

Brown Zane

From: Zakar Frank
Sent: Thursday, August 10, 2023 3:25 PM
To: Brown Zane
Subject: RE: CEN23LA344 - fractured bolts

Zane,

The head of the bolt that was submitted as representing NAS158A105 was marked "NAS 158 106 R".
The head of the bolt that was submitted as representing NAS 156-160 was marked "**NAS 154-59**".

The NAS 154 through NAS 158 series bolts specify tensile strength of 160-180 KSI (36 – 40 HRC hardness).

The hardness of the NAS 154 bolt was 36 HRC, within specification.
The hardness of the NAS 158 bolt was 37 HRC, within specification.

Regards
Frank

From: Brown Zane [REDACTED]
Sent: Thursday, August 10, 2023 1:38 PM
To: Zakar Frank [REDACTED]
Subject: RE: CEN23LA344 - fractured bolts

Thanks Frank!

Is there any chance you can do a hardness test to verify that the bolts meet spec?

The return address is correct.

Best,



Zane Brown
Aviation Accident Investigator
Denver, Colorado
Office: [REDACTED]
Web: www.nts.gov

Response Operations Center (24/7): 1-844-373-9922
Work Hours: Monday-Thursday, 0700-1600 Mountain Time

From: Zakar Frank [REDACTED]
Sent: Thursday, August 10, 2023 11:29 AM
To: Brown Zane [REDACTED]
Subject: CEN23LA344 - fractured bolts

Zane,

Our NTSB Materials Laboratory received your fractured bolts (NAS158A105 and NAS156-160) and information regarding this case was logged into our lab database.

You asked our lab to look at the fracture faces of the submitted bolts and determine the mode of fracture.

Bench binocular microscope examination of the bolts revealed the fracture faces exhibited fracture features typical of overstress separation, with no evidence of fatigue cracking.

This notice will serve as an e-mail response to your inquiry.

Please let me know if you have any further questions.

Regards

Frank Zakar
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National Transportation Safety Board
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