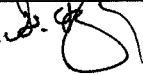


REVISIONS

REV	DESCRIPTION	DATE	APPROVED
A	Completely revised standards and added pictures of both acceptable and unacceptable product per DCR 58347.	12-20-2010	

QUALITY SPECIFICATION

APPROVALS		DATE	<p align="center">MarathonNorco Aerospace, Inc. WACO, TEXAS</p>				
ORIGINATOR D. Marks		07/01/09					<p align="center">Workmanship Standards Document.</p>
CHECKED G. McMurtry		07/01/09					
APPROVED G. McMurtry		07/01/09	SIZE	FSCM	DWG NO	REV	A
Originating DCR		57604	A	74025	DIST. CODE	OLI	SHEET 1 OF 11

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1.0 SCOPE

- 1.1 This document defines the workmanship standards for suppliers and internal departments.
- 1.2 The intent of workmanship requirements is to ensure products are not only acceptable to the engineering data, but also meets the expectation of consistency from piece to piece and lot-to-lot. An expectation of our mutual customers is that MarathonNorco product will have a consistent appearance regardless of when they were manufactured or when they were purchased.

2.0 APPLICABLE DOCUMENTS

- 2.1 Engineering drawings and specifications
- 2.2 MNAI Quality Manual, QM-01

3.0 DEFINITIONS

Abrasion: Surface imperfection that doesn't remove or displace material appears as a scuff or a change to the surface finish.

Buffing: Light polishing with a soft cloth or cloth wheel

Burnishing: Light material rubbing; burnishing produces a "smoothing" of material and a shiny outer surface. Material removal does not occur.

Burrs: Sharp edges around the part features, often caused by manufacturing processes like punching, shearing, milling or drilling.

Dents and Dings: Any small, measurable depression in a part surface, often produced by striking or pressing the surface.

Impressions: A mark or blemish made by pressure. An impression could be a ding or dent.

Nick: A slight cut, chip, or indentation on a surface or edge.

Polishing: To remove roughness from a surface and make it smooth by rubbing, with or without compound.

Scratches: Lines or marks on a surface, often created by a sharp object. A scratch is defined as a maximum of .003in. in width, and by nature, a scratch involves the removal or displacement of material.

Surface Imperfections and/or Flaws: Surface interruptions such as cracks, nicks, Dings, Dents, scratches or ridges.

Surface Texture: Describes geometric irregularities of the surface of a solid material.

Swaging: A cold working process for shaping material, where material is forced into a die(s) using continuous, repeated impacts.

Tooling Marks: Any marks that appear on the surface of a part as the result of a manufacturing process, including, but not limited to: depressions, gouges, impressions, clamping marks, etc.

4.0 ALLOWABLE SURFACE IMPERFECTIONS

- 4.1 The visual inspection for nicks, dents, scratches, machining tool marks and scuff marks shall be conducted by Quality Assurance personnel. The allowances of these detected irregularities are determined by engineering drawing requirements. All surfaces that are

visible have a need to be cosmetically acceptable, regardless of finish call outs on the engineering drawings. If the drawing does not specify, the following apply:

- 4.1.1 Surface flaws and imperfections, such as nicks, dents, tooling marks and scuff marks are allowable when they are .001 inch maximum depth and cover an area less than .01 square inches. Multiple flaws are allowed if the total area of the flaws within 1.0 square inch is less than .01 square inches.
- 4.1.2 Scratches shall not exceed any of the following dimensions:
 - 4.1.2.1 Length - 1.00 inches;
 - 4.1.2.2 Width - .003 inches;
 - 4.1.2.3 Depth - .001 inch
- 4.1.3 The part surface texture and finish shall be in accordance with the drawing and shall be uniform in appearance across the entire surface.
- 4.1.4 Where a finish process is required such as passivate or anodize, no scratch or blemish shall expose unfinished material.
- 4.2 Paint: Painted surfaces should be defect free with texture and color uniform throughout the entire part surface, including all breaks (angles) or change in shape. The finish on a continuous surface shall exhibit no gross imperfections such as gouges, large chips, runs, blisters, oil spots, flaking, orange peel, overspray, under spray or any defects that will affect the functional or appearance properties of the finish.

Paint touch-up is acceptable.
Touch-up is never acceptable if the touch-up is visible at the respective viewing distance for that class of surface.
- 4.3 Alodyne: The finish shall have uniform appearance; be semi-bright, smooth, and clear to slightly yellow or iridescent in color. Visual appearance will vary between different alloys and between machined, milled, cast, and grained surfaces. Outside surface shall be free from scratches, dents, or gouges as noted herein.
- 4.4 Anodize: All surface finishes shall be uniform and free of Nicks, Scratches or Dings prior to application of anodize. Anodize shall be per the specification referenced on purchase order or within respective engineering data.
- 4.4 Dry Film Lube (DFL): DFL will have 100% coverage of the indicated surface(s). Application shall be uniform, without flakes, fisheyes, orange peel, runs or chipping. Adhesion is to be checked via applicable dry tape test.

5.0 REWORK

- 5.1 Rework of surfaces is allowed as long as the reworked part meets all engineering data requirements.

Appendix A

Examples of Unacceptable Surface Finishes



Nick



**Cold Working Action and Scratch
(Part needs buffed to obtain uniform surface finish)**



Nicks



Nicks and Dings on Threads

Gouges on Paint



Gouges on Paint



Examples of Acceptable Surface Finishes





