

Nose Video Gimbal

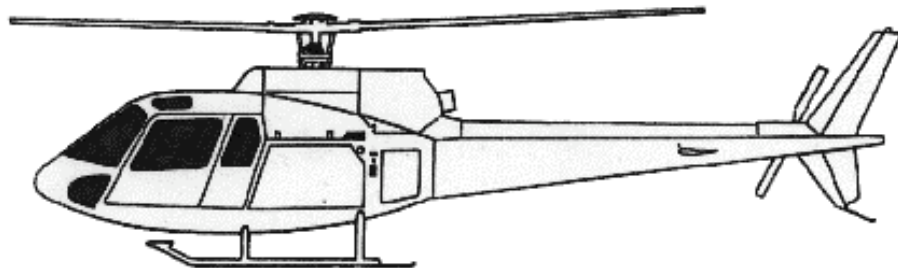
Astar / Twinstar

Installation Manual



Tyler - Nose Video Gimbal

For *Eurocopter AS-350 / AS-355 Series Helicopters*
FAA STC # SR00851LA



PLEASE RETURN THIS MANUAL WITH EQUIPMENT

This manual is available for download from our web site.



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





MODEL: A-S 350-355

REPORT #: U.M. INST-001

JOB #:

DATE: 6/25/97

NOSE VIDEO GIMBAL (MODEL NVG-AS)
INSTALLATION MANUAL FOR
ASTAR / TWINSTAR HELICOPTERS

PREPARED BY: Chris Tyler

OF PAGES: 26

CHECKED BY: George Wood

OF DRAWINGS: _____

APPROVED BY: Jeff Fox D.E.R.

REVISIONS

DATE	PAGES AFFECTED	REVISION LETTER	DESCRIPTION	APPROVAL
6/25/97		N/C	Initial Release	
11/2/99	ALL	A	Splitting of Main Tube	
10/2/00	8A	B	Mount Extension	
2/3/09	4, 4A, 6, 8, 8A	C	Addition of pictures and/or wording.	

(AS) NOSE VIDEO GIMBAL - PARTS LIST

AIRFRAME BRACKETS

LEFT SIDE - AIRFRAME BRACKET (two pieces)

RIGHT SIDE - AIRFRAME BRACKET (two pieces)

(ALTERNATE) AIRFRAME BRACKETS

(2) AIRFRAME TABS [part #ASN-002] See: Page 4A of 8

BELLYPAN

BELLYPAN TEMPLATE

BELLYPAN (optional)

SUPPORT TUBE

SUPPORT TUBE

SKID-GEAR CLAMP (two pieces)

VIDEO GIMBAL

See: Setup Manual for particular Video Gimbal (UltraMedia II, RS, etc.)

(AS) NOSE VIDEO GIMBAL - HARDWARE LIST

(iv)

<u>TYPE</u>	<u>LTH.</u>	<u>A N #</u>	<u>QTY.</u>	<u>USE</u>
9/16-18	2.00	AN9-17A	2	MAIN FRAME TANG BOLTS
1/2-20	3.50	AN8-33A	8	FT. MAIN FRAME
7/16-20	3.50	AN7-33A	2	REAR MAIN FRAME
3/8-24	1.75	AN6-16A	4	TANG CLAMP BOLTS
3/8-24	1.125	AN6-10A	4	TIE RODS

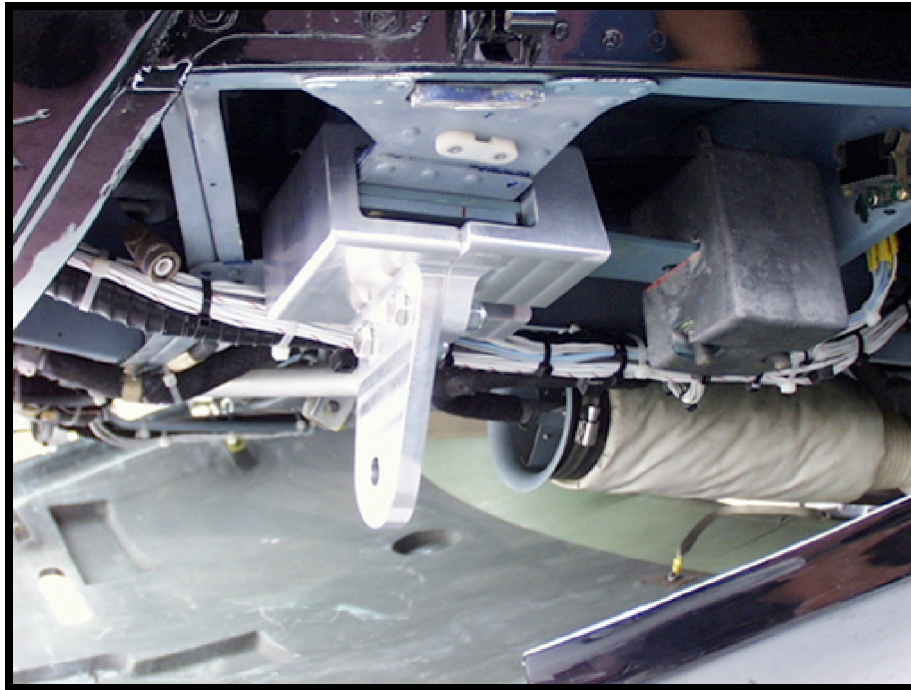
<u>MS NYLOCK NUMBERS</u>		<u>QTY.</u>
3/8-24	MS21083N6	8
7/16-20	MS21083N7	2
1/2-20	MS21083N8	8
9/16-18	MS21083N9	2

A N WASHERS

3/8	AN960-616L(.032)	16
7/16	AN960-716L(.032)	4
1/2	AN960-816L(.032)	16
9/16	AN960-916(.062)	4

(v)

AIRFRAME BRACKETS
ASSEMBLY INSTRUCTIONS
(Pages 1-10)



INSTALL AIRFRAME BRACKET ON HELICOPTER

Typically install one on left (shown) or right side of helicopter.



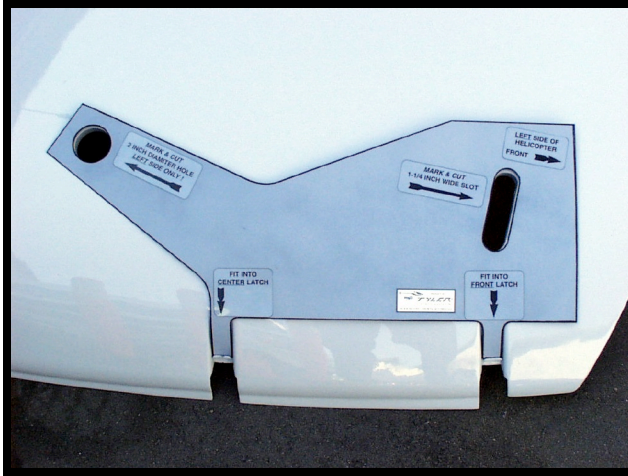
Unlatch, and lower the forward belly pan and verify whether or not there are slots in the forward corners of the belly pan (approx. 4 x 1 inches each).

Also, check to see if there is a hole near the rear of the left side (approx. 2 inches in diameter).
If "Yes," continue with step 03, if "No" continue with step 02.



Note: Tyler's Astar BELLYPAN, if used, may require adjusting the latches for proper fit.

Also see page 3 for specifics on the BELLYPAN.



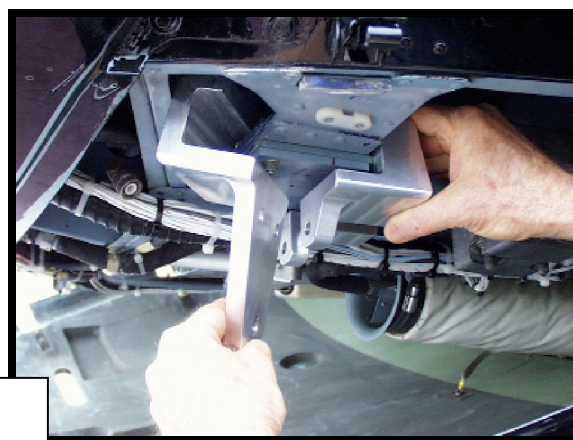
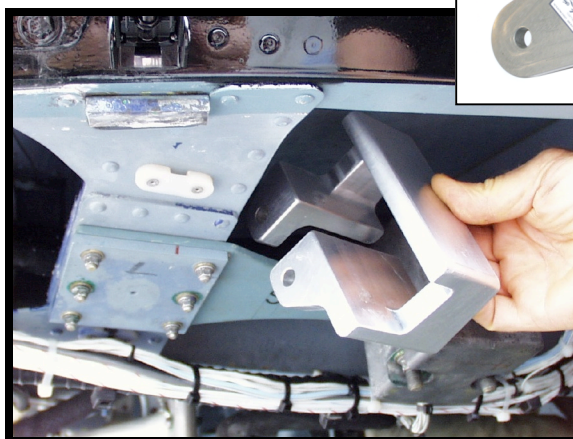
Picture:
 • Hand Saw
 • 1-1/4" Hole Saw
 • 2" Hole Saw

Using the ASTAR BELLYPAN TEMPLATE & TOOLS, and following the additional instructions on the template...

- Mark and cut out a slot to allow the AIRFRAME BRACKET to protrude.
- Mark and cut out a hole for routing the camera mount cables.

Note: Typically the slot and hole modification is only done to the left side (as shown). However, this modification may also be done to the right side of the BELLYPAN (if necessary).

Typically the Video Gimbal is installed on the left side of the helicopter (as shown).



Hardware:
(4) AN6-16BOLTS
(8) AN960-616L WASHERS
(4) MS21083N6 NUTS



Insert the two halves of the AIRFRAME BRACKET around the airframe counterweight, and connect the two halves by securely fastening the hardware.

Note: The brackets are labeled "LEFT" and "RIGHT".

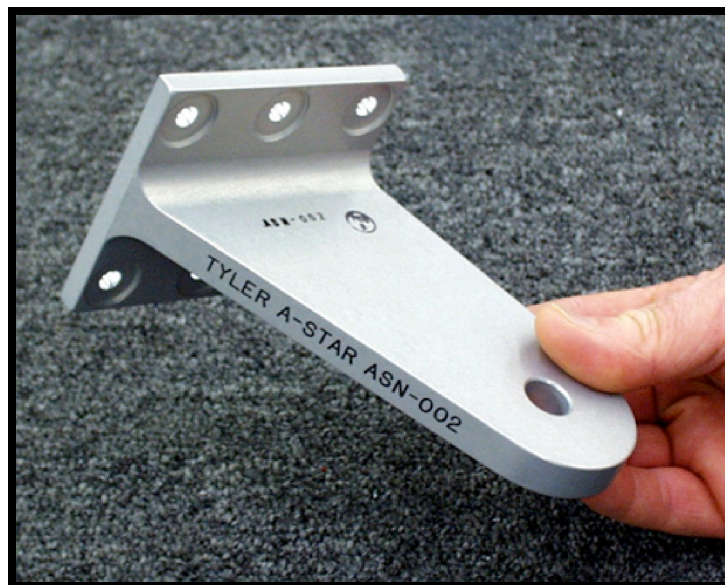
NOTE: THE AIRFRAME TABS MAY BE USED
INSTEAD OF THE AIRFRAME BRACKETS.

The AIRFRAME TAB requires the removal of the blue “factory” bottom plate.
(Page 4, Picture A)

The AIRFRAME TAB takes the place of the blue “factory” bottom plate.

Attach and fasten one AIRFRAME TAB to the airframe counterweight, using the
original six (6) bolts, on the blue “factory” bottom plate.

Position the AIRFRAME TAB so it points inward (toward the center of the ship).



Hardware:
The original bolts,
washers and nuts.



**NOSE VIDEO GIMBAL
ASSEMBLY INSTRUCTIONS**



Note: The Main Tube is available in two types:

- 1-Piece (as seen on page 8A)
- 2-Piece (shown below).

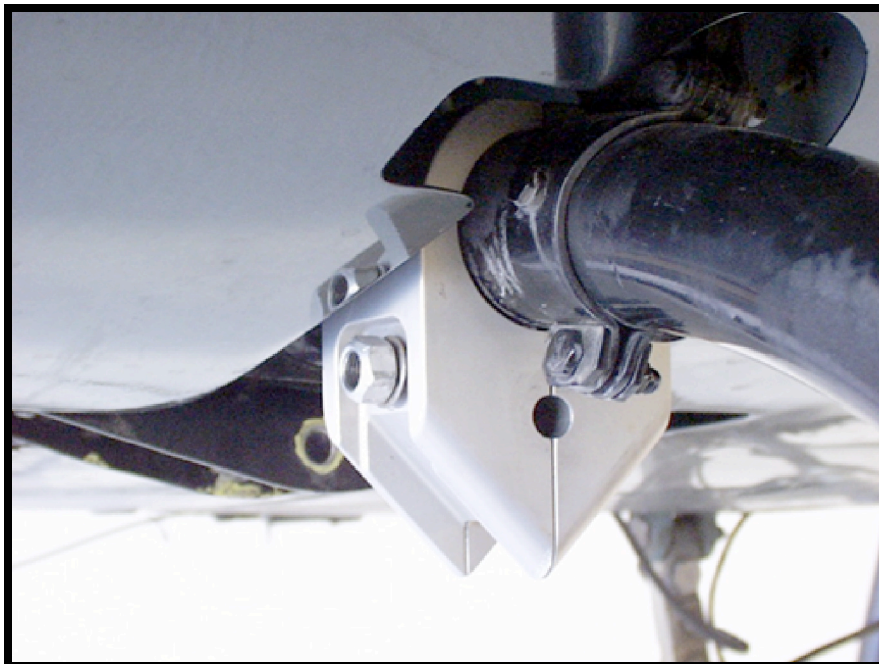


If using the 2-Piece type Main Tube, connect the two halves, and fasten with the L-Pin & Safety-Clip, as shown below.

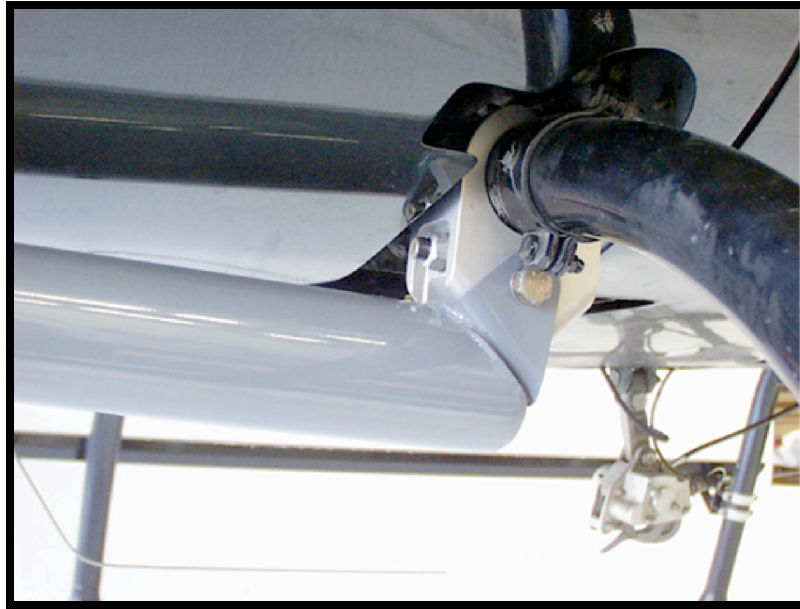




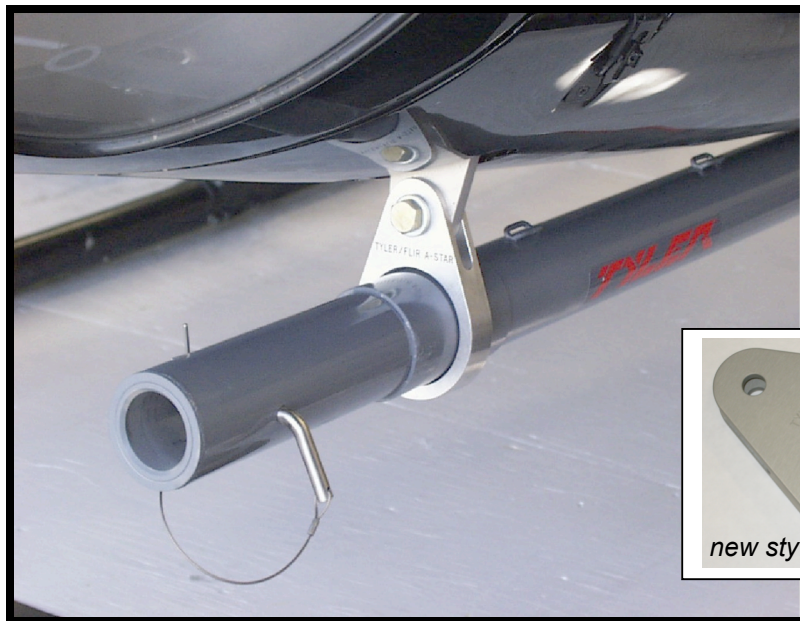
Install forward skid-gear clamps.



Insert 3/8" bolt and fasten lightly (to be fastened tightly later).



Install main tube, insert 3/8" bolt and fasten lightly (to be fastened tightly later).



Slide the front support bracket over tube, install in forward tang and tighten bolt.
Now, tighten bolts in the first and second steps.

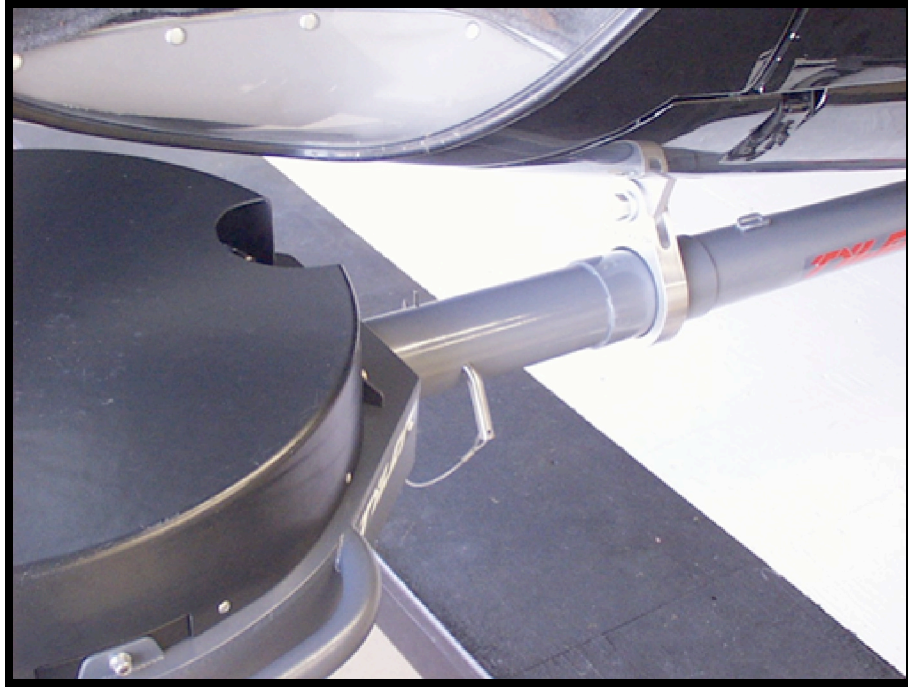
Note: If using the *new style* of "split" support bracket (above),
also make sure to securely tighten its hardware.

If necessary, utilize a *Tyler* Extension Adapter to raise the position of the Video Gimbal.

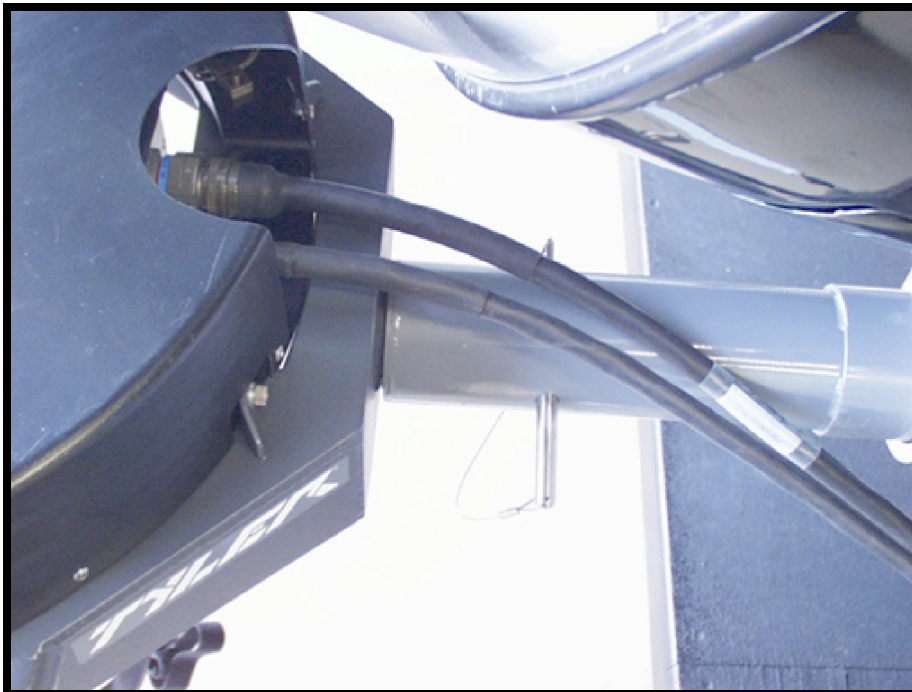
Shown here, is the *Cineflex* type of Video Gimbal adapter.



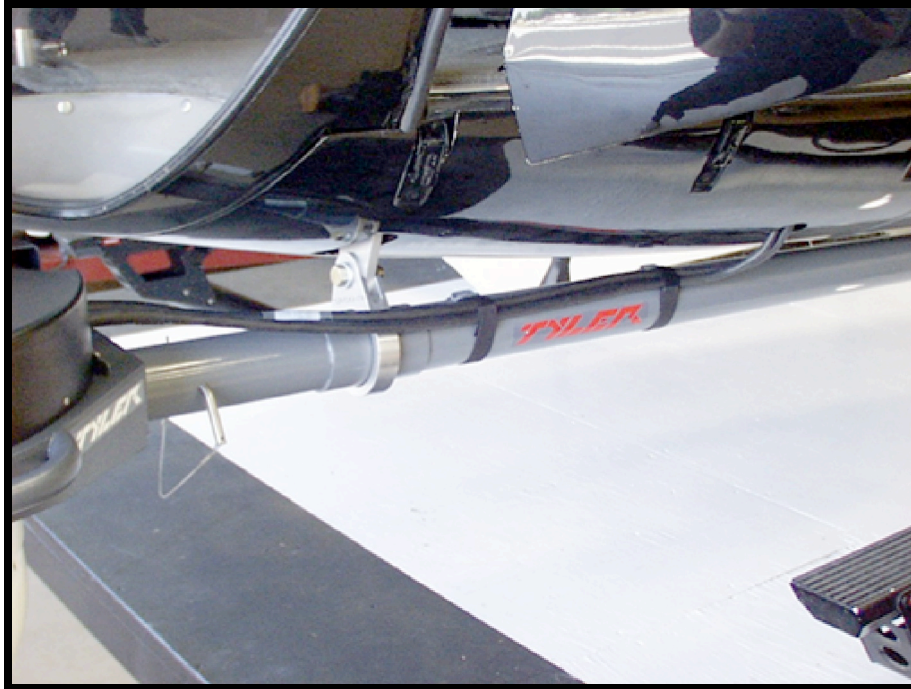
Install Video Gimbal adapter (*Cineflex* type shown, on a 1-Piece Main Tube) and fasten with 7/16" pin and safety clasp.



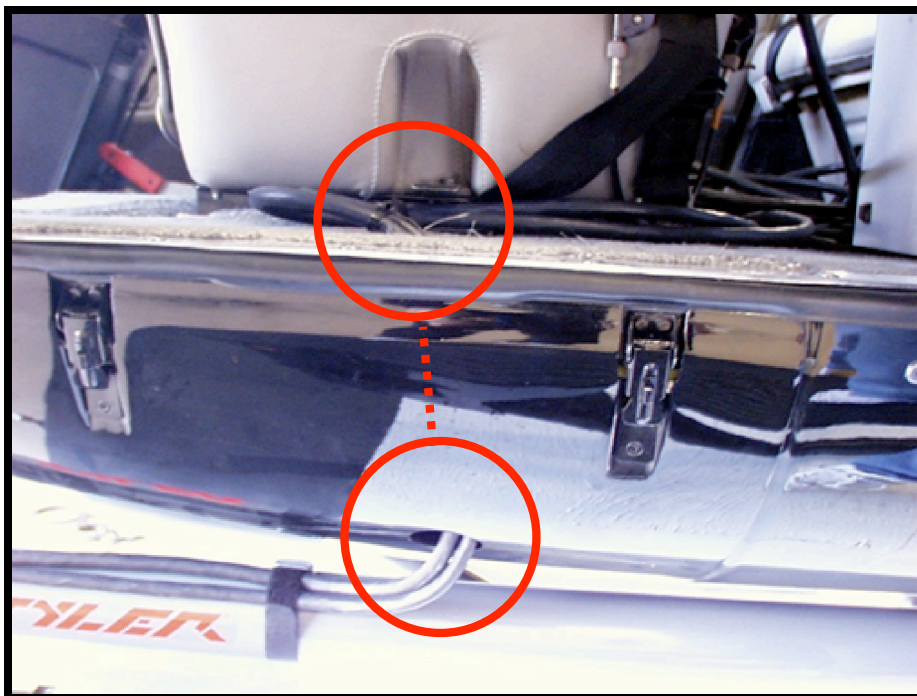
Install Video Gimbal and fasten with 7/16" pin and safety clasp.



Connect Video Gimbal cables.



Secure Video Gimbal cables to tube with tie-wraps or Velcro straps.



Route cable into helicopter through belly pan and secure cables as necessary.

United States Of America
Department of Transportation - Federal Aviation Administration

Supplemental Type Certificate

Number SR00851LA

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. SR00851LA for list of approved rotorcraft

Model: models and applicable airworthiness regulations.

Description of Type Design Change:

Installation of Tyler A-S straight tube camera mount in accordance with FAA Approved Tyler Camera Systems Master Drawing List No. A-S STM-001, and Installation Manual Report No. UM INST-001, as listed on AML No. SR00851LA, dated August 25, 1999, or later FAA Approved Revisions.

Limitations and Conditions: Approval of this change in type design applies to the aircraft models listed on AML No. SR00851LA 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: March 26, 1999

Date reissued:

Date of issuance: August 25, 1999

Date amended:



By direction of the Administrator

Michael H. Allen

(Signature)

Manager, Airframe Branch
Los Angeles Aircraft Certification Office

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 SR00851LA

Limitations and Conditions (Continued):

This camera nose mount structure approved for all camera installations having a maximum weight of not more than 108 pounds, a frontal area not to exceed 1.864 square feet and power requirements not to exceed 28 volts and 400 watts.

A copy of this Certificate and FAA Approved Model List (AML) No. SR00851LA, dated August 25, 1999, 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.



14218 Aetna St.
Van Nuys, CA. 91401
Document Number UM-A/S-RFM-001

**FAA APPROVED
ROTORCRAFT FLIGHT MANUAL
SUPPLEMENT
FOR THE
EUROCOPTER MODEL
AS-350 B, BA, B1, B2, B3, C, D, D1
AS-355 E, F, F-1, F-2, N
WHEN EQUIPPED WITH THE
TYLER STRAIGHT TUBE UNIVERSAL BALL
MOUNT**

REGISTRATION #: _____ SERIAL #: _____

The information in this supplement is FAA approved material and the supplement must be attached to the DGAC Approved AS 350/355 Rotorcraft Flight Manual when the airplane has been modified by the installation of Tyler Straight Tube Universal Ball Mount in accordance with:

STC # SR 00851 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: *Stephen F. Allen, Acting*

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

FAA APPROVED DATE: *November 7, 2003*
Original Issue August 10, 1999



14218 Aetna St.
Van Nuys, CA. 91401
Document Number UM-A/S-RFM-001

Supplement to the Eurocopter RFM for
Models AS-350 B, BA, B1, B2, B3, C, D
AS-355 E, F, F-1, N
when modified with the
Straight Tube Universal Ball Mount
STC Number SR 00851 LA

LOG OF PAGES

Rev No.	Pg No	Date	Description of Change	FAA Approved
A	1-4	7 Nov 2003	Add B-3 to cover and all pages. Changed V limits to cover all models. Added statement to allow ferry with camera off.	<u><i>Stephen F. Clever, Acting</i></u> Mgr, Flight Test Branch ANM-160L, FAA, Los Angeles ACO, Transport Airplane Directorate DATE: <u>November 7, 2003</u>



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AS-355 E, F, F-1, N
when modified with the
Straight Tube Universal Ball Mount
STC Number SR 00851 LA

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AS-355 E, F, F-1, N
when modified with the
Straight Tube Universal Ball Mount
STC Number SR 00851 LA

1. SECTION 1 – GENERAL

The Tyler Straight Tube Universal Ball Mount consists of the steel tubular frame members and camera support. The mount is attached to the front landing gear attach point and main ship "I" beam.



Figure 1 Left Front View of Installed mount with FLIR.

The information in this document is FAA approved material which, together with the basic flight manual is applicable and must be carried in the basic manual when the helicopter is modified by the installation of the **Straight Tube Universal Ball**



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AS-355 E, F, F-1, N
when modified with the
Straight Tube Universal Ball Mount
STC Number SR 00851 LA

Mount in accordance with the **Tyler Installation Manual**, U.M.
inst-001, dated 06/25/97.

2. SECTION 2 – LIMITATIONS

2.1 AIRSPEED

Reduce the published Power – On V_{NE} 25 KIAS with the mount
and camera system installed.

Reduce the published Power – On V_{NE} 10 KIAS with just the
mount installed.

2.2 MOUNT LIMITS

Maximum Weight per Rack: 108 pounds

Maximum Flat Plate Frontal Area: 1.86 sq. ft.

2.3 POWER LIMITS

The camera system may not exceed the 28 volt and 400 watt
aircraft utility outlet limit.

2.4 INSTALLATION LIMITATIONS

The flight crew must check the engine instruments; flight
instruments and communications/navigation radio for
electromagnetic or radio frequency interference. Fluctuations or
oscillations of the gages when operating the camera system
indicate possible interference.



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3. SECTION 3 – EMERGENCY PROCEDURES

No change to the basic flight manual

4. SECTION 4 – NORMAL PROCEDURES

The installation of the Flir Ultramedia II (105 pounds) & Flir RS (40 pounds) video balls does not require counterbalance weights, however it is the pilots responsibility to configure the crew and gear to maintain longitudinal and lateral C.G.

The camera maybe removed and stowed internally for ferry to and from the work area.

The Universal Ball Camera Mount may be installed or removed by a Tyler Camera Systems Trained technician, pilot or mechanic, and be recorded in accordance with FAR 43.9.

5. SECTION 5 - PERFORMANCE

No Change

6. SECTION 6 – WEIGHT AND BALANCE

No Change

ASTAR – SAMPLE WEIGHT & BALANCE

WEIGHT & BALANCE DATA AND EQUIPMENT LIST		a-s st. tube				
Weight x Arm = Moment						
6/23/98		AIRCRAFT MODEL	REGISTRATION	AIRCRAFT S/N	PILOT	
SAMPLE SHEET		AS 350 B/A	N31621	2130	N/A	
		LONGITUDINAL			LATERAL	
ITEM:		WEIGHT	ARM	MOMENT	ARM	MOMENT
AIRCRAFT EMPTY WEIGHT & C.G.		2885	139.07	401216.95	0.489	1410.765
PORT BAGGAGE (L) MAX 264 LBS		0	125.98	0	-21.89	0
REAR BAGGAGE MAX 170 LBS		0	181.1	0		
CAMERA		95	14	1330		
FRAMEWORK MAIN	15	15	46	690	0	0
SUBTOTAL:		2995	134.6367112	403236.95	0.471040067	1410.765
LAP CONTROLLER		10	61.02	610.2	-14.17	-141.7
PILOT (A+) FORWARD RIGHT		240	61.02	14644.8	14.17	3400.8
CO-PILOT (A-) FORWARD LEFT		200	61.02	12204	-14.17	-2834
PAX (B+) INSIDE RIGHT REAR		0	99.99	0	8.15	0
PAX (B-) INSIDE LEFT REAR		0	99.99	0	-8.15	0
PAX (C+) OUTSIDE RIGHT REAR		0	99.99	0	24.45	0
PAX (C-) OUTSIDE LEFT REAR		0	99.99	0	-24.45	0
FUEL(143 GAL. MAX.) X 6.8 GAL.	143	972.4	136.81	133034.044	0	0
EQUIPMENT SUBTOTAL:		1422.4		160493.044		425.1
TOTAL AIRCRAFT WEIGHT:		4417.4	127.6157907	563729.994	0.415598542	1835.865
AIRCRAFT MAX GROSS WEIGHT:		4630		LATERAL C.G. LIMITS:		
NEW USEFUL LOAD:		212.6				
NEW CENTER OF GRAVITY (LONGITUDINAL)		127.6157907		L/H LIMIT:6.30 IN. (0.16M) MINUS		
NEW CENTER OF GRAVITY (LATERAL)		0.415598542		R/H LIMIT: 3.54 IN. (0.09) PLUS		
		LONGITUDINAL C.G. LIMITS:				
		FORWARD LIMIT:				
		124.8 IN. (3.17M) @ 4000 LBS. (2000 KG)				
		126.5 IN. (3.185M) @ 5000 LBS. (2100 KG)				
		REARWARD LIMIT:				
		137.9 IN. (3.445M) @ 5000LBS. (2100KG)				
		139.3 IN. (3.49M) @ 4000 LBS. (1750 KG)				

TWINSTAR – SAMPLE WEIGHT & BALANCE

WEIGHT & BALANCE DATA AND EQUIPMENT LIST		a-s st. tube mt.				
Weight x Arm = Moment						
6/23/98		AIRCRAFT MODEL	REGISTRATION	AIRCRAFT S/N	PILOT	
SAMPLE SHEET		AS 355 F1	N5802W	5221	N/A	
		LONGITUDINAL			LATERAL	
ITEM:		WEIGHT	ARM	MOMENT	ARM	MOMENT
AIRCRAFT EMPTY WEIGHT & C.G.		3195.89	138.88	443845.2032	0.489	1562.7902
STARBOARD BAGGAGE (R) MAX 220 LBS		0	125.98	0	21.89	0
PORT BAGGAGE (L) MAX 264 LBS		0	125.98	0	-21.89	0
REAR BAGGAGE MAX 170 LBS		0	181.1	0	0	0
CAMERA		105	14	1470	0	0
FRAMEWORK MAIN	15	15	46	690	0	0
SUBTOTAL:		3315.89	134.5054279	446005.2032	0.471303394	1562.7902
LAP CONTROLLER		10	61.02	610.2	-14.17	-141.7
PILOT (A+) FORWARD RIGHT		180	61.02	10983.6	14.17	2550.6
CO-PILOT (A-) FORWARD LEFT		0	61.02	0	-14.17	0
PAX (B+) INSIDE RIGHT REAR		0	99.99	0	8.15	0
PAX (B-) INSIDE LEFT REAR		0	99.99	0	-8.15	0
PAX (C+) OUTSIDE RIGHT REAR		0	99.99	0	24.45	0
PAX (C-) OUTSIDE LEFT REAR		0	99.99	0	-24.45	0
FUEL(194.6 GAL. MAX.) X 6.8 (FOR. 1) GAL.	80	544	127.55	69387.2	0	0
FUEL(194.6 GAL. MAX.) X 6.8 (aft 2) GAL.	80	544	151.55	82443.2		
EQUIPMENT SUBTOTAL:		1278		163424.2		2408.9
TOTAL AIRCRAFT WEIGHT:		4593.89	132.6608611	609429.4032	0.864559275	3971.6902
AIRCRAFT MAX GROSS WEIGHT:		5291		LATERAL C.G. LIMITS:		
NEW USEFUL LOAD:		697.11				
NEW CENTER OF GRAVITY (LONGITUDINAL)		132.6608611		L/H LIMIT:6.30 IN. (0.16M) MINUS		
NEW CENTER OF GRAVITY (LATERAL)		0.864559275		R/H LIMIT: 3.54 IN. (0.09) PLUS		
		LONGITUDINAL C.G. LIMITS:				
		FORWARD LIMIT:				
		124.8 IN. (3.17M) @ 4000 LBS. (2000 KG)				
		126.5 IN. (3.185M) @ 5000 LBS. (2100 KG)				
		REARWARD LIMIT:				
		137.9 IN. (3.445M) @ 5000LBS. (2100KG)				
		139.3 IN. (3.49M) @ 4000 LBS. (1750 KG)				