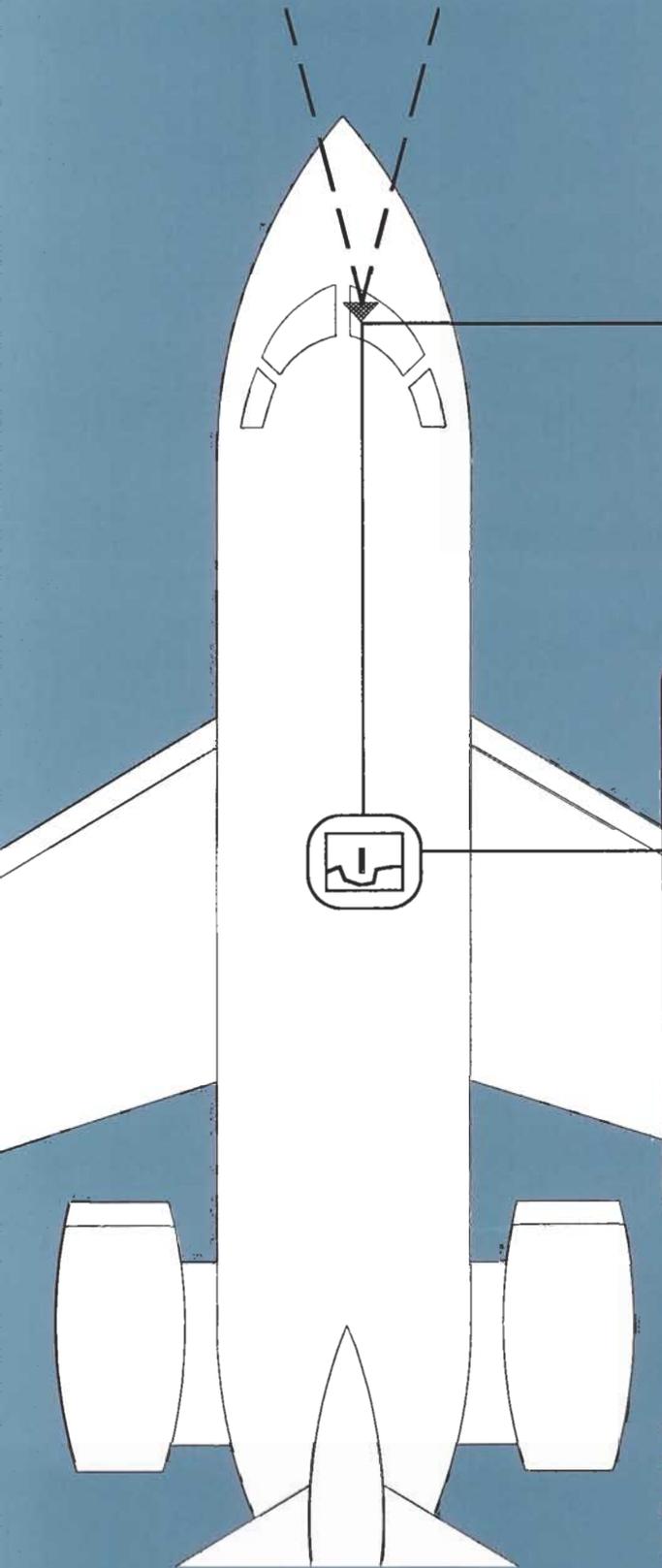


*Put Yourself In The Pilot's Seat !*



**COLOR VIDEO CAMERA**



**VIDEO MONITOR**



*Add an exciting new dimension to your passengers' flight by putting them in the pilot's seat!*

The AVS460 miniature color video camera is recessed into the cockpit glare shield and automatically adjusts to different attitude positions for taxi, take-off and landing providing passengers with an exciting pilot's eye view.

AVS camera installations include: B707&737, MD80, GII,III&IV,CL601,Falcon 50&900,Cit VII,BAe800&1000s.

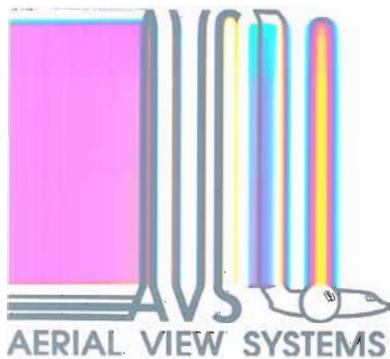
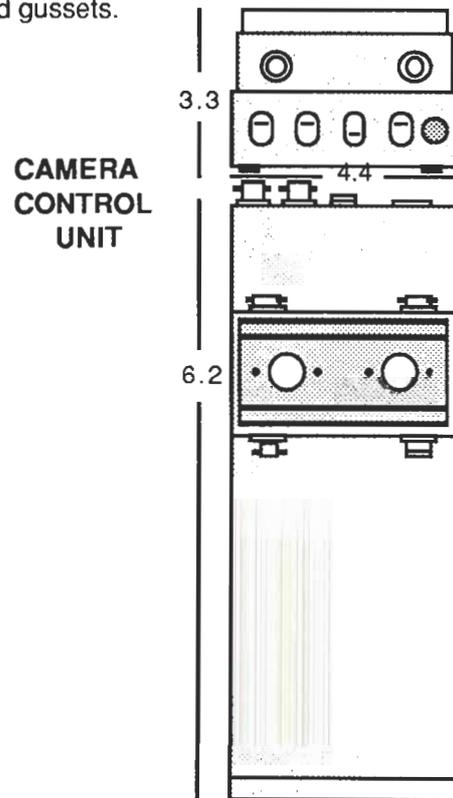
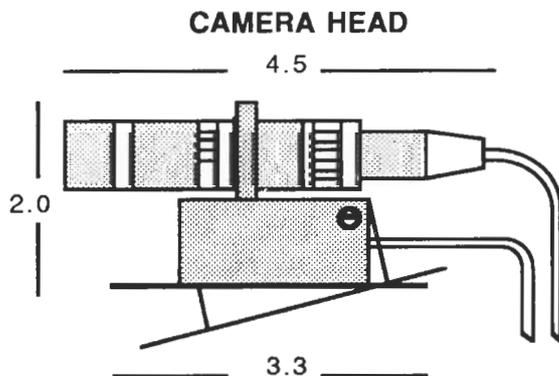


# SPECIFICATIONS AVS460 MICRO

Video Sensor	1/2 inch CCD	
Horizontal Resolution	<b>&gt;460 lines</b>	
Minimum Illumination	5 lux (F1.6)	
Signal to Noise Ratio	>48 dB	
Lenses, 1/2 inch format	24 mm, F3.1, (Telephoto) 15 mm, F2.0, (Standard) 7.5 mm, F1.6, (Wide Angle)	
Video Output, 1.0 VP-p/75 ohms	Composite Video	- BNC
	Y/C, S-VHS Super Video	- 4 Pin
	<b>RGB</b>	- 15 Pin D-sub
Scan Area	768(H) x 494(V) Effective Pixels	
Scanning System	2:1 interlace	
Synchronization	Internal/External (Auto Switching)	
White Balance	Auto Tracking One-push auto-setting Manual: Adjustable R & B levels	
Gain Control	AGC: Automatic Gain Control OFF, ON or UP Sensitivity	
<b>Electronic Shutter</b>	Auto: 1/60 - 1/50,000 second Manual: 1/125 - 1/10,000 second	
Controls	R & B levels Horizontal Phase (H PHASE) Subcarrier Phase (SC PHASE FINE)	
Servo	56 oz./inch torque 3 self-adjusting attitude positions for taxi, take-off and landing, with remote programming and manual override Optional Pan and Tilt	
Power Requirement	Regulated +28 or +12 VDC / 1 Amp	
Camera Cable Lengths	2, 5, 10, 15, 20, or 30 Meters (6.6, 16.5, 33, 49.5, 66, or 99 Feet)	
DO-160C Tested	Section 15, 20 & 21 Category TU & 2	
STC'ed in (Supplemental Type Certificate)	Falcon 50 & 900 Challenger 601 Gulfstream IV	Citation VII BAe 800 & 1000 B707,737 & MD80

Dimensions	CAMERA CONTROL UNIT	CAMERA HEAD LENS & SERVO
Width	4.4" (110mm)	1.8" (46mm)
Height	3.3" (84mm)	2.0" (51mm)
Depth	6.2" (158mm)	4.5" (115mm)
Weight	32 oz. (910g)	6 oz. (171g)

NOTE: Total camera system weight is 4.25 pounds including: CH, CCU, Servo, Lens, 2m cables, connectors, installation rack, tray and gussets.





AVS460  
AUTO-TILT CAMERA SYSTEM

TECHNICAL NOTE  
M1 MODIFICATION

SAME "FORM, FIT, FUNCTION"

SAME	CAMERA HEAD, LENS and SERVO SIZE
SAME	CCU OVERALL SIZE
SAME	CCU RACK and TRAY
SAME	CONNECTORS, IN & OUT OF CCU
SAME	POWER REQUIREMENT
SAME	VIDEO OUTPUTS
DIFFERENT	CAMERA CABLE
SMALLER	CAMERA CABLE (From .31 to .25" diameter)
SMALLER	CAMERA CABLE CONNECTORS (From .67 to .44")
IMPROVED	MINIMUM ILLUMINATION (From 5 to 2.5 lux)
IMPROVED	CCU POWER SUPPLY (Switching Regulators, more efficient & lower heat)
IMPROVED	CCU SHAPE (Cleaner, no Voltage Regulators)
IMPROVED	CAMERA LENS VIEW (Wider from 24 to 15mm)
RE-TESTED	DO-160D

AUG 15/02

Page 1A  
JAN 01/03



AVS460  
AIRBORNE VIDEO CAMERA SYSTEM

INSTALLATION NOTES  
AND  
DRAWINGS

NOVEMBER 15, 1993

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P.O. Box 9905 • Newport Beach, CA 92658 • Office 714/969-2470 • Fax 714/969-5543  
[www.aerialviewsystems.com](http://www.aerialviewsystems.com) • Office 888/695-0230 • Fax 888/695-0229



# AVS460 INSTALLATION NOTES & DRAWINGS

JAN 01/03

## TABLE OF CONTENTS & EFFECTIVE DATES

SUBJECT	PAGE	EFFECTIVE DATE
SPECIFICATIONS	COVER	NOV 15/93
RECORD OF REVISIONS	1	JAN 01/03
TABLE OF CONTENTS & EFFECTIVE DATES	2	"
CERTIFICATE OF CONFORMITY	3	NOV 15/93
CERTIFICATE OF TEST COMPLIANCE, DO-1	4	FEB 04/02
CABLE BURN TEST, FAR 25 F	5	OCT 25/01
AVS460 INSTALLATION NOTES		NOV 15/93
Introduction	6	"
Adjustments	7	"
Servo Programmer	8	"
AVS460 DRAWINGS		"
Camera Head	9	"
Camera Control Unit	10	JAN 01/03
Rack & Tray	11&11A	"
Rack & Tray (Falcon 900/2000)	12	"
Gussets	13&13A	"
BLANK	14	"
BLANK	15	"
BLANK	16	"
AVS460 M1 WIRING DIAGRAM	17	"
AVS460 M1 CABLE & CONNECTORS	17A	"
AVS460 M1 PART NUMBERS	18	"
AVS460 MANUAL OVERRIDE WIRING DIAGR	18A	NOV 15/94
AVS460 TROUBLE SHOOTING	19	NOV 15/93
AVS460 WARRANTY	20	"



## CERTIFICATE OF CONFORMITY

DATE: OCTOBER 22, 2005

CUSTOMER NAME: RAYTHEON AIRCRAFT SERVICES

CUSTOMER ORDER #: 1401647959

AERIAL VIEW SYSTEMS INVOICE #: 500122-23

Aerial View Systems does hereby certify that the following described articles have been inspected in accordance with the approved quality control procedures and quality assurance provisions as contained in the Quality Standards Manual.

MODEL#: AVS460-24-28T

SERIAL#: 198646-429 M1

Consisting of:

(1) AVS460-24-28T-CCU	CAMERA CONTROL UNIT S/N 198646-429 M1
(1) AVS460-24-28T-CH	CAMERA HEAD, LENS & SERVO S/N 450164-429 M1
(1) AVS460-CHTS & CHTBP	CH TINNERMAN SHOE & BASE PLATE
(1) AVS460-PROG	SERVO PROGRAMMER
(1) EMC-VIT-5	CAMERA CABLE VITON (5M)
(1) AVS-S	SERVO CABLE (5M)
(1) RM12BPG5S	POWER CONNECTOR
(1) 2-329446-1	VIDEO CONNECTOR
(1) MD 4P	Y/C CONNECTOR
(1) DM15C/DB15P	RGB CONNECTOR

It is further certified that:

- A. Parts conform to applicable drawings.
- B. All manufacturing processes and workmanship conform to drawing(s) and/or specification(s) applicable to this order.
- C. Documentary evidence of the product's quality in the form of an inspection log essential in determining the above, has been retained and will be available for review.

Joseph F. Brunner, Jr.  
Quality Control  
Aerial View Systems, Inc.

Page 3  
NOV 15/93

**TEST COMPLETION RECORD**

For

**Aerial View Systems**

Test Item: Camera System

Model Number: AVS470-428B4T-CCU; Serial Number: 179622 M1

Model Number: AVS470-4-28B4T-CH; Serial Number: 14716 M1

Test Start Date: 02/04/02	Test Completion Date: 02/22/02
Test Completion Record: The following EMI tests were performed on two (2 each) Camera System; in accordance with Customer: Aerial View Systems and RTCA/DO-160D.	
Magnetic Effect (Sec. 15): RF Susceptibility, Conducted (Sec. 20.4): RF Susceptibility, Radiated (Sec. 20.5): RF Emissions, Conducted (Sec. 21.3): RF Emissions, Radiated (Sec. 21.4):	Passed Passed Passed Passed Passed

Tested By:

  
 Kevin Bul, EMC Engineer

Date

2/26/02

Approved By:

   
 A.S. Brockamp, Quality Assurance Manager

Date

2/26/02



October 25, 2001

CERTIFICATION

AERIAL VIEW SYSTEMS
P.O. Box 9905
Newport Beach, CA 92658

Your Purchase Order Number: Verbal
Our Job Number: 1680

Three (3) Cables (Electrical), EMC-CVX and three (3) Cables (Electrical), EMC-VIT were in turn mounted in the test cabinet at an angle of 60 degrees from the horizontal. The burner was positioned as required according to test procedure FAR 25 App. F, Rev.: 1-1994 Edition. The flame was then adjusted to produce the minimum flame temperature of 1750°F. Each specimen was then placed over the flame. Each specimen was exposed to the flame for thirty (30) seconds. After the flame was removed, the burning time and the dripping time of each specimen was zero. The burn length was recorded as required in the above test procedure.

RESULTS:

Table with 7 columns: Serial Number, 01 CVX, 02 CVX, 03 CVX, 04 VIT, 05 VIT, 06 VIT. Row 1: Burn Length, Less than 1 inch, Less than 1 inch.

The average burn length of the six specimens did not exceed 3 inches. The average burn time of the six specimens did not exceed 30 seconds after the flame was removed. The average burn time of the drippings from the specimens did not exceed 3 seconds.

INDEPENDENT TESTING LABORATORIES INC.

Signature of A. S. Brockamp and ITL logo
A. S. Brockamp, Quality Assurance Manager

ASB/tb

DISCLAIMER

This certification represents Independent Testing Laboratories, Inc. (ITL) findings and conclusions based upon the conduct of the test and procedures described herein with respect only to the particular products(s) or components (s), which were provided to ITL. This report/certificate of conformance shall not be reproduced, except in full, without written permission from ITL.

## AVS460 INSTALLATION NOTES

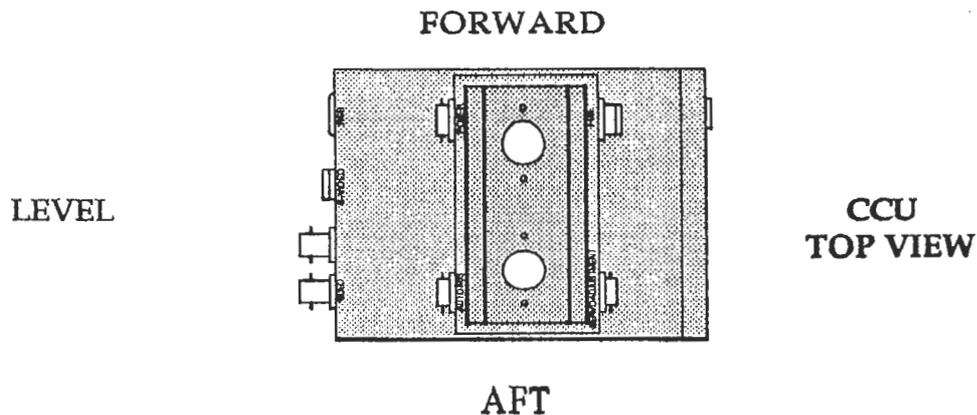
The AVS460 is a micro miniature color video camera system consisting of a CAMERA CONTROL UNIT (CCU) and a CAMERA HEAD (CH). The camera system includes all required cables, connectors, rack, tray, gussets and a SERVO PROGRAMMER.

The CH is normally recessed into the cockpit glare shield and mounted 15 to 20 degrees nose down to provide the camera with a look down angle. A servo in the CH automatically adjusts the CH to three different viewing attitudes for taxi, take-off and approach. On the ground, the camera system receives a GROUND from the aircraft Squat switch selecting the Taxi position. Inflight, Take-Off and Approach positions are selected internally by the camera by sensing aircraft attitude (8 & 12°) and require that the CCU be mounted level and athwart (across) the aircraft. Custom CCU orientation modifications available upon request.

The CCU need not be accessible for normal operations and remains "ON" to be selected by passengers for viewing. It is recommend that camera 28 VDC power be provided via the Avionics Master switch. The CCU may be installed up to 99 feet from the CH. Camera Cable lengths are available: 6.6, 9.9, 16.5, 33, 49.5, 66 & 99 feet.

Typical CCU installation locations:

GIV & CL601	Forward end of cockpit pedestal athwart aircraft. Rack, tray, & gussets provided to extend pedestal forward with 6.6' Camera Cable.
Falcon 50, 900 & 2000	Aft of cockpit pedestal under step in floor. Extended R21 rack and tray provided with 16.5' Camera Cable.
BAe 800 / 1000 & Citation VII	Forward left hand cabin entertainment cabinet. Rack and tray provided with 33' Camera Cable.
Boeing, BAC & MD 80	Radio rack aft of cockpit. Rack and tray provided with 16.5 Camera Cable.



# AVS460 INSTALLATION NOTES

## INPUT

POWER- Stabilized 28 VDC required, 1.5 Amp fuse provided externally on CCU. Camera system should be installed on an accessory 1 Amp circuit breaker and may remain "ON" at all times.

RECOM ch.

CAUTIC ing CH.

SQUAT SWITCH- GROUND

## OUTPUT

VIDEO- 1.0 VP-p  
Compos  
Y/C, S-V  
RGB ctor

## ADJUSTMENTS

POWER- Set to ON. UP

WHITE BALANCE- Set to FULL AUTO. UP

AUTO GAIN CONTROL- Set to ON. MIDDLE

SHUTTER- Set to AUTO. UP

LENS FOCUS- Set and locked on infinity, does not require adjustment.

LEVELING DEVICE- Should not require adjustment. Inside CCU, determines transition points (8 & 12°) for take-off and approach positions.

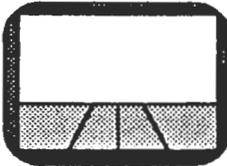
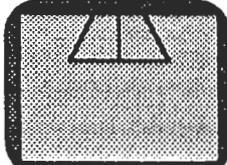
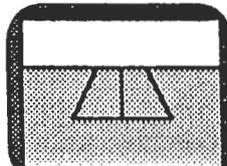
LEVEL- Level horizon on video monitor (**CAUTION: Power off to avoid damaging Servo**) by slightly loosening two hex head bolts on CH guillotine and adjusting CH.

BORESIGHT- Select an object directly in front of aircraft and center object on video monitor by adjusting CH attachment to aircraft.

## AVS460 INSTALLATION NOTES

SERVO POSITIONS - Requires initial programming in CCU as follows:

Attach SERVO PROGRAMMER to CCU Servo Adjustment Plug. Camera servo is now in the manual mode and can be adjusted up and down. While observing the cabin video monitor use up/down switch to adjust servo positions:

POSITION	ATTITUDE	VIDEO MONITOR
TAXI	Slightly up	 -HORIZON
TAKE-OFF	Full down	 -HORIZON
APPROACH	Slightly down	 -HORIZON

1. Set TAXI position using up/down switch.
2. Press "TAXI" button to memorize.

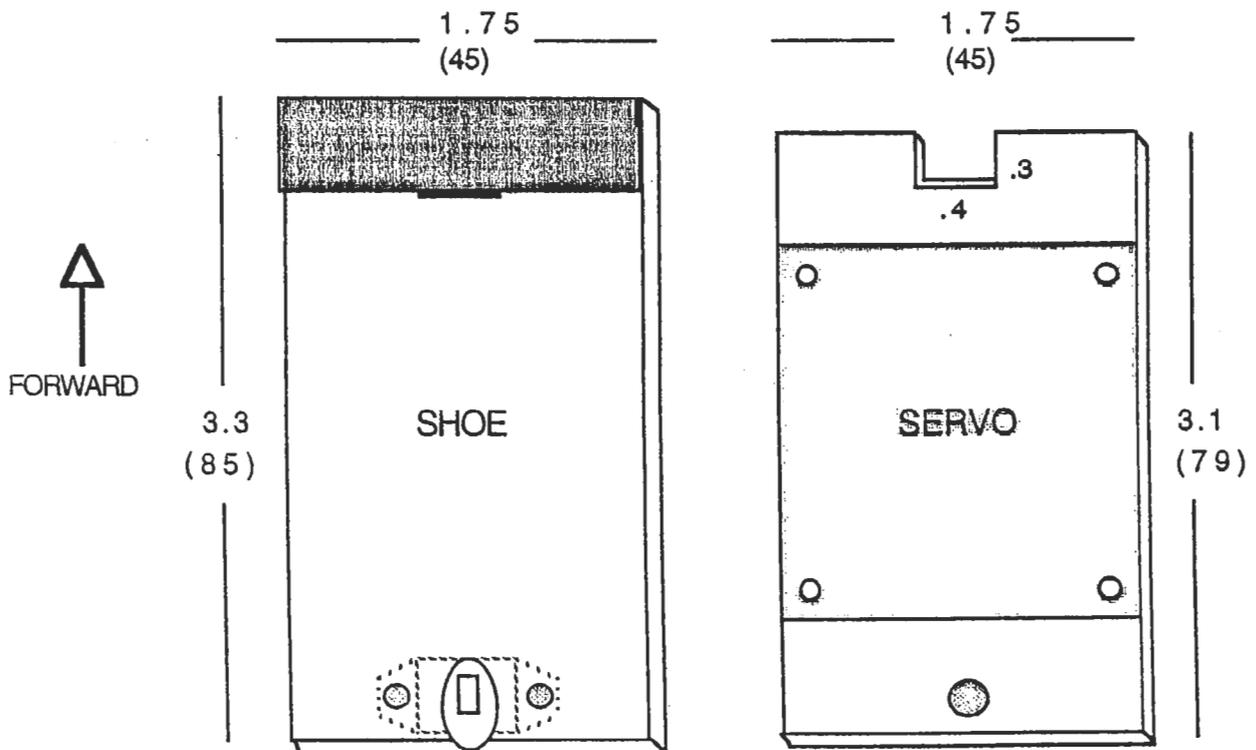
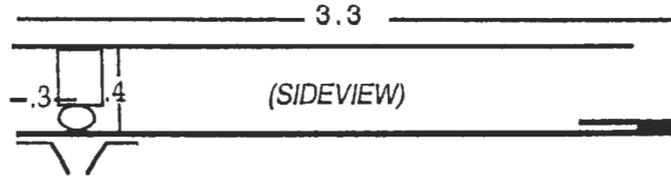
Repeat steps #1 & #2 for TAKE-OFF & APPROACH.

The CCU must be turned OFF and ON before the servo will move to new positions. Normally while on the ground the TAXI position is viewed. To simulate the inflight positions, remove the Squat switch GROUND which will cause the servo to lower slightly to the APPROACH position. While the Squat switch GROUND is removed, remove the CCU from the rack and raise the forward end of the CCU. This simulates take-off attitude and causes the servo to lower further to the TAKE-OFF position.

# TINNERMAN

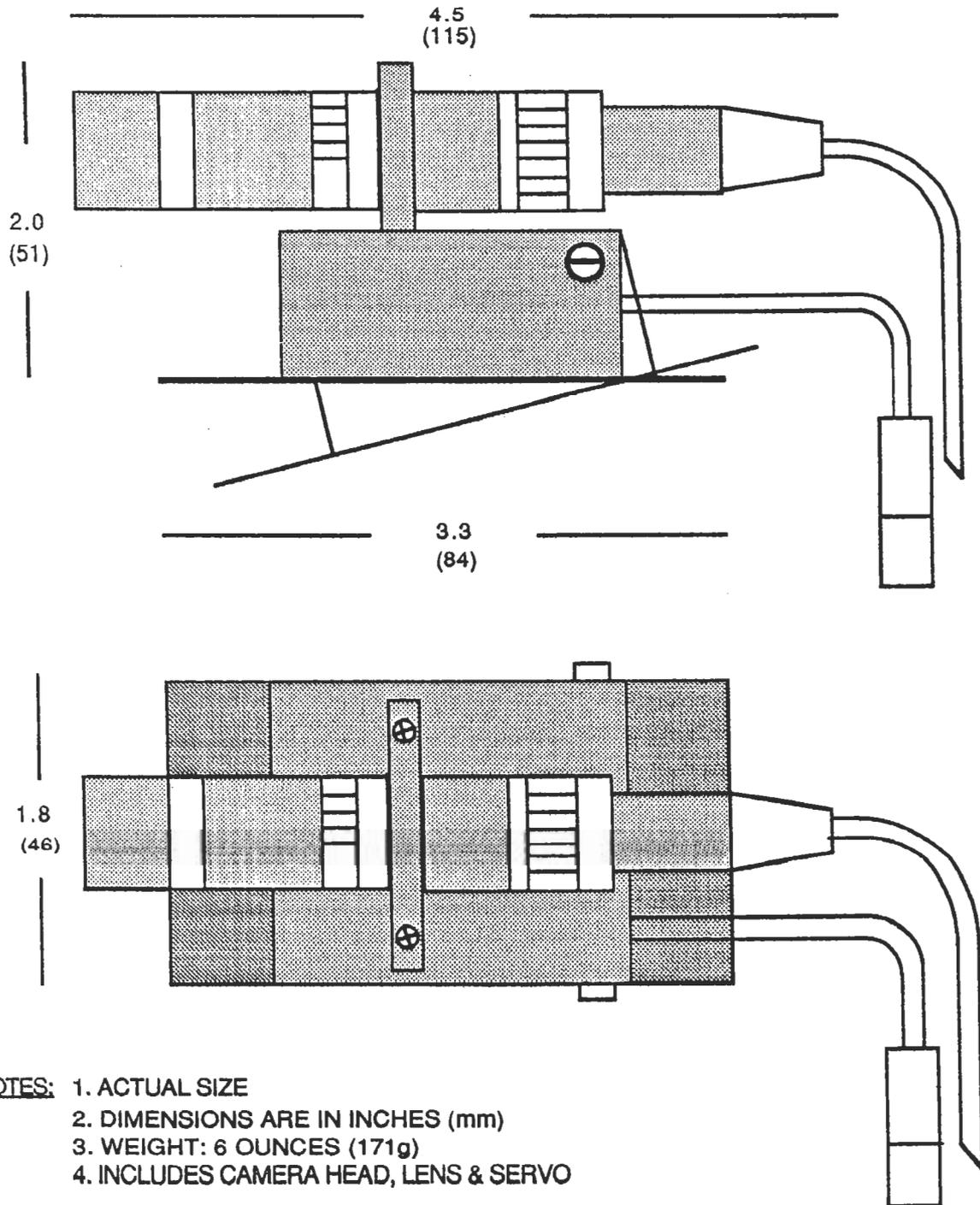
CAMERA HEAD SHOE  
P.N. AVS460-CHTS

CAMERA HEAD BASE PLATE  
P.N. AVS460-CHTBP

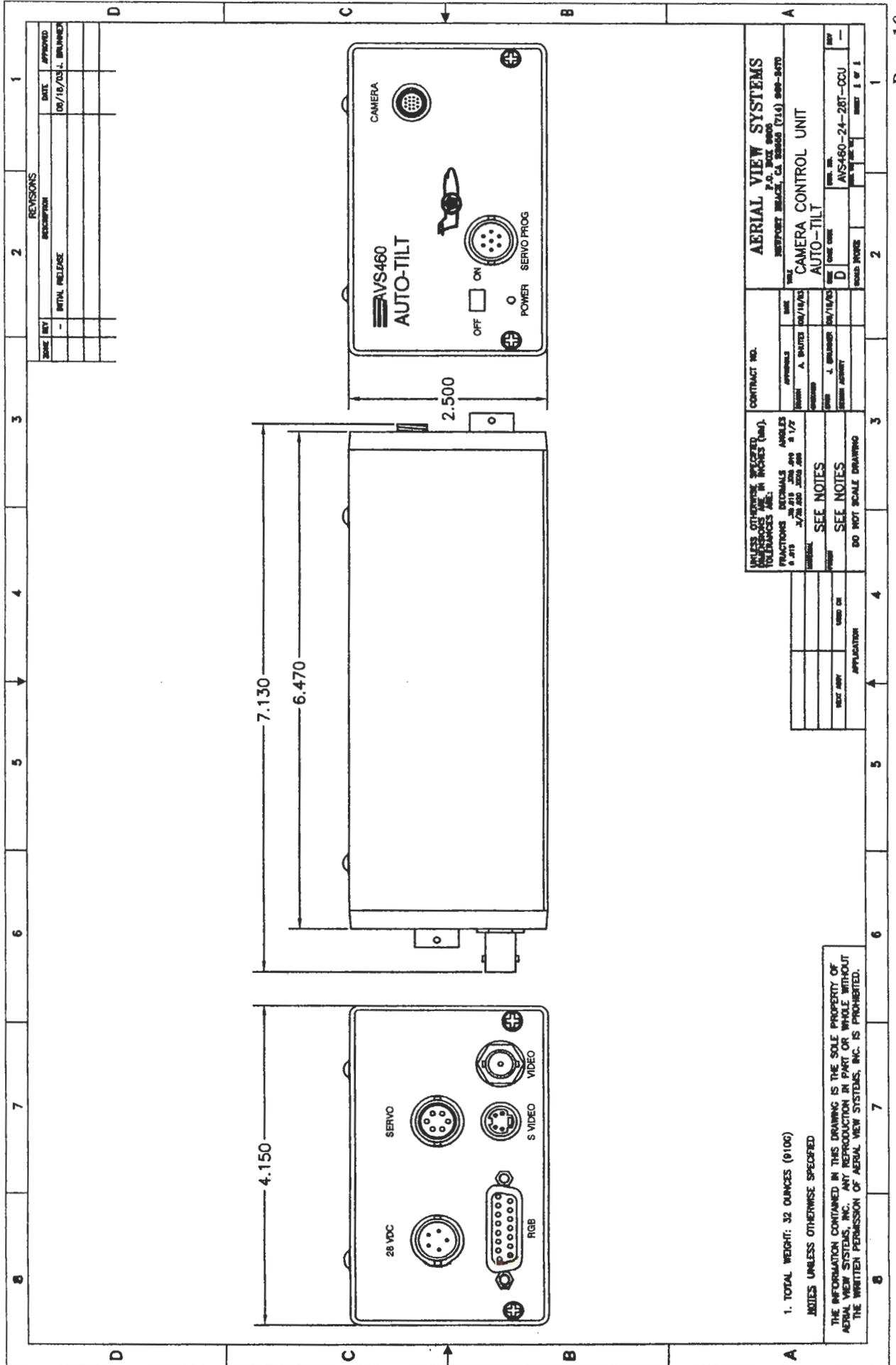


- NOTES:**
1. ACTUAL SIZE
  2. DIMENSIONS ARE IN INCHES (mm)
  3. WEIGHT: 2 OUNCES (57g)
  4. MATERIAL: .063 2024-T3 ALUMINUM, BLACK ELECTROSTATIC POWDERCOATED

**CAMERA HEAD**  
**P.N. AVS460-24-28T-CH**



- NOTES:**
- 1. ACTUAL SIZE
  - 2. DIMENSIONS ARE IN INCHES (mm)
  - 3. WEIGHT: 6 OUNCES (171g)
  - 4. INCLUDES CAMERA HEAD, LENS & SERVO

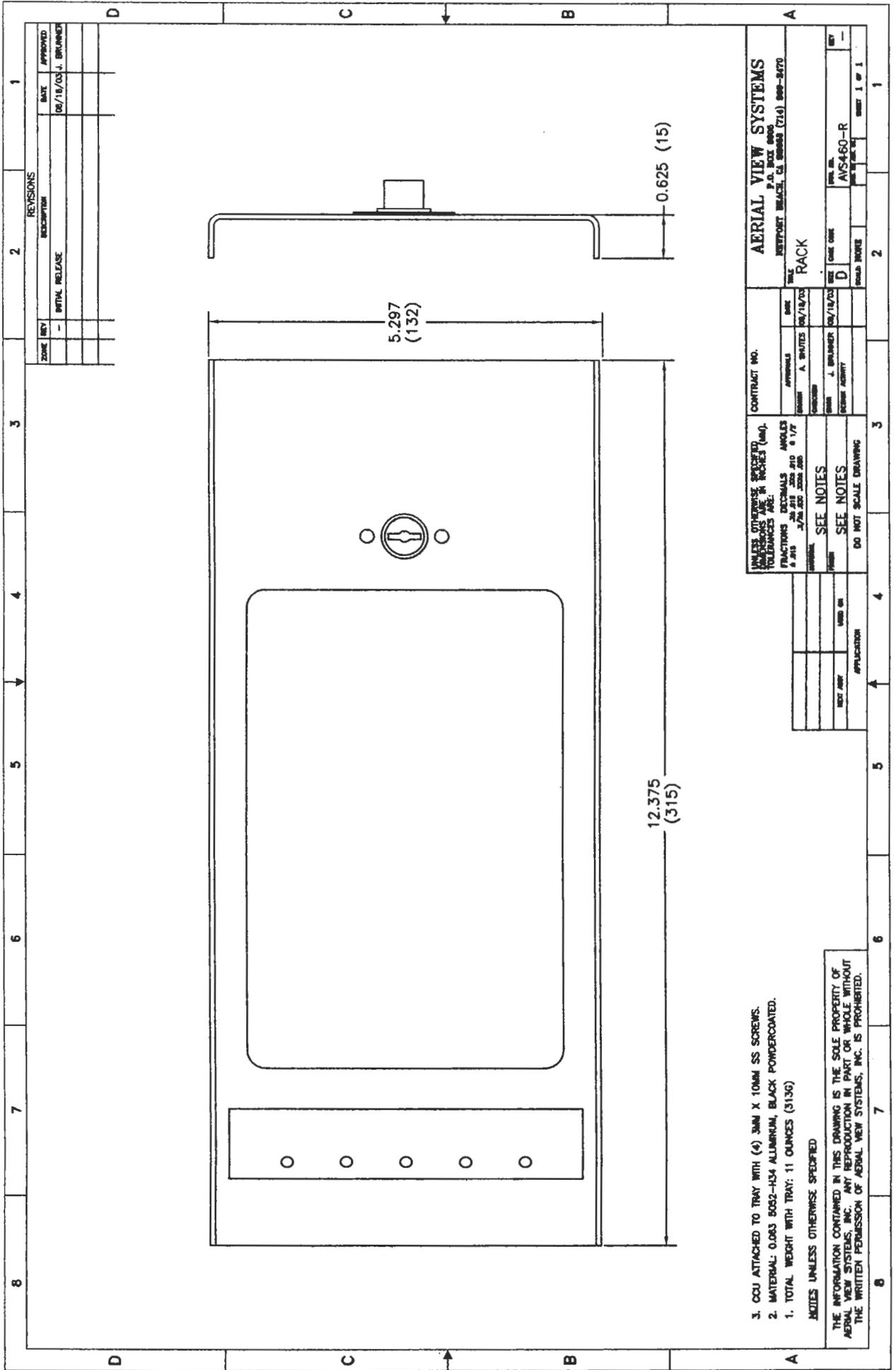


REVISIONS		
DATE	DESCRIPTION	APPROVED
08/18/03	J. BALMER	
	INITIAL RELEASE	

<b>UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES (DIM), FRACTIONS DECIMALS ANGLES</b> 0.015 1/32 0.001 0.001 0.125 1/2 DECIMALS 1/32 0.001 0.001 0.125 1/2 ANGLES 1/2 0.001 0.001 0.125 1/2		<b>CONTRACT NO.</b> APPROVALS DATE DRAWN CHECKED DESIGNED ENGINEER	
<b>SEE NOTES</b> DO NOT SCALE DRAWING		<b>AERIAL VIEW SYSTEMS</b> P.O. BOX 8900 HUNTINGTON BEACH, CA 92648 (714) 898-8670	
<b>SEE NOTES</b>		<b>CAMERA CONTROL UNIT</b> <b>AUTO-TILT</b>	
PART NO. AVS460-24-28T-CCU	REV. D	DATE 08/18/03	DRAWN BY J. BALMER

1. TOTAL WEIGHT: 32 OUNCES (910g)  
 NOTES UNLESS OTHERWISE SPECIFIED

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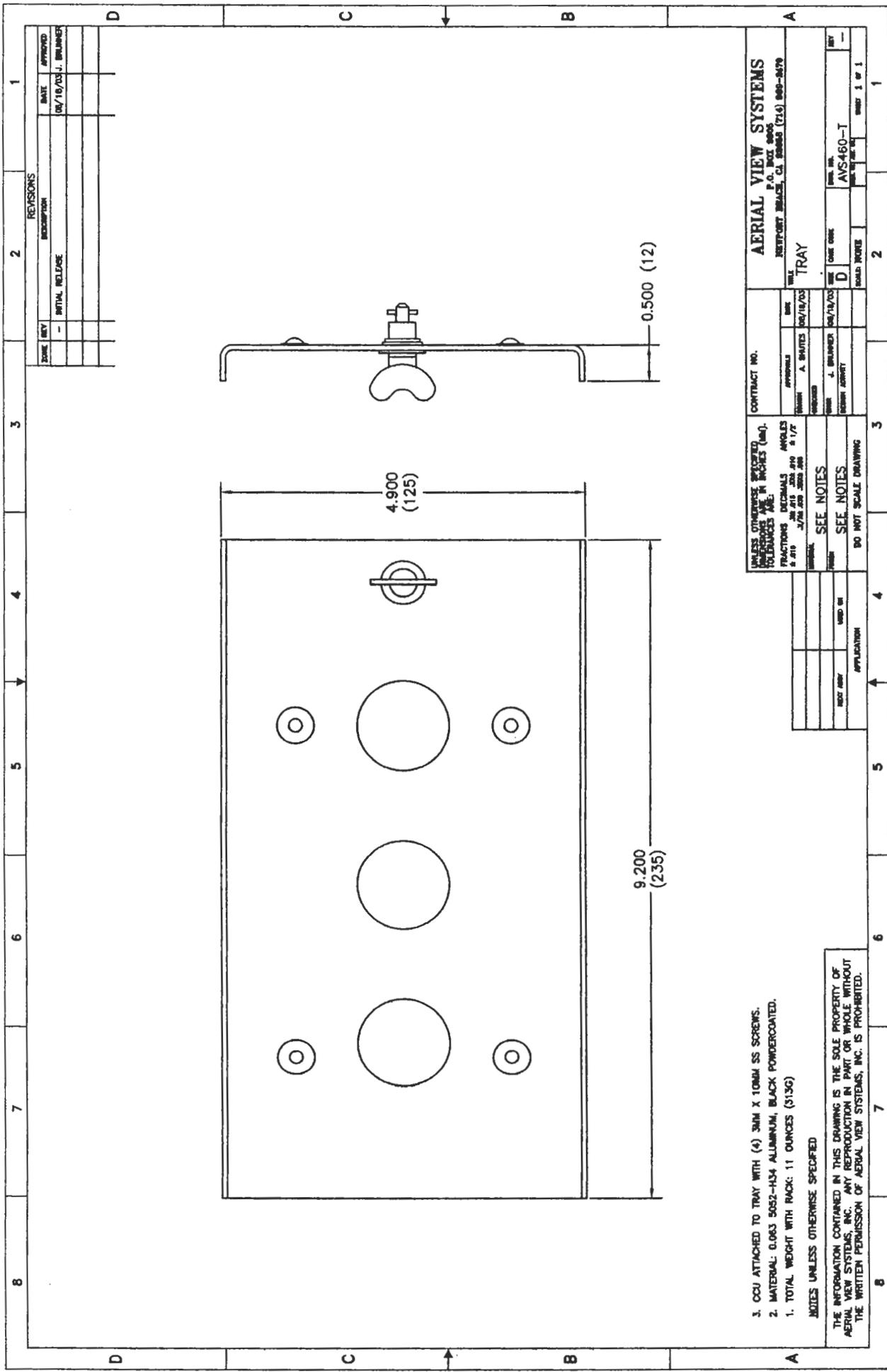


REVISIONS		
NO.	DESCRIPTION	DATE
1	INITIAL RELEASE	06/18/03-J. BRUNNER

3. CCU ATTACHED TO TRAY WITH (4) 3MM X 10MM SS SCREWS.  
 2. MATERIAL: 0.083 5052-H34 ALUMINUM, BLACK POWDERCOATED.  
 1. TOTAL WEIGHT WITH TRAY: 11 OUNCES (313G)  
 NOTES UNLESS OTHERWISE SPECIFIED

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UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES (mm). FRACTIONS DECIMALS ANGLES 1/16 3/16 1/2 5/8 3/4 7/8 1 1 1/8 1 1/4 1 1/2 1 3/4 2 2 1/4 2 1/2 3 3 1/4 3 1/2 4 4 1/4 4 1/2 5 5 1/4 5 1/2 6 6 1/4 6 1/2 7 7 1/4 7 1/2 8 8 1/4 8 1/2 9 9 1/4 9 1/2 10 10 1/4 10 1/2 11 11 1/4 11 1/2 12		<b>AERIAL VIEW SYSTEMS</b> P.O. BOX 9800 REDFORD BLVD. CA 94669 (714) 999-8470	
CONTRACT NO.		TITLE <b>RACK</b>	
APPROVALS A. BRUNNER 06/14/03 CHECKED	DATE 06/14/03	DESIGNED J. BRUNNER 06/14/03	DRAWN J. BRUNNER 06/14/03
SEE NOTES DO NOT SCALE DRAWING		PART NO. AYS460-R	
APPLICATION		SHEET 1 OF 1	



DATE	REV	DESCRIPTION	DATE	APPROVED
06/19/03	J	INITIAL RELEASE		

REVISIONS	
NO.	DESCRIPTION
1	
2	
3	
4	
5	
6	
7	
8	

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES (MM). FRACTIONS DECIMALS ANGLES  
 1/16 1/32 3/64 1/8 1/4 3/8 1/2 5/8 3/4 7/8 1 1 1/4 1 1/2 1 3/4 2 2 1/4 2 1/2 3 3 1/4 3 1/2 4 4 1/4 4 1/2 5 5 1/4 5 1/2 6 6 1/4 6 1/2 7 7 1/4 7 1/2 8 8 1/4 8 1/2 9 9 1/4 9 1/2

SEE NOTES  
 SEE NOTES  
 DO NOT SCALE DRAWING

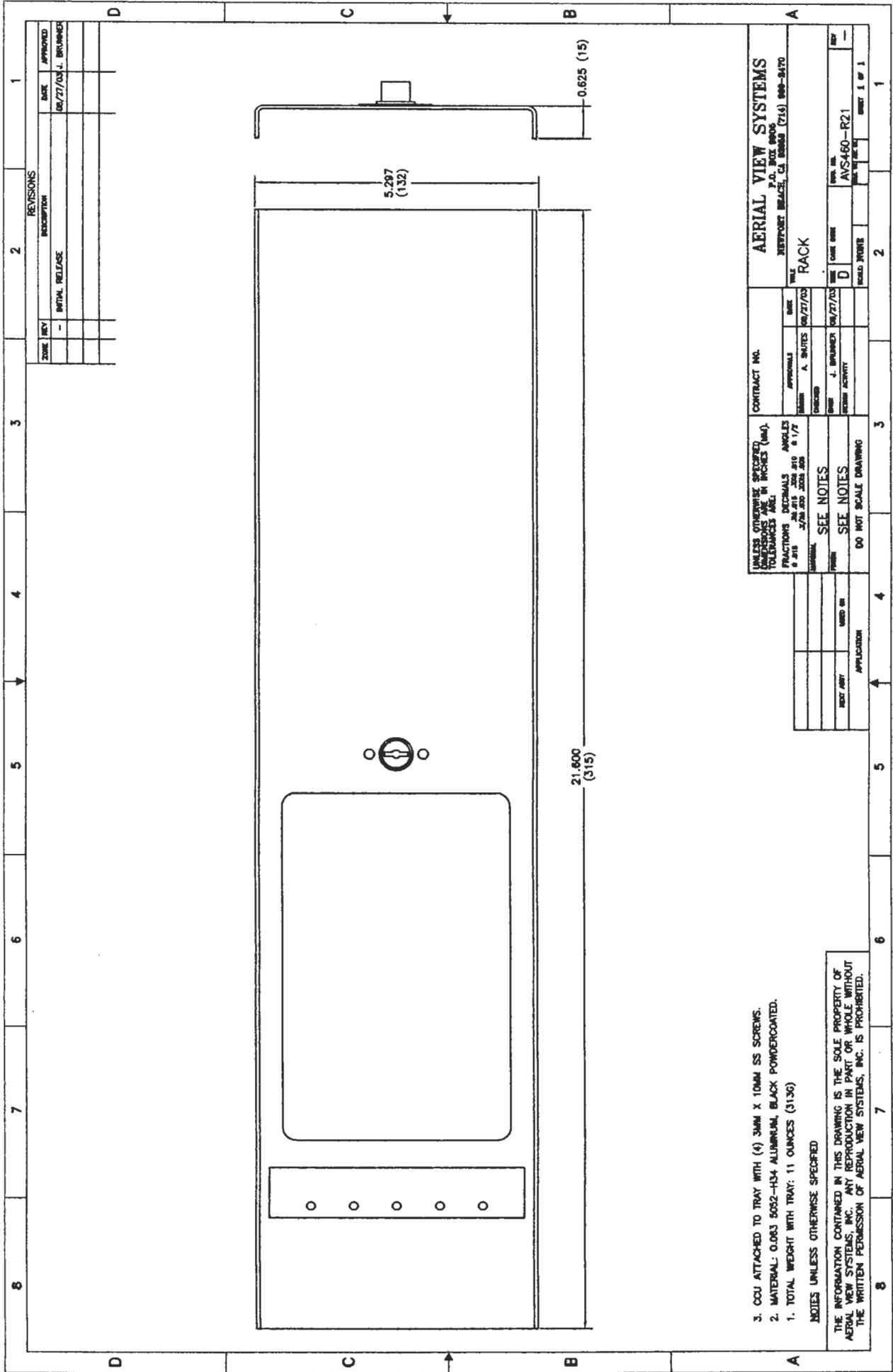
CONTRACT NO. **AERIAL VIEW SYSTEMS**  
 P.O. BOX 200  
 REEFSPORT BEACH, CA 92662 (714) 866-8470

DATE: 06/19/03  
 DRAWN: J. BRUNNER  
 CHECKED: D  
 DESIGNED: J. BRUNNER  
 SCALE: AS SHOWN  
 SHEET NO.: 1 OF 1

3. CCU ATTACHED TO TRAY WITH (4) 3/16 X 1/8MM SS SCREWS.  
 2. MATERIAL: 0.063 5052-H34 ALUMINUM, BLACK POWDERCOATED.  
 1. TOTAL WEIGHT WITH RACK: 11 OUNCES (313G)

NOTES UNLESS OTHERWISE SPECIFIED

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ZONE	REV	DESCRIPTION	DATE	APPROVED
	-	INITIAL RELEASE	08/27/03 J. BURNHAM	

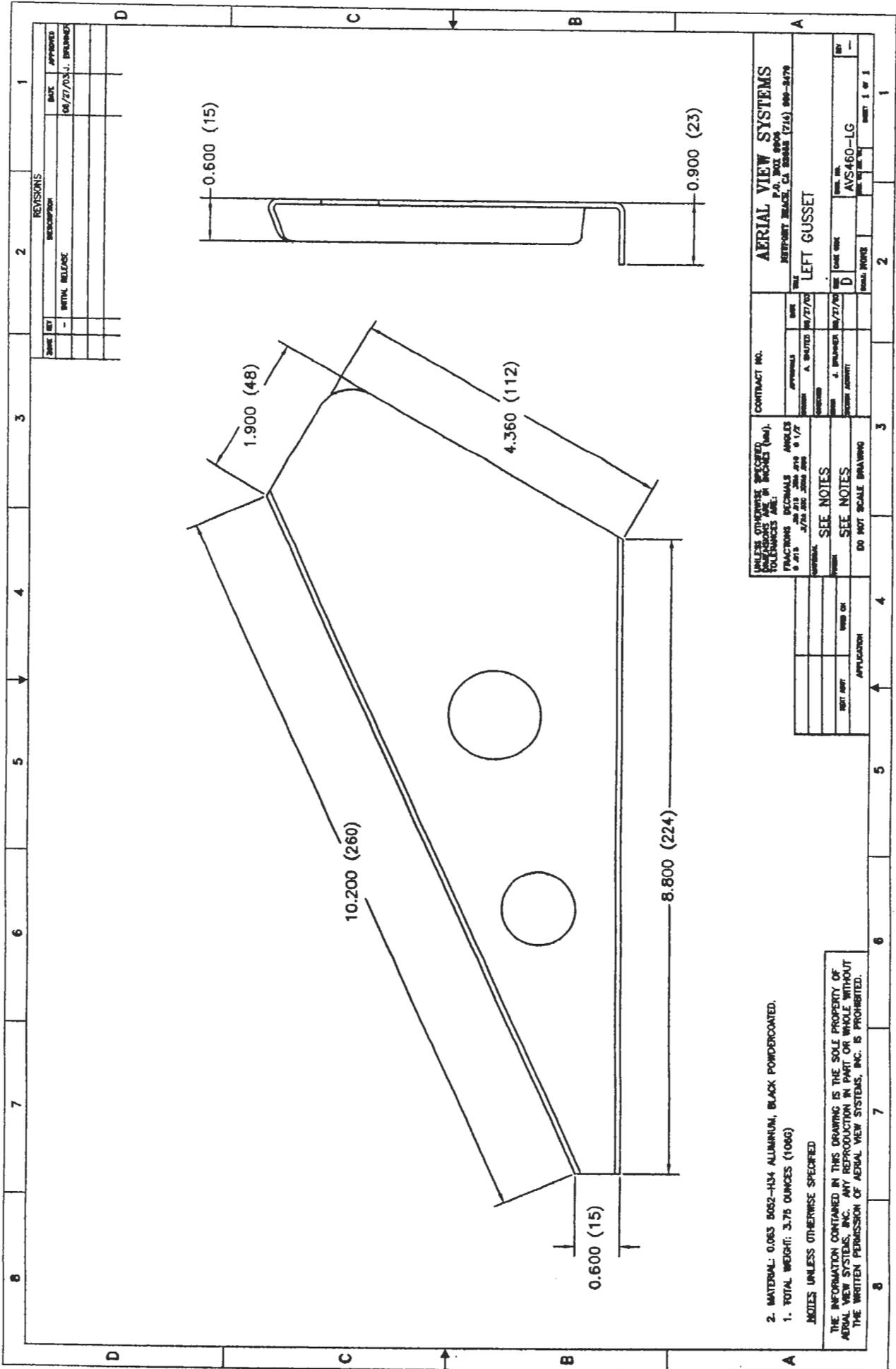
CONTRACT NO.		AERIAL VIEW SYSTEMS	
APPROVALS	DATE	REV	DATE
A. SHUTES	08/27/03	D	08/27/03
DESIGNED		ISSUED	
BY	J. BURNHAM	BY	AVS460-R21
FOR	ACTIVITY	SCALE	1 OF 1

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE:	
FRACTIONS	DECIMALS
0 3/16	0.1875
0 1/8	0.125
0 1/4	0.25
0 3/8	0.375
0 1/2	0.5
0 5/8	0.625
0 3/4	0.75
0 7/8	0.875
1	1.0

SEE NOTES	
DO NOT SCALE DRAWING	
APPLICATION	

3. COU ATTACHED TO TRAY WITH (4) 3MM X 10MM SS SCREWS.  
 2. MATERIAL: 0.063 6062-H34 ALUMINUM, BLACK POWDERCOATED.  
 1. TOTAL WEIGHT WITH TRAY: 11 OUNCES (313G)  
 DIMENSIONS UNLESS OTHERWISE SPECIFIED

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REVISIONS		DATE	APPROVED
1	INITIAL RELEASE	08/27/03	J. BRUNGER
2			
3			
4			
5			
6			
7			
8			

**AERIAL VIEW SYSTEMS**  
 P.O. BOX 9800  
 REDFORD BLVD., CA 94608 (716) 899-2479

**LEFT GUSSET**

DATE: 08/27/03  
 DRAWN BY: J. BRUNGER  
 CHECKED BY: J. BRUNGER  
 SCALE: AS SHOWN  
 SHEET NO.: 1 OF 1

**CONTRACT NO.**

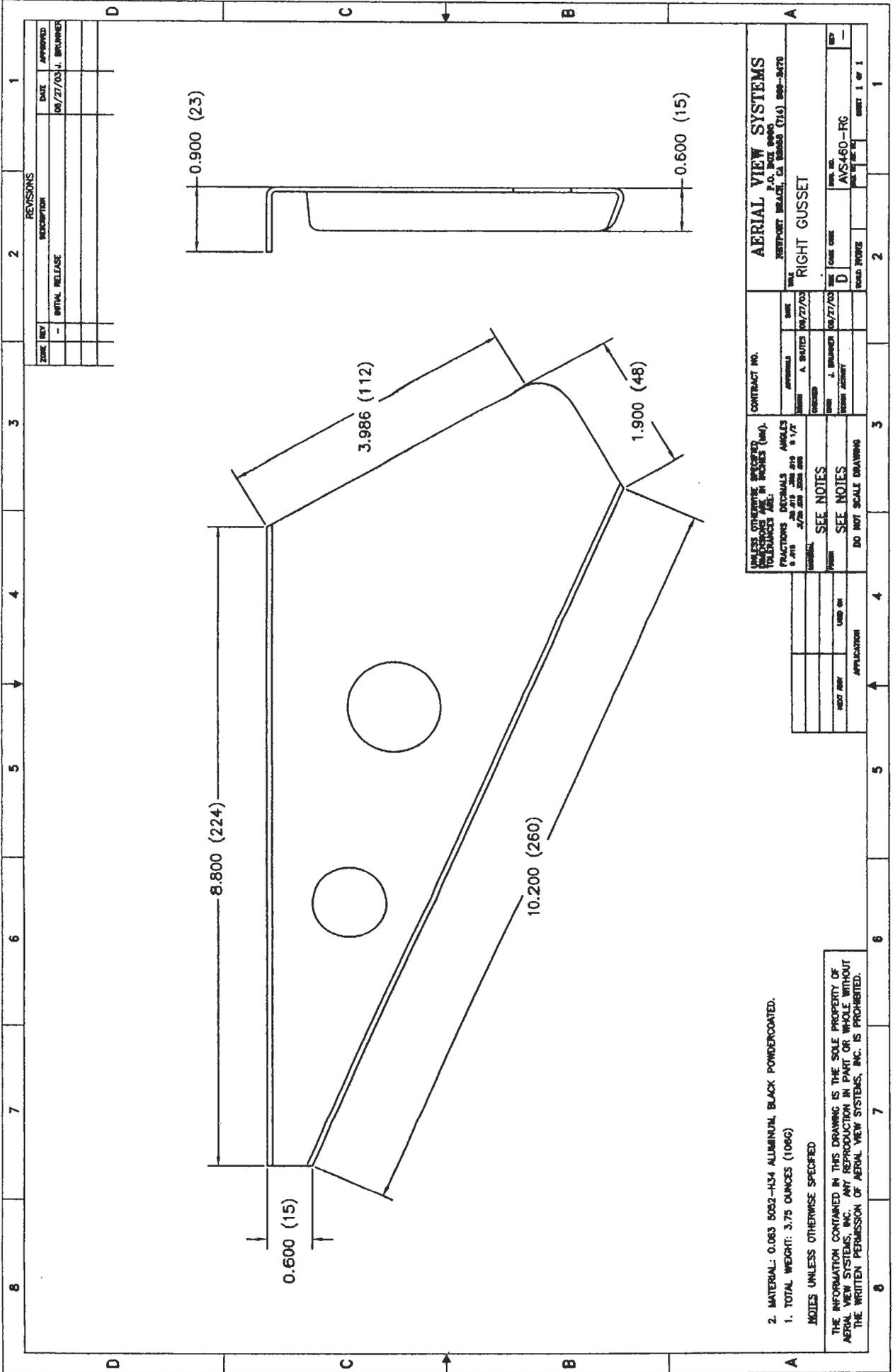
**ANALYSIS OF STRESSING REQUIRED**  
 FRACTIONS: DECIMALS ANGLES  
 1/16 1/32 3/64 1/8 1/4 3/8 1/2

**SEE NOTES**  
 DO NOT SCALE DRAWING

2. MATERIAL: 0.063 5052-H34 ALUMINUM, BLACK POWDERCOATED.  
 1. TOTAL WEIGHT: 3.75 OUNCES (106G)

NOTES UNLESS OTHERWISE SPECIFIED

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ZONE	REV	DESCRIPTION	DATE	APPROVED
	-	INITIAL RELEASE	08/27/03	J. BRUNNER

<b>AERIAL VIEW SYSTEMS</b> P.O. BOX 0000 HUNTSVILLE, AL 35894 (714) 888-3470	
<b>RIGHT GUSSET</b>	DATE: 08/27/03 DRAWN BY: A. BRUNNER CHECKED BY: J. BRUNNER DATE: 08/27/03 SCALE: 1:1
SHEET NO. 1 OF 1	PART NO. AVS460-RG

UNLESS OTHERWISE SPECIFIED: DIMENSIONS IN INCHES (mm) FRACTIONS DECIMALS ANGLES 3/16 .1875 .0015 30° 1/2°	CONTRACT NO.
TOLERANCES: SEE NOTES FINISH: SEE NOTES DO NOT SCALE DRAWING	DATE: 08/27/03 DRAWN BY: A. BRUNNER CHECKED BY: J. BRUNNER DATE: 08/27/03 SCALE: 1:1

2. MATERIAL: 0.083 5052-H34 ALUMINUM, BLACK POWDERCOATED.  
 1. TOTAL WEIGHT: 3.75 OUNCES (106G)  
 NOTES UNLESS OTHERWISE SPECIFIED

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## AVS460 PART NUMBERS

### WIRING DIAGRAM

ITEMNO.	PART NUMBER	DESCRIPTION	MFG.	
1	1	HR257TRA14-SA	FEMALE PANEL	HIROSE
2	1	HR257TPB14-P	MALE CABLE	"
3	1	EMC-VIT (VITON)	CAMERA CABLE	AVS
(3)	1	EMC-CVX (CONVOLEX) (optional)	" "	"
4	1	HR257TPB14-S	FEMALE CABLE	HIROSE
5	1	HR257TRB14-PA	MALE PANEL	"
6	1	RM12BRD-6S	FEMALE PANEL	"
7	1	RM12BPG-6P	MALE CABLE	"
8	1	AVS-S	SERVO CABLE	AVS
9	1	HR10-7P-4P	MALE CABLE	HIROSE
10	1	HR10-7J-4S	FEMALE CABLE	"
11	1	RM12BRD-5P	MALE PANEL	"
12	1	RM12BPG-5S	FEMALE CABLE	"
13	1	SP-630	FEMALE BNC	AMP
14	1	2-329446-1	MALE BNC	AMP
15	1	YWTCS7848101	S-VIDEO FEMALE PANEL	HIROSE
16	1	MD 4P	" MALE CABLE DIN	PPACIFIC
17	1	70164695	FEMALE PANEL D-SUB-15	HIROSE
18	1	DM15C / DB15P	MALE CABLE D-SUB-15	PPACIFIC
19	1	MS27473T24861SD	CIRCULAR	
20	1	RM12BRD-7P	MALE PANEL	HIROSE
21	1	RM12BPG-7S	FEMALE CABLE	"

### AVS460 INSTALLATION KIT

AVS460-R	RACK
AVS460-R21	RACK (FALCON 900 & 2000)
AVS460-T	TRAY
EMC-VIT-2,3,5,12,,20,30	CAMERA CABLE
AVS-H-2,3,5,12,20,30	HEATER CABLE
RM12BPG-5S	POWER CONNECTOR
2-329446-1	VIDEO CONNECTOR
MD 4P	Y/C, S-VHS MINI DIN CONNECTOR
DM15C / DB15P	RGB D-SUB CONNECTOR

### COMPONENTS AVS460 VIDEO CAMERA SYSTEM

AVS460-24-28T-CCU	CAMERA CONTROL UNIT
AVS460-24-28T-CH	CAMERA HEAD
AVS460-XM LOT:	CABLES, CONNECTORS, RACK & TRAY

## AVS460 TROUBLE SHOOTING

SYMPTOM	PROBABLE CAUSE	REMEDY
No Video Picture	28 VDC not present	CHECK: CCU on/off switch CCU green power lamp Aircraft camera 1 amp circuit breaker VERIFY: 28 VDC present at pin 1 of power connector RM12 BPG-5S
No Video Picture and Servo does not move and CCU green power lamp ON	Servo cable attached to CCU Servo Adjustment connector. RM12BPG-6P to RM12BRD-7P	Connect Servo cable to CCU Auto Iris / Servo connector. RM12BPG-6P to RM12BRD-6S
No CCU green power lamp	Blown internal fuse	Return to AVS for repair
Video Picture noisy	Aircraft interference	Connect a video cable from camera directly to a monitor bypassing aircraft video cable routing, switches, VCR and amplifiers to determine noise source.
	Inadequate Ground	VERIFY: pin 2 of power connector RM12 BPG-5S Grounded.
	CCU switches improperly set	VERIFY: On/Off: ON
Video Picture rolling lines	Camera Servo stalling up against windshield	READJUST Servo positions with Servo Programmer
	Camera Servo binding due to cable leads	With camera power OFF, physically move Servo up and down checking for binding and adjusting cables.
Servo moves during taxi	No Ground from Weight On Wheels switch	VERIFY: pin 3 of power connector RM12 BPG-5S Grounded on ground
Servo does not move at lift-off	Ground from Weight On Wheels switch not removed inflight	VERIFY: pin 3 of power connector RM12 BPG-5S Open with WOW CB pulled
Servo moves erratically	Servo Arms over Top Dead Center	With camera power OFF, physically move Servo to full up position, then turn power ON and Servo will pull arms over to correct side. To prevent from occurring again, you may wish to lower Taxi position and shim camera up.



AVS460  
AUTO-TILT CAMERA SYSTEM

TECHNICAL NOTE  
M1 MODIFICATION

SAME "FORM, FIT, FUNCTION"

SAME	CAMERA HEAD, LENS and SERVO SIZE
SAME	CCU OVERALL SIZE
SAME	CCU RACK and TRAY
SAME	CONNECTORS, IN & OUT OF CCU
SAME	POWER REQUIREMENT
SAME	VIDEO OUTPUTS
DIFFERENT	CAMERA CABLE
SMALLER	CAMERA CABLE (From .31 to .25" diameter)
SMALLER	CAMERA CABLE CONNECTORS (From .67 to .44")
IMPROVED	MINIMUM ILLUMINATION (From 5 to 2.5 lux)
IMPROVED	CCU POWER SUPPLY (Switching Regulators, more efficient & lower heat)
IMPROVED	CCU SHAPE (Cleaner, no Voltage Regulators)
IMPROVED	CAMERA LENS VIEW (Wider from 24 to 15mm)
RE-TESTED	DO-160D

AUG 15/02

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