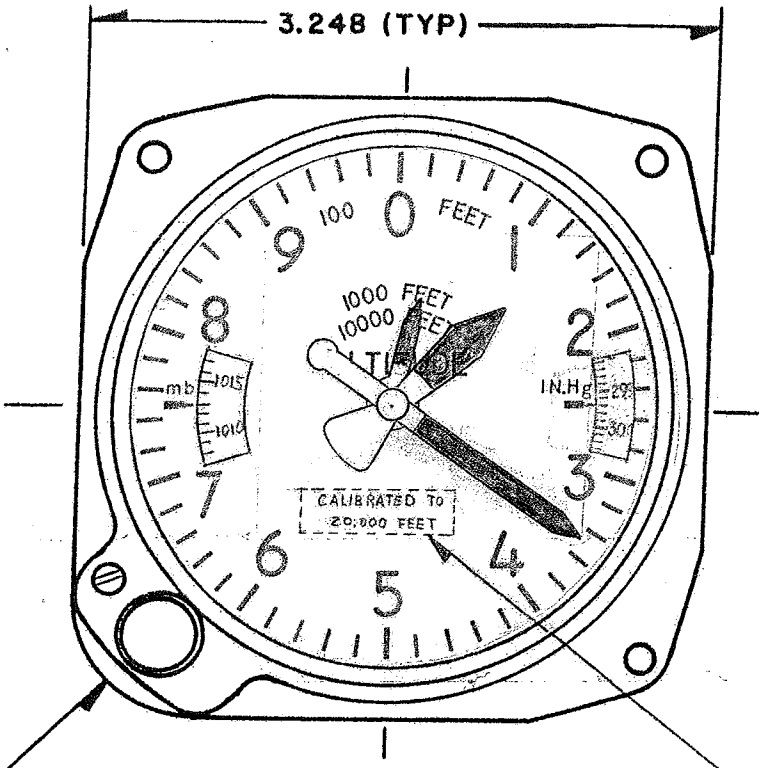
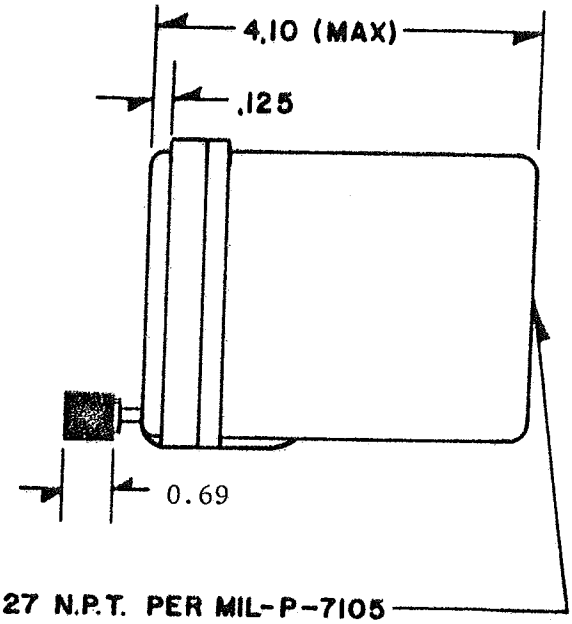
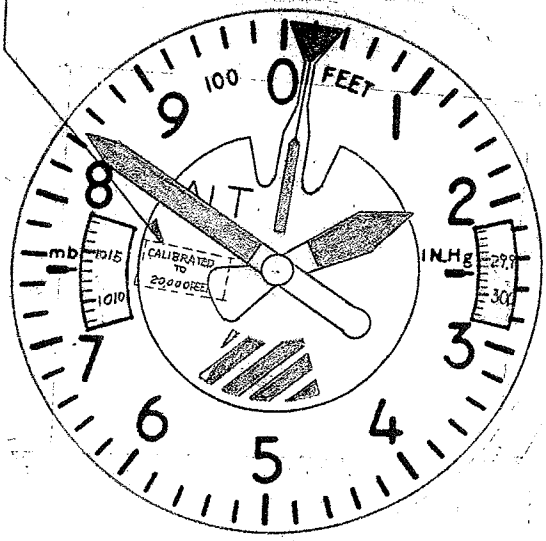




POINTER CONFIGURATION I

CASE PER MS33549

'CALIBRATED TO 20,000 FEET' MARKING IN WHITE
APPLICABLE TO 20,000-FT RANGE ALTIMETERS ONLY



POINTER CONFIGURATION II

THIS SPECIFICATION SUPERCEDES:
UI5934D-A129, UI5934PD-A130,
UI5934AD-A131, AND UI5934PAD-A132.

WEIGHT: 1.1 LBS.

REV.	DATE		CHK.	REV.	DATE		CHK.		NAME	DATE
								PREP. BY		
								APPR. BY	T. Kawawa	1-30-86
A	9-10-93	CHNGD UI DASH NO. (WAS: -1)	TC	B	4/14/09	Corrected vib. para. 2.2	TC	CHECKER	T. C.	

UNITED INSTRUMENTS, INC.

3625 Comotara Avenue
Wichita, Kansas 67226

TITLE:

INDICATOR-ALTIMETER
(DUAL BAROMETRIC)

SPEC. NO: UI5934D

ISSUE B

UIE-10

UNITED INSTRUMENTS, INC.

PART NO.	CODE NO.	RANGE (x1,000 Feet)	POINTER CONFIGURATION
5934D-3	A.129	-1 to 20	I
5934PD-3	A.130	-1 to 20	II
5934AD-3	A.131	-1 to 35	I
5934PAD-3	A.132	-1 to 35	II
5934D-3D	A.141	-1 to 20	I
5934PD-3D	A.142	-1 to 20	II
5934AD-3D	A.143	-1 to 35	I
5934PAD-3D	A.144	-1 to 35	II

1. GENERAL

1.1. Purpose: This specification defines standards of minimum performance and conditions under which these standards apply for the Model 5934 Altimeter supplied by United Instruments, Incorporated.

1.2. Description: The Model 5934 Sensitive Altimeter is for use on aircraft to indicate the height of the aircraft above a reference point, generally mean sea level, assuming standard conditions of temperature and pressure. The altimeter measures the existing barometric pressure. Since atmospheric pressure varies with altitude, this pressure is indicated on the dial in feet of altitude. The altimeter may be manually adjusted to variances in barometric pressure.

The sensing element (diaphragm assembly) and gear train are encased in black thermoset plastic case with brass fitting boss. The altitude is indicated in a three pointer display. An increase in altitude results in a clockwise rotation of the pointers.

1.3. Operating Limits: The Model 5934 Altimeter operates through a maximum calibrated range of -1,000 to 20,000 feet. The Model 5934A Altimeter operates through a maximum calibrated of -1,000 to 35,000 feet.

1.4. Barometric Scale Adjustment: The barometric scale setting is adjustable by means of an adjustment knob located in the lower left hand corner of the altimeter. Due to the variances in the barometric pressure it is necessary to set the barometric scale to the existing barometric pressure. The existing barometric pressure may be obtained from the weather station or control tower. Rotation of the knob for barometric scale adjustment results in rotation of the pointers on the altitude dial. An increase in barometric scale will result in an increase in the altitude as indicated on the dial. This relationship of pointers to barometric scale is based on standard conditions of pressure and temperature. Mechanical stops are provided to prevent incorrect readings of the pressure scale when the limits of the barometric scale are exceeded.

2. STANDARD TEST CONDITIONS:

2.1. Atmospheric Conditions: Unless otherwise specified all tests required by this specification shall be conducted at an atmospheric pressure of approximately 29.92 inches of mercury and at an ambient temperature of approximately 25°C and at a relative humidity of not greater than 85 percent.

2.2. Vibration to minimize friction: Unless otherwise specified, all test for performance may be conducted with the instrument subjected to a vibration of 0.002 to 0.005 inch double amplitude at a frequency of 1,500 to 2,000 cycles per minute B

2.3. Position: Unless otherwise specified all test shall be made with the altimeter mounted in its normal operating position.

3. INDIVIDUAL PERFORMANCE REQUIREMENTS:

3.1. Scale Error: With the barometric scale pressure at 29.92 inches of mercury, the altimeter shall be subjected successively to pressures corresponding to the altimeter specified in Table I up to the maximum calibrated range of the altimeter being tested. The reduction in pressure shall be made at a rate not in excess of 20,000 feet per minute to within approximately 2,000 feet of the test point. The test point shall be approached at a rate compatible with the test equipment. The altimeter shall be kept at the pressure corresponding to each test point for at least on minute, but not more than ten minutes, before reading is taken. The error at all test points, must not exceed the tolerances specified in Table I. Following a minimum delay of four hours this test may be repeated and the altimeter shall meet tolerances as specified in Table I.

3.2. Hysteresis: The hysteresis test shall begin not more than fifteen minutes after the altimeters initial exposure to the pressure corresponding to the upper limit of the scale error test prescribed in paragraph 3.1. While the altimeter is at this pressure, the hysteresis test shall commence. Pressure shall be increased at a rate simulating a descent in altitude at the rate of 5,000 to 20,000 feet per minute until within 3,000 feet of the first test point (50 percent of the maximum altitude). The test point shall be approached at a rate of approximately 3,000 feet per minute. Within 10 seconds after the pressure has been stabilized at the test point, the instrument indication shall be within 100ft. of the scale error reading obtained in Scale Error test. The altimeter shall be kept this pressure for at least 5 minutes, but not more than 15 minutes, before the reading is taken. After the reading has been taken, the pressure shall be increased further, in the same manner as before, until the pressure corresponding to the second test point (40 percent of maximum altitude) is reached. The altimeter shall be kept at this pressure for at least one minute, but not more than 10 minutes, before the test reading is taken. After the reading has been taken, the pressure shall be increased further, in the same manner as before, until atmospheric pressure is reached. The reading of the altimeter at either of the two test points shall not differ by more than 75 feet from the reading of the altimeter for the corresponding altitude recorded during the scale error test prescribed in paragraph 3.1.

3.3. After Effect: Not more than five minutes after the completion of the hysteresis test prescribed in paragraph 3.2, the reading of the altimeter (corrected for any change in atmospheric pressure) shall not differ from the original reading by more than 30 feet.

3.4. Friction: The altimeter shall be subjected to a steady rate of decrease of pressure of approximately 750 feet per minute. At each altitude listed in Table II, the altimeter reading will be noted before and after vibration, the difference will not exceed tolerance shown.

3.5. Case leak: The leakage of the altimeter, when the pressure within it corresponds to an altitude of 18,000 feet, shall not change the altimeter reading by more than 100 feet during an interval of one minute.

3.6. Position Error: With atmospheric pressure applied to the instrument, the difference between pointer indication when the instrument is in normal operating position and when it is in any other position shall not exceed 20 feet.

3.7. Barometric Scale Error: At constant atmospheric pressure, the barometric pressure scale shall be set at each of the pressures (falling within its range of adjustment) that are listed in Table III and shall cause the pointer to indicate the equivalent altitude difference shown in Table III with a tolerance of twenty-five feet.

3.8. Pointer Oscillation: There shall be no more than twenty feet pointer oscillation when the instrument is subjected to the vibration when mounted in normal operating position at frequencies to be varied uniformly from (a) 5 to 120 cycles per second at a maximum double amplitude of .036 inches and a maximum acceleration of 1.5 g's; and (b) 120 to 500 cycles per second at a maximum acceleration of 0.5 g's.

4. ENVIRONMENTAL CONDITIONS:

When installed in accordance with United Instruments, Incorporated, instructions, the altimeter will function in the following environmental ranges.

4.1. Temperature: -30°C to 50°C

4.2.	Vibration:	C.P.S.	MAX. DOUBLE APLITUDE	MAX. ACCELERATION
		5 to 120	.036 inch	1.5 g
		120 to 500	.036 inch	0.5 g

4.3. Humidity: 0% to 95% at 32°C

4.4. Altitude: -1,000 feet to 20,000 feet -Model 5934

-1,000 to 35,000 feet-Model 5934A

5. INSTALLATION INSTRUCITONS:

5.1. Aircraft Static System: Must meet the requirements of Federal Aviation Regulations Volume 5, Part 43, Appendix E.

5.2. Connection: The altimeter to the static system connection must include a flexible hose or tubing to provide vibration isolation.

5.3. Fitting: The threads of the fitting inserted should be coated to prevent seizing or leakage.

FUNCTIONAL TEST DATA

TABLE I

SCALE ERROR

ALTITUDE (Feet)	EQUIVALENT PRESSURE (Inches of Mercury)	TOLERANCE (±Feet)	
-1,000	31.018	20	20*
0	29.921	20	20
500	29.385	20	20
1,000	28.856	20	20
1,500	28.335	25	25
2,000	27.821	30	30
3,000	26.817	30	30
4,000	25.842	35	35
6,000	23.978	40	40
8,000	22.225	60	60
10,000	20.577	80	75
12,000	19.029	90	75
14,000	17.577	100	75
16,000	16.216	110	75
18,000	14.942	120	75
20,000	13.750	130	75
22,000	12.636	140	75
25,000	11.104	155	75
30,000	8.885	180	75
35,000	7.041	205	205

NOTE: Scale error tolerances marked with an asterisk (*) apply to the altimeters, of which United Instruments Part No. ends with "-3D".

TABLE II

FRICTION

ALTITUDE (Feet)	TOLERANCE (± Feet)
1,000	70
2,000	70
3,000	70
5,000	70
10,000	80
15,000	90
20,000	100
25,000	120
30,000	140
35,000	160

TABLE III

PRESSURE - ALTITUDE DIFFERENCE

INCHES OF MERCURY SCALE		MILLIBAR SCALE	
PRESSURE (IN HG)	ALTITUDE DIFFERENCE (Feet)	PRESSURE (Millibars)	ALTITUDE DIFFERENCE (Feet)
28.10	- 1727	950	- 1766
28.50	- 1340	965	- 1337
29.00	- 863	980	- 913
29.50	- 392	995	- 495
29.92	0	1013	0
30.50	+ 531	1030	+ 461
30.90	+ 893	1045	+ 863
30.99	+ 974	1050	+ 996