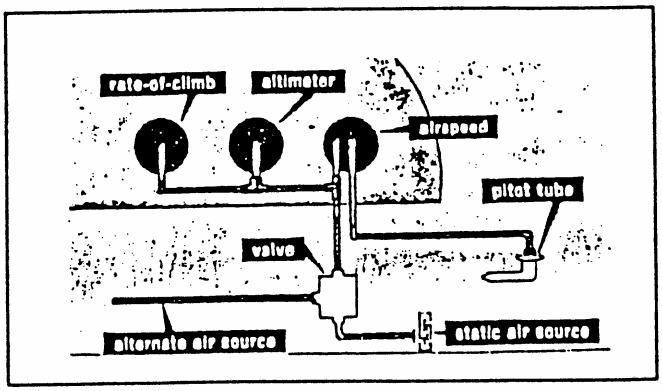
AIRCRAFT INSTRUMENTS

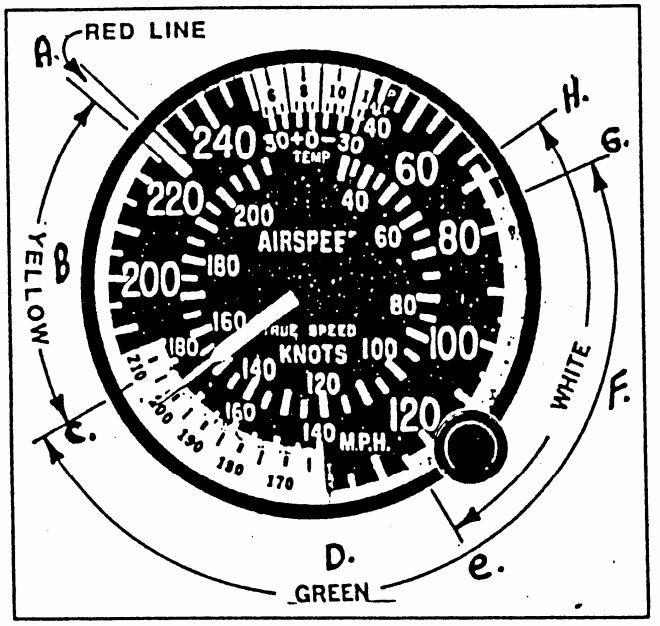
Pitot Static System



The pitot tube provides impact pressure for only the airspeed indicator.

The static vents provide information to the altimeter, vertical speed indicator and airspeed indicator.

Airspeed Indicator



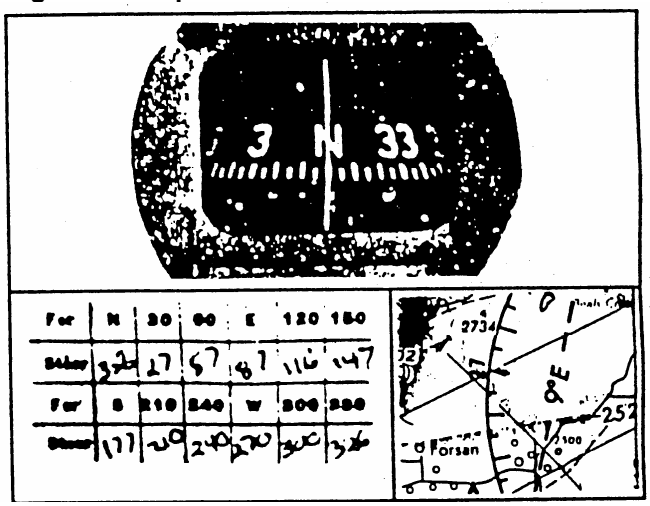
Airspeed indicator markings show:

A. Never exceed speed (red radial line). Speeds above Vne should be avoided because design limit load factors may be exceeded, if gusts are encountered - (Vne).
B. Caution range (yellow arc).
C. Maximum structural cruising speed is the maximum speed the aircraft can be operated in normal operations.
D. Normal operating range (green arc).
E. Maximum flap extended speed - Vfe.
F. Flap operating range (white arc).
G. Power off stalling speed, flaps and landing gear retracted (bottom of green arc).
H. Power off stalling speed, flaps and landing gear in landing position (bottom of white arc) - Vso.

Airspeed Indicator

Airspeeds not marked on the airspeed Indicator:
I. Design flap speed Vf
J. Maximum landing gear extended speed - Vle.
K. Maneuvering speed Is the speed to reduce to in severe turbulence. It is also the maximum speed at which full or abrupt control movements may be used.
L. Minimum steady flight speed at which the airplane is controllable - Vs.
M. Minimum steady flight speed in a specified configuration - Vs1.

Magnetic Compass



Magnetic variation is the angle between true north and magnetic north, and is found on Sectional charts. It is shown by a dashed line.

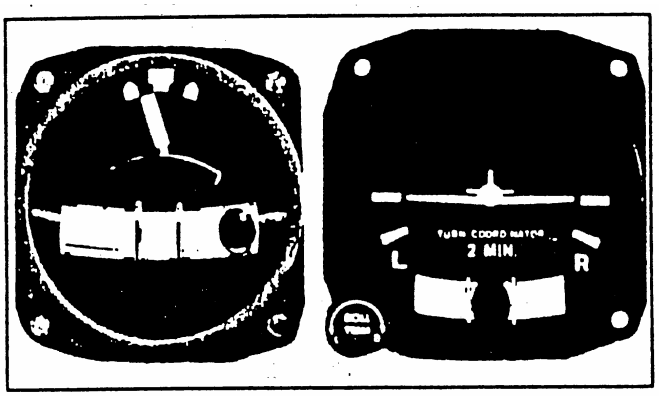
Compass deviation is the angle between magnetic north and compass north (where the compass points). Deviation varies for different headings of the same aircraft.

Errors in the compass include:

Turning error - Turning on a south heading In either direction, the compass will lead your turn. Turning on a north heading in either direction, the compass will lag your turn.

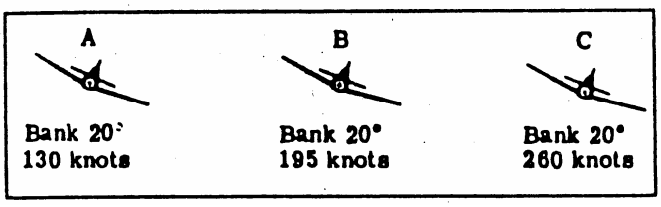
Acceleration error - On an east or west heading, if you accelerate, the compass turns north; if you decelerate, the compass turns south.

Turn & Slip / Turn Coordinator



An advantage of an electric turn coordinator if the airplane has a vacuum system is that It is a backup in case of vacuum system failure.

In a level coordinated turn, the load factor Is only a function of angle of bank.



A standard rate of turn is 3 degrees per second, taking 2 minutes to turn 360 degrees.

Increasing bank angle will decrease the radius of turn and increase the rate of turn.

Increasing airspeed will increase the radius of turn and decrease the rate of turn.

5013. A02 COM
Which is the correct symbol for the stalling speed or the minimum steady flight in a specified configuration?

A) VS.
B) VS1.
C) VSO.

5014. A02 COM
Which is the correct symbol for the stalling speed or the minimum steady flight speed at which the airplane is controllable?

A) Vs
B) Vs1
C) Vs0

5015.
FAR Part 1 defines Vf, as

A) design flap speed.
B) flap operating speed.
C) maximum flap extended speed.

5016.
FAR Part 1 defines Vle as

A) maximum landing gear extended speed.
B) maximum landing gear operating speed.
C) maximum leading edge flaps extended speed.

5177. H312 COM
Which airspeed would a pilot be unable to identify by the color coding of an airspeed indicator?

A) The never-exceed speed.
B) The power-off stall speed.
C) The maneuvering speed.

5178. H314 COM
Which statement is true about magnetic deviation of a compass? Deviation

A) varies over time as the agonic line shifts.
B) varies for different headings of the same aircraft.
C) is the same for all aircraft in the same locality.

5192. H534 COM
To increase the rate of turn and at the same time decrease the radius, a pilot should

A) maintain the bank and decrease airspeed.
B) increase the bank and increase airspeed.
C) increase the bank and decrease airspeed.

5193.
Which is correct with respect to rate and radius of turn for an airplane flown in a coordinated turn at a constant altitude?

A) For a specific angle of bank and airspeed, the rate and radius of turn will not vary.
B) To maintain a steady rate of turn, the angle of bank must be increased as the airspeed is decreased.
C) The faster the true airspeed, the faster the rate and larger the radius of turn regardless of the angle of bank.

5268. I04 COM
What is an operational difference between the turn coordinator and the turn-and-slip indicator? The turn coordinator

A) is always electric; the turn-and-slip indicator is always vacuum-driven.
B) indicates bank angle only; the turn-and-slip indicator indicates rate of turn and coordination.
C) indicates roll rate, rate of turn, and coordination; the turn-and-slip indicator indicates rate of turn and coordination.

NOTE: CORRECT ANSWER IN BOLD ITALICS

5269. I04 COM
What is an advantage of an electric turn coordinator if the airplane has a vacuum system for other gyroscopic instruments?

A) It is a backup in case of vacuum system failure.
B) It is more reliable than the vacuum-driven indicators.
C) It will not tumble as will vacuum-driven turn indicators.

5270. I05 COM
If a standard rate turn is maintained, how long would it take to turn 360°?

A) 1 minute.
B) 2 minutes.
C) 3 minutes.

5604. H312 COM
Why should flight speeds above VNE be avoided?

A) Excessive induced drag will result in structural failure.
B) Design limit load factors may be exceeded, if gusts are encountered.
C) Control effectiveness is so impaired that the aircraft becomes uncontrollable.

5605. A02 COM
Maximum structural cruising speed is the maximum speed at which an airplane can be operated during

A) abrupt maneuvers.
B) normal operations.
C) flight in smooth air.

5601. H312 COM
Calibrated airspeed is best described as indicated airspeed corrected for

A) instrument error.
B) non-standard temperature.
C) installation and instrument error.

5602. H312 COM
True airspeed is best described as calibrated airspeed corrected for

A) non-standard temperature.
B) altitude and non-standard temperature.
C) installation or instrument error.

NOTE: CORRECT ANSWER IN BOLD ITALICS