



超小型 エアーデータ ブーム

NASA Langley S2 aircraft (1/24 scale L-1011) with 101100 subminiature air data booms on each wingtip. ([high-resolution graphic](#)). The 101100 subminiature air data boom ready for shipment for a UAV platform. ([high-resolution graphic](#)).

Subminiature Air Data Boom for Unmanned Aerial Vehicles (UAVs)

Small size and low mass increases sensing capabilities for small air vehicles.

PALMDALE, CALIFORNIA USA -- Flight test engineers, avionics designers, and technicians can now more accurately monitor airspeed, altitude, angle of attack, and angle of sideslip on small unmanned aerial vehicles (UAVs). The SpaceAge Control 101100 subminiature air data boom and customized derivatives provide air data sensors that meet the small size and mass requirements of today's small UAVs.

The 101100 boom, which is the world's smallest flight test air data boom, was initially used by NASA Langley Research Center to support "refuse to crash" research efforts. Two 101100 booms are mounted on an S2 aircraft, one boom on each wingtip. The S2 is roughly equivalent to a 1/24th scale L-1011 transport aircraft. At 18.5 inches (469.9 mm) long, 0.50 inches (12.7 mm) in diameter, and only 0.60 pounds (272 grams), the 101100 boom is a breakthrough in miniaturization with potential applications on vehicles of any size.

The 101100 boom includes:

- Pitot (total) and static pressure ports
- Angle of attack and angle of sideslip sensors with voltage divider outputs
- 18.50-inch (469.9-mm) length
- 0.60-pound (272 g) mass
- -65° to +125° C (-85° to +257° F) operating temperature range
- Mounting features ideal for small UAVs, very light aircraft, scale model aircraft, and lighter-than-air vehicles

The 101100 boom is the latest in a series of small air data products now available from SpaceAge Control. SpaceAge Control first focused on the UAV market in 1987 with the introduction of the [100400 mini air data boom](#). The 101100 boom is shipping with a 30-day lead time.

Established in 1968, SpaceAge Control is an ISO9001:2000/AS9100B-compliant company leading the air data and displacement sensing industries with stock and engineered-to-order products. Located in Palmdale, California USA, SpaceAge Control's high-precision and durable products are used by over 200 companies spanning the globe including aircraft manufacturers, racing teams, vehicle manufacturers, and motion control-oriented OEMs.

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Resources

- [High-Resolution Image A](#) (jpg)
 - ◆ Photo caption is "Two 101100 subminiature air data booms (one on each wingtip) on the NASA Langley S2 air vehicle used for "refuse to crash" research."
- [High-Resolution Image B](#) (jpg)
 - ◆ Photo caption is "3D CAD image of the 101100 subminiature air data boom shown with optional air temperature sensor."
- [High-Resolution Image C](#) (jpg)
 - ◆ Photo caption is "Final inspection line for the 101100 subminiature air data boom".
- [High-Resolution Image D](#) (jpg)
 - ◆ Photo caption is "Photo showing small size of the 101100 subminiature air data boom".
- [Data Sheet](#) (pdf)

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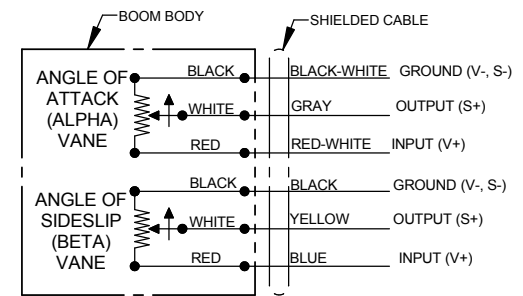
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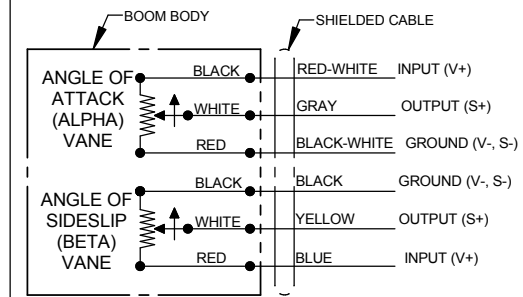
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RIGHT WING BOOM SCHEMATIC SPA PN 101100-02



LEFT WING BOOM SCHEMATIC SPA PN 101100-01



RIGHT WING BOOM SPA PN 101100-02

LEFT WING BOOM SPA PN 101100-01

DETAIL C MOUNTING BLOCK

NOTES: UNLESS OTHERWISE SPECIFIED

- VANE POTENTIOMETER (SENSOR) SPECIFICATIONS:**
 - TYPE: CONDUCTIVE PLASTIC
 - RESISTANCE: 1.5K OHMS ±15%
 - INDEPENDENT LINEARITY: ±5% MAX OF FULL SCALE PER VRCI-P-100A
 - POWER RATING AT 70° C: 0.5 WATT MIN
 - MECHANICAL TRAVEL: 360° CONTINUOUS
 - MECHANICAL LIFE: 100 MILLION SHAFT REVOLUTIONS MIN
 - OPERATING TEMPERATURE RANGE: -65° TO +125° C
- AOA VANE ELECTRICAL OUTPUT CHARACTERISTICS:**
 - SEE LEFT AND RIGHT WING BOOM SCHEMATICS ON DRAWING
 - OUTPUT VOLTAGE INCREASES FROM "-" TO "+" AS SHOWN ON DRAWING
 - AOA ELECTRICAL TRAVEL: -45° TO +135°
 - OUTPUT AT -45°: .01% - .60% OF FULL SCALE INPUT VOLTAGE
 - OUTPUT AT +135°: 93.00% - 99.99% OF FULL SCALE INPUT VOLTAGE
- AOS VANE ELECTRICAL OUTPUT CHARACTERISTICS:**
 - SEE LEFT AND RIGHT WING BOOM SCHEMATICS ON DRAWING
 - OUTPUT VOLTAGE INCREASES FROM "-" TO "+" AS SHOWN ON DRAWING
 - AOS ELECTRICAL TRAVEL: -90° TO +90°
 - OUTPUT AT -90°: .01% - .60% OF FULL SCALE INPUT VOLTAGE
 - OUTPUT AT +90°: 93.00% - 99.99% OF FULL SCALE INPUT VOLTAGE
- THE SURFACE FINISH OF THE FINAL AIR DATA BOOM ASSEMBLY SHALL HAVE A MINIMUM OF A 63 MICRO-INCH FINISH AND SHALL BE FREE OF BURRS. INTERACING PARTS ON BOOM SHALL BE BLENDED AND AERODYNAMIC.**
- WEIGHT:**
 - AIR DATA BOOM NOT INCLUDING WIRING AND PNEUMATIC TUBING: APPROXIMATELY .22 LB
 - CABLE AND PNEUMATIC TUBING (96 INCHES): APPROXIMATELY .29 LB
 - WEIGHT OF COMPLETE ASSEMBLY: .60 MAX

CUTOUT FOR WIRES / TUBING - EXIT CAN BE LEFT, RIGHT, OR BOTTOM

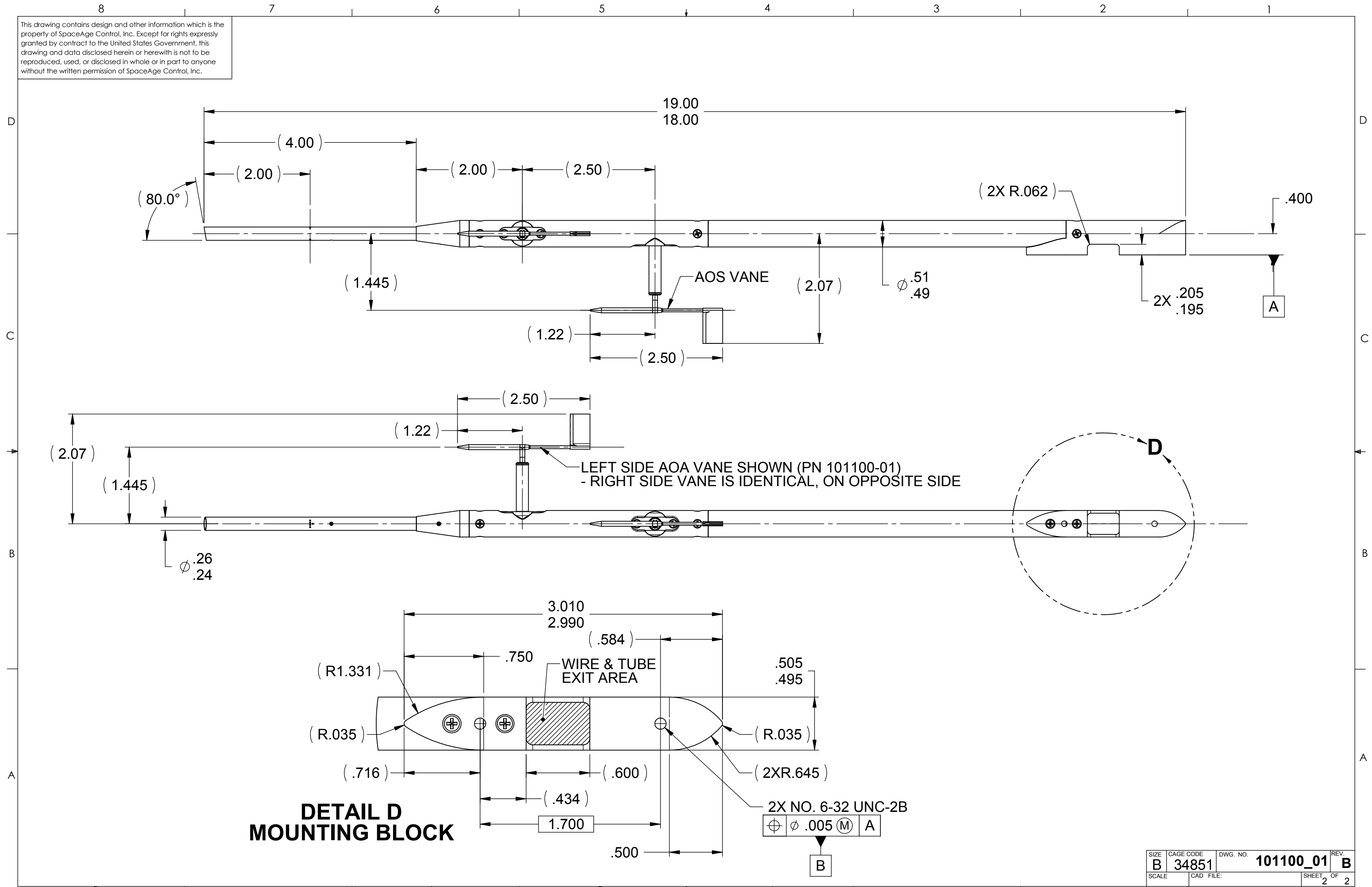
TOTAL AND STATIC LINES ARE NYLON .090 O.D. x .055 I.D. X 96 - 110 INCH LONG

ELECTRICAL CABLE PER M27500A24RC6S09 OR EQUIVALENT (6x 24-GAUGE CONDUCTOR, SHIELDED, TEFLON JACKET, Ø.180) 96 - 110 INCH LONG

SPA PN 101100-XX (WHERE "XX" IS DASH NO.)

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:		PROJECT 156		SpaceAge Control, Inc.	
DECIMALS	ANGLES	DRAWN	DATE	AIR DATA BOOM, SUBMINIATURE	
X.X ± 0.03	X° ± 30'	B.P.	XX-YY-ZZ		
X.XX ± 0.01		APPROVALS		SCALE B 34851 DWG. NO. 101100_01 REV. A	
X.XXX ± 0.005		CHECKED			
DO NOT SCALE DRAWING		DIGITAL - ON FILE		SHEET 1 OF 2	
MATERIAL SEE NOTES		ENG			
FINISH SEE NOTES		DIGITAL - ON FILE			
CAD GENERATED DRAWING. DO NOT MANUALLY UPDATE					

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**DETAIL D
MOUNTING BLOCK**

SIZE	CAGE CODE	DWG. NO.	REV.
B	34851	101100_01	B
SCALE	CAD FILE:	SHEET	OF
		2	2