1.0 GENERAL:

1.1 Purpose:
This specification defines standards of minimum performance and conditions under which these standards apply for the Model 6100 Manifold Pressure Gage's, the Model 6200 Fuel Pressure Gages and the Model 6300 Manifold Pressure/Fuel Pressure Gage supplied by United Instruments, Inc.

1.2 Description:
The Model 6100 Manifold Pressure Gage is used on aircraft to indicate the absolute pressure of the aircraft engine intake manifold in Inches of Mercury Absolute.

The Model 6200 Fuel Pressure Gage is used on aircraft to indicate the differential pressure of the fuel and air in P.S.I.D. or calculated flow rate.

The Model 6300 Manifold Pressure/Fuel Pressure Gage is a combination of the Model 6100 and the Model 6200.

1.3 Operating Limits:
The Model 6100 Manifold Pressure Gages operate through a calibrated range of 10-35, 50 and 75 Inches of Mercury Absolute.

The Model 6200 Fuel Pressure Gages operate through a calibrated range of 0-10, 20, 30, 40 and 60 P.S.I.D.

The Model 6300 Manifold Pressure/Fuel Pressure operates through a calibrated range of 10-35, 50 Inches of Mercury Absolute for the Manifold Pressure and 0-10, 20, 30, 40, 60 P.S.I.D. for the Fuel Pressure.

2.0 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 shall 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.

				C	4-18-79	CHANGE H.51 DIAL	J. K.	PREP. BY		
				B	6/24/75	CH. pages 6, 9, 10		APPR. BY		6/25/75
D	8-25-87	CHANGE DIAL CONFIG. (Pgs. 8 thru 10)		A	6/25/75	CH. TABLE II, III Test press.		CHECKER		
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2.3 Position:
Unless otherwise specified, all tests shall be conducted with the instrument in its normal operating position.

3.0 INDIVIDUAL PERFORMANCE REQUIREMENTS:

3.1 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 pressure 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 Table I. For Manifold Pressure and Table II for Fuel Pressure.

3.2 Friction:
The instrument shall be tested for friction at each test point. The pressure shall be so increased as to bring the pointer of the instrument approximately to the desired reading and then held constant while two readings are taken, the first before the instrument is tapped and the second after the instrument is tapped. The difference between any such reading is the friction error and shall not exceed 0.3 Inch of Mercury for the Manifold Pressure Gage and 0.3 P.S.I. for the Fuel Pressure Gage.

3.3 Position Error:
With sufficient pressure applied to obtain a reading of approximately mid-scale. Instrument shall be held in each of several different positions. The change in the reading of the instrument with change in position from the normal test position shall not exceed + 0.2 Inch of Mercury for the Manifold Pressure Gage and 0.3 P.S.I. for the Fuel Pressure.

3.4 Dampening: (Manifold Pressure)
A pressure equivalent to 50 Inches of Mercury shall be applied to the instrument when this pressure is suddenly released, the time for the pointer to travel from 50 Inches of Mercury to 35 Inches of Mercury shall be 2.0 $\pm$ 1.0 seconds or with vacuum applied the time for the pointer to travel from 10 Inches of Mercury to 25 Inches of Mercury shall be 2.0 $\pm$ 1.0 seconds.

3.5 Leakage:
With pressure applied to produce a full scale reading, the connection tubing shall then be sealed at a point within 2 inches of the pressure connection. During a period of 5 minutes, there shall be no change in reading.

3.6 Pointer Spread:
Spread between pointers shall not exceed one-half($\frac{1}{2}$) the total allowable scale error tolerance (Table I) for that setting. Example: At 20 inches of mercury the tolerance is $\pm$ .4(total .8); The spread of the pointers shall not exceed 0.4.

3.7 Pointer Oscillation:
The Gage shall be subjected to vibration, at frequencies varied uniformly from 5 to 50 cycles per second, at a double amplitude of .020 inches maximum, and a maximum acceleration of 1.5 g's, and 50 to 500 cycles per second at a maximum acceleration of 0.5g's. The pointer oscillation shall not exceed 1.5 percent of full scale value.

3.8 Differential Pressure Error: (Fuel Pressure Gage only)
The applicable pressure (one-half the calibrated range) shall be applied to the vent boss of the gage.
Pressures shall be applied to the pressure boss so that the pressure differential between the vent boss and the pressure boss equal the required test pressure of the scale error test. (Table II). The scale errors shall not exceed the tolerance shown in Table III.

3.9 Aneroid Test: (Manifold Pressure gage only)
The gage shall be placed in a vacuum chamber and tested for scale errors from ambient pressure to 10 inches of mercury absolute. These errors shall not exceed the tolerances specified in Table I and Paragraph 3.6 of this specification.

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

4.1 Temperature:
-30 to 70C

4.2 Vibration:

C.P.S.	Max. Double Amplitude	Max. Acceleration
5 to 50	020 Inch	1.5g
50 to 500		0.5g

4.3 Humidity:
0% to 95 At 32C

4.4 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.

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4.5 Pressure Extremes: (Manifold Pressure Gage only)
The gage shall not be adversely affected by exposure to pressures to two inches of mercury absolute and five inches of mercury in excess of the full scale reading.

4.6 Overpressure: (Fuel Pressure Gage Only)
The gage shall not be adversely affected when subjected to an over-pressure of 120 percent times full scale reading.

5.0 INSTALLATION INSTRUCTION:

5.1 Mounting:
Front or rear panel mounting, attached with (4 ea) 6-32 screws and selflocking nuts.

5.2 Connection:
Connecting lines should be clean and connected to the appropriate ports.

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

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TABLE I
SCALE ERROR MANIFOLD PRESSURE

Pressure-In.Hg.ABS	Tolerance±In.Hg.Abs.	Pressure-In.Hg. ABS	Tolerance±In.Hg. Abs.
30	0.3	40	0.3
25	0.4	45	0.3
20	0.4	50	0.4
15	0.5	55	0.4
10	0.6	60	0.4
20	0.4	65	0.5
30	0.3	70	0.6
35	0.3	75	0.6

TABLE II
SCALE ERROR FUEL PRESSURE

PRESSURE P.S.I.D.	TOLERANCE ± P.S.I.D.	PRESSURE P.S.I.D.	TOLERANCE ± P.S.I.D.
0	0.2	50	0.7
5	0.3	55	0.8
10	0.3	60	1.0
15	0.4	65	1.0
20	0.4	70	1.2
25	0.5	75	1.5
30	0.5	80	1.5
35	0.6	85	1.7
40	0.6	90	1.7
45	0.7	95	1.7
		100	2.0

TABLE III
DIFFERENTIAL PRESSURE ERROR TEST
(0-30 P.S.I.D. GAGE)

APPLIED PRESSURE VENT BOSS	PRESSURE BOSS	GAGE READING	TOLERANCE ± P.S.I.
15 PSI	15 PSI	0 PSID	0.2
15 PSI	20 PSI	5 PSID	0.3
15 PSI	25 PSI	10 PSID	0.3
15 PSI	30 PSI	15 PSID	0.4
15 PSI	35 PSI	20 PSID	0.4
15 PSI	40 PSI	25 PSID	0.5
15 PSI	45 PSI	30 PSID	0.5
15 PSI	60 PSI	45 PSID	0.7

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2415 SOUTH GLENDALE
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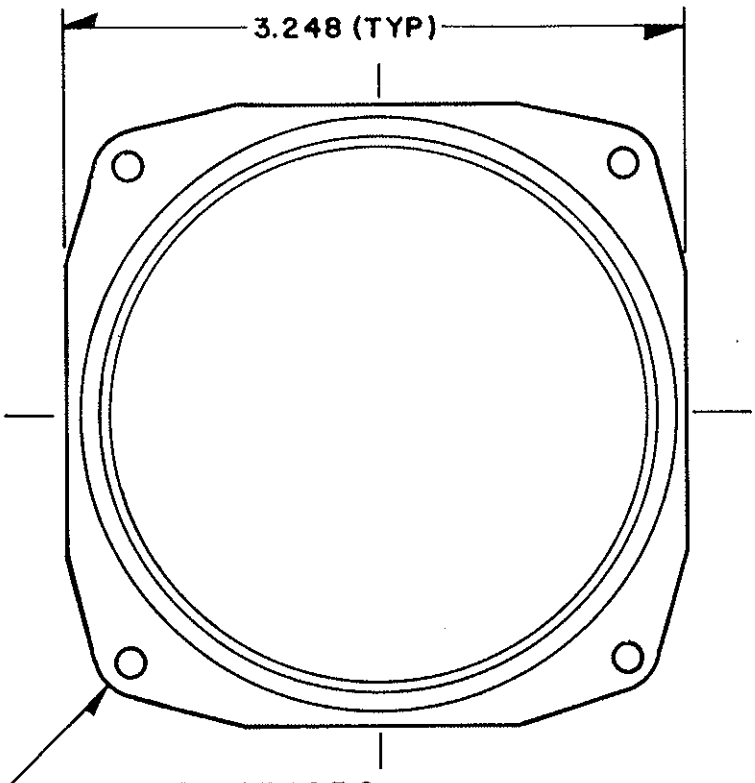
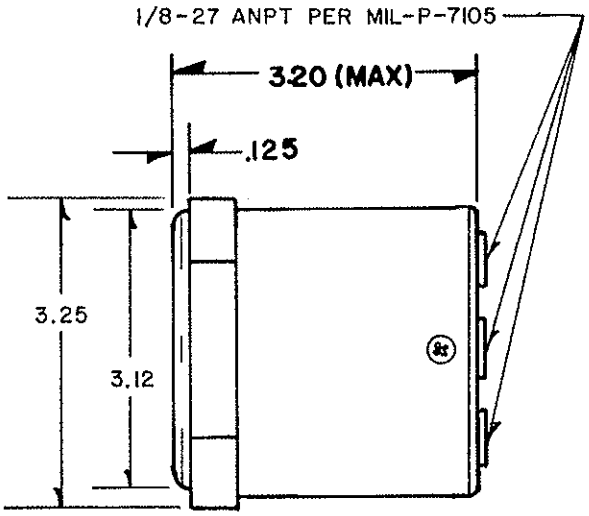
TITLE: GAGE, PRESSURE MANIFOLD & FUEL

SPEC. NO: UI6100

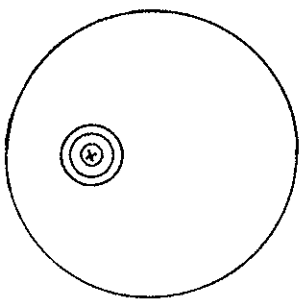
ISSUE D

UIE-10



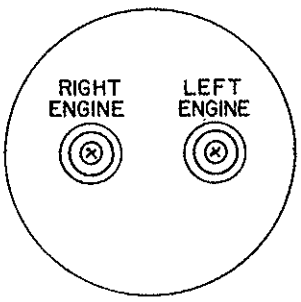


CASE DIMENSIONS AND PRESSURE PORT CONFIGURATIONS



SINGLE MANIFOLD PRESSURE

6111
6112



DUAL MANIFOLD PRESSURE

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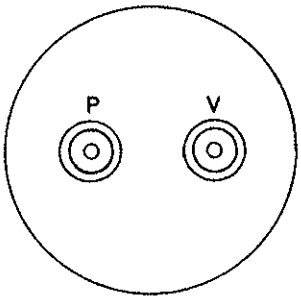

SINGLE FUEL PRESSURE

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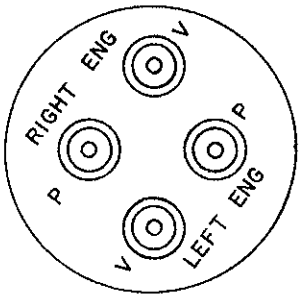
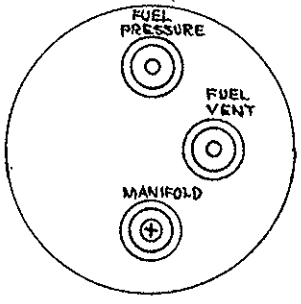
6212
6213



DUAL FUEL PRESSURE

6221
6222
6223
6224
6225



MANIFOLD / FUEL PRESSURE

6311
6312
6313
6314
6315
6331
6332
6333

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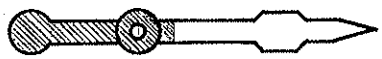
POINTER CONFIGURATIONS

USED ON: 6111, 6112, 6211, 6212, 6213

Standard on opposed scale dual gages
Optional on 6311, 6312, 6313, 6321, 6322, 6323

Marked "R" — 6121, 6122, 6221, 6222, 6223, 6224, 6225

Marked "F" — 6311, 6312, 6313, 6314, 6315, 6331, 6332, 6333



Marked "L" — 6121, 6122, 6221, 6222, 6223, 6224, 6225

Marked "M" — 6311, 6312, 6313, 6314, 6315, 6331, 6332, 6333

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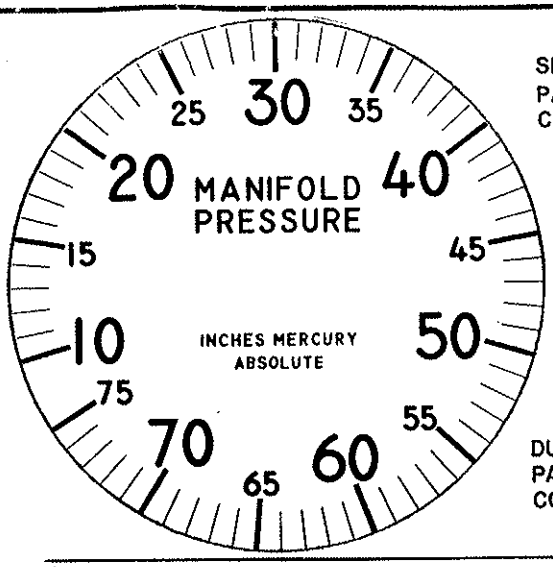

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DUAL
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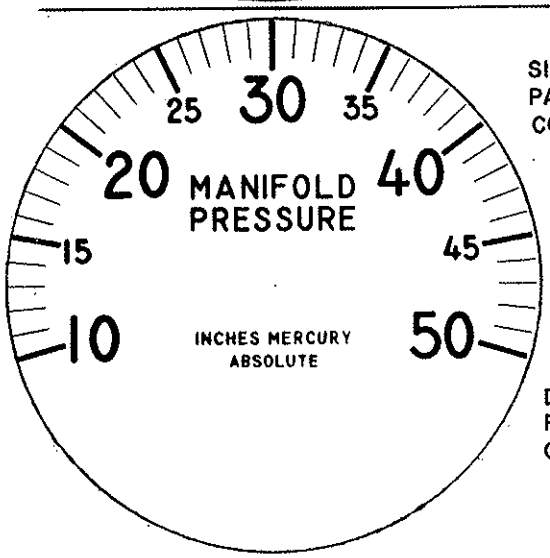
CODE E.56



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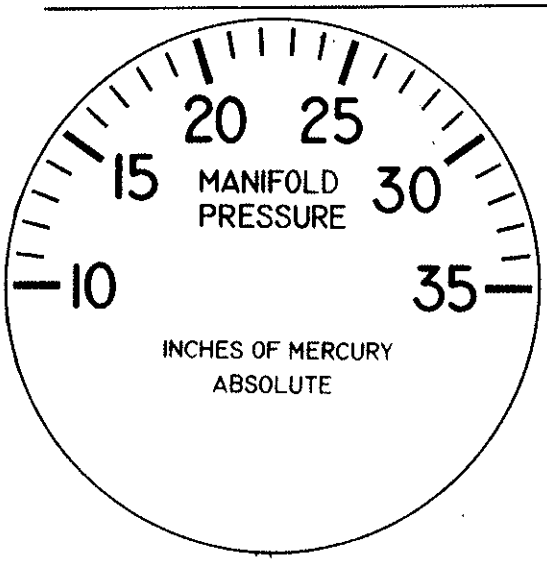

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DUAL
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CODE E.58

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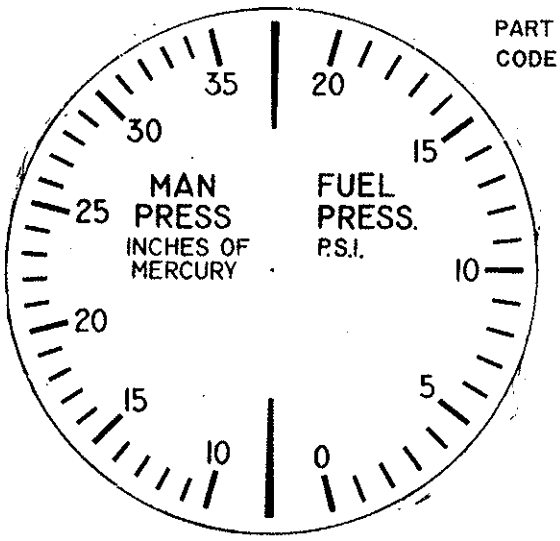

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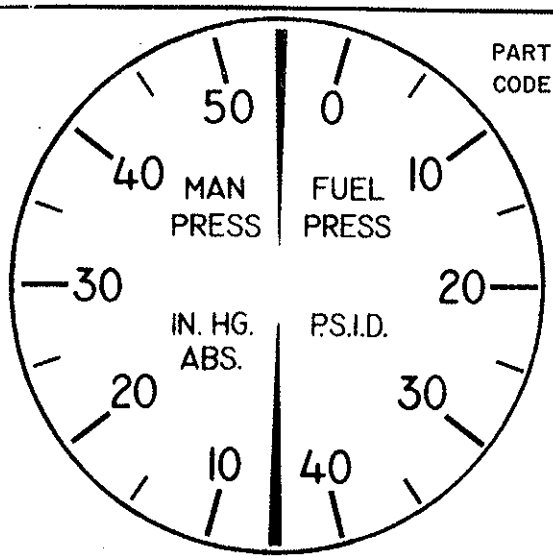

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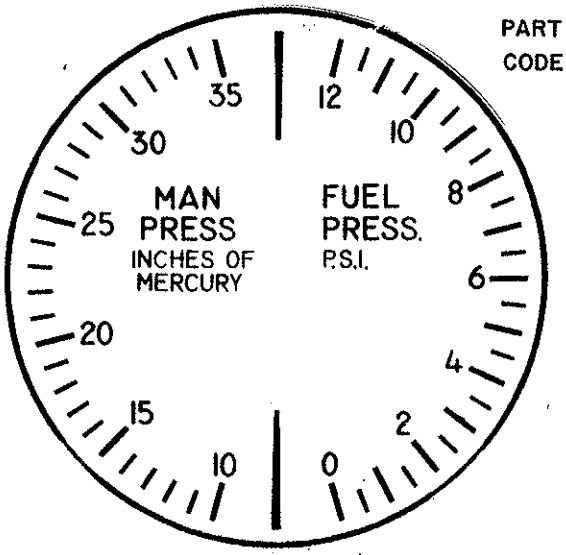

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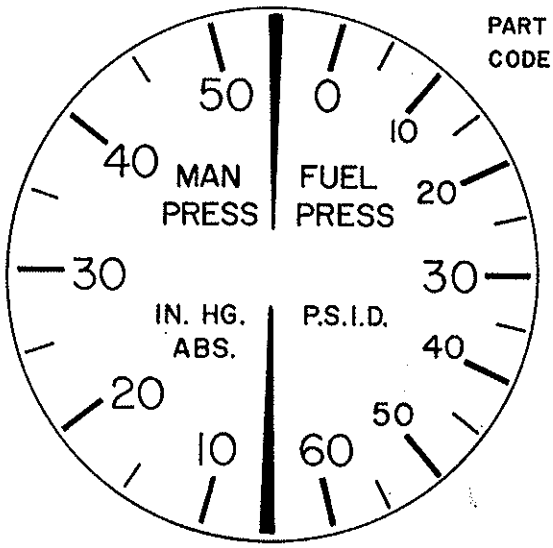

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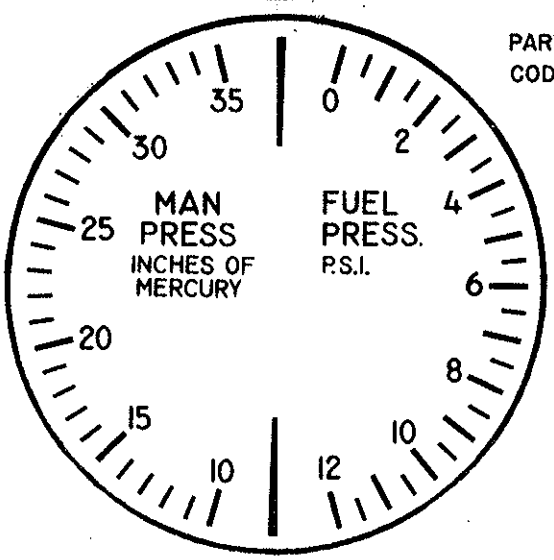

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ISSUE: D

SINGLE
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DUAL
PART NO. 6222
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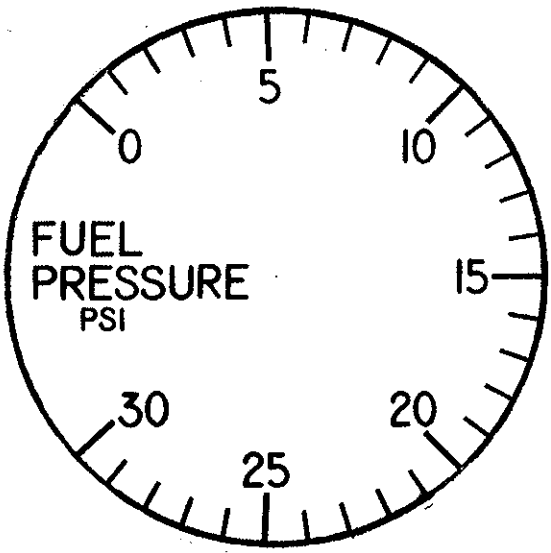

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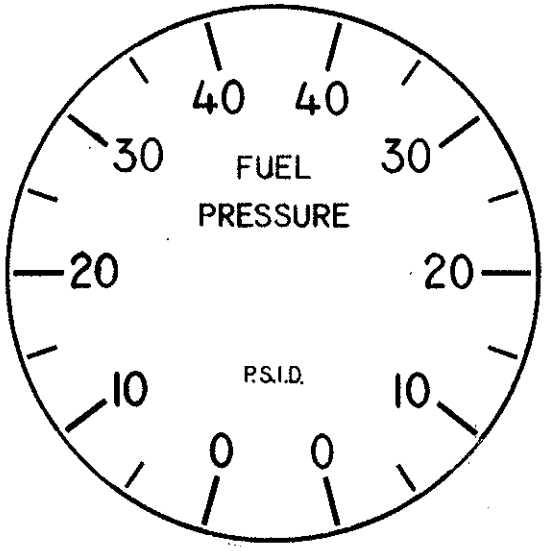

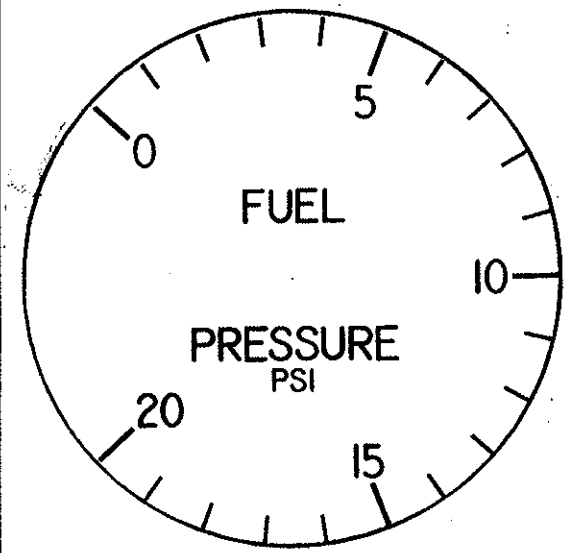

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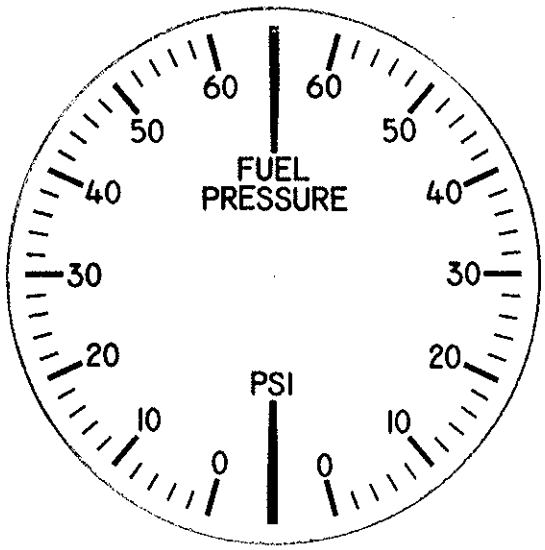

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