

Accident Investigator Reference Card

Weight

<u>Liquid</u>	<u>Specific Wt.</u> (lb / U.S. gal)
Gasoline	5.87
Jet A Fuel	6.74
Synthetic Oil (23699)	8.22
Water	8.345

One pound of Jet A = 19 fluid ounces
One cubic foot of air weighs about 1.25 oz.

Volume

Gallons X 3.7854 = Liters
Liters X 0.26417 = Gallons

One cubic foot = 7.48 gallons
One pound of air occupies 13.11 cubic feet

Distance

1 statute mile = 5,280 feet = 0.869 nautical miles
1 nautical mile = 6,080 feet = 1.1516 statute miles
miles X 1.6093 = kilometers
kilometers X 0.62139 = miles

feet X 0.3048 = meters
meters X 3.2808 = feet

1 millimeter = 0.03937 inches
1 mil = 0.001 inches

Speed

100 miles/hour = 87 knots
100 knots = 115 miles/hour

miles/hour X 0.86898 = knots
knots X 1.1516 = miles/hour

miles/hour X 1.4667 = feet/second
knots X 1.6890 = feet/second

Standard Atmosphere

Standard Values at Sea Level:

Pressure 29.92 in.Hg
Temperature 59.0°F

Standard Values at Altitude:

Isothermal altitude 36,089 ft
Isothermal temperature -56.5°C / -69.7°F
Temperature lapse rate -2.0°C/1000 ft / -3.57°F/1000 ft
(sea level to isothermal)
Pressure lapse rate -1.0 in. Hg/1000 ft

Inches Hg X 13.595 = inches H₂O

Temperature

$$^{\circ}\text{F} = 1.8 \times t(^{\circ}\text{C}) + 32$$

$$^{\circ}\text{C} = [t(^{\circ}\text{F}) - 32] / 1.8$$

For interpolation 1°C = 1.8°F

Propeller Slash Mark Conversion To Ground Speed Chart

Number of Blades → Propeller RPM ↓	3	4	5	6
1552	-	5.88	7.35	-
1591	4.52	6.03	-	-
1700	-	-	8.05	9.66
2000	5.68	7.58	-	-

To obtain a ground speed from propeller slash marks:
Multiply the distance between the slash marks (in inches)
by the appropriate conversion number in the chart above.
Ground speed will be in miles per hour (mph).

Thermodynamics

15 lbs of air are required to burn 1 lb of jet fuel.

For each pound of fuel burned, 45 lbs of air is required to
cool the gases from 3600°F combustion temperature to
1800°F turbine entry temperature.