

Quality Appearance Standard Interiors

Introduction

This Quality Appearance Standard has been compiled as an aid to clarify the agreed upon acceptance criteria, where previously subjective issues such as aesthetic appearance have caused differences of opinion. It is not intended to be a substitute for any Hawker Beechcraft Corporation design data, or specification in place at this time. It does raise the standard of acceptance in terms of a tightening of the existing requirements and acceptance criteria. This will help us to provide our customers with an improved product, which is consistent in quality and appearance.

This standard does not cover all work on every part of the aircraft, but does deal with those areas that have proven problematic in the past. This document is intended to be a quick reference guide to assist with the majority of appearance issues and, will serve to elevate the awareness of the agreed standards required.

The Quality Appearance Standard is jointly developed by Quality Assurance and Manufacturing and is maintained by the Quality Engineer responsible for the product line. The requirements herein have been accepted by Quality Assurance, Manufacturing, and Flight.

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1.0 Inspection Requirements

1.1 Inspection Responsibilities

Inspection of the aircraft interior, or interior component, shall be performed under the following conditions:

- Furniture and components shall be inspected as they would normally be installed in the aircraft.
- The product will be inspected in daylight conditions, as close to actual daytime lighting in flight configuration as possible. This may require the inspector to use a flashlight.
- The surface of the component to be inspected must be free of dust and other contaminants that could limit the ability to identify defects in the component.
- The product finish will be inspected for defects, to include but not limited to scuffs, dullness, scratches, milky appearance, voids, mismatch color, build-up, shrinkage, entrapped debris, and runs.

1.2 Supplier Responsibilities

- This QAS will be used as a standard for inspection and acceptance criteria.
- All assemblies and components must conform to HBC engineering drawings and specifications and/or supplier controlled drawings and specifications. Unauthorized deviations from HBC design or engineering requirements is prohibited.
- Wood is a natural material and has variation in both grain pattern and stain. Wood is susceptible to change prompted by exposure to humidity, light, or heat. Veneer sheets must be stored in a controlled environment, away from any direct light, and at a controlled level of humidity and temperature.
- Approved color sample panels of the individual components shall be maintained and controlled by the Supplier's Quality Department and made available upon request to HBC Quality Representative for inspection purposes. Duplicate samples shall be provided to HBC at time of approval. The color of the components must match the Customer Approved Sample.

2.0 General Guidelines for Interior Appearance

2.1 Wood Furniture and Fixtures

2.1.1 All doors and drawers will have a uniform gap sufficient to allow proper operation during pressurization.

2.1.2 All doors and drawers shall have flush edges to adjacent surround. Check drawer, tray and door fronts for proper alignment – no bowing allowed when checked with a straight edge.

2.1.3 All doors and drawers must operate smoothly without catching or binding with drawers weighted to placard limitations.

2.1.4 All veneers will be matched for similar grain, color, etc. Some items will require end-grain matching (e.g., galley sides). Vendor supplied sample boards retained at HBC will be used if any concerns or questions arise.

2.1.5 All hardwood will be stain-matched to veneer, or as otherwise specified by HBC customer work order.

2.1.6 Hardwood and veneer or laminate must be uniform in color throughout the aircraft with particular attention given to bulkheads, side ledges, and large adjoining surfaces.

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Supplier provided color sample panels will be retained at HBC and used to determine color uniformity should any concerns or questions arise.

2.1.7 Side ledges will fit with minimal gap and no binding at altitude.

2.1.8 Finished wood surfaces will be clear, bright, and must meet the interior inspection criteria called out in this standard.

2.2 Carpet

2.2.1 Cockpit carpet will be flush fitting with no overlaps and all exposed edges bound or surged according to customer specifications.

2.2.2 Cockpit floorboard area under carpet will be painted black.

2.2.3 Frayed edges on carpet are not acceptable.

2.2.4 Cabin carpet will be flush fitting with no gaps or overlaps and will be properly bound or surged according to customer specifications.

2.2.5 Cabin carpet will be secured so that it lays flat and smooth and will not bulge or bubble up.

2.2.6 Cuts in carpet will not be visible to the customer (e.g., around partition mount brackets, chair mount brackets, etc.).

2.3 Upholstery

2.3.1 Seams & Stitching

2.3.1.1 Missed, damaged, or buckled stitches are unacceptable.



2.3.1.2 Seams will be uniformly spaced, and symmetrical on each side of cushion. Seams will maintain alignment of the pull lines to within 1/4". Seam lines should be symmetrical on any given seat, and all seats in a shipset should have the same appearance.

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2.3.1.3 Seams will be, straight, uniform, and without any major wrinkles. They will maintain the gathering of leather to a minimum, be equally spaced, and maintain consistency between seats in a given shipset. Since different shipsets will use different kinds of leather it's understood that it will not always be possible to maintain precise consistency between shipsets.



Acceptable (Level 1)

Unacceptable (Level 1)

2.3.2 Wrinkles

2.3.2.1 Visible wrinkles on any level 1 areas are not acceptable.

2.3.2.2 Excessive wrinkles on any level 2 areas are not acceptable.

2.3.2.3 Wrinkles will be minimized with modifications to the cushions, and with more consistent leather. Permissible to massage, steam and touch-up the seats to eliminate wrinkles from level 1 areas as much as possible. The photos below indicate acceptable and unacceptable finishes. See para.2.3.1.3 for wrinkles along seams.

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Unacceptable (Level 1)



Acceptable (Level 2)
Unacceptable (Level 1)



Unacceptable (Level 1)



Unacceptable (Level 1)

2.3.3 Gaps

2.3.3.1 Gaps between components are not acceptable without engineering coverage.



Unacceptable (Level 1)



Unacceptable (Level 1)

2.3.3.2 Gaps between cushions and hardware are not acceptable.

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Unacceptable (Level 1)

2.3.4 Foam

2.3.4.1 All seat cushions and chair back cushions will have a uniform appearance. High and low areas in the foam that are visible through the fabric or leather are not acceptable. Criteria for level 1 and 2 areas will be observed.



2.3.4.2 Loose material around any undersize cushion component is unacceptable.



2.3.5 Bonded Material

2.3.5.1 Material glued or bonded to other structure shall be secured properly.

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2.3.6 Frayed edges on fabrics and rubbed areas on leather are unacceptable.

2.3.7 Headliner and window panel coverings will be smooth, free of wrinkles, scuffs, tears, bubbles, dirt, ink marks, and blemishes.

2.3.8 Leather shall meet applicable sections in BS235469 – Leather Appearance Specification and BS24834 – Upholstery Leather Specification as applicable to the Airplane Model Index of Specifications.

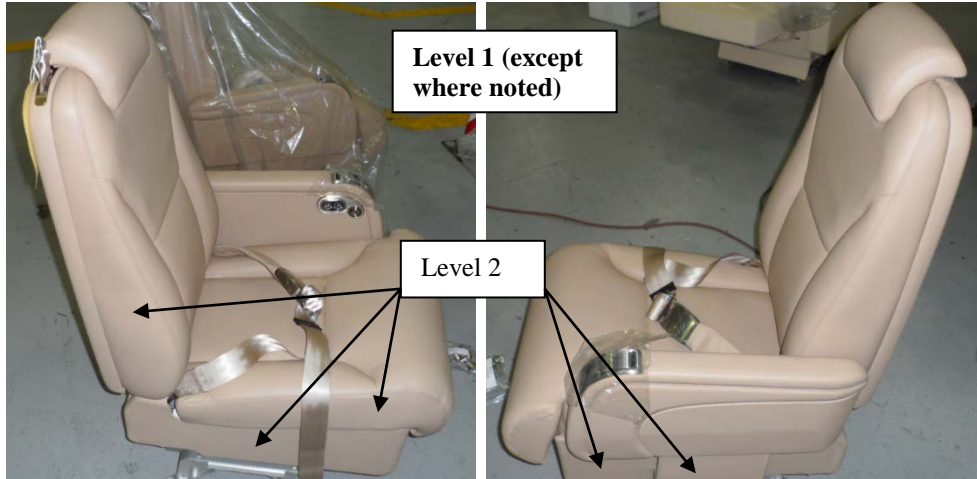
Zones – Definition of zones.



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2.4 Miscellaneous Items

2.4.1 Window panels and side walls will fit flush and uniform without binding against adjacent bulkheads.

2.4.2 Lower cabin painted parts and upper cabin painted parts will be painted to the color specified per HBC customer work order.

2.4.3 Instrument panel will be of uniform color, including instrument gauge bezels.

2.4.4 Lower cockpit trim will be color-matched including screw heads. Upper cockpit trim will be matched to HBC customer work order.

2.4.5 Plated surfaces will be color-matched throughout the entire aircraft, or as specified per HBC Customer Work Order.

2.4.6 Screw heads throughout the cabin and cockpit are to be color matched with paint to HBC customer work order requirements.

2.4.7 Countersunk screws are to be seated to sufficient depth so as to present a flush appearance and painted to color match if required by HBC customer work order.

2.4.8 All cabinetry latches shall have positive engagement and be adjusted to eliminate play or rattle.

2.4.9 Window shades shall glide freely with no binding, sticking, or tilt. Actuator mechanism control force shall be comparable between all window shade units on same aircraft.

Note: The defects given as examples in this standard are not intended to be an inclusive listing of all possible defects. It provides a realistic situation of the common discrepancies. Where any anomalies are encountered beyond the ones listed, the quality representative performing the inspection, shall base a decision of acceptance or rejection after consideration of all factors involved, including customer requirements, specifications, feasibility, and practicality.

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3.0 Cosmetic Quality Levels

Level I		High visibility during normal operations
Level II		Partial visibility during normal operations
Level III		No visibility during normal operations

3.1 Level I RED

This level is applicable to all areas that are readily viewable in the standard cabin. This includes all areas that are in the customer's line of sight while seated in the standard seating locations, entering and exiting the aircraft, and moving about the cabin. Examples would include left hand and right hand cabinets, forward and aft partitions, toilet, lavatory, tables, side ledges, chairs, upper and lower sidewalls, and headliners. These surfaces will meet the requirements outlined within this QAS. The description and location of Level I surfaces are defined in each aircraft model Appendix.

3.2 Level II YELLOW

This level is applicable to areas that are viewable only in certain instances and are not in the customer's line of sight while they sit in any of the standard seating locations. Examples of these areas include surfaces behind chairs and surfaces contacting other furnishings. When installed in the aircraft, these areas will be free from visible markings, dents, discoloration, and poor finish. The description and location of Level II surfaces are defined in each aircraft model Appendix.

3.3 Level III GREEN

This level is applicable to surfaces, which cannot be seen, such as the back and bottom of seats and cabinets. Small scratches, blemishes in finish, discolorations or nonstandard marks are acceptable provided they do not indicate damage to the piece. The description and location of Level III surfaces are defined in each aircraft model Appendix.

Note: Scratches that indicate mishandling, poor craftsmanship, or damage will not be acceptable in any cosmetic Level. Any defect that indicates structural or functional damage will not be accepted.

4.0 List of Common Defects Found On Interior Components Listed By Type of Material

4.1 Paint, Stain, Varnish (High Gloss or Satin), Powder Coat Paint

4.1.1 Cracks in Finish Coat

Definition: Breaks in the surface finish film without complete separation from the substrate

Definitions and Dimensions	Level I	Level II	Level III
Width \geq 0.000"; Length \geq 0.00" per face surface	Unacceptable	Unacceptable	Unacceptable

Notes:

- No cracks will be acceptable at any location on the component under any circumstance.

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4.1.2 Dent

Definition: Impression or hollow in the surface film made by pressure including nick, notch or gouge.

Definitions and Dimensions	Level I	Level II	Level III
Dents \leq 2 per surface of 4 square feet	Unacceptable	Unacceptable	Acceptable
2 < Dents \leq 6 per surface of 4 square feet	Unacceptable	Unacceptable	Acceptable
Dents > 6 per surface of 4 square feet	Unacceptable	Unacceptable	Acceptable

Notes:

- Any dent with a diameter > 0.20" will not be accepted on any surface.
- Depression > 0.005" depths will not be accepted on any zone
- In Level II, two (2) dents will be accepted only if they are separated by a minimum of 24.0" from each other.

4.1.3 Pinholes

Definition: Small pore-like flaws in a finish that do not extend entirely through the applied film and have the general appearance of pin pricks when viewed by reflected light.

Definitions and Dimensions	Level I	Level II	Level III
Pinholes \leq 3 per 4 square feet surface	Unacceptable	Unacceptable	Acceptable
3 < Pinholes \leq 6 per 4 square feet surface	Unacceptable	Unacceptable	Acceptable
Pinholes > 6 per 4 square feet surface	Unacceptable	Unacceptable	Unacceptable

Notes:

- Pinhole defects penetrating through the surface finish to the substrate are unacceptable.
- Pinholes with diameter > 0.020" will not be acceptable in any level.
- Any pinhole deeper than > 0.006" will not be acceptable in any level.
- In Level II, three (3) pinholes will be accepted only if they are separated by a minimum of 24.0" from each other.

4.1.4 Wave (Ripple)

Definition: Variation in thickness in the clear coat finish, or in the veneer or laminate creating a concave or convex surface; a defective surface is uneven or not in the plane of the surrounding area.

Definitions and Dimensions	Level I	Level II	Level III
Wave \leq 4 per surface of 4 square feet	Unacceptable	Unacceptable	Acceptable
Wave > 4 per surface of 4 square feet	Unacceptable	Unacceptable	Acceptable

Notes:

- Wave having a width < 1.75" will not be accepted regardless of quantity or level.
- Wave (Ripple) running from top to bottom of a component will not be acceptable in any level.

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4.1.5 Drop (Sag)

Definition: Excess or surplus finish. Sagging or dripping in the finish coat from droplets created during application.

Definitions and Dimensions	Level I	Level II	Level III
One (1) drop per 4 square feet surface	Unacceptable	Unacceptable	Acceptable
Two (2) drops per 4 square feet surface	Unacceptable	Unacceptable	Acceptable
Three (3) drops or more per 4 square feet surface	Unacceptable	Unacceptable	Acceptable

Notes:

- Drops having a width > 0.30", and a length > 0.90" will not be accepted in any level.
- In Level II, two (2) drops (sag) per surface inspected will be accepted only if they are separated by a minimum of 36" from each other.
- In Level III, drop (sag) will be accepted only on the paint application.

4.1.6 Peel Off or Finish Coat Delamination

Definition: A segment of film or surface lifting from the component. Layers of finish coat separating from each other (fuzzy edge resulting from trimming).

Definitions and Dimensions	Level I	Level II	Level III
Width ≤ 0.10"; Length ≤ 0.50" per surface of 4 square feet	Unacceptable	Unacceptable	Acceptable
0.10" < Width ≤ 0.20"; Length ≤ 0.50" per surface of 4 square feet	Unacceptable	Unacceptable	Acceptable
Width > 0.20"; Length ≤ 0.50"	Unacceptable	Unacceptable	Unacceptable

Notes:

- Peel off penetrating to the surface of the piece will not be acceptable in any Level.
- No more than one peel per surface per 4 square feet will be accepted.
- Peel off of varnish located at the edge of the piece will not be accepted in any zone.
- In Level III, defect will be accepted in paint application only.

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4.1.7 Scratch

Definition: A score or mark on the surface of the item including minor, micro superficial scratches on the cosmetic surface of the finish.

Definitions and Dimensions	Level I	Level II	Level III
Width \leq 0.001"; Length \leq 0.25" Per surface of 4 square feet	Acceptable	Unacceptable	Acceptable
Width \leq 0.002"; 0.25" < Length \leq 0.50" Per surface of 4 square feet	Unacceptable	Unacceptable	Acceptable
Width \leq 0.003"; 0.50" < Length \leq 1.00" Per surface of 4 square feet	Unacceptable	Unacceptable	Acceptable
Width \leq 0.003"; Length > 1.00" Per surface of 4 square feet	Unacceptable	Unacceptable	Unacceptable

Notes:

- Maximum one scratch per surface of 4 Square feet inspected will be acceptable in any Level.
- Maximum two (2) scratches per item(s) will be accepted, they must be separated by a minimum of 48.0".
- Any scratch > 0.004" deep will not be accepted.
- Any scratch penetrating through the top surface of the component will not be accepted.
- Any scratch exceeding 0.003" wide will not be accepted.

4.1.8 Cloudy, Matted, Milky Finish

Definition: A non-transparent, unclear, blurry, or flat appearance in the clear coat finish. A milky finish is a white surface finish that has the appearance of watery milk.

Definitions and Dimensions	Level I	Level II	Level III
Area \leq 5% of the surface	Acceptable	Unacceptable	N/A
5% < area \leq 10% of the surface	Unacceptable	Acceptable	N/A
Area > 10% of the surface	Unacceptable	Unacceptable	N/A

Notes:

- The total percentage limit is applicable only when comparing each discrete component in the same cabin location.
- Defective area will be inspected only after complete finish application and curing.

4.1.9 Fisheyes

Definition: Contamination of the surface creating pinhole or shallow indentation in the surface.

Definitions and Dimensions	Level I	Level II	Level III
Diameter \leq 0.032" per surface	Unacceptable	Unacceptable	Acceptable
0.032" < Diameter \leq 0.063" per surface	Unacceptable	Unacceptable	Acceptable
0.063" < Diameter \leq 0.125" per surface	Unacceptable	Unacceptable	Acceptable
Diameter > 0.125" per surface	Unacceptable	Unacceptable	Unacceptable

Notes:

- Indentation > 0.005" deep will not be accepted in any level.
- Fisheyes shall be separated by a minimum of 24.0"
- Maximum of three (3) fisheyes per item will be accepted.

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4.1.10 Orange Peel

Definition: Irregularity of a surface comparable to the skin of an orange.

Definitions and Dimensions	Level I	Level II	Level III
Area ≤ 5% of the total surface	Unacceptable	Unacceptable	Acceptable
5% < area ≤ 10% of the total surface	Unacceptable	Unacceptable	Acceptable
Area > 10% of the total surface	Unacceptable	Unacceptable	Unacceptable

Notes:

- Maximum of 2 areas of orange peel finish will be accepted. They must be separated by a minimum of 36".
- The total percentage limit is applicable only when comparing each discrete component in the same cabin location.

4.1.11 Finish Shrinkage

Definition: Contraction of the clear coat finish.

Definitions and Dimensions	Level I	Level II	Level III
Area ≤ 5% of the surface	Unacceptable	Unacceptable	N/A
5% < area ≤ 10% of the surface	Unacceptable	Acceptable	N/A
Area > 10% of the total surface	Unacceptable	Unacceptable	N/A

Notes:

- Maximum one (1) area of shrinkage finish per component will be accepted.

4.1.12 Touch-Up Finish

Definition: An alteration using pencil, liquid stain, or varnish to repair a nonconformity on a surface.

Definitions and Dimensions	Level I	Level II	Level III
Diameter ≤ 0.25" per surface	Acceptable	Acceptable	Acceptable
0.25" < Diameter ≤ 0.50" per surface	Unacceptable	Acceptable	Acceptable
Diameter > 0.50" per surface	Unacceptable	Unacceptable	Unacceptable

Notes:

- Maximum of 2 touch-up areas will be accepted per component. They must be separated by a minimum of 36.0".
- Touch up color should match all adjacent surfaces. Touch up area should not exceed 5% of surface and adjacent surface.

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4.2 Wood Veneer Sheet – Laminate – Hardwood Molding

4.2.1 Delamination

Definition: The separation of layers in a laminate or veneer caused by adhesive bond failure. Adhesive failure or adhesive bond failure at the interface between the adhesive and the adherent.

Definitions and Dimensions	Level I	Level II	Level III
Diameter \leq 0.125" per surface	Unacceptable	Unacceptable	N/A
Diameter $>$ 0.125" per surface	Unacceptable	Unacceptable	N/A

Notes:

- Prior to re-laminating a surface to correct a defect, HBC shall verify if the veneer sheet has the same grain sequence pattern as the other adjacent veneer areas.
- Delamination on an edge of a panel will not be accepted.
- Delamination resulting from the installation of an inlay will not be accepted.
- In Level II, a maximum of 2 defects will be accepted. They must be separated by a minimum of 36".

4.2.2 Ring or Stain

Definition: Discoloration of the veneer prior to application of stain. The appearance is similar to the residue left by water droplets or humidity after evaporation.

Definitions and Dimensions	Level I	Level II	Level III
Diameter \leq 0.25", 1 per surface	Unacceptable	Acceptable	N/A
0.25" $<$ Diameter \leq 2.00", 1 per surface	Unacceptable	Acceptable	N/A
Diameter $>$ 2.00", 1 per surface	Unacceptable	Unacceptable	N/A

Notes:

- More than one ring or stain per surface will not be accepted in any level.
- Any ring or stain penetrating to the backing sheet surface will not be accepted.

4.2.3 Veneer Plug Appearance

Definition: A matching wood plug used by the manufacturer to fill a defect such as a knot hole in the wood.

Definitions and Dimensions	Level I	Level II	Level III
Area \leq 1.00 in ² , 1 per surface of 4 square feet	Acceptable	Acceptable	N/A
1.00 in ² $<$ Area \leq 1.50 in ² , 1 per surface of 4 square feet	Unacceptable	Acceptable	N/A
Area $>$ 1.50 in ² , 1 per surface of 4 square feet	Unacceptable	Unacceptable	N/A

Notes:

- Repaired veneer will only be acceptable in burl style veneer.
- Veneer plug must be done correctly to eliminate visible demarcation line in the unique pattern of the grain.
- Repetitive veneer plug in the sequence of the grain pattern from the same veneer sheet will be accepted as long as conditions from above Table are not exceeded.

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4.2.4 Black Dot, Knots, Bowtie Effect, Wormhole

Definition: Natural characteristic in the wood grain that leaves visual deformation in the color.

Definitions and Dimensions	Level I	Level II	Level III
Area \leq 0.063 in ² , 1 per surface	Acceptable	Acceptable	N/A
0.063 in ² < Area \leq 0.16 in ² , 1 per surface	Unacceptable	Acceptable	N/A
Area > 0.16 in ² , 1 per surface	Unacceptable	Unacceptable	N/A

Notes:

- Defect applies only to hardwood pieces and veneer sheet(s).
- Repetitive defects in the sequence of the grain pattern from the same veneer sheet will be accepted as long as conditions from above Table are not exceeded. The defect should not detract from the natural grain pattern.
- All repairable defects in burl veneer sheet must be made using putty with the same color as the adjacent area.
- If the condition described above is found in the approved customer sample signed by the customer (same quantity, dimension, color), this should not be considered a defect.

4.2.5 Cracks in Laminate or Hardwood

Definition: A break without complete separation of parts in the material, visual line or slit in the wood grain.

Definitions and Dimensions	Level I	Level II	Level III
Length \leq 0.60" per surface	Unacceptable	Unacceptable	N/A
Length > 0.60" per surface	Unacceptable	Unacceptable	N/A

Notes:

- No defect will be accepted over 24" from the floor.
- All cracks must be separated by minimum of 18" from each other.
- More than two (2) cracks in the same item will not be accepted.
- Any crack exceeding width of > 0.003" will not be accepted.
- Any crack located on an exposed edge will not be accepted.
- Any crack reaching the backing of the veneer sheet will not be accepted.

4.2.6 Open Joint

Definition: Failure of bond or separation of two (2) adjacent pieces of veneer or laminate.

Definitions and Dimensions	Level I	Level II	Level III
Width \leq 0.003" per joint	Acceptable	Acceptable	N/A
Width > 0.003" per joint	Unacceptable	Unacceptable	N/A

Notes:

- A maximum one open joint per sheet will be accepted.
- The open joint can be vertical or horizontal in a burl veneer sheet.
- Any visible open joint that is visible while maintaining a minimum of 24" from the surface inspected will not be accepted.
- Any visible open joint will not be accepted if over 24" from the floor.

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4.2.7 Scratch or Knife Mark

Definition: A score or mark on the surface of veneer or laminate sheet. Various types of scratches, from micro superficial in the upper surface layer to penetration of the veneer surface to the backer sheet.

Definitions and Dimensions	Level I	Level II	Level III
Width \leq 0.002"; Length \leq 0.50"	Unacceptable	Acceptable	N/A
Width \leq 0.002"; 0.50" < Length \leq 1.00"	Unacceptable	Acceptable	N/A
Width \leq 0.002"; Length > 1.00"	Unacceptable	Unacceptable	N/A

Notes:

- Any scratch exceeding a width of > 0.002" or a depth > 0.003" will not be accepted.
- Any scratch reaching the backer sheet will not be accepted (maximum depth is 0.006").
- Scratches must be separated by a minimum of 48" on an item.
- More than two (2) scratches in the item will not be accepted.
- Repetitive defect in the sequence, like cuts on the surface of the veneer sheet will be accepted only if they can be completely removed by a light flat sanding prior to finish.

4.3 Leather, Vinyl, Fabric (Grosspoint, Ultrasuede, etc.), and Felt

4.3.1 Grain Wrinkle, Scars, Vein

Definition: Appearance variations caused by natural or conditional consequence in the life cycle of the animal from which the leather was obtained.

Definitions and Dimensions	Level I	Level II	Level III
Area \leq 10% per 8 linear yards of material	Acceptable ¹	Acceptable ¹	N/A
10% < Area \leq 20% per 8 linear yards of material	Unacceptable	Acceptable ¹	N/A
Area > 20% per 8 linear yards of material	Unacceptable	Unacceptable	N/A

Notes:

- Any scars or vein defects exceeding length > 1.50" will not be accepted.
- Vein and scar refer to defect in leather materials.
- More than two (2) areas of scars or vein defects per component will not be accepted.
- 1) Refer to BS235469 and BS24834 as applicable to the Airplane Model Index of Specifications.

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4.3.2 Inconsistent Color

Definition: Non-uniform color between dye lots.

Definitions and Dimensions	Level I	Level II	Level III
Area \leq 5% per 4 linear yards visible surface	Unacceptable	Acceptable ²	N/A
Area $>$ 5% per 4 linear yards visible surface	Unacceptable	Unacceptable	N/A

Notes:

- The total percentage of color variation is applicable only when comparing all related components in the same area.
- Rolls of material with inconsistent color between dye lots will not be accepted.
- The material shall be inspected after the fire block treatment.
- 2) Each shipset must use the same dye lot. Any substitution in dye lots is not acceptable without approval from HBC Customer Support.

4.3.3 Scratch

Definition: A score of mark on the surface of the material. Various types of scratches, ranging from micro superficial to penetrating the fabric surface; also scrape or graze.

Definitions and Dimensions	Level I	Level II	Level III
Width \leq 0.001"; Length \leq 0.25", 1 per linear yard visible surface	Acceptable	Acceptable	N/A
Width \leq 0.001"; 0.25" \leq Length \leq 0.50", 1 per linear yard visible surface	Unacceptable	Acceptable	N/A
Width \leq 0.001"; Length $>$ 0.50", 1 per linear yard visible surface	Unacceptable	Unacceptable	N/A

Notes:

- Maximum of 1 scratch per yard linear per surface inspected is acceptable.
- Maximum of 2 scratches per item will be accepted. They must be separated by a minimum of 36".
- Any scratch having a depth $>$ 0.003" will not be accepted.
- Any scratches exceeding width of 0.001" will not be accepted.
- No defect will be accepted over 24" from the floor.

4.3.4 Wavy Pattern

Definition: Material with a ripple or a pleat in the fabric pattern. Pattern does not run in a straight line.

Definitions and Dimensions	Level I	Level II	Level III
Wave \leq 4 per linear yard of surface	Unacceptable	Acceptable	N/A
Wave $>$ 4 per linear yard of surface	Unacceptable	Unacceptable	N/A

Notes:

- Pattern wave having a width \geq 0.40" is unacceptable regardless of quantity per area.
- Repetitive defect will not be accepted unless the material has a naturally misaligned pattern as defined by specification, work order or purchase order instructions.
- No defect will be accepted over 24" from the floor.
- A maximum of 10% of the total surface of the component will be accepted.

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4.3.5 Pinholes

Definition: Imperfection similar to a small void found in the material creating a hole that does not extend all the way through the fabric piece.

Definitions and Dimensions	Level I	Level II	Level III
Pinholes \leq 2 per linear yard surface	Acceptable ³	Acceptable ³	N/A
2 < Pinholes < 4 per linear yard surface	Unacceptable	Acceptable ³	N/A
Pinholes \geq 4 per linear yard surface	Unacceptable	Unacceptable	N/A

Notes:

- Pinholes penetrating the surface of the material are unacceptable.
- Pinholes having a diameter of > 0.002" on any surface inspected are unacceptable.
- More than three (3) Pinholes per component will not be accepted.
- Pinholes from the same material roll must be separated by a minimum of 36.0".
- Black Pinholes in leather material will not be accepted.
- No defect will be accepted over 24" from the floor.
- 3) Refer to BS235469 and BS24834 as applicable to the Airplane Model Index of Specifications.

4.3.6 Unraveled Edge & Pullout Mesh

Definition: Material fraying on the edge of a panel, similar to a loose thread, causing an uneven edge. Pull out mesh condition is located in the middle of a material roll.

Definitions and Dimensions	Level I	Level II	Level III
Length \leq 0.50" per square yard of surface	Unacceptable	Unacceptable	Acceptable
0.50" < length \leq 1.00" per square yard of surface	Unacceptable	Unacceptable	Unacceptable
Length > 1.00" per square yard of surface	Unacceptable	Unacceptable	Unacceptable

Notes:

- The unraveled edge defect is applicable only for fabric (not vinyl or leather).
- Any unraveled edge with a width larger than one fabric mesh, will not be accepted.
- Maximum of 2 defects per piece will be accepted. They must be separated by a minimum of 48".
- No defect will be accepted over 24" from the floor.

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4.3.7 Inconsistent Thickness

Definition: Uneven dimension or thickness in the roll of material or from the upholstery process. Completed fabric panel with foam underlay that does not have a flush surface.

Definitions and Dimensions	Level I	Level II	Level III
Deep \leq 0.050" per linear yard of surface	Unacceptable	Acceptable	Acceptable
0.050" < Deep \leq 0.100" per linear yard of surface	Unacceptable	Acceptable	Acceptable
0.100" < Deep \leq 0.200" per linear yard of surface	Unacceptable	Unacceptable	Acceptable
Deep > 0.200" per linear yard of surface	Unacceptable	Unacceptable	Acceptable

Notes:

- The limit for an inconsistent thickness defect applies to the final thickness of the completed component (including foam and substrate piece).
- Maximum length of a finished article that has an inconsistent thickness detected is 24.0".
- Only one inconsistent thickness defect per component will be accepted.
- No defect will be accepted over 24" from the floor.

4.3.8 Ring Stain

Definition: Discoloration on the material surface similar to the residue left by water droplets or humidity after evaporation.

Definitions and Dimensions	Level I	Level II	Level III
Diameter \leq 0.50", 1 per discrete, separate fabric surface of a finished component	Unacceptable	Acceptable	Acceptable
0.50" < Diameter \leq 2.00", 1 per discrete, separate fabric surface of a finished component	Unacceptable	Acceptable	Acceptable
Diameter > 2.00", 1 per discrete, separate fabric surface of a finished component	Unacceptable	Unacceptable	Unacceptable

Notes:

- Ring Stain only applies to fabric material.
- More than one ring stain per discrete component in Level I will not be accepted.
- Any ring stain that penetrates the backing material may affect the fire block treatment and will not be accepted.
- Maximum three (3) ring stains per component will be accepted. They must be separated by a minimum of 10" from each other.

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4.3.9 Bleed Through

Definition: Glue or the fire treatment showing through the material. Has the appearance of a stain, spot, or discoloration of the fabric.

Definitions and Dimensions	Level I	Level II	Level III
Area \leq 5% per discrete, separate fabric surface of a finished component	Unacceptable	Unacceptable	Acceptable
Area $>$ 5% per discrete, separate fabric surface of a finished component	Unacceptable	Unacceptable	Acceptable

Notes:

- The total percentage limit applies to the completed surface of the component.
- Maximum one (1) area that is bleeding through per component will be accepted.
- Bleed through defect having a Diameter $>$ 1.00" will not be accepted.
- No defect will be accepted over 24" from the floor.

4.3.10 Misaligned Pattern

Definition: Fabric that has an interruption in the uniform pattern of the fabric.

Definitions and Dimensions	Level I	Level II	Level III
Area \leq 1% of a discrete, separate fabric surface of a finished component	Unacceptable	Acceptable	Acceptable
1% $<$ Area \leq 5% of a discrete, separate fabric surface of a finished component	Unacceptable	Acceptable	Acceptable
Area $>$ 5% of a discrete, separate fabric surface of a finished component	Unacceptable	Unacceptable	Unacceptable

Notes:

- Area of misalignment $>$ 0.10" will not be accepted.
- Maximum of 2 pattern misalignments per component will be accepted. They must be separated by a minimum of 36".
- Repetitive defect will not be accepted unless the material has a naturally misaligned pattern as defined by specification, work order or purchase order instructions.
- No defect will be accepted over 24" from the floor.

4.3.11 Cellulite (vinyl material only)

Definition: Appearance variations due to natural or conditional consequence during the life cycle of the animal from which the leather was obtained.

Definitions and Dimensions	Level I	Level II	Level III
Area \leq 10% per 8 linear yards of material	Unacceptable	Acceptable	N/A
10% $<$ Area \leq 20% per 8 linear yards of material	Unacceptable	Acceptable	N/A
Area $>$ 20% per 8 linear yards of material	Unacceptable	Unacceptable	N/A

Notes:

- Cellulite refers to defect in vinyl material.
- More than two (2) areas of cellulite per component will not be accepted.

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4.3.12 **Birds-Eye** (vinyl material only)

Definition: Shallow indentations in the fabric similar to a small circle. Similar in appearance to an eyelet.

Definitions and Dimensions	Level I	Level II	Level III
Birds-Eye $\leq 0.063 \text{ in}^2$, per visible surface	Acceptable	Acceptable	N/A
$0.063 \text{ in}^2 \leq$ Birds-Eye $\leq 0.20 \text{ in}^2$, per visible surface	Unacceptable	Acceptable	N/A
Birds-Eye $> 0.20 \text{ in}^2$, per visible surface	Unacceptable	Unacceptable	N/A

Notes:

- Birds-Eye defects are applicable only to vinyl material.
- Indentations > 0.010 " deep are unacceptable.
- Any Birds-Eye defect area must be separated by minimum of 36" from each other.
- No defect will be accepted over 24" from the floor.

4.4 **Inlays – All Types**

4.4.1 **Crack**

Definition: A break, without complete separation of the parts, on the surface of the finish or in the inlay material.

Definitions and Dimensions	Level I	Level II	Level III
Width ≤ 0.002 "; Length ≤ 0.20 " per distinct inlay surface	Unacceptable	Acceptable	N/A
Width ≤ 0.002 "; Length > 0.20 " per distinct inlay surface	Unacceptable	Unacceptable	N/A

Notes:

- More than one crack per inlay surface inspected will not be accepted.
- Any crack located at an exposed edge of an inlay will not be accepted.
- Crack defect condition descriptions are applicable for all type of inlays or accessory equipment.
- Any crack on the surface of cabin table inlay will not be accepted.
- Any crack having a depth > 0.010 " on the surface inlay will not be accepted.

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4.4.2 Misaligned Veneer Pattern

Definition: A slippage of the veneer strip, unsymmetrical, minor misaligned pattern match.

Definitions and Dimensions	Level I	Level II	Level III
One (1) area per discrete inlay surface	Unacceptable	Acceptable	N/A
Two (2) area per discrete inlay surface	Unacceptable	Acceptable	N/A
> Two (2) per discrete inlay surface	Unacceptable	Unacceptable	N/A

Notes:

- Misaligned veneer pattern applies to all inlay types.
- A maximum of 5% of the total surface area may be misaligned, or have a maximum width of 0.010" or length of 0.25" to be acceptable.
- Repetitive defect will not be accepted unless the material has a naturally misaligned pattern as defined by specification, work order or purchase order instructions.
- Any misaligned veneer pattern on cabin table inlay surfaces will not be accepted.

4.4.3 Discoloration

Definition: Irregular color.

Definitions and Dimensions	Level I	Level II	Level III
Area \leq 1% per distinct inlay surface	Acceptable	Acceptable	N/A
1% < Area < 5% per distinct inlay surface	Unacceptable	Acceptable	N/A
Area > 5% per distinct inlay surface	Unacceptable	Unacceptable	N/A

Notes:

- Discoloration applies to faux finish, plated, and veneer inlays.
- More than 2 discolored areas on all components in the same area will not be accepted.

4.4.4 Scratch

Definition: A score or mark on the surface. Scratches range from micro superficial to penetrating the substrate material; similar to scrape or graze.

Definitions and Dimensions	Level I	Level II	Level III
Width \leq 0.001"; Length \leq 0.20" per discrete inlay surface	Acceptable	Acceptable	N/A
Width \leq 0.001"; 0.20" < Length \leq 0.40" per discrete inlay surface	Unacceptable	Acceptable	N/A
Width \leq 0.001"; Length > 0.40" per discrete inlay surface	Unacceptable	Unacceptable	N/A

Notes:

- Only micro superficial surface scratch will be accepted in Level I.
- Any scratch having a depth > 0.004" is unacceptable.
- More than 2 scratches per inlay will not be accepted. Scratches must be separated by a minimum of 40".
- No defect will be accepted over 24" from the floor.

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4.4.5 Dents or Chips

Definition: A depression or hollow made by force or small pieces of material removed (also includes nick, notch, or gouge).

Definitions and Dimensions	Level I	Level II	Level III
Diameter \leq 0.030", per distinct inlay surface	Unacceptable	Acceptable	N/A
0.30" \leq Diameter \leq 0.060 per distinct inlay surface	Unacceptable	Acceptable	N/A
Diameter $>$ 0.060" per distinct inlay surface	Unacceptable	Unacceptable	N/A

Notes:

- More than two (2) dents or chips per inlay will not be accepted.
- Dent or chip must be separated by a minimum 60.0" per surface inspected.
- Any dent or chip having a depth $>$ 0.004" will not be accepted.
- Any dent or chip located at an exposed edge will not be accepted.
- Any dent or chip having a maximum total length of 0.20" per discrete surface inspected will not be accepted.
- No defect will be accepted over 24" from the floor.

4.4.6 Pinholes

Definition: Small pore-like flaws in in the clear coat finish of the surface and has the general appearance of pin pricks when viewed by reflected light.

Definitions and Dimensions	Level I	Level II	Level III
Pinholes \leq 2 per discrete inlay surface	Unacceptable	Acceptable	N/A
2 $<$ Pinholes \leq 4 per discrete inlay surface	Unacceptable	Acceptable	N/A
Pinholes $>$ 4 per discrete inlay surface	Unacceptable	Unacceptable	N/A

Notes:

- Pinhole defects penetrating to the substrate will not be accepted.
- Pinhole having a diameter $>$ 0.002" for any surface inspected will not be accepted.
- In Level I, a maximum of 2 Pinholes per piece will be accepted. They must be separated by a minimum of 36".
- Pinholes having a depth $>$ 0.004" for any surface inspected will not be accepted.
- No defect will be accepted over 24" from the floor.

4.5 Mirror Sheet

Note: There are limited suppliers of HBC specified mirror material. Installed mirror will meet all applicable visual quality standards and test methods contained in the manufacturer's product specification sheet. In a case where a defect limit in this section is more stringent than the quality provided by the manufacturer, the manufacturer's technical sheet shall take precedence and be used for acceptance of the finished component.

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4.5.1 Scratch

Definition: A score or mark on the surface of the item including minor, micro superficial scratches on the cosmetic surface up to penetration to the substrate.

Definitions and Dimensions	Level I	Level II	Level III
Width \leq 0.001"; Length \leq 0.10" not to exceed one per square feet surface area	Acceptable	Acceptable	N/A
Width \leq 0.001"; 0.10" < Length \leq 0.50" not to exceed one per square feet surface area	Unacceptable	Acceptable	N/A
Width \leq 0.001"; Length > 0.50" not to exceed one per square feet surface area	Unacceptable	Acceptable	N/A

Notes:

- Maximum two (2) scratches per aircraft mirror component will be accepted. They must be separated by a minimum of 36".
- Any scratch penetrating the surface or having a depth > 0.002" will not be accepted under any circumstance.
- No defect will be accepted over 24" from the floor.

4.5.2 Pinholes or Dents

Definition: Small pore-like flaws in a finish that extend entirely through the applied film and have the general appearance of pin pricks when viewed by reflected light.

Definitions and Dimensions	Level I	Level II	Level III
Pinholes \leq 2 per 80 in ² per piece	Acceptable	Acceptable	N/A
Pinholes > 2 per 80 in ² per piece	Unacceptable	Unacceptable	N/A

Notes:

- Pinholes or dents penetrating through the surface will not be accepted.
- Pinholes or dents having a diameter > 0.006" or a depth > 0.006" for any surface will not be accepted.
- In Level I, more than one pinhole or dent per mirror item will not be accepted.
- Maximum of 2 pinholes or dents will be accepted in Level II. They must be separated by a minimum of 36".
- No defect will be accepted over 24" from the floor.

4.5.3 Crack

Definition: A break without complete separation of the parts on the surface an obvious visual line, marks, or slit in a piece.

Definitions and Dimensions	Level I	Level II	Level III
Width \geq 0.000"; Length \geq 0.00" per face surface	Unacceptable	Unacceptable	N/A

Notes:

- Cracks in mirror will not be accepted.

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4.5.4 Distortion or Wave

Definition: Variation in the finish thickness resulting in a convex, concave or uneven surface.

Definitions and Dimensions	Level I	Level II	Level III
0 < Defects ≤ 2 per square foot surface	Unacceptable	Acceptable	N/A
2 < Defects ≤ 4 per square foot surface	Unacceptable	Unacceptable	N/A
Defects > 4 per square foot surface	Unacceptable	Unacceptable	N/A

Notes:

- Any distortion or wave having a width > 0.50" per square foot will not be accepted regardless of the acceptance criteria.
- Maximum of 2 distortions or waves will be accepted. They must be separated by a minimum of 36".
- No defect will be accepted over 24" from the floor.

5.0 Revision History

Revision	Revision Date	Release Date	Description of Change
New	06/04/09	11/12/09	New document for Interior appearance standard.
A	11/30/11	01/03/12	Added pictures specific to upholstery and updated acceptability throughout.

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