8tree and Gulfstream Fastener Flushness Inspection

2 team members required.

Within the allocated 10 minutes, complete tasks in order:

1) Evaluate Fastener Flushness using Traditional Method

8 Minutes

2) Evaluate Fastener Flushness using fastCHECK

2 minutes

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Task #1: Evaluate Fastener Flushness using Traditional Method

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Provided Tools

1) Depth Gauge



(Figure 1)

Task Process

Step 1: Determine 'out of limit' suspects by finger test

- Perform touch test on all fasteners among the panel to identify the 'too high & too low' candidates (Figure 2). Exact number of fasteners to be inspected will be announced on event day.

- Record the location (coordinate) of these fasteners in the Task Card

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Step 2: Determine the High point (H)

- Zero out the depth gauge with the provided Calibration Block- Using the provided tripod depth gauge, select either the digital or dial gaague. measure the height at 4 locations on the fastener head – 12 o'clock, 3 o'clock, 6 o'clock and 9 o'clock
  - Pick the highest measurement among 4 numbers and record the High (H) measurement (in inches) on the Task Card (4 decimal points)

Step 3: Determine the Low point (L)

- From the measured height at 4 locations on the fastener head – 12 o'clock, 3 o'clock, 6 o'clock and 9 o'clock, pick the lowest measurement among 4 numbers and record the Low (L) measurement (in inches) on the Task Card (4 decimal points)

Step 4: Determine Conformity of each fastener using High (H) and Low (L) measurements.

- A conformity/flushness tolerance spec will be provided during the competition.
  - If High point (H) is above a certain threshold (For example H > 0.002"), then the fastener is "Too High"
  - If Low point (L) is below a certain threshold (For example L < -0.006"), then the fastener is "Too Low"

- - Update the fastener map on the task card

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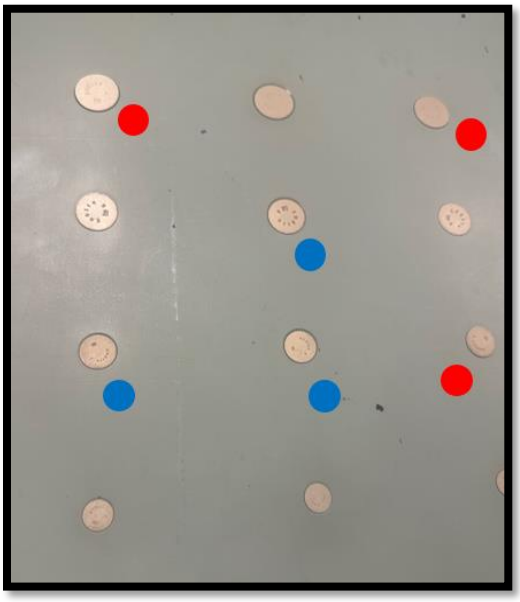
Figure Guides



(Figure 2)



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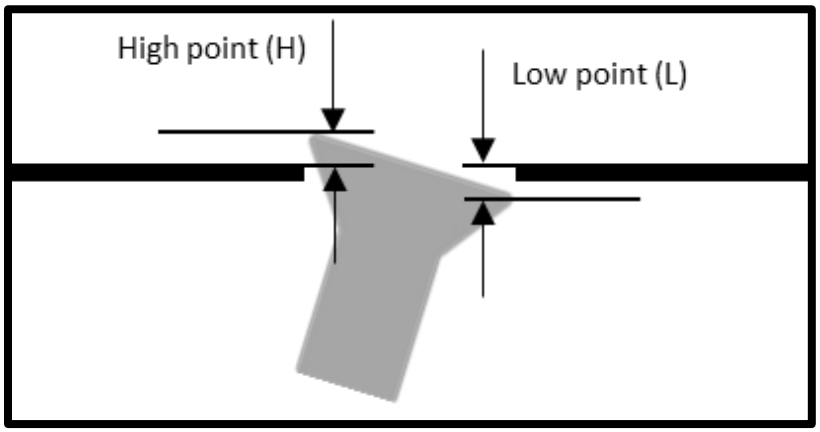
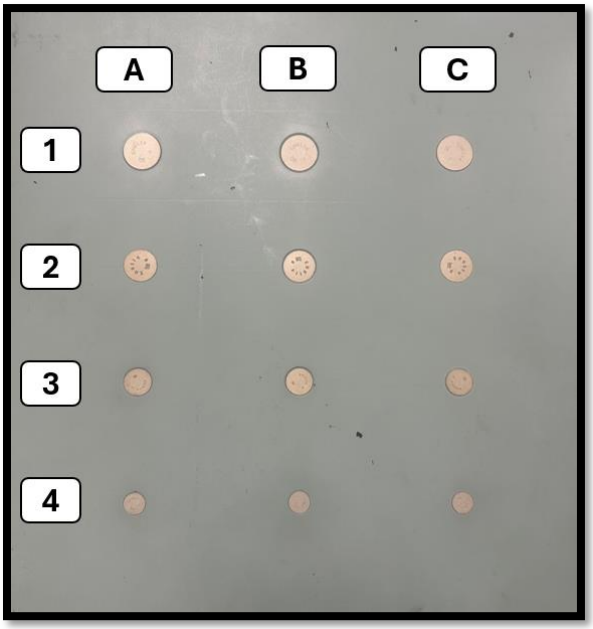


(Figure 4)



(Figure 5)

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Task Card Template

Task Card

Fasteners Measured By:

Location (Coordinate)	**High (H)** *4 decimal points in inch*	**Low (L)** *4 decimal points in inch*	**Conformity** (Too High/Low)

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Example Completed Task Card

Task Card

Fasteners Measured By: Mike

Location (Coordinate)	**High (H)** *4 decimal points in inch*	**Low (L)** *4 decimal points in inch*	**Conformity** (Too High/Low)
A2	0.0066	-0.0044	Too High
A4	0.0027	-0.0022	Too Low
B1	0.0085	0.0044	Too High
B3	0.0034	-0.0009	Too Low
C2	0.0116	0.0099	Too High

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Task #2: Evaluate Fastener Flushness using fastCHECK

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Provided Tools

1) fastCHECK Inspection Tool

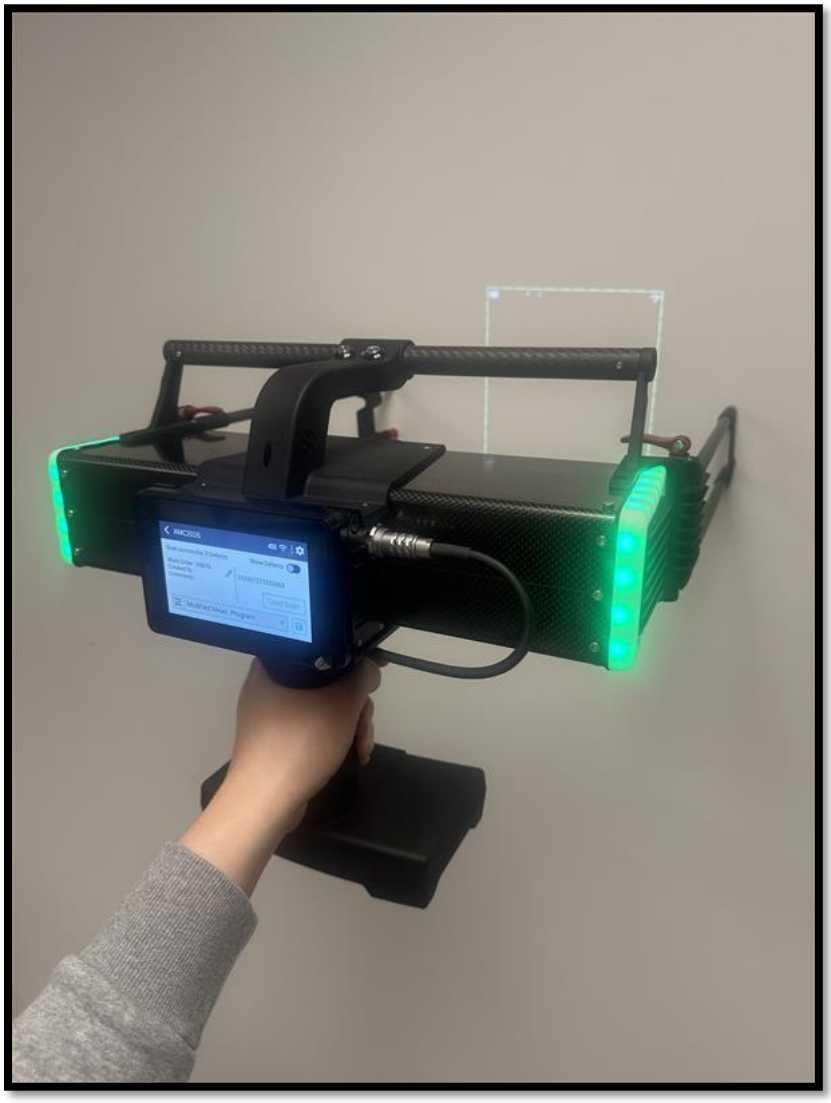

Figure 6

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Task Process

Step 1: Take a Scan using fastCHECK

- Position the fastCHECK tool by leaning the tip(s) of the positioning frame on the fastener panel. (Figure 7)
- Take a scan by pulling the trigger. (Figure 8)
- After taking a scan, pay attention to the following:
  - While the blue lights are flickering on the panel, the user must hold fastCHECK stable (~200 milliseconds)
  - Approximately 2 seconds after the blue flickering light, the fastener measurements will be projected on the surface of the panel skin
  - Ensure that the fastener head is measured correctly. A "Save successful" message will appear at the top of the results image.
  - You will see an image with 3 colors (Figure 9):
    - Green circles → Fasteners are within tolerance
    - Red circles → Fasteners are "Too High"
    - Blue circles → Fasteners are "Too Low"
  - You will also see the High (H) and Low (L) points measured by fastCHECK

Step 2: Confirm Conformity

- With the help of your teammate, refer to the Task Card, and check if the conformity results from Task #1 (Evaluation with Traditional Method) are correct, using the red and blue result projection from Task #2 (Evaluation with fastCHECK)

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Figure Guides

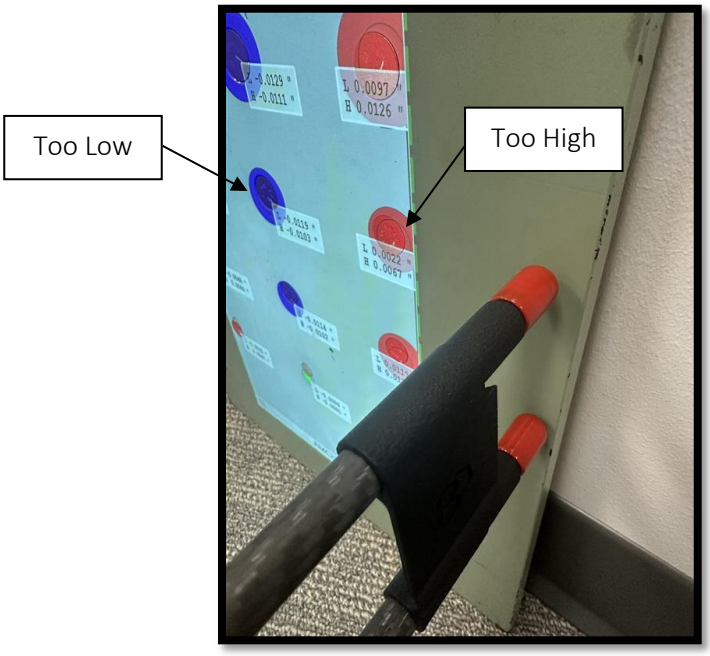

Figure 7



Figure 8

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Figure Guides *(Continued)*

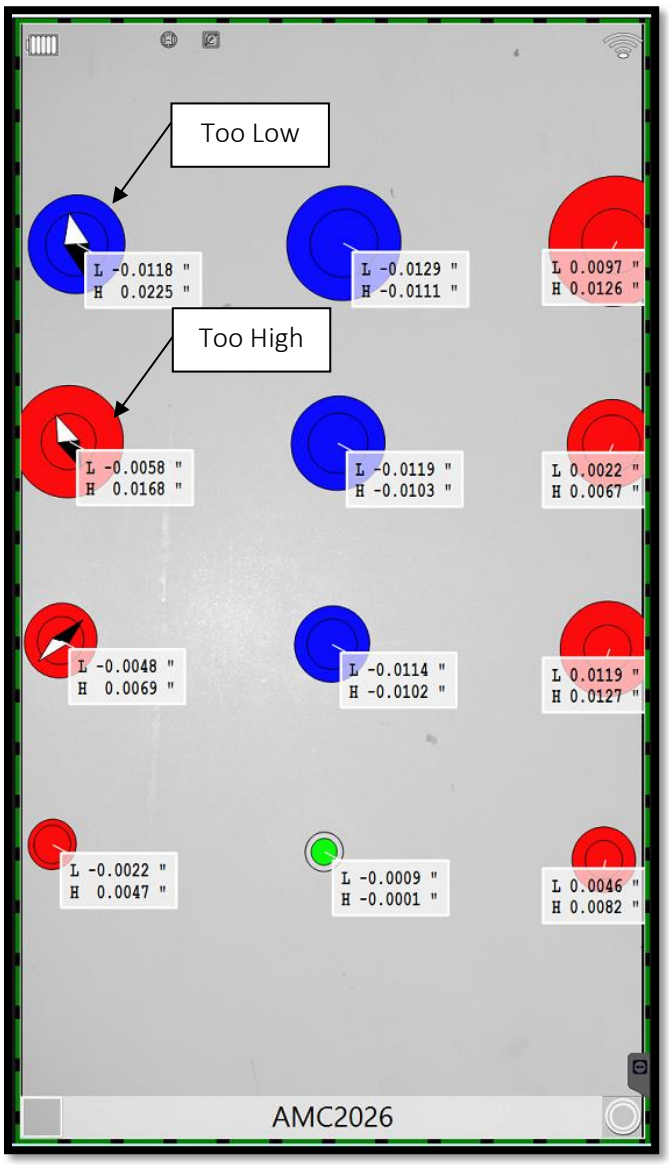

Figure 9

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