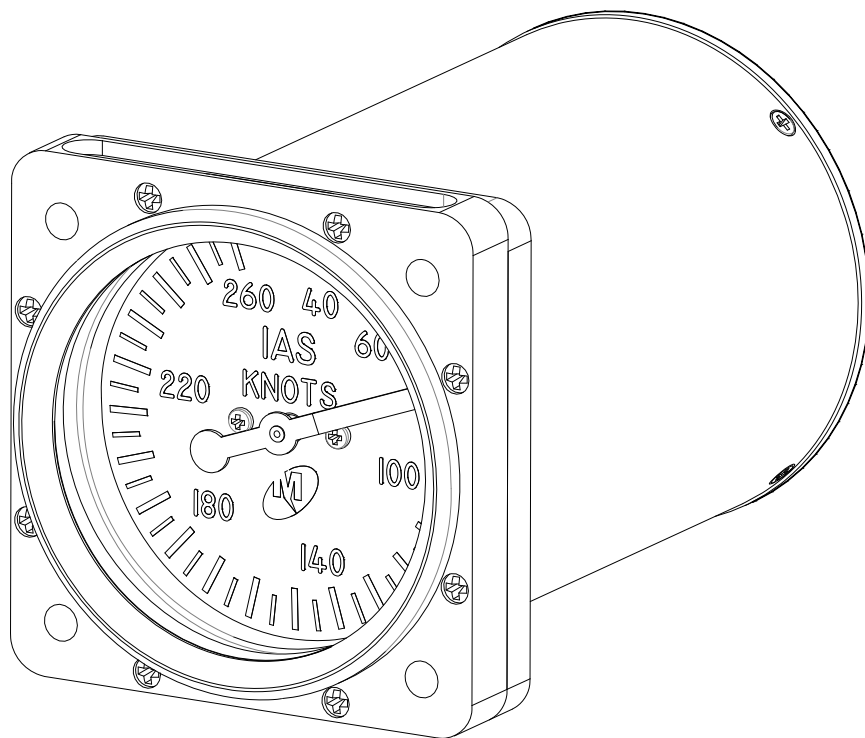




## INSTALLATION MANUAL AND OPERATING INSTRUCTIONS

### MD25-( ) Series Airspeed Indicator



REV. C July 14, 2011

Manual Number 9017051

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## FOREWORD

This manual provides information intended for use by persons who, in accordance with current regulatory requirements, are qualified to install this equipment. If further information is required, please contact:

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We welcome your comments concerning this manual. Although every effort has been made to keep it free of errors, some may occur. When reporting a specific problem, please describe it briefly and include the manual part number, the paragraph/figure/table number, and the page number. Send your comments to:

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## REVISION DETAIL

<u>Rev.</u>	<u>Date</u>	<u>Approved</u>	<u>Detail</u>
A	03/17/10	CJM/BAW	Initial release.
B	05/31/10	BAW/MKN	Update DO-160 qualification to include helicopter vibration compliance. Update Section 2.2 to include air fitting part number.
C	07/14/11	MKN/CJM	Update DO-160 qualification from ...G)]XXXXXXY... to ...G)]XWXSFSY...

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## SECTION 1 GENERAL DESCRIPTION

### 1.1 INTRODUCTION

The model MD25 series two-inch Airspeed Indicator is a Type A, air-driven, direct reading, self contained airspeed indicator built to meet or exceed SAE AS8019 standards as per FAA TSO-C2d.

### 1.2 TECHNICAL SPECIFICATIONS

#### 1.2.1 PHYSICAL ATTRIBUTES

<b>Characteristics:</b>	
Weight:	0.6 pounds max
Dimensions:	See outline drawing
Colors:	Dial background is black #37038 per FED-STD-595 Markings are white #37875 per FED-STD-595 Pointer is white with black hub and counterweight Case and bezel are black Range markings per customer specifications
Connections:	1/8-27 NPT per MIL-P-7105
Mounting:	Rear mount, see panel cutout
Lighting:	Field replaceable light tray available for 5, 14, & 28VDC input with incandescent bulbs or white LEDs

**Table 1.1**

#### 1.2.2 QUALIFICATIONS

<b>Specifications:</b>	
Qualification:	FAA TSO-C2d
Environmental Qualification:	RTCA DO-160F Env. Cat. (D1)CAB[(SM)(UG)]XWXSFSYXXXXXXXXXX
Altitude:	-15,000 ft to +50,000 ft
Operating Temperature:	-20°C to +55°C (-4°F to +131°F)
Storage Temperature:	-55°C to +85°C (-67°F to +185°F)

**Table 1.2**

## SECTION 2 INSTALLATION PROCEDURE

### 2.1 GENERAL INFORMATION

This section contains mounting dimensions and other information pertaining to the installation of the MD25 Airspeed Indicator.

### 2.2 UNPACKING AND INSPECTING EQUIPMENT

When unpacking this equipment, make a visual inspection for evidence of any damage that may have incurred during shipment. The following parts should be included:

- |                          |                  |
|--------------------------|------------------|
| a. Airspeed Indicator –  | MCI P/N MD25-( ) |
| b. Installation Manual – | MCI P/N 9017051  |

Required equipment not provided:

- |                        |  |
|------------------------|--|
| a. Mounting Hardware – | four (4) #6-32 screws<br>#6 lock washers (optional)                                    |
| b. Air fittings –      | two (2): 1/8-27 NPT x 1/8" tube fitting<br>AN816-4D or similar<br>(MCI P/N NY-400-1-2) |

Optional equipment available:

- |                                |  |
|--------------------------------|--|
| a. Light tray (LED) –          | MCI P/N MD31, -4, -6 (28, 14, 5V)  |
| b. Light tray (incandescent) – | MCI P/N 6015358-2 (28V)<br>MCI P/N 6015010-2 (14V)<br>MCI P/N 6018634-2 (5V) |
| c. Tinnerman nuts (4) –        | MCI P/N 6013031  |

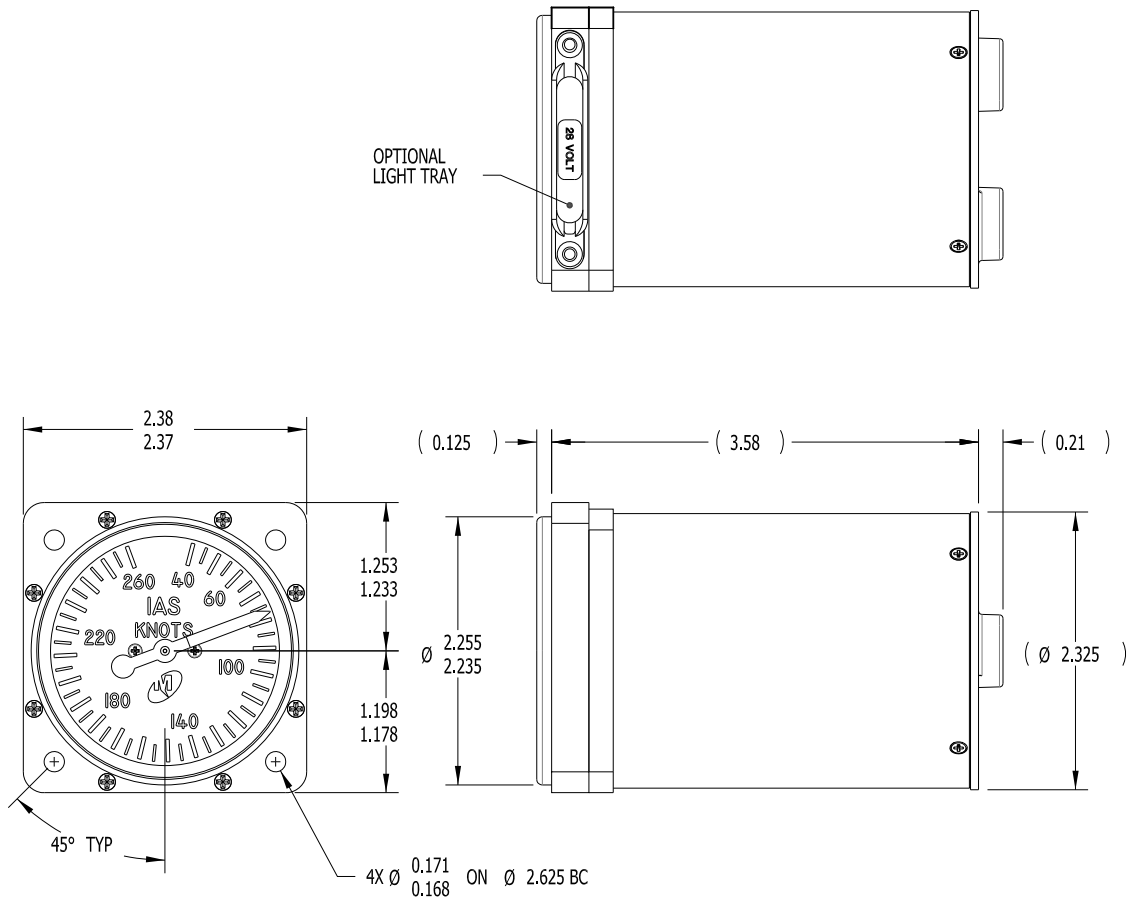
### 2.3 INSTALLATION

Install the MD25 Airspeed Indicator within the aircraft in accordance with the aircraft manufacturer's instructions and the following steps:

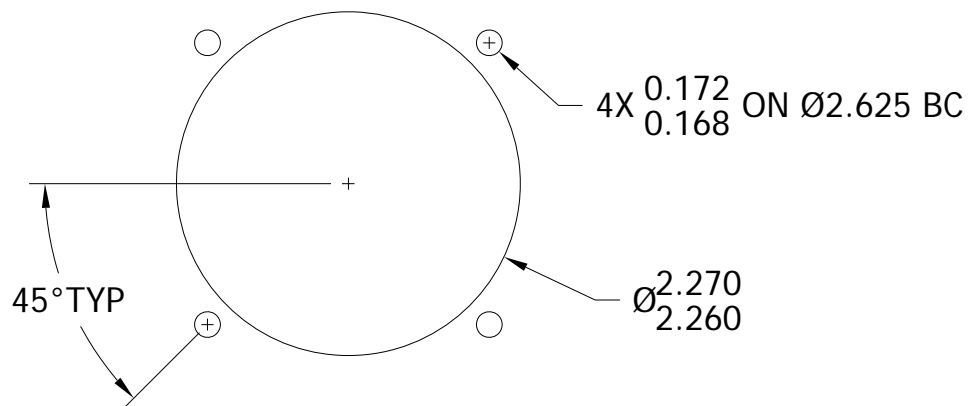
- A. Ensure the available instrument panel cutout meets the requirements of the indicator. See Fig 3.2 for details.
- B. Secure the indicator to the instrument panel using the screw sizes called out in the mounting instructions. Length of screws will be determined by aircraft instrument panel thickness. The aircraft manufacturer or the installation facility is responsible for supplying appropriate installation hardware.
- C. Connect pitot line tube to the differential pressure port (designated "P") on the back of the indicator.

**CAUTION: INSTALL FITTINGS IN PORTS WITH NO MORE THAN 45 IN-LBS OF TORQUE. IF TORQUE IS NOT SUFFICIENT TO MAINTAIN A SEAL THREAD SEALANT MUST BE USED.**

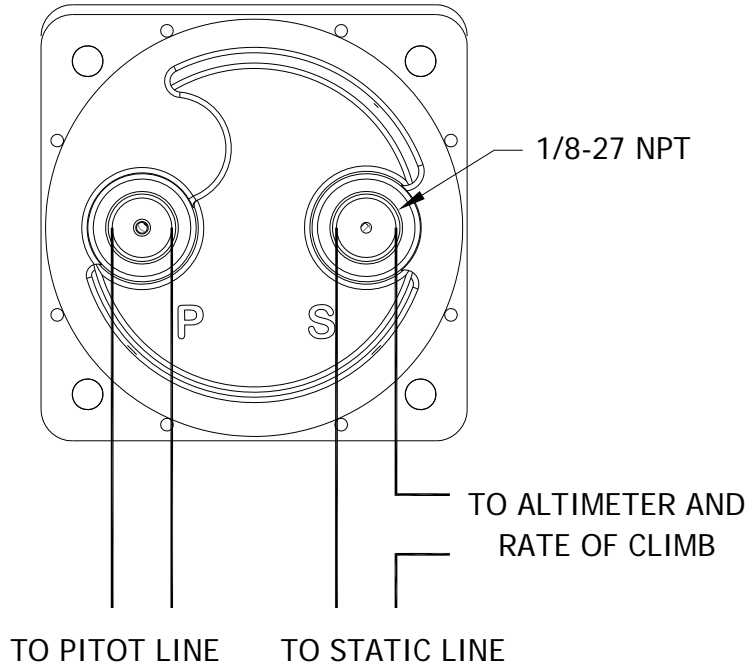
- D. The remaining port (designated "S") should be connected to the static line vented to atmospheric pressure. See Fig 3.3 for details.
- E. For units with light tray, connect wires to the appropriate voltage designated on the tray itself.



**FIGURE 3.1  
MD25 OUTLINE DRAWING**



**FIGURE 3.2  
PANEL CUTOUT DIMENSIONS**



**FIGURE 3.3**  
**MD25 REAR VIEW**

## **SECTION 3 OPERATION**

### **3.1 MINIMUM PERFORMANCE REQUIREMENTS**

The MD25 Airspeed Indicator shall meet these minimum performance requirements under standard test conditions.

#### **3.1.1 SCALE ERROR**

- ±5 from 20-60 Knots
- ±4 from 70-90 Knots
- ±3 from 100-160 Knots
- ±5 from 180-350 Knots

#### **3.1.2 FRICTION/BALANCE ERROR**

- ±3 from 40-180 Knots
- ±5 from 190-350 Knots

#### **3.1.3 LEAKAGE**

- <0.05 In Hg in 1 min. under 15 In Hg Suction
- <1 Knot in 1 min. at Full Scale Deflection



## SECTION 4 CONFORMANCE

### 4.1 CONTINUED AIRWORTHINESS STATEMENT

No periodic scheduled maintenance or calibration is necessary for continued airworthiness of the MD25 series Airspeed Indicator. If the unit fails to perform to specifications, it must be removed and serviced by a qualified service facility.

### 4.2 ENVIRONMENTAL QUALIFICATION STATEMENT

**NOMENCLATURE:** Airspeed Indicator

**MODEL NUMBER:** MD25-( ) **TSO NUMBER:** C2d

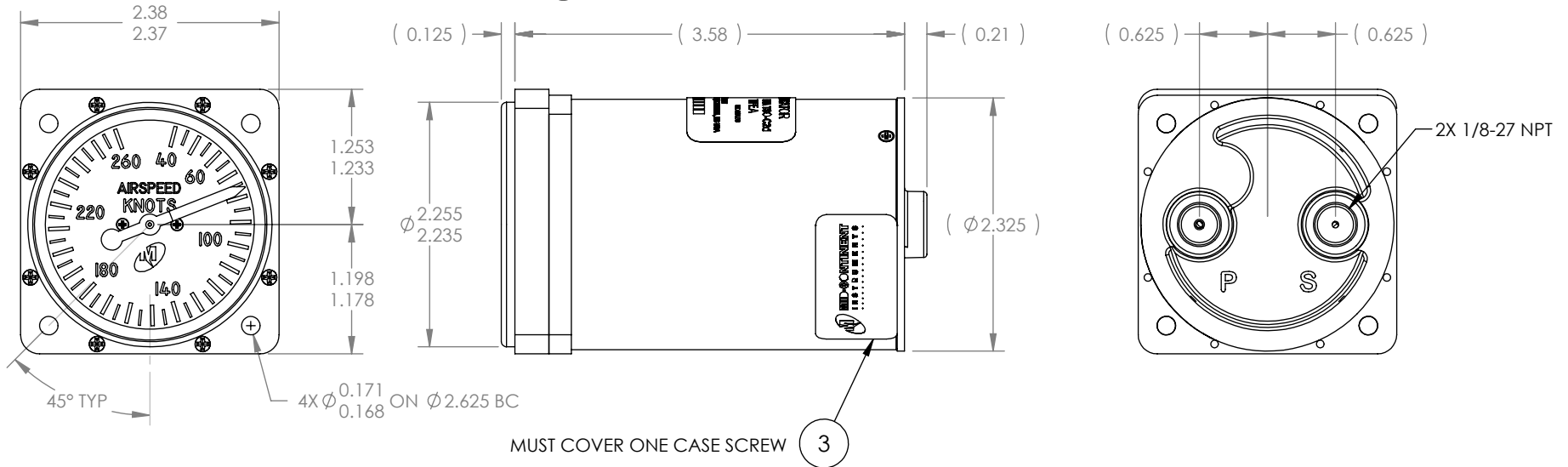
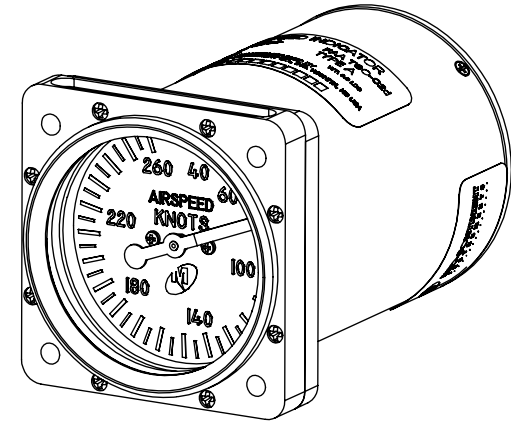
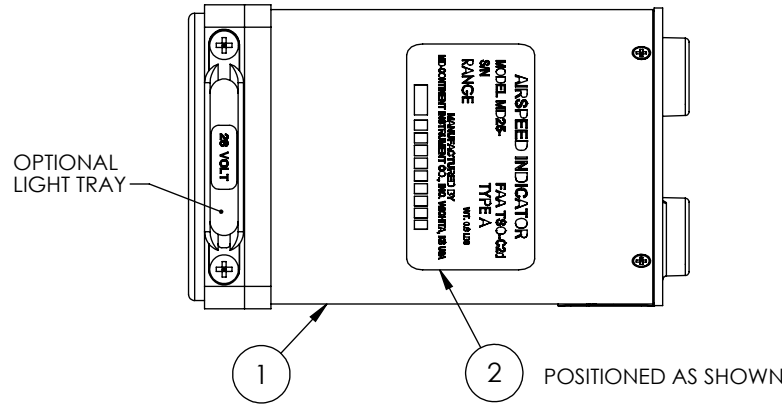
**MANUFACTURERS SPECIFICATIONS:** Minimum Performance Specifications:  
Test Specification (TS) 349, Test Data Sheet (TDS) 349

**QUALIFICATION STANDARD:** RTCA DO-160F

CONDITIONS	SECTION	DESCRIPTION OF TEST
Temperature and Altitude	4	Category D1
Ground Survival Low	4.5.1	-55C
Operating Low	4.5.2	-20C
Ground Survival High	4.5.3	+85C
Operating High	4.5.4	+55C
Altitude	4.6.1	+50,000 ft
Decompression	4.6.2	+50,000 ft
Overpressure	4.6.3	-15,000 ft
Temperature Variation	5	Category C
Humidity	6	Category A
Operational Shock and Crash Safety	7	Category B
Vibration	8	Category S, Curve M Category U, Curve G
Explosion	9	Category X
Waterproofness	10	Category W
Fluids	11	Category X
Sand and Dust	12	Category S
Fungus	13	Category F
Salt Spray	14	Category S
Magnetic Effect	15	Category Y
Power Input	16	Category X
Voltage Spike	17	Category X
Audio Frequency Conducted Susceptibility	18	Category X
Induced Signal Susceptibility	19	Category X
Radio Frequency Susceptibility	20	Category X
Emission of Radio Freq Energy	21	Category X
Lightning Induced Transient Susceptibility	22	Category X
Lightning Direct Effects	23	Category X
Icing	24	Category X
ESD	25	Category X
Flammability	26	Category X

Configuration		
Dash #	Range (kt)	Assembly
-160	20-160	9017008-1
-200	40-200	9017008-2
-260	40-260	9017008-3
-300	40-300	9017008-4
-350	40-350	9017008-5
-400	40-400	9017008-6

Revision				
ECO	Rev.	Description	Date	Approved
	A	Production release.	03/17/10	BAW/CJM
5620	B	Env. Qual. Was ..SM] XXXXXXY...	07/14/11	MKN/CJM



Certification:	FAA TSO-C2d RTCA DO-160F (D1) CAB [(SM) (UG)] XWXSFSYXXXXXXXXXX
Range:	160-400 knots (see table)
Scale:	knots (mph available upon request)
Lighting:	Field Replaceable LED or Incandescent Light Tray available for 5, 14, or 28VDC input
Colors:	Dials: Black #37038 per FED-STD-595 Pointers and Text: White #37875 per FED-STD-595 Case, Bezel, Knob: Black Range Markings: per customer specification
Weight:	0.6 lbs. max.

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.  
TOLERANCE:  
FRACTIONAL=±1/64  
.XX=±0.015  
.XXX=±0.005  
.XXXX=±0.002  
ANGULAR=±0.5°  
CONCENTRICITY: 0.005 TIR  
BREAK ALL SHARP EDGES  
THREADS PER MIL-S-7742

DRAWN:  
BAW  
1/18/2010

APPROVED:  
C. Mies  
3/17/2010

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Item	Qty	Part Number	Description
1	1	See Config	Assembly, Airspeed, 2-inch
2	1	9017001	Nameplate
3	1	6018956	Decal, Warranty

TITLE: Airspeed Indicator, 2-inch

PART NUMBER: MD25

SCALE: 2:3 DO NOT SCALE THIS DRAWING SHEET: 1 of 1