

PART No. 206-076-062-003

REPORT No. ML-01-036

P.O. No. _____

DATE 5-14-01

R.R. No. _____

TESTED BY T.A. Thompson

LABORATORY REPORT

APPROVED _____

COPIES TO:

APPROVED _____

TITLE Accident Investigation

ITEM Actuators, 206L1 S/N 45434

SPEC. No. _____

VENDOR Ronson Hydraulics

S/N RH1132 L/H Cyclic Actuator

Actuator has moderate to medium damage. Removed the pilot input idler and bellcrank from the unit prior to testing. The servo pivot bolt and the linkage pivot bolt are free to rotate. The pilot input valve is free to move stop to stop. Bypass travel in both directions has good detent. Cycled unit and noticed no unusual abnormalities.

S/N RH1133 Collective Actuator

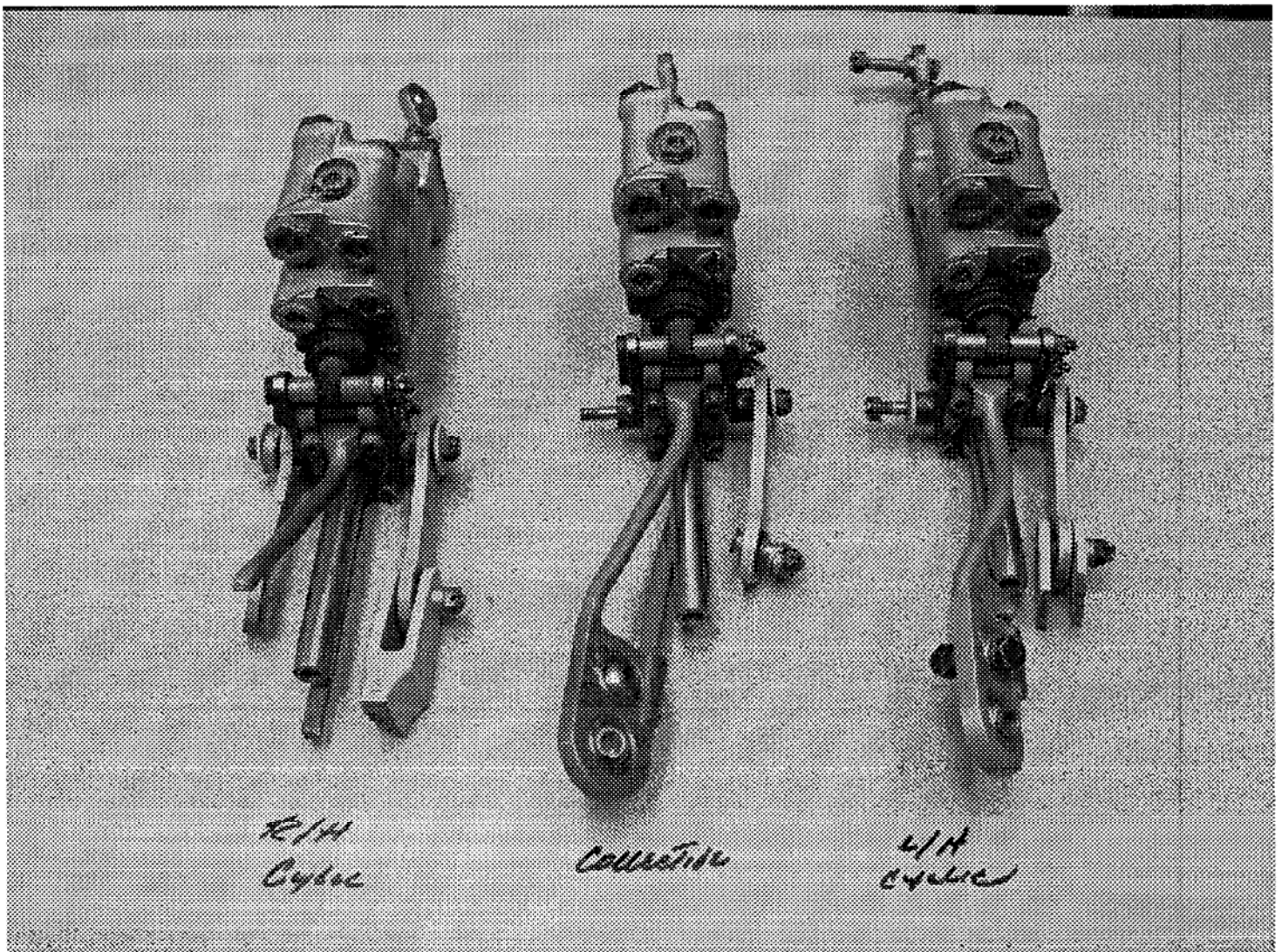
Actuator has moderate to medium damage. Removed the pilot input idler from the unit prior to testing. The servo pivot bolt and the linkage pivot bolt are free to rotate. The pilot input valve is free to move stop to stop. Bypass travel in both directions has good detent. The right pilot input arm is bent slightly away from the actuator. Cycled unit and noticed no unusual abnormalities.

S/N RH1134 R/H Cyclic Actuator

Actuator has moderate to medium damage. Removed the pilot input idlers and bellcrank from the unit prior to testing. The servo pivot bolt is free to rotate. Suspect the linkage pivot bolt is not free to rotate through 360° due to impact damage. The pilot input valve is free to move stop to stop. Bypass travel in both directions has good detent. Cycled unit and noticed no unusual abnormalities.

Note: Mark Stuntzner, Flight Safety, Rich Parker, NTSB and Nolan Mackey, Senior Engineer of the Reliability and Maintainability Group witnessed the test.

Below is a picture of the parts as delivered to the test lab.



 HIAC/ROYCO

 06/13/00 04:34:53
 SAMPLE ID = 000001

PARAMETERS
 START TIME =04:25:01
 SF#04 ELAPS=00:01:08
 SAMPLE MODE= VOLUME
 NUMBER OF RUNS= 02

CONDITIONS
 SELF TEST FAILED

ALARMS
 ALL ALARMS DISABLED

SIZES
 CH-1 5.00UM
 CH-2 16.00UM
 CH-3 26.00UM
 CH-4 51.00UM
 CH-5 100.00UM
 CH-6 .00UM

DATA
 ---- RUN 01 ----
 CH# DIFF CUM
 1 0000418 0000470
 2 0000033 000052
 3 0000016 0000019
 4 0000003 0000003
 5 0000000 0000000
 6 0000000 0000000

DATA
 ---- RUN 02 ----
 CH# DIFF CUM
 1 0000689 0000796
 2 0000073 0000107
 3 0000031 0000034
 4 0000002 0000003
 5 0000001 0000001
 6 0000000 0000000

Hydraulic Oil Evaluation

Mech, Test Lab BPS 4305

Unit Id : TEST STAND A Helicopter Powered Lift

Aircraft Grd. Sup. Equip.

Sampled By : T. Thompson Sample Date : 5-9-01 Plant : 1

| Particle Count | | | <input type="checkbox"/> Pass | <input type="checkbox"/> Fail |
|----------------|--------------|-------|-------------------------------|-------------------------------|
| | | | Limits | |
| Channel | Size (µm) | Count | G.S.E. | Aircraft |
| One | Heli. 5-15 | 1,266 | 40,000 | 170,000 |
| | P.L. 5-10 | | 24,000 | 87,000 |
| Two | Heli. 16-25 | 159 | 9,000 | 40,000 |
| | P.L. 11-25 | | 3,500 | 21,400 |
| Three | Heli. 26-50 | 53 | 3,000 | 5,000 |
| | P.L. 26-50 | | 780 | 1,510 |
| Four | Heli. 51-100 | 6 | 300 | 1,000 |
| | P.L. 51-100 | | 110 | 225 |
| Five | Heli. >100 | 1 | 150 | 500 |
| | P.L. >100 | | 11 | 21 |

Flash Point
 _____ of 380°F Min. Pass Fail N/R

Water Content (P.L. Only)
 _____ PPM 175 PPM Max. Pass Fail N/R

Total Chlorine (P.L. Only)
 _____ PPM 200 PPM Max. Pass Fail N/R

Notified : T. Thompson Ext: email Date : 6-25-01 Time : _____

Tested By : [Signature] Date : 6-25-01

Comments: IN Lab 6-25-01 N/R = Not required

 HIAC/ROYCO

 06/13/00 05:55:54
 SAMPLE ID = 001134

PARAMETERS
 START TIME =05:42:57
 SF#04 ELAPS=00:01:48
 SAMPLE MODE= VOLUME
 NUMBER OF RUNS= 02

CONDITIONS
 SELF TEST FAILED

ALARMS
 ALL ALARMS DISABLED

SIZES
 CH-1 5.00UM
 CH-2 16.00UM
 CH-3 26.00UM
 CH-4 51.00UM
 CH-5 100.00UM
 CH-6 .00UM

DATA
 ---- RUN 01 ----
 CH# DIFF CUM
 1 0159626 0177394
 2 0014193 0017768
 3 0003286 0003575
 4 0000271 0000289
 5 0000018 0000018
 6 0000000 0000000

DATA
 ---- RUN 02 ----
 CH# DIFF CUM
 1 0164619 0182556
 2 0014364 0017937
 3 0003319 0003573
 4 0000243 0000254
 5 0000011 0000011
 6 0000000 0000000

Hydraulic Oil Evaluation

BPS 4305

206-076-062-3

Unit Id : P/H Lyelic ACT Helicopter Powered Lift
S/N RH1134 Aircraft Grd. Sup. Equip.
Ship # 45434

Sampled By : T. Thompson Sample Date : 5-9-01 Plant : 1

| | | Particle Count | | <input type="checkbox"/> Pass | <input type="checkbox"/> Fail |
|---------|--------------|----------------|--------|-------------------------------|-------------------------------|
| | | | | Limits | |
| Channel | Size (µm) | Count | G.S.E. | Aircraft | |
| One | Heli. 5-15 | 359,950 | 40,000 | 170,000 | |
| | P.L. 5-10 | | 24,000 | 87,000 | |
| Two | Heli. 16-25 | 35,705 | 9,000 | 40,000 | |
| | P.L. 11-25 | | 3,500 | 21,400 | |
| Three | Heli. 26-50 | 7,148 | 3,000 | 5,000 | |
| | P.L. 26-50 | | 780 | 1,510 | |
| Four | Heli. 51-100 | 543 | 300 | 1,000 | |
| | P.L. 51-100 | | 110 | 225 | |
| Five | Heli. >100 | 29 | 150 | 500 | |
| | P.L. >100 | | 11 | 21 | |

Flash Point

_____ of 380°F Min. Pass Fail N/R

Water Content (P.L. Only)

_____ PPM 175 PPM Max. Pass Fail N/R

Total Chlorine (P.L. Only)

_____ PPM 200 PPM Max. Pass Fail N/R

Notified : T. Thompson Ext : email Date : 6-25-01 Time : _____

Tested By : [Signature] Date : 6-25-01

Comments: IN Lab 6-25-01 N/R = Not required

 HIAC/ROYCO

 06/13/00 07:10:33
 SAMPLE ID = 001132

PARAMETERS
 START TIME = 07:00:35
 SF#04 ELAPS=00:01:16
 SAMPLE MODE= VOLUME
 NUMBER OF RUNS= 02

CONDITIONS
 SELF TEST FAILED

ALARMS
 ALL ALARMS DISABLED

SIZES
 CH-1 5.00UM
 CH-2 16.00UM
 CH-3 26.00UM
 CH-4 51.00UM
 CH-5 100.00UM
 CH-6 .00UM

DATA
 ---- RUN 01 ----
 CH# DIFF CUM
 1 0153962 0172911
 2 0013592 0018949
 3 0004869 0005357
 4 0000469 0000488
 5 0000019 0000019
 6 0000000 0000000

DATA
 ---- RUN 02 ----
 CH# DIFF CUM
 1 0150579 0169245
 2 0013358 0018666
 3 0004879 0005308
 4 0000419 0000429
 5 0000010 0000010
 6 0000000 0000000

Hydraulic Oil Evaluation

206-076-062-3 BPS 4305
 S/N R1H 113 2

Unit Id : LH Cyclic Act. Helicopter Powered Lift
Ship # 45434 Aircraft Grd. Sup. Equip.

Sampled By : J. Thompson Sample Date : 5-9-01 Plant : 1

| Particle Count | | | <input type="checkbox"/> Pass | <input type="checkbox"/> Fail |
|----------------|--------------|---------|-------------------------------|-------------------------------|
| | | | Limits | |
| Channel | Size (µm) | Count | G.S.E. | Aircraft |
| One | Heli. 5-15 | 342,154 | 40,000 | 170,000 |
| | P.L. 5-10 | | 24,000 | 87,000 |
| Two | Heli. 16-25 | 37,615 | 9,000 | 40,000 |
| | P.L. 11-25 | | 3,500 | 21,400 |
| Three | Heli. 26-50 | 10,665 | 3,000 | 5,000 |
| | P.L. 26-50 | | 780 | 1,510 |
| Four | Heli. 51-100 | 917 | 300 | 1,000 |
| | P.L. 51-100 | | 110 | 225 |
| Five | Heli. >100 | 29 | 150 | 500 |
| | P.L. >100 | | 11 | 21 |

Flash Point

_____ of 380°F Min. Pass Fail N/R

Water Content (P.L. Only)

_____ PPM 175 PPM Max. Pass Fail N/R

Total Chlorine (P.L. Only)

_____ PPM 200 PPM Max. Pass Fail N/R

Notified : T. Thompson Ext : email Date : 6-25-01 Time : _____

Tested By : [Signature]

Date : 6-25-01

Comments:
IN Lab 6-25-01

N/R = Not required

 HIAC/ROYCO

 06/13/00 08:23:17
 SAMPLE ID = 001133

PARAMETERS
 START TIME =08:14:30
 SF#04 ELAPS=00:01:09
 SAMPLE MODE= VOLUME
 NUMBER OF RUNS= 02

CONDITIONS
 SELF TEST FAILED

ALARMS
 ALL ALARMS DISABLED

SIZES
 CH-1 5.00UM
 CH-2 16.00UM
 CH-3 26.00UM
 CH-4 51.00UM
 CH-5 100.00UM
 CH-6 .00UM

DATA
 ---- RUN 01 ----
 CH# DIFF CUM
 1 0138691 0160067
 2 0015461 0021376
 3 0005156 0005915
 4 0000698 0000759
 5 0000061 0000061
 6 0000000 0000000

DATA
 ---- RUN 02 ----
 CH# DIFF CUM
 1 0137118 0158583
 2 0015602 0021465
 3 0005179 0005853
 4 0000647 0000684
 5 0000037 0000037
 6 0000000 0000000

Hydraulic Oil Evaluation

206-076-002-3
 S/N RH 1133

BPS 4305

Unit Id : Collect. Act Helicopter Powered Lift
 Ship # 45434 Aircraft Grd. Sup. Equip.

Sampled By : T. Thompson Sample Date : 5-9-01 Plant : 1

| Particle Count | | | <input type="checkbox"/> Pass | <input type="checkbox"/> Fail |
|----------------|--------------|---------|-------------------------------|-------------------------------|
| Channel | Size (µm) | Count | Limits | |
| | | | G.S.E. | Aircraft |
| One | Heli. 5-15 | 318,650 | 40,000 | 170,000 |
| | P.L. 5-10 | | 24,000 | 87,000 |
| Two | Heli. 16-25 | 42,841 | 9,000 | 40,000 |
| | P.L. 11-25 | | 3,500 | 21,400 |
| Three | Heli. 26-50 | 11,778 | 3,000 | 5,000 |
| | P.L. 26-50 | | 780 | 1,510 |
| Four | Heli. 51-100 | 1,443 | 300 | 1,000 |
| | P.L. 51-100 | | 110 | 225 |
| Five | Heli. >100 | 98 | 150 | 500 |
| | P.L. >100 | | 11 | 21 |

Flash Point

_____ of 380°f Min. Pass Fail N/R

Water Content (P.L. Only)

_____ PPM 175 PPM Max. Pass Fail N/R

Total Chlorine (P.L. Only)

_____ PPM 200 PPM Max. Pass Fail N/R

Notified : T. Thompson Ext : email Date : 6-25-01 Time : _____

Tested By : [Signature] Date : 6-25-01

Comments: _____ N/R = Not required

IN Lab 6-25-01