

| PLATING | | |
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| Quality Approval: | Quality Standards | ROUTINE PR300 |
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This Quality Standard applies to all metallic parts unless otherwise specified by drawing or specification.

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| | Definitions | Revision 6/20/96 PAGE 2 |

Blisters/Pimples

A condition that is the result of internal gas release or air pockets evidenced by the appearance of a bump.

Chips

Small nicks along edges of part or small pieces broken off from the edge.

Closed Knit Line

A visible material flow line having no perceptible depth.

Color Uniformity

Surface color varying in uniformity resulting in spots, blotches and striations of different color.

Contamination

An inclusion of foreign material detectable on the surface of the part.

Cracks

A fracture passing completely through the thickness or section of a part.

Crazing

Fine surface cracks appearing as a network of interconnecting hairline cracks on the surface.

Cut

Material severed or damaged as a result of piercing or slicing action with a sharp instrument or tool.

Deformed

A departure from the normal shape greater than the dimensional tolerance. Parts often deform out of round, out of square, twisted, warped, bent or flattened.

Dent

A depression with no removal of material or change in surface texture.

Dry Spot

An area on the surface of the part where reinforcement has not been wetted with resin, usually distinguished by the presence of loose fibers.

Flash

Excess material adhering to part.

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| | Definitions | Revision 6/20/96 PAGE 3 |

Gouges

The result of scooping out of material by another object.

Mutilation

May consist of any combination of a gouge, cut, nick, tear, porosity and other abnormal material conditions that result in the part exhibiting a non uniform appearance.

Nicks

Sharp surface indentation caused by impact of a foreign object. Parent material is normally displaced, seldom separated.

Non-fill / Void

An incomplete part due to insufficient material.

Pit / Pinhole

A small sharply defined hole in the surface of the part.

Porosity

Multiple pits or pin holes

Scuff

A mark caused by an abrasion which changes the surface smoothness or texture.

Sink Marks

A dimple like depression in surface of part.

Surface Cracks

A fracture on surface of part that does not go completely through thickness of part.

Surface Discoloration

An apparent surface inconsistency in material evidenced by the appearance of light to dark streaks.

Tear

Separation of material due to mechanical stress.

Wire Marks

Visible marks caused by the part having rested against the curing trays.

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| Quality Approval: | Quality Standards OLIVE DRAB (OD) CHROMATE - CADMIUM PLATE | PR300 Revision 1/20/2010 PAGE 4 |

Acceptable Conditions:

1. The OD Cadmium plating shall be:
 - a) Smooth
 - b) Fine grained
 - c) Adherent
 - d) Uniform in appearance (*see Note 1*)
 - e) Free from burns examined visually without magnification
 - f) Free from pits, nodules or cracks examined visually without magnification
 - g) Free from contamination (*see Note 1*)
 - h) Free of scratches to the base metal
 - i) Free of scratches in Olive Drab Chromate (*see Note 2*)

NOTE 1: *Cosmetic staining from the rinsing process shall not be cause for rejection given that the stain is: not on the complete lot, slight in nature (i.e. not visible to the unaided eye from 2.5 feet under normal room lighting), and collectively are no larger than .700" (for reference, approximately the size of a US dime).*

NOTE 2: *OD Cadmium may exhibit scratched surfaces that are localized to areas where additional mechanical operations have taken place, as in the installation of rivets, clinch nuts, helicoils, etc and where certain fixturing or packaging (ie: plastic trays) may wear on the OD Chromate dye. Scratches or wear on threads are also permissible.*

Unacceptable Conditions:

2. Blisters in base metal (i.e. Die Cast) visible under normal room lighting at 6 to 12 inches using unaided eyesight, (except for corrective lenses as required), meeting any of the following criteria are not acceptable.
 - a) More than three (3) in a half inch diameter.
 - b) Any of the blisters exceed 0.5 mm in size (*for reference, a typical mechanical pencil lead is 0.5 mm*).

PACKAGING RESTRICTIONS per SAE-AMS-QQ-P-416:

Cadmium plated articles should not be packed in non-ventilated containers, either together or in contact with electrical equipment, because of the danger of deleterious effect on cadmium plating from unstable organic electrical insulation. In addition to organic electrical insulation, phenolic resinous substances and others containing unsaturated carbon-to-carbon linkages, such as oil, paint and impregnated paper, etc., cause an abnormal attack on cadmium by setting free, in the presence of moisture, formic acid, butyric acid, etc. Corrosion of cadmium coatings and steel basis metal has been noted when cadmium plated articles have been packaged in direct contact with container materials such as wood or cardboard. Corrosion has been especially severe if the container materials have become wet or have been stored under conditions of high humidity.

INTERNAL USE ONLY: See PR300 PLATING WORKMANSHIP STANDARDS OLIVE DRAB ADDENDUM for additional criteria.

(Based on Federal Specification: SAE-AMS-QQ-P-416)
(Blister standard developed by Amphenol Manufacturing and Inspection)

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| | GOLD CONTACTS PLATING | Revision 6/20/96 PAGE 5 |

Acceptable Workmanship

1. Gold Plating shall be:
 - a. smooth.
 - b. Fine grained.
 - c. Dull plating is acceptable provided it is smooth.

Unacceptable Workmanship

1. Excessive gold plating on solder contacts.
2. Etching on exposed surfaces (after molding) of solder contacts, or any etching on crimp contacts.
3. Dark solderwells, crimp barrels or sockets.
4. Contamination.
5. Frosted plating.
6. Peeling.
7. Exposed base metal on underplate.
8. Blisters.
9. Pits.
10. Nodules.
11. Porosity.
12. Indications of burning.
13. Excessive edge buildup.
14. Correction of a burned condition by burnishing or tumbling.

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| | MOLDED-IN CONTACTS PLATING | Revision 6/20/96 PAGE 6 |

This Quality Standard is applicable to connector inserts with molded in contacts, unless the inspection routine specifically overrides this standard by having more stringent requirements.

Visual Standards for Contact Plating

1. The inside wall and bottom surfaces of the socket shall be continuously plated, but will not necessarily meet the thickness requirements.
2. The inside wall and bottom surface of the solder cup must be continuously plated, but will not necessarily meet the thickness requirements.
3. Contamination and corrosion inside of socket or inside of solder well are not acceptable.
4. Tarnish, scratches or marks on the gold plate shall not be cause for rejection. Scratches exposing the underplate are acceptable. Scratches exposing the base metal are unacceptable.

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| | KCD SA TYPE CONNECTORS PLATING | Revision 6/20/96 PAGE 7 |

This Quality Standard is applicable to connector inserts with molded in contacts, unless the inspection routine specifically overrides this standard by having more stringent requirements.

For KCD SA Type Connectors

1. The contacting surfaces of the socket tine / fingers shall be continuously plated, but will not necessarily meet the thickness requirements. Minor dislocation below the tine / finger plane of the socket is acceptable.
2. The plating on the inside wall and bottom surface of the solder cup shall extend into the solder cup significantly beyond the cut out toward the bottom but will not necessarily meet the thickness requirements. Plating imperfections including discoloration on the spherical radius surface and below the intersection of the cup cylindrical wall and the spherical radius of the solder cup are acceptable.
3. For pin contacts, discoloration and/or lack of plating at the radius of the pin and base intersection is acceptable.
4. For socket contacts, gold plating that is flaking or scraped off the tines, exposing either the nickel underplate or the contact base metal is unacceptable.

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| | MATTE FINISH PLATING | Revision 5/11/07 PAGE 8 |

Acceptable Conditions:

1. Inspect for overall matte. Parts shall exhibit an overall matte finish on all exterior surfaces except where part detail drawings indicate external surface may be bright. A matte finish is dull luster. See samples in Receiving Inspection of Final Inspection areas for a visual reference (see Table I Below).
2. There may be areas where the matte finish is not uniform due to secondary operations, e.g. stamping, rolling over of accessory nuts, or where threads have been mated and unmated. These may be bright.
3. There may be random locations due to handling of parts before and after plating that result in small bright areas. These areas are acceptable if not more than 1/10 of the total visible external surface.

(samples may have been lost during flood of 2006)
TABLE I - Use of Visual Matte Finish Samples

Sample Marked -1

Has a bright, polished light reflective luster. Parts displaying this finish when compared to the -1 sample are cause for rejection.

Sample Marked -2

Has a minimum amount of dull appearance and shows areas of somewhat brighter amounts of surface reflection. Parts displaying this finish when compared to the -2 sample are acceptable.

Sample Marked -3

Has a dull appearance and shows a very poor reflection. Parts displaying this finish when compared to the -3 sample are acceptable. All parts showing a duller more matte surface than sample -3 are also acceptable.

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| Haney | ZINC and ZINC ALLOY Plating | PR300 Revision 4/09/2010 PAGE 9 |
| | | |

Acceptable Workmanship

1. The ZINC plating shall be:
 - a. Smooth
 - b. Fine grained
 - c. Adherent
 - d. Uniform in appearance (see note)
 - e. Free from burns examined visually without magnification
 - f. Free from pits, nodules or cracks examined visually without magnification
 - g. Free from contamination
 - h. Free of scratches to the base metal
 - i. Free of continuous scratches that exceed .5 inches in length
 - j. 90% free of scratches on the plated surface.

NOTE: Cosmetic staining shall not be cause for rejection.

2. Color:

Green Zinc: shall be dark green and of such a shade as to be discernable from Olive Drab Cadmium.
Black Zinc: shall be a solid black. Acceptable shades of black for AAO Black Zinc Plating per 9-9181: Federal Standard 595C, Table VIII, Colors 17038, 27038, 27040, 27041, 37030, 37031, 37038

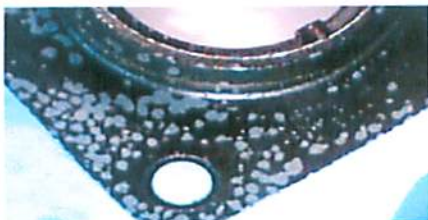
Unacceptable conditions:

3. Blisters visible under normal room lighting at 6 to 12 inches using unaided eyesight, (except for corrective lenses as required), meeting any of the following criteria are not acceptable.
 - A1. More than three in a half inch diameter.
 - A2. Any of the blisters exceed 5 mm in size (for reference: a mechanical pencil lead is 5 mm).

UNACCEPTABLE PLATING CONDITIONS , (Photo examples)



Shell body with UNACCEPTABLE Spalling of plating (10x)



Shell flange with UNACCEPTABLE spalling of plating (10x)

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| Haney. | PASSIVATION FOR CORROSION-RESISTENT STEEL | PAGE 10 |

Passivated parts shall have a chemically clean surface that is free of any foreign material or residual film deposit which would be detrimental to the quality of the part.

Staining is allowed that is not attributable to the presence of free iron particles imbedded in the surface. (Iron contamination normally results in a rust colored spot rather than a surface covering stain of various colors or hues).

Surface Finish reflections: Be careful not to misjudge differences in the surface finish which may result in spots of visible coloration differences when viewing the product. Surface finish irregularities may be caused by tool drag, tool marks etc.

Refer to the Workmanship Standard LO-6000 IP500-6, 'Foreign Object / Contamination' for instructions on the method to use when examining product for the presence of contamination.

NOTE: Drawings and documented customer requirements take precedent over this standard.

(reference: QQ-P-35C, par.6.5)

Unacceptable: Iron contamination

