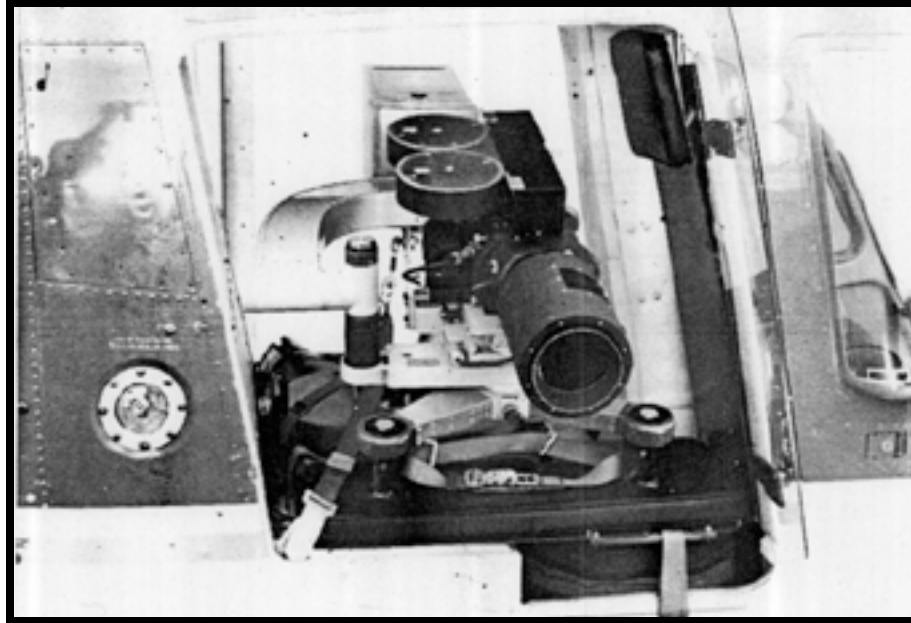




Major Mount

407 & Jet Ranger / Long Ranger

Installation Manual



Tyler – Major Mount
For Bell 407 & 206/206L Series Helicopters

FAA STC # SH3234NM

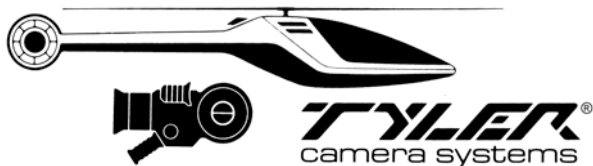
EASA _____



PLEASE RETURN THIS MANUAL WITH EQUIPMENT

This manual is available for download from our web site.

Tyler Camera Systems 14218 Aetna Street Van Nuys, California 91401 • USA
www.tylermount.com • 800-390-6070 • (818) 989-4420 • Fax (818) 989-0423

MODEL: Major MountREPORT #: TCS 3-85JOB #: 407DATE: 8-1-85

MAJOR MOUNT (MODEL 806)
 INSTALLATION MANUAL FOR
 407 & 206/206L HELICOPTERS

PREPARED BY: N. Tyler
5-27-90

OF PAGES: _____

CHECKED BY: _____

OF DRAWINGS: 0

APPROVED BY: _____

LOG OF PAGES

REV	PAGE NO.	PAGE DATE	DESCRIPTION	FAA APPROVED
NC		Jul 1, 85	Initial Issue	
A	ALL	Mar 29, 01	Updated Report	
B	3, 11, 12	Nov 11, 04	Added backrest picture – revised wording	
C	ALL	Sep 15, 08	Added 407 model	
D	ALL	Oct 3, 08	Added Approved Camera Section and Appendix A	

TABLE OF CONTENTS

Section 1	List of Approved Cameras & Acceptance Process	Pg 4-5
Section 2	Assembly Instructions	Pg 6-24
Section 3	Weight and Balance	Pg 25-26

SECTION 1 List of Approved Cameras & Acceptance Process

The Tyler 407 & 206/206L Major Mount was certified with the Arri III film camera and lens and a self-contained power supply. The following cameras have been installed and flown on the mount at different times and using ships power.

- ARRI® / Arriflex® cameras
- Panavision® cameras
- Imax® cameras (in particular, models: MSN and IW5)
- Aaton®
- Éclair®
- Sony® cameras
- Panasonic®
- Ikegami® cameras
- Hitachi® cameras
- Canon® cameras
- RED® camera

This STC addresses the Structural, Performance & Handling Qualities requirement for the largest configuration flown.

Smaller or lighter cameras/sensors are approved without further flight testing. The specific sensor/cameras/light not listed here is accepted with this follow-on test plan found in Appendix A.

For helicopters registered in the U.S. or other countries recognizing FAA certification:

Once the testing is completed by the Integrator/Operator and the flight test conducted by the Pilot/Operator and the FAA (certified) mechanic the sensor /camera / light payload can be added to the accepted list in this manual. The report contained herein must be completed and signed prior to the “return to service” for any sensor/ camera / light payload.

The flight will be conducted as an “Operational Check Flight”. Operational check flights do not require a special airworthiness certificate in the experimental category. The term “operational check flight” (14 CFR § 91.407(b)) includes flight tests performed to check installation and/or operation of an approved STC, amended TC, or any other FAA-approved data after installation and return to service.

Operational check flights are performed under the current airworthiness certificate.

The purpose of this test is to ensure the approved modification and/or alteration functions properly and does not adversely affect aircraft operation.

For helicopters registered in an EU-member state:

The specific sensor/camera/light to be added to the STC has to be introduced by a Minor Change with an EASA accepted certification program.

Once the testing is completed by the Integrator/Operator and the flight test conducted by the Pilot/Operator and EASA Engineer and the Minor Change is approved the sensor/camera/light, can

be added to the accepted list in this manual. The report contained herein must be completed and signed prior to the “return to service” for sensor/camera/light.

The flights have to be conducted with a “Permit to Fly”.

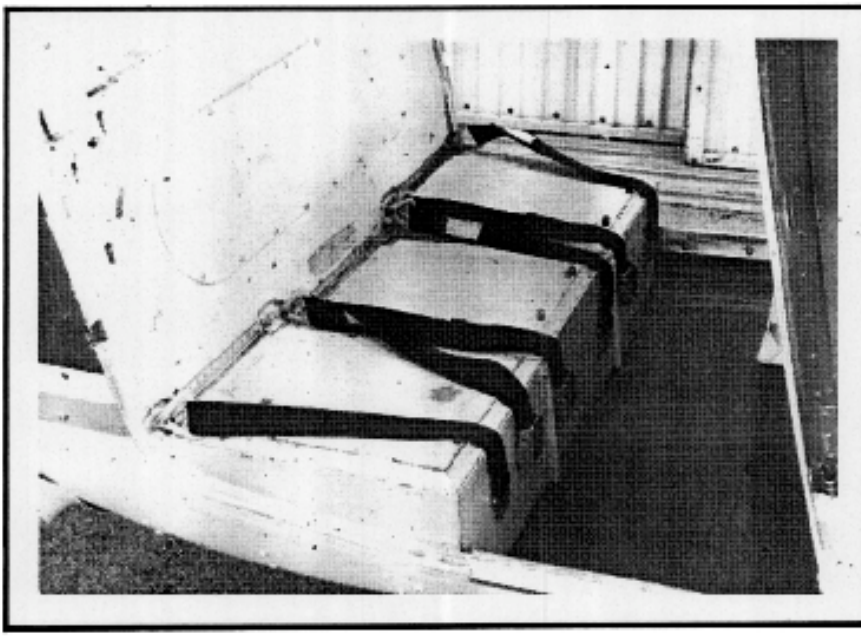
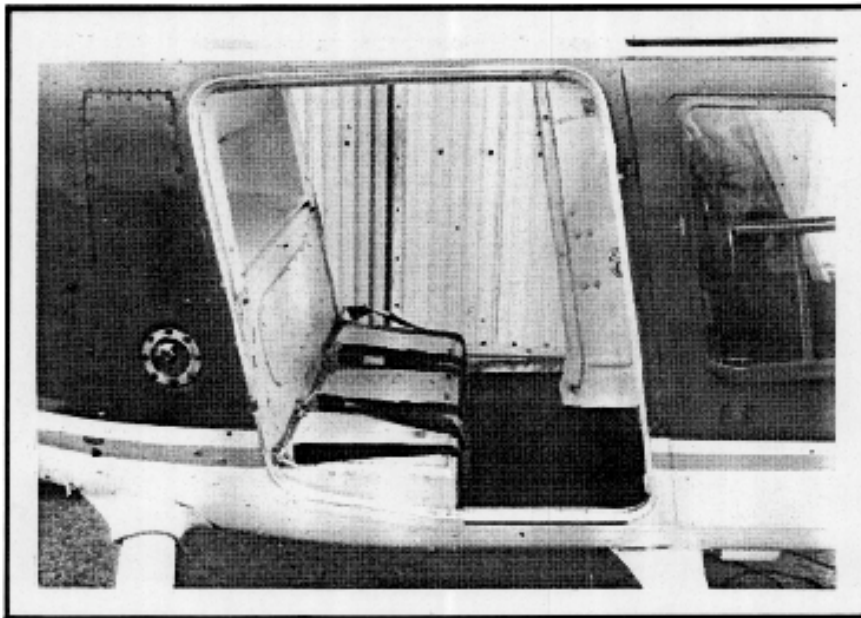
The purpose of this test is to ensure the approved modification and/or alteration functions properly and does not adversely affect aircraft operation.

For all helicopters:

The installation is assumed to have a self-contained power supply or connected to the aircraft through a previously approved electrical connection. If modification to the ship’s system is necessary to support this installation, additional minor modifications with appropriate approval is necessary.

Installation by persons other than a certified mechanic/engineer can be authorized if properly trained. Any mount system may be installed or removed by a Tyler Camera Systems trained technician, pilot or mechanic, and must be recorded in accordance with FAR 43.9. The training would be in accordance with EASA/JAR 145 or by an appropriate maintenance organization in accordance with applicable national requirements. The mount is designed to be installed with a minimum amount of alteration to the basic aircraft and a limited number of tools.

SECTION 2 Assembly Instructions

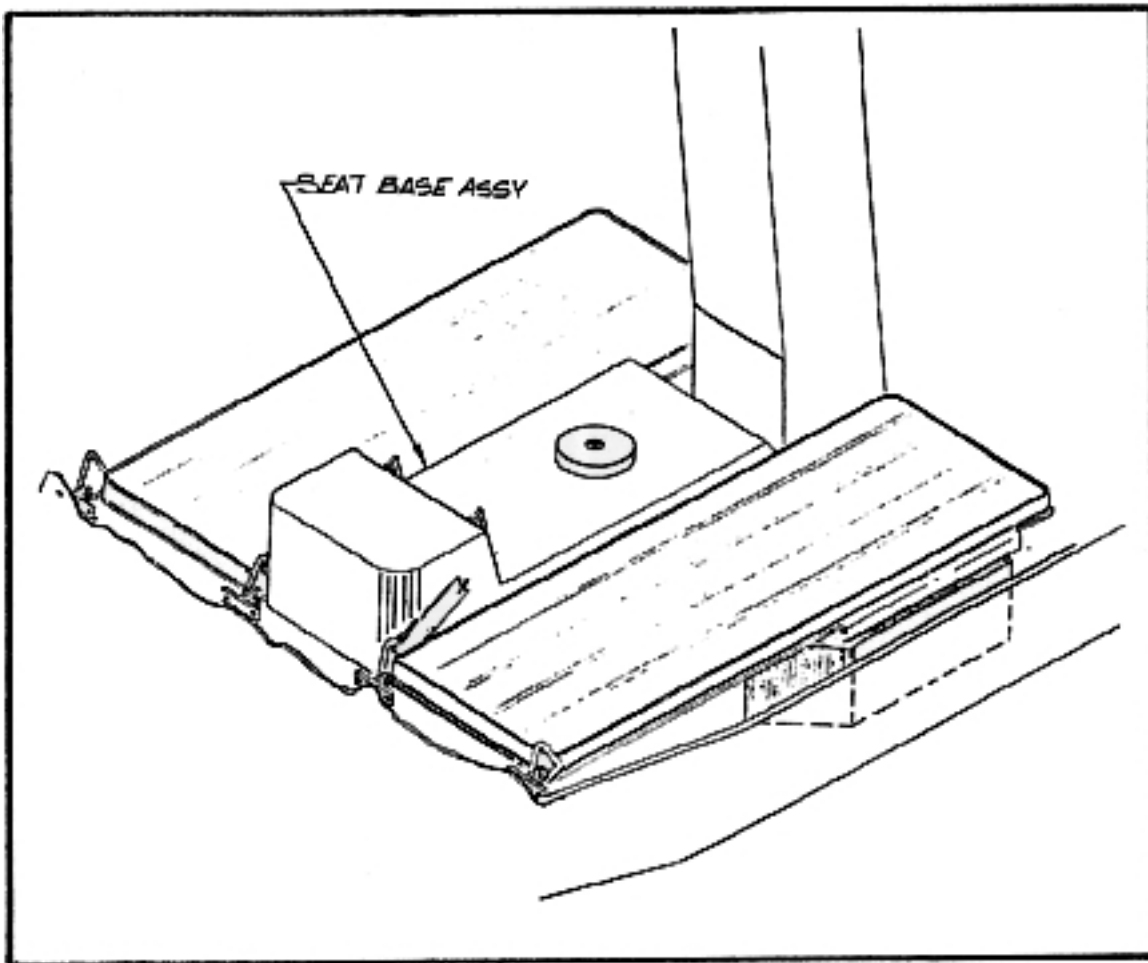


The Major Mount can be installed on either side of the helicopter.

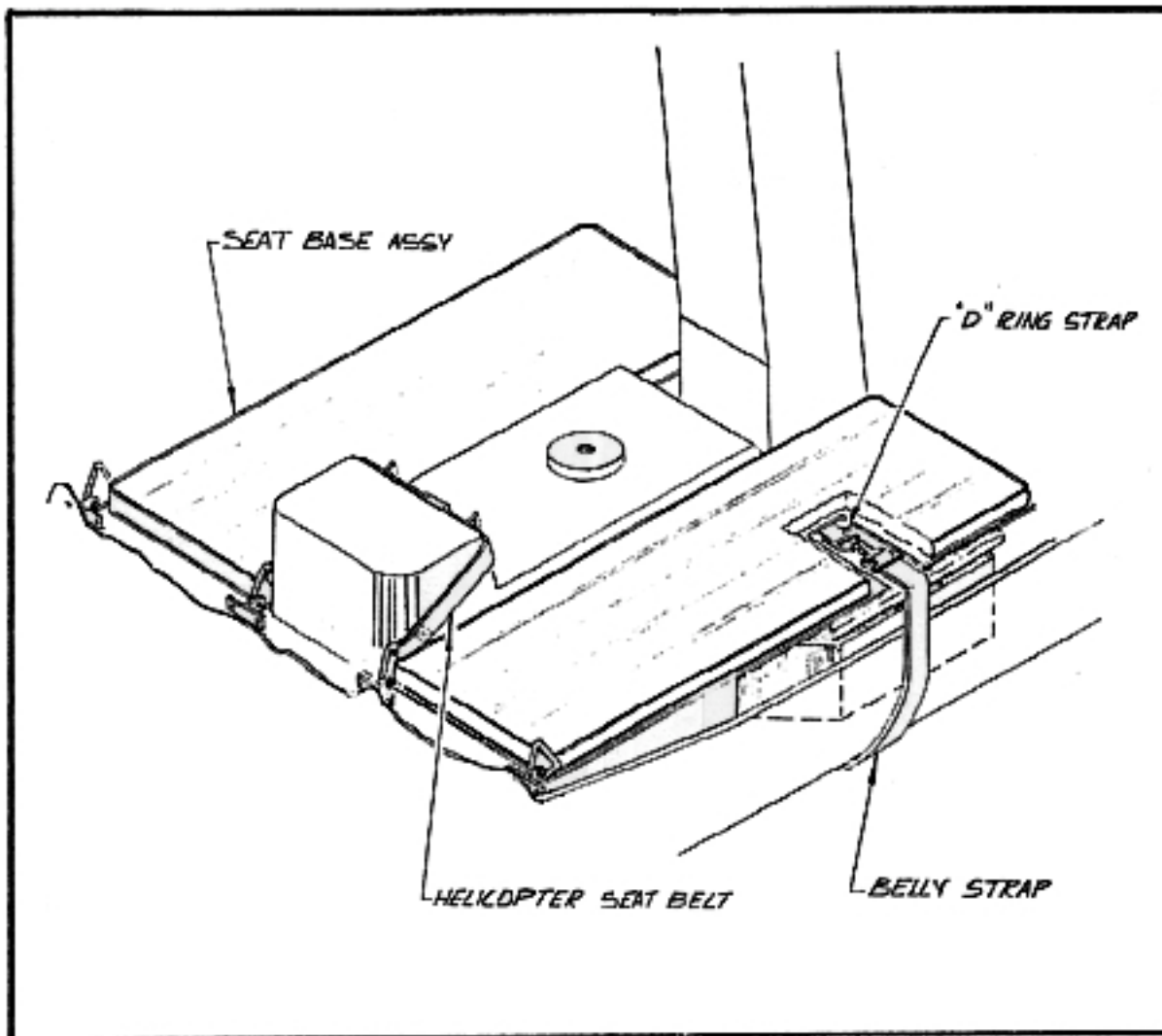
Remove PI-pins or screws from doors and remove doors. Replace PI-pins or screws. Remove all seat and back cushions or other obstacles from seat and floor area.

Before Proceeding...

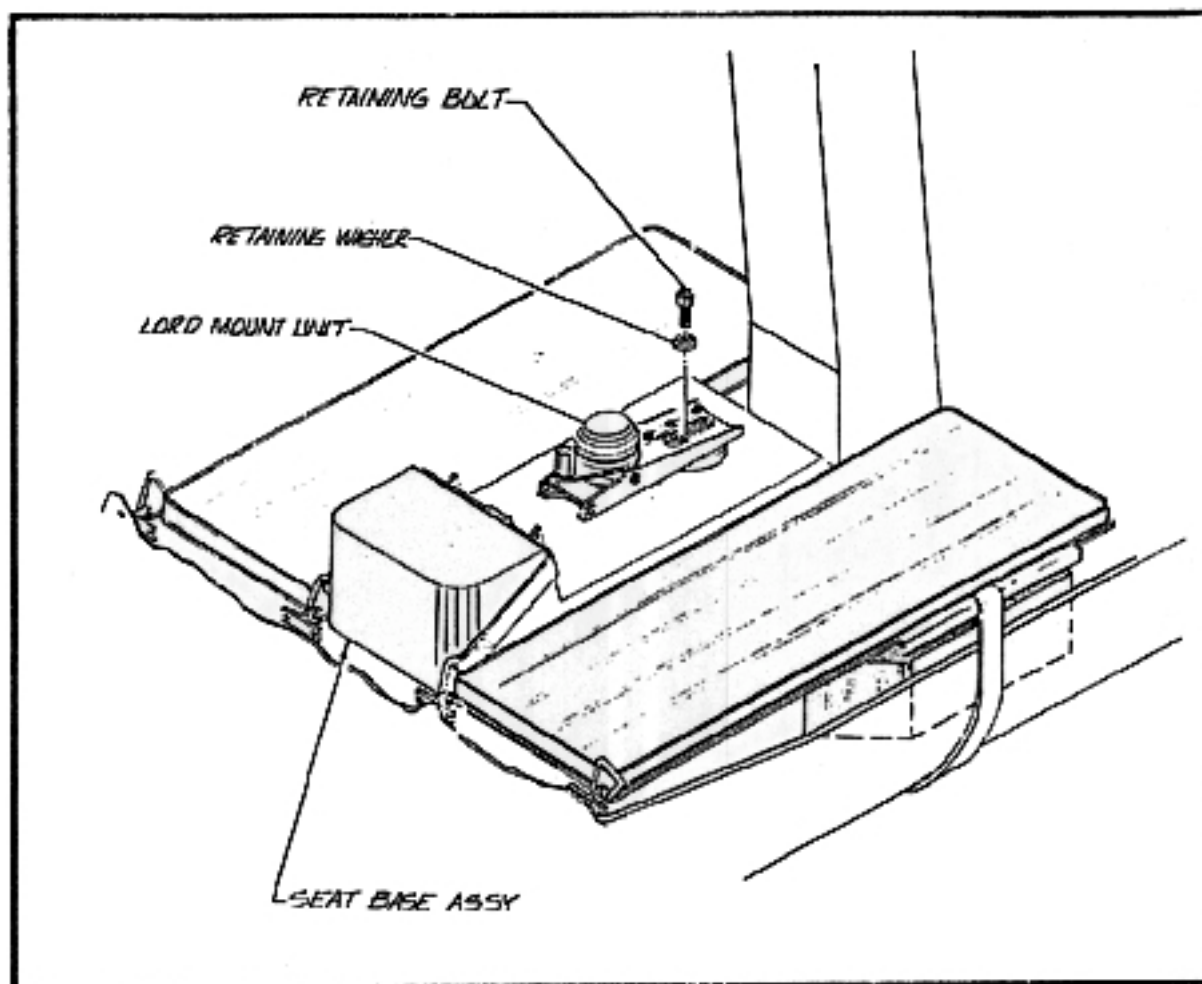
- Visually inspect all Tiedown straps for chaffing or wear.
- Visually check Tiedown bar for deformity or burrs.
- Visually check Major Mount for signs of damage.



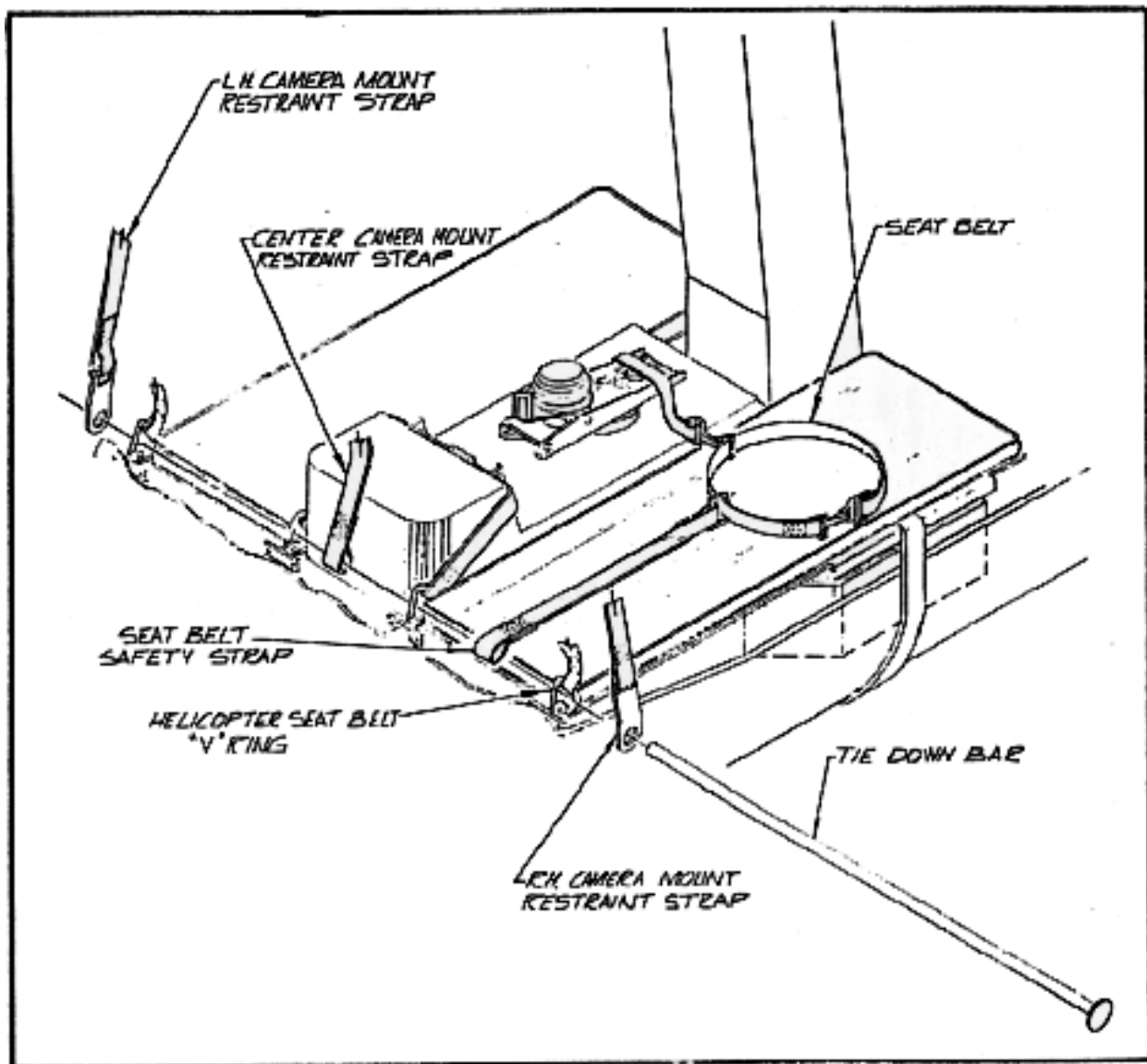
Lift Camera Platform into helicopter around the center support column, placing the foot risers (on the bottom of the Camera Platform) into the foot wells. The Camera Platform should fit snug against the support column and the rear foot well area.



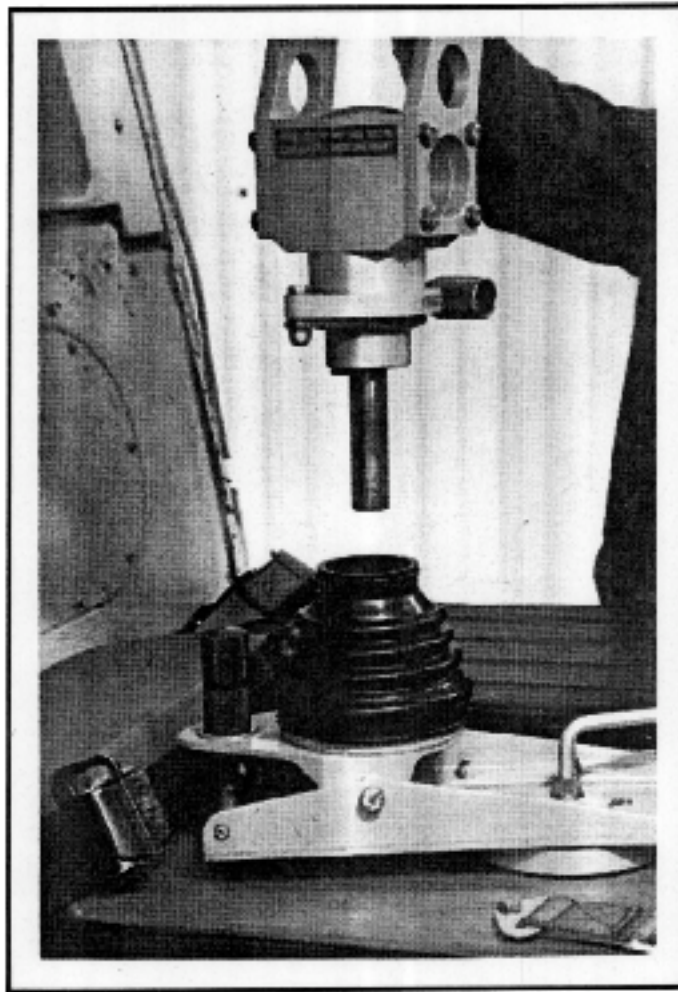
Place the helicopter seat belt through the two "D" Rings on the Camera Platform. Buckle the (existing) center seat belt together leaving it loose. A Belly Strap is provided (already attached) to one side of the Camera Platform. Make sure that the bottom antennas are out of the way. Place the belly strap around the bottom of the helicopter and connect it to the attach point ("D" Ring Strap) underneath the Camera Platform cushion on the other side. Slack in the Belly Strap should be pulled snug around the bottom of the helicopter.



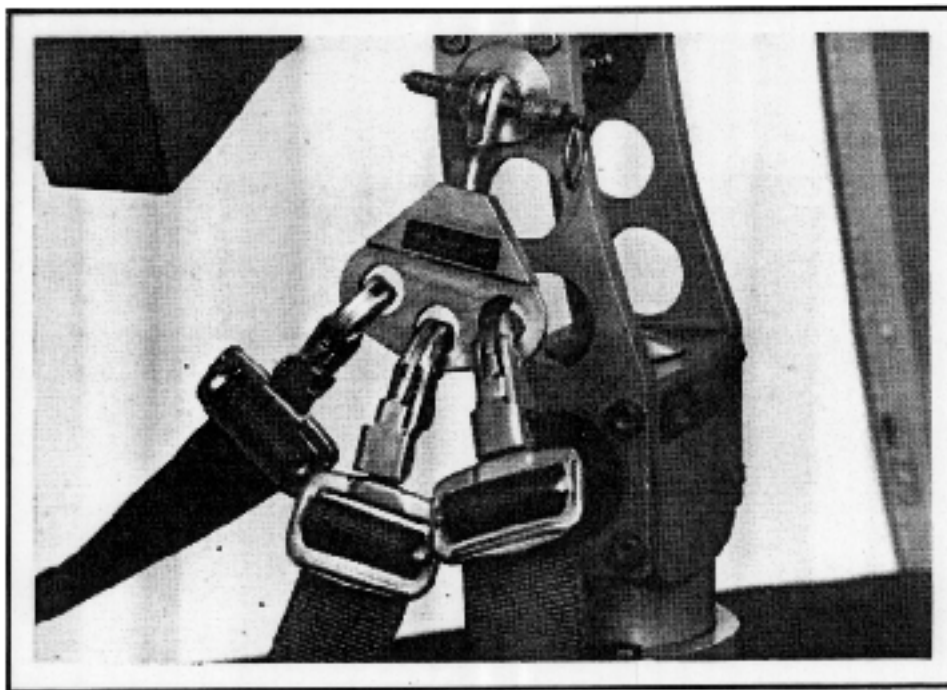
Install the Lord Mount unit. Line up the Lord Mount unit with the retaining bolt at the approximate center of the slot with the rubber Lord Mount boot to the Camera Operator's right. The slot should line up with the nose and tail direction of the helicopter. Tighten the retaining bolt with the allen wrench found on the Velcro patch on top of the Camera Platform.



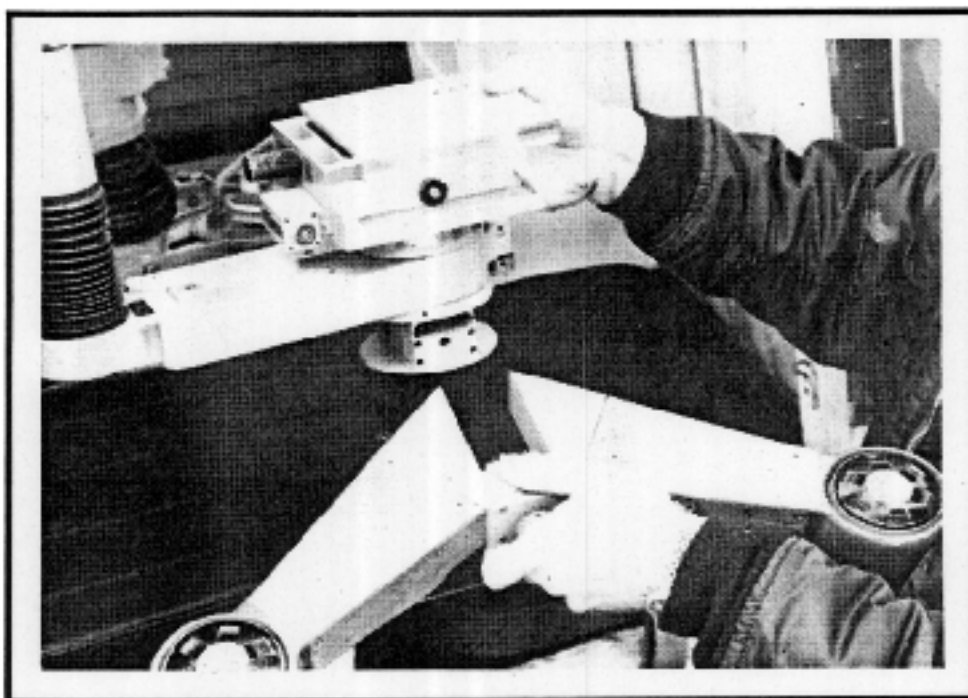
Slip the Tie-down Bar through the (Right Hand) camera mount Restraint Strap, then through the existing helicopter seat belt "D" Ring. Continue by sliding the Tie-Down Bar through the camera operator's seat belt safety strap and then through the second existing helicopter seat belt "D" Ring, and then through the center camera mount Restraint Strap. Continue sliding the Tie-down Bar through the third and fourth existing helicopter seat belt "D" Rings, and then through the (Left Hand) camera mount Restraint Strap. Secure with a bolt and nut through the end of the Tie-down Bar.



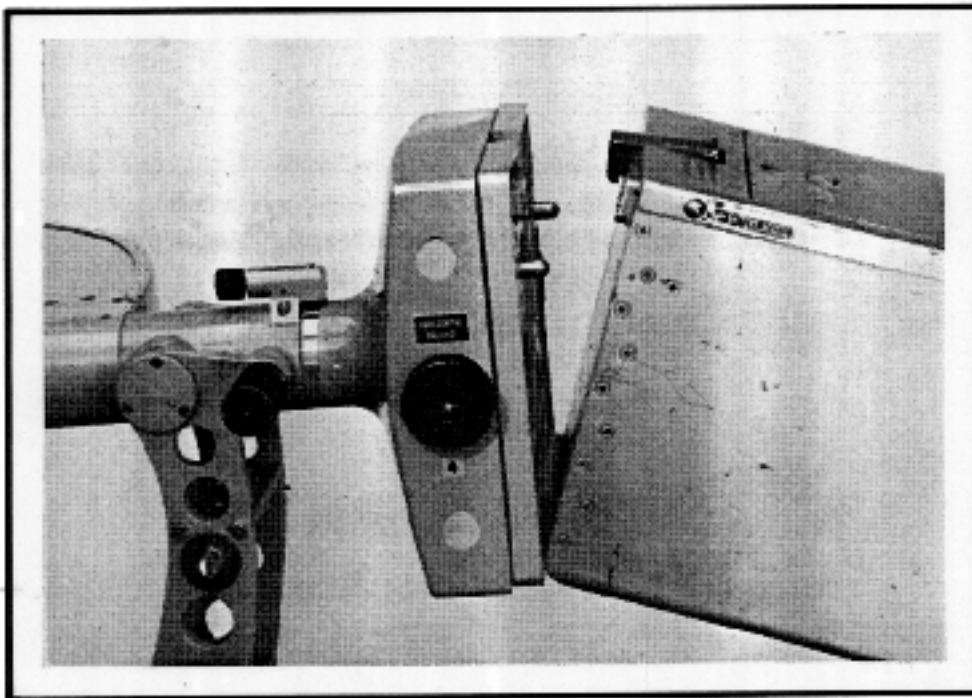
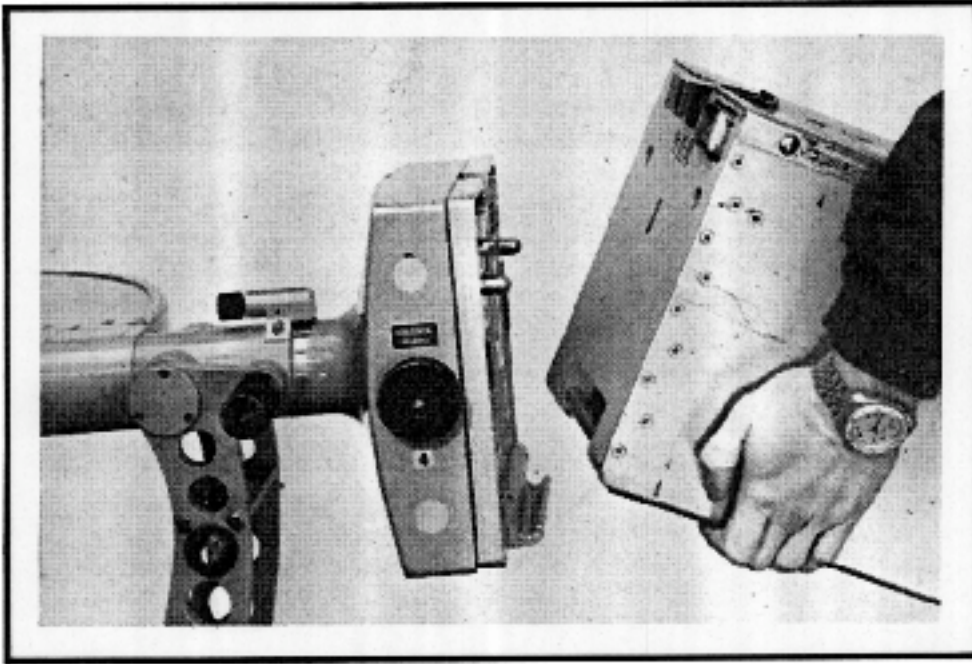
Install the Major Mount Arm, by lowering the Mast Post into the Lord Mount assembly. Engage the vertical mount locks (red knobs at the top of the Mast Post). Rotate the Mast Post until it engages into a detente in the Lord Mount.



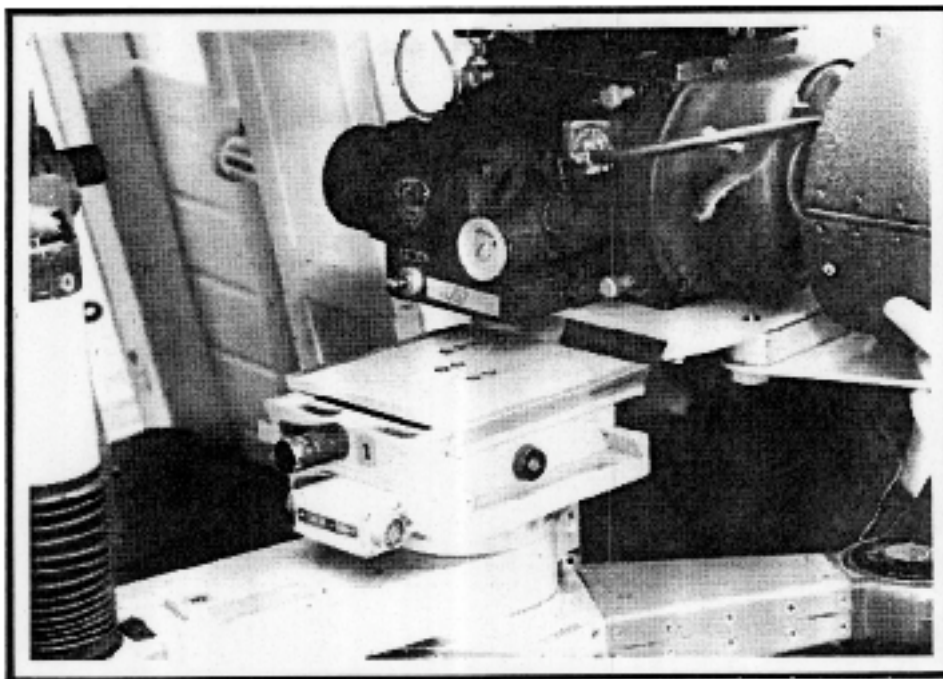
Attach the Restraint Strap Bracket to the Mast Post using a PI-pin. Attach the camera mount Restraint Straps to the Restraint Strap Bracket in their appropriate positions. Adjust the Restraint Straps so there is sufficient slack to allow the camera mount to move on the yaw (pan) axis.



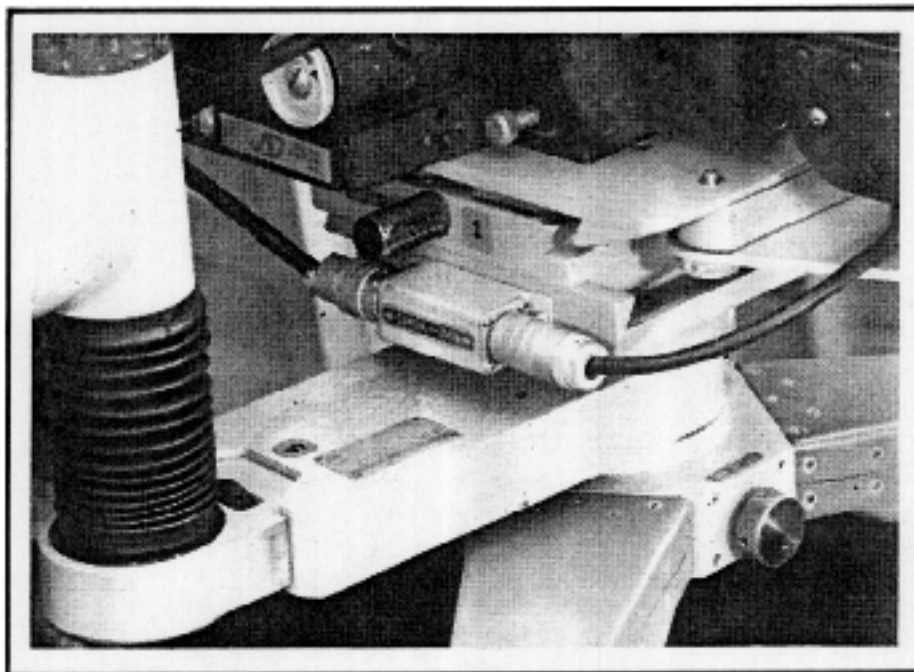
Connect the Hand Grip assembly and rotate the red knob (marked "Arm Release") clockwise until securely engaged.



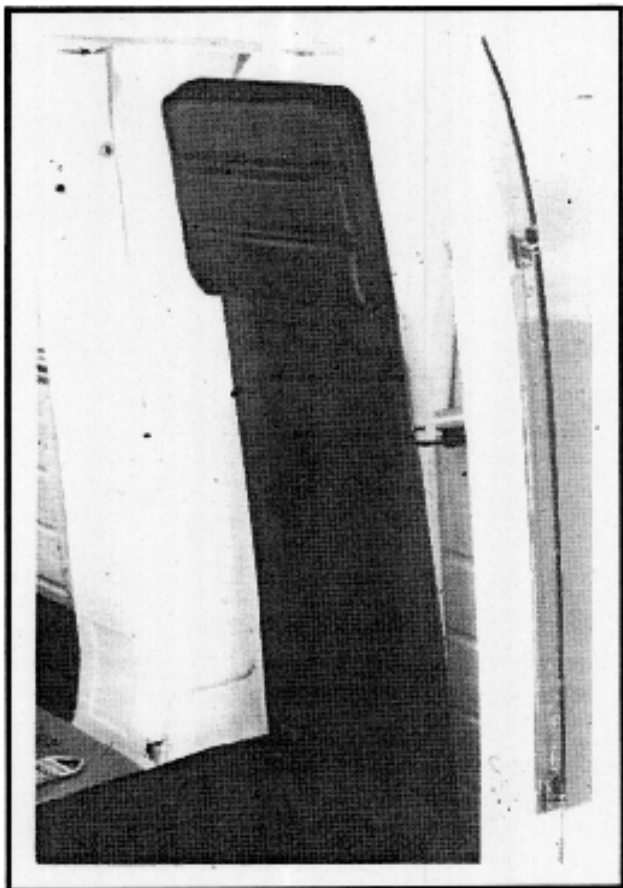
Install the Battery Box by placing the box-support shaft onto the corresponding channel at the rear of the balance arm, and raising the Battery Box until it automatically engages and locks.



Install the camera by sliding the dovetail of the Quick Release onto the camera support assembly. While depressing the "Camera Release" Lever, slide the camera in until the lock portion of the Lever has cleared the edge of the camera support assembly and let go of it while continuing to slide the camera in until the lock portion of the Lever snaps into the camera support assembly. The "Camera Release" Lever will be flush or level with the Quick Release Plate.



Connect wiring from camera to camera mount assembly.

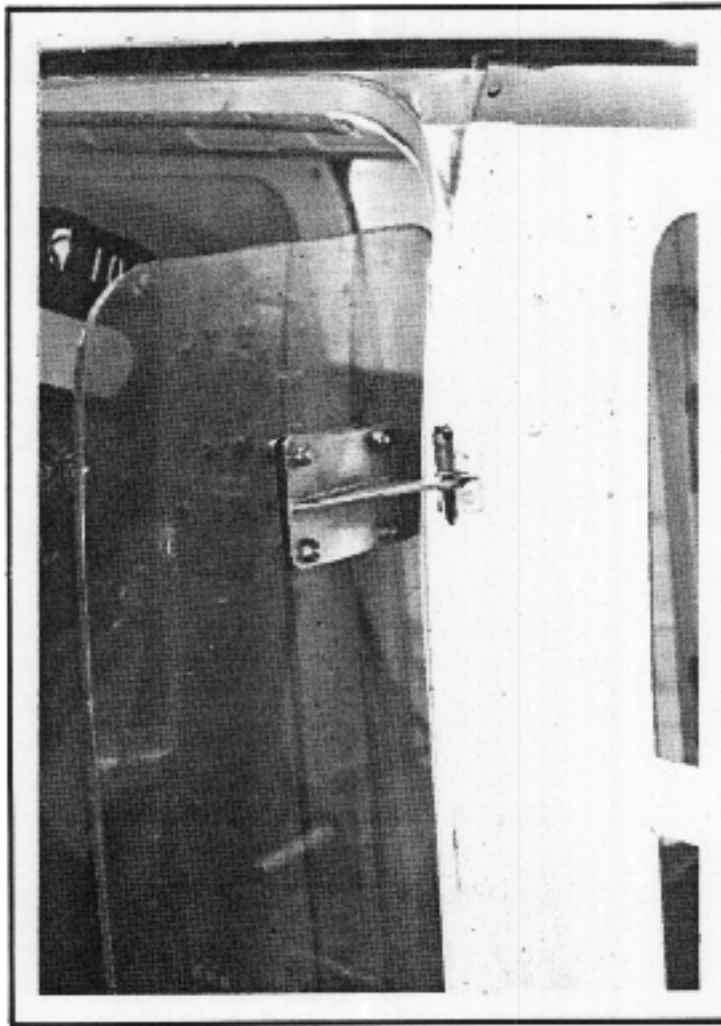


Hook the two Bungee Cords into the holes in the Back Support. Pull the Bungee Cords over the the pilot's back rest and hook them into the pilot's seat belt "D" Rings (one on each side).

Install Back Support assembly by connecting the hinge on the bottom of the Back Support to the hinge on the (Forward - Right Hand) side of the Camera Platform, using the Hinge Pin.

Note: The Back Support installs on the right side only.





Install the Lexan Wind-Screen to the existing door hinges. Secure with PI-pins or the bolts and nuts that normally hold the door in place. Install on the Right or Left side, depending on the direction the Camera Platform Arm is installation. This completes the installation for Right side filming. Reinstall the Left-Rear helicopter door.

Appendix A

1 Overview

This Appendix provides the requirements necessary to qualify additional sensor / camera / light payloads not listed in the front of this manual. It may also be used as a check list for previously approved sensor /cameras / light payloads if desired.

The STC flight testing was conducted and the STC approved with the largest and heaviest payload expected for use with this mount. The specific sensor/cameras/light not listed in the installation manual of equal or lesser than the limit case are accepted with this follow-on test plan.

For helicopters registered in the U.S. or other countries recognizing FAA certification:

Once the testing is completed by the Integrator/Operator and the flight test conducted by the Pilot/Operator and the FAA (certified) mechanic the sensor/camera/light payload can be added to the accepted list in this manual. The report contained herein must be completed and signed prior to the "return to service" for any sensor/camera/light payload.

The flight will be conducted as an "Operational Check Flight". Operational check flights do not require a special airworthiness certificate in the experimental category. The term "operational check flight" (14 CFR § 91.407(b)) includes flight tests performed to check installation and/or operation of an approved STC, amended TC, or any other FAA-approved data after installation and return to service.

Operational check flights are performed under the current airworthiness certificate.

The purpose of this test is to ensure the approved modification and/or alteration functions properly and does not adversely affect aircraft operation.

For helicopters registered in an EU-member state:

The specific sensor/camera/light to be added to the STC has to be introduced by a Minor Change with an EASA accepted certification program.

Once the testing is completed by the Integrator/Operator and the flight test conducted by the Pilot/Operator and EASA Engineer and the Minor Change is approved the sensor/camera/light, can be added to the accepted list in this manual. The report contained herein must be completed and signed prior to the "return to service" for sensor/camera/light.

The flights have to be conducted with a "Permit to Fly".

The purpose of this test is to ensure the approved modification and/or alteration functions properly and does not adversely affect aircraft operation.

For all helicopters:

The installation is assumed to have a self-contained power supply or connected to the aircraft through a previously approved electrical connection. If modification to the ship's system is necessary to support this installation, additional minor modifications with appropriate approval is necessary.

All systems are to be operational and an image viewable by one of the crew displayed in the cockpit/cabin. The pilot is not expected to make this evaluation and should direct his/her attention to flying the aircraft.

Pictures of the installation and location of the power and controller as used in the test will provide additional documentation for the record.

2 Sensor/ Camera/ payload

2.1 Make & Model _____

3 Test Team

3.1 Pilot/s

Print Name

3.2 Mechanic and/or Engineer and/or Camera Operator

Print Name

4 Test Aircraft Configuration and Location

4.1 Aircraft Model, Registration & Serial Number

Model

Registration Number

Serial Number

4.2 Test Configurations

Empty weight with appropriate fuel and camera system installed

Takeoff Gross weight with crew

Configuration	Gross Weight	Longitudinal CG	Lateral CG
Empty Wt			
Takeoff Wt			

4.3 Test Location

Airport or Test Site

5 Test Conditions

Date: _____

Weather: Ceiling _____ Visibility _____ Winds _____

Altimeter _____ Field Elevation _____

Flight Time: Engine Start _____ Shut Down _____ Flt Time _____

6 Flight Test

6.1 Overview

Applicable regulations demonstrated for compliance are indicated with the following symbol ➔. The testing required for the compliance findings of this installation will be made by as a subject/qualitative evaluation. Although the most critical CG is considered to be at the aft limit for most tests this configuration is mounted forward of the mast should not approach the aft limits. This also depends on crew loading. The test team conducts the following tests and evaluations and mark initial the box at the end of each section if the configuration successfully passes the requirements.

6.2 FAR § 27.51 Takeoff

6.2.1 APPLICABLE REGULATION

- ➔ (a) The takeoff, with takeoff power and rpm, and with the extreme forward center of gravity -
 - ➔ (1) May not require exceptional piloting skill or exceptionally favorable conditions; and
 - (2) Must be made in such a manner that a landing can be made safely at any point along the flight path if an engine fails.
- (b) Paragraph (a) of this section must be met throughout the ranges of -
 - (1) Altitude, from standard sea level conditions to the maximum altitude capability of the rotorcraft, or 7,000 feet, whichever is less; and
 - (2) Weight, from the maximum weight (at sea level) to each lesser weight selected by the applicant for each altitude covered by paragraph (b)(1) of this section.

6.2.2 METHOD OF COMPLIANCE

The recommended takeoff procedure must be demonstrated to remain clear of the HV "avoid" areas without requiring exceptional piloting skill or exceptionally favorable conditions.

A qualitative evaluation of the ability to safely land at any point along the flight path will be made using judgment and experience with the basic aircraft. No engine failure testing at low altitude will be conducted.

The normal takeoff procedures will be used for the sensor/camera/light payload and mount installation.

6.2.3 FINDINGS

Satisfactory ☐

6.3 FAR § 27.71 Glide Performance

6.3.1 APPLICABLE REGULATION

➔ For single engine helicopters and multiengine helicopters that do not meet the Category A engine isolation requirements of Part 29 of this chapter, the minimum rate of descent airspeed and the best angle of glide airspeed must be determined in autorotation at -

- (a) Maximum weight; and
- (b) Rotor speed(s) selected by the applicant.

6.3.2 METHOD OF COMPLIANCE

(1) Performance capabilities during stabilized autorotative descent are useful tools to assist the pilot when all engines fail. This information is also useful in determining the suitability of available landing areas along a given route segment.

(2) Two speeds are of particular importance, the speed for minimum rate of descent and the speed for best angle of glide. These speeds along with glide distance information are required as flight manual entries per FAR § 27.1587.

The best angle of glide performance will be evaluated at a single speed and low power (needles joined) descent. An autorotative descent starting at least 1000 feet above the ground and at the speed published in the RFM, 100% RPM value will be demonstrated. Small turns will be conducted in the descent.

The aircraft should be easily controllable and the difference between the mount and camera/sensor/light payload and the clean configuration is the evaluation point.

6.3.3 FINDINGS

Satisfactory Altitude Band H_P _____ Fuel Gage Reading _____

6.4 FAR § 27.143 Controllability and Maneuverability

6.4.1 APPLICABLE REGULATION

➔ (a) The rotorcraft must be safely controllable and maneuverable -

- ➔ (1) During steady flight; and
- ➔ (2) During any maneuver appropriate to the type, including -
 - ➔ (i) Takeoff;
 - ➔ (ii) Climb;
 - ➔ (iii) Level flight;
 - ➔ (iv) Turning flight;
 - (v) Glide;
 - ➔ (vi) Landing (power on and power off); and
 - (vii) Recovery to power on flight from a balked autorotative approach.

➔ (b) The margin of cyclic control must allow satisfactory roll and pitch control at VNE with -

- (1) Critical weight;
- (2) Critical center of gravity;
- (3) Critical rotor rpm; and
- (4) Power off (except for helicopters demonstrating compliance with paragraph (e) of this section) and power on.

(c) A wind velocity of not less than 17 knots must be established in which the rotorcraft can be operated without loss of control on or near the ground in any maneuver appropriate to the type (such as crosswind takeoffs, sideward flight, and rearward flight), with -

- (1) Critical weight;
- (2) Critical center of gravity;
- (3) Critical rotor rpm; and
- (4) Altitude, from standard sea level conditions to the maximum altitude capability of the rotorcraft or 7,000 feet, whichever is less.

(d) The rotorcraft, after failure of one engine in the case of multiengine rotorcraft that meet Transport Category A engine isolation requirements, or complete engine failure in the case of other rotorcraft, must be controllable over the range of speeds and altitudes for which certification is requested when such power failure occurs with maximum continuous power and critical weight. No corrective action time delay for any condition following power failure may be less than -

- (1) For the cruise condition, one second, or normal pilot reaction time (whichever is greater); and
- (2) For any other condition, normal pilot reaction time.

(e) For helicopters for which a VNE (power off) is established under § 27.1505(c), compliance must be demonstrated with the following requirements with critical weight, critical center of gravity, and critical rotor rpm:

- (1) The helicopter must be safely slowed to VNE (power off), without exceptional pilot skill, after the last operating engine is made inoperative at power on VNE.

(2) At a speed of 1.1 VNE (power off), the margin of cyclic control must allow satisfactory roll and pitch control with power off.

6.4.2 METHOD OF COMPLIANCE

The general requirements for control and for maneuverability are summarized in section (a), which is largely self-explanatory.

Section (b) specifies flight at V_{NE} with critical weight, center of gravity (CG), rotor RPM, and power. Adequate cyclic authority must remain at V_{NE} for nose down pitching of the rotorcraft and for adequate roll control.

The helicopter will be flown between 1000 and 3000 feet above ground. The test altitude will be dependent on traffic and terrain and conditions close to sea level pressure are desirable. V_{NE} will be the value stated in the RFM for the test density altitude. Qualitative measurement techniques (pilot opinion) will be used. The tests will include:

6.4.2.1 Takeoff

6.4.2.2 Climbing flight

6.4.2.3 Forward flight to V_{NE} at MCP (maybe less than MCP)

6.4.2.4 Left & right 30 degree bank turns at V_{NE} and at MCP (maybe less than MCP)

6.4.2.5 Take-off & Landings (Power on only).

The aircraft should be easily controllable and adequate cyclic margins should exist throughout the flight test points. The difference between the mount and sensor / camera / light payload and the clean configuration is the evaluation point.

6.4.3 FINDINGS

Satisfactory ☐ Cruise Altitude H_P _____ Fuel Gage Reading _____

6.5 FAR § 27.171 Stability: General

6.5.1 APPLICABLE REGULATION

➔ The rotorcraft must be able to be flown, without undue pilot fatigue or strain, in any normal maneuver for a period of time as long as that expected in normal operation. At least three landings and takeoffs must be made during this demonstration.

6.5.2 METHOD OF COMPLIANCE

Compliance with the requirements of this section can often be obtained for the VFR condition without any specific or designated flight testing. This test should be conducted with minimum required systems in the aircraft and with minimum flight crew.

Compliance with this requirement will be evaluated throughout the test program.

6.5.3 FINDINGS

Satisfactory ☐

6.6 FAR § 27.251 Vibration

6.6.1 APPLICABLE REGULATION

➔ Each part of the rotorcraft must be free from excessive vibration under each appropriate speed and power condition.

6.6.2 METHOD OF COMPLIANCE

This flight requirement may be both a qualitative and quantitative flight evaluation. Section 27.571(a) contains the flight load survey requirement that results in accumulation of vibration quantitative data. Section 27.629 generally requires quantitative data to show freedom from flutter for each part of the rotorcraft including control or stabilizing surfaces and rotors.

The aircraft should have a good track & balance for this evaluation. The airspeed should be evaluated at 20 kt increments out to the RFM V_{NE} speed. Variations in rotor RPM expected in normal flight should be evaluated. Changes in vibration are best sensed in the cyclic and pedal controls. The stability of the camera/sensor image will be a good indicator.

The pilot will make a subjective evaluation.

The difference between the mount and sensor / camera/ light payload and the clean configuration is the evaluation point.

6.6.3 FINDINGS

Satisfactory ☐

6.7 **FAR § 27.773 Pilot Compartment View**

6.7.1 APPLICABLE REGULATION

(a) Each pilot compartment must be free from glare and reflections that could interfere with the pilot's view, and designed so that--

➔ (1) Each pilot's view is sufficiently extensive, clear, and undistorted for safe operation; and

(2) Each pilot is protected from the elements so that moderate rain conditions do not unduly impair his view of the flight path in normal flight and while landing.

➔ (b) If certification for night operation is requested, compliance with paragraph (a) of this section must be shown in night flight tests.

6.7.2 METHOD OF COMPLIANCE

The section outlines requirements for pilot view in fairly general terms. The aircraft was approved with the installed glare shield and instrument panel that meet the rules. Any additional equipment/monitors must be positioned so as not to limit or obstruct the pilot's field of view. There will be some cases where the installation will be temporary and for a unique mission and consideration should be given for these limited cases and time.

If night operations are expected with an operational system, a "dark cockpit" or night evaluation will be necessary to insure the glare/reflection will not interfere with the pilot duties. A limitation to the use at night is an option.

Satisfactory ☐

6.8 **FAR § 27.787 Cargo & Baggage Compartment**

6.8.1 APPLICABLE REGULATION

Cargo and baggage compartments.

(a) Each cargo and baggage compartment must be designed for its placarded maximum weight of contents and for the critical load distributions at the appropriate maximum load factors corresponding to the specified flight and ground load conditions, except the emergency landing conditions of Sec. 27.561.

(b) There must be means to prevent the contents of any compartment from becoming a hazard by shifting under the loads specified in paragraph (a) of this section.

➔ [(c) Under the emergency landing conditions of Sec. 27.561, cargo and baggage compartments must--

- (1) Be positioned so that if the contents break loose they are unlikely to cause injury to the occupants or restrict any of the escape facilities provided for use after an emergency landing; or
- (2) Have sufficient strength to withstand the conditions specified in Sec. 27.561 including the means of restraint, and their attachments, required for the maximum authorized weight of cargo and baggage at the critical loading distribution.]
- (d) If cargo compartment lamps are installed, each lamp must be installed so as to prevent contact between lamp bulb and cargo.

6.8.2 METHOD OF COMPLIANCE

Amendment 27-27 adds two subparagraphs to § 27.787(c) which clarify that cargo and baggage compartments should be designed to protect occupants from injury by the compartment contents during emergency landings. This may be done by location or by retention provisions.

The sensor/camera/light controllers and power supply must be located and secured in a position that will not endanger occupants in an emergency landing impact.

Consideration should be given to stowage and egress when filming in hovering flight. In some cases this might not be possible.

6.8.3 FINDINGS

Comment: _____

Satisfactory ☐

6.9 **FAR § 27.1301 Function and Installation.**

6.9.1 APPLICABLE REGULATION

Each item of installed equipment must--

- ➔ (a) Be of a kind and design appropriate to its intended function;
- (b) Be labeled as to its identification, function, or operating limitations, or any applicable combination of these factors;
- (c) Be installed according to limitations specified for that equipment; and
- ➔ (d) Function properly when installed.

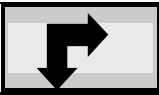
6.9.2 METHOD OF COMPLIANCE

For optional equipment, the emphasis on functioning is rather limited compared to that for required equipment. The conditions under which the optional equipment is evaluated should be recorded in the report. The major emphasis for this type of equipment should be to ensure it does not interfere with the operation of systems that are required for safe operation of the rotorcraft, and that the failure modes are acceptable and do not create any hazards.

During flight operations, operate all avionics and electrical systems. Complete the matrix below. The matrix is laid out with the newly installed equipment listed at the top of the page and all aircraft systems listed down the left side of the page. Note any EMI or RFI either TO or FROM the installed equipment. Note any anomalies or EMI/RFI interference to other instruments or indications during all testing phases of flight.

Each item must be checked. Check off each block if no interference is noted. If interference is present during the test, DO NOT CHECK THE BOX and explain in Comments section at end of section. If applicable, note relevant conditions (i.e. frequencies, OBI selection, function modes) under which the interference occurred.

6.9.3 FINDINGS

Interference?		Camera/Sensor/Light	Position Controller
Camera/Sensor/Light			
Position Controller			
VHF Comm 1			
VHF Comm 2			
VHF Comm 3			
VHF NAV 1			
VHF NAV 2			
ADF 1			
XPONDER 1			
Other Radios			
Audio 1			
Audio 2			
Standby Compass			
Engine Inst			
Fuel Gage			
Clock			
Voltmeter			
Ammeter			
Other			

EMI / RFI Comments:

Satisfactory ☐

7 Signatures

General test findings _____

Pilot Signature _____

Mechanic/ Engineer _____

Other Flt Personnel Signature & Function _____

8 References

1. *14 Code of Federal Regulations, Aeronautics and Space, Chapter I – Federal Aviation Administration, Department of Transportation, Subchapter C – Aircraft, Part 27* (Revised as of 1 January 2000.)
2. *Federal Aviation Administration, Advisory Circular, AC 27-1B Certification of Normal Category Rotorcraft* (ASW-110, September 9, 1999)

United States Of America
Department of Transportation - Federal Aviation Administration
Supplemental Type Certificate

Number SH3234NM

This Certificate issued to Tyler Camera Systems
14218 Aetna Street
Van Nuys, California 91401

Certifies that the change in the type design for the following product with the limitations and conditions therefor as specified hereon meets the airworthiness requirements of Part 6/27 of the Civil Air/Federal Aviation Regulations.* * Certification basis is set forth in Type Certificate Data Sheet H2SW

Original Product Type Certificate Number : H2SW

Make : Bell

Model : 206, 206A, 206B, 206L-1, 206L-3, 206A-1, 206B-1,
206L, 206L-4, and 407

Description of Type Design Change: Installation of major mount camera system in accordance with FAA approved Tyler Camera Systems Master Drawing List TCS 2-85, Revision D, dated March 11, 1986, or later FAA approved revisions.

Limitations and Conditions: Approval of this change in type design applies to the aircraft models listed above only. This approval should not be extended to aircraft of this model on which other previously approved modifications are incorporated unless it is determined that the interrelationship between this change and any of those other previously approved modifications, including changes in type design, will introduce no adverse effect upon the airworthiness of that aircraft. This determination should include consideration of significant changes in weight distribution such as an increase in the fixed disposable weight in the fuselage. (Continued)

This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.

Date of application : January 26, 1984

Date reissued :

Date of issuance : March 19, 1986

Date amended : June 31, 1994; December 9, 1996;
April 17, 2006



By direction of the Administrator

Carlton K. Wo
(Signature)

Manager, Technical & Administrative Support
Staff, Los Angeles Aircraft Certification Office
(Title)

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.

INSTRUCTIONS: The transfer endorsement below may be used to notify the appropriate FAA Regional Office of the transfer of this Supplemental Type Certificate.

The FAA will reissue the certificate in the name of the transferee and forward it to him.

TRANSFER ENDORSEMENT

Transfer the ownership of the Supplemental Type Certificate Number _____

to *(Name of transferee)* _____

(Address of transfer) _____
(Number and street)

(City, State, and Zip code)

from *(Name of grantor)* *(Print or type)* _____

(Address of grantor) _____
(Number and street)

(City, State, and Zip code)

Extent of Authority (if licensing agreement): _____

Date of Transfer: _____

Signature of grantor *(In ink)* _____

United States Of America
Department of Transportation - Federal Aviation Administration
Supplemental Type Certificate
(Continuation Sheet)
Number SH3234NM

Limitations and Conditions: (Continued)

The FAA approved Rotorcraft Flight Manual Supplement No. TCS 14-85, Revision "B", dated August 1, 2005, or later FAA approved revisions, for the major mount camera system installation is required.

Operation Limitations: The following flight speed limitations apply to the Bell Models 206, 206A, 206B, 206L-1, 206L-3, 206A-1, 206B-1, 206L, 206L-4, and 407 helicopters equipped with the Tyler major mount camera system installation:

LIMITATIONS

1. V_{NE} 100 mph (89 KCAS) power ON or OFF with mount, with or without camera assembly and Lexan Wind Guard, with ONE or Both Aft Cabin Doors OFF, sea level to 300 ft. density altitude.
2. V_{NE} 80 mph (69 KCAS) power ON or OFF with mount, with or without camera assembly and Lexan Wind Guard, with ONE or Both Forward, All, or Any Combination of Forward and Aft Doors Off, sea level to 3000 ft. density altitude.
3. Decrease V_{NE} 2.3 mph (or 2 kts) per 1000 ft. above density altitude.
4. Protracted Rearward and Sideward flight Prohibited with any combination of Doors Off, with or without camera assembly and Lexan Wind Guard.

A copy of this Certificate must be maintained as part of the permanent records for the modified aircraft. If the holder agrees to permit another person to use this certificate to alter the product, the holder shall give the other person written evidence of that permission.

- END -

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.

FAA FORM 8130-2 (10-68)

Page 3 of 3

This certificate may be transferred in accordance with FAR 21.47.



14218 Aetna St.
Van Nuys, CA 91401

Document Number TCS 14-85

**FAA APPROVED
ROTORCRAFT FLIGHT MANUAL
SUPPLEMENT
FOR THE
BELL MODEL 206 SERIES
& 407 SERIES
WHEN EQUIPPED WITH THE
TYLER 806 MAJOR MOUNT**

REGISTRATION #: _____ SERIAL #: _____

This supplement must be attached to the FAA Approved Bell Rotorcraft Flight Manual when the rotorcraft is modified by the installation of the **Tyler 806 Major Mount** in accordance with

STC No. SH 3234 NM

The information contained herein supplements or supersedes the basic manual only in those areas listed herein. For limitations, procedures, and performance information not contained in this supplement, consult the basic Rotorcraft Flight Manual.

FAA APPROVED

Patricia Power

Manager, Flight Test Branch, ANM-160L
Federal Aviation Administration
Los Angeles Aircraft Certification Office
Transport Airplane Directorate

Rev B. DATE August 1, 2005

Original FAA Approval Date: March 18, 1986



14218 Aetna St.
Van Nuys, CA 91401
Document Number TCS 14-85


Supplement to the Bell RFM for
206 SERIES & 407 SERIES
Tyler 806 Major Mount
STC No. SH3234NM

RECORD OF REVISIONS

TYLER CAMERA SYSTEMS

TYLER 806 MAJOR MOUNT

LOG OF REVISIONS

REV. NO.	PAGES		DESCRIPTION	FAA APPROVED
	NO.	DATE		
Orig.	All	11/11/85	INITIAL RELEASE	 <small>Robert J. Anderson Special Agent in Charge Federal Bureau of Investigation</small>

A	All	11/17/96	Revision to add Bell Models 806L and 806L6
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FAA Approved: 
 Mr., Mr. Tom H., MRN-100L
 FAA, Los Angeles AOB
 Transport Airplane Directorate

FAA Approval Date: 11-29-96



14218 Aetna St.
Van Nuys, CA 91401
Document Number TCS 14-85

Supplement to the Bell RFM for
206 SERIES & 407 SERIES
Tyler 806 Major Mount
STC No. SH3234NM

RECORD OF REVISIONS

Rev No.	Page No.	Date	Description of Change	FAA Approved
B	Cover I-III 1-4	8/1/05 8/1/05 8/1/05	Change from 206 models to 206 Series and add 407 Series Change header all pages Add ref to 91.105 Add sta loc for weight & balance	<u>Patricia Power</u> Manager, Flight Test Branch, ANM-160L Federal Aviation Administration Los Angeles Aircraft Certification Office Transport Airplane Directorate DATE: <u>August 1, 2005</u>



14218 Aetna St.
Van Nuys, CA 91401
Document Number TCS 14-85

Supplement to the Bell RFM for
206 SERIES & 407 SERIES
Tyler 806 Major Mount
STC No. SH3234NM

TABLE OF CONTENTS

SECTION	PAGE
GENERAL.....	2
Section 1 - LIMITATIONS	3
Section 2 - PROCEDURES	4
Section 3 - PERFORMANCE	4
Section 4 - WEIGHT & BALANCE	4

TABLE OF FIGURES

FIGURE	PAGE
Figure 1 - Major Mount Installed in B 206 Long Ranger	2



14218 Aetna St.
Van Nuys, CA 91401
Document Number TCS 14-85

Supplement to the Bell RFM for
206 SERIES & 407 SERIES
Tyler 806 Major Mount
STC No. SH3234NM

GENERAL

The Tyler Major Mount consists of a platform attached in the rear seat area. The primary installation is in the right rear door/sear area, however the platform can be installed in the left rear seat area. The platform is secured to the rear seat area by a set of "D" rings which attach to the seat belt tabs. A single crewmember/operator maneuvers the camera system. A Lexan Wind Guard may be installed at the door attach points. A footrest attaches to the platform.



Figure 1 Major Mount Installed in B 206 Long Ranger

Rev. B FAA Approved Date: August 1, 2005

Page 2 of 4



14218 Aetna St.
Van Nuys, CA 91401
Document Number TCS 14-85

Supplement to the Bell RFM for
206 SERIES & 407 SERIES
Tyler 806 Major Mount
STC No. SH3234NM

The basic Tyler Camera Systems 806 Major Mount configuration is with Camera Assembly (Camera, Mount, gyros and film magazine) installed. Operation, installation and removal of the Camera Assembly and Camera Ballast are to be conducted in accordance with Tyler Camera Systems Installation Manual No. TCS 4-85.

The mount may be installed or removed by a Tyler Camera Systems trained technician, pilot, or mechanic, and must be recorded in accordance with FAR 43.9

Section 1 - LIMITATIONS

- The camera operator, performing an essential function in conjunction with the operation, is considered to be a required crewmember in accordance with the provisions of FAR 91.105 B (1) (2) while using the Major Mount Camera System.
- V_{NE} = 100 MPH or 87 KTS power ON or OFF with Major Mount, with or without camera assembly and Lexan Wind Guard, with ONE or BOTH AFT cabin doors off, sea level to 3000 ft density altitude.
- Decrease V_{NE} 2.3 MPH or 2 KTS per 1000 ft. above 3000 ft. density altitude.
- Protracted Rearward and Sideward flight prohibited with any combination of doors OFF, with or without camera assembly and Lexan Wind Guard.
- Completed Tyler Major Mount may use ships auxiliary power outlet, but may not exceed 28 volts, 400 watts.

Rev. B FAA Approved Date: August 1, 2005

Page 3 of 4



14218 Aetna St.
Van Nuys, CA 91401
Document Number TCS 14-85

Supplement to the Bell RFM for
206 SERIES & 407 SERIES
Tyler 806 Major Mount
STC No. SH3234NM

Section 2 - PROCEDURES

- Check the installation for security.
- Secure all loose items in the cabin area.

Section 3 - PERFORMANCE

- No change to hover performance
- Use the published doors OFF climb performance

Section 4 - WEIGHT & BALANCE

- Major Mount position for the 206 A & B for the right side configuration
 - Longitudinal station location = 99 inches
 - Lateral station location = +17 inches
- Major Mount position for the B 206 L, L-1, L-3 & 407 for the right side configuration
 - Longitudinal station location = 117 inches
 - Lateral station location = + 17 inches

206 JET RANGER

ITEM:	WEIGHT	ARM	MOMENT	ARM	MOMENT
AIRCRAFT EMPTY WEIGHT & C.G.	1830.8	114.23	209132.28	0.28	512.62
CAMERA MOUNT LEFT SIDE	0	104	0	-11	0.00
CAMERA PACKAGE LEFT SIDE 135Lbs max	0	104	0.00	-11	0.00
CAMERA OPERATOR LEFT SIDE	0	88	0.00	-11	0.00
CAMERA MOUNT RIGHT SIDE	180	104	18720	14.2	2556.00
CAMERA PACKAGE RIGHT SIDE 135Lbs max	35	104	3640.00	14.2	497.00
CAMERA OPERATOR RIGHT SIDE	170	88	14960.00	14.2	2414.00
SUBTOTAL:	2215.80	111.224968	246452.28	2.70	5979.62
PILOT (A+) FORWARD RIGHT	170	65	11050	14.2	2414
CO-PILOT (A-) FORWARD LEFT	0	65	0	-11	0
PASSANGER (A+) FORWARD RIGHT	0	104	0	14.2	0
PASSANGER (A-) FORWARD LEFT	0	104	0	-11	0
FUEL(76 GAL. MAX.) X 6.8 GAL.	76	516.80	116	59948.80	0
EQUIPMENT SUBTOTAL:	686.80		70998.80		2414.00
TOTAL AIRCRAFT WEIGHT:	2902.60	109.37	317451.08	2.89	8393.62
AIRCRAFT MAX GROSS WEIGHT:	3200				
NEW USEFUL LOAD:	297.40				
NEW CENTER OF GRAVITY (LONGITUDINAL)	109.37				
NEW CENTER OF GRAVITY (LATERAL)	2.89				

LATERAL C.G. LIMITS:

L/H LIMIT: 3.00 IN. MINUS
R/H LIMIT: 4.00 IN. PLUS

LONGITUDINAL C.G. LIMITS:

FORWARD LIMIT:

106.0 IN. @ 2100 Lbs.

106.0 IN. @ 3000 Lbs.

REARWARD LIMIT:

114.2 IN. @ 2100 Lbs.

112.1 IN. @ 3000 Lbs.

206L - LONG RANGER

ITEM:	WEIGHT	ARM	MOMENT	ARM	MOMENT
AIRCRAFT EMPTY WEIGHT & C.G.	2250	130.7	294075.00	0.30	675.00
				-	
CAMERA MOUNT LEFT SIDE	0	129	0	16.8	0.00
CAMERA PACKAGE LEFT SIDE 135 Lbs				-	
max	0	129	0.00	16.8	0.00
				-	
CAMERA OPERATOR LEFT SIDE	0	113	0.00	16.8	0.00
CAMERA MOUNT RIGHT SIDE	180	129	23220	16.8	3024.00
CAMERA PACKAGE RIGHT SIDE 135 Lbs					
max	50	129	6450.00	16.8	840.00
CAMERA OPERATOR RIGHT SIDE	200	113	22600.00	16.8	3360.00
SUBTOTAL:	2680	129.233209	346345.00	2.95	7899.00
PILOT (A+) FORWARD RIGHT	170	65	11050	14.2	2414
CO-PILOT (A-) FORWARD LEFT	0	65	0	-11	0
PASSANGER (A+) FORWARD RIGHT	0	91	0	16.8	0
				-	
PASSANGER (A-) FORWARD LEFT	0	91	0	16.8	0
PASSANGER (A+) FORWARD RIGHT	0	129	0	16.8	0
				-	
PASSANGER (A-) FORWARD LEFT	0	129	0	16.8	0
REAR BAGGAGE	0	177	0	0	0
FUEL(98.4 GAL. MAX.) X 6.8 GAL.	98	666.40	130.40	86898.56	0
EQUIPMENT SUBTOTAL:	836.40		97948.56		2414.00
TOTAL AIRCRAFT WEIGHT:	3516.40	126.35	444293.56	2.93	10313.00
MAX GROSS WEIGHT INTERNAL:	4050				LATERAL C.G. LIMITS:
MAX GROSS WEIGHT EXTERNAL	4250				
NEW USEFUL LOAD:	533.60				
NEW CENTER OF GRAVITY					
(LONGITUDINAL)	126.35				L/H LIMIT:4.00 IN. MINUS
NEW CENTER OF GRAVITY (LATERAL)	2.93				R/H LIMIT: 3.5 IN. PLUS

LONGITUDINAL C.G. LIMITS:

FORWARD LIMIT:

118.0 IN. @ 2800 Lbs.

119 IN. @ 4000 Lbs.

REARWARD LIMIT:

128.5 IN.@ 2900 Lbs.

126.5 IN. @ 4000 Lbs.

407 MAJOR MOUNT

MODEL	REG	S/N	PILOT
407			N/A

LONG			LAT	
WT.	ARM	MOMENT	ARM	MOMENT

WT.	ARM	MOMENT	ARM	MOMENT
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AIRCRAFT EMPTY WEIGHT & C.G.	3384	131.14	443777.76	0.19	642.96
CAMERA MOUNT LEFT SIDE	0	129	0	-16.8	0.00
CAMERA OPERATOR LEFT SIDE	0	113	0	-16.8	0.00
CAMERA PACKAGE LEFT SIDE 135					
Lbs max	0	129	0.00	-16.8	0.00
CAMERA MOUNT RIGHT SIDE	180	129	23220	16.8	3024.00
CAMERA PACKAGE RIGHT SIDE 135					
Lbs max	50	129	6450.00	16.8	840.00
CAMERA OPERATOR RIGHT SIDE	170	113	19210.00	16.8	2856.00

SUBTOTAL:	3784	130.1949683	492657.76	1.95	7362.96
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PILOT (A+) FORWARD RIGHT	170	65	11050	14.2	2414
CO-PILOT (A-) FORWARD LEFT	0	65	0	-11	0
PASSANGER (A+) FORWARD RIGHT	0	91	0	16.8	0
PASSANGER (A-) FORWARD LEFT	0	91	0	-16.8	0
PASSANGER (A+) FORWARD RIGHT	0	129	0	16.8	0
PASSANGER (A-) FORWARD LEFT	0	129	0	-16.8	0
FUEL(127.8 GAL. MAX.) X 6.8 GAL.	127	863.60	130.40	112613.44	0

EQUIPMENT SUBTOTAL:	1033.60	123663.44	2414.00
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TOTAL AIRCRAFT WEIGHT:	4817.60	127.93	616321.20	2.03	9776.96
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MAX GROSS WEIGHT INTERNAL:

5000

LATERAL C.G. LIMITS:

MAX GROSS WEIGHT EXTERNAL

6000

NEW USEFUL LOAD:

182.40

LAT. BASED ON INTERNAL WT.

NEW CENTER OF GRAVITY

(LONGITUDINAL)

127.93

NEW CENTER OF GRAVITY (LATERAL)

2.03

L/H LIMIT: -2.5 IN. MINUS

R/H LIMIT: +3.0 IN. PLUS

LONGITUDINAL C.G. LIMITS:

FORWARD LIMIT EXTERIOR:

119.0 @ 4500 Lbs.

120.5 @ 6000 Lbs

REARWARD LIMITS EXTERNAL

129.0 @ 5000 Lbs.

127.6 @ 6000 Lbs.

FORWARD LIMIT INTERIOR:

119.0 IN. @ 4500 Lbs.

119.5 IN. @ 5000 Lbs.

REARWARD LIMIT:

126.5 IN. @ 4000 Lbs.

129.0 IN.@ 5000 Lbs.