



- **Cargo Rack**
- **Power Bench**
- **Sensor Frame**

MD500

Installation Manual



Tyler • Cargo Rack • Power Bench • Sensor Frame
For MD500 Series Helicopters
FAA STC # SR01682LA



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





MODEL: MD 369

REPORT #: INST MD5-001

JOB #: _____

DATE: 08/17/04

CARGO RACK (MODEL H500)
 INSTALLATION MANUAL FOR
 MD 369 D,E,F,FF,500N,600N MODELS

PREPARED BY: C. Tyler

OF PAGES: 19

CHECKED BY: N. Tyler

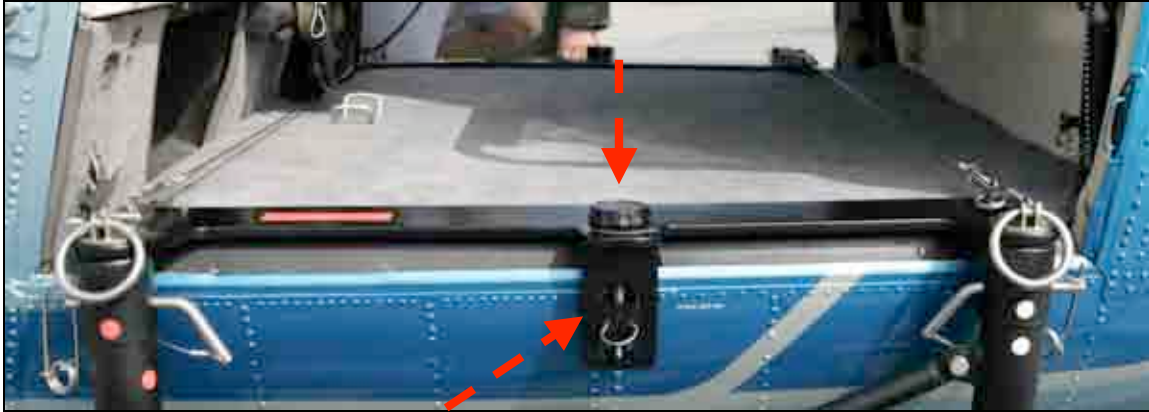
OF DRAWINGS: 0

APPROVED BY: G. Wood

RECORD OF REVISIONS

No.	Revision Inserted	Date	EFFECTIVE PAGES	By D.E.R.
0	N/C	08/17/04	ALL	
1	A	08/12/08	ADDITION OF SENSOR FRAME	
2				
3				
4				

SECTION 1 – INSTALLATION OF CARGO RACK (17” or 48”)



- 1.) Place floor plates (left and right sides) on floor of ship as shown. Insert tab into side of aircraft. Note: Lightly tighten the Lock Knobs (later they will be tightened firmly).



- 2.) Install Cross Cables Assemblies (two on each side) and leave cam-over buckles open (until later).



- 3.) Assemble left/right-front and left/right-rear Platform Tubes by placing them laterally under the ship and connecting the halves with the L-Pins and Safety Clips.



- 4.) Lift Support Tubes up and insert both tubes (on each side) into floor-plate receptacles and fasten with the L-Pins and Safety Clips.



4.) Install fore-to-aft cross brace, using pip-pins.



5.) Firmly tighten Lock Knobs (one on each side).



6.) Adjust for snug tension, then latch cam-over buckles and secure with pip-pins.

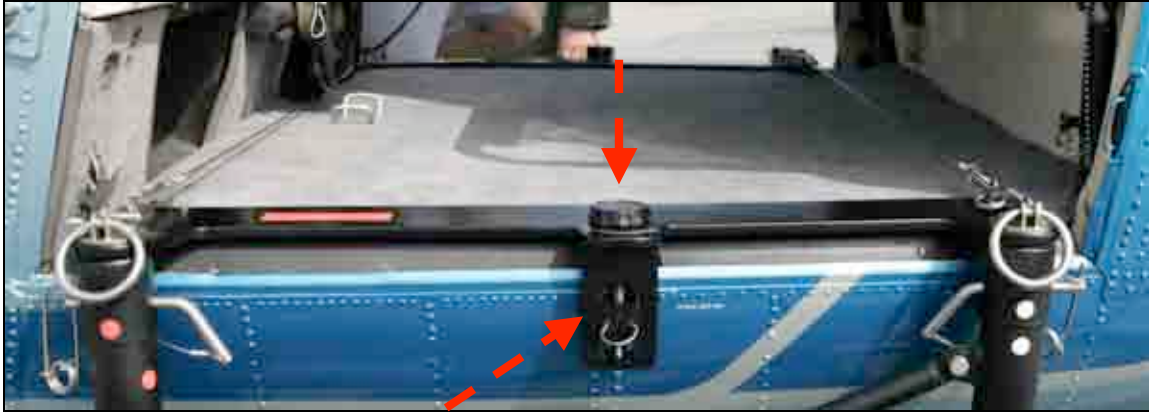


- 5.) Install Cargo Rack (17" or 48") using four (4) bolts, but do not tighten bolts at this time.



Alternate Cargo Rack (48")

SECTION 2 – INSTALLATION OF POWER BENCH (31”)



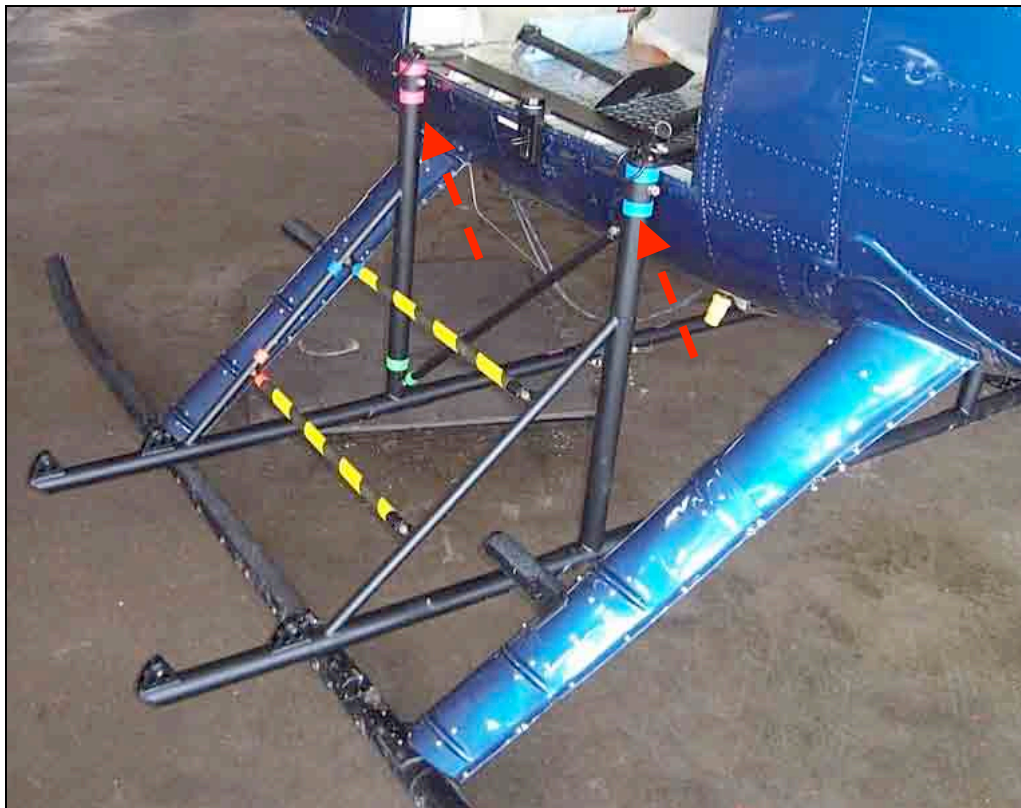
- 1.) Place floor plates (left and right sides) on floor of ship as shown. Insert tab into side of aircraft. Note: Lightly tighten the Lock Knobs (later they will be tightened firmly).



- 2.) Install Cross Cables Assemblies (two on each side) and leave cam-over buckles open (until later).



- 2.) Assemble left/right-front and left/right-rear Platform Tubes by placing them laterally under the ship and connecting the halves with the L-Pins and Safety Clips.



- 3.) Lift Support Tubes up and insert both tubes (on each side) into floor-plate receptacles and fasten with the L-Pins and Safety Clips.



4.) Install fore-to-aft cross brace, using pip-pins.



5.) Firmly tighten Lock Knobs (one on each side).



6.) Adjust for snug tension, then latch cam-over buckles and secure with pip-pins.



- 4.) Install 31" Power Bench using four (4) bolts, but do not tighten bolts at this time.

SECTION 3 – OPTIONAL COUNTERWEIGHT INTALLATION



Optional Counterweight Unit for Cargo Rack or Power Bench

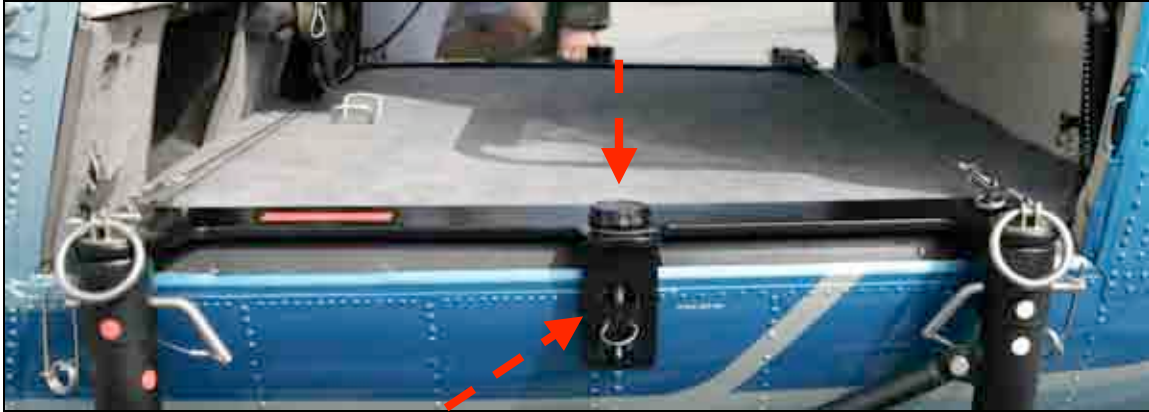
The *optional* Counterweight Unit is used to laterally balance the helicopter against the payload of the Cargo Rack on the opposite side. Therefore, the Counterweight is attached instead of a second Cargo Rack Bench.

The Counterweight Unit is comprised of the following components and may be installed in these configurations:

- Frame only
- Frame and Box
- Frame and Extension Tube (not shown)
- Frame, Extension Tube and Box

- 1.) Attach Counterweight Frame to main support frame by securely tightening the four (4) bolts supplied.
- 2.) Insert Counterweight Box into Counterweight Tube (with or without the Extension Tube) and secure with Safety-Pin(s) and Clip(s).
- 3.) If necessary, add ballast weight into Counterweight Box (see Weight & Balance section, page 18 of this manual).

SECTION 3 – INSTALLATION OF SENSOR FRAME



- 1.) Place floor plates (left and right sides) on floor of ship as shown. Insert tab into side of aircraft. Note: Lightly tighten the Lock Knobs (later they will be tightened firmly).



- 2.) Install Cross Cables Assemblies (two on each side) and leave cam-over buckles open (until later).



- 3.) Lift Sensor Frame Support Tubes up and insert into floor-plate receptacles (each side) and fasten with the L-Pins and Safety Clips.



- 4.) Attach fore-to-aft cross brace (left side and right side) using pip-pins.



- 5.) Firmly tighten Lock Knobs (one on each side).



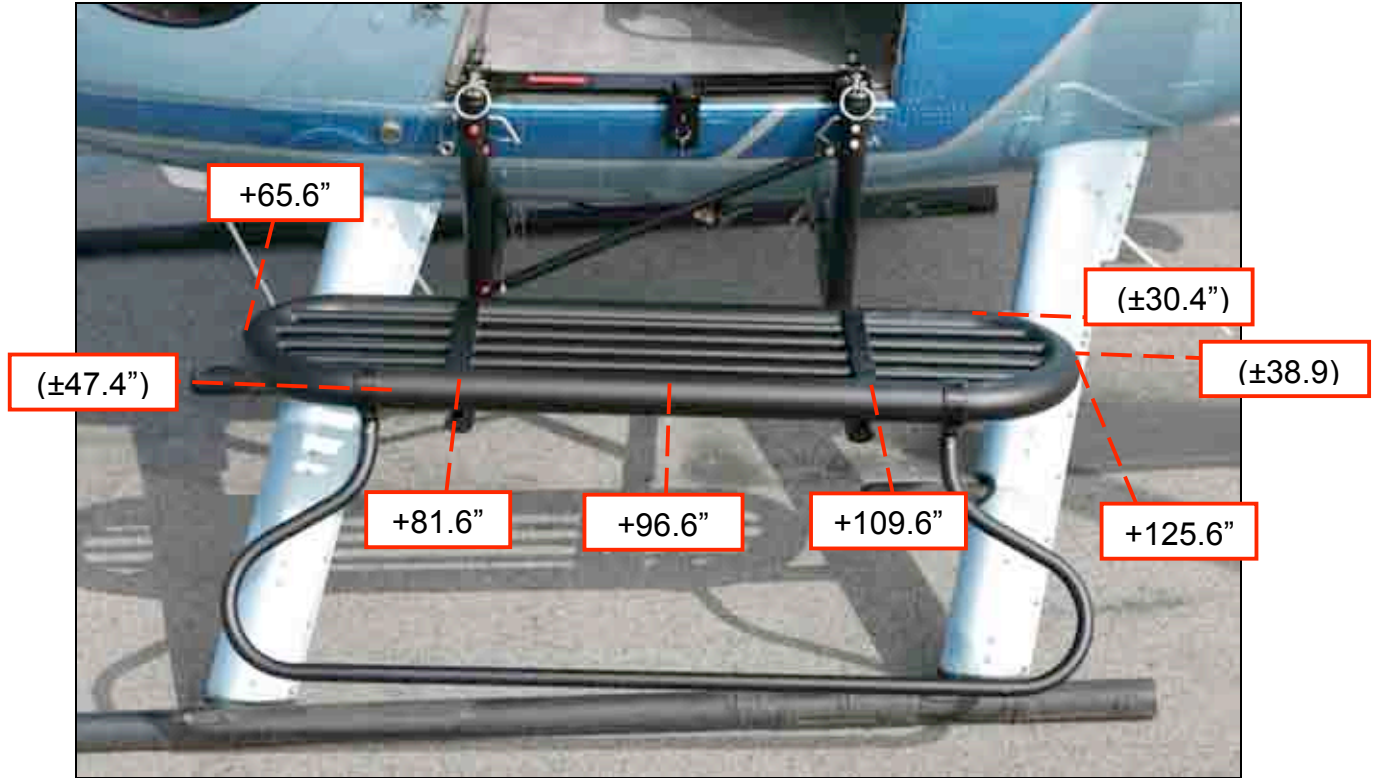
6.) Adjust for snug tension, then latch cam-over buckles and secure with pip-pins.



ABOVE PHOTO IS FOR EXAMPLE ONLY
The assembled framework (off of ship).

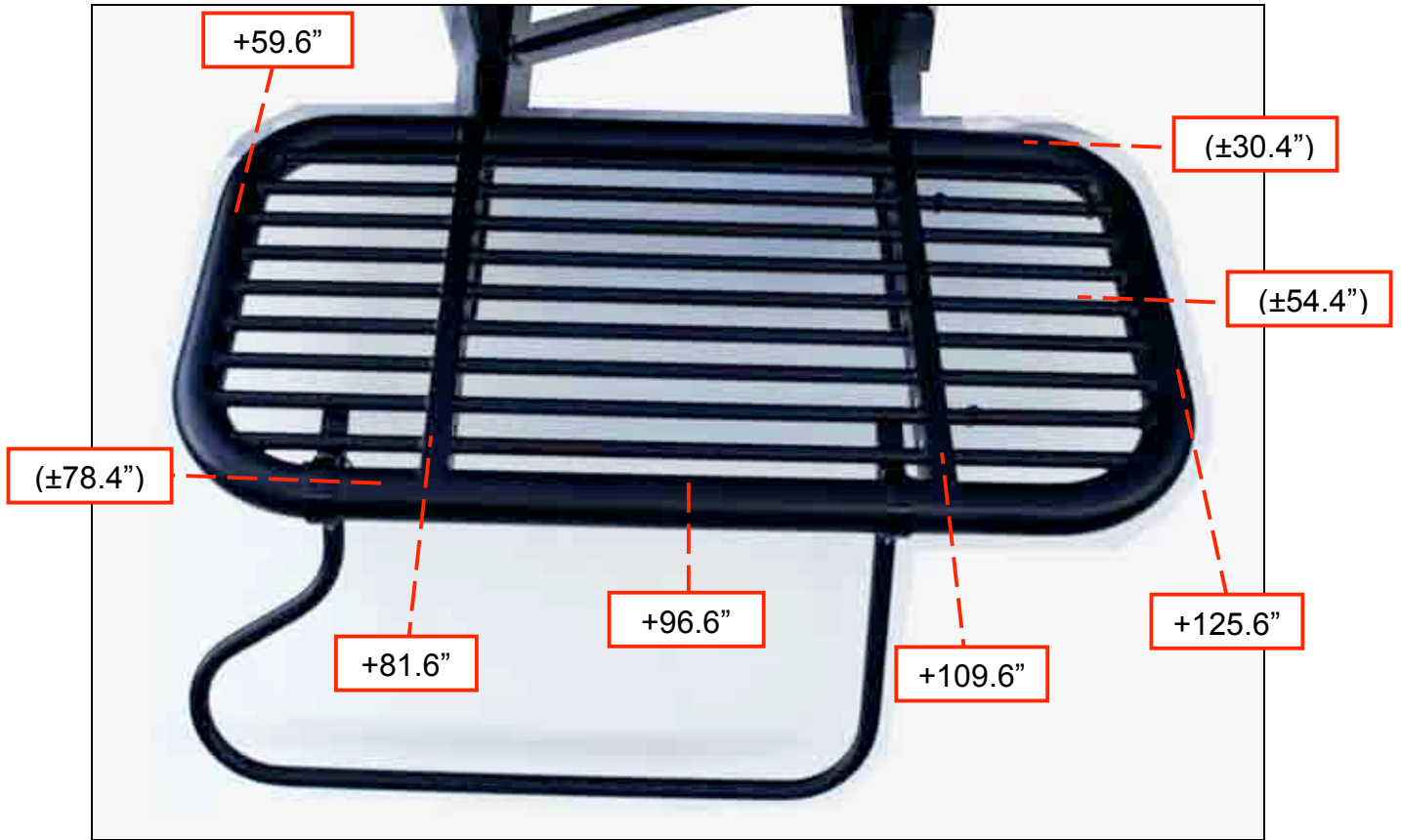
Note: Install of Sensor Package is not shown. However, a device can attach to the fore and aft tabs, and is fastened using four bolts specific to the device.

SECTION 4 – WEIGHT & BALANCE



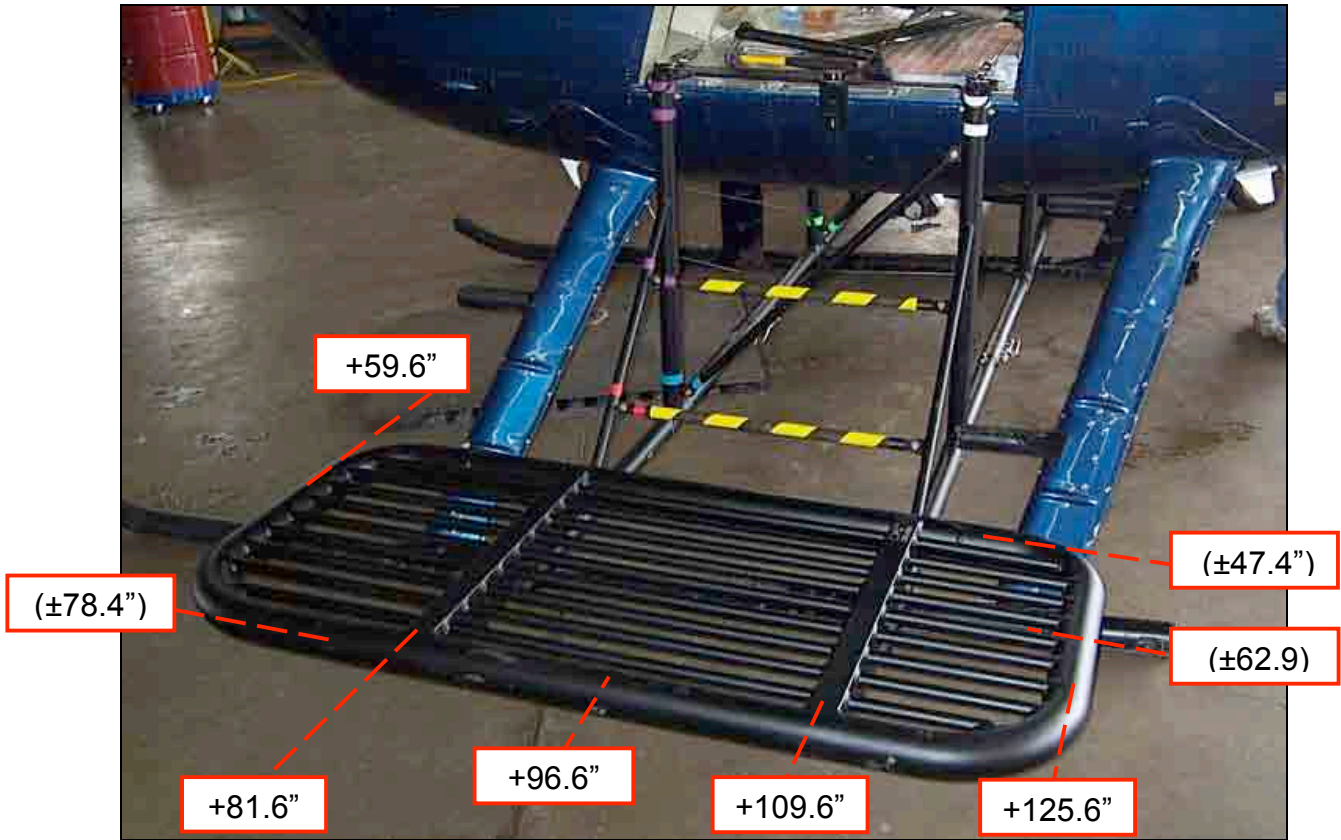
Cargo Rack (17" wide)

Weight: 33 lbs.



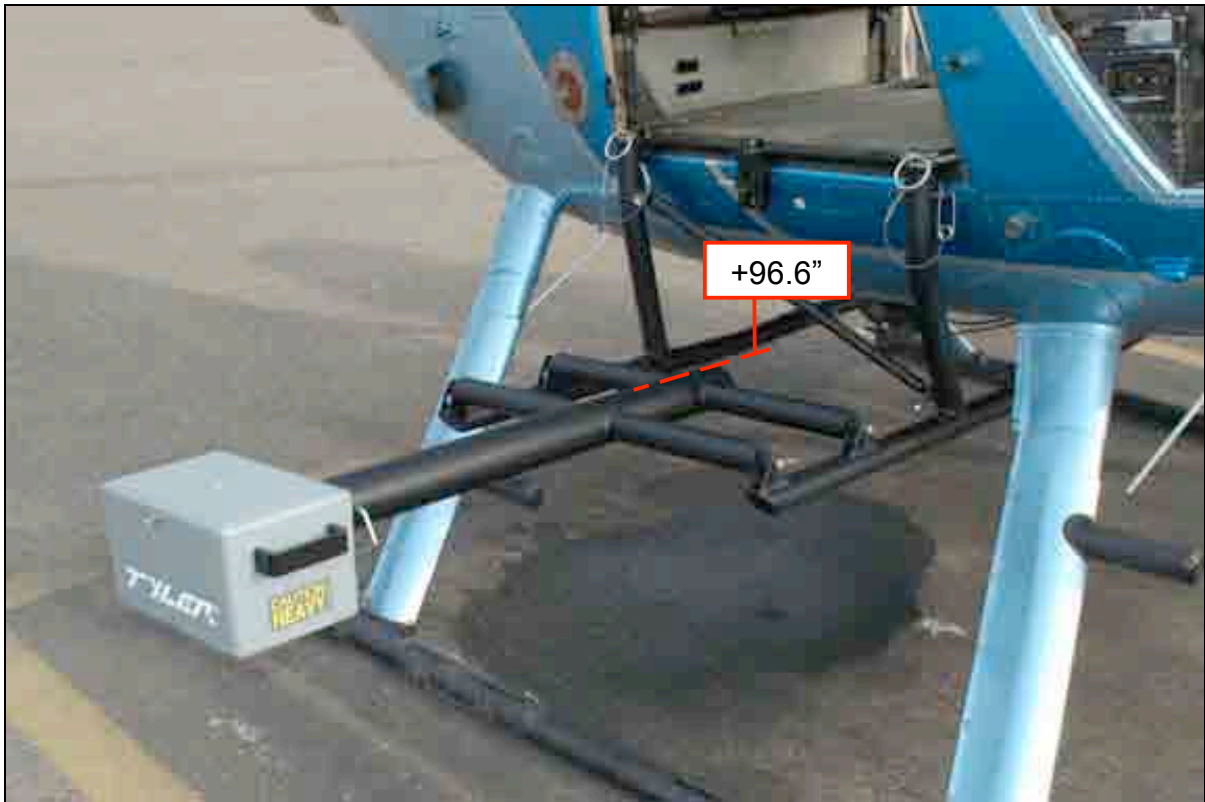
Cargo Rack (48" wide)

Weight: 78 lbs.



Power Bench (31" wide)

Weight: 45 lbs.



Optional Counterweight Unit for Cargo Rack or Power Bench

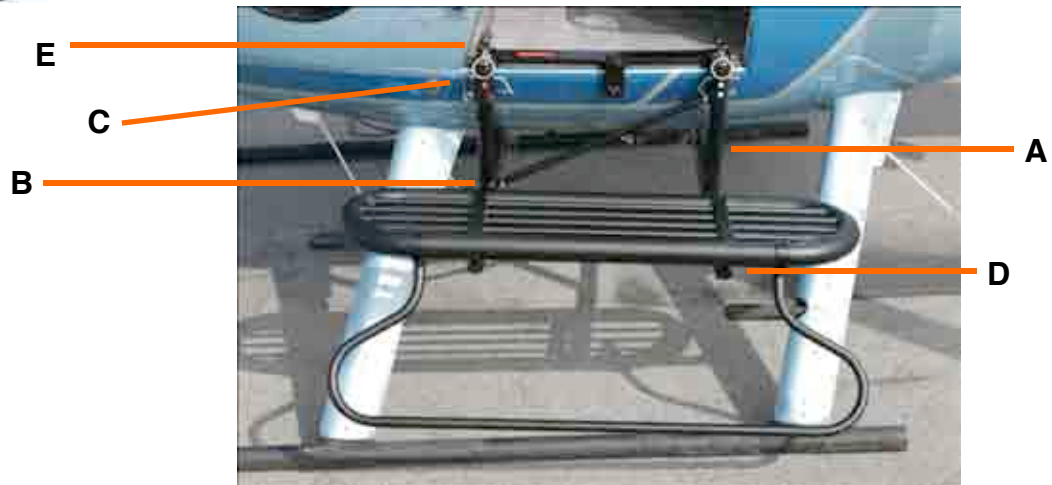
Configuration	Weight (lbs.)	Lateral C.G.
• Frame only	26	(±22.0")
• Box (empty) on Frame	19	(±63.4")
• Extension Tube on Frame	35	(±51.5")
• Box (empty) on Extension Tube & Frame	19	(±103.4")

Notes: The Extension Tube is not shown. When the above listed lateral positions were calculated, the Counterweight Box was empty. Therefore, adjustments to the figures will be required if weight is added to the Counterweight Box. Up to 80 lbs. of lead plates (20 lbs. each) can be loaded into the Counterweight Box.

MD 500 WEIGHT & BALANCE DATA (Weight x Arm = Moment) SAMPLE SHEET						
Tyler Special Operations Platform		AIRCRAFT MODEL MD 520 N	REGISTRATION	AIRCRAFT S/N	AGENCY	DATE
ITEM:		LONGITUDINAL WEIGHT	ARM	MOMENT	LATERAL ARM	MOMENT
AIRCRAFT EMPTY WEIGHT & C.G.		1874	108.42	203179.08	-0.53267	-998.22358
PILOT (FORWARD LEFT)		200	73.5	14700	-13	-2600
CO-PILOT (FORWARD RIGHT)		0	73.5	0	15.5	0
PAX (AFT LEFT)		0	105	0	-12.2	0
PAX (AFT RIGHT)		0	105	0	12.2	0
FUEL (64 gals.) 6.8lbs. X # of gals:	64	435.2	97.7	42519.04	0	0
sub total		2509.2	563.12	260398.12	1.96733	3598.22358
TYLER SPECIAL OPERATIONS PLATFORM:	WT					
STD MOUNT FRAMEWORK	68	0	96.9	0	0	0
DROP DOWN MOUNT FRAMEWORK	77	0	96.9	0	0	0
SENSOR FRAMEWORK (<i>specialty</i>)	44	0	96.9	0	0	0
R/H BENCH SEAT 17"	33	0	96.9	0	38.9	0
L/H BENCH SEAT 17"	33	0	96.9	0	-38.9	0
L/H BENCH SEAT 31" STD (STEEL 67#)	42	0	96.9	0	54.4	0
L/H BENCH SEAT 31" DROP DOWN	45	0	96.9	0	62.9	0
R/H BENCH SEAT 31" DROP DOWN	45	0	96.9	0	62.9	0
R/H COUNTER WT ARM (used w/48" bench)	26	0	96.9	0	22	0
R/H COUNTER WT w/ EXTENSION ARM	35	0	96.9	0	51.5	0
R/H COUNTER WT BOX	19	0	96.9	0	63.4	0
WEIGHTS 20 LBS EA (80 LBS MAX)	20	0	96.9	0	63.4	0
R/H COUNTER WT BOX ON EXTENSION	19	0	96.9	0	103.4	0
WEIGHTS 20 LBS EA (80 LBS MAX)	20	0	96.9	0	103.4	0
L/H BENCH SEAT 48" (STEEL)	78	0	96.9	0	-45.4	0
PAX R/H BENCH 17" (Forward Right)		0	65.6	0	38.9	0
PAX L/H BENCH 17" (Forward Left)		0	65.6	0	-38.9	0
PAX R/H BENCH 31" STD (FORWARD)		0	65.6	0	45.4	0
PAX L/H BENCH 31" D DOWN (FORWARD)		0	59.6	0	-45.4	0
PAX R/H BENCH 31" D DOWN (FORWARD)		0	59.6	0	45.4	0
PAX L/H BENCH 48"(FORWARD)		0	59.6	0	54.4	0
SENSOR BOX (<i>specialty</i>)	125	0	96.9			
sub total		0	472.5	0	0	0
TOTAL AIRCRAFT WEIGHT:		2509.2	103.7773474	260398.12	1.434012267	3598.22358
AIRCRAFT MAX GROSS WEIGHT:		3350				
NEW USEFUL LOAD:		840.8				
NEW CENTER OF GRAVITY (LONGITUDINAL)		103.7773474				
NEW CENTER OF GRAVITY (LATERAL)		-1.434012267				
LONGITUDINAL C.G. LIMITS:			LATERAL C.G. LIMITS:			
<i>FORWARD LIMIT:</i>			L/H LIMIT: -3.0 IN. MINUS			
99.0 in. @ 3350 lbs.			R/H LIMIT: + 3.0 IN. PLUS			
99.0 in. @ 2600 lbs.						
101.4 in. @ 1796 lbs.			EXPANDED LATERAL C.G. LIMITS:			
<i>REARWARD LIMIT:</i>			L/H LIMIT: -5.0 IN. MINUS			
105.5 in. @ 3350 lbs.			R/H LIMIT: + 5.0 IN. PLUS			
107.8 in. @ 2600 lbs.						
110.3 in. @ 1796 lbs.						



Tyler / MD-500 TSOP & Power Bench Hardware Specifications



TSOP

ITEM	HARDWARE	SIZE	PART #	QTY.
A	L-PIN	7/16	17.4 Stainless Steel 4	
B	BOLT	-	AN6-10A	2 (PER SIDE)
C	BOLT	-	AN7-26A	2 (PER SIDE)
D	BOLT	-	AN6-25A	4 (PER SIDE)
E	QUICK PIN	5/16	Stainless Steel	2 (PER SIDE)



Power Bench

ITEM	HARDWARE	SIZE	PART #	QTY.
A	L-PIN	7/16	17.4 Stainless Steel 4	
B	BOLT	-	AN6-10A	6 (PER SIDE)
C	BOLT	-	AN7-26A	2 (PER SIDE)
D	BOLT	-	AN6-25A	4 (PER SIDE)
E	QUICK PIN	5/16	Stainless Steel	2 (PER SIDE)

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

Number SR01682LA

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 * of the Federal Aviation Regulations. **

Original Product Type Certificate Number : ** See attached FAA Approved Model List (AML)

Make : No. SR01682LA for list of approved rotorcraft

Model : * models and applicable airworthiness regulations.

Description of Type Design Change:

Installation of cargo rack in accordance with FAA Approved Tyler Camera Systems Master Drawing List No. MD500-001, Revision N/C, dated March 25, 2004, and a copy of FAA Approved Rotorcraft Flight Manual Supplement No. CR-RFM-002, dated November 15, 2004 or later FAA Approved Revisions.

Limitations and Conditions: Approval of this change in type design applies to the aircraft models listed on AML No. SR01682LA 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 relationship 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. (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 : July 1, 2004

Date reissued :

Date of issuance : November 19, 2004

Date amended :



By direction of the Administrator

[Signature]
(Signature)

ACTING Manager, Airframe Branch
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.

Supplemental Type Certificate

(Continuation Sheet)

Number SR01682LA

Limitations and Conditions (Continued):

The provisions of the Supplemental Type Certificate are applicable only to those aircraft which are listed on the attached FAA Approved Model List of MDHI (Hughes) Helicopter models.

This cargo rack structure approved for all cargo only installations having a maximum payload weight of not more than 500 pounds per side and frontal area not to exceed 3.2 square feet.

No passengers may be carried external to the aircraft on the cargo racks. Crew members or other persons necessary for the conduct of the external load operations may be carried in accordance with 14 CFR Section 133.35.

The lateral center of gravity (CG) of models 369D (MD 500D), 369E (MD 500E), 369FF (MD 530F) and 500N (MD 520N) may be extended to ± 5.0 inches with a forward airspeed limitation of 70 KCAS and a sideward/rearward airspeed limitation of 20 KCAS.

A copy of this Certificate and FAA Approved Model List (AML) No. SR01682LA, dated November 19, 2004, or later FAA Approved revision, 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 APPROVED MODEL LIST (AML) NO. SR01682LA
 TYLER CAMERA SYSTEMS

FOR

INSTALLATION OF CARGO RACK ON HELICOPTER MODELS LISTED

ISSUE DATE : November 19, 2004

ITEM	AIRCRAFT MAKE	AIRCRAFT MODEL	ORIGINAL TYPE CERTIFICATE NUMBER	CERTIFICATION BASIS FOR ALTERATION	MASTER DWG. LIST		INSTALLATION INSTRUCTIONS		RFM SUPPLEMENT NUMBER/REV. NO. & DATE	AML AMENDMENT DATE
					REPORT NO.	REV. NO. & DATE	REPORT NO.	REV. NO. & DATE		
1	MDHI (HUGHES)	369 369A 369H 369HM 369HS 369HE 369D 369E 369F 369FF 500N	H3WE	CAR 6 AND AMENDMENTS LISTED ON TCDS H3WE	MD500-001	REV. N/C 03/25/04	INST MDS-001	REV. N/C 8/17/04	INITIAL RELEASE 11/15/04	N/A

FAA APPROVED : 
 ACTIVE MANAGER, AIRFRAME BRANCH
 LOS ANGELES AIRCRAFT CERTIFICATION OFC.



14218 Aetna St.
Van Nuys, CA. 91401
Document Number CR-RFM-002

FAA APPROVED
ROTORCRAFT FLIGHT MANUAL SUPPLEMENT
FOR THE
MD HELICOPTERS MODEL
MD-500D, 500E, 530FF, & 520N
WHEN EQUIPPED WITH THE
EXTERNAL ATTACH FRAME

REGISTRATION #: _____ SERIAL #: _____

The information in this supplement is FAA approved material and must be attached to the FAA Approved MD-500 series Rotorcraft Flight Manual when the aircraft has been modified by the installation of Tyler Camera Systems External Attach Frame in accordance with:

STC # SR 02067 LA

The information contained herein supplements or supersedes the information in the basic Rotorcraft Flight 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:

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

FAA Date:

August 28, 2007



LOG OF PAGES


Rev No.	Pg No	Date	Description of Change	FAA Approved
Initial Issue	1-6	28 Aug 2007	Initial Issue	 Mgr, Flight Test Branch ANM-160L, FAA, Los Angeles ACO, Transport Airplane Directorate DATE: <u>8-28-2007</u>



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Document Number EF-RFM-001

Supplement to the MD Helicopters RFM for
Models MD-500D, 500E, 530FF, & 520N
when modified with the MD 5 External Attach Frame

STC Number SR 02067 LA

SECTION 1 – GENERAL

The Tyler Camera Systems MD-5 External Frame consists of the steel tubular frame members that attach to the existing hard point on the roof and side of the rotorcraft.



Figure 1. View of Installed Frame



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when modified with the MD 5 External Attach Frame

STC Number SR 02067 LA

The frame is attached to the hard points using quick release pins for ease of installation as shown in Figure 2.



Figure 2. Left Side Installation of Frame

The External Attach Frame can be used in conjunction with STC # SR 01682 LA for the MD-5 Cargo Rack Installation

CAUTION

Lateral CG can be easily exceeded with heavy weights on the
External Attach Frame
See Limitation Section for CG Limits



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Supplement to the MD Helicopters RFM for
Models MD-500D, 500E, 530FF, & 520N
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STC Number SR 02067 LA

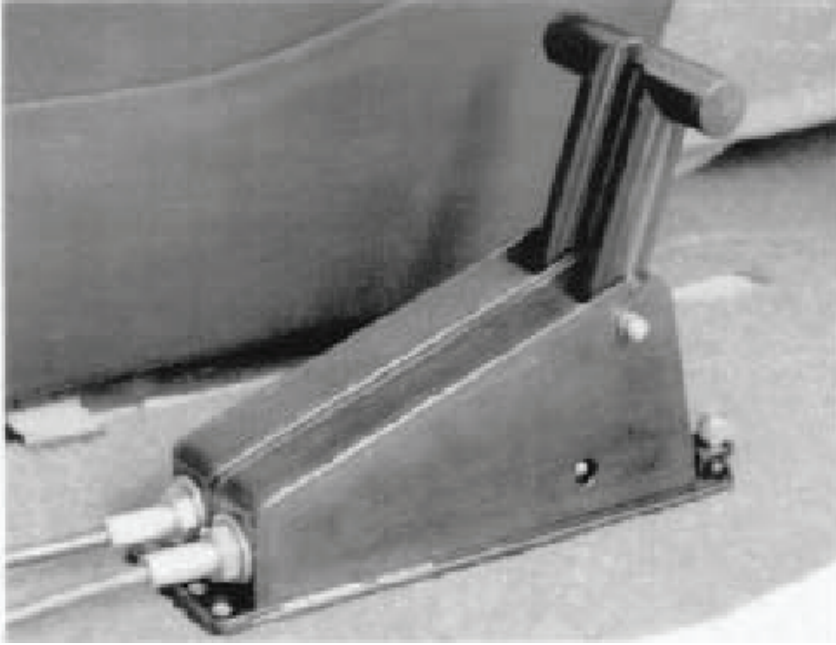


Figure 3. Hook Release Handles (Control Closet between Pilots)



Figure 4. Hook Release



SECTION 2 – LIMITATIONS

1.1 AIRSPEED

CARGO INSTALLED

Reduce to hover flight to load cargo.
Vne with Cargo attached = 15 knots

NO CARGO INSTALLED

Reduce the published Power – On V_{NE} 30 KIAS with the External Frame.

1.2 REQUIRED CREW

A second pilot is required in the front seat to jettison the load when anything is attached to the attach frame hook.

1.3 MAXIMUM WEIGHT LIMIT

Maximum Weight 415 pounds on hook

1.4 LATERAL CG LIMITS

The lateral center of gravity limit is ± 5.0 inches with airspeed limits published above.

2. SECTION 3 – EMERGENCY PROCEDURES

Jettison load from hook by pulling out and back on the release handles.



3. SECTION 4 – NORMAL PROCEDURES

No Change

4. SECTION 5 - PERFORMANCE

No Change

5. SECTION 6 – WEIGHT AND BALANCE

The weight and balance data must be considered for each flight.

The load on the external attach frame must be considered.

CAUTION

Lateral CG can be easily exceeded with heavy weights on the external attach frames. Compute the aircraft weight and balance before flight with loads on the frames.

The longitudinal CG of the external frame hook is Sta 96.9 inches

The lateral CG of the external frame hook is:

Left: - 50.0 inches

Right: + 50.0 inches



Transport
Canada

Transports
Canada

1100-9700 Jasper Avenue
Edmonton, Alberta T5J 4E6

Your file Votre référence

February 05, 2008

Our file Notre référence
C-07-0681

Tyler Camera Systems
14218 Aetna Street
Van Nuys, California
United States of America, 91401

ATTENTION: GEORGE WOOD

Dear Sirs:

SUBJECT: ACCEPTANCE OF FOREIGN STC SR01682LA – INSTALLATION OF CARGO RACK – MCDONNELL DOUGLAS MODELS HC 369, 369A, 369D, 369E, 369F, 369FF, 369H, 369HE, 369HM, 369HS, 500N – ISSUED TO TYLER CAMERA SYSTEMS

This is in response to your application dated 2007 June 7, requesting Transport Canada approval of the subject STC on the above noted model Rotorcraft.

In accordance with our current policy associated with the review of foreign STCs, some STCs applicable to certain categories of aircraft may be accepted solely on the basis of their foreign certification, and do not require the issue of a corresponding certificate by Transport Canada. The subject STC falls within these criteria.

This STC will be entered in the national index of STCs that have been reviewed and accepted by Transport Canada for installation on Canadian-registered aeronautical products.

This letter confirms formal acceptance of the referenced STC by Transport Canada.

Yours truly,

D.S. Austen
Senior Engineer, Aircraft Certification
Prairie and Northern Region
Phone: 780-495-5226
Facs: 780-495-7963

CC: Gregory S. DiLiberio, Manager
Airframe Branch – ANM-120L
Los Angeles Aircraft Certification Office
Federal Aviation Administration

Canada

