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October 10th, 2025

Quality Alert!

Increased Quality Issues Related to Burrs and Dimensional Non-Conformities

Dear Supplier

We are reissuing this **Quality Alert** due to a continued increase in quality issues identified with incoming parts, specifically related to **burrs/FOD** and **thread depth nonconformities**.

Primary Concerns:

- Presence of **burrs and/or foreign object debris (FOD)** on machined and threaded features
- **Dimensional nonconformities**, particularly thread features outside specification

It is essential that your **Quality** and **Final Inspection** teams review **SMB Engineering Specification ES 1018**, which details the requirements for burr-free components and thread dimensional compliance. If any clarification is needed, please contact our **Supplier Quality Engineer** immediately.

Attached for your reference are a few examples of the issues we've been observing, which we hope will assist your team in identifying and addressing them effectively prior to shipping.

Please note:

- Nonconforming parts are being **returned**, negatively impacting your **On-Time Delivery performance**
- Ongoing quality issues and returns are prompting **alternate sourcing decisions**, which may adversely affect our business relationship

Action Required:

1. Confirm that the responsible parties within your organization have **fully reviewed SMB's ES 1018**.
2. If you have experienced recent rejections related to burrs or thread dimensions, implement **additional inspection steps** to verify burr removal and dimensional compliance.
3. Contact our **Supplier Quality Engineer** immediately with any questions or concerns.

We appreciate your prompt attention and your continued commitment to quality and continuous improvement.

Charlie Damon

Charlie Damon

Supplier Quality Engineer
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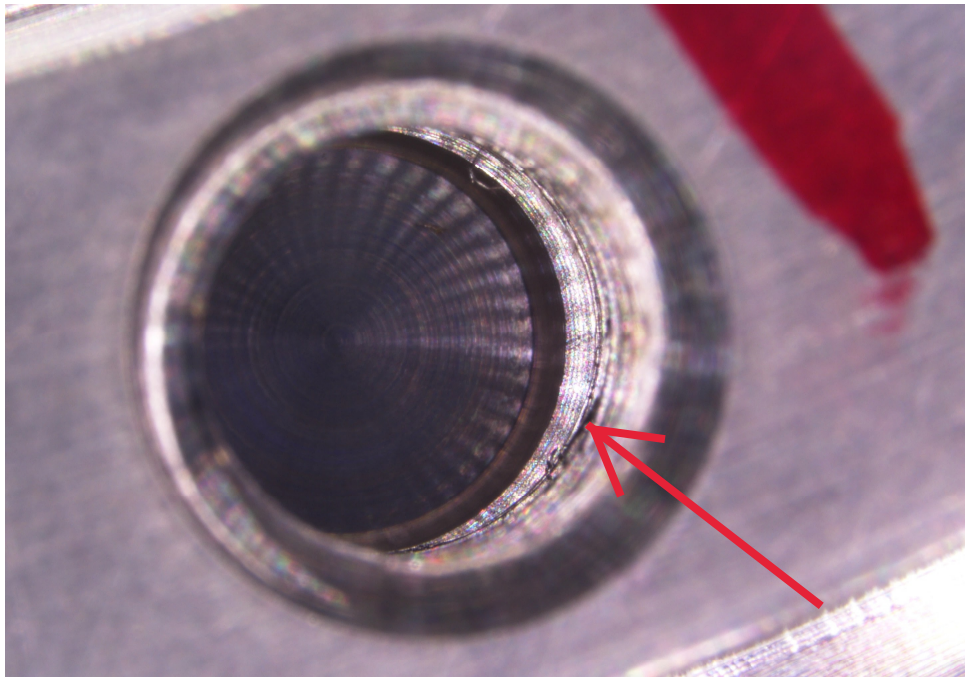
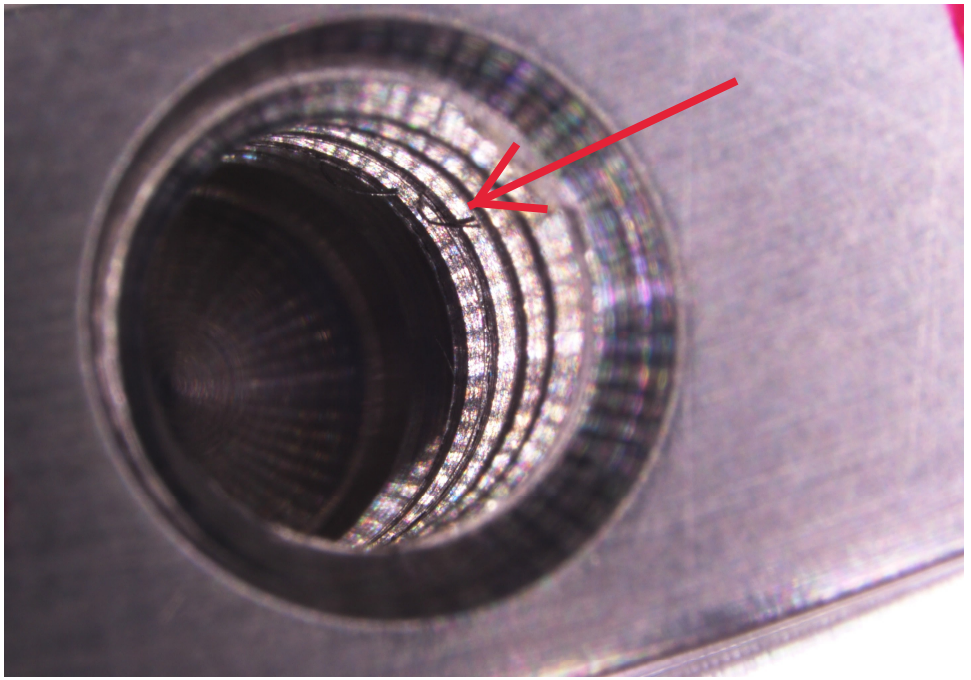
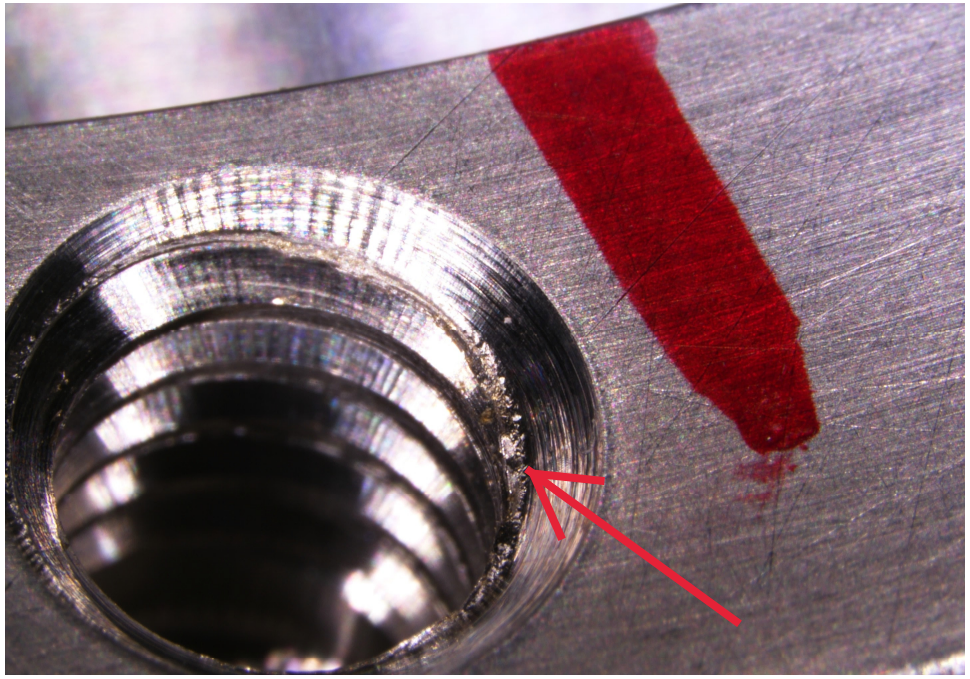
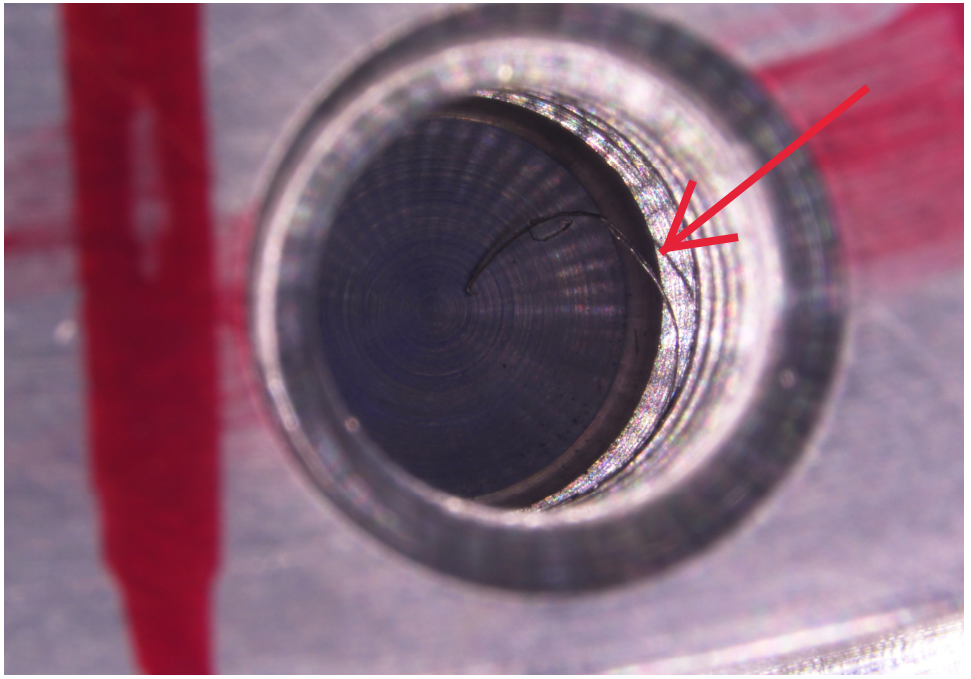
ES 1018 - Examples of Unacceptable Burrs in threads.









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ES 1018

DEBURRING OF PRECISION PARTS

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INDEX OF REVISIONS					
DATE	PAGES AFFECTED			DESCRIPTION OF REVISIONS	
	REVISED	ADDED	DELETED		
7/15/93 REV D PREP.BY	2			Para. 2.1 From: "type 3" To: "type 5"	
APPROVAL		PE		CE CLB	QA RFH
DATE	PAGES AFFECTED			DESCRIPTION OF REVISIONS	
	REVISED	ADDED	DELETED		
7/17/96 REV E PREP.BY PLD	ALL 3-5			Changed All Pages From: MBC to Senior Flexonics, ECN 32185	
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DATE	PAGES AFFECTED			DESCRIPTION OF REVISIONS	
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3/28/06 REV F PREP.BY MSD	ALL			Changed All Pages From: Senior Flexonics, To: Senior Aerospace See also, ECO MB51775	
APPROVAL		PE MSD		CE JMC	QA [illegible]

1.0 SCOPE

This specification defines the general requirements for deburring, cleaning and packaging of precision components supplied to and/or manufactured by Metal Bellows.

2.0 GENERAL REQUIREMENTS

2.1 All parts will be classified as type 5 unless otherwise stated on drawing, purchase order or specification.

2.2 No attempt is made herein to define methods of burr removal except for any chemical deburring process which must be approved by Metal Bellows. It is generally good practice to remove burrs at the operation where they occur. Under all circumstances, it is the responsibility of the manufacturer to provide burr-free parts as defined by the part type classification.

3.0 DEFINITIONS

3.1 Burr

A burr is an irregularity caused in fabrication as applied to edges and corners. There irregularities protrude in any direction beyond the point of intersection. (See Figure 3-1-1.)

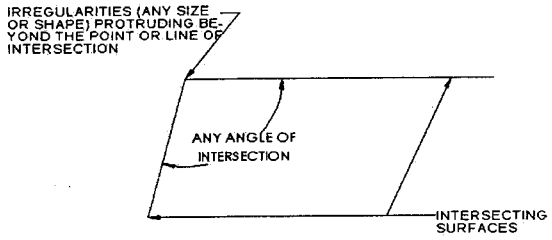

Fig. 3-1-1

3.2 Loose Burr

A burr which can be bent or removed by applying manual pressure.

3.3 Tight Burr

A burr which cannot be bent or removed by applying manual pressure.

4.0 CLASSIFICATION

4.1 Parts to be deburred are categorized by type number. They will be deburred so that no burrs will be visible when viewed under the applicable magnification with a minimum of 100 ft-candle light source.

Type 1 -- Parts in this category will be viewed under 30 power magnification and the process shall be designated ES 1018-1.

Type 2 -- Parts in this category will be viewed under 20 power magnification and the process shall be designated ES 1018-2.

Type 3 -- Parts in this category will be viewed under 10 power magnification and the process shall be designated ES 1018-3.

Type 4 -- Parts in this category will be viewed under 3.5 power magnification and the process shall be designated ES 1018-4.

Type 5 -- The parts in this category will be viewed with the unaided eye and the process shall be designated ES 1018-5.

4.1.1 If the letter "N" appears after any of the types specified above (e.g.: ES 1018-1N), it indicates that no tight burrs are allowed.

4.2 All loose burrs must be completely removed and all semi-rigid burrs will be removed and the bases blended to the existing surface not exceeding the allowable tolerance.

4.3 All tight burrs, unless otherwise specified (see 4.1.1), will be acceptable provided the dimensions over the burr are within the allowable tolerance of the drawing.

4.4 Sharp edges resulting from scratches or other surface imperfections exceeding the finish requirement must be blended to adjacent surfaces. All external and internal edges and the edges of undercuts shall be broken unless otherwise specified on the drawing.

4.5 Unless otherwise specified, all edges must be broken by either a 45° chamfer or radius with a .005 minimum to a .010 maximum corner break.

4.6 A "sharp edge" or "sharp corner" callout on a drawing shall be interpreted as being limited to a .002 maximum chamfer or radius.

4.7 Unless otherwise specified, all inside corners or fillets shall have a chamfer or radius of .010 minimum to a .020 maximum blended surface.

4.8 A "sharp inside corner" callout on a drawing shall be interpreted as being limited to a .002 maximum chamfer or radius.

4.9 Undercuts will be subject to rejection unless otherwise specified on the drawing.

5.0 GRINDING

5.1 Grinding relief edges will be blended after grinding. Chamfered edges must have blending radii not exceeding .005" with a minimum of overlapping on adjacent surfaces.

6.0 THREADS

6.1 All standard threads must meet the requirements for Federal Standard H28.

6.2 Burrs must be removed using 3.5X magnification (Type 4) unless higher magnification is specified on the drawing, work instruction and/or purchase order.

6.3 Raggedness of the thread crest is not cause for rejection unless the raggedness exceeds ½ the distance across the flat on the crest of the thread form.

6.4 The raggedness may be either material torn from the crest of the thread or may be rolled material displaced by the manufacturing process.

6.5 In all cases, the rolled material must be firmly secured metal. (Figure 6-5-1)

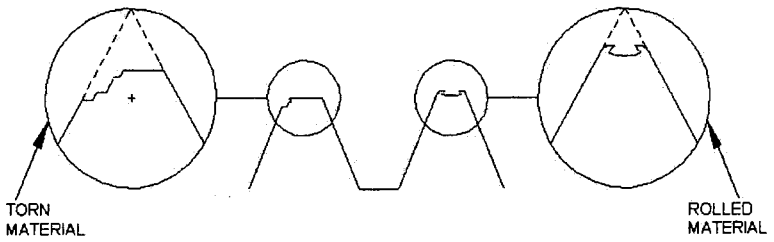

Fig. 6-5-1

6.6 Thinned material and/or burrs resulting from incomplete threads must be removed to an extent such that only tight burrs remain (see 4.1.1 for exceptions) and proper engagement of the applicable thread gage is allowed.

7.0 CLEANING

7.1 Finished parts must be free from all particulate and/or foreign matter when viewed using the applicable magnification specified. (See Paragraphs 4.0 and 6.2.)

Note: Particular attention must be paid to blind holes to make sure that all particulates, etc. have been removed.

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8.0 QUALITY ASSURANCE PROVISIONS

8.1 Quality Control

The manufacturer must maintain sufficient inspection and quality control to ensure that the deburring and cleaning processes specified herein are in strict accordance with the requirements of this specification.

8.2 Inspection Tests

8.2.1 Visual Examination

All processed parts will be subjected to visual examination to determine compliance with requirements of this specification. Examination will be as specified by the types listed in Paragraphs 4.0 and 6.2.

8.3 Rejection

Failure of a finished part to meet any of the requirements of this specification, either at Incoming Inspection or after being submitted to any further processes, will be cause for rejection of the part. Metal Bellows reserves the right to reject any or all such parts.

9.0 PACKAGING

9.1 It is the responsibility of the supplier to ensure that all purchased materials arrive at Metal Bellows damage free.