COSMETIC REQUIREMENTS

Harley-Davidson motorcycles represent a major investment on the part of the buying public. The success of our product depends on its appearance. Our bike owners standards are high, so too are the standards of our internal customers. All employees and suppliers must produce goods within our current corporate cosmetic standards.

Cosmetic standards represent a common language and set of shared expectations of acceptable quality at Harley-Davidson today. Acceptable quality represents a realistic balance between stakeholder's expectations, the capabilities of Harley-Davidson's and our suppliers manufacturing processes. It is important to recognize that our standards represent today's conditions. As our technology and the technology of our suppliers improve, we can and must expect Continuous Improvement. Cosmetic issues and concerns have historically caused both Harley-Davidson and its' suppliers problems; problems that can be frequently traced to vague or unknown specifications. While cosmetic issues are to a large degree subjective, Harley-Davidson has replaced much of this subjectivity with objectivity based on specific requirements.

On the following pages we have included information regarding our:

- **Cosmetic Standards Development Process**
- **Inspection Guidelines**
- **References**

Cosmetic requirements are verified as part of the Production Part Approval Process (PPAP). The Cosmetic Validation Report is a part of this process. This report is for approval of cosmetic appearance and should be used for obtaining part appearance approval for production.

Cosmetic Standards Development

Cosmetic requirements for new parts should be defined during the development process. Both Harley-Davidson and the supplier should be involved in setting part cosmetic standards. Cosmetic standards must be properly documented to ensure consistent understanding by all stakeholders. Criteria used to establish cosmetic standards are:

- Stakeholder Expectation of Quality
- Today's Process Technologies / Capabilities
- Total Cost

Cosmetic requirements may change during the product life cycle due to changes to the criteria listed above. Any changes to cosmetic requirements will be communicated to suppliers. It is the intention of Harley-Davidson to involve suppliers when revising cosmetic requirements.

The cosmetic standard development process can be divided into three steps:

1. *Define Cosmetic Zones based on part visibility on the motorcycle*
2. *Set Cosmetic Standards Based on substrate*
3. *Define exceptions to standards based on specific part characteristics*

Different cosmetic zoning considerations may be required for Parts and Accessories. This is due to visual inspection by the consumer of areas of the part not normally seen or displayed when mounted on the motorcycle. Examples of these types of parts might be cosmetic covers where the bottom of the part may be a “B” surface as mounted on the motorcycle. However, Parts and Accessories may deem the zone as an “A” Surface due to visual inspection by the consumer looking at parts on the dealer’s shelf.

Definition of Cosmetic Zones

The surface of all parts is classified into cosmetic areas or “zones” to differentiate between the different levels of part visibility on a finished vehicle. The four basic zones used at Harley-Davidson are defined as A, B, C, and D surfaces.

"A" Surface: Surfaces readily visible from the normal riding position and other highly visible surfaces as deemed by Platform Engineering and/or Styling and/or Systems Group and/or P & A Category Manager.

"B" Surface: Surfaces readily visible during an upright walk-around approximately 3 - 5 feet from the vehicle as the vehicle sits on its jiffy stand.

"C" Surface: Surfaces not readily visible during an upright walk-around approximately 3 - 5 feet from the vehicle as the vehicle sits on its jiffy stand.

"D" Surface: Surfaces completely hidden by other components on the motorcycle. Low visibility surfaces due to mounting configuration.

Surface Finish Cosmetic Requirements

Cosmetic requirements will vary dependent upon the surface finish of the part. For example, a chrome-plated component will have different cosmetic expectations and requirements than the powder-painted version of the same component.

Stakeholder’s expectations of quality vary depending upon the surface finish. Each surface finish is dependent upon separate process technologies and capabilities. Harley-Davidson’s Corporate Cosmetic Committee has defined cosmetic requirements for each surface finish utilized in the production of our motorcycle or in the production of after-market components supplied by Harley-Davidson. Surface finish standards remain the same regardless of the substrate material utilized to produce the part; substrates themselves are dependent upon separate process technologies and process capabilities. Thus different substrates may not produce the same results. Harley- Davidson and the supplier can account for these differences by defining exceptions to the base standard due to part specific issues.

Part Specific Cosmetic Requirements

Parts may have specific issues that are relevant to the specific part due to design, tooling design, or substrate material. Individual part cosmetic requirements are based on balancing the three criteria previously listed. Exceptions are documented on the engineering drawing and become the cosmetic requirements for the specific part.

Inspection Guidelines

Many variables exist in inspecting the quality of a part. To minimize the effect of these variables, Harley-Davidson has replaced subjectivity of inspection with objectivity based on specific requirements. We recommend these specific guidelines be followed.

Training

Employees must be qualified and trained to perform visual inspection. This should include review of the types of conditions that can occur and actual inspection under guidance of an experienced person. Employees inspecting cosmetic parts should be familiar with the following:

- How and where the part will be used
- What areas are exposed to the customer's vision or are hidden by mating parts
- Types of discrepancies that can occur to the part
- Procedures for rejecting parts including segregation of parts and procedures for evaluation and disposition

New personnel may both not consider certain types of discrepancies as well as to over inspect parts. They may reject parts that are marginally acceptable. It is important that employees be monitored for consistency in applying standards and inspection methods. Feedback "calibrates" the person for consistent application of the standard. A review of standards should be conducted with the person after about the first three weeks on the job, and periodically thereafter. This will provide opportunity to clarify any concerns and to reinforce training.

Viewing & Lighting

The viewing process should have minimal impact on whether a part meets the cosmetic standards or does not meet the standard. Proper lighting conditions must be present within the area where inspection occurs. A measurable defect exists on the part no matter the viewing procedures or lighting.

Recommended

Viewing / Inspection Procedure (Not Required)

Lighting and Viewing Conditions

1. The light source shall simulate natural outdoor lighting with uniform illumination and intensity between 100 - 200 foot candles.
2. The lighting shall be primarily from an overhead source.
3. The part shall be viewed in a similar manner to the position after being assembled on a motorcycle.
4. The part shall be viewed for a time of between 10 and 30 seconds.

Inspection Procedure

1. The part shall be scanned in a continuous manner.
2. Any condition shall be identified utilizing a non-destructive method.
3. Conditions that are immediately obvious shall be evaluated against the intent of the cosmetic standard.

Viewing Distance

1. 18 - 36 inches
2. "D" surfaces shall be inspected for coverage only.

Templates & Overlays

Templates and overlays are useful devices for size of a condition such as diameter, length, or spacing (number of pinholes in a 1" diameter, holes not closer than 5" apart), or positioning relative to part features. One way of constructing an overlay or template is to make a drawing of the desired template, then photocopy or laser-print onto the plastic sheet used for overhead transparencies. Harley-Davidson has templates; they are available upon request from your purchasing representative.

Samples

Samples of parts can be utilized to show cosmetic zones and/or boundary / limit samples. Prints or pictures can show cosmetic zones for heavy or bulky parts. Boundary / limit samples should be approved by Harley-Davidson prior to their use and Harley-Davidson should have a “calibrated” set so consistency is maintained. Samples must be protected from dirt or damage and must be reviewed periodically to ensure that they do not degrade.

Material Handling

Material handling of finished surfaces is important. Improper handling of parts may produce damage. Packaging and containerization, protective padding, and shipping must be agreed upon and followed.

Confinement of Potential Non-Conforming Parts

Non-conforming parts must be confined in an area separate from acceptable parts and properly labeled to prevent them from entering the normal flow of acceptable materials. Written procedures should define how rejected material will be reviewed and dispositioned. Rejected material must not be allowed to accumulate. Information gathered should be used as feedback for process improvement.

Documentation and Analysis of Non-Conformances

Suppliers must use of preventative / corrective action. Further information regarding an acceptable process can be found in the Preventative/Correction Action section of DBWHD. Cosmetic discrepancies found should be documented and records analyzed to aid in continuous improvement. Sufficient information and detail will allow for identification of major issues and help determine root cause of those issues. Process documentation will also help to determine process capabilities for this part and others using the same production process.

References:

Books

Appearance Inspection of Finished Surfaces
Thomas G. Cleaver, James C. Michels, Jr., and Lloyd A. Dennis, ASQC Quality Press, 611 East Wisconsin Avenue, Milwaukee, Wisconsin 53203

Industry Standards Sources

American Die Casting Institute, Inc.
2340 Des Plaines Avenue, Des Planes, IL 60018

American Electroplaters and Surface Finishers Society
12644 Research Parkway, Orlando, FL 32826 (407)281-6441

American Society for Testing and Materials (ASTM)
1916 Race Street, Philadelphia, PA 19103 (215)299-5400
E284 - "Standard Definitions of Terms Relating to Appearance of Materials"

Association for Finishing Processes for the Society of Manufacturing Engineers (AFP/SME) See information listed under SME

Federation of Societies for Coatings Technology (FSCT)
492 Norristown Road, Blue Bell, PA 19422 (610)940-0777
“Pictorial Standards of Coatings Defects"

National Association of Metal Finishers
401 N. Michigan Avenue, Chicago, IL 60611 (312)366-6610

Powder Coating Institute
2121 Eisenhower Avenue, Suite 401, Alexandria, VA 22314

Society of Automotive Engineers (SAE)
400 Commonwealth Drive, Warrendale, PA 15096 (412)772-7129

Society of Manufacturing Engineers (SME)
1 SME Drive, P.O. Box 930 Dearborn, MI 48128 (313) 271-1500