

TASK PERFORMANCE SHEET

NASA - LYNDON B. JOHNSON SPACE CENTER

1. PROJECT CODE SAAMS	2. JPIC AMS	3. NEED DATE 11/12/09	4. CRITICALITY Crit 3	5. TPS NO. 2A0920141	6. MOD SHEET NUMBER(S)	7. PAGE 1 of 10		
8. TYPE <input checked="" type="checkbox"/> A CONFIGURATION CHANGE <input checked="" type="checkbox"/> PERMANENT <input type="checkbox"/> TEMPORARY <input type="checkbox"/> B NONCONFIGURATION CHANGE				20. ORG. ESCG	21. CONTRACT NO./JOB NO. NNJ05HI05C			
9. SHORT TITLE Diagonal Strut Flight Installation				22. ORIGINATOR John Heilig/ESCG	DATE 12/9/09			
10. PURPOSE To Perform the final planned installation of the two(2) Diagonal Struts SEG39315741-301 onto the Upper USS-02 Assembly SEG39135726-301.				APPROVALS (Printed or Typed and Signed)				
11. REFERENCE DOCUMENTS SEG39135726 SFG38116959				23. PROJECT ENGINEER John Heilig	DATE			
12. ADP UPDATE <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> N/A				13. TIME/CYCLE <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	14. HAZARDOUS <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	15. HAZARD ANALYSIS N/A		
16. DR LOG IPS STEP DR NUMBER		17. QARC ORIGINAL STAMP		18. OPEN STAMP AND DATE	27. DATE			
					28. DATE			
				19. FINAL ACCEPTANCE STAMP AND DATE	29. CONTRACT QUALITY ENGINEER Steve Caldwell			
					30. GOVERNMENT QUALITY ENGINEER			
HARDWARE / SOFTWARE / FIRMWARE IDENTIFICATION				Additional items in Block 49 <input type="checkbox"/>				
31. ITEM	32. PART NAME	33. PART NO. / DRAWING NO.	34. SERIAL NO.	35. LOT NO.	36. QTY	37. UNIT	38. CLASS	39. SHELF LIFE
1	Upper USS-02 Assembly (UUSS-02)	SEG39135726- 301	1001	NA	1	Ea	I	
2	Washer, Flat	NAS1149E1632R	NA	9020-2/7-03	4	Ea	I	
3	Washer, CSK	NAS1587-16C	NA	N5206	4	Ea	I	
4	Nut, Self Locking	NAS1805-16	NA	5174422-000	4	Ea	I	
5	Pin, Clevis, VC, Diagonal Bracket	SDG39135744-003	1003,1004	NA	2	Ea	I	

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9. SHORT TITLE Diagonal Strut Flight Installation	5. TPS NO. 2A0920141	6. MOD SHEET NUMBER(S)	7. PAGE 2 of 10
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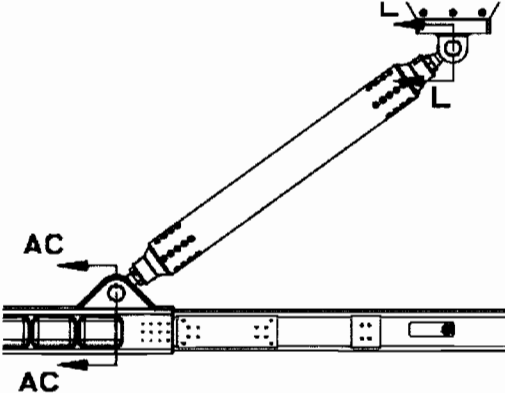
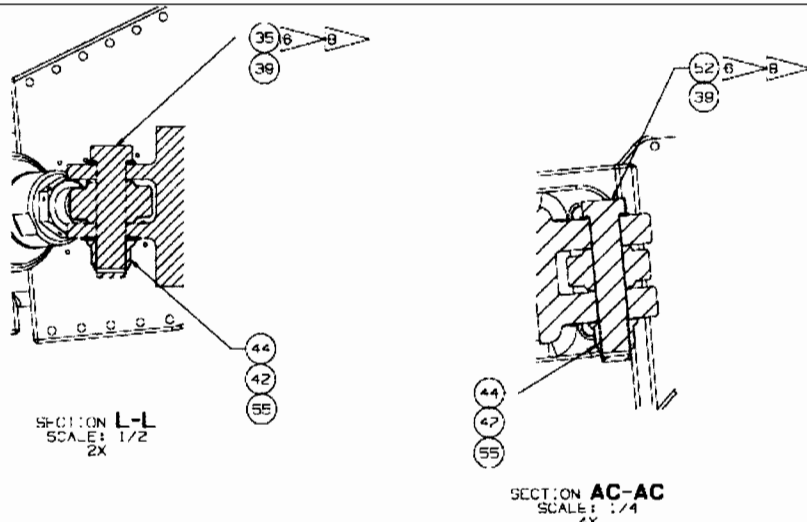
31. ITEM	32. PART NAME	33. PART NO. / DRAWING NO.	34. SERIAL NO.	35. LOT NO.	36. QTY	37. UNIT	38. CLASS	39. SHELF LIFE
6	Pin, Clevis, USS-02, Diagonal Bracket	SDG39135744-001	1001,1002	NA	2	Ea	I	
7	Cotter Pin Shield	SDG39135746-001	1001,1002	NA	2	Ea	I	
8	Cotter Pin, .090 x 1.50L	MS24665-306	NA	055052404A	4	Ea	I	
9	Washer, Flat, Plain	NAS1149EN432R	NA		4	Ea	I	
10	Screw, Pan Head	NASM8100PU8	NA		4	Ea	I	
11	Diagonal Strut Assembly	SEG39135741-301	1001,1002	NA	2	Ea	I	
12	Super Koropon Primer Base	515-700	NA		1	Ea	I	
13	Grease	Braycote 601EF	NA		1	Ea	I	

CALIBRATED TOOLS REQUIRED			Additional items in Block 49 <input type="checkbox"/>		
40. MIP	41. ITEM	42. TOOL NAME / PART NUMBER	43. CALIBRATION NUMBER	44. CALIBRATION DUE DATE	45. QA / DV
		Torque Wrench			
		Torque Wrench			
		Torque Wrench			
		Torque Wrench			

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9. SHORT TITLE Diagonal Strut Flight Installation			5. TPS NO. 2A0920141	6. MOD SHEET NUMBER(S)	7. PAGE 3 of 10			
46. OPER SEQ. NO.	47. GMIP	48. MIP	49. OPERATIONS (Print, Type, or Write Legibly)			50. TECH	51. QA DV	52. GQA
<p>① This TPS performs the final flight installation of the Diagonal Strut Assemblies, SEG39135741-301 into the Upper USS-02 Assembly SEG39135726-301.</p> <p>① Note: ESCG Designated Verifiers (DV) shall witness and/or verify all torque applications, confirm the Running (or Run-in) and Final torques, and proper documentation of these torques relative to this procedure and any other sub-process relative to this task. Designated Verifier (DV) shall coordinate with ESCG quality personnel for any additional verification of steps that would normally require a Mandatory Inspection Point or (MIP). ESCG Designated Verifier shall insure compliance with NASA/JSC NT-CWI-001 work instruction.</p> <p>⚠ WARNING: Rotation of the USS is prohibited until the Diagonal Struts are reinstalled. Tag the RAS to prevent rotation of the USS.</p>								
1.			<p>Remove the two (2) Diagonal Strut Assemblies SEG39135741-301(CI). Using Figure 1 and 2 as reference, nuts (42) and washers (44) from both ends of each diagonal strut as shown in Figure 1. Bag and retain these parts for reuse. Take care to support the diagonal struts during removal of the pins (35) and washers (39) to prevent damage to the struts or USS.</p> <p>Two (2) Washer, Flat P/N NAS1149E1632R – (CI) Lot # 9020-2/7-03 Two (2) Washer, CSK, P/N NAS1587-16C - (CI) Lot # N5206 Two (2) Nut, Self Locking, P/N NAS1805-16 - (CI) Lot # 131034 One (1) Pin, Clevis, VC, Diagonal Bracket P/N SDG39135744-003 - (CI) SN 1003,1004 One (1) Pin, Clevis, USS-02, Diagonal Bracket P/N SDG39135744-001 - (CI) SN 1001,1002</p>					

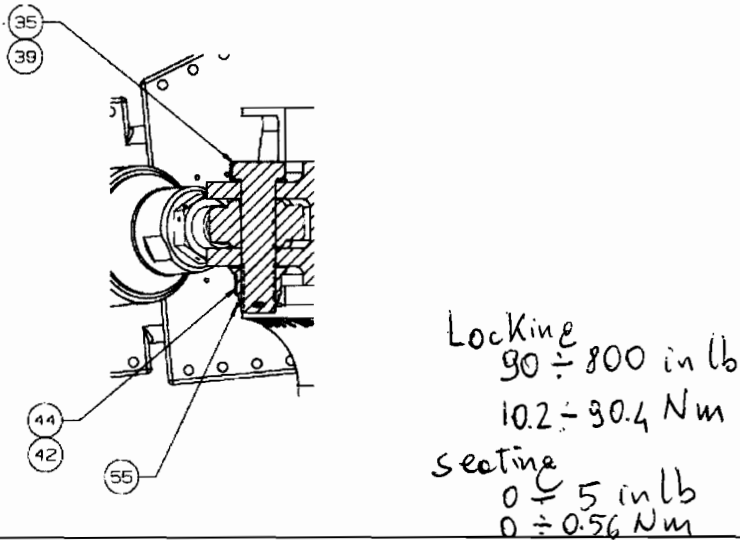
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46. OPER SEQ. NO.	47. GMIP	48. MIP	49. OPERATIONS (Print, Type, or Write Legibly)			50. TECH	51. QA DV	52. GQA
								
			Figure 1					
								
			Figure 2-1			Figure 2-2		

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9. SHORT TITLE Diagonal Strut Flight Installation			5. TPS NO. 2A0920141	6. MOD SHEET NUMBER(S)	7. PAGE 5 of 10		
46. OPER SEQ. NO.	47. GMIP	48. MIP	49. OPERATIONS (Print, Type, or Write Legibly)		50. TECH	51. QA DV	52. GQA
2.			Store the Diagonal Strut Assemblies, pins and fasteners for reuse later in this TPS.				
			<p>① Collaboration will install Single Layer Insualtion (SLI) per ATS TCS090930-082 and TCS090930-0 and collaboration will install Main Radiators per ATS TCS081115-26 and TCS081115-27, documented in another TPS.</p>				
3.			<p>Obtain the following parts for reinstallation of the two (2) Diagonal Struts</p> <p>Four (4) Washer, Flat P/N NAS1149E1632R – (CI) Lot # 9020-2/7-03 Four (4) Washer, CSK, P/N NAS1587-16C - (CI) Lot # N5206 Four (4) Nut, Self Locking, P/N NAS1805-16 - (CI) Lot # 5174422-000 Two (2) Pin, Clevis, VC, Diagonal Bracket P/N SDG39135744-003 - (CI) SN 1003,1004 Two (2) Pin, Clevis, USS-02, Diagonal Bracket P/N SDG39135744-001 - (CI) SN 1001,1002 Two (2) Cotter Pin Shield, SDG39135746-001 (CI) SN 1001, 1002 Four (4) Cotter Pin, .090 x 1.50L , MS24665-306 Lot# <u>C55052404A</u> Four (4) Screw, Pan Head .112-40 UNJC-3A x .50L, NASM8100PU8 Lot# _____ Four (4) Washer, Flat, Plain ID .215 x OD .312 .x .032 THK, NAS1149EN432R Lot# _____</p>				
			<p>① Note: Obtain four (4) new nuts (NAS1805-16 (CI)) as previously used ones would have low locking torque.</p>				
4.			<p>As shown in Figure 3, install the two (2) Diagonal Strut Assemblies to FLIGHT VC by installing one (1) Washer, Flat P/N NAS1149E1632R(CI), item 42; one (1) Washer, CSK, P/N NAS1587-16C(CI), item 39; one (1) Nut, Self Locking, P/N NAS1805-16(CI), item 44; and one (1) Pin, Clevis, VC, Diagonal Bracket P/N SDG39135744-003(CI), item 35. Seal fasteners as per SEG39135726 and NASA/JSC PRC-4004. Use grease on threads</p> <p>Super Koropon PN <u>601EP</u> Lot# <u>135999</u> Exp. Date <u>06/01/28</u> Braycote Grease PN <u>515-700</u> Lot# <u>503714</u> Exp. Date <u>1/2010</u></p>				

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9. SHORT TITLE Diagonal Strut Flight Installation			5. TPS NO. 2A0920141	6. MOD SHEET NUMBER(S)	7. PAGE 6 of 10											
46. OPER SEQ. NO.	47. GMIP	48. MIP	49. OPERATIONS (Print, Type, or Write Legibly)		50. TECH	51. QA DV	52. GQA									
			 <p>Locking 90 ÷ 800 in lb 10.2 ÷ 90.4 Nm</p> <p>Seating 0 ÷ 5 in lb 0 ÷ 0.56 Nm</p>													
			Figure 3													
5.		MIP	<p>Torque the fasteners installed in the previous step per Upper USS-02 Assembly drawing SEG39135726-301. Locking torque shall be 90-800 in-lb. Final torque shall be 0.0 to 5.0 in-lb above locking torque. Record the locking and final torque. Bolt 1 is Y+(Wake), Bolt 2 is Y- (Stbd)</p> <p>Torque Wrench - Locking PN <u>P 3100</u> M# <u>213 885</u> Cal Due Date <u>3/22/2010</u> Torque Wrench - Final PN <u>P 3100</u> M# <u>213 885</u> Cal Due Date <u>3/22/2010</u></p> <table border="0"> <thead> <tr> <th>Bolt</th> <th>Locking Torque</th> <th>Final Torque</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td><u>412</u></td> <td><u>415</u></td> </tr> <tr> <td>2.</td> <td><u>287</u></td> <td><u>290</u></td> </tr> </tbody> </table>		Bolt	Locking Torque	Final Torque	1.	<u>412</u>	<u>415</u>	2.	<u>287</u>	<u>290</u>			
Bolt	Locking Torque	Final Torque														
1.	<u>412</u>	<u>415</u>														
2.	<u>287</u>	<u>290</u>														
6.			Install Cotter Pin, Item 55, MS24665-306 into each pin, item, 35													

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9. SHORT TITLE Diagonal Strut Flight Installation			5. TPS NO. 2A0920141	6. MOD SHEET NUMBER(S)	7. PAGE 7 of 10			
46. OPER SEQ. NO.	47. GMIP	48. MIP	49. OPERATIONS (Print, Type, or Write Legibly)			50. TECH	51. QA DV	52. GQA
7.			<p>As shown in Figure 4, install other end of the two (2) Diagonal Strut Assemblies to the UUSS-02 by installing one (1) Washer, Flat P/N NAS1149E1632R(CI), item 42; one (1) Washer, CSK, P/N NAS1587-16C(CI), item 39; one (1) Nut, Self Locking, P/N NAS1805-16(CI), item 44; and one (1) Pin, Clevis, USS-02, Diagonal Bracket P/N SDG39135744-002(CI), item 52. Seal fasteners as per SEG39135726 and NASA/JSC PRC-4004. Use grease on threads</p> <p>Super Koropon PN <u>515-700</u> Lot# <u>500014</u> Exp. Date <u>JAN 2010</u> Braycote Grease PN <u>601- EF</u> Lot# <u>135999</u> Exp. Date <u>JUNE 02 2008</u></p> <p style="text-align: center;">Figure 4</p>					
8.		MIP	<p>Torque the fasteners installed in the previous step per Upper USS-02 Assembly drawing SEG39135726-301. Locking torque shall be 90-800 in-lb. Final torque shall be 0.0 to 5.0 in-lb above locking torque. Record the locking and final torque. Bolt 1 is Y+(Wake), Bolt 2 is Y-(Stbd)</p> <p>Torque Wrench - Locking PN <u>93100</u> M# <u>213885</u> Cal Due Date <u>3/22/2010</u></p>					

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46. OPER SEQ. NO.	47. GMIP	48. MIP	49. OPERATIONS (Print, Type, or Write Legibly)	50. TECH	51. QA DV	52. GQA
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Torque Wrench - Final PN P3100 M# 213885 Cal Due Date 3/22/2010

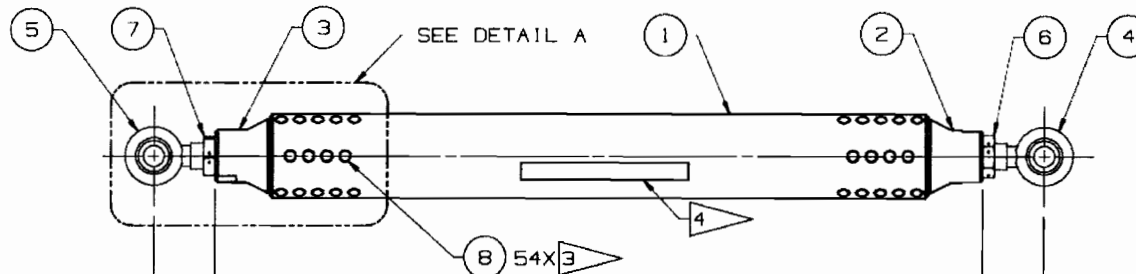
Bolt	Locking Torque	Final Torque
1.	<u>361</u>	<u>363</u>
2.	<u>466</u>	<u>470</u>

9. Install Cotter Pin, Item 55, MS24665-306 into each pin, item, 52

① The following step can be worked out of order.

10. MIP Adjust Diagonal Struts to the length required to install both pins. Torque the Diagonal Struts nuts, items 6,7 per SFG38116959. Torque should be 45-55 in-lb. Use grease on threads.

5.1 ÷ 6.2 Nm



Braycote Grease	PN <u>601CF</u>	Lot# <u>135499</u>	Exp. Date <u>06/02/28</u>
Super Koropon	PN <u>515-700</u>	Lot# <u>500014</u>	Exp. Date <u>01/2010</u>

Torque Wrench - Locking	PN <u>3100</u>	M# <u>213885</u>	Cal Due Date <u>3/22/2010</u>
Torque Wrench - Final	PN <u>3100</u>	M# <u>213885</u>	Cal Due Date <u>3/22/2010</u>

Y+(Wake)	Final Torque	
NAS509L-20C.	<u>49</u>	(item 7)
NAS509-20C.	<u>46</u>	(item 6)
Y- (Std) Bolt	Final Torque	

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9. SHORT TITLE Diagonal Strut Flight Installation			5. TPS NO. 2A0920141	6. MOD SHEET NUMBER(S)	7. PAGE 9 of 10		
46. OPER SEQ. NO.	47. GMIP	48. MIP	49. OPERATIONS (Print, Type, or Write Legibly)		50. TECH	51. QA DV	52. GQA
11.		MIP	<p style="text-align:center;">NAS509L-20C. <u>51</u> (item 7) NAS509-20C. <u>50</u> (item 6)</p> <p>Install Cotter Pin Cap, Item 29 from SEG39135726-301 onto item 52 for both Diagonal Struts. Use fasteners, qty (4), Screw, Pan Head .112-40 UNJC-3A x .50L ,NASM8100PU8, and qty (4) Washer, Flat, Plain , NAS1149EN432R. Locking torque shall be 0.5-5.0 in-lb. Final torque shall be 7.4-8.7 in-lb above locking torque. Record the locking and final torque. Seal fasteners as per SEG39135726 and NASA/JSC PRC-4004. Use grease on threads.</p> <p>Braycote Grease PN _____ Lot# _____ Exp. Date _____ Super Koropon PN _____ Lot# _____ Exp. Date _____</p> <p>Torque Wrench - Locking PN _____ M# _____ Cal Due Date _____ Torque Wrench - Final PN _____ M# _____ Cal Due Date _____</p> <p style="margin-left: 40px;">Y+(Wake)Bolt Locking Torque Final Torque 1. _____ _____ 2. _____ _____</p> <p style="margin-left: 40px;">Y- Bolt Locking Torque Final Torque 1. _____ _____ 2. _____ _____</p>				
<p>NOTE: Rotation of the RAS is now acceptable. Follow AMS-CERN standard operating procedures for RAS rotation</p>							
12.			<p>Close this TPS</p> <p style="margin-left: 40px;">$0.5 \div 5.0 \text{ in lb}$ $7.4 \div 8.7 \text{ in lb}$ $0.06 \div 0.56 \text{ Nm}$ $0.84 \div 0.88 \text{ Nm}$</p>				

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1. PROJECT CODE SAAMS	2. JPIC AMS	3. NEED DATE 11/24/09	4. CRITICALITY Crit 3	5. TPS NO. 2A0920141M1	6. MOD SHEET NUMBER(S)	7. PAGE 1 of 3
8. TYPE <input checked="" type="checkbox"/> A CONFIGURATION CHANGE <input checked="" type="checkbox"/> PERMANENT <input type="checkbox"/> TEMPORARY <input type="checkbox"/> B NONCONFIGURATION CHANGE				20. ORG. ESCG	21. CONTRACT NO./JOB NO. NNJ05HI05C	
9. SHORT TITLE Diagonal Strut Flight Installation				22. ORIGINATOR John Heilig/ESCG		DATE 12/9/09
10. PURPOSE To Perform the final planned installation of the two(2) Diagonal Struts SEG39315741-301 onto the Upper USS-02 Assembly SEG39135726-301.				APPROVALS (Printed or Typed and Signed)		
				23. PROJECT ENGINEER John Heilig		DATE
11. REFERENCE DOCUMENTS SEG39135726 SFG38116959				24. DATE		
12. ADP UPDATE <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> N/A				13. TIME/CYCLE <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		25. DATE
14. HAZARDOUS <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				15. HAZARD ANALYSIS N/A		26. DATE
16. DR LOG <u>TPS STEP</u> <u>DR NUMBER</u>		17. QARC ORIGINAL STAMP		18. OPEN STAMP AND DATE		27. DATE
				19. FINAL ACCEPTANCE STAMP AND DATE		28. DATE
				29. CONTRACT QUALITY ENGINEER Steve Caldwell		DATE
				30. GOVERNMENT QUALITY ENGINEER		DATE
HARDWARE / SOFTWARE / FIRMWARE IDENTIFICATION						Additional items in Block 49 <input type="checkbox"/>
31. ITEM	32. PART NAME	33. PART NO. / DRAWING NO.	34. SERIAL NO.	35. LOT NO.	36. QTY	37. UNIT
						38. CLASS
						39. SHELF LIFE
CALIBRATED TOOLS REQUIRED						Additional items in Block 49 <input type="checkbox"/>
40. MIP	41. ITEM	42. TOOL NAME / PART NUMBER		43. CALIBRATION NUMBER	44. CALIBRATION DUE DATE	45. QA / DV

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9. SHORT TITLE Diagonal Strut Flight Installation			5. TPS NO. 2A0920141M1	6. MOD SHEET NUMBER(S)	7. PAGE 2 of 3			
46. OPER SEQ. NO.	47. GMIP	48. MIP	49. OPERATIONS (Print, Type, or Write Legibly)			50. TECH	51. QA DV	52. GQA
1.			Step 4 add: Apply Braycote grease to either the pin or the nut per NASA/JSC PRC-8002 prior to installation.					
2.			Step 6 add. Bend cotter pin.					
3.			Step 7 change: SDG39135744-002 to SDG39135744-001 add: Apply Braycote grease to either the pin or the nut per NASA/JSC PRC-8002 prior to installation.					
4.			Step 9 add: Bend cotter pin to fit under cover.					
5.			Step 10 add: Apply Braycote grease to either the pin or the nut per NASA/JSC PRC-8002 prior to installation.					
6.			Step 11 add: See Figure 4 add: Apply Braycote grease to either the fastener per NASA/JSC PRC-8002 prior to installation.					
7.			Close this MOD.					

