

SUBJECT:

INSTRUCTIONS FOR CONTINUED AIRWORTHINESS CARGO MIRRORS EC 130 T2

AIRBUS HELICOPTERS CANADA LIMITED

Required maintenance for the Cargo Mirrors (P/N 130-201414).
APPLICABILITY:
Aircraft with the subject modification embodied in accordance with TCCA STC. No. SH14-40 or any relevant foreign approvals.
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RECORD OF REVISIONS

Rev.	Pages at this Revision	Description, Reason Changed Pages	Prepared (name and date)	Checked App'd/Acc'd (Civil A/W and date) Authority) (name and date)		Released (name and date)	
0	1 through 28	Original Issue	D. Kerr 26 August 2014	C. Timmins N/A 26 August 2014		P. Sharpe 8 September 2014	
1	1 through 28	Minor corrections. Title of Table 1 in Section 4 corrected. Addition of torque value inspection also in Section 4. (Pages 3, 16, 22 & 23)	D. Kerr 8 September 2014	P. Sharpe N/A 8 September 2014		P. Sharpe 9 September 2014	
2	1 through 28	Correction in Section 4. (Pages 7, 22 & 23)	D. Kerr 9 September 2014	P. Sharpe 9 September 2014	TCCA G. David 10 September 2014	P. Sharpe 16 September 2014	
3	1 through 28	Revised installation details, revised illustrations showing mirrors. Increased torquing reference from 4 Nm to 8Nm. Revision to Weight and Balance Chart. (Pages 3 to 11, 17 to 19, 22, 24, 25, 27 & 28)	See Page 1.	See Page 1.	See Page 1.	See Page 1.	

NOTE: Revisions to this document will be distributed to operators of this equipment by the STC holder.

NOTE: Revised portions of affected pages are identified by a vertical black line in the margin adjacent to the change.

NOTE: Minor changes are released in accordance with TCCA-ACCEPTED CAR 521.154 procedures (ref. DAPM-E-0001).



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1. GENERAL

A. The Cargo Mirrors installation consists of two mirrors mounted on a support frame that is fixed to the helicopter at four attachment points on the LHS of the aircraft. One mirror is used to monitor the load while the other is used to monitor the hook. The mirrors must be manually adjusted while on the ground to enable the pilot to watch the external load and monitor hook while monitoring the instrument panel.

The Cargo Mirrors Installation consists of the following main components:

Detachable Provisions

- Strut Assembly
- Door Strut
- Aft Strut
- Convex Mirror (quantity 2)

Fixed Provisions

- Upper Mount Assembly
- Middle Mount Assembly
- Aft Mount Assembly
- Nutplate Assembly
- Hinge Mount
- Shim (PRE MOD AMS 07 4373 only)
- Bonding Jumper (PRE MOD AMS 07 4373 only)

The cargo mirrors can easily be removed between aerial missions and must be readjusted upon installation.

For instructions of initial installation, see IP-AHCA-138.

B. These Instructions for Continued Airworthiness are applicable to aircraft with the subject modification embodied.

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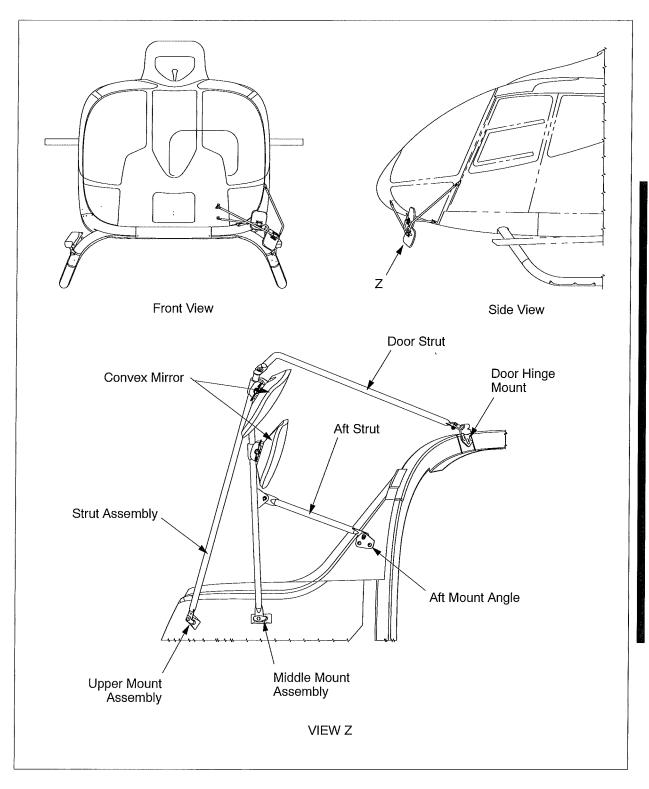


Figure 1 General Layout



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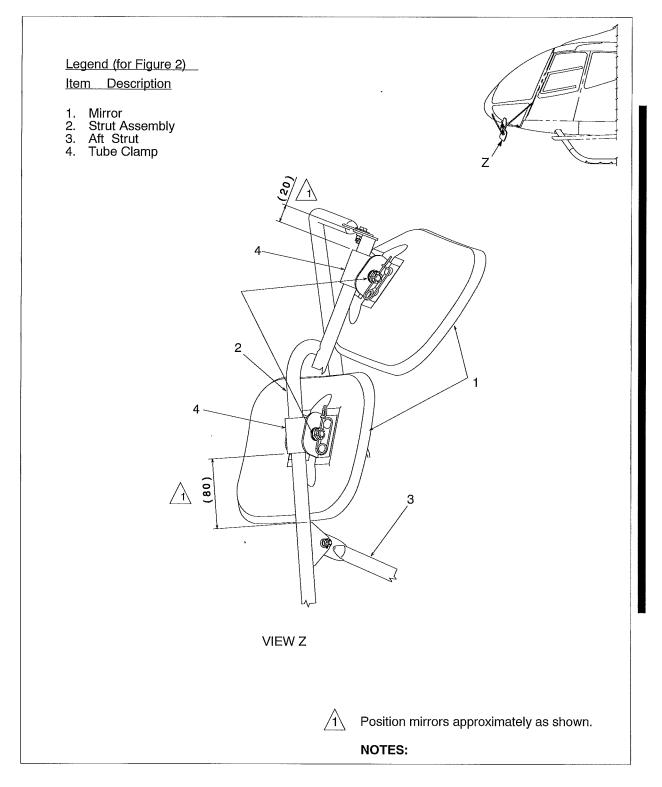


Figure 2 Position of mirrors on strut assembly

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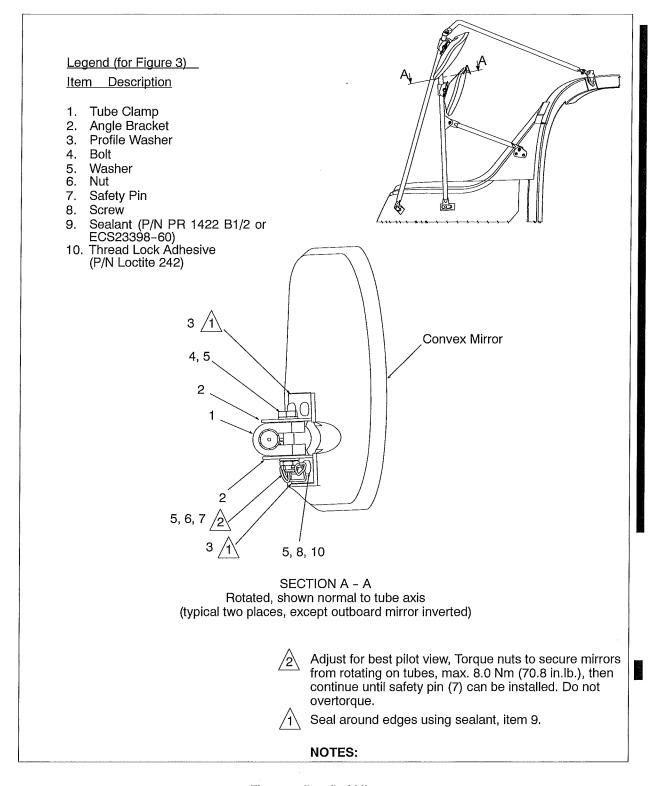


Figure 3 Detail of Mirrors

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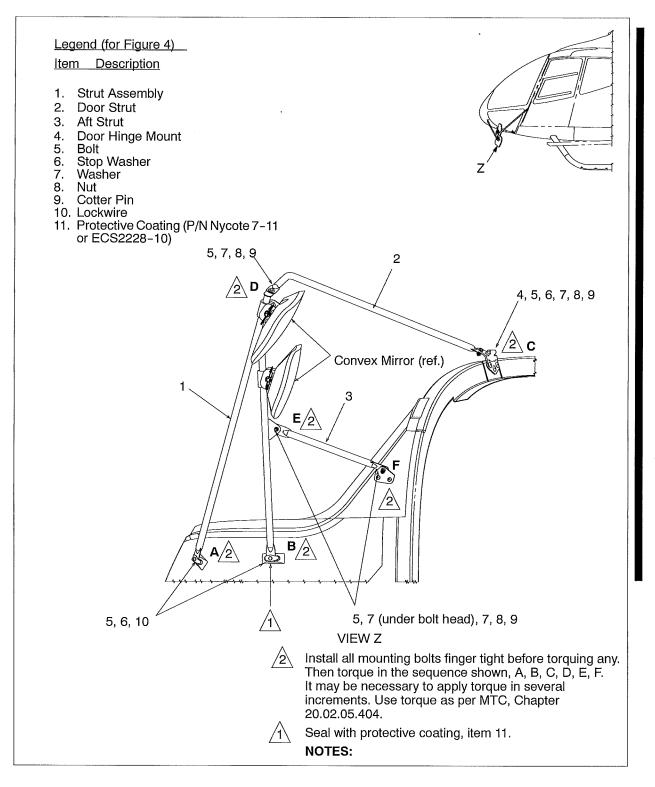


Figure 4 Installation Hardware and Torquing Order

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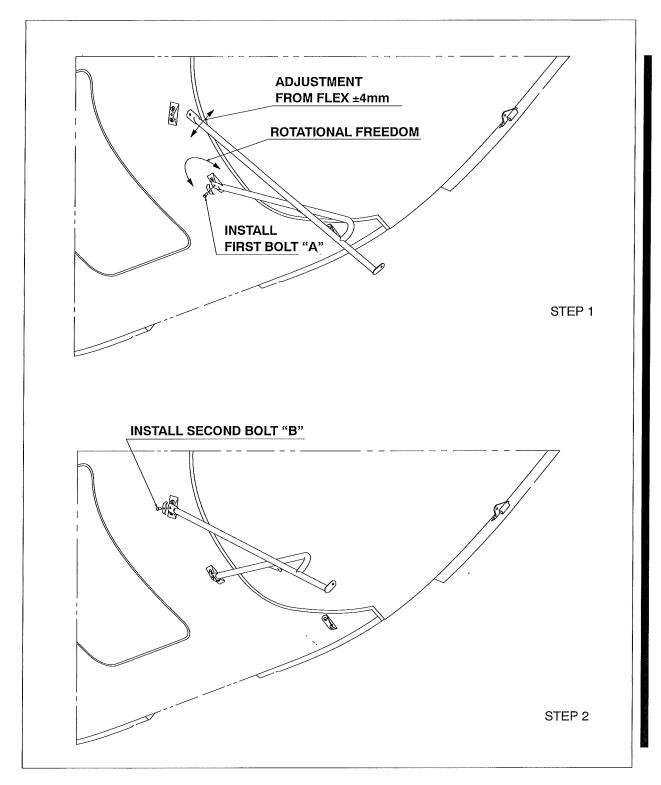


Figure 5 Installation Details (Steps 1 & 2)

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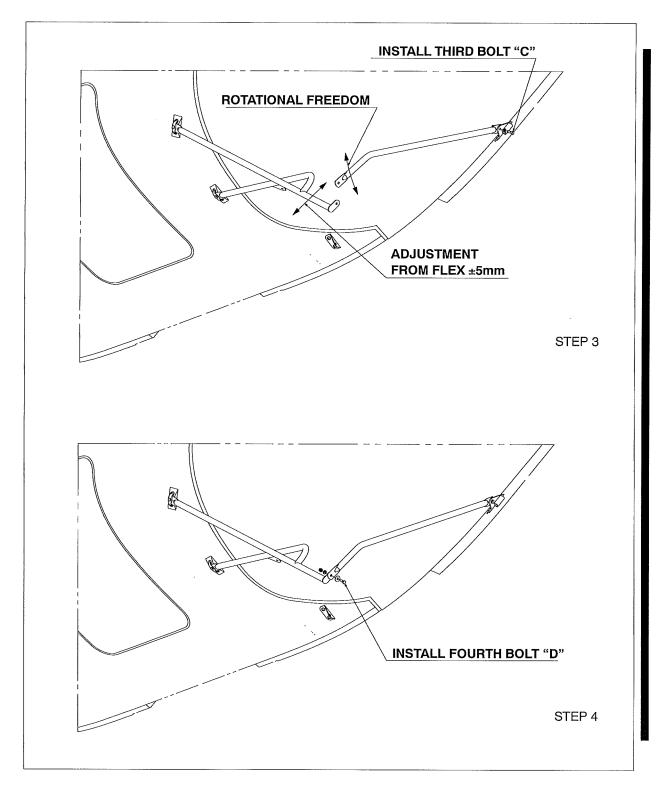


Figure 6 Installation Details (Steps 3 & 4)

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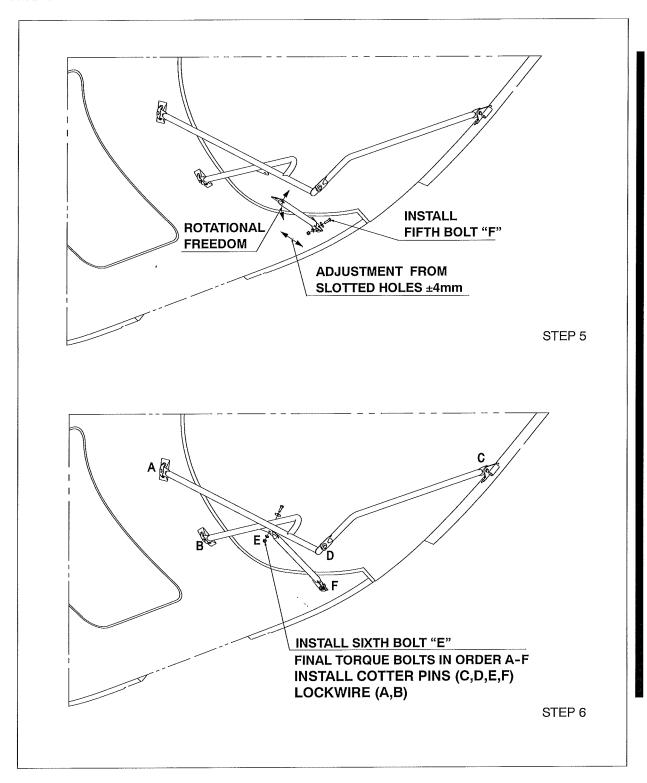


Figure 7 Installation Details (Steps 5 & 6)



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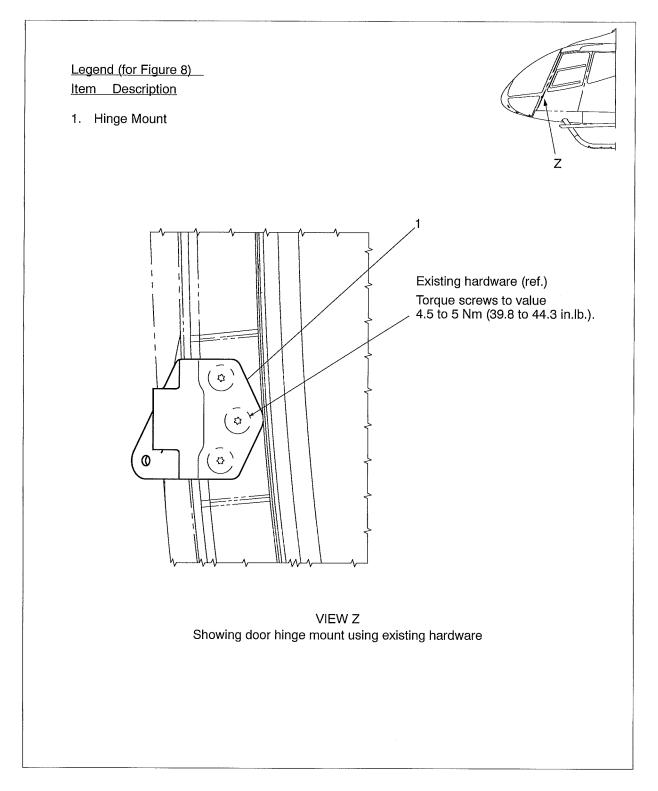


Figure 8 Door hinge mount



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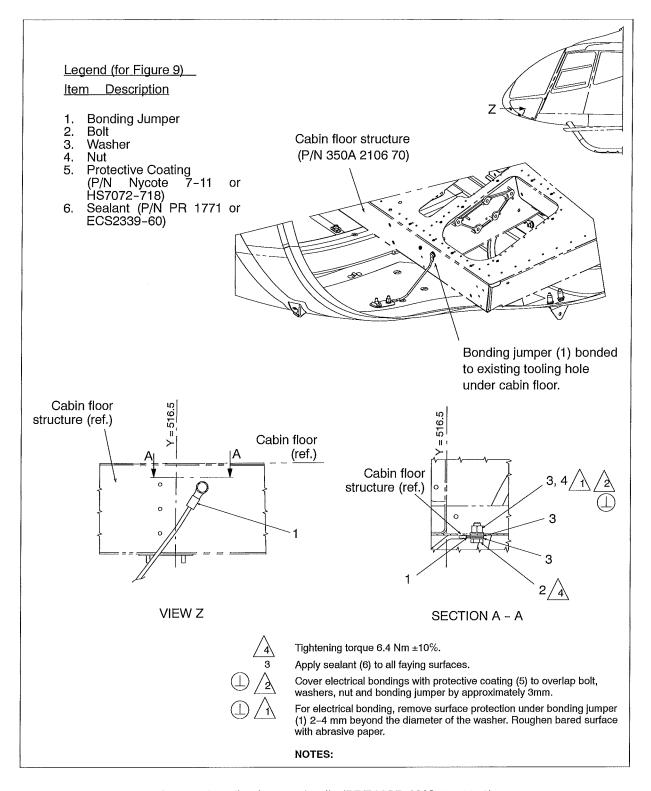


Figure 9 Bonding jumper details (PRE MOD AMS 07-4373)



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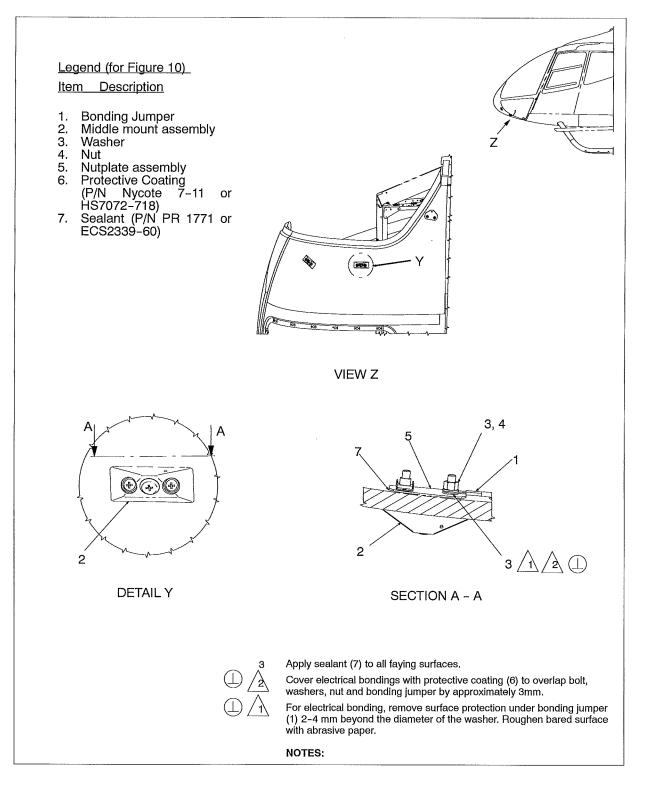


Figure 10 Electrical bonding details (PRE MOD AMS 07-4373)



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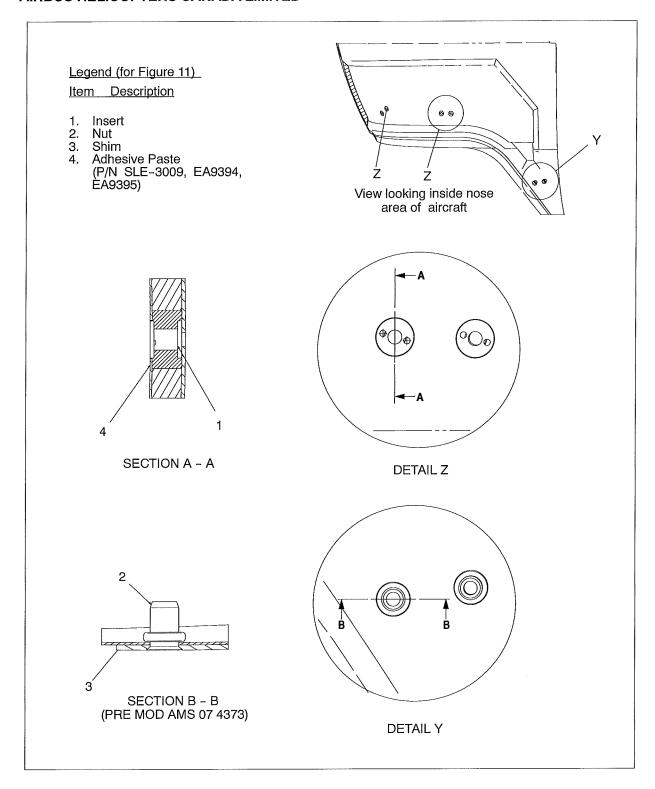


Figure 11 Insert details (PRE and POST MOD AMS 07 4373)



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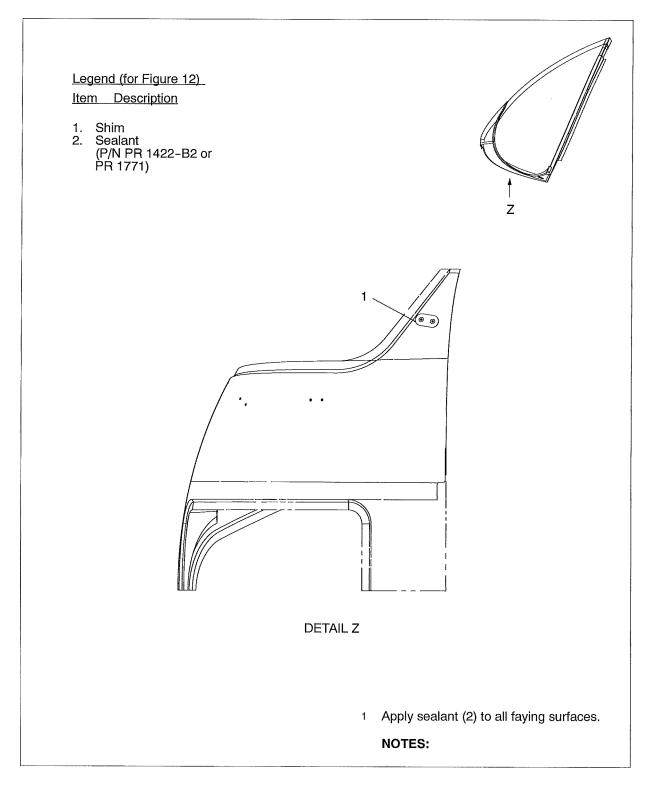


Figure 12 Shim details (PRE MOD AMS 07-4373)



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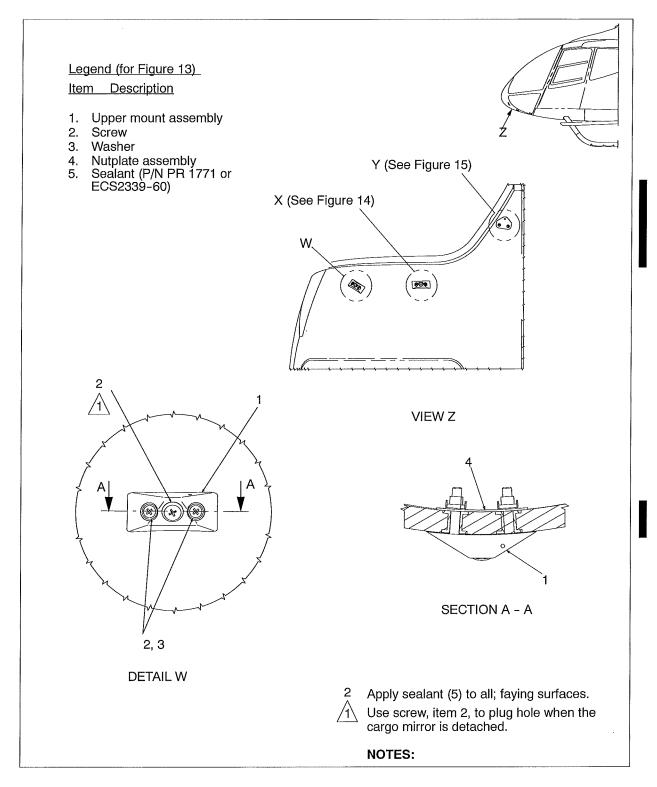


Figure 13 Upper mount attachment points (PRE and POST MOD AMS 07-4373)



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Legend (for Figure 14) Item Description 1. Middle Mount Assembly 2. Screw 3. Washer 4. Nutplate Assembly Conductive Sealant (P/N PR 1764 or ECS2241.20) Sealant (P/N PR 1771 or ECS2339-60) 2 (used to plug hole when cargo mirror is detached) В SECTION B - B 2, 3 **DETAIL X** (refer to Figure 13) Apply sealant (6) to faying surfaces. Seal middle mount assembly (1) with conductive sealant (5). For electrical bonding, remove surface protection under middle mount assembly (1) 2-4 mm beyond the edge of the middle mount assembly (1). Roughen bared surface with abrasive paper. NOTES:

Figure 14 Middle mount assembly attachment points (POST MOD AMS 07-4373)

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Legend (for Figure 15) Item Description 1. Aft Mounting Angle Screw 2. 3. Washer Sealant (P/N PR 1771 or ECS2339-60) С Outer surface of aircraft (ref.) 2, 3 **DETAIL Y** SECTION C - C (refer to Figure 13) Apply sealant (4) to faying surfaces.

Figure 15 Aft mounting angle attachment points (PRE and POST MOD AMS 07-4373)

NOTES:

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C. REFERENCES

DOCUMENT	DOCUMENT TITLE
AMM	Aircraft Maintenance Manual
MTC	Standard Practices
PRE MOD AMS 07-4373	PRE Modification Avis de Modification Series 07 4373
	PRE Option of Modification Series 07 4373
POST MOD AMS 07-4373	POST Modification Avis de Modification Series 07 4373
	POST Option of Modification Series 07 4373

D. ABBREVIATIONS & DEFINITIONS

ABBREVIATION	DEFINITION
Acc'd	Accepted
AH	Airbus Helicopters (France)
AHCA	Airbus Helicopters Canada
App'd	Approved
A/W	Airworthiness
D	Day
FAA	Federal Aviation Administration
FH	Flight Hours
LHS	Left Hand Side
M	Months
MOD	Modification
OEM	Original Equipment Manufacturer
P/N	Part number
P.O.	Post Office
STC	Supplemental Type Certificate
TCCA	Transport Canada Civil Aviation

E. UNITS OF MEASUREMENT

ABBREVIATION / SYMBOL	UNIT OF MEASUREMENT
in	inch
kg	kilogram
lb	pound
m	meter
mm	millimeters
Nm	Newton meters



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2. AIRWORTHINESS LIMITATIONS

The Airworthiness Limitations section is approved by the Minister and specifies maintenance required by any applicable airworthiness or operating rule unless an alternative program has been approved by the Minister. Variants must also be approved.

The Airworthiness Limitations section is FAA approved and specifies inspections and other maintenance required under §§43.16 and 91.403 of Federal Aviation Regulations unless an alternative program has been FAA approved.

The airworthiness limitations section is approved and variations must also be approved.

No airworthiness limitations associated with this installation.

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3. CONTROL AND OPERATION

Control and operation of the aircraft remains unchanged.

4. INSPECTION SCHEDULE AND MAINTENANCE ACTION

NOTE: Use torque per MTC, Chapter 20.02.05.404, unless otherwise specified.

4.1. INSPECTION SCHEDULE

4.1.1. Before the first flight of each day:

ITEM	INSPECTION OR MAINTENANCE WORK	CORRECTIVE ACTION
Α	- Visually inspect Cargo Mirrors for:	
	a. general condition	Clean mirrors, replace mirror if cracked or broken. Check mirror casing for cracking.
	b. security	b. Secure as required.

Table 1 Inspection Schedule and Maintenance Action Before the first flight of each day

NOTE: The "Before the first flight of each day" task can be carried out by a suitably trained pilot or maintenance personnel.

4.1.2. Every 150 FH or 12 M (Margin: 15 FH or 36 D) to coincide with the 150 FH or 12 M helicopter inspection, whichever occurs first:

ITEM	INSPECTION OR MAINTENANCE WORK	CORRECTIVE ACTION
Α	Inspect Cargo Mirrors shown in Figure 3 for:	
	a. security	a. Ensure nuts (6) are torqued to maximum 8.0 Nm (70.8 in.lb.), then continue until safety pin (7) can be installed. Do not overtorque.
В	 Inspect safety pins (7) securing mounting hardware on cargo mirror shown in Figure 3 for: 	
	a. security	a. Ensure correct locking of safety pins (7).
	b. wear	b. If wear is found, contact AHCA for replacement parts.
С	 Visually inspect tube clamp (1), shown in Figure 3 for: 	
	a. cracking	a. If cracks are found, contact AHCA for replacement parts.

Table 2 Inspection Schedule and Maintenance Action
Every 150 FH or 12 M to coincide with the 150 FH or 12 M helicopter inspection, whichever occurs first
(continued on the following page)



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4. INSPECTION SCHEDULE AND MAINTENANCE ACTION

4.1.2. Every 150 FH or 12 M (Margin: 15 FH or 36 D) to coincide with the 150 FH or 12 M helicopter inspection, whichever occurs first:

ITEM	INSPECTION OR MAINTENANCE WORK	CORRECTIVE ACTION
С	Visually inspect sealant (9) around profile washer (3) on back of mirror, shown in Figure 3 for: a. deterioration	a. Clean area and reseal with sealant (P/N PR1422 B1/2 or ECS2339.80) in accordance with MTC, Chapter
		20-05-01-206.
D	- Check mounting bolts (5), in Figure 4, for:	
	a. security	a. Secure as required. Use torque as per EC 130 T2 AMM, Chapter 20.02.05.404.
F	 Inspect bolt securing hinge mount (1) shown in Figure 8 for: 	
	a. security	a. Secure as required. Refer to Figure 8 for torquing value of screws. Refer to EC 130 T2 AMM, Chapter 52-11-01, 5-2.
G	 Visually inspect bonding jumper (1, PRE MOD AMS 07-4373 only) shown in Figure 9 for: 	
	a. security	a. Re-tighten as required.
	b. cracking and kinking	b. No cracking is allowed. If kinking found, adjust as required. Contact AHCA for replacement parts if cracking found.
Н	 Inspect fixed attachment points shown in Figures 10, 12, 13, 14 & 15 for: 	
	a. deterioration of sealant	 a. Clean area and reseal with sealant (P/N PR 1771 or ECS2339-60) in accordance with MTC, Chapter 20-05-01-206.
	b. security	b. Secure as required.
	Inspect fixed attachment points shown in Figures 9, 10 & 11 for:	
	a. security	a. Secure as required.

Table 2 Inspection Schedule and Maintenance Action Every 150 FH or 12 M to coincide with the 150 FH or 12 M helicopter inspection, whichever occurs first



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4. INSPECTION SCHEDULE AND MAINTENANCE ACTION

4.1.3. Supplemental Maintenance Instructions for replacement of loose insert (PRE MOD AMS 07 7373):

ITEM	INSPECTION OR MAINTENANCE WORK	CORRECTIVE ACTION
J	Inspect fixed attachment points shown in Figures 11 &14 for:	
	a. security (upper mount assembly or middle mount assembly must be removed)	a. Remove adhesive (P/N's EA9394 or EA9395 or SLE-3009) from core surrounding the loose insert. Reinstall each insert through the bottom hole, securing it with a plastic locating washer attached to the insert nut or a screw coated with release agent. Refill core cavity with adhesive paste. Cure the adhesive at room temperature for 24 hours. Remove the locating washer or screw securing the insert. Refer to Replacement of insert Honeycomb Panels, Chapter 20-02-08, 406.

Table 3 Inspection Schedule and Maintenance Action Supplemental Maintenance Instructions for replacement of loose insert:

5. REPLACEMENT COMPONENTS AND REPAIR / OVERHAUL INFORMATION

Contact AHCA for replacement parts. No overhaul information required for this installation.

For replacement components or repair information contact:

Airbus Helicopters Canada Limited 1100 Gilmore Road, P.O. Box 250 Fort Erie, Ontario L2A 5M9 Canada Telephone: (905) 871–7772

Telefax: (905) 871-3599 www.airbushelicopters.ca

6. TROUBLESHOOTING

There are no unique characteristics which require special troubleshooting techniques.

7. SPECIAL TOOLING

No special test equipment or tools are required. Standard tools are adequate.

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8. REMOVAL AND REPLACEMENT

PRELIMINARIES

- comply with General Safety Instructions for the Mechanical assemblies, refer to EC 130 AMM Chapter 60-00-00, 3-1.
- Read General Safety Instruction Electrical Power Supply System, EC 130 T2, AMM, Chapter 24-00-00, 3-1.
- disconnect the external power unit and battery (refer to Electrical Power Supply on the Ground, EC 130 T2, AMM, Chapter 24–00–00, 2–1).

A. REMOVAL

- 1) CARGO MIRRORS (Refer to Figure 3)
 - Remove safety pins (7), bolts (4), washers (5), and nuts (6) from the angle brackets. Remove
 mirrors and hardware and store for future use.
 - b) The tube clamp (1) may remain on strut assembly (1).
- 2) STRUT ASSEMBLIES (Refer to Figure 4, 13 & 14)
 - a) Remove cotter pins (9), bolts (5), washers (7), and nuts (8) and remove aft strut (3). Retain aft strut (3) and installation hardware for reinstallation. Refer to Figure 4.
 - b) Remove lockwire (10) securing strut assembly (1). Remove cotter pins (9) from door strut (2) attachment points.
 - c) Begin loosening hardware at remaining attachment points while supporting frame.
 - d) Remove bolts (5), stop washer (6), washer (7) and nuts (8) securing the door strut (2). Retain all mounting hardware for reinstallation.
 - e) Remove bolts (5) and stop washers (6) and remove strut assembly (1). Retain hardware for reinstallation.
 - f) Plug hole in upper and middle mounts with screw (2) when cargo mirror is detached. Refer to Figures 13 & 14.

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8. REMOVAL AND REPLACEMENT

B. REPLACEMENT

NOTE:

Use torque per MTC, Chapter 20.02.05.404,

unless otherwise specified.

General Methods of applying sealing compounds - MTC, Chapter 20.05.01.102

Electrical Bonding - MTC, 20.02.07.101

Safetying Assemblies: general - MTC, Chapter 20-02-06-101

Safetying with safety pins - MTC, Chapter 20-02-06-401

Safetying with lockwire - MTC, Chapter 20-02-06-402

- 1) STRUT ASSEMBLIES (Refer to Figures 4, 5, 6, 7, 13 7 14)
 - a) Remove screws (2) from upper and middle mounts and retain. Refer to Figures 13 & 14.
 - b) Secure strut assembly (1), beginning at the middle attachment assembly, using bolt (5) and stop washer (6), finger tighten only. Secure with lockwire (10) for final torque. Refer to Figures 4 & 5.
 - c) Attach other end of strut assembly (1) to upper mount assembly and secure using bolt (5) and washer (7). Finger tighten only. Secure with lockwire (10) for final torque. Refer to Figure 4 and Step 2 in Figure 5.
 - d) The maximum allowable adjustment from flex \pm 4mm at the middle mount assembly. Refer to Step 1 in Figure 5.

NOTE: Ensure mating surfaces are clean.

- e) Secure door strut (2) to door hinge mount (4), using bolt (5), washers (7, 2 places), nut (8). Finger tighten only. Secure with cotter pin (9) for final torque. Refer to Figures 4 & 6.
- f) There should be rotational freedom at attachment point. Refer to Step 3 in Figure 6.
- g) Attach strut assembly (1) to door strut (2) and secure using bolt (5), washers (7, 2 places) and nut (8). Finger tighten only. Refer to Figure 4 and Step 4 in Figure 6.
- h) Secure aft strut (3) to aft mounting angle using bolt (5), washer (7, under bolt head), washer (7) and nut (8). Secure with cotter pin (9) for final torque. Refer to Figures 4 and Step 5 in Figure 7.
- i) Secure aft strut (3) to strut assembly (1) using bolt (5), washer (7, under bolt head), washer (7) and nut (8). Secure with cotter pin (9) for final torque. Refer to Figures 4 and Step 6 in Figure 7.
- J/) Finger tighten all bolts before torquing. Begin torquing bolts in sequence A, B, C, D, E & F. It may be necessary to apply torque in several increments. Once complete, install cotter pins (9, 3 places) and lockwire (10, 2 places). Refer to Figure 4.
- k) Apply protective coating (11) to overlap bolt (5) and stop washer (6) by approximately 3 mm on the middle mount assembly. Refer to Figure 4.

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8. REMOVAL AND REPLACEMENT

- 2) CARGO MIRROR (Refer to Figures 2 & 3)
 - a) Position mirrors onto strut assembly in approximate location as shown in Figure 2.
 - b) Secure mirror to the tube clamps (1) using bolts (4), washers (5) and nuts (6). With pilot in the pilot's seat, adjust both mirrors for maximum pilot visibility.
 - c) Once mirrors are correctly adjusted begin to torque nuts (6) to prevent mirrors from rotating on tubes to maximum 8.0 Nm (70.8 in.lb.). Once correct torque is achieved install safety pins (7). Refer to Figure 3.

NOTE Do not over torque.

- 3) Before energizing the aircraft power supply system, read safety instructions Electrical Power Supply on the Ground, EC 130 T2, AMM, Chapter 24–00–00, 2–1.
- 4) Reconnect the external power unit and battery (refer to Electrical Power Supply on the Ground, EC 130 T2, AMM, Chapter 24-00-00, 2-1).
- 5) Perform functional tests for the EC 130 T2 in accordance with EC 130 T2, AMM, Chapters 24–30–00, 1–1 and 24–30–00, 5–1.

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9. WEIGHT AND BALANCE DATA

A. Removed Items						
DESCRIPTION	WEI	GHT	А	RM	MON	/IENT
	kg	lbs	m	in	kg m	lb in
OEM Hinge Mount Assembly	-0.07	-0.2	0.95	37.4	-0.07	-7.5
Total	-0.07	-0.2	0.95	37.4	-0.07	-7.5

B. Added Items - with Cargo Mirro	<u>ors</u>					
DESCRIPTION	WEIGHT		ARM		MOMENT	
	kg	lbs	m	in	kg m	lb in
Detachable Provisions	1.99	4.4	0.44	17.3	0.88	76.1
Fixed Provisions	0.22	0.5	0.69	27.2	0.15	13.6
Total	2.21	4.9	0.46	18.3	1.03	89.7

10. PLACARDS AND MARKINGS

Not applicable

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