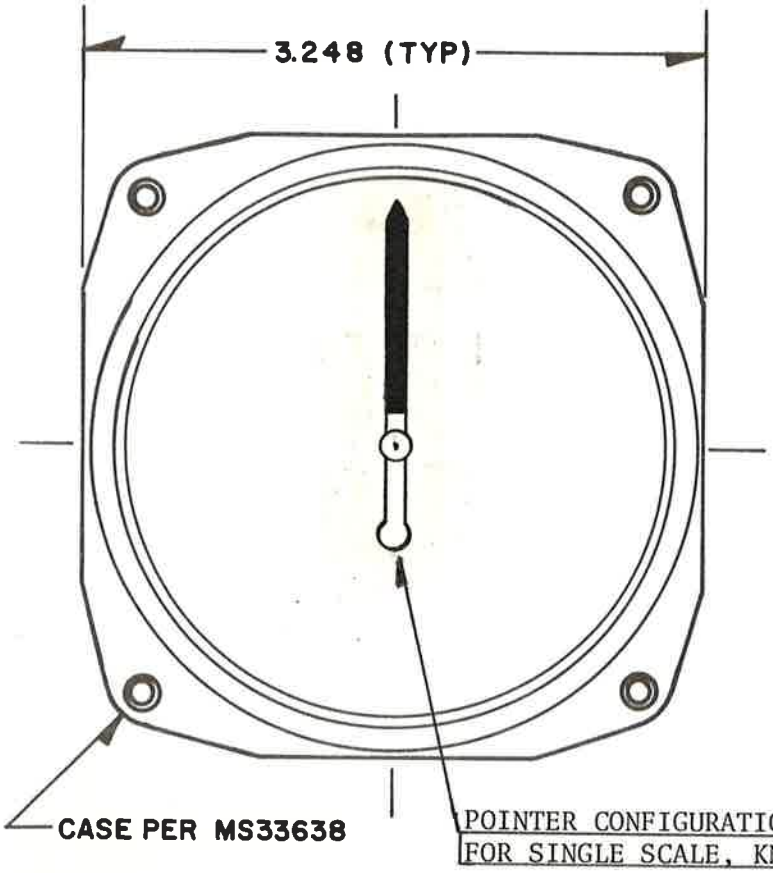
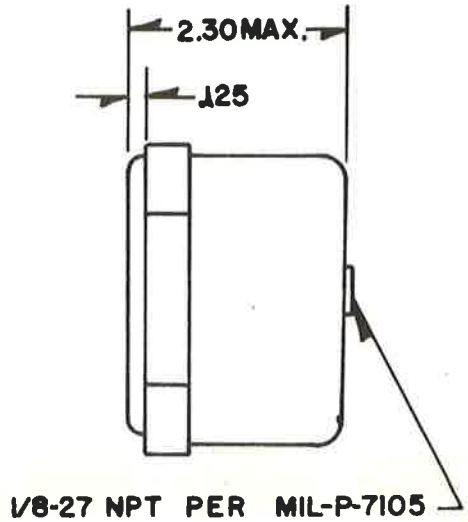


POINTER CONFIGURATION FOR SINGLE SCALE, KNOTS



POINTER CONFIGURATION FOR DUAL SCALE, KNOTS AND MPH

UNITED INSTRUMENTS, INC. PART NO.	CODE NO.	RANGE
8000	B.445	0 - 130 KNOTS
8000	B.463	0 - 130 KNOTS, 0 - 150 MPH
8000	B.446	0 - 170 KNOTS
8000	B.464	0 - 170 KNOTS, 0 - 200 MPH
8025	B.477	0 - 200 KNOTS
8025	B.488	0 - 200 KNOTS, 0 - 230 MPH
8025	B.447	0 - 210 KNOTS
8025	B.465	0 - 210 KNOTS, 0 - 250 MPH
8030	B.448	0 - 260 KNOTS
8030	B.466	0 - 260 KNOTS, 0 - 300 MPH
8040	B.480	0 - 350 KNOTS
8040	B.489	0 - 350 KNOTS, 0 - 400 MPH

REV.	DATE		CHK.	REV.	DATE		CHK.		NAME	DATE
E	8-5-85	2.2 CHG'D "SINC" TO "MAY"		C	11-28-84	CHNGD 80 & 85 KTS GRADS LOCATION (B.446 & B.464)		PREP. BY	T. Kageyama	9-9-81
				B	7-7-83	CHNGD B.445 DIAL CONFIG.		APPR. BY	T. Kawano	9-1-81
D	9-25-84	ADDED TEST POINT AT 20 FOR 200 KTS UNIT (TABLE 2)		A	9-4-81	ADDED B.477, 480 AND DUAL SCALE CONFIG.		CHECKER	T. K.	

UNITED INSTRUMENTS, INC.

3625 Comotara Avenue
Wichita, Kansas 67226

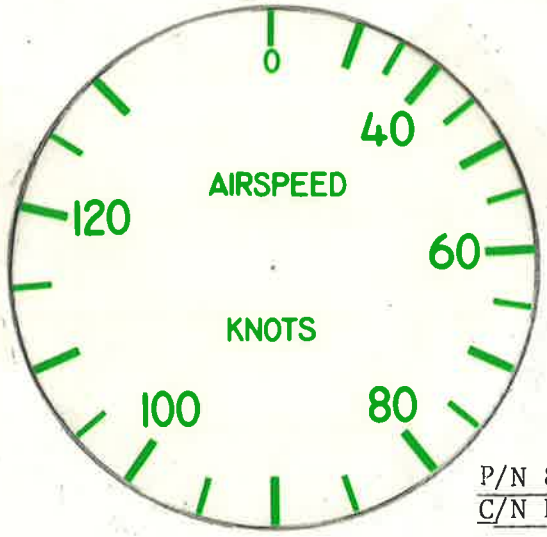
TITLE:

INDICATOR— AIRSPEED
KNOTS

SPEC. NO: UI8000-B445

ISSUE E

PAGE 1 OF 9 PAGES



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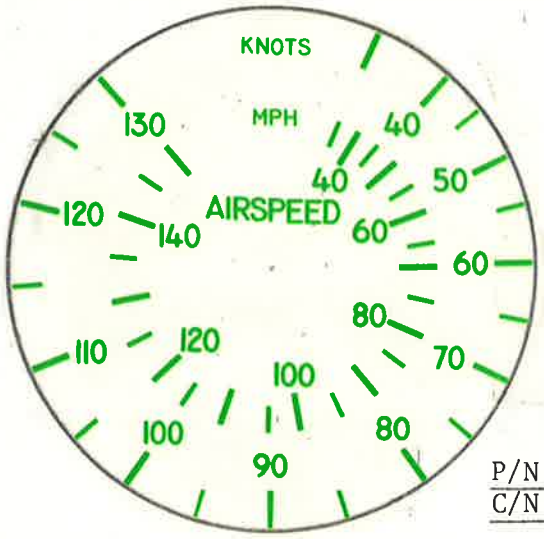
C/N B.445



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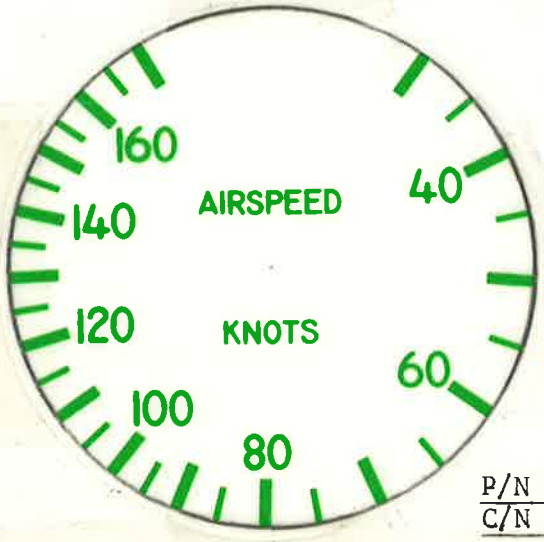

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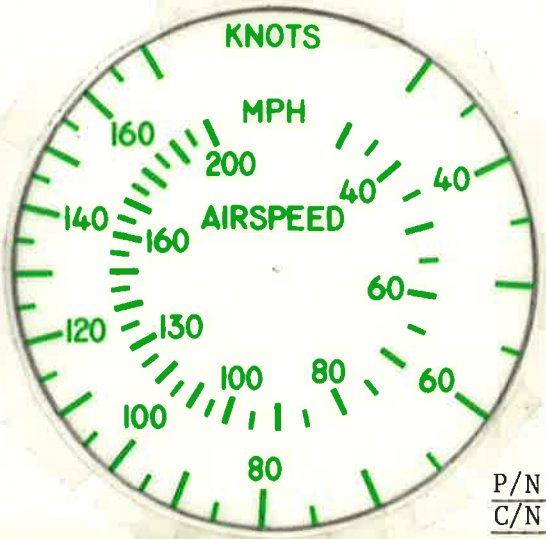

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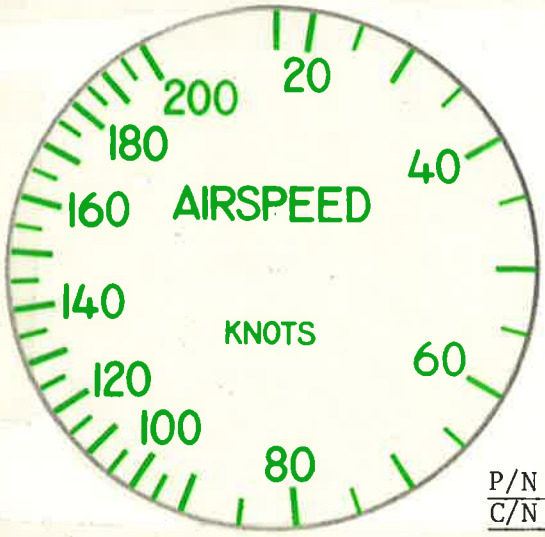

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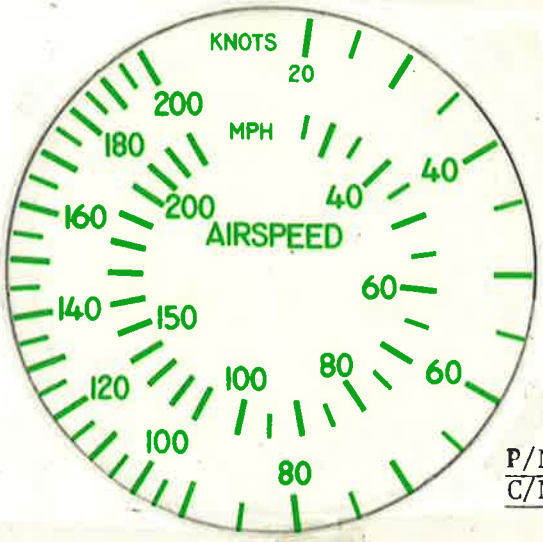

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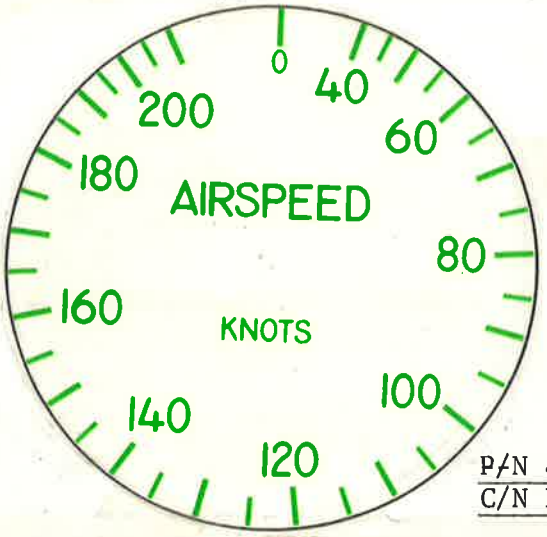
C/N B.488

UNITED INSTRUMENTS, INC. 3625 COMOTARA AVE. WICHITA, KANSAS 67226	TITLE: INDICATOR-AIRSPEED KNOTS	SPEC. NO. UI8000-B445	ISSUE E
		PAGE 2 OF 9 PAGES	



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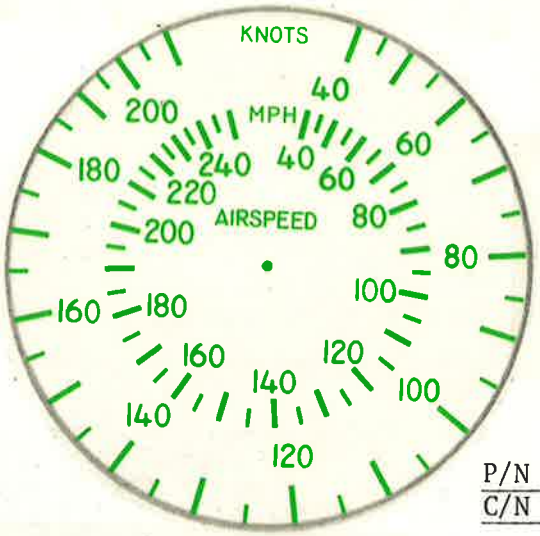

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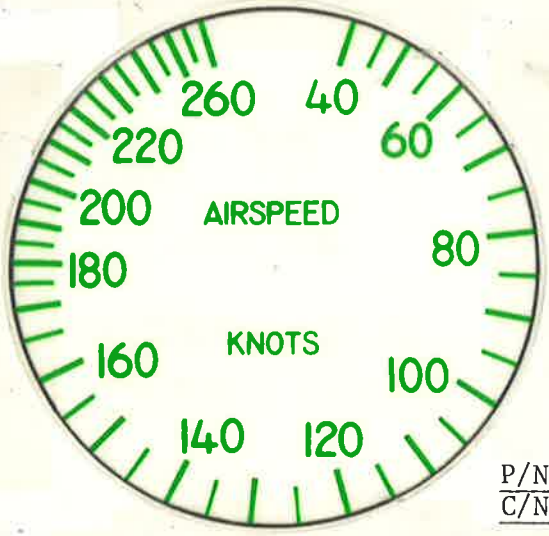

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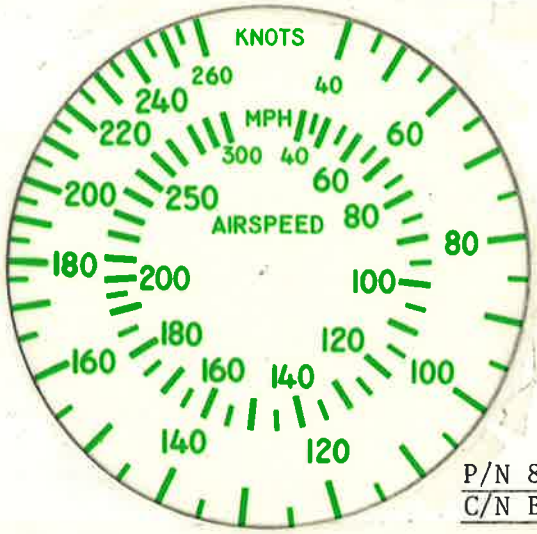

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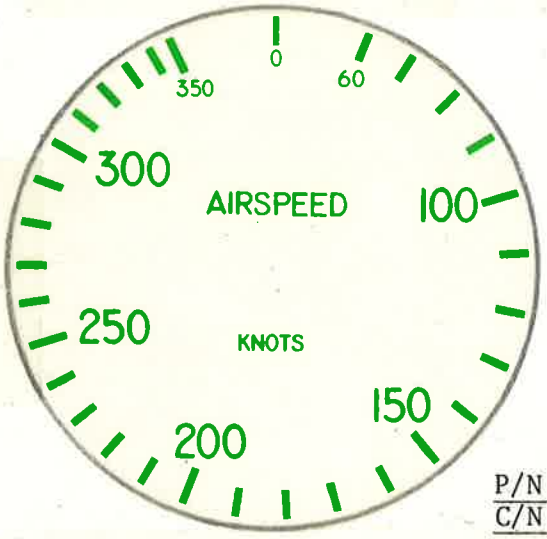

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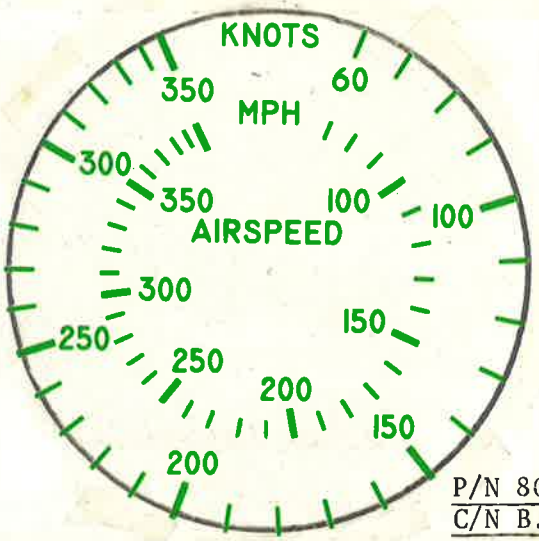

P/N 8040
C/N B.489

UNITED INSTRUMENTS, INC. 3625 COMOTARA AVE. WICHITA, KANSAS 67226	TITLE: INDICATOR-AIRSPEED KNOTS	SPEC. NO. UI8000-B445	ISSUE E
		PAGE 3 OF 9 PAGES	

B448-DL13

INSTRUMENTS MEET OR EXCEED THE REQUIREMENTS OF UNITED INSTRUMENTS, INC. SPECIFICATION UI8000 AND AERONAUTICAL STANDARD AS391C SUBJECT TO THE FOLLOWING AMENDMENTS:

1. GENERAL

1.1 DESCRIPTION: The airspeed indicator is intended for use on aircraft to indicate the speed relative to the air at sea level and when used at any other altitude, to indicate the equivalent speed corresponding to the actual sustaining force of the air

When properly connected to an airspeed tube, mounted so as to be in undisturbed air, a single pointer indicates the differential pressure developed between the pitot and static opening. This pressure is indicated in units of air speed (MPH or Knots). The normal position of the pointer when at Zero is vertical, pointing upward. From this position it moves clockwise.

1.2 OPERATING LIMITS: United Instruments, Inc. Airspeed Indicator part number 8000 operates through a calibrated range of 0 to 130 k\Knots or 0 to 170 Knots, whichever is specified.

United Instruments, Inc. Airspeed Indicator part number 8025 operates through a calibrated range of 0 to 200 Knots or 0 to 210 Knots, whichever is specified.

United Instruments, Inc. Airspeed Indicator part number 8030 operates through a calibrated range of 0 to 260 Knots.

United Instruments, Inc. Airspeed Indicator part number 8040 operates through a calibrated range of 0 to 350 Knots.

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 tests 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 1500 to 2000 cycles per minute. The term double amplitude, as used herein, indicates the total displacement from positive maximum to negative maximum.

2.3. POSITION: Unless otherwise specified, all tests shall be conducted with the instrument mounted in its normal operating position.

3 DETAIL REQUIREMENTS

3.1 INDICATING METHOD: The instrument indicates by a means of a pointer moving over a fixed dial. Clockwise pointer motion indicates increasing airspeed.

3.2 Limitation of Pointer Movements: The pointer movement is limited by stops in the mechanism in such a way that the pointer will not be permitted to rotate more than 10 degrees beyond the last graduation on the dial. Stops are incorporated in the instrument mechanism to limit counter-clockwise motion of the pointer.

3.3 Pressure Equivalent: The instruments shall be calibrated to indicate air speed in accordance with the following pressure equivalents. (See Table I)

4 INDIVIDUAL PERFORMANCE REQUIREMENTS

4.1 Scale Error: The instruments shall be tested for scale errors, by subjecting the instrument to the pressure required to produce the test points first with the pressures increasing, then with the pressure decreasing. With the pressures increasing, the pressure shall be brought up to, but shall not exceed the pressure specified to give the desired reading; and with the pressure decreasing, the pressure shall be brought down to, but shall not fall below the pressure specified to give the desired reading. The scale errors at room temperature shall not exceed the tolerances specified in Table II.

4.2 Friction: The instrument shall be tested for friction at the points indicated in Table III. The pressure shall be brought up to the desired reading and then held constant while two readings are taken; the first reading being taken before the instrument is vibrated, and the second one after the instrument is vibrated. The difference between any two readings shall not exceed the tolerance specified in Table III.

4.3 Position Error: A pressure equivalent to one-quarter, one-half and three-quarters scale deflection shall be applied. The change in reading at each deflection produced by rotating the instrument from the dial vertical to the dial horizontal position and 90 degrees to the right and left, while the instrument is vibrated shall not exceed the tolerance specified in Table IV.

4.4 Leak: With both the pitot pressure and static pressure connections simultaneously evacuated to 15 inches of mercury, the leakage shall not cause more than 0.05 inch of mercury pressure drop during a one minute period. With the static pressure connection open and pressure equivalent to full scale pointer deflection applied to the pitot pressure connection, the leakage shall not cause more than 1 Knot decrease in indication during a one minute period. This test shall be made with test apparatus containing the minimum practical volume.

4.5 Dampening: When sufficient pressure is applied to the pitot port to indicate maximum calibrated reading, the connection shall be suddenly broken. The time for the pointer to fall to 40 Knots shall be between 1 and 3 seconds.

5 ENVIRONMENTAL CONDITIONS: When installed in accordance with United Instruments, Inc. instructions the instrument will function in the following environmental ranges.

5.1 Temperature: -30 to 70°C

5.2 Vibration:

C.P.S.	Max. Double Amplitude	Max. Acceleration
5 to 50	0.02 Inch	1.5 g
50 to 500		0.5 g

5.3 Humidity: 0 to 95% at 32°C

5.4 Altitude: The instrument shall function and shall not be adversely affected when subjected to a pressure and temperature range equivalent to -1,000 to 40,000 feet standard altitude, per NACA Report Number 1235.

TABLE I
DIFFERENTIAL PRESSURE - KNOTS AND MPH
Mercury at 0°C
Water at 15.8°C

Differential Pressures for Knots				Differential Pressures for MPH		
Pounds per Square Inch	Inches of Water	Inches of Mercury	Calibrated Airspeed	Inches of Mercury	Inches of Water	Pounds per Square Inch
.0094	.261	.0192	20	.0145	.197	.0071
.0377	1.05	.0768	40	.0579	.788	.0284
.0590	1.63	.120	50	.0905	1.23	.0444
.0850	2.35	.173	60	.130	1.77	.0640
.116	3.21	.236	70	.178	2.42	.0872
.151	4.19	.308	80	.232	3.16	.114
.192	5.31	.390	90	.294	4.00	.144
.237	6.56	.482	100	.363	4.94	.178
.342	9.47	.696	120	.524	7.13	.257
.467	12.9	.950	140	.715	9.73	.351
.612	17.0	1.25	160	.936	12.7	.460
.777	21.5	1.58	180	1.19	16.2	.583
.964	26.7	1.96	200	1.47	20.0	.723
1.17	32.5	2.39	220	1.79	24.3	.878
1.40	38.8	2.85	240	2.13	29.1	1.05
1.65	45.8	3.37	260	2.52	34.2	1.24
1.93	53.5	3.93	280	2.93	39.9	1.44
2.23	61.8	4.54	300	3.38	46.0	1.66
2.56	70.8	5.20	320	3.87	52.6	1.90
3.09	85.6	6.30	350	4.67	63.5	2.29
4.13	114.3	8.40	400	6.20	84.3	3.04

TABLE II
SCALE ERROR

TEST POINT (KNOTS)	T O L E R A N C E (+/- Knots)					
	U.I. P/N 8000		U.I. P/N 8025		U.I. P/N 8030	U.I. P/N 8040
	130 Kts	170 Kts	200 Kts	210 Kts	260 Kts	350 Kts
0	1/16-INCH MAX.					
20	---	---	2.0	---	---	---
30	1.3	1.7	---	---	---	---
40	1.3	1.7	2.0	2.0	2.5	---
50	1.3	---	---	---	---	---
60	1.3	1.7	2.0	2.0	2.5	3.5
70	3.0	---	---	---	---	---
80	3.0	1.7	2.0	2.0	2.5	3.5
100	3.0	4.0	2.0	2.0	2.5	---
120	3.0	4.0	---	5.0	---	3.5
130	3.0	---	---	---	---	---
140	---	4.0	5.0	5.0	6.5	---
160	---	4.0	5.0	5.0	6.5	3.5
170	---	4.0	---	---	---	---
180	---	---	5.0	5.0	6.5	---
200	---	---	5.0	---	---	8.5
210	---	---	---	5.0	---	---
220	---	---	---	---	6.5	---
240	---	---	---	---	---	8.5
260	---	---	---	---	6.5	---
280	---	---	---	---	---	8.5
320	---	---	---	---	---	8.5
350	---	---	---	---	---	8.5

TABLE III

FRICTION ERROR

TEST POINT (Knots)	TOLERANCE (± Knots)				
	U.I. P/N 8000		U.I. P/N 8025	U.I. P/N 8030	U.I. P/N 8040
	130 Kt. Range	170 Kt. Range	210 Kt. Range	260 Kt. Range	350 Kt. Range
40	1.5	2.0	2.5	3.0	----
80	1.5	2.0	----	----	4.2
100	1.5	----	2.5	----	----
120	1.5	2.0	----	3.0	----
160	----	2.0	2.5	----	4.2
180	----	----	----	3.0	----
200	----	----	2.5	----	----
260	----	----	----	3.0	4.2
350	----	----	----	----	4.2

TABLE IV

POSITION ERROR

TEST POINT (Knots)	TOLERANCE (± Knots)				
	U.I. P/N 8000		U.I. P/N 8025	U.I. P/N 8030	U.I. P/N 8040
	130 Kt. Range	170 Kt. Range	210 Kt. Range	260 Kt. Range	350 Kt. Range
50	1.3	1.7	----	----	----
80	1.3	1.7	2.0	2.5	----
120	1.3	1.7	2.0	2.5	3.5
180	----	----	2.0	2.5	3.5
260	----	----	----	----	3.5