEN PER PWA 11-32, RC 24 MIN	
PASSIVATE	PA-001	AMS 2700, ASTM A 967	METHOD 1, TY. 6, CL. 1
	PA-002		PASSIVATE & BAKE @ 350/400°F FOR 3 HOURS
	PA-003	AMS 2700	METHOD 1, TY. 2, CL. 1
	PA-004	AMS-QQ-P-35/AMS 2700	METHOD 1, TY. 7, CL. 1, NITRIC ACID 20-25%(120-140°)
	PA-005	AMS-QQ-P-35/AMS 2700	METHOD 1, TYPE 6, CLASS 4
PAVCOAT SUPERSEAL	PAV-001	NONE	PAVCOAT SUPERSEAL
PLASTISOL COAT	PLA-001	MIL-P-20689, A-A-59464	TYPE I, CLASS 2, PLASTISOL COAT .03/.06 THICK PER B/P, BLACK
NEOPRENE COAT	PLA-002		NEOPRENE LATEX DIP COAT ALL SURFACES .005/.015 THICK
SODIUM TREAT	SOD-001	AMS 2491	SODIUM TREAT
ZINC PLATE	ZIN-001	ASTM B633	FE/ZN 13, TY II, .0005 GOLD (HEXAVALENT)
	ZIN-002		FE/ZN 13, TY III, .0005 BRIGHT (HEXAVALENT)
	ZIN-003		FE/ZN 13, TY II, .0005 BLACK (HEXAVALENT)
	ZIN-004		FE/ZN 8, TY II, .0003 GOLD (HEXAVALENT)
	ZIN-005		FE/ZN 8, TY III, .0003 BRIGHT (HEXAVALENT)
	ZIN-006		BAC5637, AMS 2417
	ZIN-007	TT-C-490, TT-P-1757	ZINC PHOSPHATE & 1 COAT ZINC CHROMATE PRIMER
	ZIN-100	ASTM B633, GM 4345	FE/ZN 13, TY II, .0005 GOLD, REF. GM 4345-12D144/48
	ZIN-101		FE/ZN 13, TY II, .0005 RED, REF. GM 4345-12D144/48
	ZIN-200		FE/ZN 13, TY III, .0005 BRIGHT, REF. GM 4345-9K96/0
	ZIN-201		FE/ZN 8, TY II, .0003 GOLD, REF. GM 4345-M-6D96/48
	ZIN-300		GMW 3044, CEMS G-20, IFP-8, 12424710
	ZIN-301	GMW 4700	8 um MIN THICKNESS & SEALER BRIGHT TRIVALENT ZINC-NICKEL, TYPE A (480 HR SS)
	ZIN-302		8 um MIN THICKNESS & SEALER BRIGHT TRIVALENT ZINC-NICKEL, TYPE B (1000 HR SS)
	ZIN-400	WSS-M21P17-B1	8 um MIN THICKNESS & SEALER BRIGHT TRIVALENT ES2751
	ZIN-401	CORROLUX 550	8 um MIN THICKNESS & SEALER BRIGHT TRIVALENT (480 HR SS)
	ZIN-402		12 um MIN Total S439 WSS-M21P37-A1, GMW3359 TYPE A SILVER (1000 HR SS)
	ZIN-403	MAGNII 565	12 um MIN Total S439 WSS-M21P37-A1, GMW3359 TYPE B SILVER (480 HR SS)
	ZIN-500		FE/ZN 13, TY II, .0005 GOLD & SUPERSEAL (HEXAVALENT)
	ZIN-501	ASTM B633	FE/ZN 5, TY V, .0002 BRIGHT & SUPERSEAL TRIVALENT 49-00005-503
	ZIN-502		FE/ZN 8, TY VI, .0003 GRAY & SUPERSEAL TRIVALENT

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