

CEN22FA331

AIRWORTHINESS

Group Chair's Factual Report - Attachment 1

ATP results for the forward LCT; the pitch, roll, yaw, and thrust ILCAs; and the forward and aft pivoting and swiveling UBAs

Component		COLUMBIA HELICOPTERS			
WO #	Part Number NSN	Title CH47 LCT ACTUATOR 145CS114 Initial Test (1.7 HRS)		TC # ELE-6740-984302	
Date	Serial #			Rev / Date 0 /	
WO Description		TT / TSN /	TSO	Qty / Pos /	
A. Tools/Equipment CHI CUSTOMER REQUEST PERFORMANCE TEST BE COMPLETED PRIOR TO DISASSEMBLY OF UNIT TO DETERMINE EXTENT OF REPAIR REQUIRED					
TASK				MECH	INSP
1. Final Test of Part:					
516408-8-1 / FWD 516408-9-1 / AFT					
2. Ref 4-1 c. Limit switch settings					
A. Retract switch adjustment - Retract position: <u>9.70</u> in.					
Extend switch adjustment - Extend position: <u>10.60</u> in.					
Electric Stroke Length - Stroke Length (Ext-Ret): <u>9</u> in.					
Electric Stroke Center - Actuator length at electric center: <u>Can't perform</u> in.					
3. Ref 4-1 d. Rated load check					
A. With opposing load to actuator - Stroke time: <u>26.85</u> sec.					
- Current draw: <u>7.20</u> amps					
4. Ref 4-1 e. End play check					
A. Measure end play in full extend / retract - Extend: <u>0.00</u> in.					
- Retract: <u>0.00</u> in.					
5. Ref 4-1 f. Variable resistor check					
A. Resistance of Variable Resistor (pins D and E) - Resistance: <u>3083</u> ohms					
Full retract position (pins D and F) - Resistance: <u>9</u> ohms					
Full extend position (pins D and F) - Resistance: <u>1812</u> ohms					

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Figure 1. The forward LCT actuator ATP results. (Note: page 2 of this ATP sheet does not contain any tasks.)

Component		COLUMBIA HELICOPTERS		Title		TC #	
WO #	Part Number NSN	145740000-19		CH-47D FWD PIVOT: TEST (9.5 HRS)		HYD-6740-054213	
Date	Serial #	LPR120573EN				Rev / Date	
						0 /	
WO Description		TT / TSN		TSO		Qty / Pos	
A. Tools/Equipment							
TASK						MECH	INSP
1. SYNCHRONIZE CONTROL VALVES							
Fluid Temp 125°F							
2. TEST ASSEMBLED ACTUATOR PER OVERHAUL MANUAL AND RECORD DATA							
1850psi DIFFERENTIAL PRESSURE							
#1 CC NEUTRAL	#1 CC EXT.	#1 CC RET.					
240	240	225					
#2 CC NEUTRAL	#2 CC EXT.	#2 CC RET.					
250	250	250					
EXTERNAL LEAKAGE							
EXT. 1.7 lbs	RET. 1.4 lbs	VALVE FRICTION TEST		1003 Total			
EXT. .001	RET. .002	TOTAL DEADBAND					
EXT. .122	RET. .125	PRIMARY STOP TRAVEL					
EXT. .252	RET. .252	TOTAL TRAVEL					
#1 EXT. .025	#1 RET. .025	DIFF. PRESSURE INDICATOR TRAVEL					
#2 EXT. .020	#2 RET. .031	DIFF. PRESSURE INDICATOR TRAVEL					
#1 EXT. SEC 1.8	#1 RET. SEC 1.5	DIFF. INDICATOR BUTTON EXT TIME					
#2 EXT. SEC 1.8	#2 RET. SEC 1.5	DIFF. INDICATOR BUTTON EXT TIME					
#1 EXT. 43 spm	#1 RET. 43 spm	RETURN FLOW					
#2 EXT. 40 spm	#2 RET. 43 spm	RETURN FLOW					
EXT. LBS. 56	RET. LBS. 49	JAM FORCE/LOAD					
#1 EXT. SEC 1.5	#1 RET. SEC 2.0	GAIN TEST		Bot 1.5			
#2 EXT. SEC 1.5	#2 RET. SEC 1.9	GAIN TEST		1.9			
CONTROL VALVE LEAKAGE							
LBS. N/A PRELOAD SPRING & PERFORMANCE TEST							
3. FINAL ASSEMBLY							
INSPECT FOR CORRECT INSTALLATION OF STOP PIN (52) AND RETAINING RINGS (50, 47)							
END OF TASK							

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Figure 2. The forward pivoting UBA ATP results.

Component		COLUMBIA HELICOPTERS		TC #																																																										
WO #	Part Number NSN 145H6700+19	Title CH-47D FWD SWIVEL: TEST (9.5 HRS)		HYD-6740-094213																																																										
Date	Serial # WR1808A			Rev / Date 0 /																																																										
WO Description		TT / TSN /	TSO	Qty / Pos /																																																										
A. Tools/Equipment																																																														
TASK				MECH	INSP																																																									
1. SYNCHRONIZE CONTROL VALVES																																																														
2. TEST ASSEMBLED ACTUATOR PER OVERHAUL MANUAL AND RECORD DATA																																																														
<table border="1"> <thead> <tr> <th colspan="3">DIFFERENTIAL PRESSURE</th> </tr> </thead> <tbody> <tr> <td>#1 CC NEUTRAL 160cc</td> <td>#1 CC EXT. 160cc</td> <td>#1 CC RET. 160cc</td> </tr> <tr> <td>#2 CC NEUTRAL 130cc</td> <td>#2 CC EXT. 130cc</td> <td>#2 CC RET. 130cc</td> </tr> <tr> <td colspan="3">EXTERNAL LEAKAGE</td> </tr> <tr> <td>EXT. 1202</td> <td>RET. 1302</td> <td>VALVE FRICTION TEST</td> </tr> <tr> <td>EXT. 201</td> <td>RET. 002</td> <td>TOTAL DEADBAND 003 Total</td> </tr> <tr> <td>EXT. 1241</td> <td>RET. 127</td> <td>PRIMARY STOP TRAVEL</td> </tr> <tr> <td>EXT. 248</td> <td>RET. 248</td> <td>TOTAL TRAVEL</td> </tr> <tr> <td>#1 EXT. 027</td> <td>#1 RET. 030</td> <td>DIFF. PRESSURE INDICATOR TRAVEL</td> </tr> <tr> <td>#2 EXT. 026</td> <td>#2 RET. 027</td> <td>DIFF. PRESSURE INDICATOR TRAVEL</td> </tr> <tr> <td>#1 EXT. SEC 1.4</td> <td>#1 RET. SEC 1.6</td> <td>DIFF. INDICATOR BUTTON EXT TIME</td> </tr> <tr> <td>#2 EXT. SEC 1.4</td> <td>#2 RET. SEC 1.6</td> <td>DIFF. INDICATOR BUTTON EXT TIME</td> </tr> <tr> <td>#1 EXT. 405 RPM</td> <td>#1 RET. 405 RPM</td> <td>RETURN FLOW</td> </tr> <tr> <td>#2 EXT. 425 RPM</td> <td>#2 RET. 435 RPM</td> <td>RETURN FLOW</td> </tr> <tr> <td>EXT. LBS. 62</td> <td>RET. LBS. 55</td> <td>JAM FORCE/LOAD</td> </tr> <tr> <td>#1 EXT. SEC 1.5</td> <td>#1 RET. SEC 1.9</td> <td>GAIN TEST 1.9 Ret</td> </tr> <tr> <td>#2 EXT. SEC 1.5</td> <td>#2 RET. SEC 1.9</td> <td>GAIN TEST 1.5 Ext</td> </tr> <tr> <td colspan="3">CONTROL VALVE LEAKAGE see page 2</td> </tr> <tr> <td colspan="3">PRELOAD SPRING & PERFORMANCE TEST 14 lbs Hold in Neutral</td> </tr> </tbody> </table>				DIFFERENTIAL PRESSURE			#1 CC NEUTRAL 160cc	#1 CC EXT. 160cc	#1 CC RET. 160cc	#2 CC NEUTRAL 130cc	#2 CC EXT. 130cc	#2 CC RET. 130cc	EXTERNAL LEAKAGE			EXT. 1202	RET. 1302	VALVE FRICTION TEST	EXT. 201	RET. 002	TOTAL DEADBAND 003 Total	EXT. 1241	RET. 127	PRIMARY STOP TRAVEL	EXT. 248	RET. 248	TOTAL TRAVEL	#1 EXT. 027	#1 RET. 030	DIFF. PRESSURE INDICATOR TRAVEL	#2 EXT. 026	#2 RET. 027	DIFF. PRESSURE INDICATOR TRAVEL	#1 EXT. SEC 1.4	#1 RET. SEC 1.6	DIFF. INDICATOR BUTTON EXT TIME	#2 EXT. SEC 1.4	#2 RET. SEC 1.6	DIFF. INDICATOR BUTTON EXT TIME	#1 EXT. 405 RPM	#1 RET. 405 RPM	RETURN FLOW	#2 EXT. 425 RPM	#2 RET. 435 RPM	RETURN FLOW	EXT. LBS. 62	RET. LBS. 55	JAM FORCE/LOAD	#1 EXT. SEC 1.5	#1 RET. SEC 1.9	GAIN TEST 1.9 Ret	#2 EXT. SEC 1.5	#2 RET. SEC 1.9	GAIN TEST 1.5 Ext	CONTROL VALVE LEAKAGE see page 2			PRELOAD SPRING & PERFORMANCE TEST 14 lbs Hold in Neutral				
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----- END OF TASK -----																																																														

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Figure 3. The forward swiveling UBA ATP results.

Component		COLUMBIA HELICOPTERS		[Barcode]	
WO #	Part Number NSN	Title		TC #	
	145H6000-20	CH-47D AFT PIVOT: TEST (9.5 HRS)		HYD-6740-054203	
Date	Serial #			Rev / Date	
	WR 1908 AS			0 /	
WO Description		TT / TSN	TSO	Qty / Pos	
		/		/	
A. Tools/Equipment					
TASK				MECH	INSP
1. SYNCHRONIZE CONTROL VALVES					
2. TEST ASSEMBLED ACTUATOR PER OVERHAUL MANUAL AND RECORD DATA					
		DIFFERENTIAL PRESSURE			
#1 CC NEUTRAL	#1 CC EXT.	#1 CC RET.			
100	165	170			
#2 CC NEUTRAL	#2 CC EXT.	#2 CC RET.			
125	120	130			
		EXTERNAL LEAKAGE 0.125 in ³ /min			
EXT. 502	RET. 302	VALVE FRICTION TEST			
EXT. .001	RET. .003	TOTAL DEADBAND 1004 total			
EXT. .123	RET. .127	PRIMARY STOP TRAVEL			
EXT. .1250	RET. .1250	TOTAL TRAVEL			
#1 EXT. .022	#1 RET. .024	DIFF. PRESSURE INDICATOR TRAVEL			
#2 EXT. .024	#2 RET. .026	DIFF. PRESSURE INDICATOR TRAVEL			
#1 EXT. SEC 1.7	#1 RET. SEC 1.5	DIFF. INDICATOR BUTTON EXT TIME			
#2 EXT. SEC 1.7	#2 RET. SEC 1.5	DIFF. INDICATOR BUTTON EXT TIME			
#1 EXT. 1460 rpm	#1 RET. 1475 rpm	RETURN FLOW			
#2 EXT. 428 rpm	#2 RET. 445 rpm	RETURN FLOW			
EXT. LBS. 52 lbs	RET. LBS. 57 lbs	JAM FORCE/LOAD			
#1 EXT. SEC 1.5	#1 RET. SEC 2.0	GAIN TEST Both			
#2 EXT. SEC 1.5	#2 RET. SEC 2.0	GAIN TEST 1.5 Ext 1.9 Ret			
		CONTROL VALVE LEAKAGE			
LBS. 27	PRELOAD SPRING & PERFORMANCE TEST Holding @ 25 lbs				
3. FINAL ASSEMBLY					
INSPECT FOR CORRECT INSTALLATION OF STOP PIN (52) AND RETAINING RINGS (50, 47)					
----- END OF TASK -----					

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Figure 4. The aft pivoting UBA ATP results.

Component		COLUMBIA HELICOPTERS		Title		TC #	
WO #	Part Number NSN	CH-47D AFT SWIVEL: TEST (9.5 HRS)		Rev / Date		HYD-6740-094203	
Date	Serial #	TT / TSN		TSO		Qty / Pos	
WO Description							
A. Tools/Equipment				MECH		INSP	
TASK							
1. SYNCHRONIZE CONTROL VALVES							
2. TEST ASSEMBLED ACTUATOR PER OVERHAUL MANUAL AND RECORD DATA							
		DIFFERENTIAL PRESSURE					
#1 CC NEUTRAL	100	#1 CC EXT.	90	#1 CC RET.	100		
#2 CC NEUTRAL	130	#2 CC EXT.	130	#2 CC RET.	140		
EXTERNAL LEAKAGE		VALVE FRICTION TEST					
EXT.	1.5 lbs	RET.	1.5 lbs	TOTAL DEADBAND	.005	Total	
EXT.	.003	RET.	.002	PRIMARY STOP TRAVEL			
EXT.	.123	RET.	.124	TOTAL TRAVEL			
EXT.	.250	RET.	.250	DIFF. PRESSURE INDICATOR TRAVEL			
#1 EXT.	.026	#1 RET.	.027	DIFF. PRESSURE INDICATOR TRAVEL			
#2 EXT.	.024	#2 RET.	.021	DIFF. INDICATOR BUTTON EXT TIME			
#1 EXT. SEC	1.5	#1 RET. SEC	1.9	DIFF. INDICATOR BUTTON EXT TIME			
#2 EXT. SEC	1.5	#2 RET. SEC	1.8	RETURN FLOW	1800 cc		
#1 EXT.	.5	#1 RET.	.5	RETURN FLOW	460 cc		
#2 EXT.	.1	#2 RET.	.1	JAM FORCE/LOAD			
EXT. LBS.	59	RET. LBS.	53	GAIN TEST	Both 1.5		
#1 EXT. SEC	1.5	#1 RET. SEC	1.5	GAIN TEST	1.9		
#2 EXT. SEC	1.9	#2 RET. SEC	1.9	CONTROL VALVE LEAKAGE			
LBS.	30	PRELOAD SPRING & PERFORMANCE TEST		28 to Hold			
3. FINAL ASSEMBLY INSPECT FOR CORRECT INSTALLATION OF STOP PIN (54) AND RETAINING RINGS (52, 49)							
END OF TASK							

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Transposed on original sheet

Figure 5. The aft swiveling UBA ATP results.

Component		COLUMBIA HELICOPTERS		TC #	
WO #	Part Number NSN 145H7300-21	Title 47D ILCA (SPARE): TEST AND FINAL ASSEMBLY (20 HRS)		HYD-6720-014203	
Date	Serial # 0022LV			Rev / Date 0 /	
WO Description		TT / TSN /	TSO	Qty / Pos /	
A. Tools/Equipment					
TASK				MECH	INSP
1. TEST RELIEF VALVES					
SYSTEM 1 CRACKED AT _ PSI AND RE-SEATED AT _ PSI					
SYSTEM 2 CRACKED AT _ PSI AND RE-SEATED AT _ PSI					
2. TEST CYLINDER INDICATOR (JAM SENSOR)					
3. GROUND TEST					
SAS 1: <u>ohms</u> <i>✓ good</i> SAS 2: <u>ohms</u> <i>✓ good Both less than 1 ohm</i>					
4. EXTENSIBLE LINK SELF FEEDBACK TRANSDUCER NULL VOLTAGE TEST					
STEP 49: <u>V</u> <i>.0548</i>					
5. EXTENSIBLE LINK CROSS FEEDBACK TRANSDUCER NULL VOLTAGE TEST					
STEP 59: <u>V</u> <i>.0114</i> <i>unable to pin in null</i>					
STEP 61: <u>V</u> <i>.8809</i> <i>broken lever</i>					
STEP 63A: <u>V</u> <i>.8750</i>					
DIFFERENCE ON 63: <u>V</u> <i>.0059</i>					
6. EXTENSIBLE LINK PHASE TEST					
STEP 75: <u>V</u>					
STEP 80: <u>V</u>					
STEP 90: <u>V</u>					
STEP 95: <u>V</u>					
7. MANUAL CYCLING TEST					
8. CYLINDER STROKE TEST					
STEP 139: <u>inch</u>					

Figure 6. The pitch ILCA SAS ATP results (page 1 of 2).

Component		COLUMBIA HELICOPTERS		TC #	
WO #	Part Number NSN	Title		HYD-6720-014203	
Date	Serial #	47D ILCA (SPARE): TEST AND FINAL ASSEMBLY (20 HRS)		Rev / Date	
WO Description		TT / TSN	TSO	Qty / Pos	
9. EXTENSIBLE LINK AUTHORITY TEST					
152B: <u>V 1.6533</u>	152C: <u>inch</u>	152D: <u>V .8911</u>	152G: <u>V .8522</u>	Measured with Calipers @ Piston	
152H: <u>inch</u>	152I: <u>V 1.7139</u>	152K: <u>inch .6865</u>	157B: <u>V 1.6721</u>		
157C: <u>inch</u>	157E: <u>V .8561</u>	157G: <u>V .8742</u>	157H: <u>inch</u>		
157J: <u>V 1.7103</u>	157K: <u>inch .6920</u>	158E: <u>V 1.7466</u>	158H: <u>V 1.7380</u>		
158I: <u>inch</u>	158K: <u>V 1.6984</u>	158N: <u>V 1.7185</u>	158O: <u>inch</u>		
158P: <u>inch 1.418</u>					
10. STATIC DEADBAND TEST					
DEADBAND: <u>inch</u>				Zero indicator moved #1 Valve control	
11. EXTENSIBLE LINK STABILITY TEST				Swon Extend to Retract & #2 Valve control	
12. EXTENSIBLE LINK CENTERING SPRINGS TEST				Swon Retract to Extend	
10071 (.0043V)				.0069 (.0010V) ✓ good	
13. PROOF PRESSURE TEST					
14. RETURN PRESSURE TEST					
15. VALVE JAM INDICATOR TEST					
16. CASE CAVITY LEAKAGE TEST					
17. EXTERNAL DYNAMIC LEAKAGE TEST					
18. EXTERNAL STATIC LEAKAGE					
19. PERFORM FINAL ASSEMBLY					
SAFETY WIRE, CAP, PLUG AND SEALANT					
END OF TASK					

Figure 7. The pitch ILCA SAS ATP results (page 2 of 2).

Component		COLUMBIA HELICOPTERS			
WO #	Part Number NSN <i>145H7300-25</i>	Title 47D ILCA (SPARE): TEST AND FINAL ASSEMBLY (20 HRS)		TC # HYD-6720-014203	
Date	Serial # <i>YU3390LV</i>			Rev / Date 0 /	
WO Description		TT / TSN /	TSO	Qty / Pos /	
A. Tools/Equipment					
TASK				MECH	INSP
1. TEST RELIEF VALVES					
SYSTEM 1 CRACKED AT <u> </u> PSI AND RE-SEATED AT <u> </u> PSI					
SYSTEM 2 CRACKED AT <u> </u> PSI AND RE-SEATED AT <u> </u> PSI					
2. TEST CYLINDER INDICATOR (JAM SENSOR)					
3. GROUND TEST					
SAS 1: <u>ohms</u> <i>✓ good</i> SAS 2: <u>ohms</u> <i>✓ good less than 1 ohm</i>					
4. EXTENSIBLE LINK SELF FEEDBACK TRANSDUCER NULL VOLTAGE TEST					
STEP 49: <u>V</u> <i>1.0224</i> <i>0.0367</i>					
5. EXTENSIBLE LINK CROSS FEEDBACK TRANSDUCER NULL VOLTAGE TEST					
STEP 59: <u>V</u> <i>0.0036</i>					
STEP 61: <u>V</u> <i>0.8650</i>					
STEP 63A: <u>V</u> <i>0.8557</i>					
DIFFERENCE ON 63: <u>V</u> <i>0.0093</i>					
6. EXTENSIBLE LINK PHASE TEST					
STEP 75: <u>V</u>					
STEP 80: <u>V</u>					
STEP 90: <u>V</u>					
STEP 95: <u>V</u>					
7. MANUAL CYCLING TEST					
8. CYLINDER STROKE TEST					
STEP 139: <u>inch</u>					

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Figure 8. The roll ILCA SAS ATP results (page 1 of 2).

Component		COLUMBIA HELICOPTERS		Title		TC #	
WO #	Part Number NSN	47D ILCA (SPARE): TEST AND FINAL ASSEMBLY (20 HRS)		HYD-6720-014203		Rev / Date	
Date	Serial #			0 /			
WO Description		TT / TSN	TSO	Qty / Pos			
EXTENSIBLE LINK AUTHORITY TEST							
152B: <u>-V 1.7381</u>	152C: <u>inch</u>	152D: <u>-V .8680</u>	152G: <u>-V .8696</u>				
152H: <u>inch</u>	152I: <u>-V 1.6846</u>	152K: <u>inch .625</u>	157B: <u>-V 1.7598</u>				
157C: <u>inch</u>	157E: <u>-V .9070</u>	157G: <u>-V .8530</u>	157H: <u>inch</u>				
157J: <u>-V 1.6374</u>	157K: <u>inch .657</u>	158E: <u>-V 1.7375</u>	158H: <u>-V 1.7337</u>				
158I: <u>inch</u>	158K: <u>-V 1.7855</u>	158N: <u>-V 1.7543</u>	158O: <u>inch</u>				
158P: <u>inch 1.370</u>	<u>Measured with dial indicator at output</u>						
10. STATIC DEADBAND TEST <u>SAS #1 & SAS #2 closed 1000 zero indicator moved #1 valve control from Extend to Retract & #2 Valve control from Retract to Extend</u>							
DEADBAND: <u>inch</u>							
11. EXTENSIBLE LINK STABILITY TEST <u>✓ good</u>							
12. EXTENSIBLE LINK CENTERING SPRINGS TEST <u>.0035 (.0001) .0306 (.0213) ✓ good</u>							
13. PROOF PRESSURE TEST							
14. RETURN PRESSURE TEST							
15. VALVE JAM INDICATOR TEST							
16. CASE CAVITY LEAKAGE TEST							
17. EXTERNAL DYNAMIC LEAKAGE TEST							
18. EXTERNAL STATIC LEAKAGE							
19. PERFORM FINAL ASSEMBLY							
SAFETY WIRE, CAP, PLUG AND SEALANT							
----- END OF TASK -----							

Figure 9. The roll ILCA SAS ATP results (page 2 of 2).

Component		COLUMBIA HELICOPTERS		Title		TC #	
WO #	Part Number NSN	47D ILCA (SPARE); TEST AND FINAL ASSEMBLY (20 HRS)		HYD-6720-014203			
Date	Serial #			Rev / Date			
WO Description		TT / TSN	TSO	Qty / Pos			
A. Tools/Equipment							
TASK				MECH	INSP		
1. TEST RELIEF VALVES							
SYSTEM 1 CRACKED AT _ PSI AND RE-SEATED AT _ PSI							
SYSTEM 2 CRACKED AT _ PSI AND RE-SEATED AT _ PSI							
2. TEST CYLINDER INDICATOR (JAM SENSOR)							
3. GROUND TEST							
SAS 1: _ ohms SAS 2: _ ohms							
4. EXTENSIBLE LINK SELF FEEDBACK TRANSDUCER NULL VOLTAGE TEST							
#1 .0080 #2 .0039							
STEP 49: _ V							
5. EXTENSIBLE LINK CROSS FEEDBACK TRANSDUCER NULL VOLTAGE TEST							
STEP 59: _ V .0170							
STEP 61: _ V .9024							
STEP 63A: _ V .8889							
DIFFERENCE ON 63: _ V .0135							
6. EXTENSIBLE LINK PHASE TEST							
#1 STEP 75: _ V .4919 step 74 1.0V @ 10 micro Amp							
#2 STEP 80: _ V .5647 step 79 1V @ 10 micro Amps							
STEP 90: _ V .5546 step 89 1.0V @ 10 micro Amps							
STEP 95: _ V .4811 step 94 1.0V @ 11 micro Amps							
7. MANUAL CYCLING TEST							
✓ ok with condition of Actuator							
8. CYLINDER STROKE TEST							
STEP 139: _ inch 3.900							

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Figure 10. The yaw ILCA SAS ATP results (page 1 of 2).

Component		COLUMBIA HELICOPTERS		Title		TC #	
WO #	Part Number NSN	47D ILCA (SPARE): TEST AND FINAL ASSEMBLY (20 HRS)		HYD-6720-014203		Rev / Date	
Date	Serial #			0 /			
WO Description		TT / TSN		TSO		Qty / Pos	
9. EXTENSIBLE LINK AUTHORITY TEST							
152B: <u> </u> V	152C: <u> </u> inch	152D: <u> </u> V	152G: <u> </u> V				
152H: <u> </u> inch	152I: <u> </u> V	152K: <u> </u> inch	157B: <u> </u> V				
157C: <u> </u> inch	157E: <u> </u> V	157G: <u> </u> V	157H: <u> </u> inch				
157J: <u> </u> V	157K: <u> </u> V	158E: <u> </u> V	158H: <u> </u> V				
158I: <u> </u> inch	158K: <u> </u> V	158N: <u> </u> V	158O: <u> </u> inch				
158P: <u> </u> inch							
10. STATIC DEADBAND TEST							
DEADBAND: <u> </u> inch <u>1.003</u>							
11. EXTENSIBLE LINK STABILITY TEST <u>system #1 .001 overshoot / good</u> <u>system #2 .001 overshoot / good</u>							
12. EXTENSIBLE LINK CENTERING SPRINGS TEST <u>Both systems / good</u>							
13. PROOF PRESSURE TEST							
14. RETURN PRESSURE TEST							
15. VALVE JAM INDICATOR TEST <u>used ATP for test</u> <u>#2 Indicator Popped after reset (failed test) #1 50 lbs</u> <u>#2 50</u>							
16. CASE CAVITY LEAKAGE TEST							
17. EXTERNAL DYNAMIC LEAKAGE TEST							
18. EXTERNAL STATIC LEAKAGE							
19. PERFORM FINAL ASSEMBLY							
SAFETY WIRE, CAP, PLUG AND SEALANT							
----- END OF TASK -----							

Figure 11. The yaw ILCA SAS ATP results (page 2 of 2).

Component		COLUMBIA HELICOPTERS			
WO #	Part Number NSN	Title		TC #	
	145H7300-26	47D ILCA (THRUST): TEST (9 HRS)		HYD-6720-014311	
Date	Serial #			Rev / Date	
	A0058982			0 /	
WO Description		TT / TSN	TSO	Qty / Pos	
		/		/	
A. Tools/Equipment					
TASK				MECH	INSP
1. TEST RELIEF VALVES					
SYSTEM 1 CRACKED AT <u>190</u> PSI AND RE-SEATED AT <u>170</u> PSI					
SYSTEM 2 CRACKED AT <u>190</u> PSI AND RE-SEATED AT <u>170</u> PSI					
2. TEST CYLINDER INDICATOR (JAM SENSOR)					
<u>✓ Good</u>					
3. MANUAL CYCLING TEST					
<u>✓ Good</u>					
4. CYLINDER STROKE TEST					
STEP 139: inch <u>4,490/4.492</u>					
5. STATIC DEADBAND TEST					
DEADBAND: inch <u>.011</u>					
6. PROOF PRESSURE TEST					
<u>✓ Good</u>					
7. RETURN PRESSURE TEST					
<u>0 leakage</u>					
8. VALVE JAM INDICATOR TEST					
<u>System #1 40-49/lbs System #2 55-56/lbs</u>					
9. CASE CAVITY LEAKAGE TEST					
<u>#1 pressure #2 case leakage / #2 pressure #1 case leakage</u>					
<u>27 drops / 100 drops per/min</u>					
10. EXTERNAL DYNAMIC LEAKAGE TEST					
<u>0 leakage</u>					
11. EXTERNAL STATIC LEAKAGE					
12. SAFETY WIRE, CAP, PLUG AND SEALANT					
----- END OF TASK -----					

Manual #
DMWR 1-1650-397,
CH-47D IETMS

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Figure 12. The thrust ILCA ATP results.