

INCH-POUND

MIL-DTL-32360

6 October 2010

SUPERSEDING

MS51329B

18 July 1983

DETAIL SPECIFICATION

STOP LIGHT - TAILLIGHT, VEHICULAR-24 VOLT,
SERVICE STOP, SERVICE TAIL, BLACKOUT TAIL

Inactive for new design after 6 October 2010.

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers two types of vehicular taillights, which include a stop signal and blackout lighting. This assembly will be referred to as "tail/stop/blackout light" for the remainder of the document.

1.2 Classification. The tail/stop/blackout lights are of the following types and classes as specified below (see 6.2).

1.2.1 Types. The types of tail/stop/blackout lights are as follows:

Type I - Employs incandescent lamps for the taillight, stop signal, and blackout light.
The assembly housing is painted yellow.

Type II - Employs incandescent lamps for the taillight and the stop signal. A light emitting diode (LED) marker assembly is used for the blackout light. The assembly housing is painted green.

1.2.2 Classes. The classes of tail/stop/blackout lights are as follows:

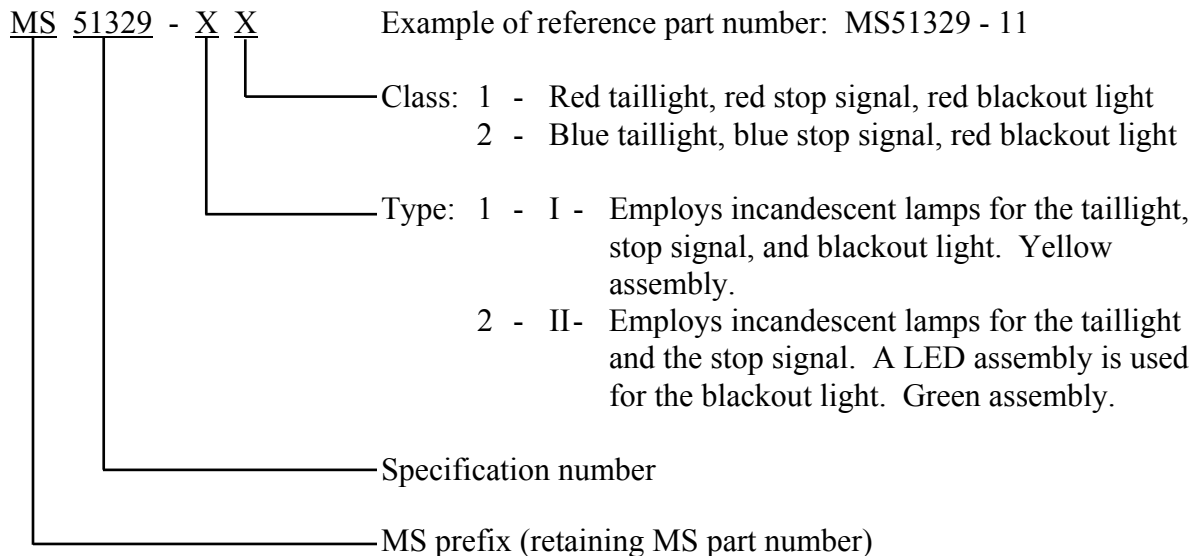
Class 1 - Red taillight, red stop signal, red blackout light

Class 2 - Blue taillight, blue stop signal, red blackout light

Comments, suggestions, or questions on this document should be addressed to Defense Logistics Agency Aviation VEB, 8000 Jefferson Davis Highway, Richmond, VA 23297-5616, or e-mailed to STDZNMGT@dla.mil . Since contact information can change, you may want to verify the currency of this address information using the ASSIST database at https://assist.daps.dla.mil/ .
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1.3 Part or identifying number (PIN). The PIN to be used for tail/stop/blackout lights acquired to this specification is created as follows:



2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of the documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbook. The following specifications, standards, and handbook form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

FEDERAL SPECIFICATIONS

FF-S-85	- Screw, Cap, Slotted and Hexagon Head
L-P-380	- Plastic Molding Material Methacrylate
TT-C-490	- Chemical Conversion Coatings and Pretreatments for Ferrous Surfaces (Base for Organic Coatings)
TT-P-1757	- Primer Coating, Alkyd Base, One Component

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FEDERAL STANDARDS

FED-STD-595/23538	- Yellow, Semigloss
FED-STD-595/34094	- Green, Flat or Lusterless
FED-STD-H28	- Screw-Thread Standards for Federal Services

COMMERCIAL ITEM DESCRIPTIONS

A-A-52463	- Lamp Bulbs, Incandescent, Miniature, Single and Double Contact, Bayonet Candelabra Base
A-A-52536	- Contact, Electrical No. 12, 14, and 16 A.W.G.
A-A-59569	- Braid, Wire (Copper, Tin-Coated, Silver-Coated, or Nickel Coated, Tubular or Flat)

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-DTL-11195	- Enamel, Lusterless, Fast Dry, VOC Compliant, (for Use On Ammunition and Other Metals)
MIL-W-12332	- Welding, Resistance, Spot, Seam, and Projection; for Fabricating Assemblies of Low-Carbon Steel
MIL-DTL-13486/1	- Cable, Special Purpose, Electrical: Low-Tension, Heavy-Duty, Single Conductor, Unshielded
MIL-E-16663	- Enamel, Semigloss, (for Metal Surfaces of Ammunition and Ammunition Containers)
MS35430	- Terminal, Lug, Solder Type, Copper Stamping, One Hole
MIL-B-43436/1	- Band Marker, Blank, Single Crimp Style Band

DEPARTMENT OF DEFENSE STANDARD

MIL-STD-130	- Identification Marking of U.S. Military Property
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DEPARTMENT OF DEFENSE HANDBOOK

MIL-HDBK-808	- Finish, Protective and Codes for Finishing Schemes for Ground and Ground Support and Equipment
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(Copies of these documents are available online at <https://assist.daps.dla.mil/> or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.3 Non-government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

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AEROSPACE INDUSTRIES ASSOCIATION

NASM16535	- Rivet - Tubular, Oval Head
NASM20613	- Rivet, Solid-Universal Head, Steel, Carbon and Steel, Corrosion-Resistant
NASM35206	- Screw, Machine-Pan Head, Cross-Recessed, Carbon Steel, Cadmium Plated, UNC-2A
NASM35338	- Washer, Lock-Spring, Helical, Regular (Medium) Series

(Copies of these documents are available online at <http://www.aia-aerospace.org/> or from Aerospace Industries Association, 1000 Wilson Blvd., Suite 1700, Arlington, VA 22209-3901.)

AMERICAN SOCIETY FOR QUALITY (ASQ)

ASQ Z1.4	- Sampling Procedures and Tables for Inspection by Attributes
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(Copies of this document are available online at <http://www.asq.org/> or from American Society of Quality, 600 North Plankinton Avenue, Milwaukee, WI 53203.)

ASTM INTERNATIONAL

ASTM A109/A109M	- Standard Specification for Steel, Strip, Carbon (0.25 Maximum Percent), Cold-Rolled
ASTM A228/A228M	- Standard Specification for Steel Wire, Music Spring Quality
ASTM A313/A313M	- Standard Specification for Stainless Steel Spring Wire
ASTM A580/A580M	- Standard Specification for Stainless Steel Wire
ASTM B86	- Standard Specification for Zinc and Zinc-Aluminum (ZA) Alloy Foundry and Die Castings
ASTM B117	- Standard Practice for Operating Salt Spray (Fog) Apparatus
ASTM B633	- Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel
ASTM D2000	- Standard Classification System for Rubber Products in Automotive Applications
ASTM D707	- Standard Classification System and Basis for Specification for Cellulose Acetate Butyrate Molding and Extrusion Compounds
ASTM D709	- Standard Specification for Laminated Thermosetting Materials
ASTM G21	- Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi

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(Copies of these documents are available online at <http://www.astm.org/> or from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.)

IPC - ASSOCIATION CONNECTING ELECTRONICS INDUSTRIES

IPC J-STD-001 - Requirements for Soldered Electrical and Electronic Assemblies

(Copies of this document are available online at <http://www.ipc.org/> or from IPC - Association Connecting Electronics Industries, 3000 Lakeside Drive Suite 309 S, Bannockburn, IL 60015-1249.)

SAE INTERNATIONAL

SAE AMS2700	- Passivation of Corrosion Resistant Steels
SAE AMS-QQ-P-416	- Plating, Cadmium (Electrodeposited)
SAE AS25050	- Colors, Aeronautical Lights and Lighting Equipment, General Specification for
SAE J452	- General Information—Chemical Compositions, Mechanical and Physical Properties of SAE Aluminum Casting Alloys
SAE J561	- Electrical Terminals-Eyelet and Spade Type
SAE J585	- Tail Lamps (Rear Position Lamps) for Use on Motor Vehicles Less than 2032 mm in Overall Width

(Copies of these documents are available from <http://www.sae.org/> or from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001.)

2.4 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Description. The tail/stop/blackout light shall be as shown in figures 1 through 34 and as specified herein.

3.2 Design.

3.2.1 Photometric characteristics. Photometric characteristics are to be in accordance with the values shown in the photometric chart in figure 1.

3.2.2 Lighting specifications. Lamps shall be as specified herein and must comply with the following lighting specifications. The blackout features shall have a maximum visibility of

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not less than 1000 \pm 200 feet (ft) on a dark, cloudy night with no moon and with the bulbs/LED assembly operating at design voltage. The four openings, see figure 26, shall be of substantially equal brightness and there shall be no discernable difference under visual inspection. The service features, tail and stop, shall comply with the photometric chart in figure 1.

3.2.3 Fungus-proof materials. Materials that are nutrients for fungi shall not be used where it is practical to avoid them. Where used and not hermetically sealed, they shall be treated with a fungicide agent in accordance with ASTM G21. However, if they will be used in a hermetically sealed enclosure, fungicidal treatment will not be necessary.

3.2.4 Waterproofness. Tail/stop/blackout light assemblies shall display no evidence of leakage under visual examination and shall be operable, in accordance with 3.4, during and subsequent to submersion when subjected to the tests of 4.5.1.

3.2.5 Corrosion resistance. Tail/stop/blackout light assemblies shall display no evidence of corrosion under visual examination and shall be operable, in accordance with 3.4, subsequent to the corrosion resistance test of 4.5.3.

3.2.6 Steel projection welds. Steel projection welds shall be in accordance with MIL-W-12332.

3.2.7 Threads. All screw threads shall be in accordance with FED-STD-H28.

3.2.8 Identification of product. Equipment, assemblies, and parts shall be marked for identification in accordance with MIL-STD-130.

3.3 Materials.

3.3.1 Finish. Protective finish shall be applied with guidance from MIL-HDBK-808, F300, type I. Prime with one coat of TT-P-1757. Finish with two coats of semigloss enamel in accordance with MIL-E-16663, color yellow no. 23538 for type I and camouflage green 383 in accordance with FED-STD-595/34094 for type II.

3.3.2 Workmanship. Workmanship shall be in accordance with high-grade automotive manufacturing practices appropriate to rugged, high-reliability taillight assemblies.

3.3.3 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible, provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.4 Operation. The tail/stop/blackout light shall give no indication of electrical or mechanical faults when tested in accordance with 4.4.3.

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4. VERIFICATION

4.1 Classification of inspection. The inspection requirement specified herein are classified as conformance inspection (see 4.3).

4.2 Sampling.

4.2.1 Lot. For purposes of sampling, a lot shall consist of not greater than 100 tail/stop/blackout lights of the same type and class, assembled from the same batch components or subassemblies, and offered for delivery at one time.

4.2.2 Sampling for conformance inspection. A random sample of tail/stop/blackout lights shall be selected from each lot and subjected to the inspections specified in 4.3. Sampling shall be in accordance with ASQ Z1.4, inspection level III, with the acceptance quality limit (AQL) as specified in the contract (see 6.2).

4.3 Conformance inspection. Unless otherwise specified (see 6.2), each of the sample tail/stop/blackout lights selected in accordance with 4.2.2 shall be subjected to the examinations and tests specified in table I.

TABLE I. Conformance inspection.

Title	Requirement	Verification	Examination	Test
Design and materials	3.2 through 3.3.3	4.4.2, 4.5.1, 4.5.2, 4.5.3	X	-
Operation	3.4	4.4.3	-	X

4.4 Verification methods. The types of verification methods included in this section are visual inspection, measurement, sample tests, full-scale demonstration tests, simulation, modeling, engineering evaluation, component properties analysis, and similarity to previously approved or previously qualified designs.

4.4.1 Verification alternatives. The manufacturer may propose alternative test methods, techniques, or equipment, including the application of statistical process control, tool control, or cost-effective sampling procedures, to verify performance. Refer to contract (see 6.2) for alternatives to verifications required by this specification.

4.4.2 Design and materials. Conformance to 3.2 through 3.3.3 shall be determined by inspection of contractor records providing proof or certification that design, construction, processing, and materials conform to requirements. Visual verification discovering that the required components specified herein are not used shall constitute failure of this test (see 4.4).

4.4.3 Operation. Each sample tail/stop/blackout light shall be visually tested by individually energizing each of the three circuits contained within the tail/stop/blackout light with 24 VDC to verify proper operation and illumination.

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4.5 Tests.

4.5.1 Waterproofness. The tail/stop/blackout light shall withstand the waterproofness tests of 4.5.1.1 through 4.5.1.4.

4.5.1.1 Saline solution. The salt used shall be sodium chloride containing on a dry basis not more than 0.1 percent of sodium iodide and not more than 0.2 percent of total impurities. The solution shall be prepared by dissolving 5 parts by weight of salt in 95 parts by weight of distilled water or other water containing not more than 200 parts per million of total solids. The solution shall be kept free of sediment by filtration or decantation.

4.5.1.2 Preparation and initial testing. The tail/stop/blackout light, with its electrical connections, shall be submerged in a container with the uppermost surface of the assembly a minimum of 1 inch below the surface of the saline solution. The container and assembly shall be installed in a transparent, sealed chamber capable of supporting both vacuum and pressurization. The assembly shall initially be operated while submerged for 30 minutes and shall be carefully observed during its entire period of submersion.

4.5.1.3 Vacuum submersion testing. The chamber shall be evacuated to a pressure 6 pounds per square inch (psi) below atmospheric so as to apply a minimum of 6 psi in internal pressure to all voids within the assembly. During this period, the taillight shall be carefully observed for leakage, as evidenced by bubbles escaping from the interior of the assembly. Any leakage shall be considered as noncompliance with the waterproof requirement and the assembly shall be rejected. Bubbles that are the result of entrapped air on the exterior surfaces of the component shall not be considered leakage.

4.5.1.4 Pressure submersion testing. The chamber shall then be pressurized to six pounds above atmospheric and the assembly again operated for 30 minutes. The assembly shall then be disassembled as normally required in servicing and inspection made for the presence of water. If water is present, the assembly shall be rejected. If the assembly is dry, it shall be reassembled and subjected to 15 hours of dry operation (3 separate 5-hour periods). Insulation breakdown or other damage that would impair mechanical or electrical operation of the assembly shall be considered as evidence of failure and the assembly shall be rejected.

4.5.2 Photometric characteristics. Photometric characteristics are to be taken on a test screen at a distance of 4 feet from the light with 28 volts direct current (VDC) applied. See SAE J585 photometric test and color for service stop and tail lens.

4.5.3 Corrosion resistance. The tail/stop/blackout light assembly shall successfully withstand 200 hours of salt atmosphere in accordance with ASTM B117.

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5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the military service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The tail/stop/blackout lights covered by this specification are intended for use in various types of ground vehicles. The blackout feature provides minimum lighting to show vehicle position to a trailing vehicle when illumination must be restricted to a level not visible to a distant enemy.

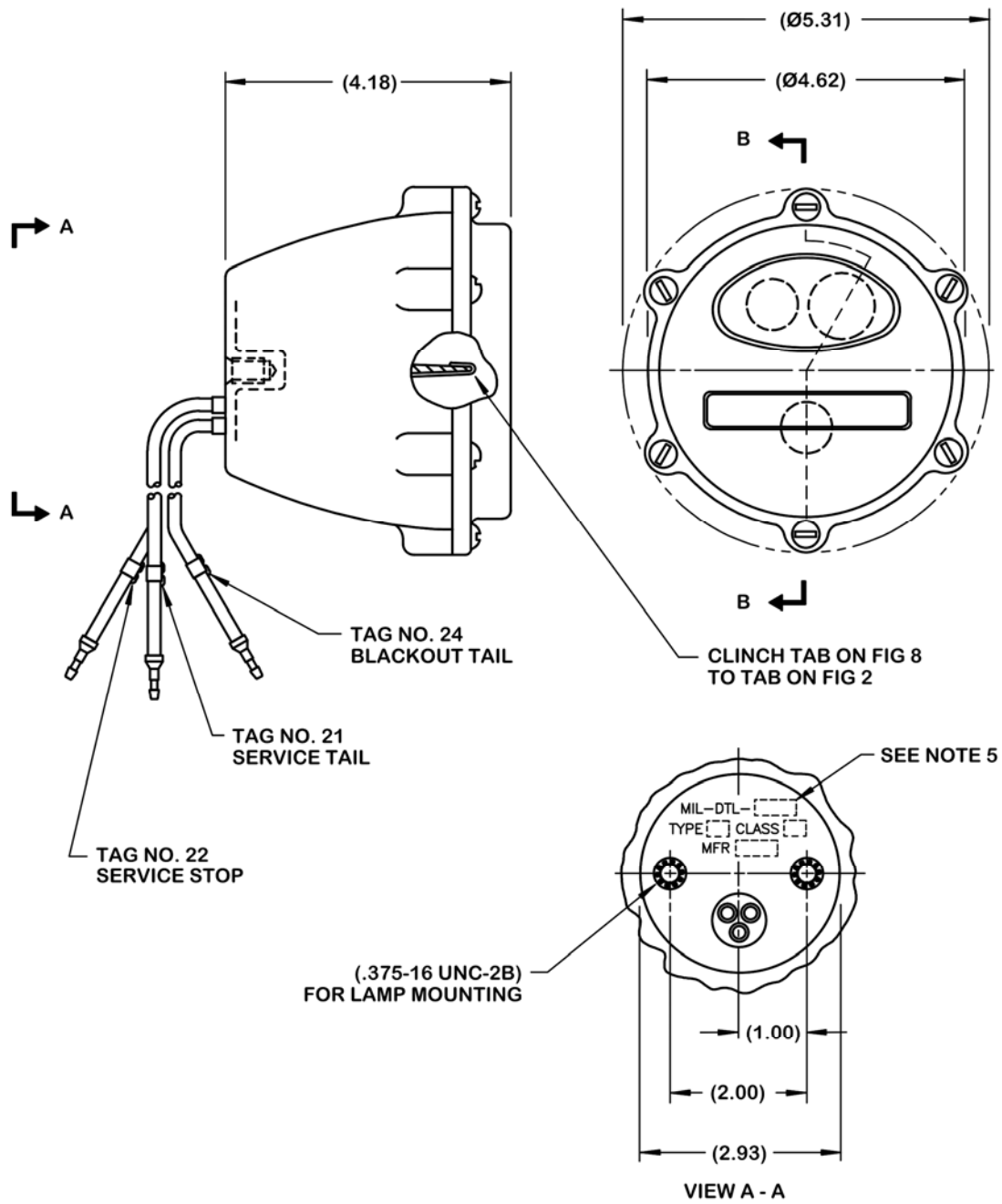
6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. Type (see 1.2.1).
- c. Class (see 1.2.2).
- d. AQL (see 4.2.2).
- e. Conformance inspection (see 4.3).
- f. Verification alternatives (see 4.4.2).
- g. Packaging requirements (see 5.1).

6.3 Subject term (key word) listing.

Bulb
Cadmium
Colored light filter
Light emitting diode
LED
Tactical lighting
Vehicle lighting
Waterproof

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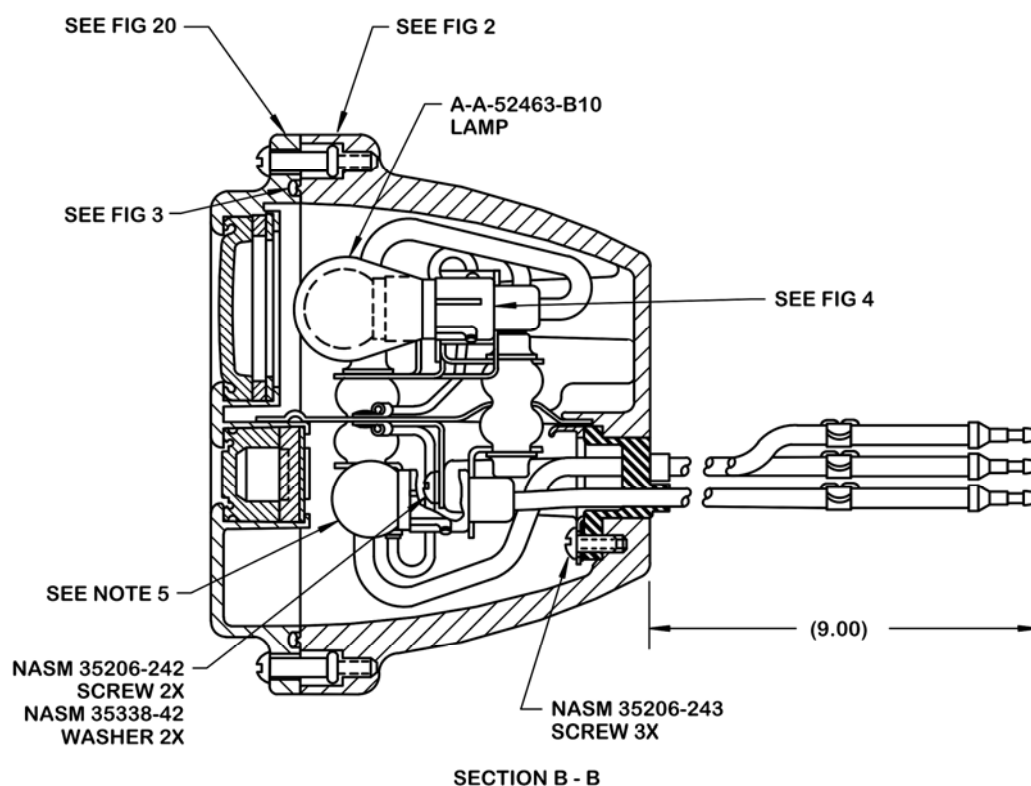


NOTES:

1. All dimensions are in inches.
2. Tolerance: 2-place decimals: $\pm .01$.
3. All radii 0.6 unless otherwise specified.
4. Break all corners R.03.
5. Stamp specification document number, type, class, and manufacturer CAGE as shown in letters .16 high, with black indelible ink on the bottom of yellow lamp bodies (type I) and yellow indelible ink on the bottom of green lamp bodies (type II).
6. A-A-52463-A08 lamp (2X for type I, 1X for type II).

FIGURE 1. Lamp assembly, red or blue lens.

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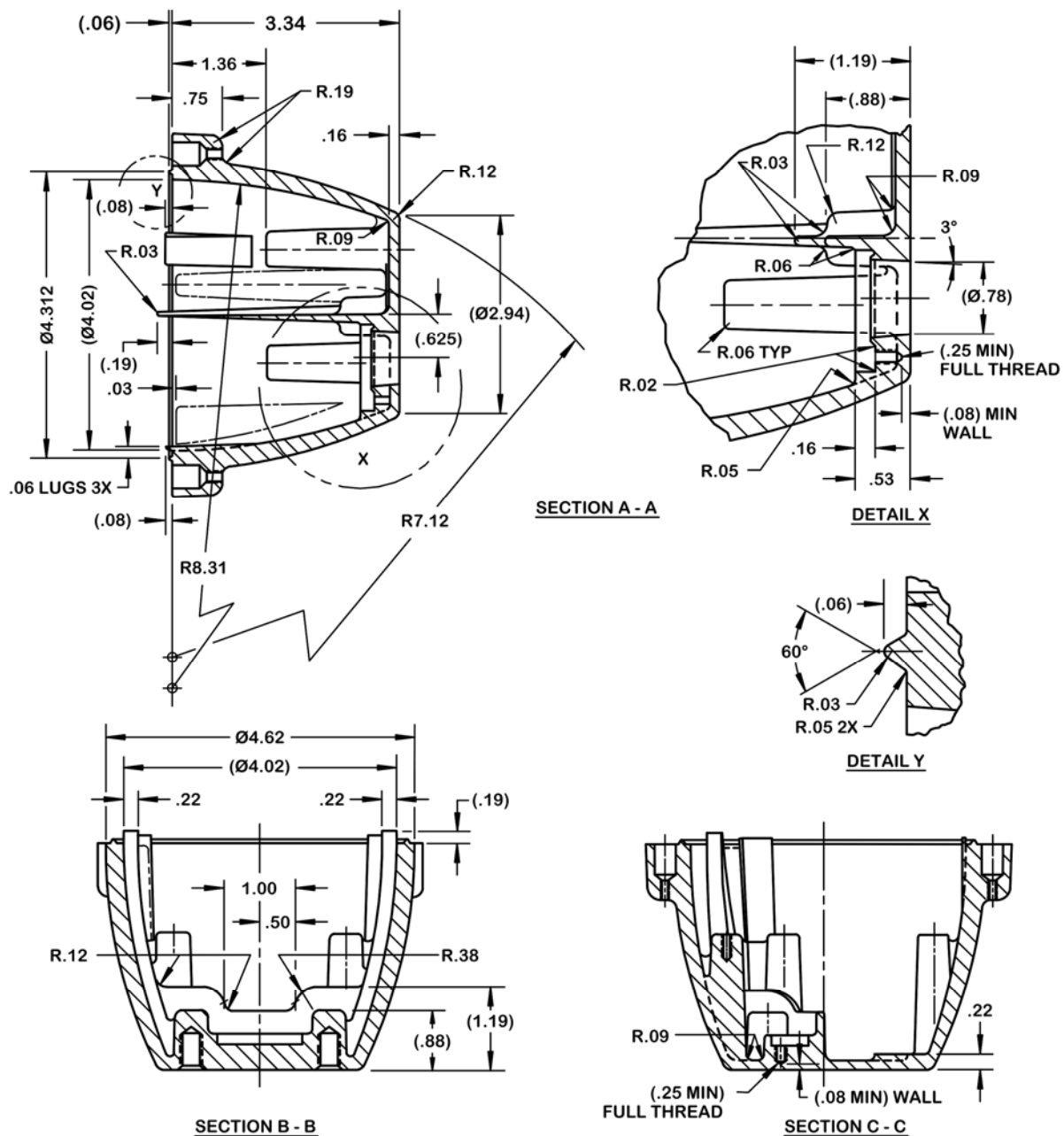
Photometric Minimum Candlepower Required		
Test points (Angular degrees)	Candlepower	
	Service tail	Service stop
10° up or 10° down at 5° right and 5° left	0.25	2.0
10° up or 10° down on vertical axis	0.25	2.0
5° up or 5° down at 20° right and 20° left	0.00	0.0
5° up or 5° down at 10° right and 10° left	0.25	2.0
5° up at 5° right and 5° left	0.25	5.0
5° up or 5° down on vertical axis	0.25	10.0
Horizontal axis at 20° right and 20° left	0.25	2.0
Horizontal axis at 10° right and 10° left	0.25	5.0
Horizontal axis at 5° right and 5° left	0.25	10.0
Horizontal axis at vertical axis	0.25	15.0

NOTES:

1. All dimensions are in inches.
2. Tolerance: 2-place decimals: $\pm .01$.
3. All radii 0.6 unless otherwise specified.
4. Break all corners R.03.
5. Stamp specification document number, type, class, and manufacturer CAGE as shown in letters .16 high, with black indelible ink on the bottom of yellow lamp bodies (type I) and yellow indelible ink on the bottom of green lamp bodies (type II).
6. A-A-52463-A08 lamp (2X for type I, 1X for type II).

FIGURE 1. Lamp assembly, red or blue lens - Continued.

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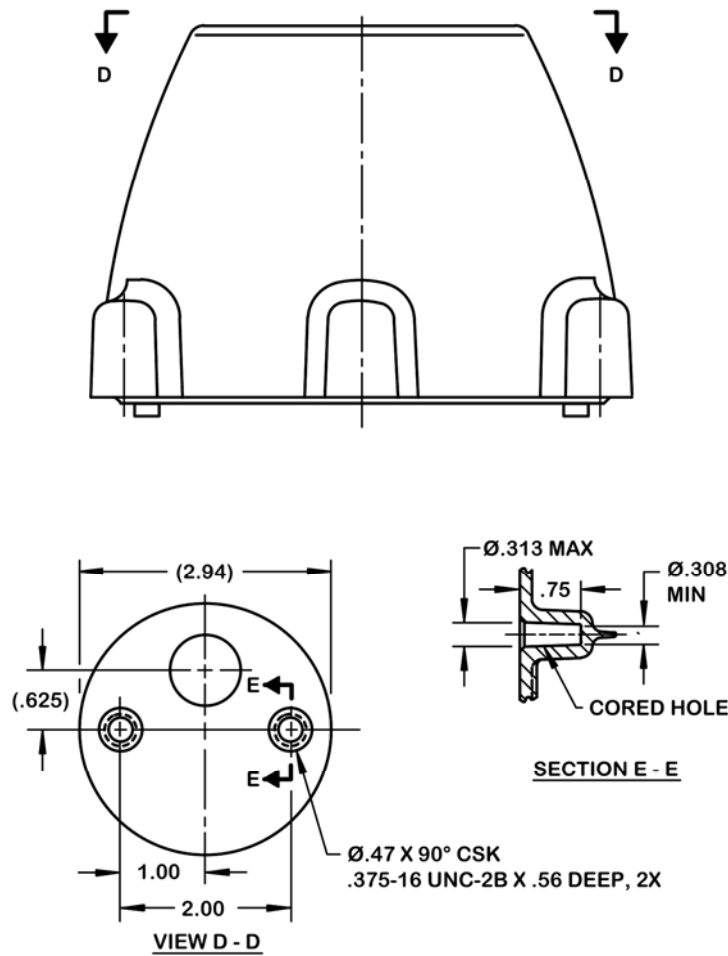


NOTES:

1. All dimensions are in inches.
2. Tolerance: 2-place decimals: $\pm .01$.
3-place decimals: $\pm .005$.
3. All radii .06 unless otherwise specified.
4. Break all corners R.03.
5. Unless otherwise specified draft angle 2° max.
6. Material: Aluminum alloy die casting in accordance with SAE J452, composition A413.0, C443.0, A380, 380, or 360.

FIGURE 2. XM body - Continued.

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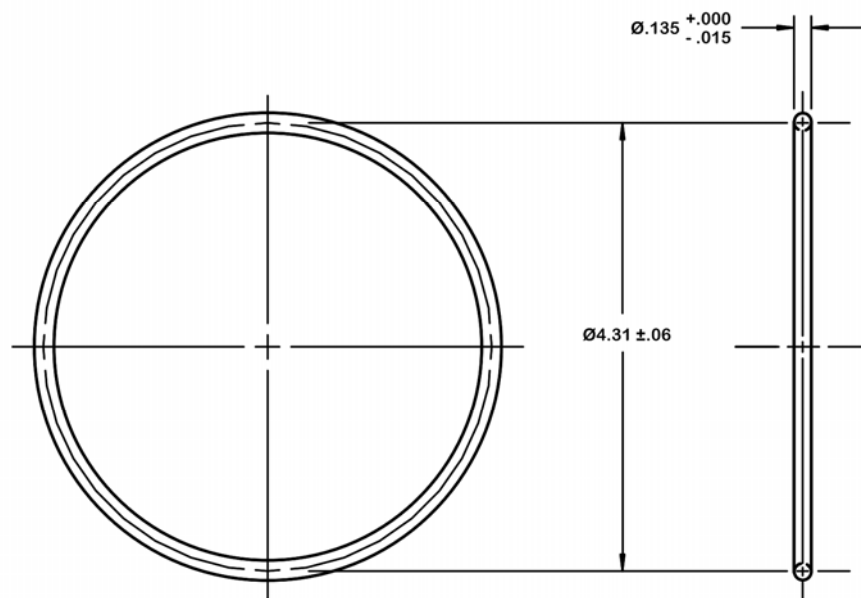


NOTES:

1. All dimensions are in inches.
2. Tolerance: 2-place decimals: $\pm.01$.
3-place decimals: $\pm.005$.
3. All radii 0.6 unless otherwise specified.
4. Break all corners R.03.
5. Unless otherwise specified draft angle 2° max.
6. Material: Aluminum alloy die casting in accordance with SAE J452, composition A413.0, C443.0, A380, 380, or 360.

FIGURE 2. XM body - Continued.

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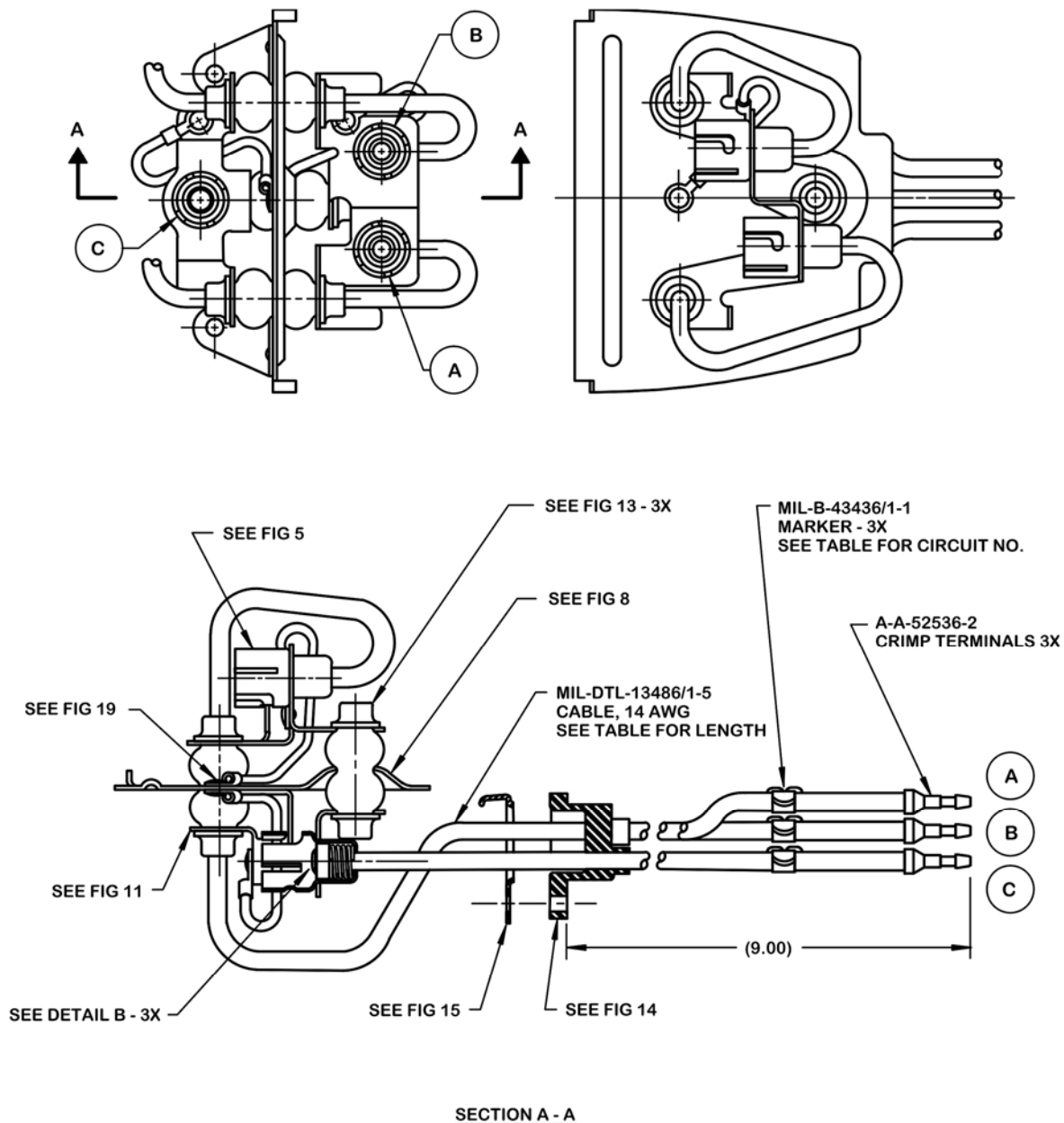


NOTES:

1. All dimensions are in inches.
2. Material: Rubber in accordance with ASTM D2000 with a grade that is acceptable to procuring activity.

FIGURE 3. Gasket, door.

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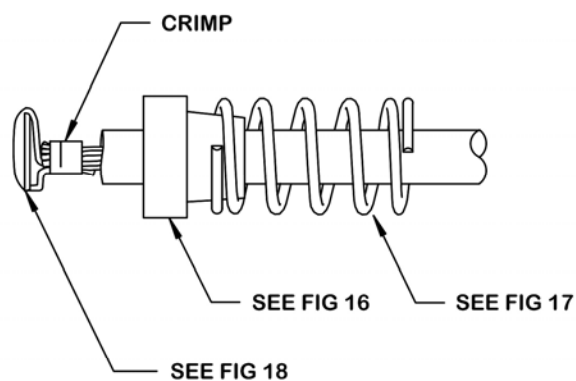
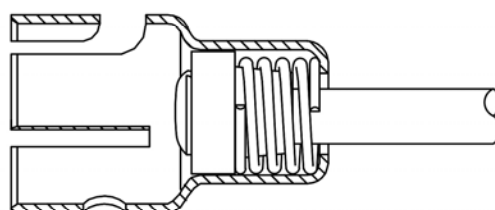


NOTES:

1. All dimensions are in inches.
2. Tolerance: 2-place decimals: $\pm .01$.
3. All radii 0.6 unless otherwise specified.
4. Break all corners R.03.
5. Crimp terminals in accordance with SAE J561.
6. Cement wires securely to grommet such that the seal complies with the waterproof requirements contained in this standard.

FIGURE 4. Socket and wiring assembly.

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ASSEMBLY DETAILASSEMBLED SOCKETDETAIL B

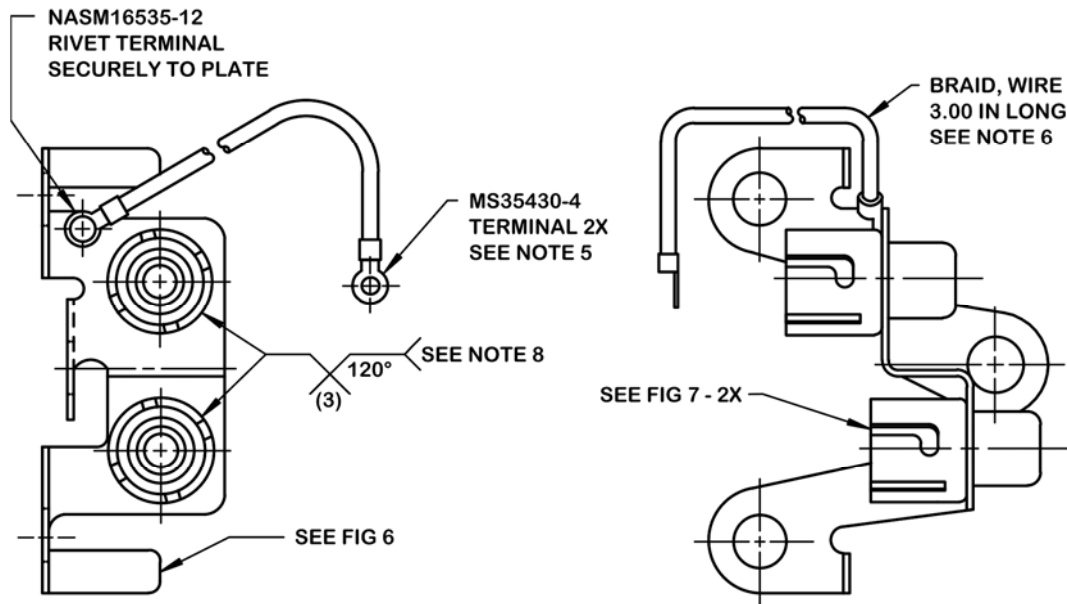
Part	Conductor designation	Application	Circuit no.	Cut cable length (inch)
Socket wiring assembly	A	Service stop	22	18 1/2
	B	Service tail	21	18 1/2
	C	Blackout tail	24	18 1/2

NOTES:

1. All dimensions are in inches.
2. Tolerance: 2-place decimals: ± 0.01 .
3. All radii 0.6 unless otherwise specified.
4. Break all corners R.03.
5. Crimp terminals in accordance with SAE J561.
6. Cement wires securely to grommet such that the seal complies with the waterproof requirements contained in this standard.

FIGURE 4. Socket and wiring assembly - Continued.

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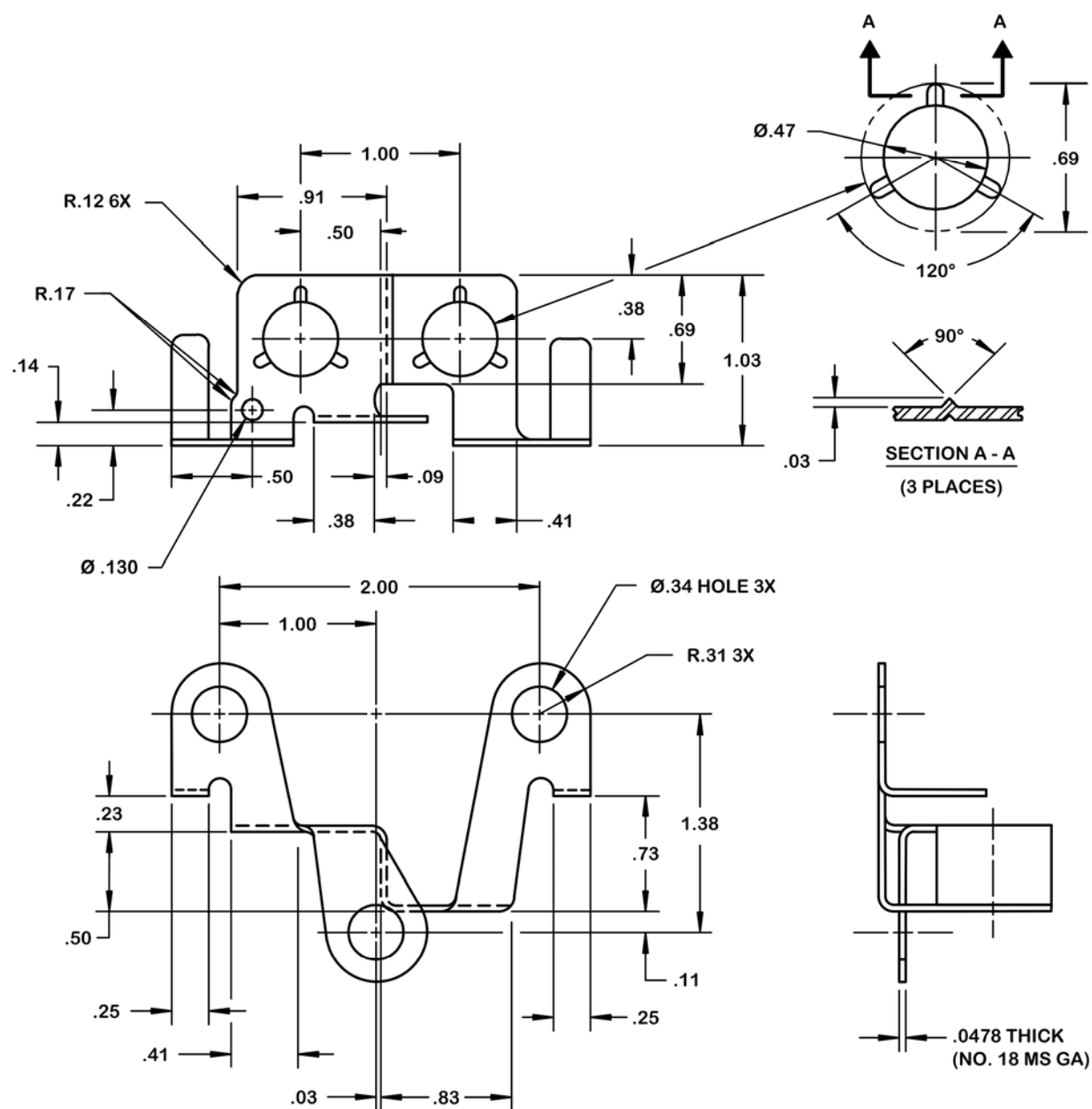


NOTES:

1. All dimensions are in inches.
2. Tolerance: 2-place decimals: $\pm .01$.
3. All radii .06 unless otherwise specified.
4. Break all corners R.03.
5. Solder in accordance with IPC J-STD-001.
6. Braid, wire, in accordance with A-A-59569 tinned copper no. 34 B&S gauge, 16 carriers, 32 ends, 1/16 nominal ID.
7. Finish: Cadmium plate in accordance with SAE AMS-QQ-P-416, type II, class 2.
8. Steel projection weld in accordance with MIL-W-12332.

FIGURE 5. Socket and wire assembly.

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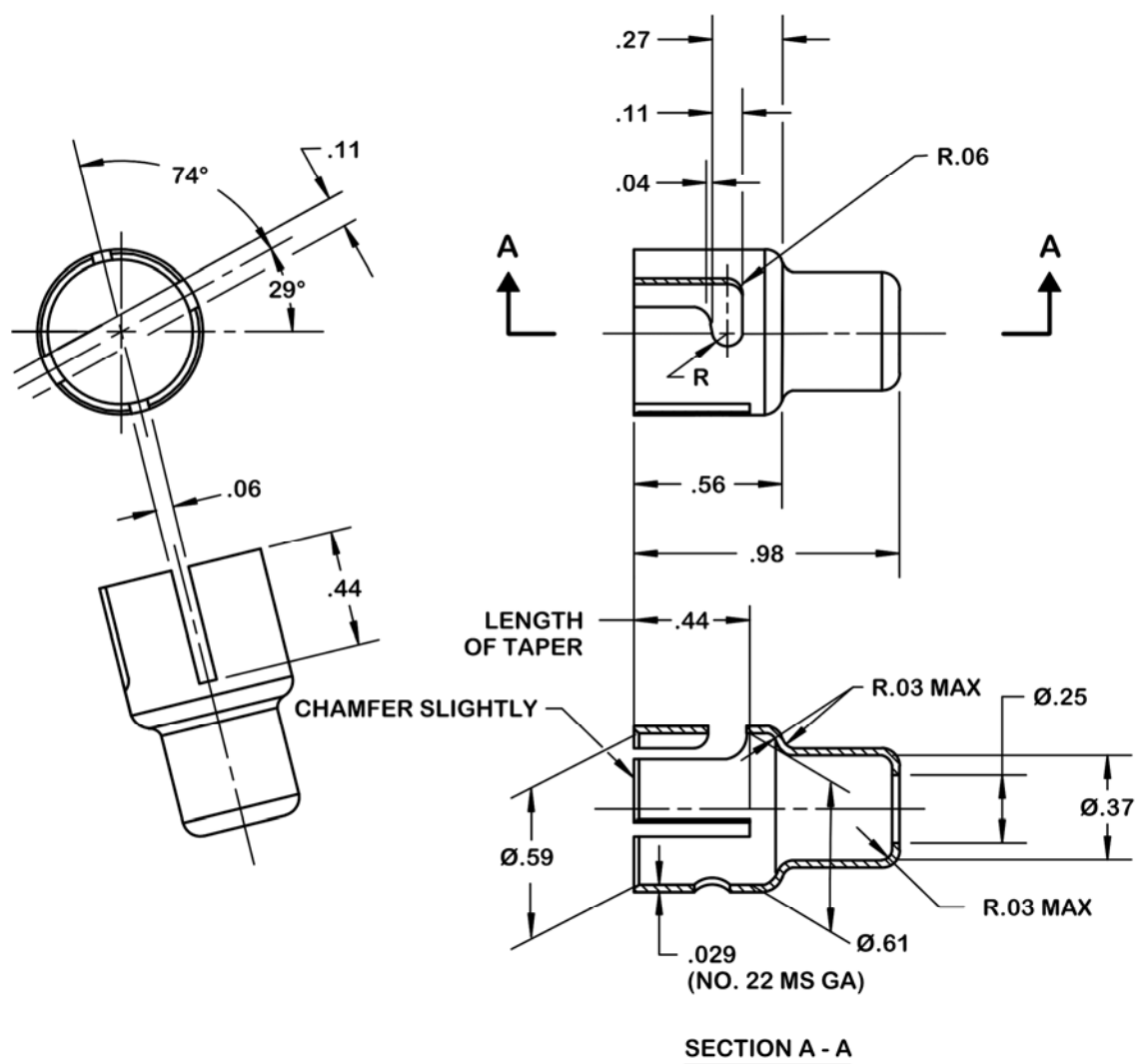


NOTES:

1. All dimensions are in inches.
2. Tolerance: 2-place decimals: $\pm .01$.
3-place decimals: $\pm .005$.
3. All radii .06 unless otherwise specified.
4. Break all corners R.03.
5. Material: Steel sheet, carbon in accordance with ASTM A109/A109M, exposed.

FIGURE 6. Plate.

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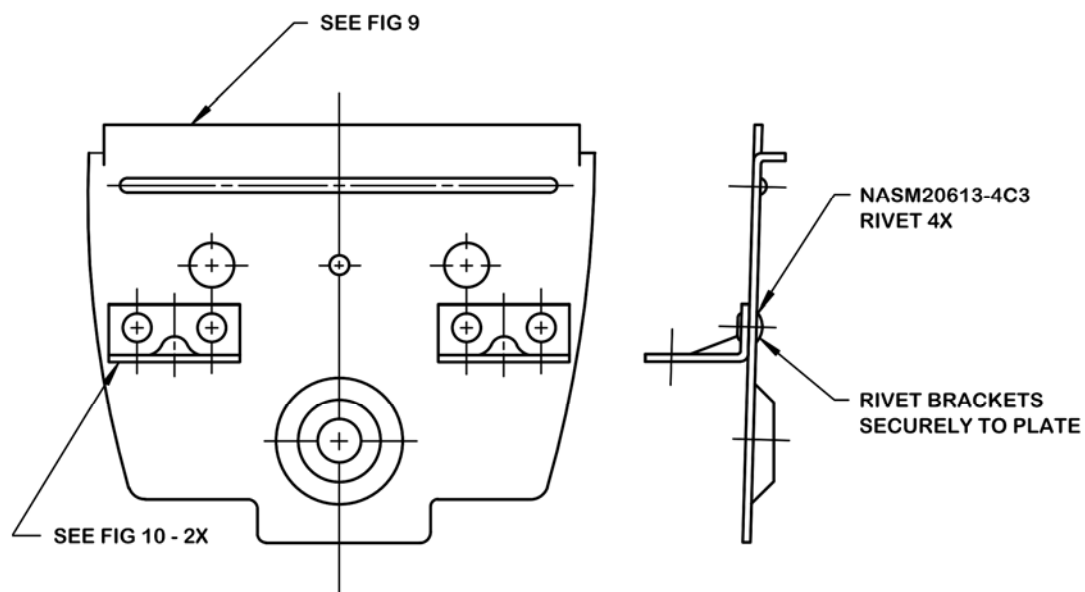


NOTES:

1. All dimensions are in inches.
2. Tolerance: place decimals: $\pm.01$.
3. All radii 0.6 unless otherwise specified.
4. Break all corners R.03.
5. Material: Steel sheet, carbon, in accordance with ASTM A109/A109M, exposed.

FIGURE 7. Socket.

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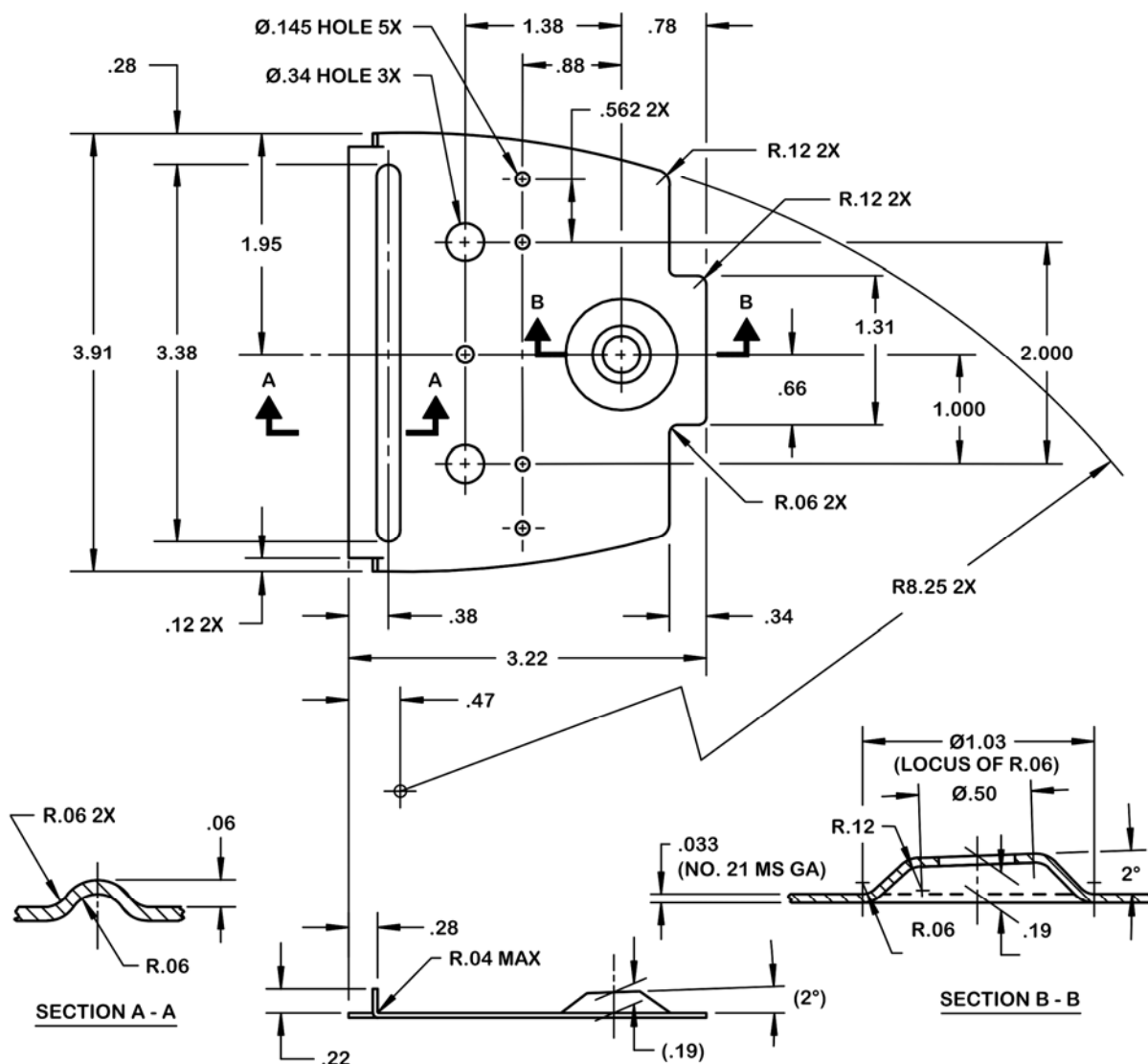


NOTES:

1. All radii .06 unless otherwise specified.
2. Break all corners R.03.

FIGURE 8. Plate assembly.

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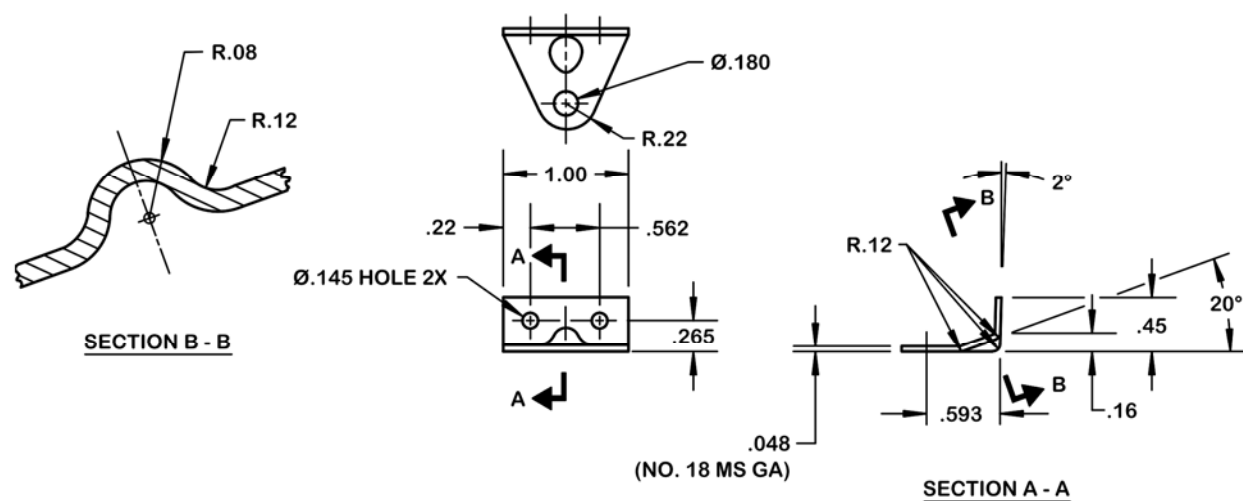


NOTES:

1. All dimensions are in inches.
2. Tolerance: 2-place decimals: $\pm.01$.
3-place decimals: $\pm.005$.
3. All radii .06 unless otherwise specified.
4. Break all corners R.03.
5. Material: Steel sheet, carbon in accordance with ASTM A109/A109M, exposed.
6. Cadmium plate in accordance with SAE AMS-QQ-P-416, type II, class 2.

FIGURE 9. Plate.

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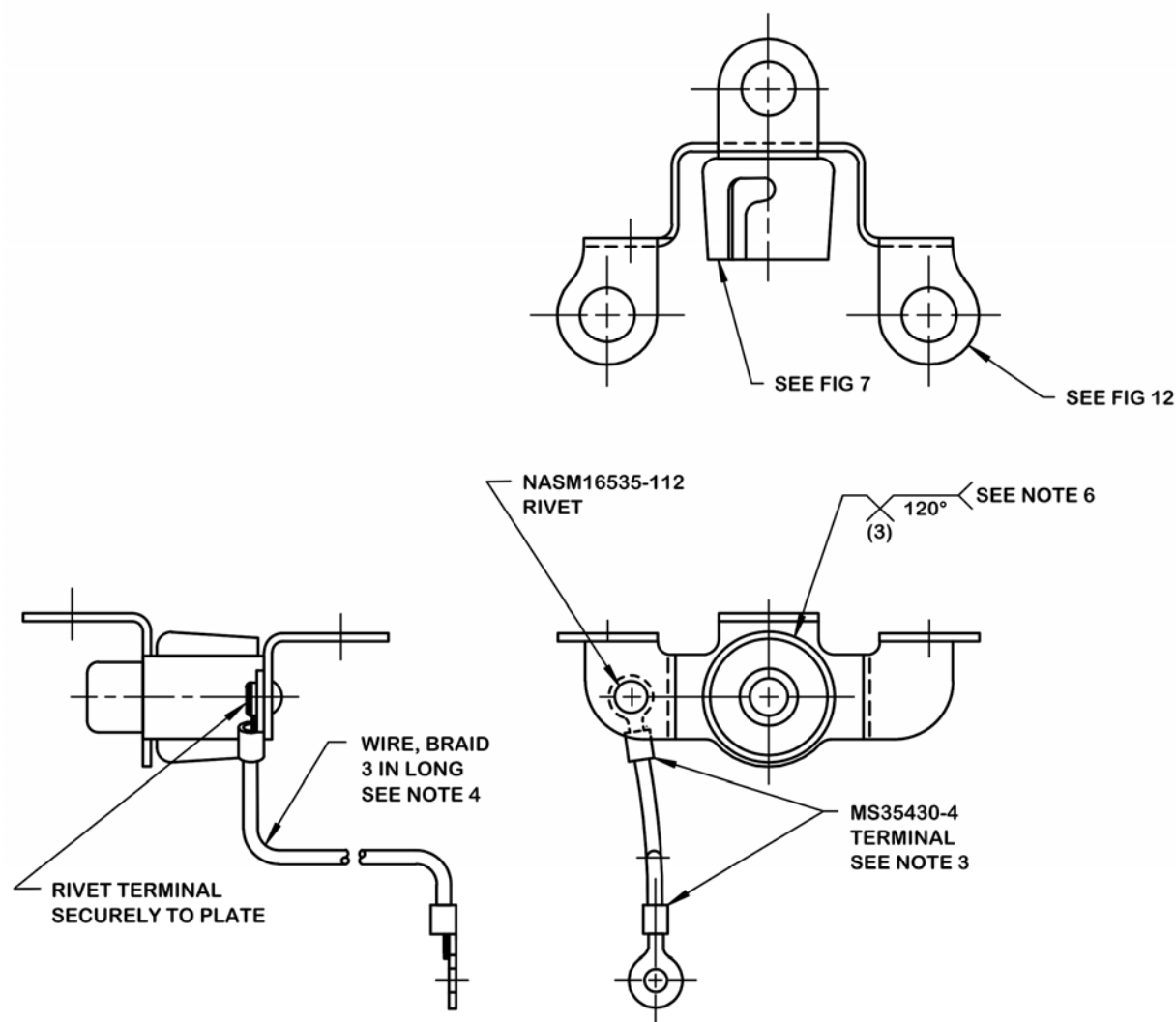


NOTES:

1. All dimensions are in inches.
2. Tolerance: 2-place decimals: $\pm .01$.
3-place decimals: $\pm .005$.
3. All radii .06 unless otherwise specified.
4. Break all corners R.03.
5. Material: Steel sheet, carbon in accordance with ASTM A109/A109M, exposed.
6. Cadmium plate in accordance with SAE AMS-QQ-P-416, type II, class 2.

FIGURE 10. Bracket.

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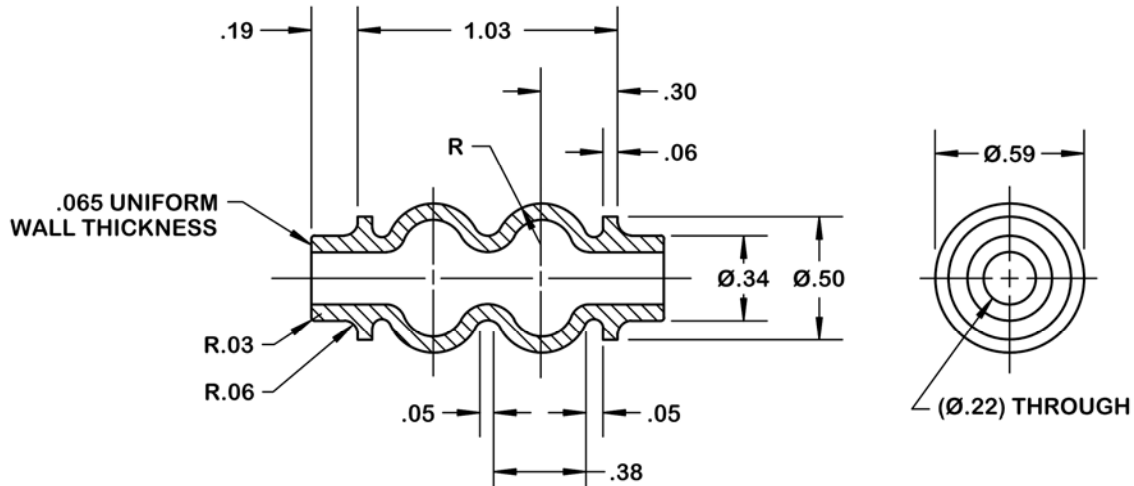


NOTES:

1. All radii .06 unless otherwise specified.
2. Break all corners R.03.
3. Solder in accordance with IPC J-STD-001.
4. Braid, wire in accordance with A-A-59569 tinned copper no. 34 B&S gauge, 16 carriers, 32 ends, 1/16 nominal ID.
5. Cadmium plate in accordance with SAE AMS-QQ-P-416, type II, class 2.
6. Steel projection weld in accordance with MIL-W-12332.

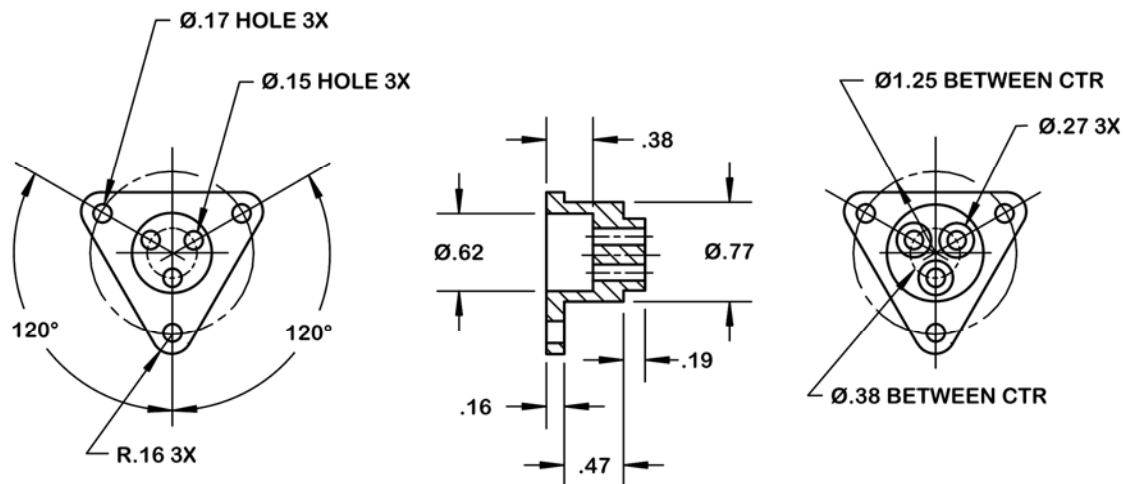
FIGURE 11. Socket and wire assembly.

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NOTES:

1. All dimensions are in inches.
2. Tolerance: 2-place decimals: $\pm .01$.
3-place decimals: $\pm .005$.
3. All radii .06 unless otherwise specified.
4. Break all corners R.03.
5. Material: Rubber in accordance with ASTM D2000 with a grade that is acceptable to procuring activity.

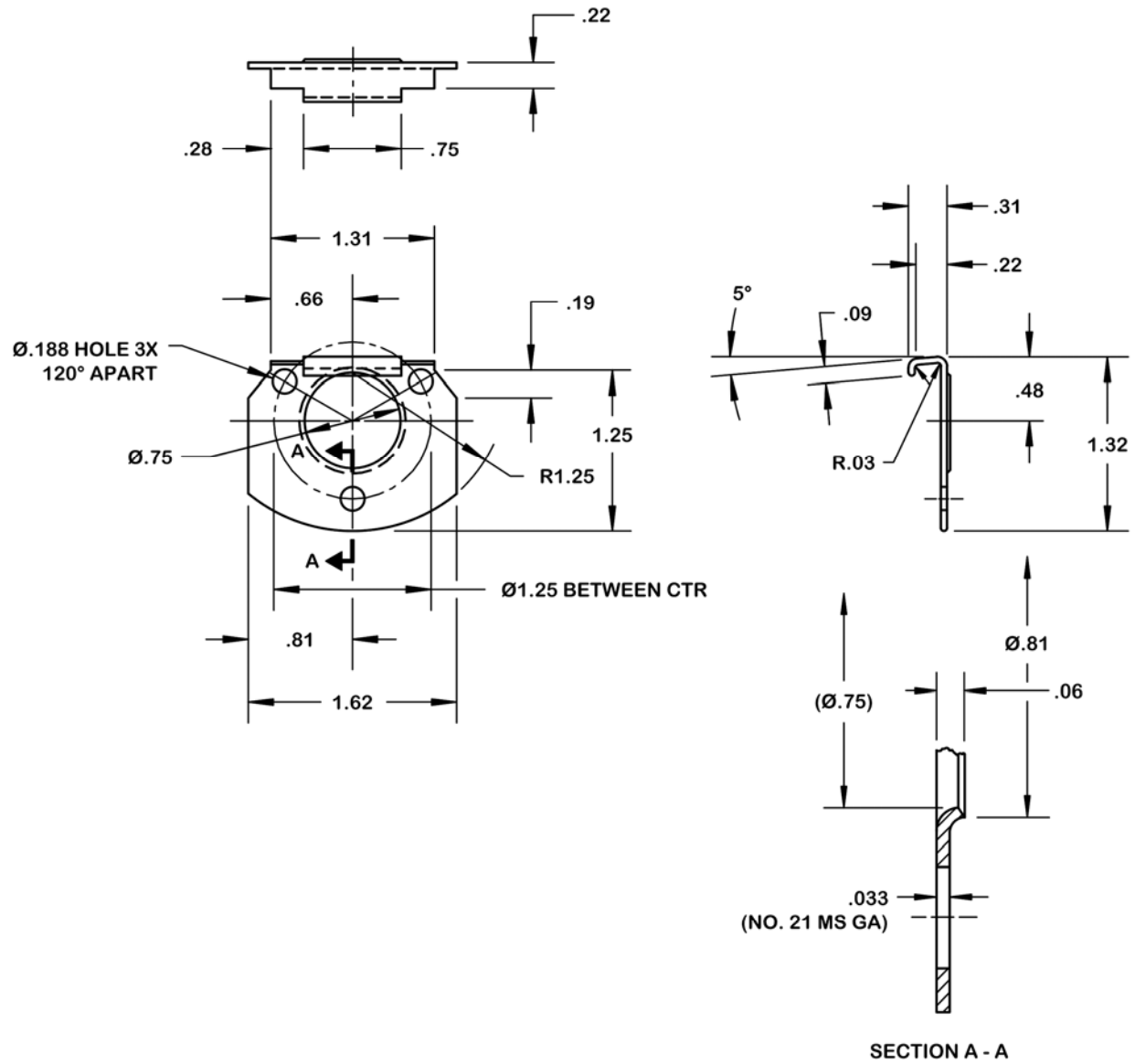
FIGURE 13. Isolator.

NOTES:

1. All dimensions are in inches.
2. Tolerance: place decimals: $\pm .01$.
3. All radii .06 unless otherwise specified.
4. Break all corners R.03.
5. Material: Rubber in accordance with ASTM D2000 with a grade that is acceptable to procuring activity.

FIGURE 14. Grommet.

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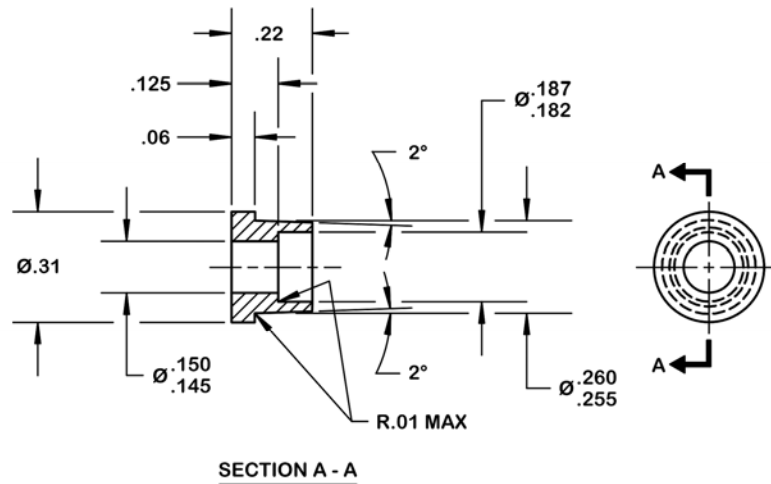


NOTES:

1. All dimensions are in inches.
2. Tolerance: 2-place decimals: $\pm .01$.
3-place decimals: $\pm .005$.
3. All radii .06 unless otherwise specified.
4. Break all corners R.03.
5. Material: Steel sheet, carbon in accordance with ASTM A109/A109M, exposed.
6. Finish: Cadmium plate in accordance with SAE AMS-QQ-P-416, type II, class 3.

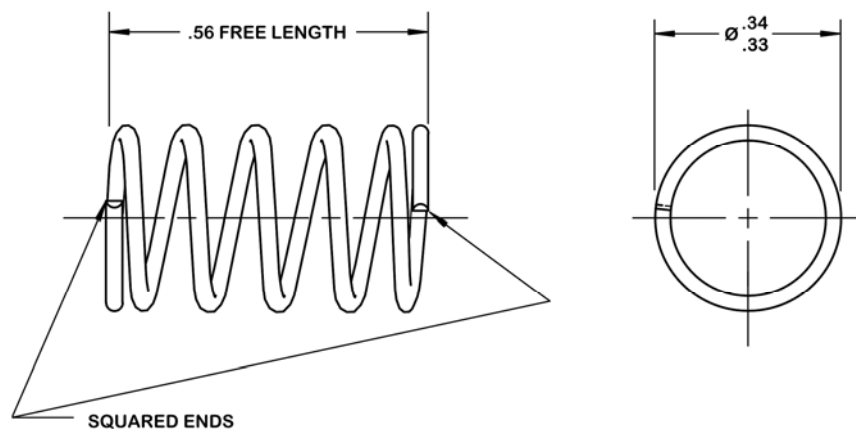
FIGURE 15. Plate.

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NOTES:

1. All dimensions are in inches.
2. Tolerance: 2-place decimals: $\pm .01$.
3-place decimals: $\pm .005$.
3. All radii .06 unless otherwise specified.
4. Break all corners R.03.
5. Material: Plastic, sheet, thermosetting in accordance with ASTM D709, type I, grade XXXP or XXXPC, finish optional.

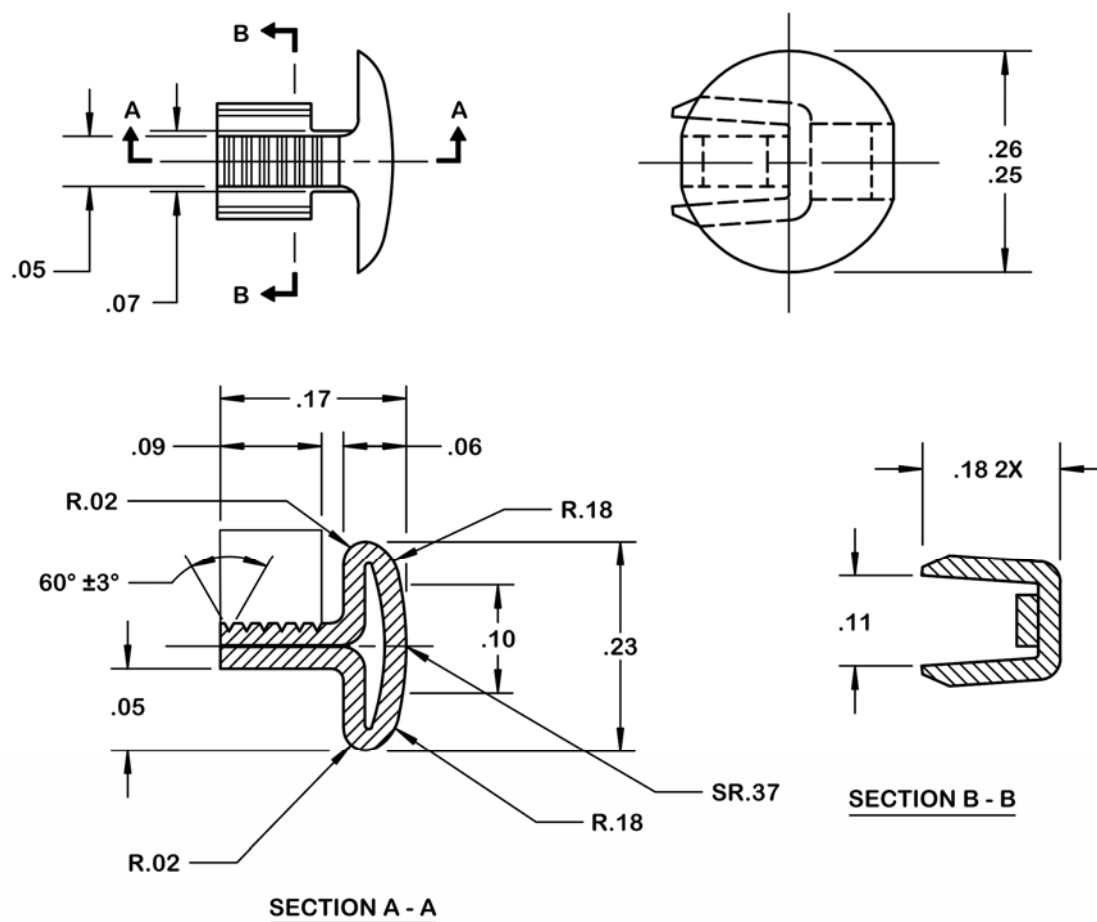
FIGURE 16. Bushing.

NOTES:

1. Unless otherwise specified, all dimensions are in inches.
2. Tolerances: $\pm .02$.
3. Material: Steel wire, music spring quality per ASTM A228/A228M, diameter $.0317 \pm .0004$.
4. Closed ends - five coils total.
5. Finish: Zinc plate, type II, class Fe/Zn 8 in accordance with ASTM B633.
6. Remove all burrs and sharp edges.

FIGURE 17. Sprin

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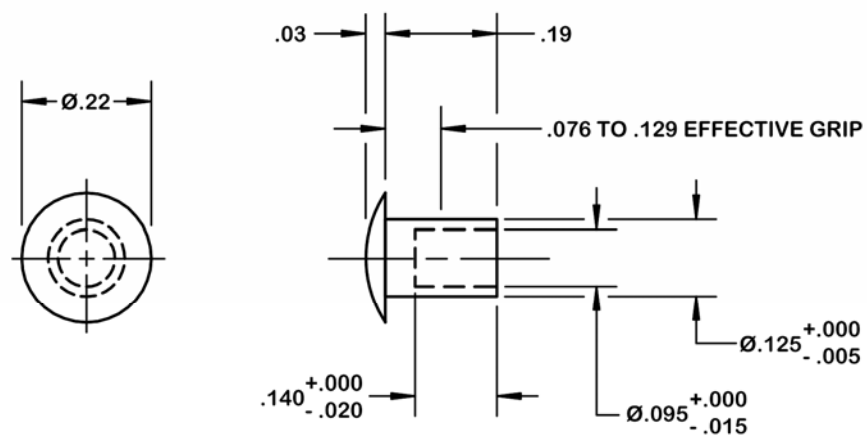


NOTES:

1. All dimensions are in inches.
2. Tolerance: 2-place decimals: $\pm .01$.
3. All radii .06 unless otherwise specified.
4. Break all corners R.03.
5. Material: Sheet steel, carbon, in accordance with ASTM A109/A109M, exposed.
6. Finish: Cadmium plate in accordance with SAE AMS-QQ-P-416, type II, class 3.

FIGURE 18. Button contact.

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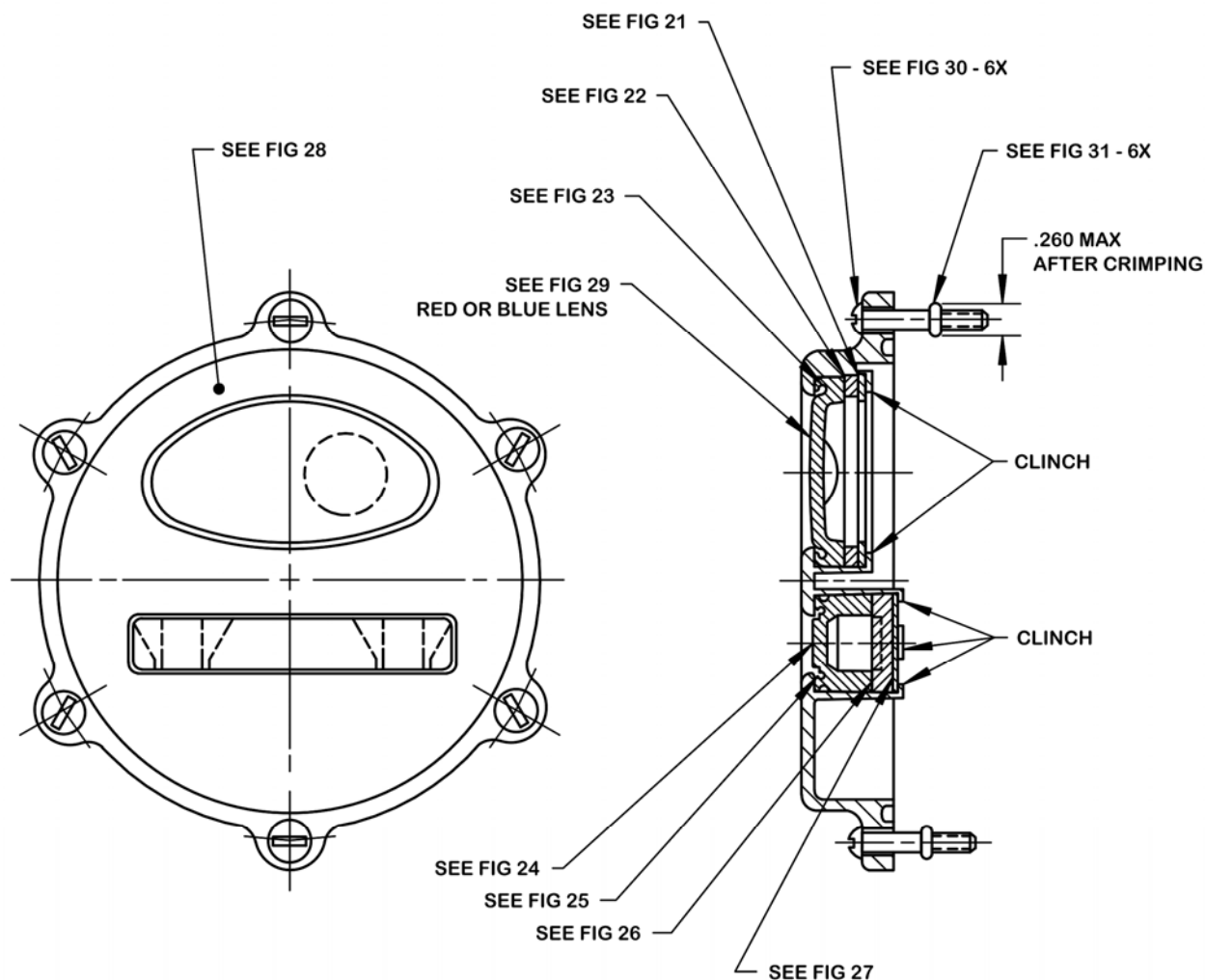


NOTES:

1. All dimensions are in inches.
2. Tolerance: 2-place decimals: $\pm.01$.
3-place decimals: $\pm.005$.
3. All radii .06 unless otherwise specified.
4. Break all corners R.03.
5. Material: Sheet steel, carbon, in accordance with ASTM A109/A109M, exposed.

FIGURE 19. Rivet.

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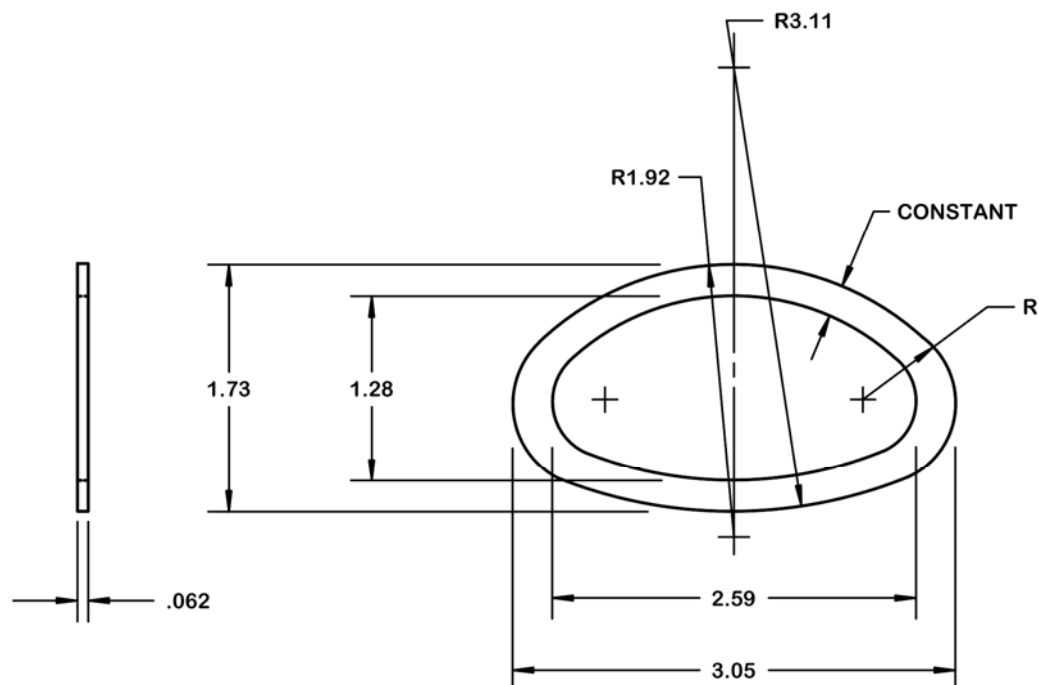


NOTES:

1. All dimensions are in inches.
2. Tolerance: 2-place decimals: $\pm .01$.
3-place decimals: $\pm .005$.
3. All radii .06 unless otherwise specified.
4. Break all corners R.03.
5. Clinch securely as shown. Must meet the waterproofness requirements of this standard.

FIGURE 20. Door assembly, red or blue lens.

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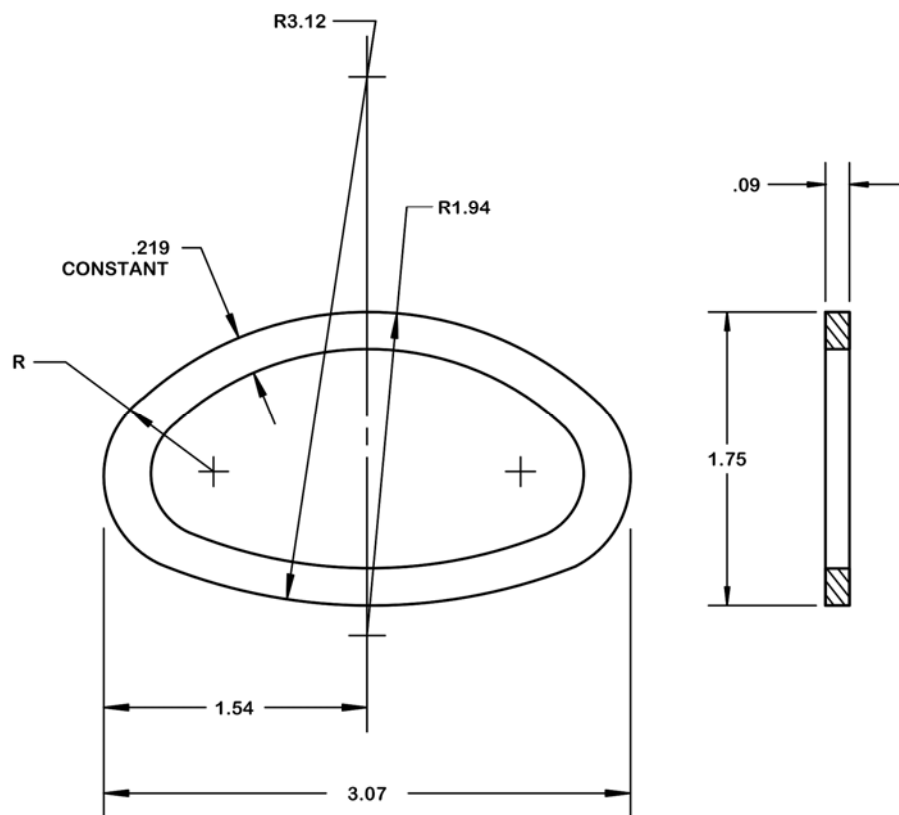


NOTES:

1. All dimensions are in inches.
2. Tolerance: 2-place decimals: $\pm .01$.
3-place decimals: $\pm .005$.
3. All radii .06 unless otherwise specified.
4. Break all corners R.03.
5. Material: Steel sheet, carbon in accordance with ASTM A109/A109M, exposed.
6. Finish: Cadmium plate in accordance with SAE AMS-QQ-P-416, type II, class 2.

FIGURE 21. Clinch plate.

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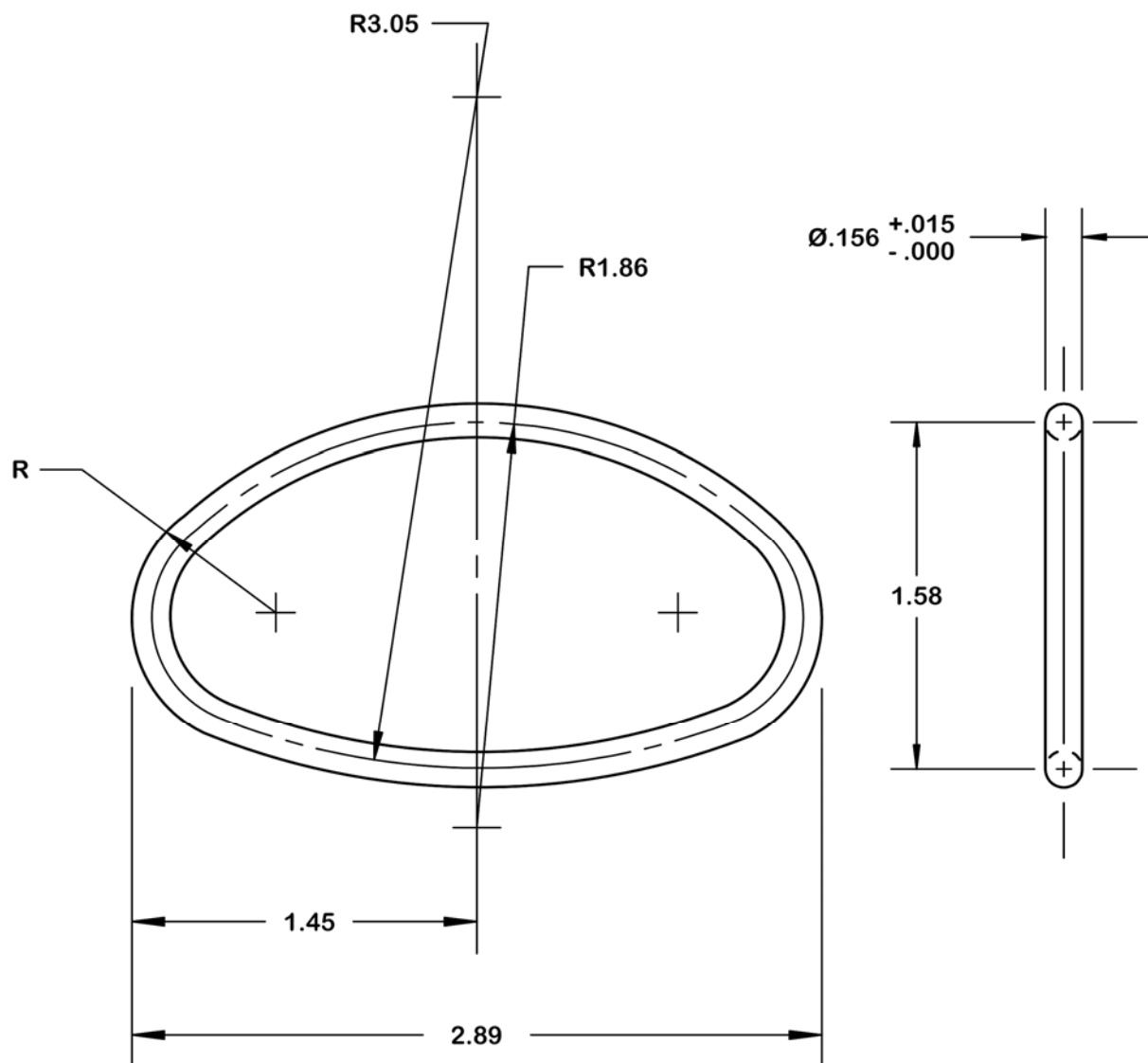


NOTES:

1. All dimensions are in inches.
2. Tolerance: 2-place decimals: $\pm .01$.
3-place decimals: $\pm .005$.
3. All radii .06 unless otherwise specified.
4. Break all corners R.03.
5. Material: Rubber in accordance with ASTM D2000 with a grade that is acceptable to procuring activity.

FIGURE 22. Gasket.

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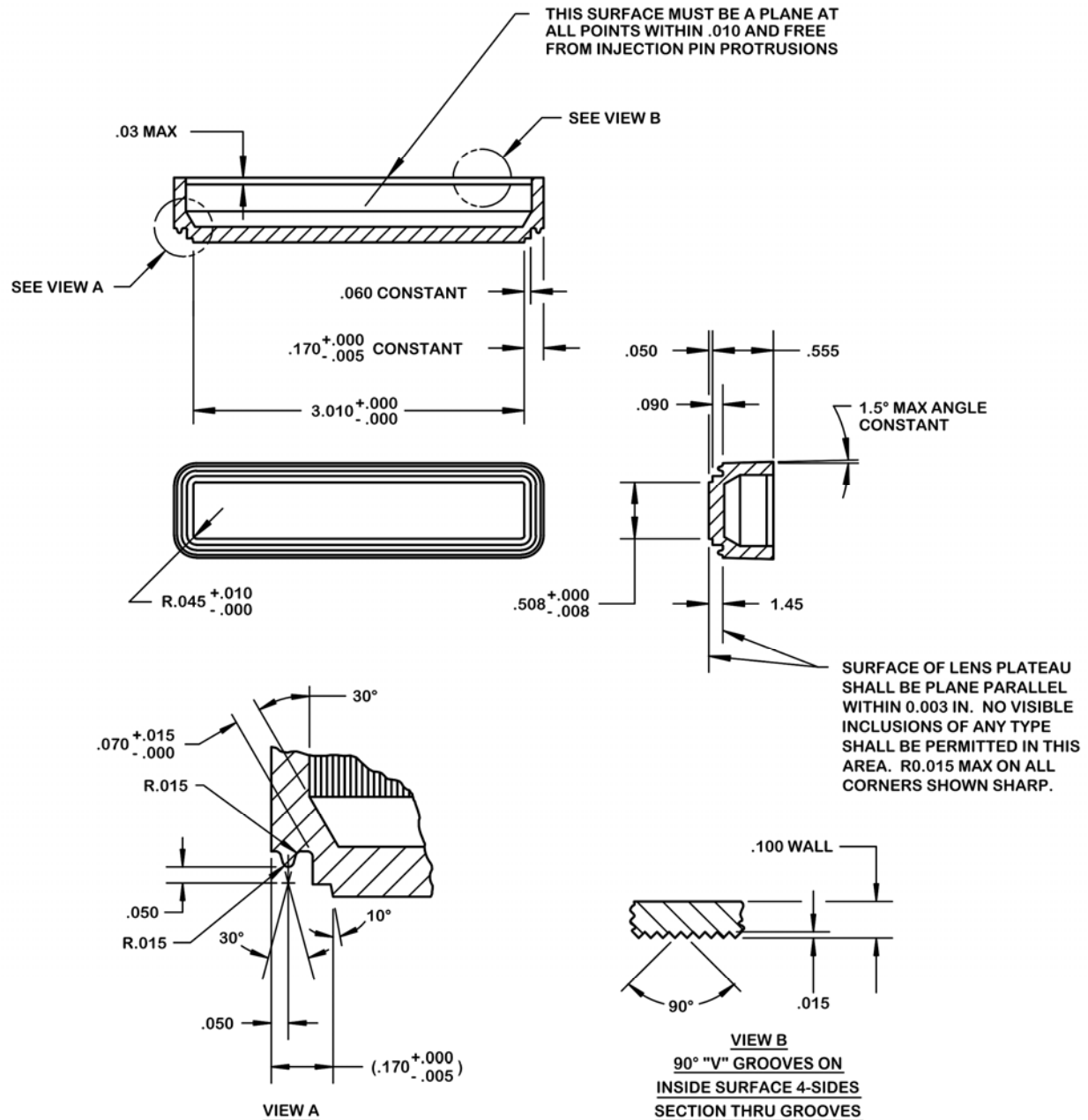


NOTES:

1. All dimensions are in inches.
2. Tolerance: 2-place decimals: $\pm.01$.
3. Material: Rubber in accordance with ASTM D2000 with a grade that is acceptable to procuring activity.

FIGURE 23. Gasket.

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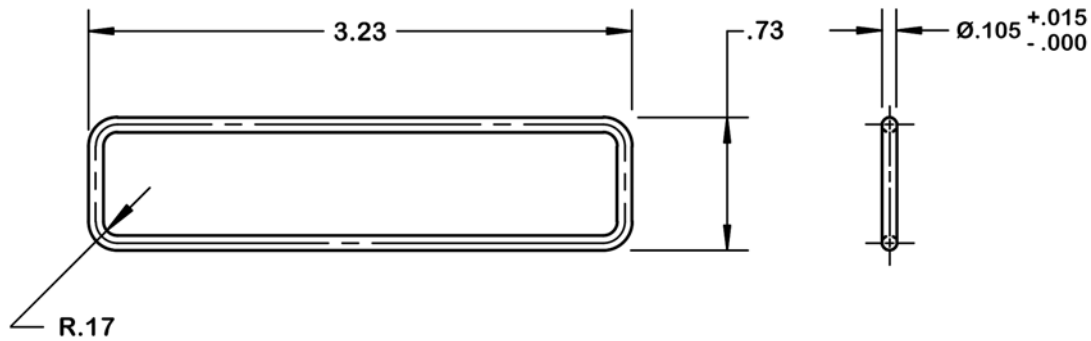


NOTES:

1. All dimensions are in inches.
2. Tolerance: 2-place decimals: $\pm .01$.
3-place decimals: $\pm .005$.
3. All radii .06 unless otherwise specified.
4. Break all corners R.03.
5. Material: Plastic, methacrylic in accordance with L-P-380, type I, class 3.

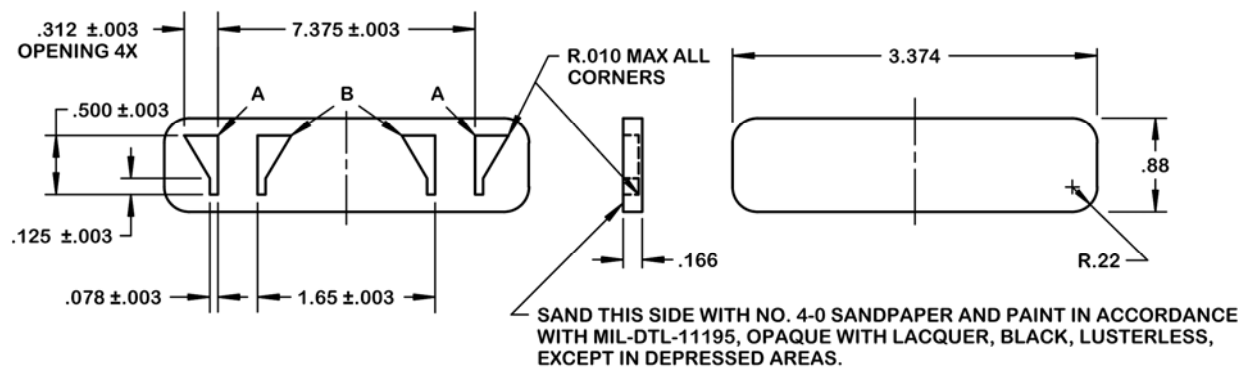
FIGURE 24. Lower lens.

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NOTES:

1. All dimensions are in inches.
2. Tolerance: 2-place decimals: ± 0.01 .
3. Material: Rubber in accordance with ASTM D2000 with a grade that is acceptable to procuring activity.

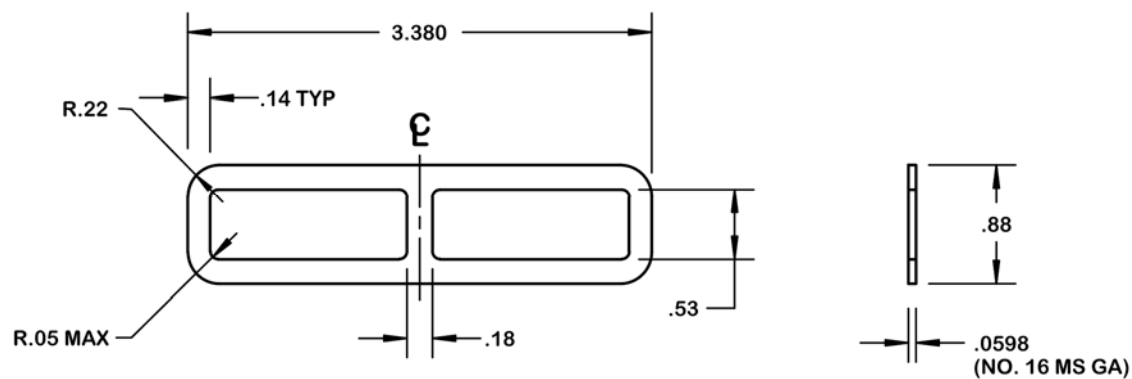
FIGURE 25. Gasket, lens seal.

NOTES:

1. All dimensions are in inches.
2. Tolerance: 2-place decimals: $\pm .01$.
3-place decimals: $\pm .005$.
3. All radii .06 unless otherwise specified.
4. Break all corners R.03.
5. Areas B to be recessed approx .116. Areas A to be recessed exactly .009 deeper than areas B. Wall thickness at areas B is approx .055 - mold to be adjustable so that wall thickness at depressions can be varied to a dimension to be determined by engineering department.
6. Must be symmetrical about vertical center line within .005.
7. Material: Plastic molding material, cellulose acetate butyrate, in accordance with ASTM D707, with a grade that is acceptable to procuring activity. Tristimulus values for Tennessee Eastman Co. Color no. 18029, red, for illuminant C with the specular component removed, obtained from pieces pressed .075 thickness: X = 3.55, Y = 1.30, Z = 0.002.

FIGURE 26. Red filter.

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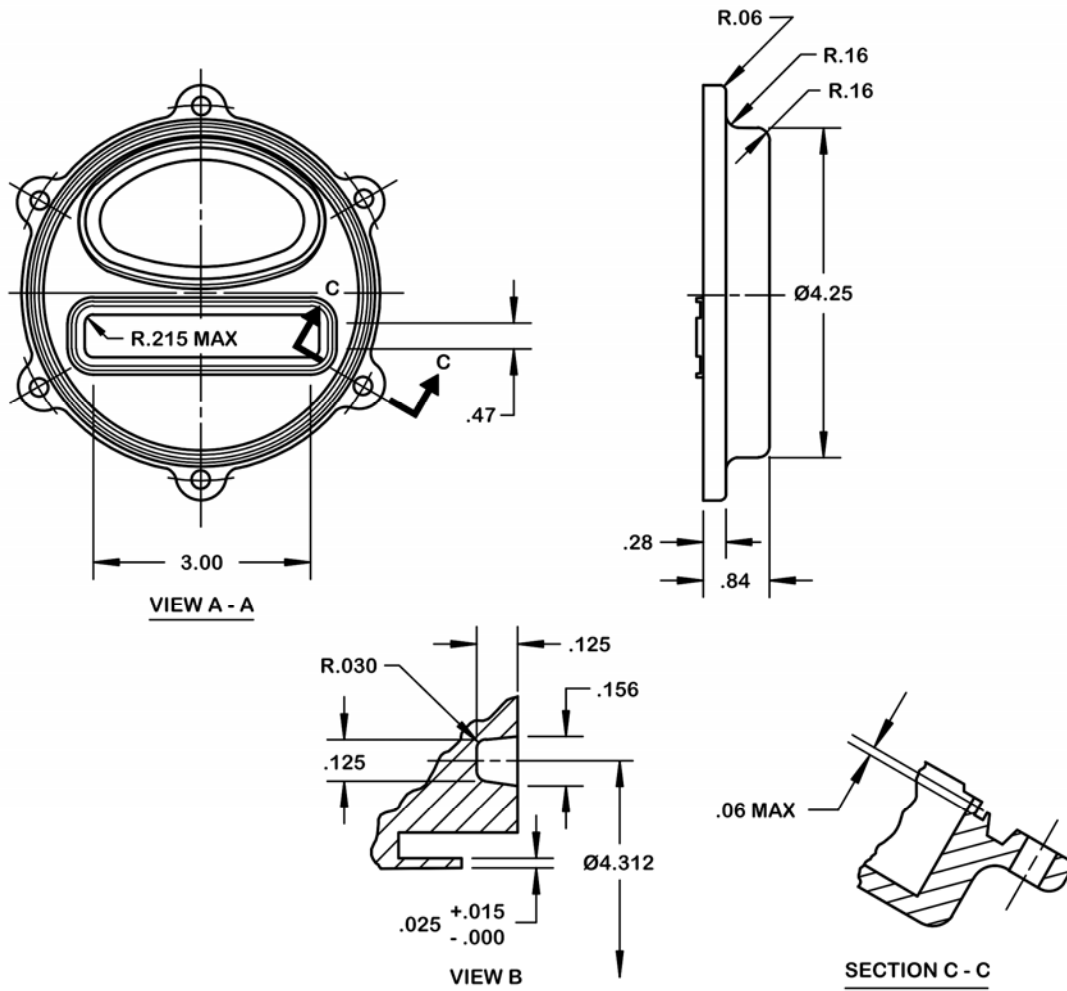


NOTES:

1. All dimensions are in inches.
2. Tolerance: 2-place decimals: $\pm .01$.
3-place decimals: $\pm .005$.
3. All radii .06 unless otherwise specified.
4. Break all corners R.03.
5. Must be symmetrical about vertical centerline within .010.
6. Material: Steel sheet, carbon in accordance with ASTM A109/A109M, exposed.
7. Finish: Cadmium plate in accordance with SAE AMS-QQ-P-416, type II, class 2.

FIGURE 27. Plate clinch.

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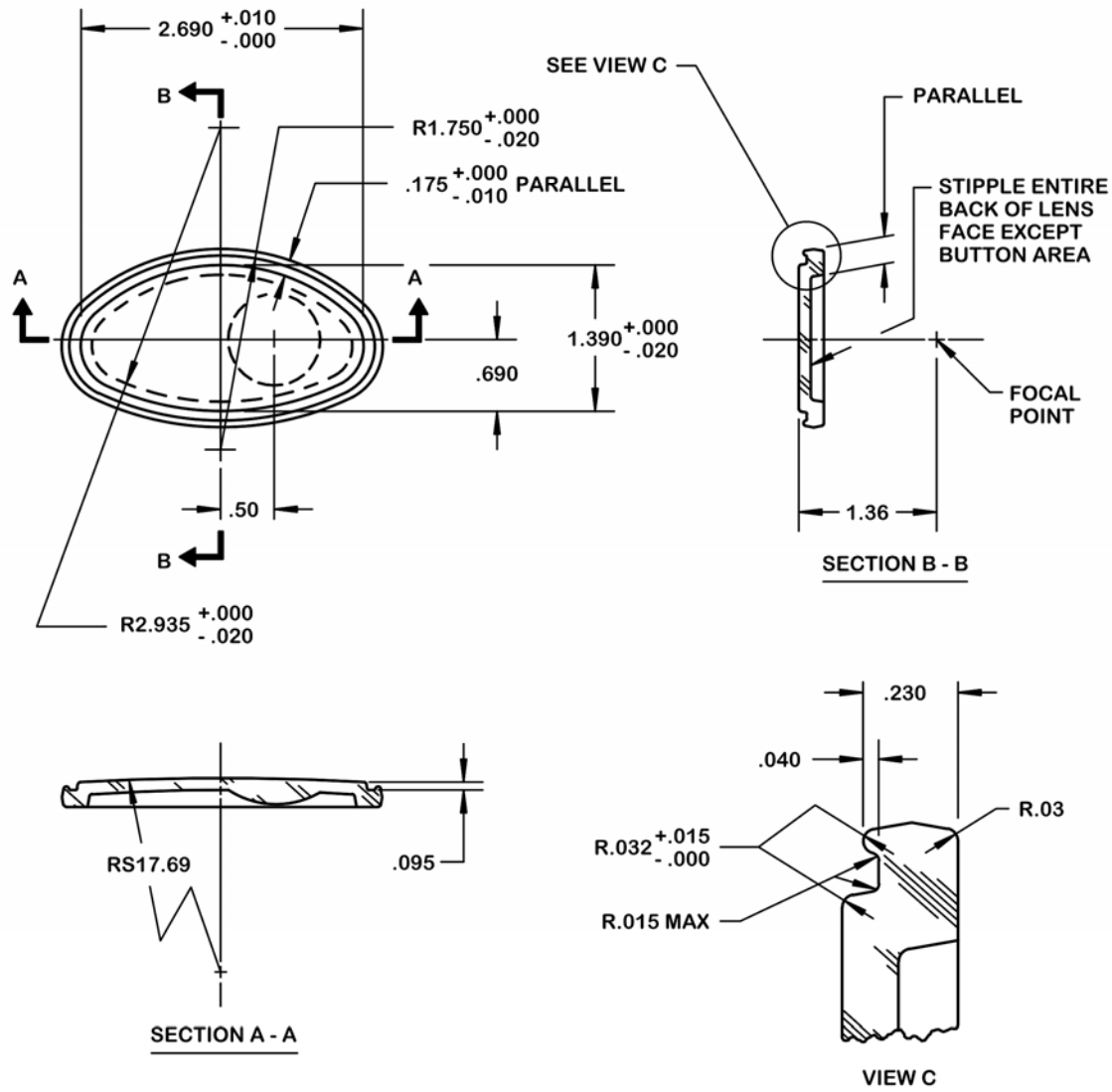


NOTES:

1. All dimensions are in inches.
2. Tolerance: 2-place decimals: $\pm .01$.
3-place decimals: $\pm .005$.
3. All radii .06 unless otherwise specified.
4. Break all corners $R.03$.
5. Unless otherwise specified draft 2° max - $R.015$ allowed on corners shown sharp-wall thickness $.110 + .015$.
6. Casting to be symmetrical about vertical center line, must match figure 2.
7. Material: Zinc die cast in accordance with ASTM B86, alloy 3 or 5.
8. Finish: Treat in accordance with TT-C-490, type I or II.
9. Finish: Protective finish shall be applied with guidance from MIL-HDBK-808, F300, type I. Prime with one coat of TT-P-1757. Finish with two coats of semigloss enamel in accordance with MIL-E-16663, color yellow no. 23538 for type I and camouflage green 383 in accordance with FED-STD-595/34094 for type II.

FIGURE 28. Door - Continued.

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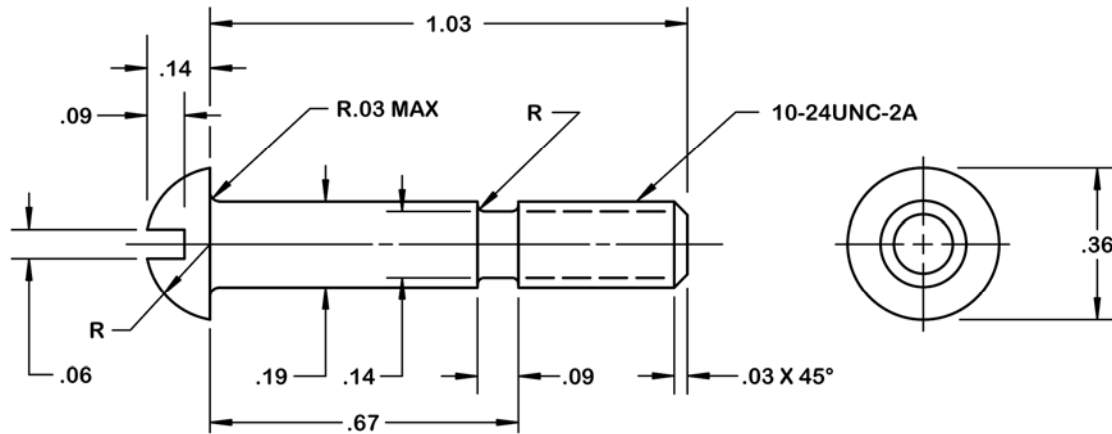


NOTES:

1. All dimensions are in inches.
2. Tolerance: 2-place decimals: $\pm .01$.
3-place decimals: $\pm .005$.
3. All radii .06 unless otherwise specified.
4. Break all corners R.03.
5. Wall thickness $.14 \pm .05$ unless otherwise specified.
6. All draft angles 9° .
7. Guide Lamp Division, General Motors Corp., Anderson, Indiana, part no. 5939695 or approved substantial equal.
8. Optical design is optional. See photometric chart on figure 1.
9. Material: Plastic, methacrylic in accordance with L-P-380, type I, class 3.
10. Color: Class 1 upper lens is red, in accordance with SAE AS25050, type I (A). Class 2 upper lens is blue, in accordance with SAE AS25050, type I (D).

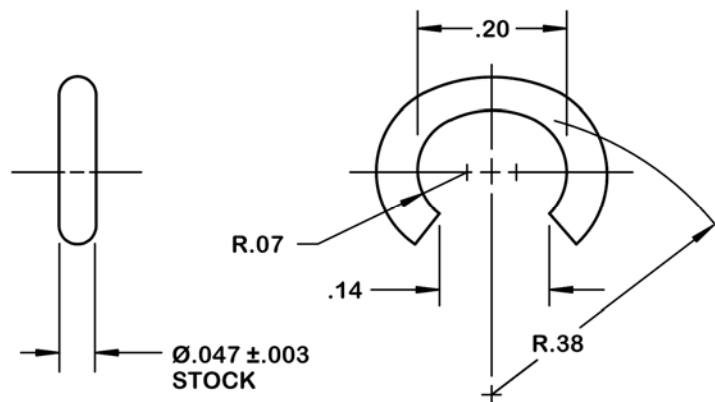
FIGURE 29. Upper lens, red or blue.

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NOTES:

1. All dimensions are in inches.
2. Tolerance: 2-place decimals: $\pm .01$.
3-place decimals: $\pm .005$.
3. All radii .06 unless otherwise specified.
4. Break all corners R.03.
5. Material: Screw, cap, slotted, corrosion-resistant steel, in accordance with FF-S-85.
6. Optional material: Wire, steel, corrosion-resistant, in accordance with ASTM A313/A313M and ASTM A580/A580M, round, composition 302 or 304, annealed.
7. Finish: Passivate in accordance with SAE AMS2700.

FIGURE 30. Screw.

NOTES:

1. All dimensions are in inches.
2. Tolerance: 2-place decimals: $\pm .01$.
3. All radii .06 unless otherwise specified.
4. Break all corners R.03.
5. Material: Wire, steel, corrosion-resistant, in accordance with ASTM A313/A313M and ASTM A580/A580M, round, composition 302 or 304, annealed.
6. Finish: Passivate in accordance with SAE AMS2700.

FIGURE 31. Ring.

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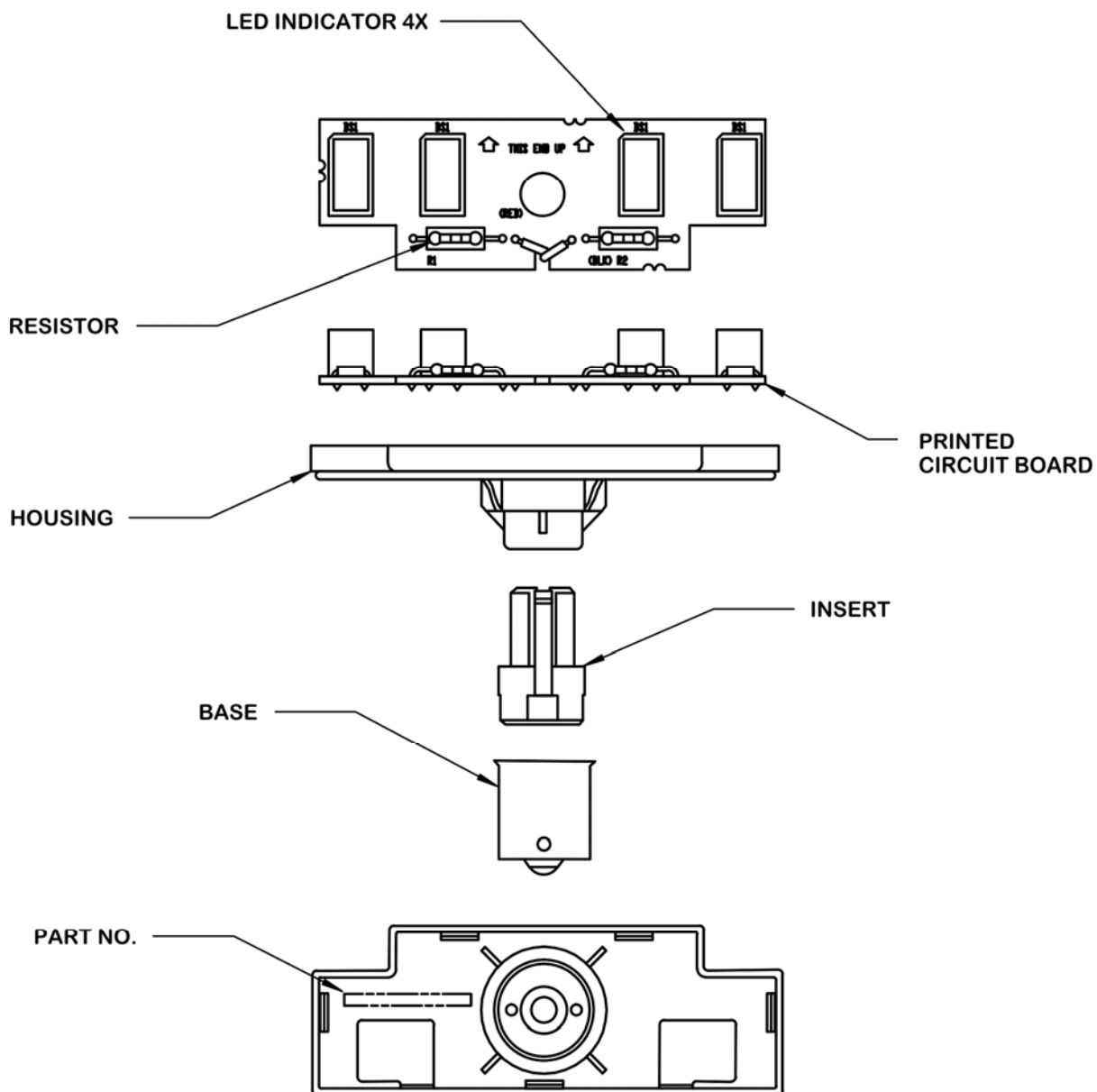


FIGURE 32. LED marker assembly.

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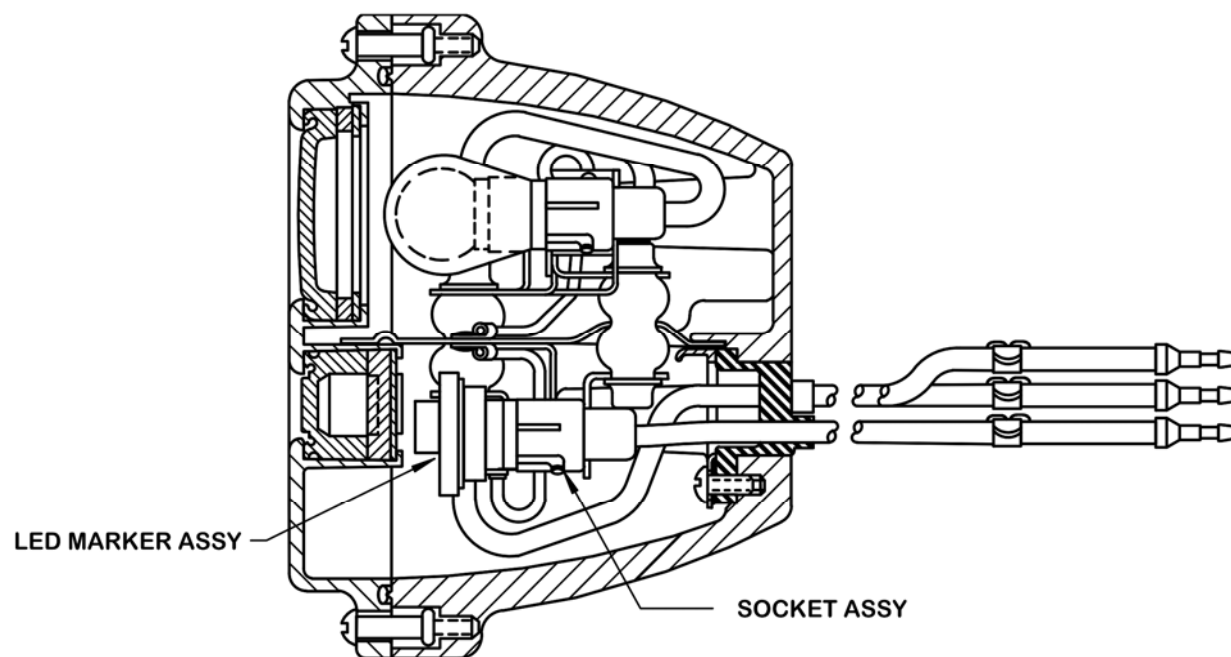
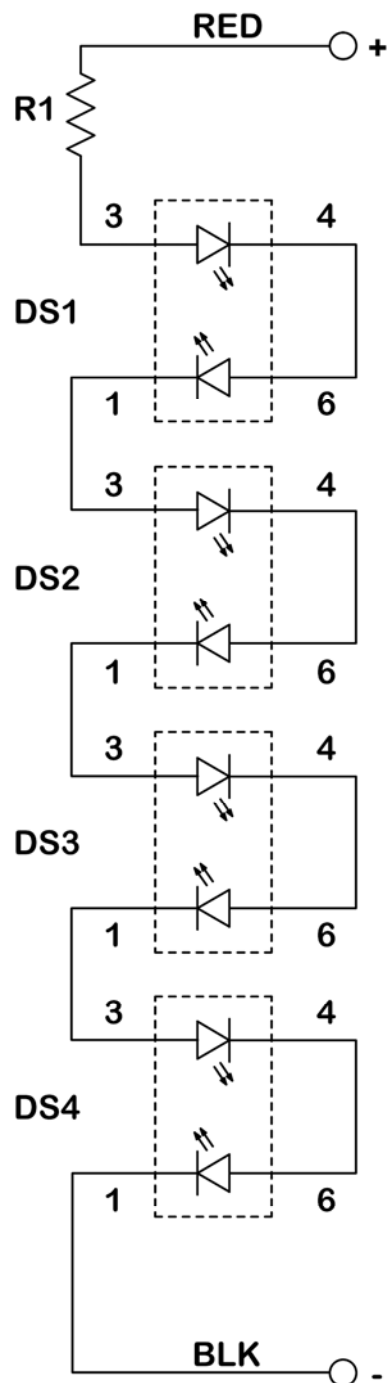


FIGURE 33. LED marker assembly installed.

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FIGURE 34. LED marker assembly circuit.

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Custodians:

Army - CR4

DLA - GS

Preparing Activity:

DLA - GS2

(Project 6220-2010-004)

Review Activity:

DLA - IS

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