



## Supplier Workmanship Guidelines

### Revision History

Rev.	Date	Description of Change
1	08/04/2022	New Release



## Supplier Workmanship Guidelines

### I. Purpose

The purpose of this document is to establish G&W's interpretation, acceptance criteria, and guidelines with respect to the workmanship for G&W's customers (when not specified by customer specific requirements). Herein, workmanship refers to the level of quality imparted onto a finished part/assembly.

### II. Definitions

**Burr:** A burr is an extending edge or roughness on the surface of a part resulting from a manufacturing process. Burr size ranges from the jagged edge pushed up by a dull cutting tool to the microscopic edge

**Scratch:** A defect that leaves a mark/linear indication on surface

**Visible Burr** - A visible burr is one that can be seen without magnification.

**Crack:** planar discontinuity in the metal that has length and is at least 0.002 inch deep

**Crazing:** network of fine cracks on the surface of a material

### III. Responsibilities

It will be the responsibility of the supplier to ensure that parts are reviewed for workmanship

### IV. Burrs/Edges

Loose or hanging burrs must be removed.

Unless otherwise specified, all external surfaces and edges should be free of burrs. Features internal to the product part which would not constitute a safety hazard may exhibit sharp edges.

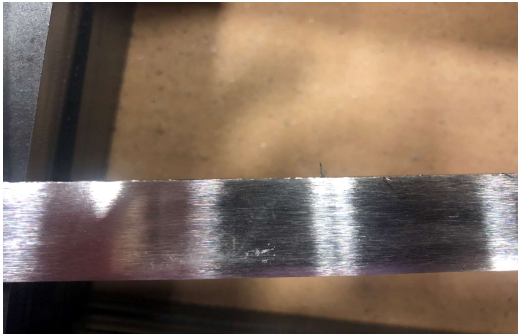
1. .006 inches shall be the maximum acceptable burr height for all parts unless otherwise specified on the drawing
2. .003 inches shall be the maximum acceptable height for all parts where:
  - a. The drawing is marked "Contact Surface"
  - b. The drawing is marked "Free of Burrs"
3. Notify G&W if burr heights greater than the preceding requirements



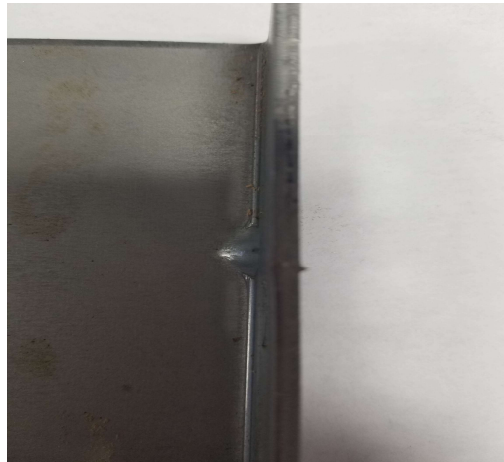
## Supplier Workmanship Guidelines

No sharp edge that may cause a safety issue is allowable. Safety is the first priority!

Examples of Sharp Edges:



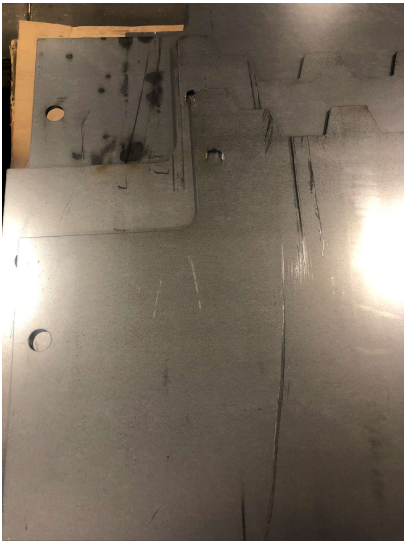
Examples of Burrs:



### V. Material Imperfections (i.e. Scratches, Scuffs, Pits)

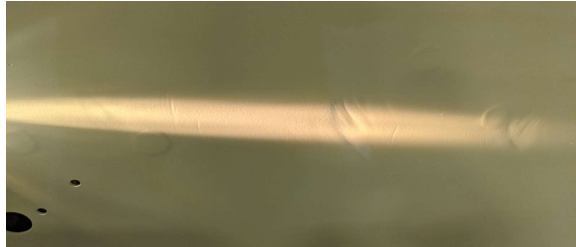
Unless otherwise noted, very light scratches/scuffs (seen but not felt) are acceptable.

Scratches that catches the fingernail are not acceptable. No scratches, dents, dings, pits or scuffs are acceptable. See examples of non-conforming parts below:



## VI. Grinding

Grind marks are not acceptable in visible position and depth  $\leq 25\text{mm}$  and not violating material thickness, unless otherwise specified by G&W. See examples of excessive grinding below:



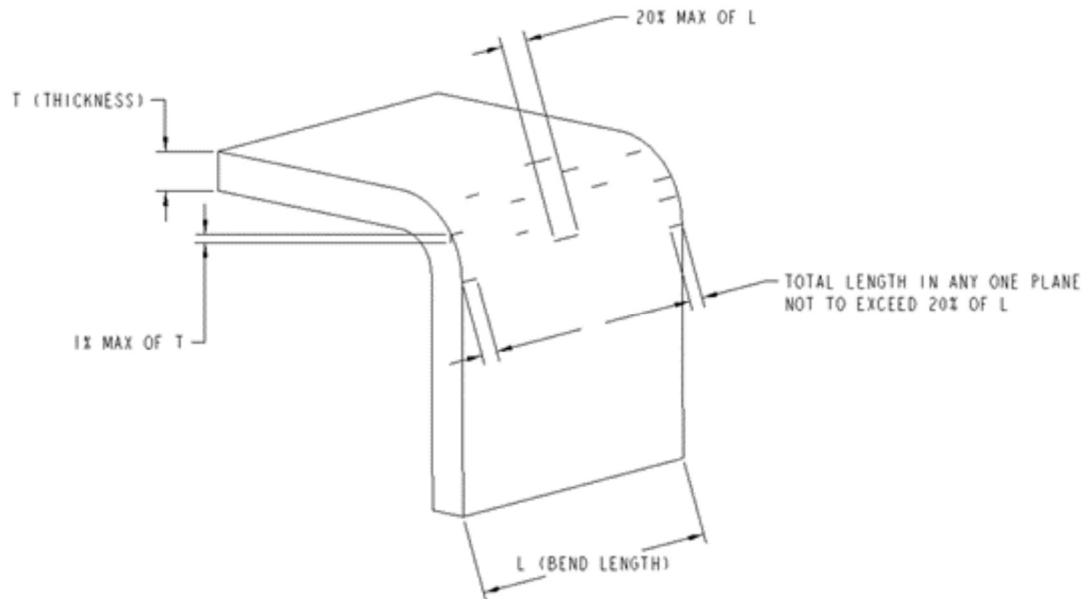
## VII. Bend Tension (Crazing)



## Supplier Workmanship Guidelines

Crazing is the phenomenon that produces a network of fine cracks on the outside bend radius surface due to metal stretching and expanding

Surface crazing is permissible, but the aggregate length in any plane and depth of any imperfection should not exceed limits shown in the figure below.



GOOD



BAD

All cracks are rejectable. A crack is a planar discontinuity in the metal that has length and is at least 0.002 inch deep. Cracks may be surface cracks or through cracks. For the purposes of this specification, a crack is identifiable by the unaided eye unless otherwise specified in the contract or purchase order.



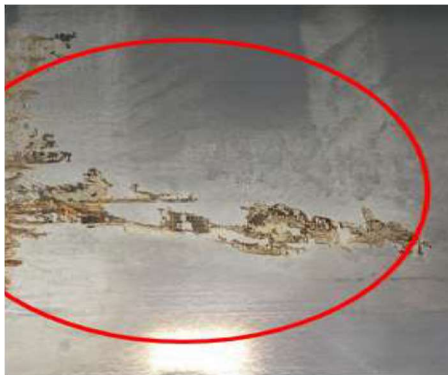
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If there is a linear indication present, it is recommended to verify that the defect is not a crack (i.e. non-destructive testing).

### VII. Visual Inspection

The completed part should be free of rust and all contaminants, such as excessive lubricating oils, corrosive products, solder fluxes, metal chips, loose/splattered solder, clippings, etc., or any foreign material that could loosen or become dislodged. The coated surface should be smooth, continuous, adherent, and uniform in appearance.

Verify bins are free of contaminants such as oils before loading parts into the bins.



The above listed non-conformities are not acceptable. They shall be cause for rejection. The supplier may be responsible for replacing the parts.