



A Textron Company

TECHNICAL BULLETIN

214ST-90-112

16 March 1990

Revision A, 30 August 2011

**MODEL AFFECTED:** 214ST

**SUBJECT:** ROOF FRAME P/N 214-031-516-131, -132, -139,  
AND -140, REPAIR/MODIFICATION OF

**HELICOPTERS AFFECTED:** Serial number 28101 through 28200

**COMPLIANCE:** At the customer's option prior to identification of a crack.

Frame should be repaired before crack reaches 1.0 inch in length.

It is recommended this bulletin and Technical Bulletin 214ST-89-102 be accomplished concurrently.

**DESCRIPTION:**

Several reports have been received of circumferential cracks in subject frame. The cracks originated at the forward crew door post to roof frame attachment. Failure to identify and repair the crack can result in frame cracks requiring major repair.

Modification of the roof frame before cracking occurs will reduce the probability of an unscheduled repair.

Revision A to this bulletin changes the part number of the repair doublers used in this repair. The old part number doublers and the new part number doublers are identical except for the part number; repairs/modifications performed with the original part numbers are acceptable to Bell helicopter. Other bulletin changes include update of the materials list and minor format/text/illustration revisions.

**APPROVAL:**

The engineering design aspects of this bulletin are FAA/ODA approved.

## CONTACT INFO:

For any questions regarding this bulletin, please contact:

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## MANPOWER:

Approximately 30.0 man-hours are required to complete this bulletin. This time will be reduced to approximately 20 hours if accomplished concurrently with TB 214ST-89-102. These estimates are based on hands-on time, and may vary with personnel and facilities available.

## WARRANTY:

There is no warranty credit applicable for parts or labor associated with this bulletin.

## MATERIAL:

### Required Material:

The following material is required for the accomplishment of this bulletin and may be obtained through your Bell Helicopter Textron Supply Center.

<u>Part Number</u>	<u>Nomenclature</u>	<u>Qty per Side</u>	<u>Qty per Ship</u>
214-031-516-145	Doubler	1	1
214-031-516-146	Doubler	1	1
100-048-5-5	Hi-Lok	1	2
30-015-5	Collar	1	2
NAS1399CFA3A3	Rivet	4	8
MS20615-4MP3	Rivet	13	26
NAS9304B-4-01	Rivet	8	8
NAS9307ML-4-01	Rivet	28	56
NAS9307ML-5-01	Rivet	2	4
NAS9307ML-5-02	Rivet	8	16
NAS9307ML-5-03	Rivet	10	20
NAS9307ML-5-04	Rivet	2	4
NAS9307ML-5-06	Rivet	1	2

### Consumable Material:

The following material is required to accomplish this bulletin, but may not require ordering, depending on the operator's consumable material stock levels. This material may be obtained through your Bell Helicopter Textron Supply Center.

<u>Part Number</u>	<u>Nomenclature</u>	<u>Qty per Side</u>	<u>Qty per Ship</u>	<u>Reference*</u>
MIL-PRF-23377TI,CLC	Primer Kit	A/R	A/R	C-204
AMS-S-8802 6OZ	Sealant	A/R	A/R	C-308
299-947-100TY2CL2G50	Adhesive	A/R	A/R	C-317

\* C-XXX numbers refer to the consumables list in BHT-ALL-SPM Standard Practices Manual

**SPECIAL TOOLS:**

None required

**WEIGHT AND BALANCE:**

	<u>Weight</u>	<u>Arm</u>	<u>Longitudinal Moment</u>	<u>Arm</u>	<u>Lateral* Moment</u>
Left side	+0.2 Lbs	114.6 in.	+23.0 in-Lbs	-33.3 in.	-7.0 in-Lbs
Right side	+0.2 Lbs	114.6 in.	+23.0 in-Lbs	33.3 in.	7.0 in-Lbs
Both	+0.4 Lbs	114.6 in.	+46.0 in-Lbs	0	0

\* In lateral calculations, - is left and + is right.

**ELECTRICAL LOAD DATA:**

Not affected

**REFERENCES:**

BHT-214ST-IPB Illustrated Parts Breakdown  
 BHT-214ST-MM Maintenance Manual  
 BHT-ALL-SPM Standard Practices Manual  
 BHT-ALL-SRM Structural Repair Manual

**PUBLICATIONS AFFECTED:**

None affected

**ACCOMPLISHMENT INSTRUCTIONS:**

-NOTE-

If working concurrently with TB 214ST-89-102, work TB 214ST-89-102 steps as noted in brackets [            ].

Left side Modification/Repair:

[Do TB 214ST-89-102 steps 1 thru 11].

1. Locate repair doubler P/N 214-031-516-145 over roof frame P/N 214-031-516-131 as shown in Section B-B of Figure 1. Mark end with felt tip marker.
2. Remove rivets in area to be covered with repair doubler and handle.

[Do TB 214ST-89-102 steps 12 thru 18].

3. Nest repair doubler over frame with 1.00 inch holes aligned and clamp in place. Verify fastener ED, then drill doubler to match all existing fastener locations shown in figure. Stop drill any crack in frame.

-NOTE-

- a. Trim notch edge if required to clear vertical legs of casting. Trim must be held to a minimum.
  - b. On s/n 28160 and sub., locate holes by fabricating 2 heavy aluminum foil templates. Form 1<sup>st</sup> foil to top and second foil to bottom surface of roof frame. Punch holes through foil with ballpoint pen or pencil at fastener locations. Transfer locations to doubler. Use 1.00 dia. holes for locators.
4. Layout new rivet locations. Progressively drill (number 30 for (-4) rivets and number 20 drill for (-5) rivets). Cleco parts together as they are drilled. See Section A-A for rivet pattern in lower web of frame (outboard rivet locations established during TB 214ST-89-102 incorporation). See section B-B for rivet pattern in upper web. Trim ends of doubler as shown.

[Do TB 214ST-89-102 steps 19 thru 25, skip step 26].

5. Using Tedlar or Mylar tape, mask off frame and structure around doubler.
6. Remove doubler from frame.
7. Deburr all holes and break all sharp edges.
8. Remove finish from frame in masked-off area using 240 grit or finer paper for enamel and 370 grit or finer for primer. Clean surface with MEK until clean white cloth is not stained while drying MEK from surface.
9. Clean faying surface of repair doubler using procedure step 8 above.

-NOTE-

The following steps, 10 through 17 must be completed within 45 minutes after starting to mix adhesive.

10. Mix adhesive (C-317) in accordance with manufacturer's instructions.
11. Apply thin coat of adhesive (C-317) to 1) marked-off area of frame and 2) faying surface of doubler.
12. Assemble parts being certain rivet holes are aligned. Cleco in place.
13. Install two NAS9307ML-5-04, one NAS9307ML-5-06, and one 100-048-5-5 fasteners through door post fitting, doubler, and frame.
14. Install remaining rivets shown in Section A-A.

[Do TB 214ST-89-102 steps 27 and 28].

15. Install rivets in top web except rivets securing handle.
16. Install rivets through flange of doubler, frame, and roof skin.

[Do TB 214ST-89-102 step 29].

17. Coat faying surface of handle and doubler with adhesive (C-317) and rivet handle in place.
18. Remove excess adhesive and allow to cure at or above 68 degrees Fahrenheit for 24 hours.

19. Seal all bond line edges with sealant (C-308).

[Do TB 214ST-89-102 steps 30 and 31].

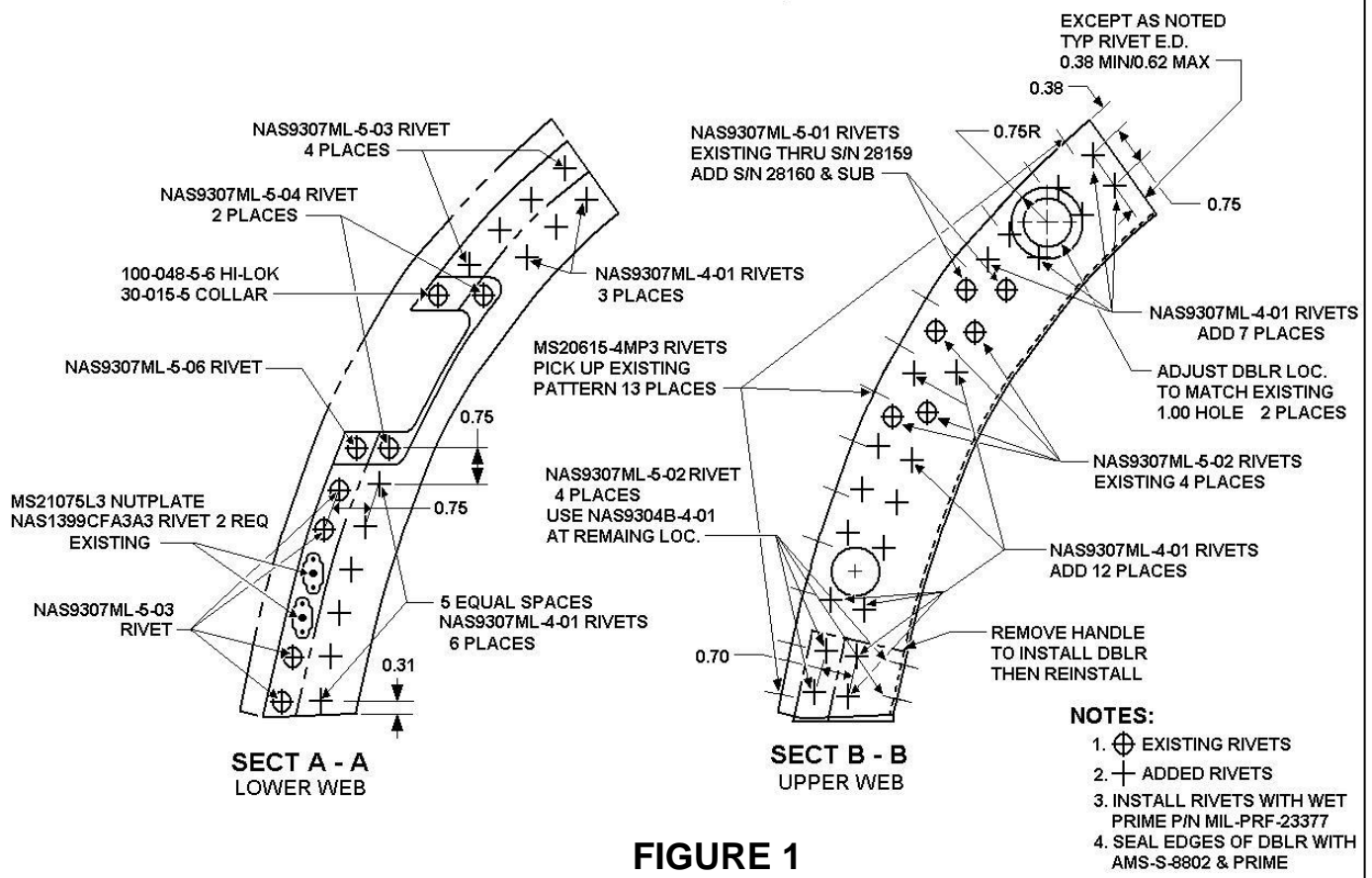
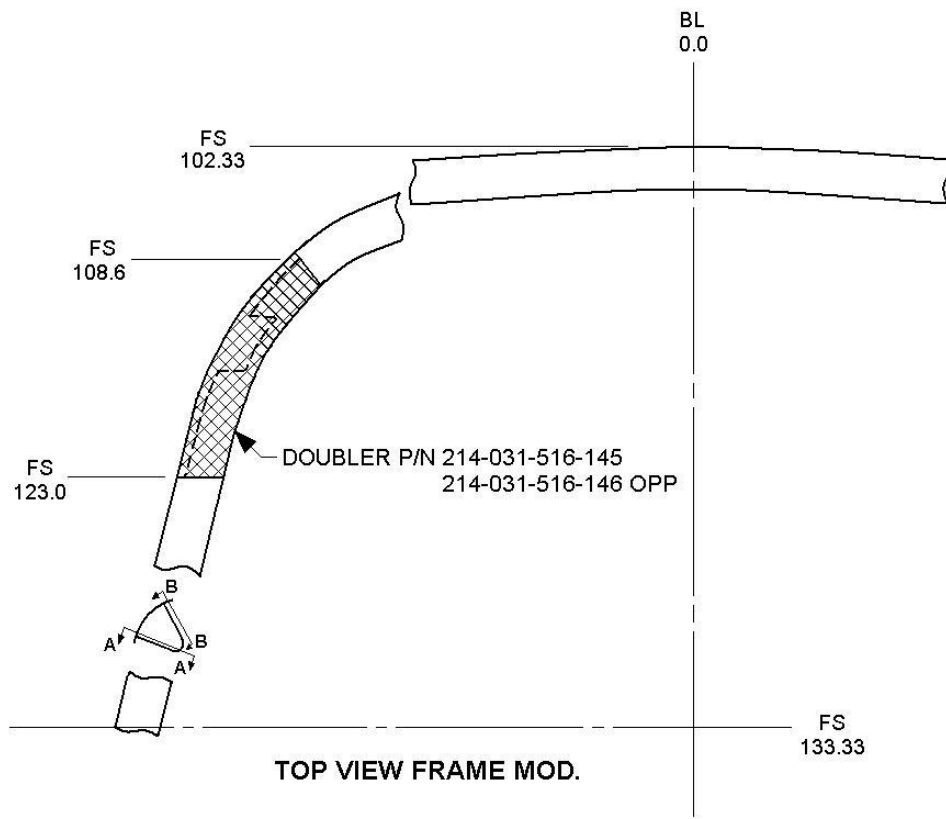
20. Prime repair area with primer (C-204) and finish paint to match helicopter interior.

[Do TB 214ST-89-102 steps 32 and 33].

Right side Modification/repair:

Repeat steps 1 through 20 on right side using doubler P/N 214-031-516-146.

21. Make an entry in helicopter historical service records indicating compliance with this Technical Bulletin.



**FIGURE 1**