

Figure 1.1 Circular scale quantitative display.

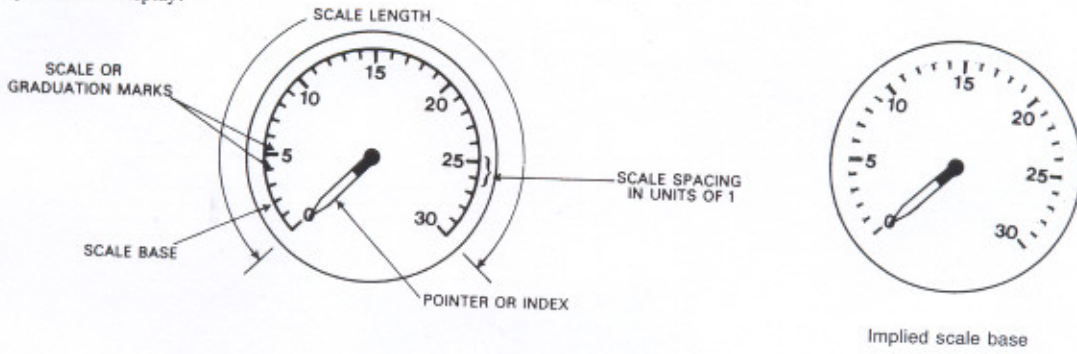


Figure 1.2 Linear and non-linear scales. (a) Linear; (b) square-law; (c) logarithmic.

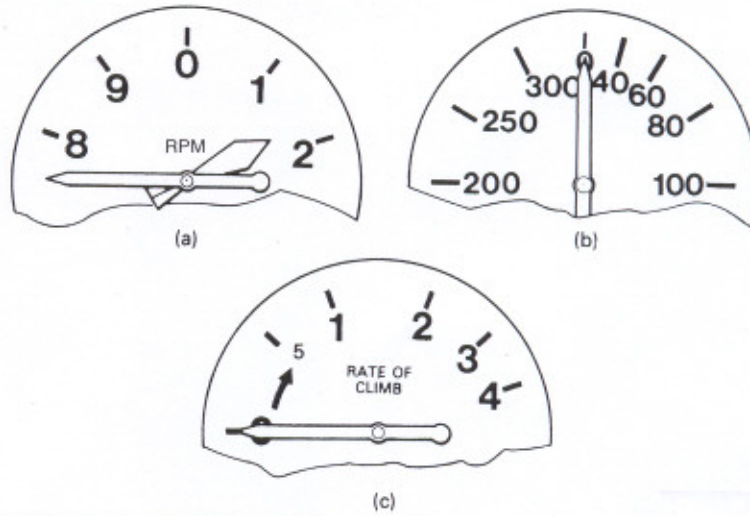


Figure 1.3 High-range long-scale displays. (a) Concentric scales; (b) fixed and rotating scales; (c) common scale and triple pointers.

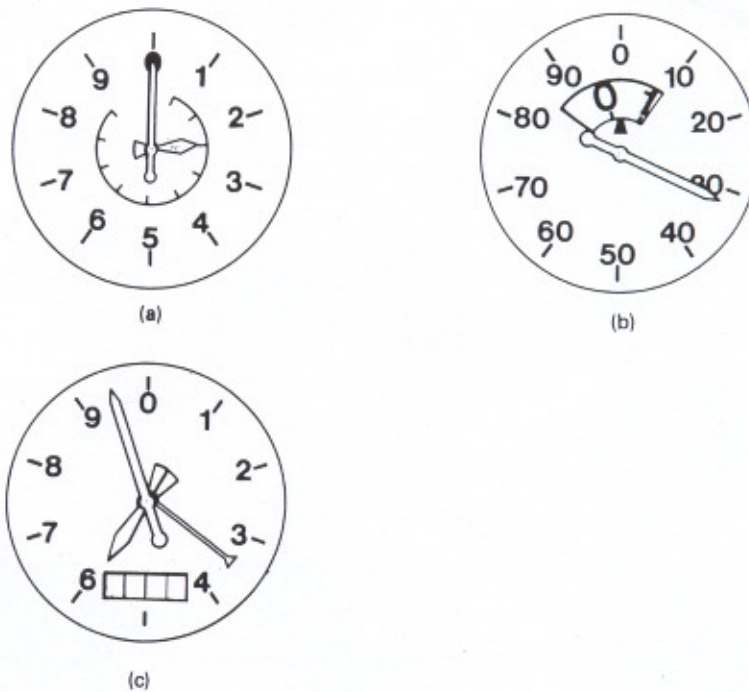


Figure 1.4 Reading accuracy.

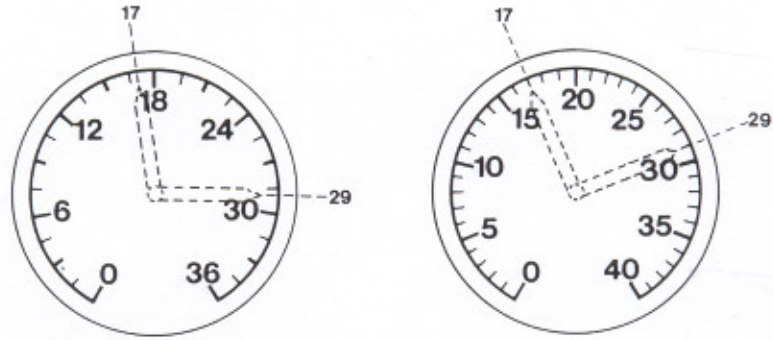
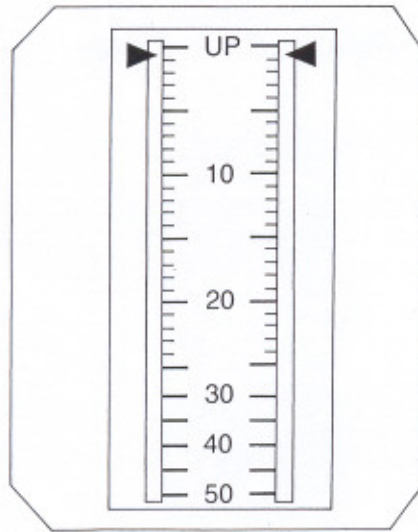
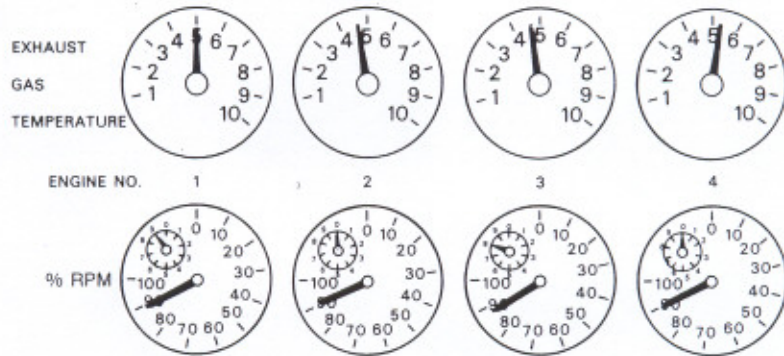


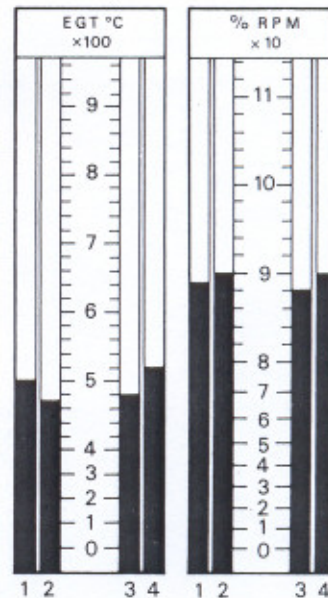
Figure 1.5 Straight scale displays. (b) gives a comparison between moving-tape and circular scale displays.



(a)



| Engine No. | EGT °C | % RPM |
|------------|--------|-------|
| 1          | 500    | 89    |
| 2          | 470    | 90    |
| 3          | 480    | 88    |
| 4          | 520    | 90    |



(b)

Figure 1.6 Application of digital counter displays.

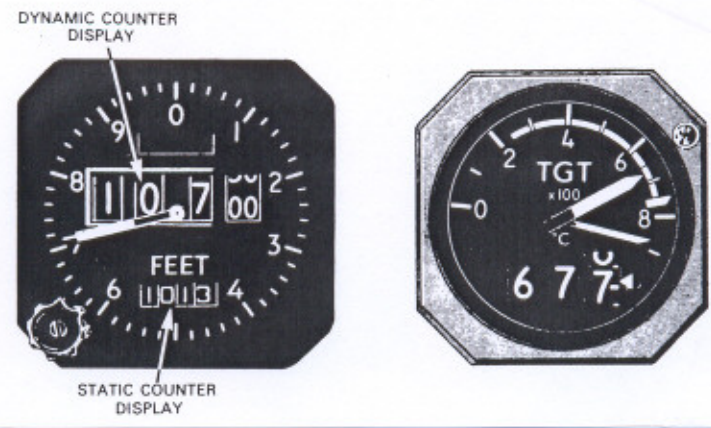


Figure 1.7 Dual-indicator displays. The display with three pointers has a helicopter application: it shows the speed of No. 1 and No. 2 engines, and of the main rotor.



Figure 1.10 Director display (gyro horizon).

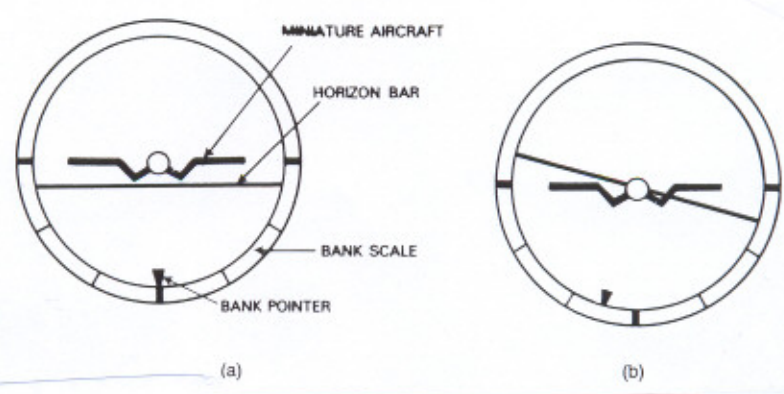


Figure 1.8 Operational range markings.

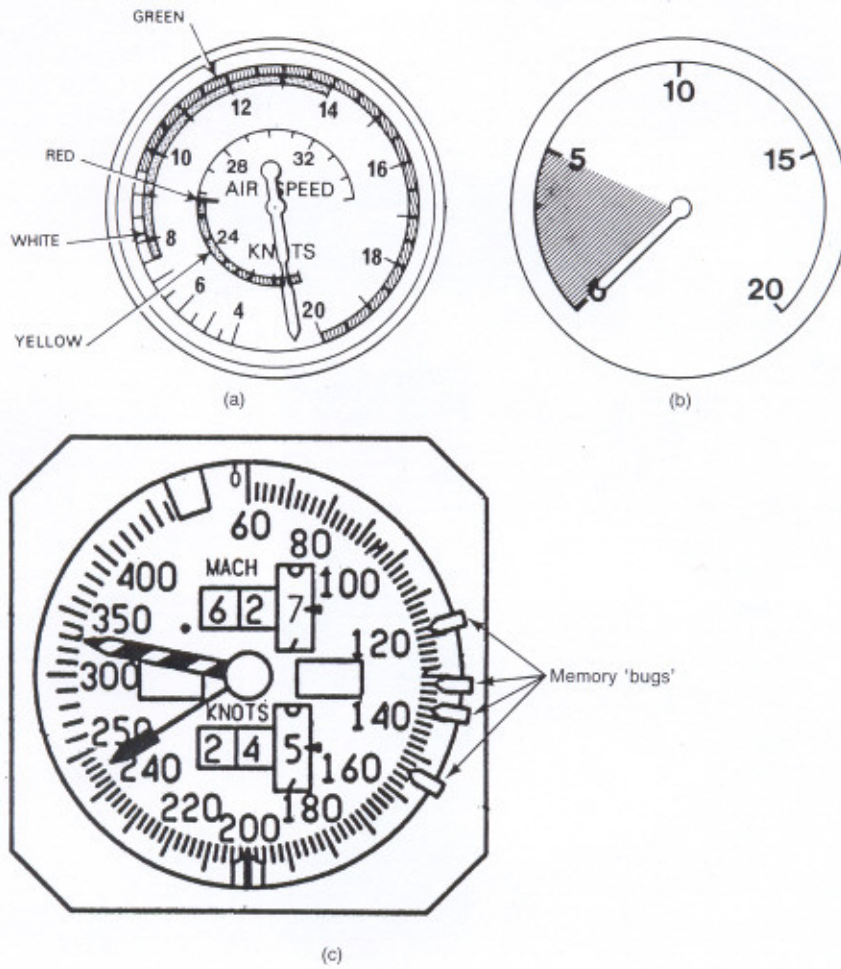


Figure 1.9 Qualitative display.

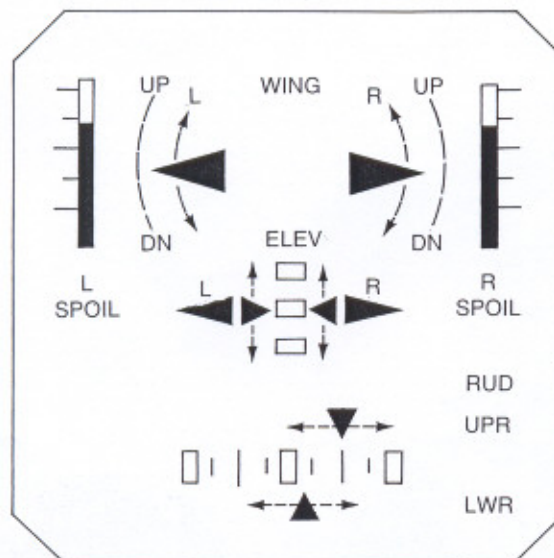


Figure 1.11 Attitude director display. (a) Aircraft straight and level; (b) aircraft nose up; (c) aircraft banked left; (d) 'fly up' command; (e) 'fly left' command.

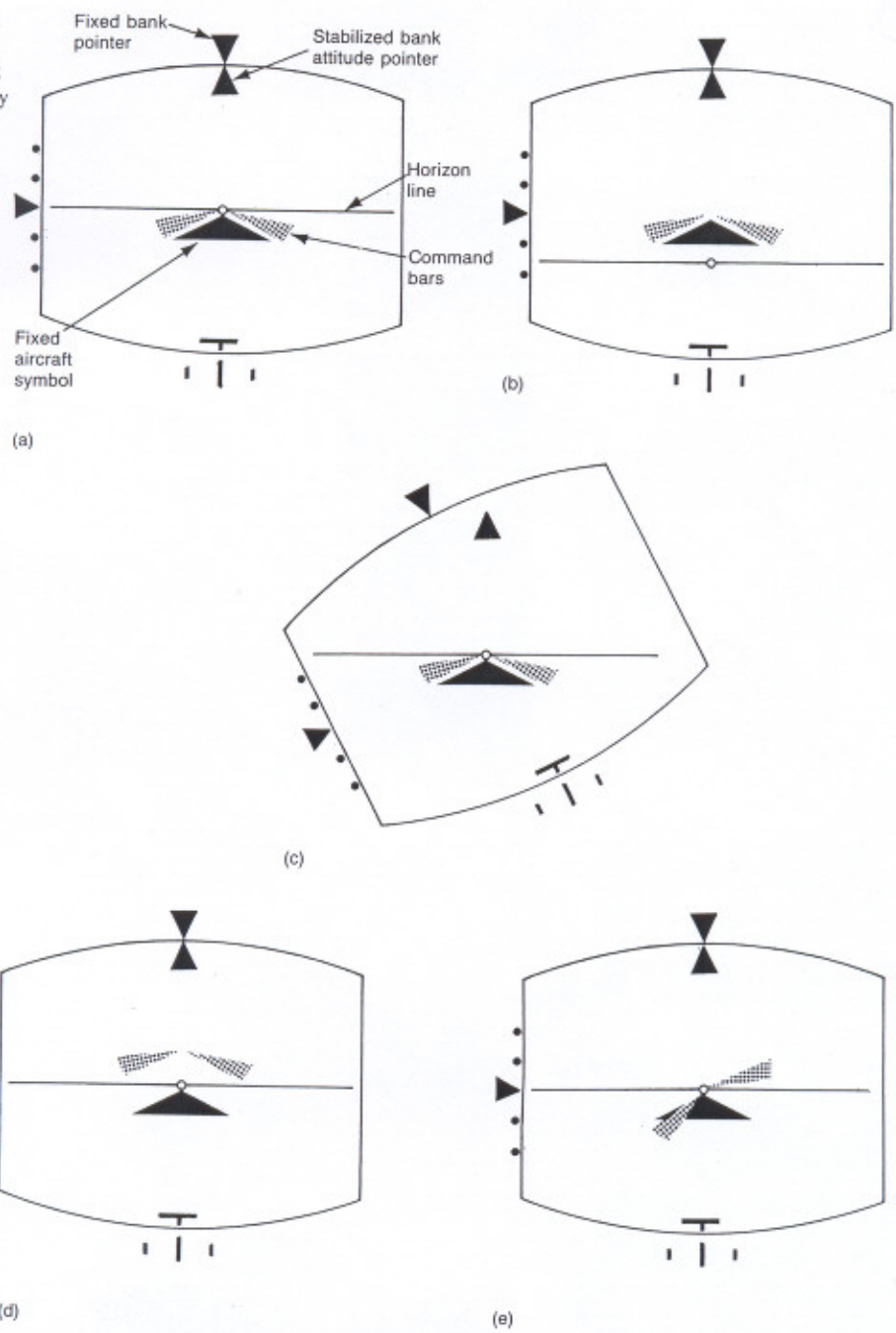
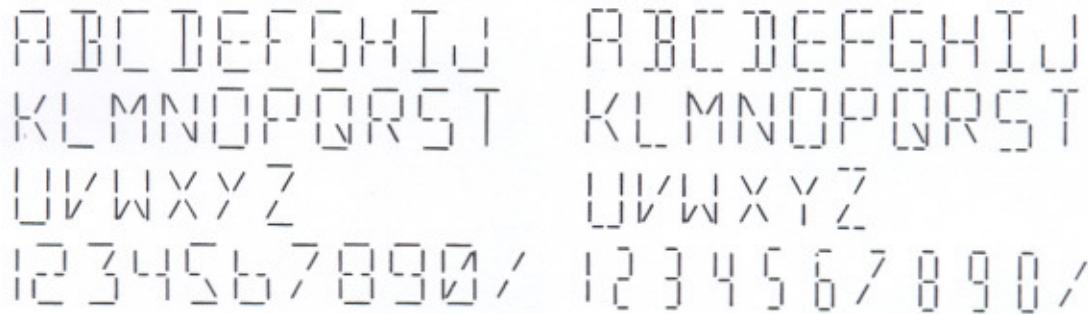


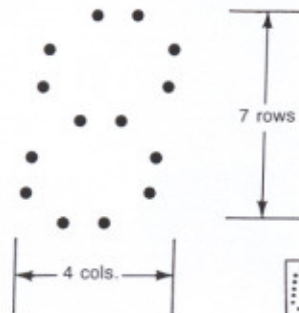
Figure 1.12 Electronic alphanumeric displays.  
 (a) Seven-segment;  
 (b) 13- and 16-segment;  
 (c) a  $4 \times 7$  matrix.



(a)



(b)



(c)



Figure 1.13 Light-emitting diode.

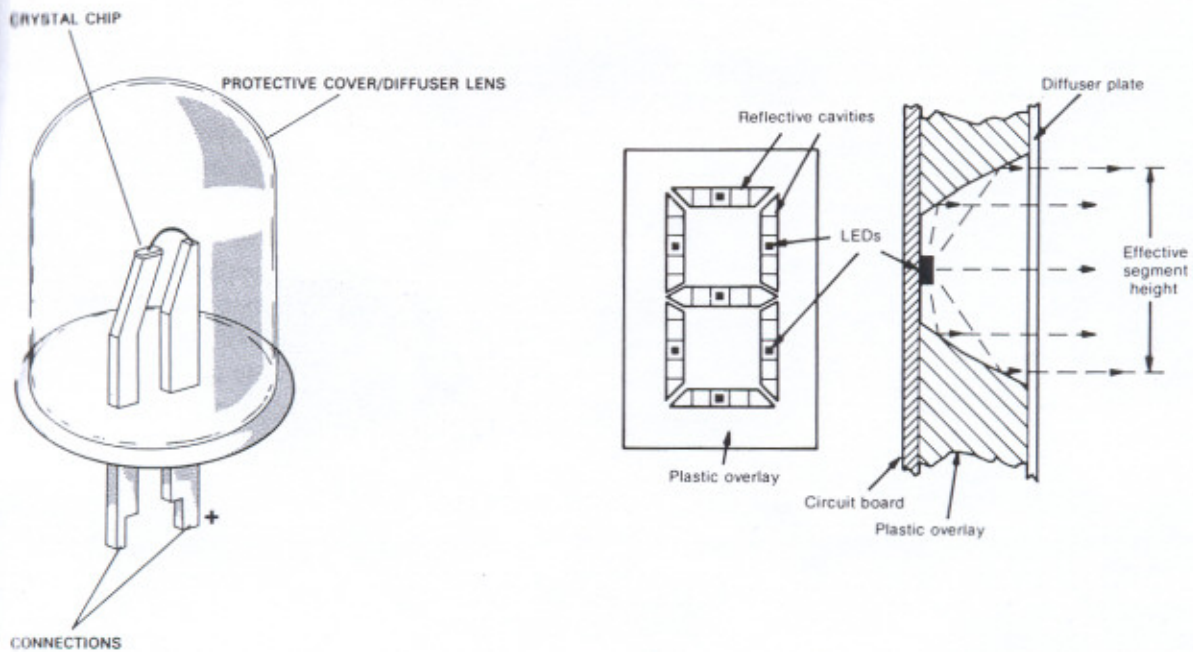


Figure 1.14 Engine speed indicator with a dot matrix LED. (Courtesy of Smith's Industries Ltd.)

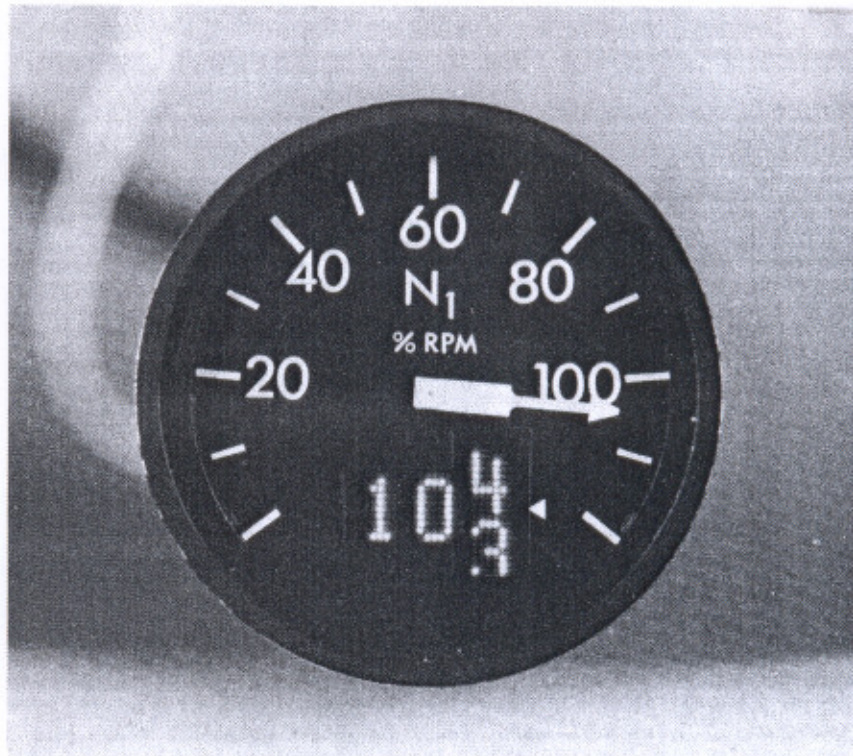


Figure 1.15. Structure of an LCD.

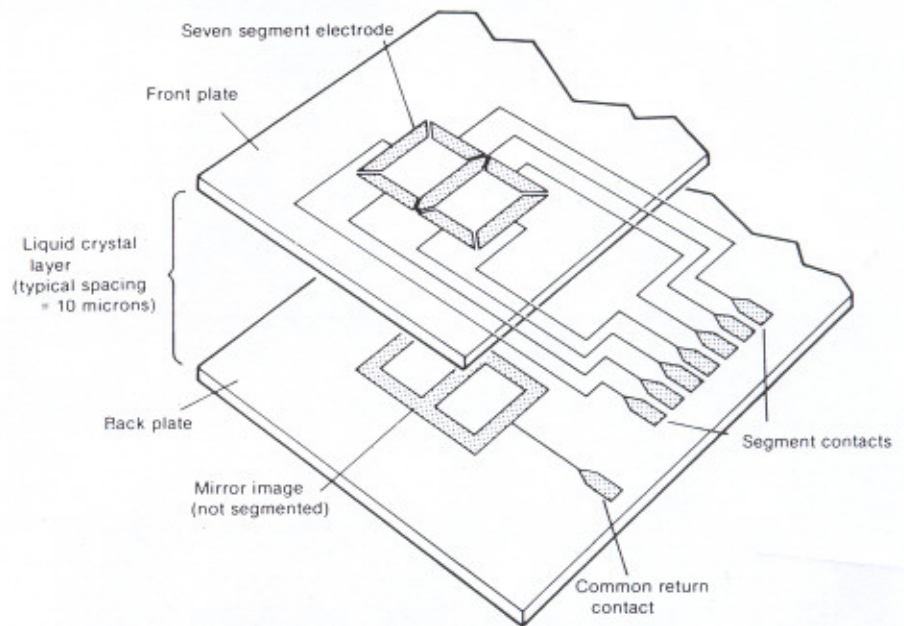


Figure 1.16 Application of an LCD.



Figure 1.17 Head-up display.

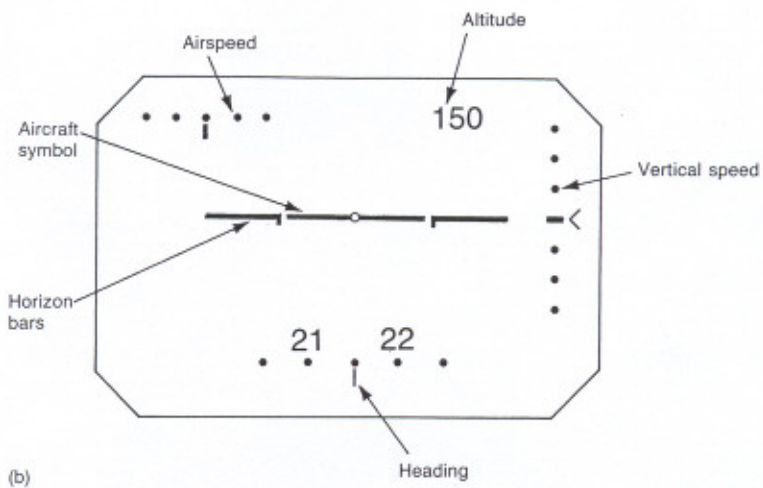
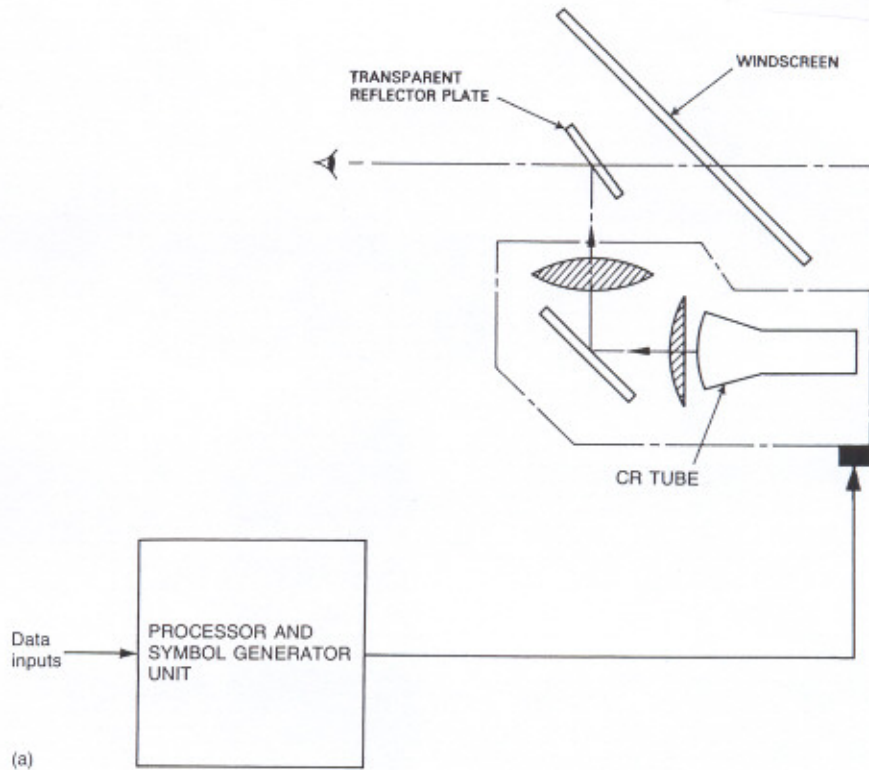




Figure 1.18 Flight deck layout: Boeing 737-300 series aircraft.

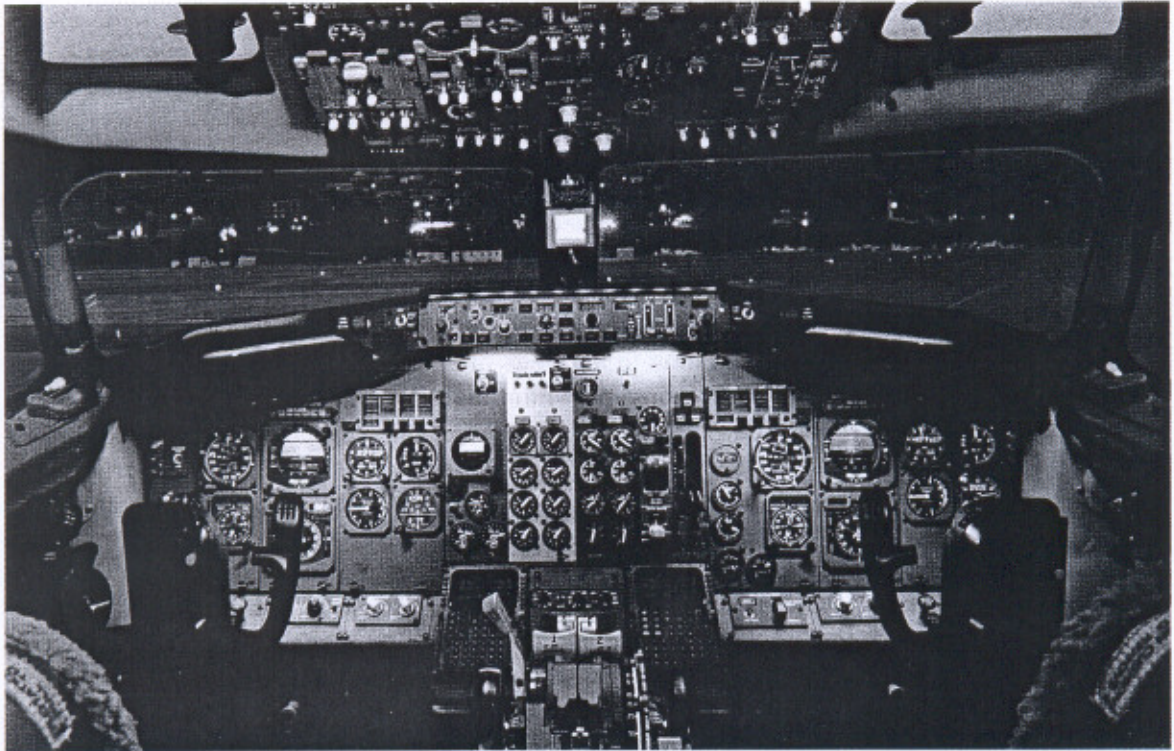


Figure 1.19 Flight instrument grouping. (a) Basic six; (b) basic 'T' (with flight director system indicators).

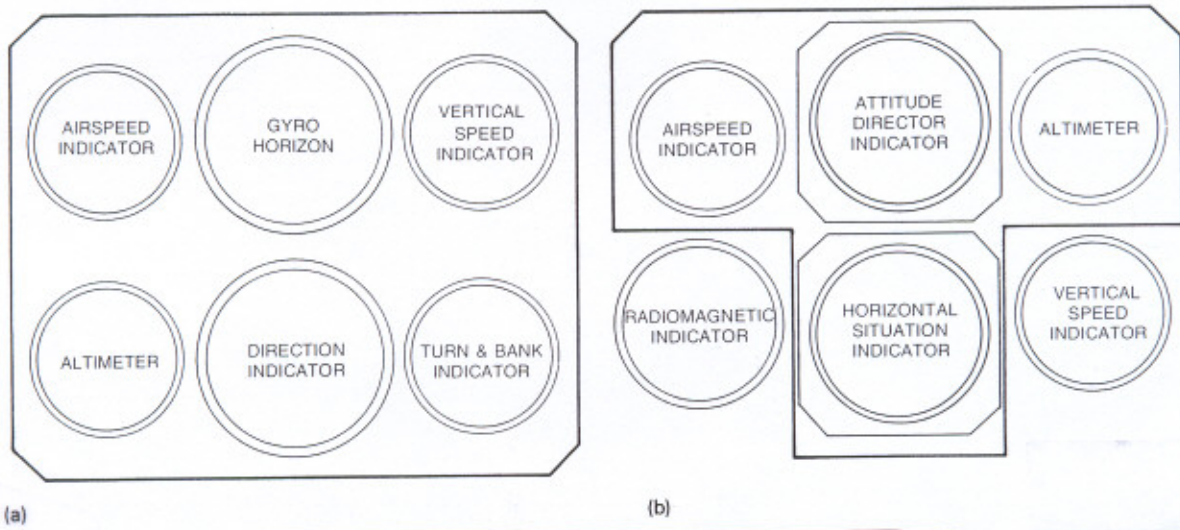
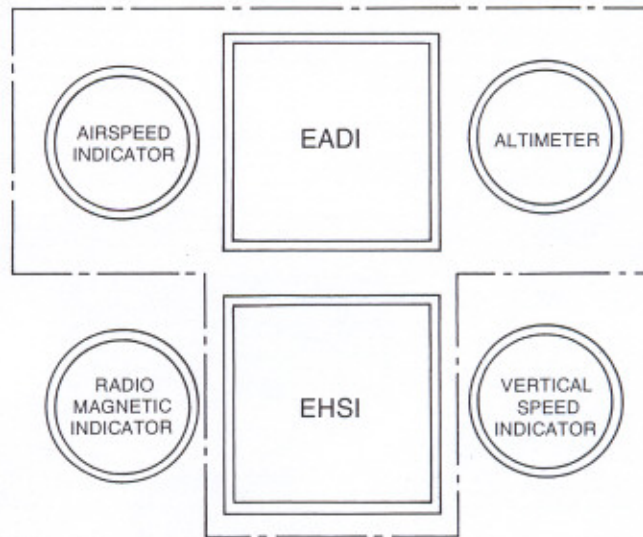
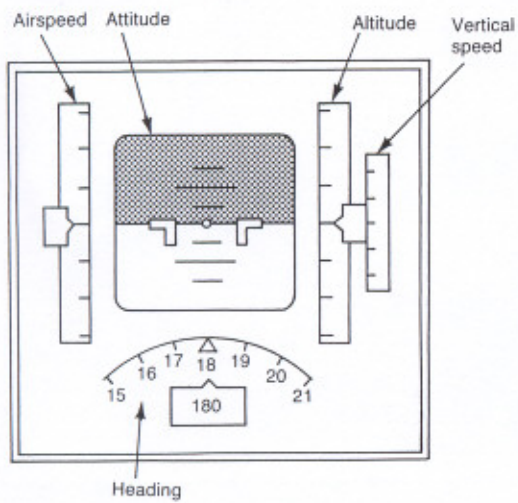


Figure 1.20 Basic 'T' grouping with electronic flight instruments.



(a)



(b)

EADI



Conventional instruments as standby

Figure 1.21 Power plant instrument grouping.

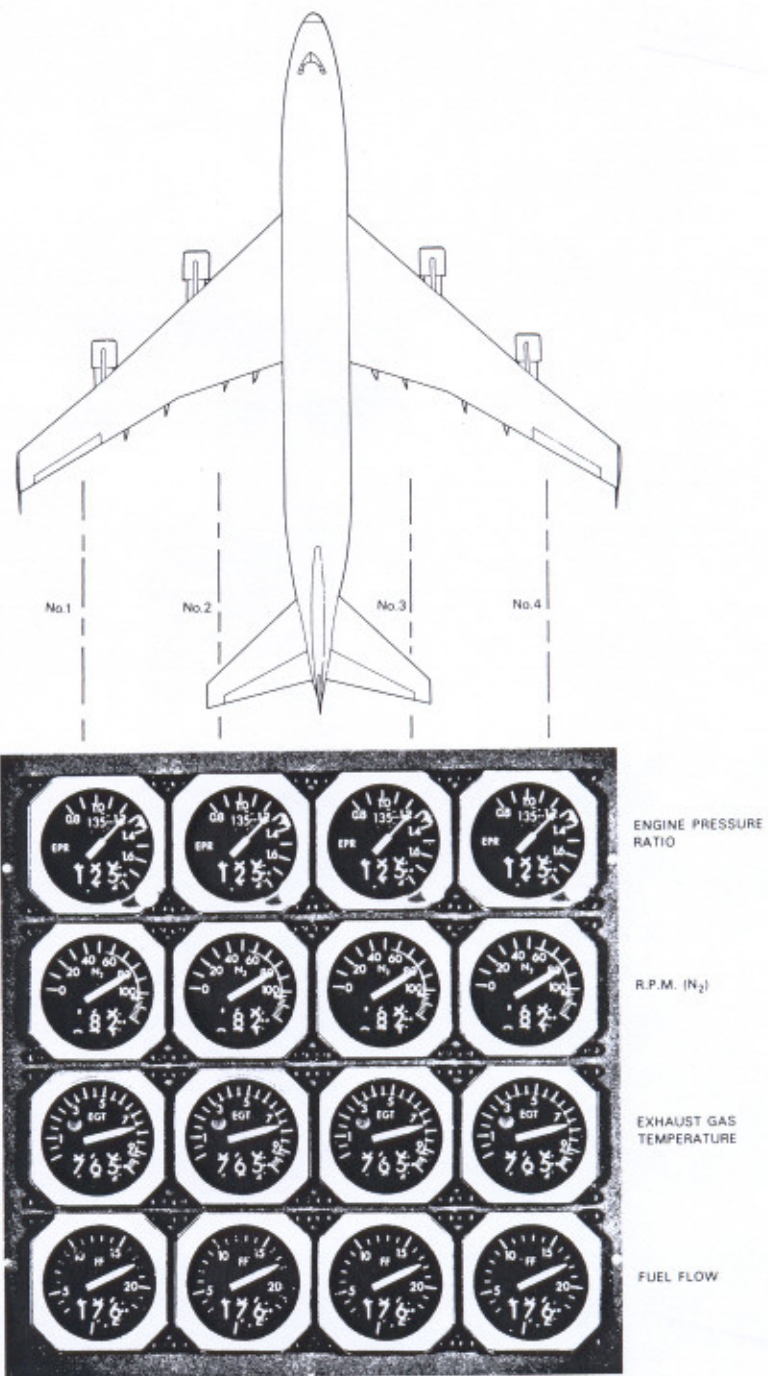


Figure 1.22 Power plant instrument grouping (solid-state displays): Primary parameters



Figure 2.1 Earth's atmosphere.

Pressure ———  
 Temperature - - - -  
 Relative density . . . .

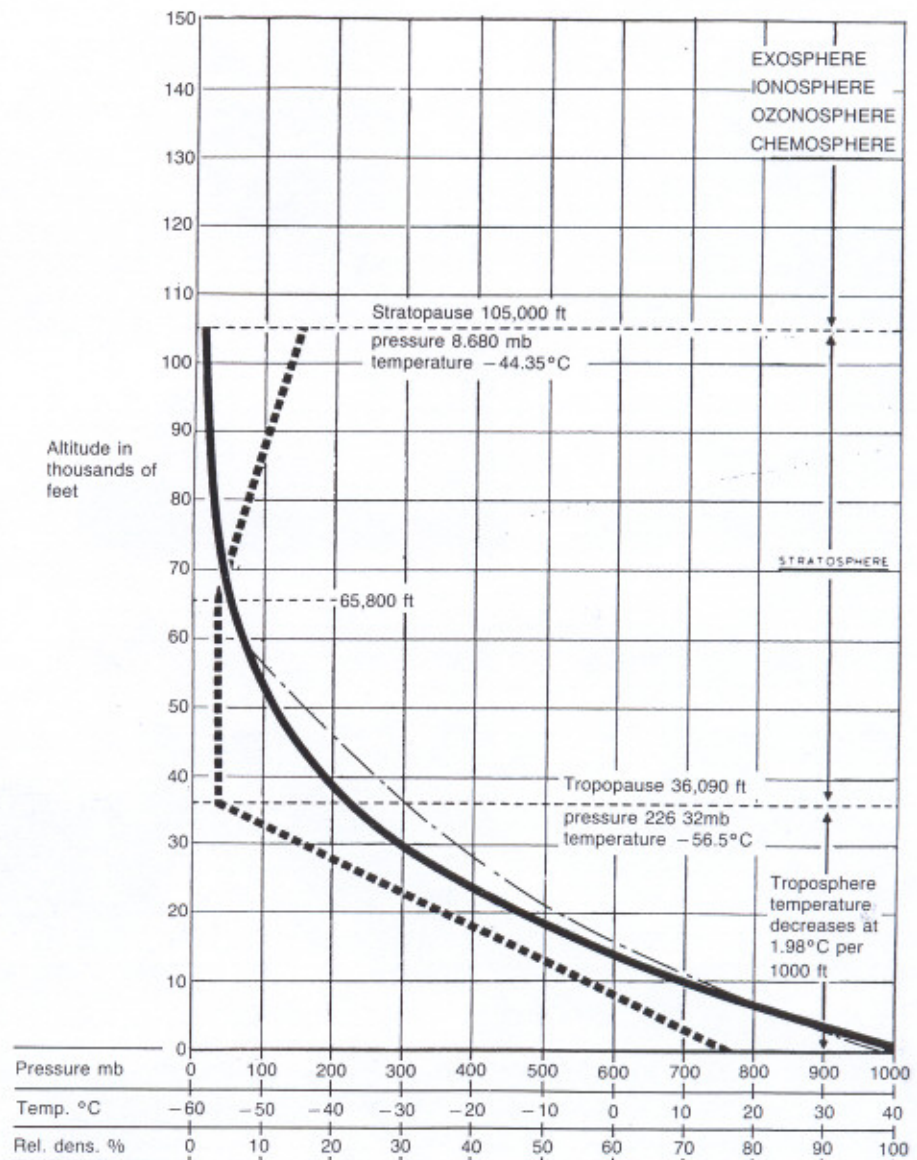
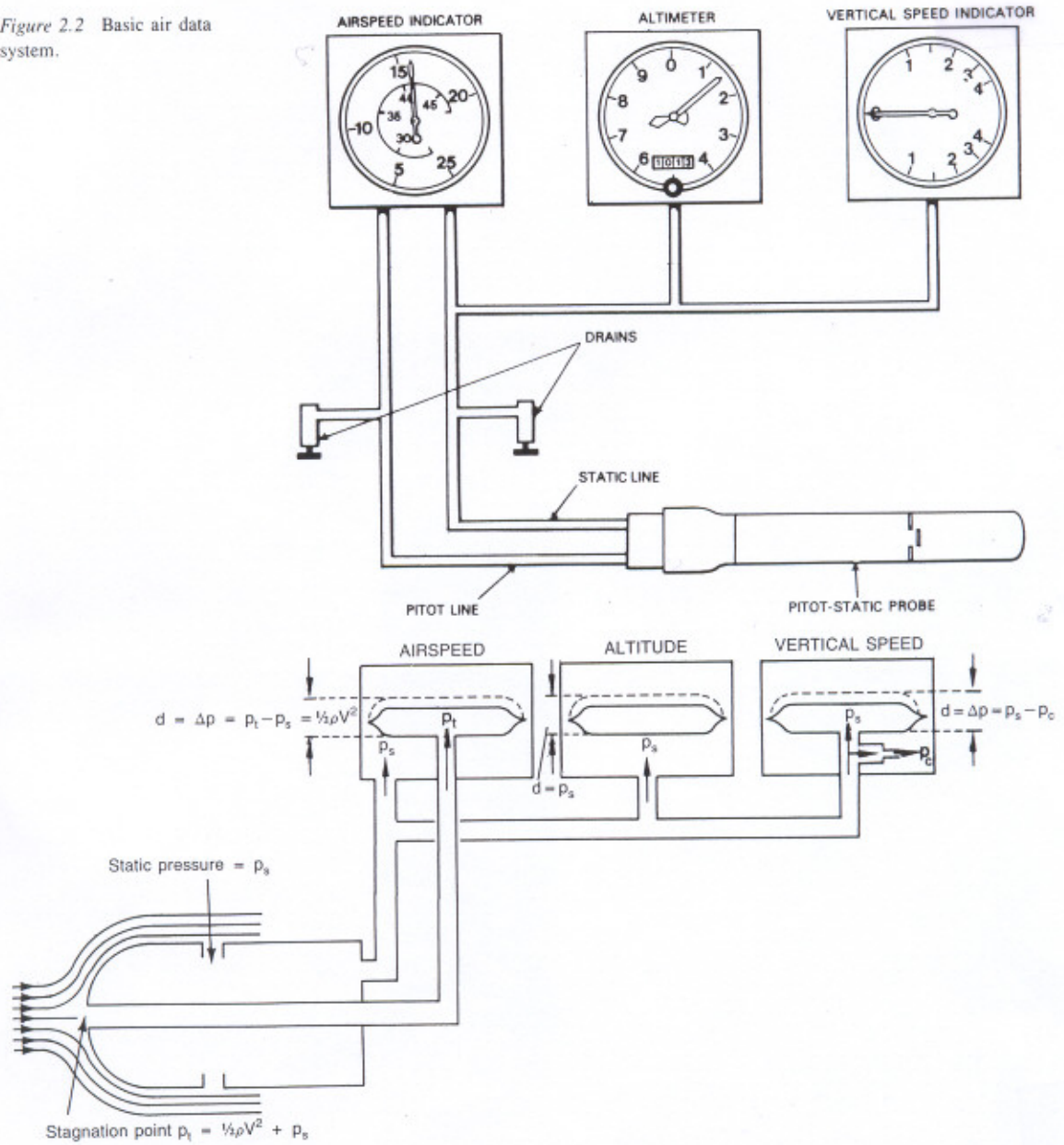
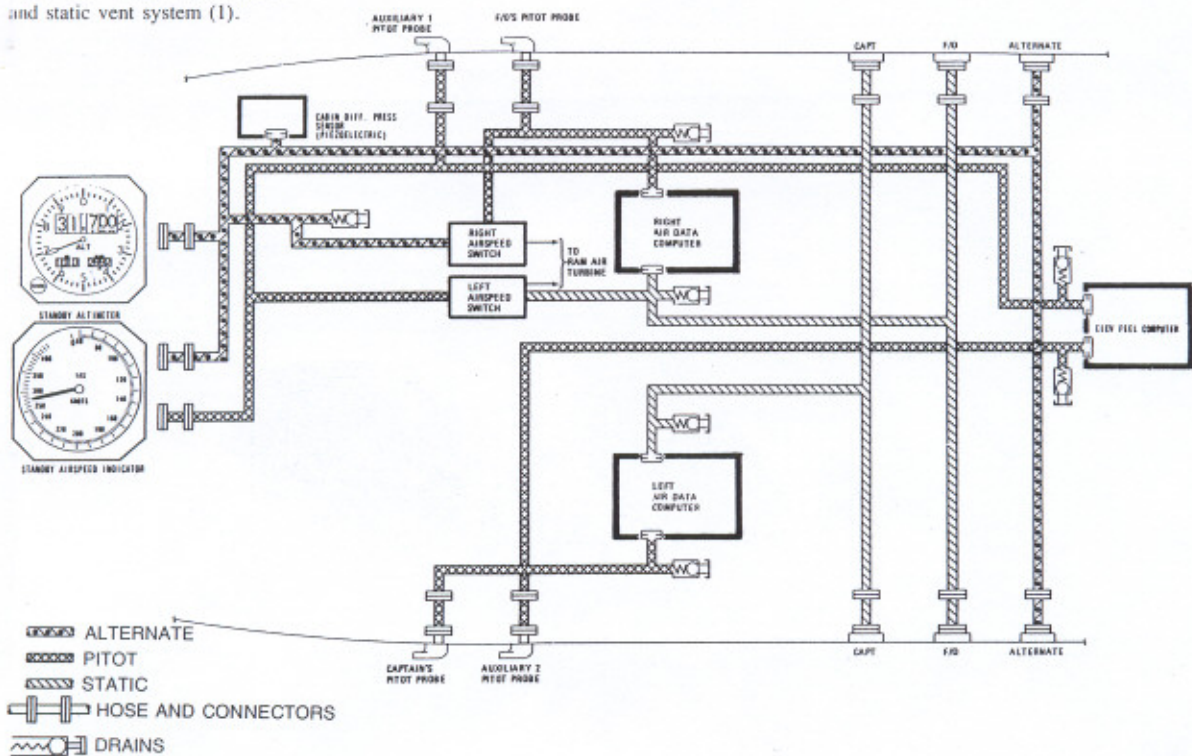


Figure 2.2 Basic air data system.



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Figure 2.3 Typical pitot probe and static vent system (1).



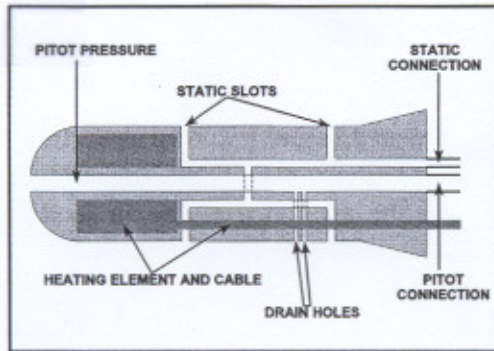


Figure 2.2. A Combined Pitot/Static Pressure Head.

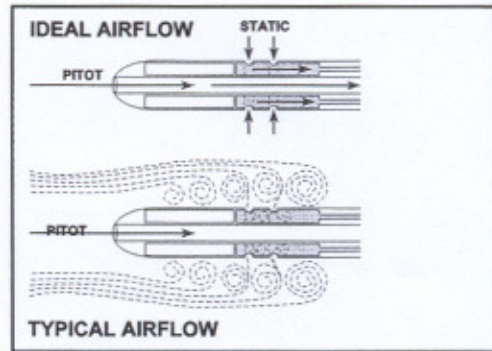


Figure 2.3. How Turbulence Affects the Value of Static Pressure

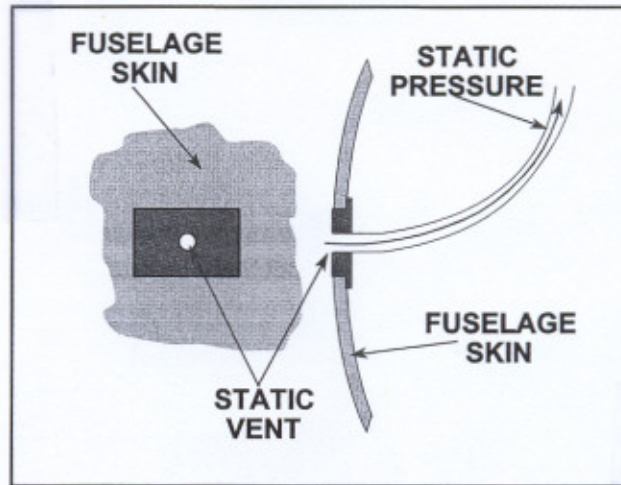


Figure 2.4. A Static Vent.

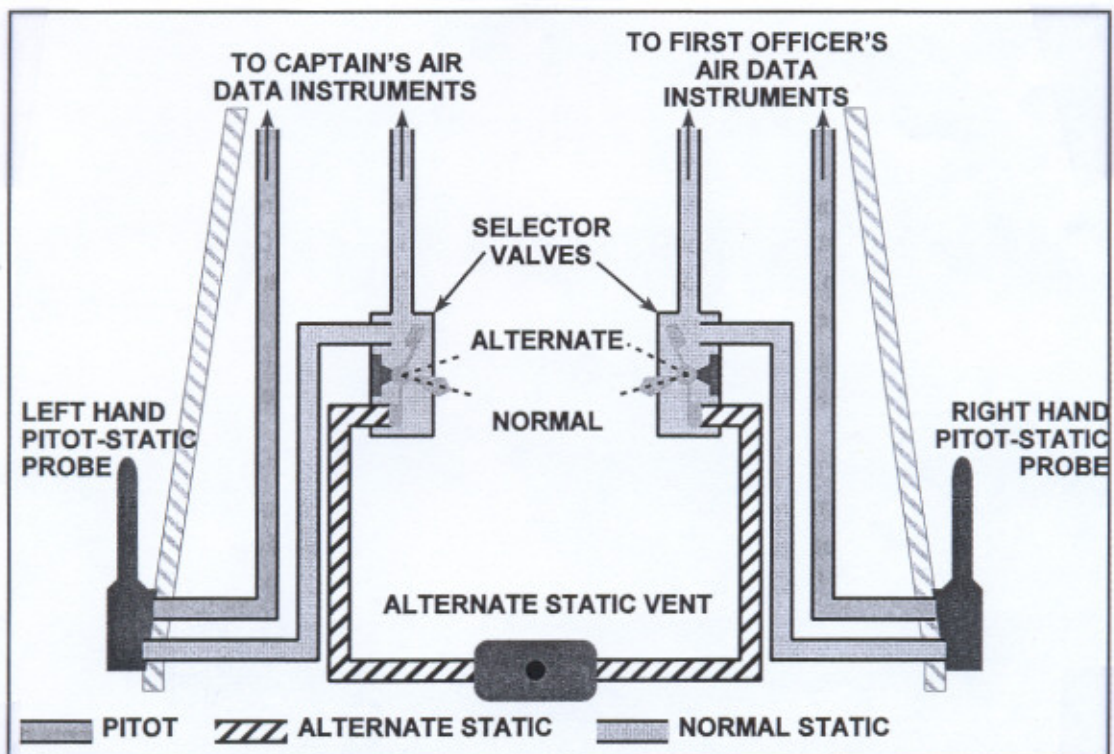
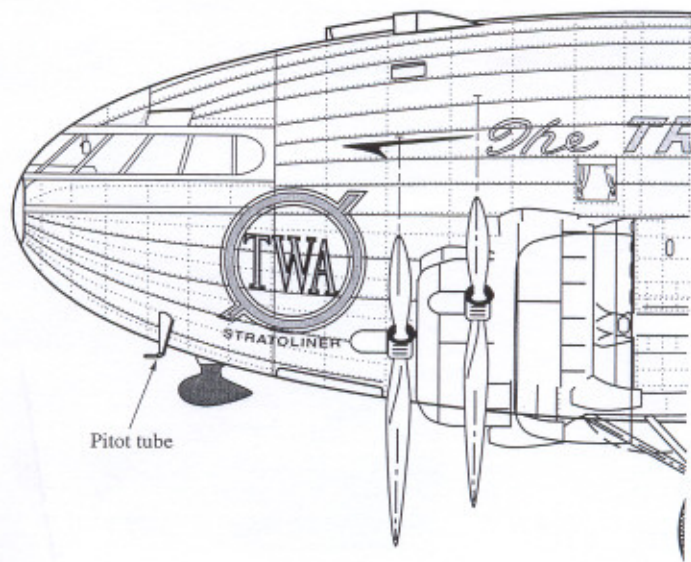
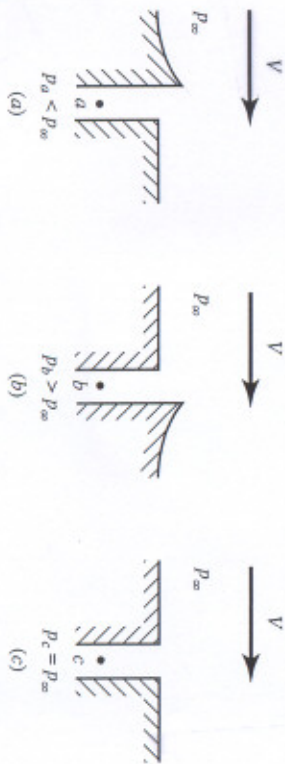


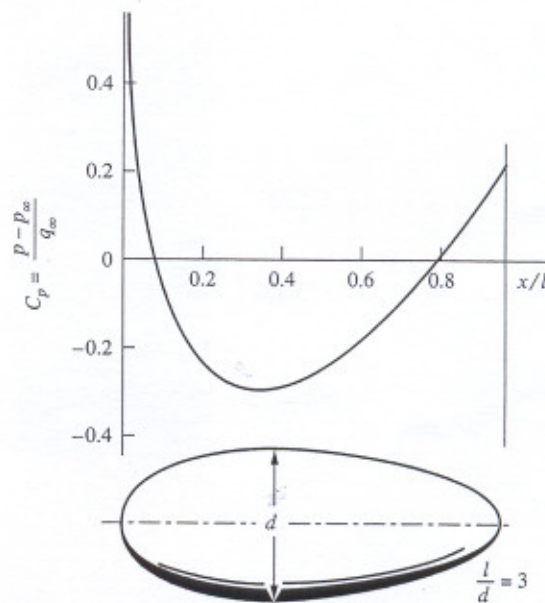
Figure 2.6. Emergency Static Source.



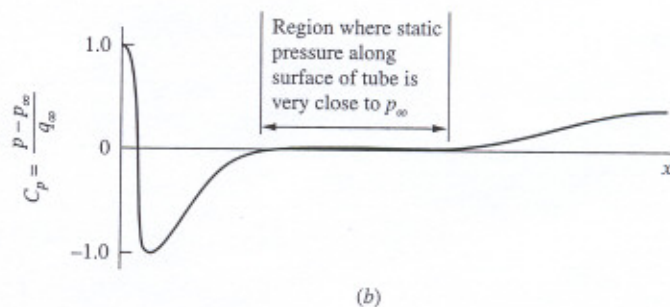
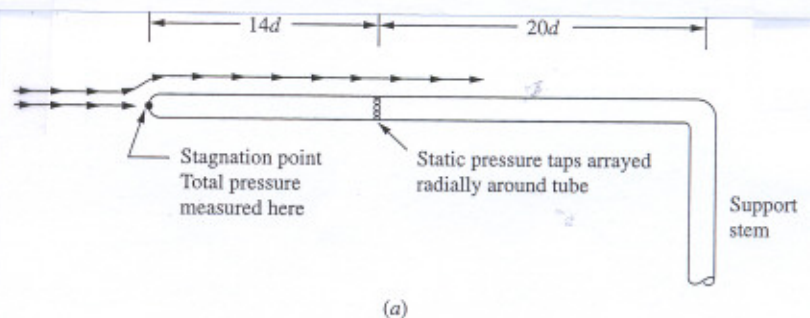
**Figure 3.16** Nose-mounted Pitot tube on the Boeing Stratoliner. (Stratoliner detail courtesy of Paul Matt, Alan and Drina Abel, and Aviation Heritage, Inc., with permission.)



**Figure 3.14** Schematic of static pressure taps. (a) and (b) Proper design. (c) Poor design.



**Figure 3.17** Experimentally measured pressure coefficient distribution over a streamlined body with a fineness



**Figure 3.13** (a) Pitot-static tube. (b) Schematic of the pressure distribution along the outer surface of the tube.

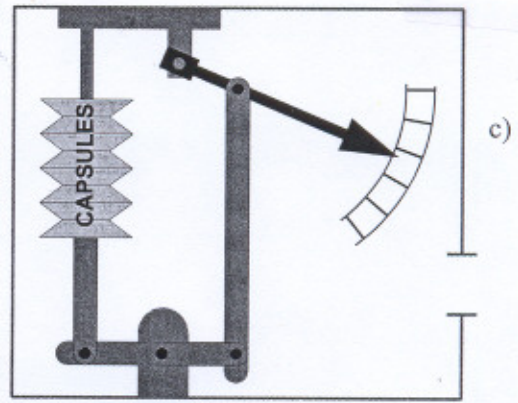
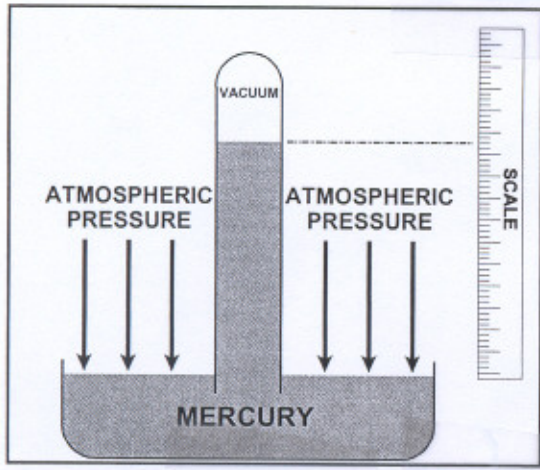


Figure 2.4. An Aneroid Barometer.

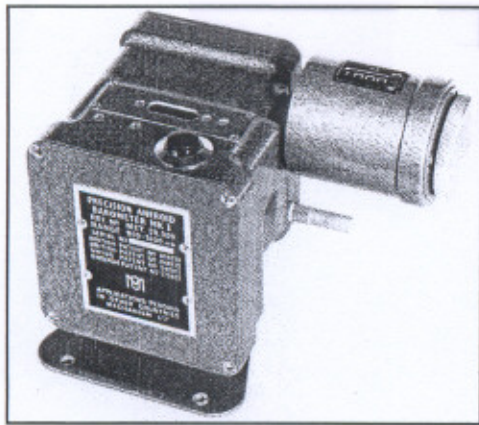


Figure 2.5. Met Office Aneroid Barometer

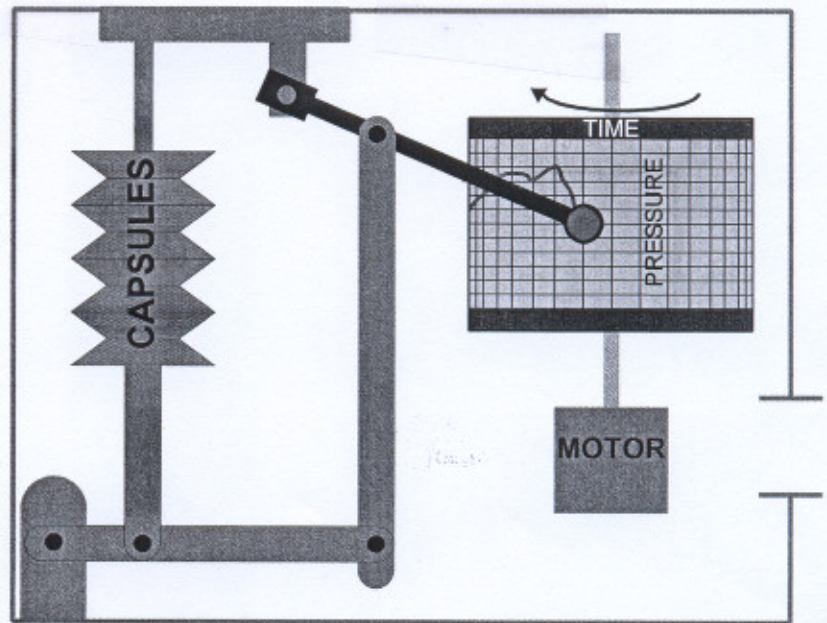
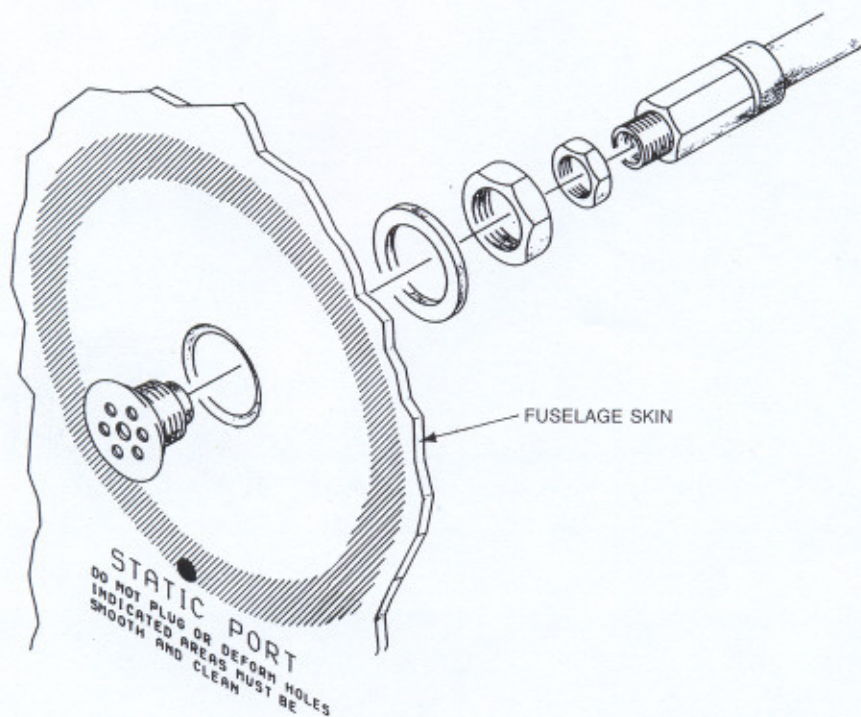


Figure 2.6. A Barograph.

Figure 2.10 Static vent or port.





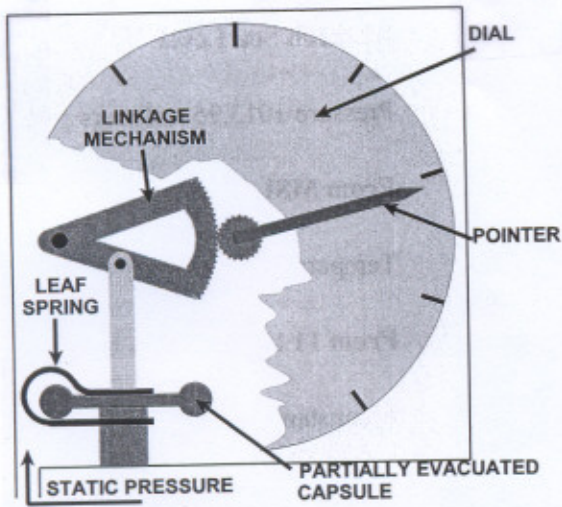


Figure 5.1. A Simple Altimeter.

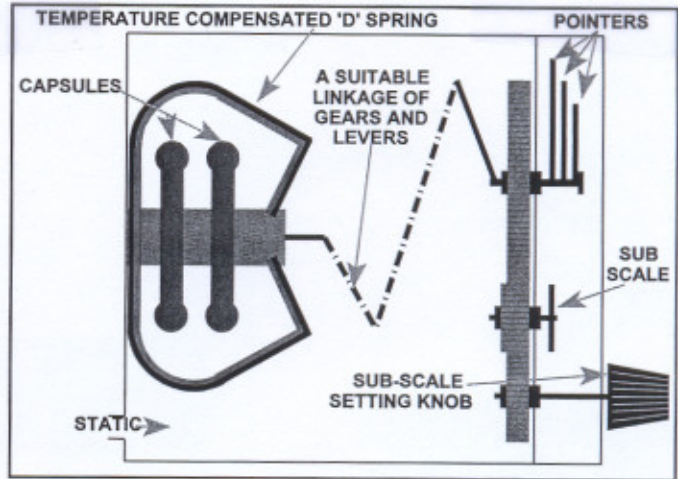


Figure 5.2. A Schematic Diagram of a Sensitive Altimeter.

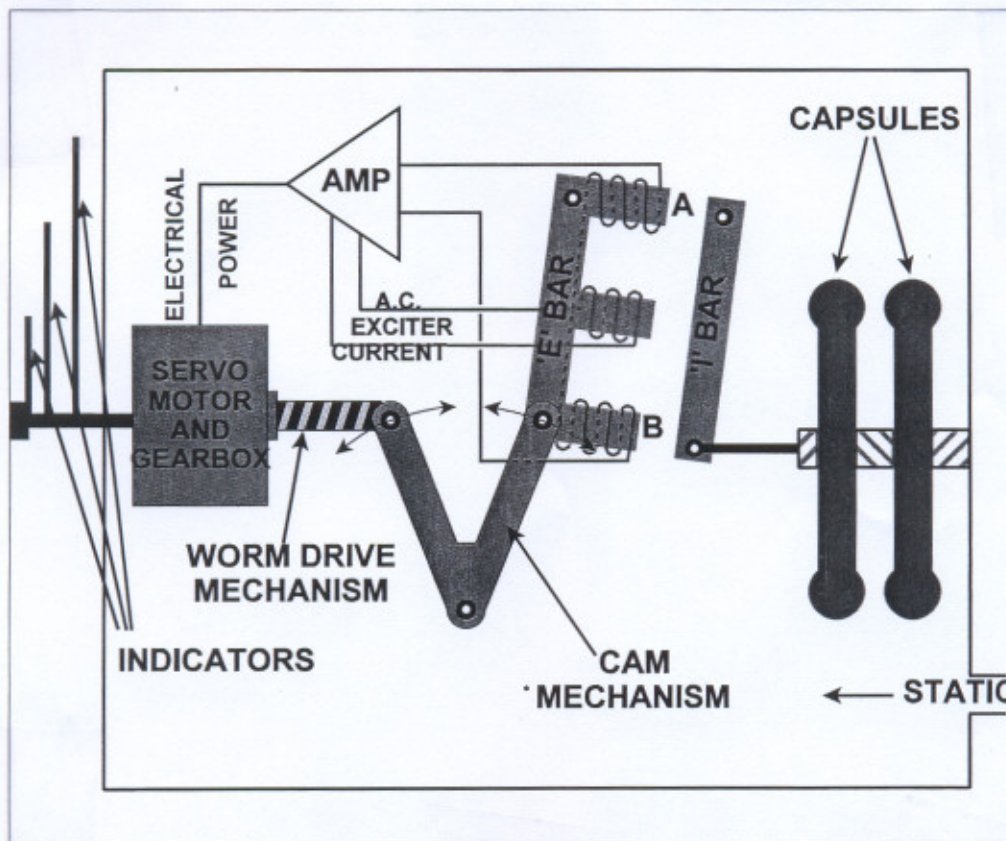


Figure 5.5. A Schematic Diagram of a Servo-Assisted Altimeter.

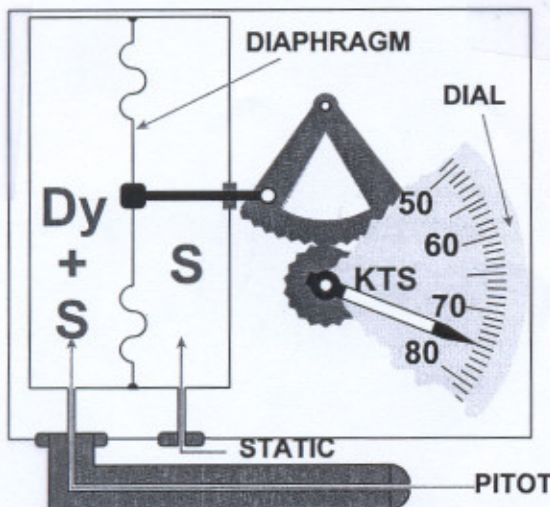


Figure 4.1. The Simple Air Speed Indicator.

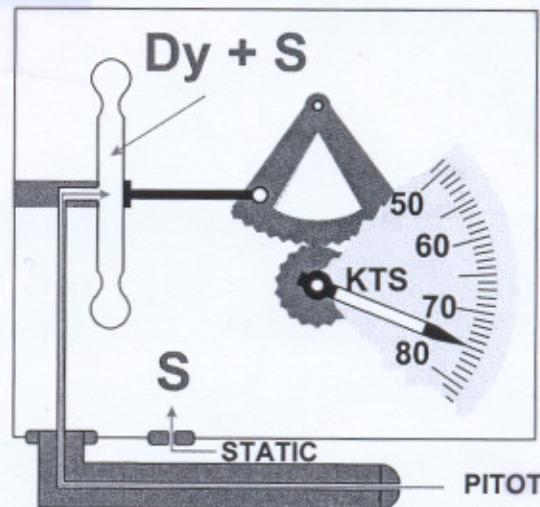


Figure 4.2. A Functional Diagram of an Air Speed Indicator.

Figure 2.22 Pneumatic-type altimeter.

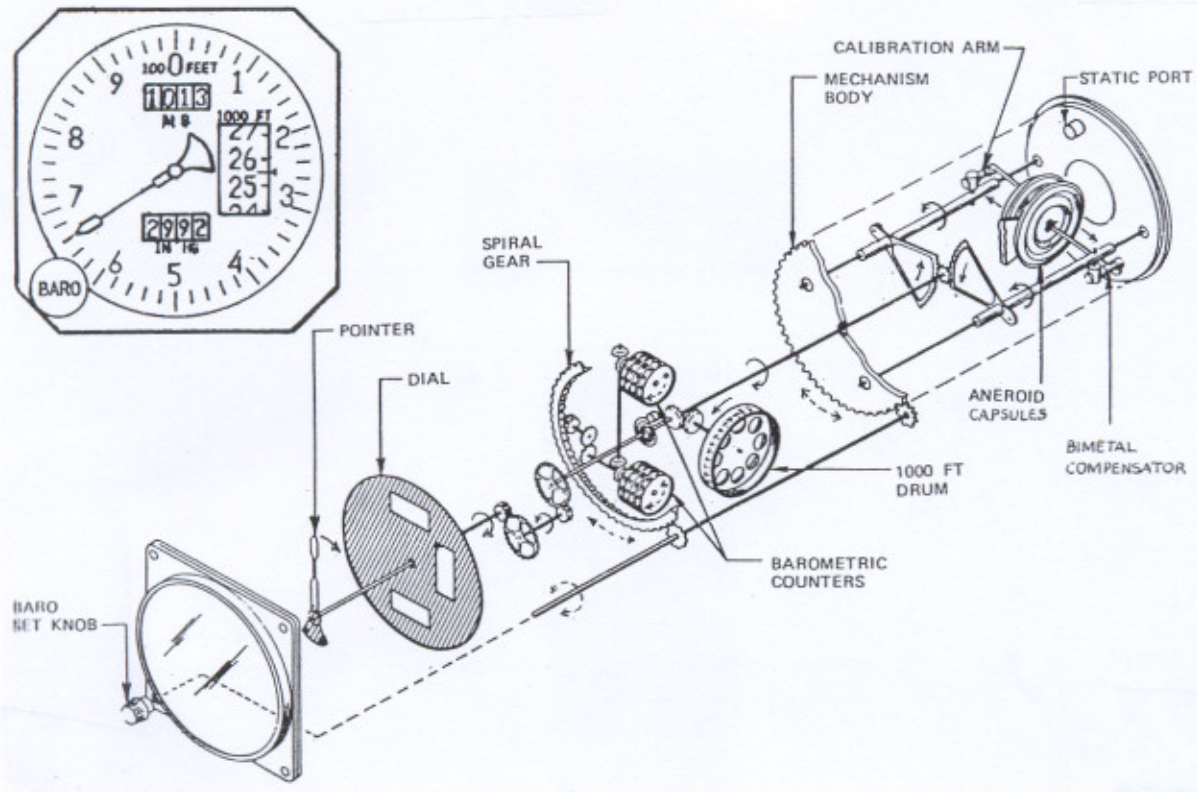
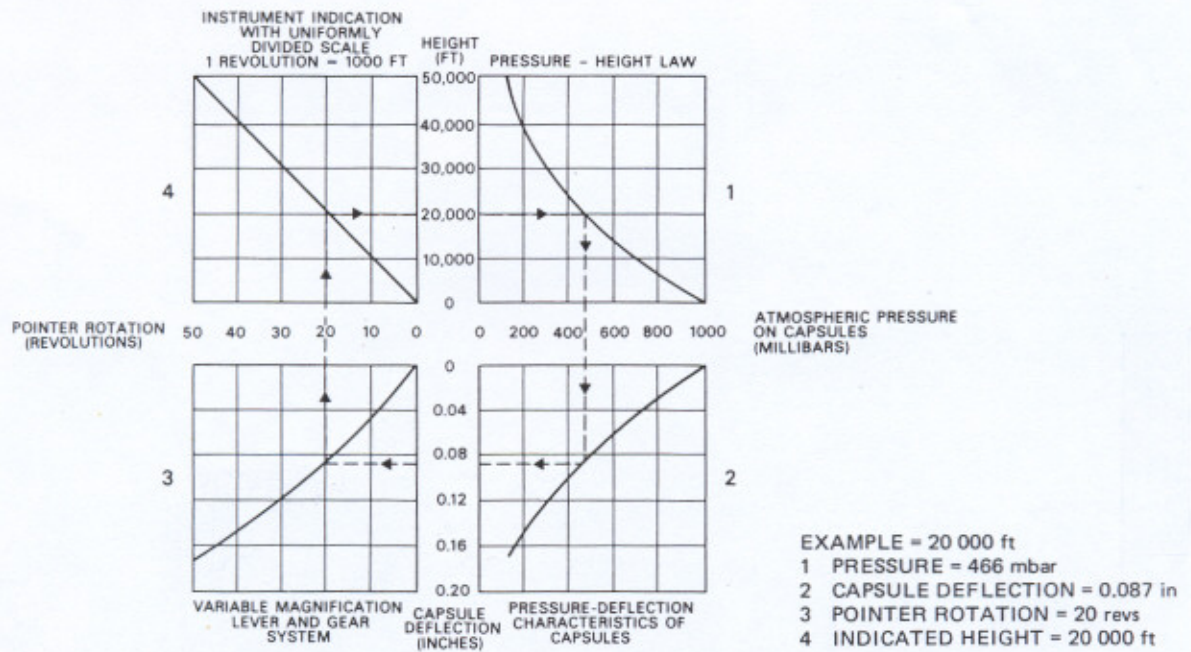
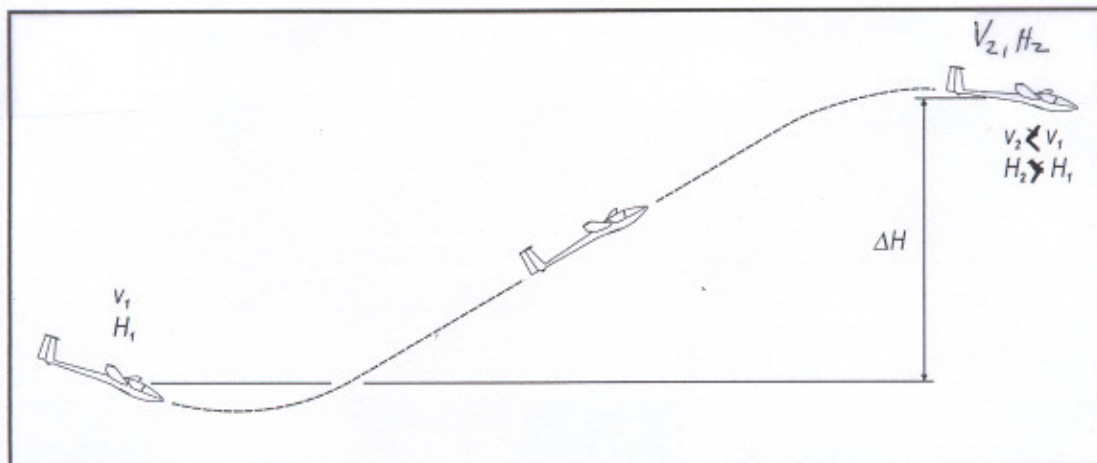
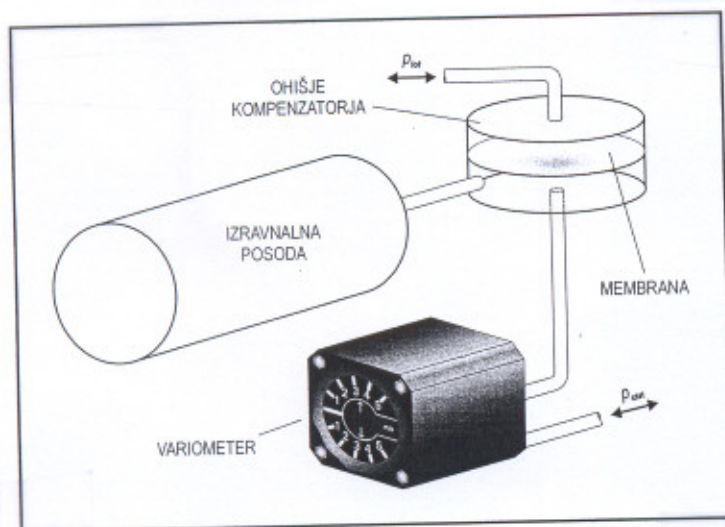


Figure 2.23 Conversion of pressure/height relationship to a linear scale.

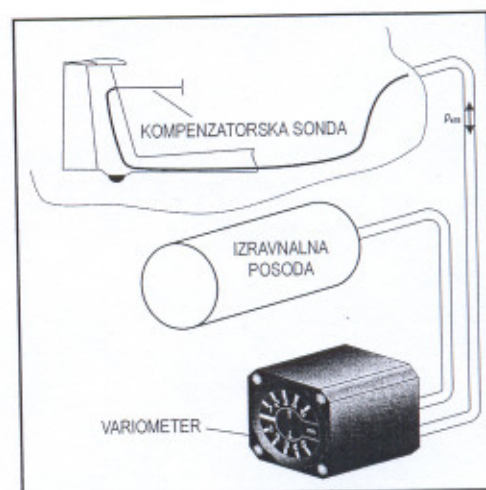




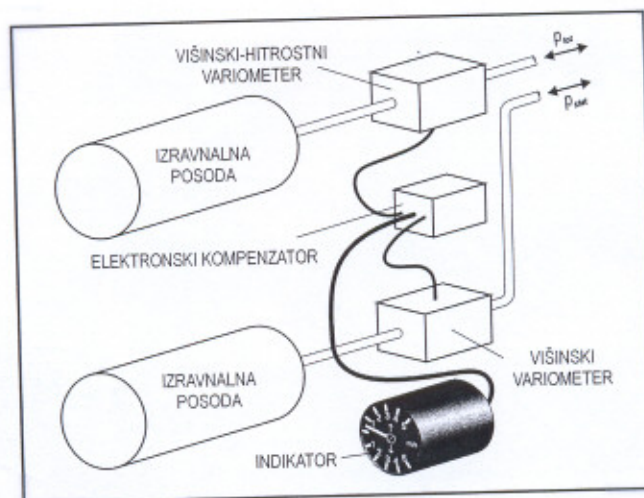
Slika 2.5: Manever zmanjšanja hitrosti



Slika 2.6: Shematski prikaz sistema kompenzacije celotne energije z membrano



Slika 2.8: Shematski prikaz sistema kompenzacije celotne energije s sondo



Slika 2.7: Shematski prikaz sistema elektronske kompenzacije celotne energije

$$\frac{d(P_{stat} - P_{din})}{dt} \propto \text{sprememba celotne energije}$$

Figure 4.3 Gyroscopic precession (2). (a) Gyro resists force; (b) transmission of force; (c) effect on rotor segments; (d) generation of precession; (e) effect of precession.

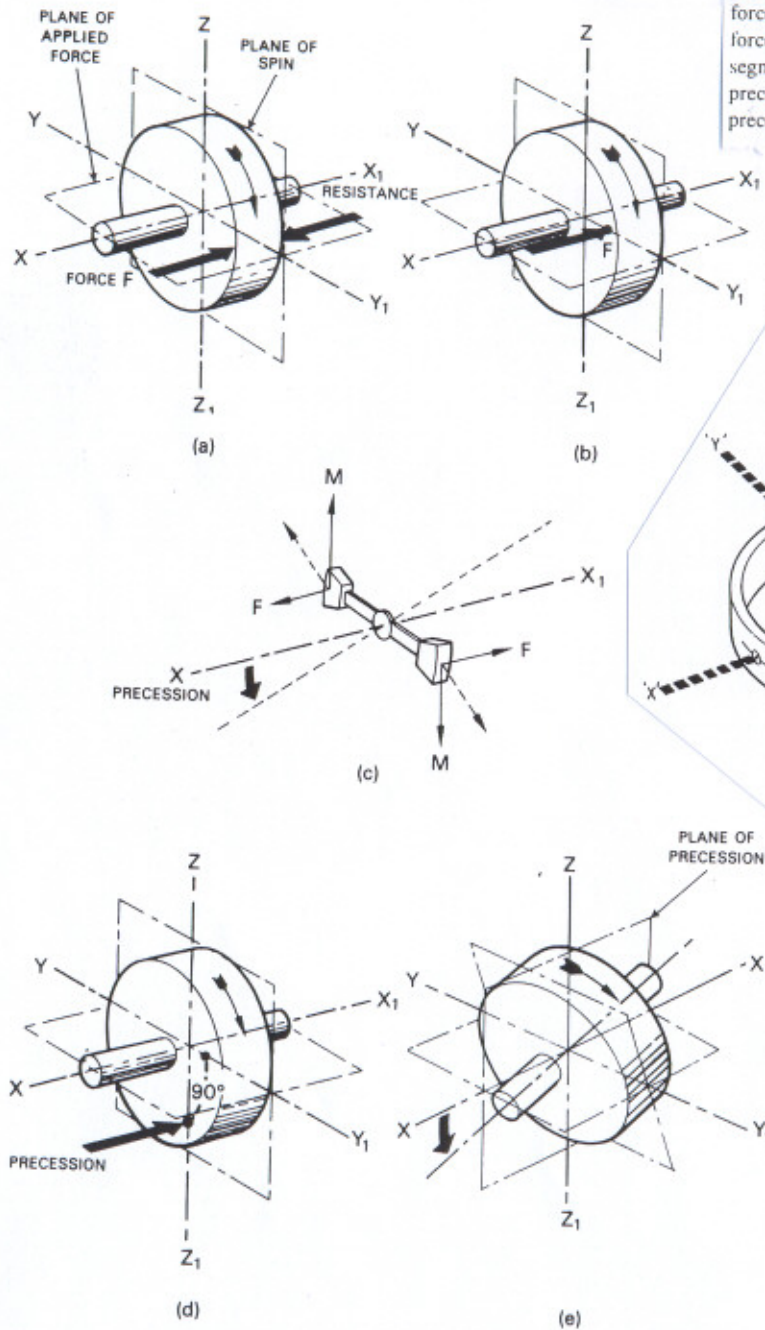


Figure 4.2 Gyroscopic precession (1). (a) Gyro resists force; (b) transmission of force; (c) effect on rotor segments; (d) generation of precession; (e) effect of precession.

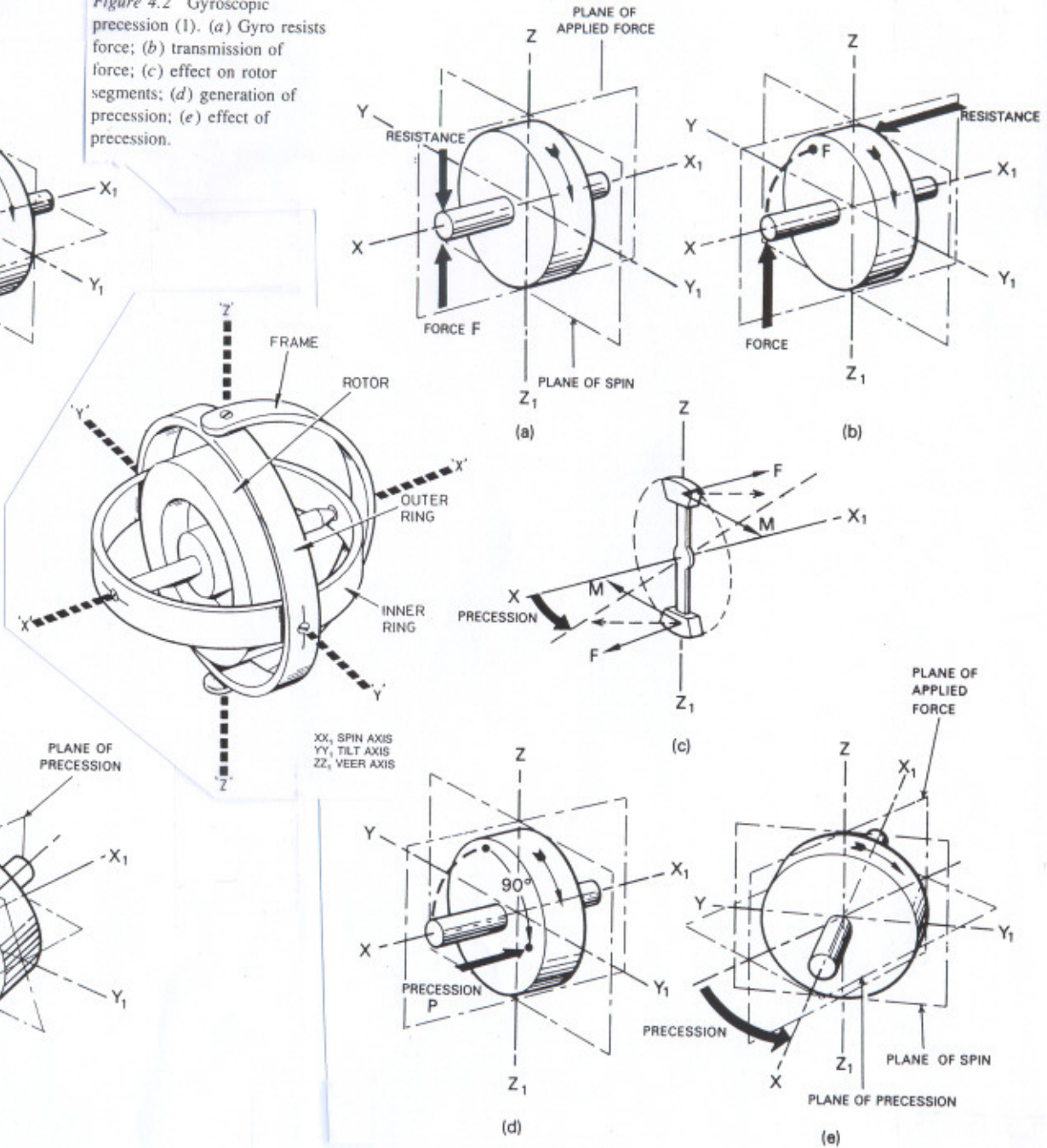


Figure 4.4 References established by gyroscopes.

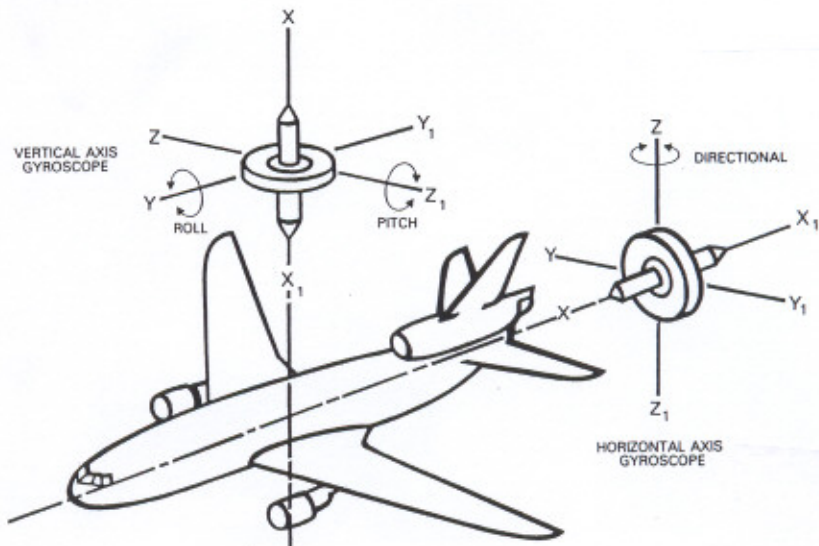


Figure 4.10 Principle of gyro horizon. 1 Symbolic aircraft, 2 rotor, 3 outer ring, 4 inner ring, 5 balance weight, 6 pivot point, 7 actuating pin, 8 horizon bar, 9 roll pointer and scale.

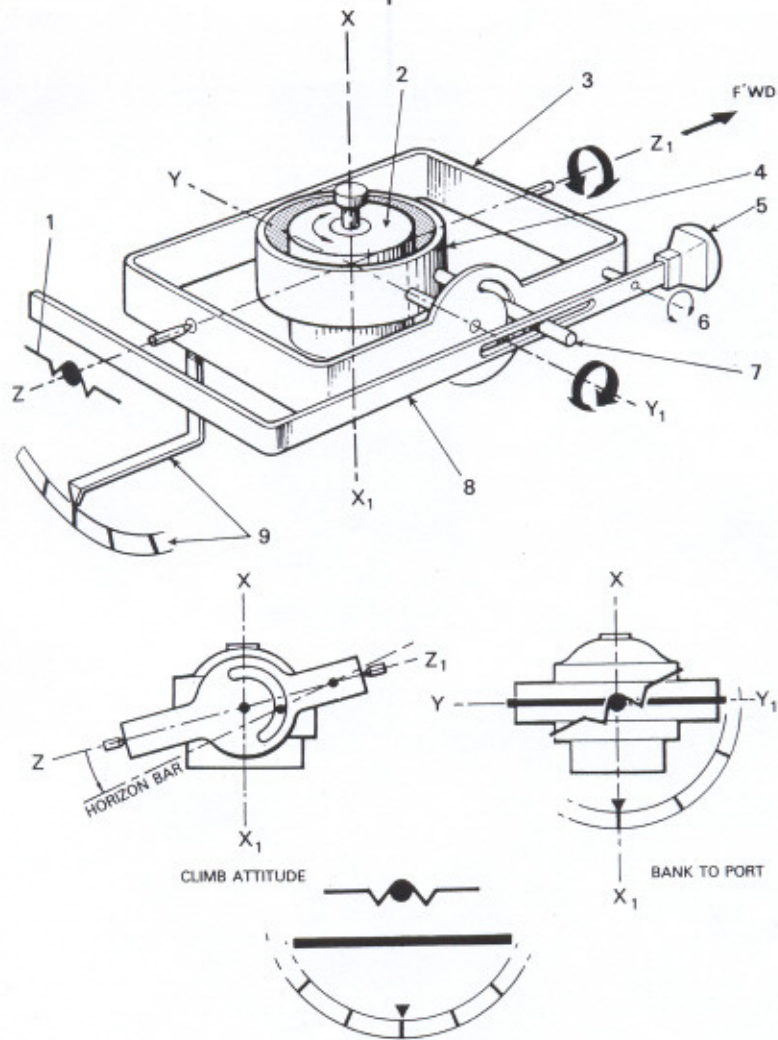


Figure 4.11 Pneumatic type of gyro horizon. 1 Sky plate, 2 inner gimbal ring, 3 resilient stop, 4 balance nut, 5 temperature compensator, 6 rotor, 7 actuating pin, 8 outer gimbal ring, 9 actuator arm, 10 pendulous vane unit, 11 buffer stops, 12 bank pointer, 13 horizontal bar.

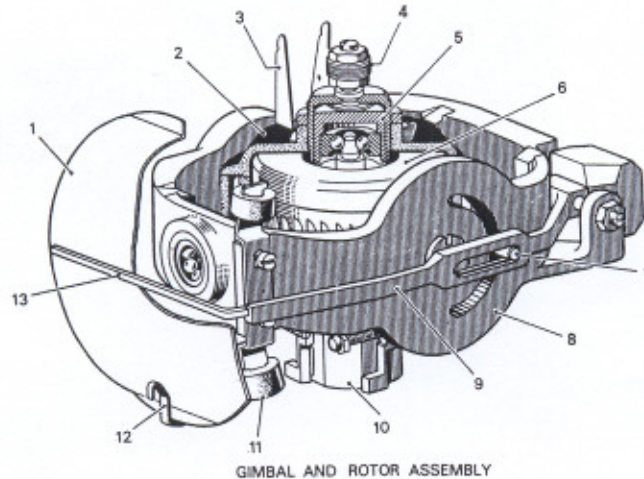
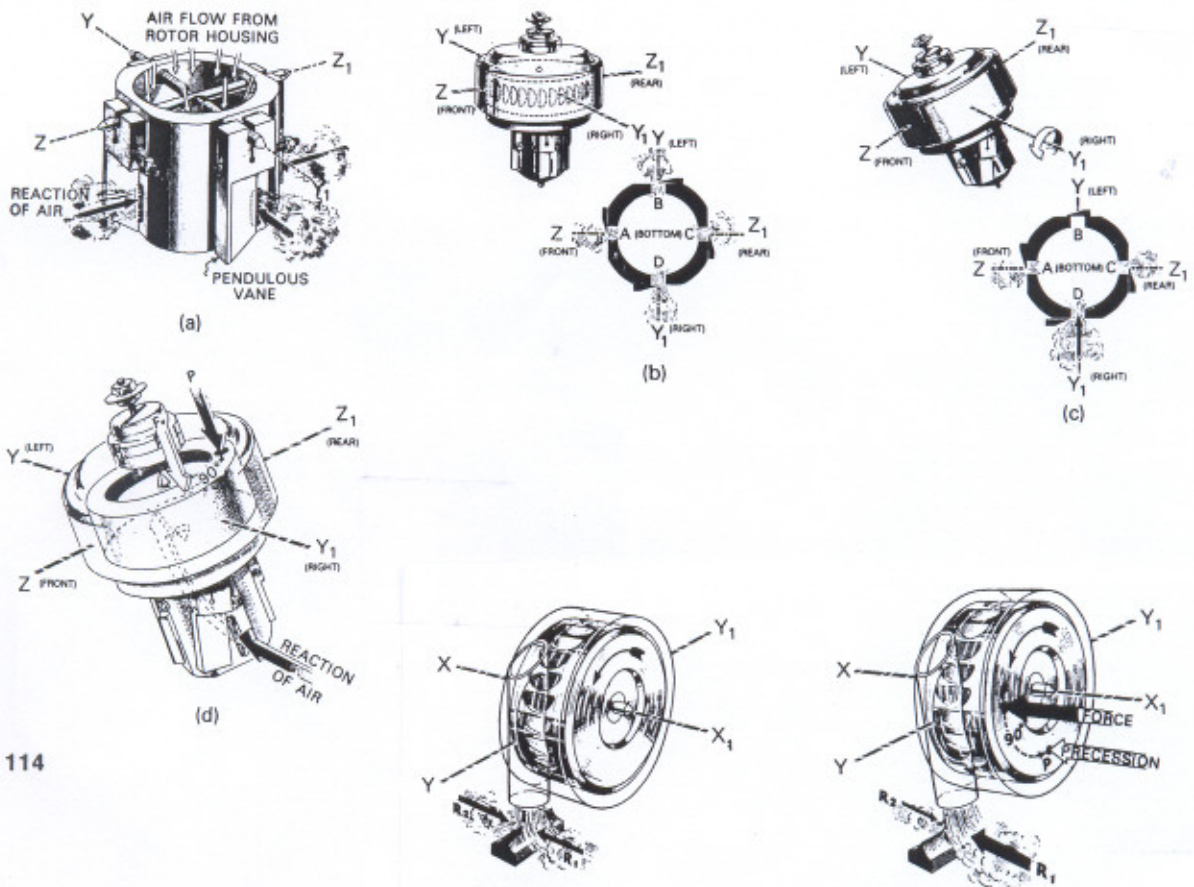


Figure 4.13 Pendulous vane unit. (a) Construction; (b) precession due to air reaction; (c) gyro in vertical position; (d) gyro tilted.



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Figure 4.14 Ball-type erection unit. (a) Gyro vertical. (b) tilted away from front of instrument; (c) precession to vertical.

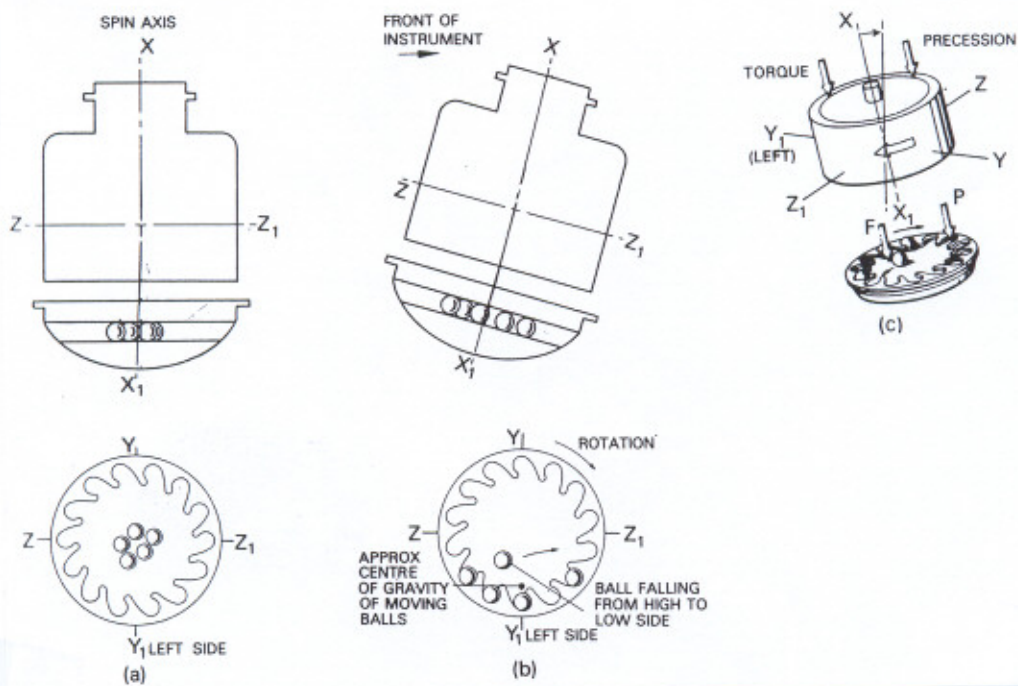
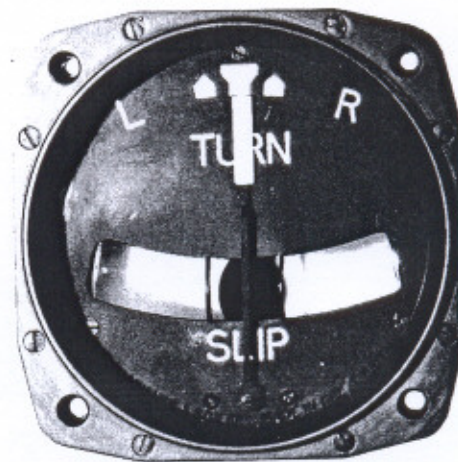
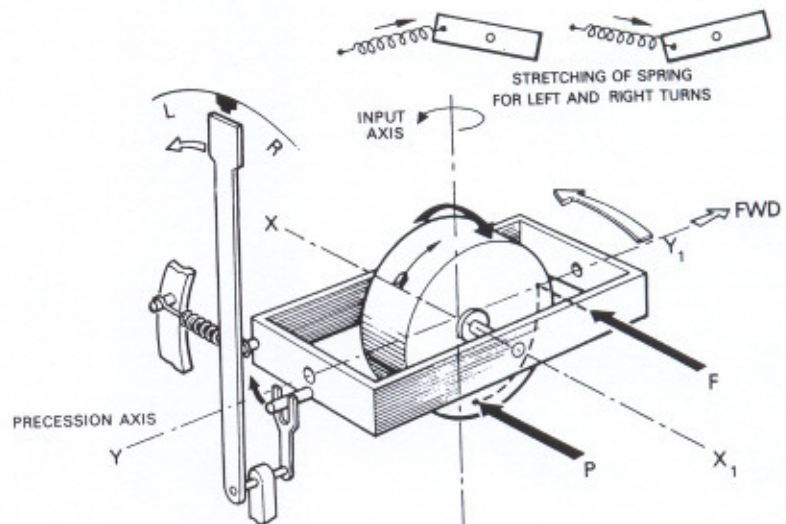
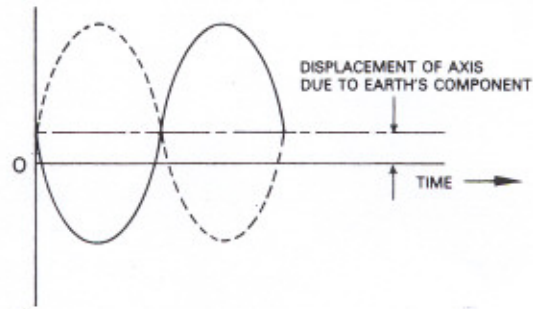


Figure 4.22 Turn-and-bank/slip indicator.



(a)





(b)

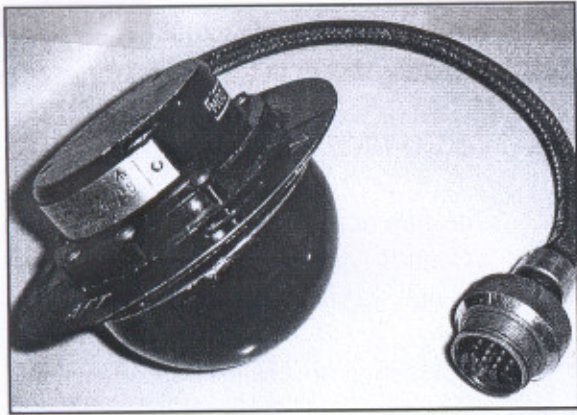
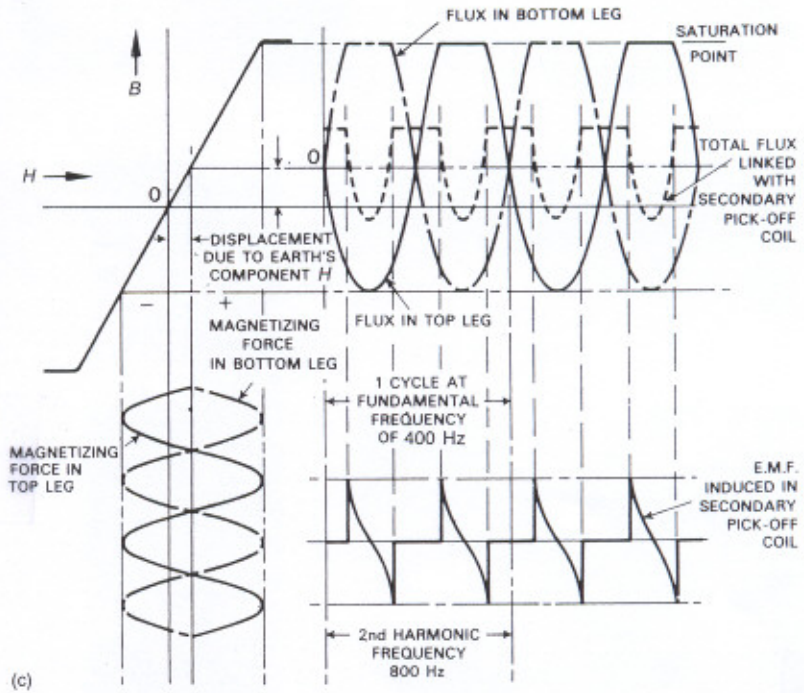


Figure 16.6. A Detector Unit.



(c)

Figure 8.7 Path of earth's field through a detector.

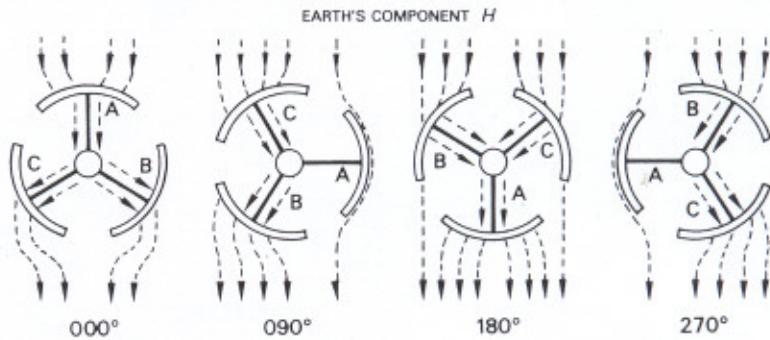
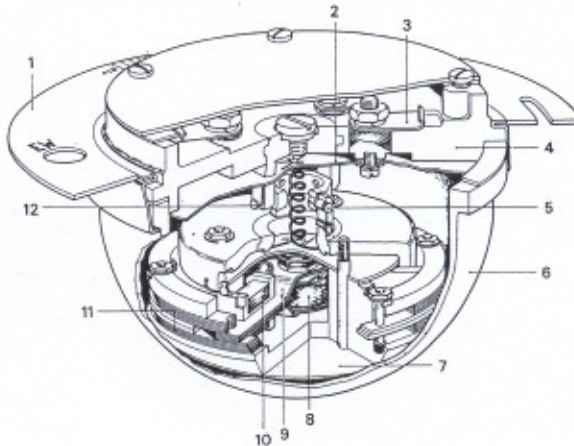


Figure 8.8 Practical detector element. 1 Mounting flange (ring seal assembly), 2 contact assembly, 3 terminal, 4 cover, 5 pivot, 6 bowl, 7 pendulous weight, 8 primary (excitation) coil, 9 spider leg, 10 secondary coil, 11 collector horns, 12 pivot.





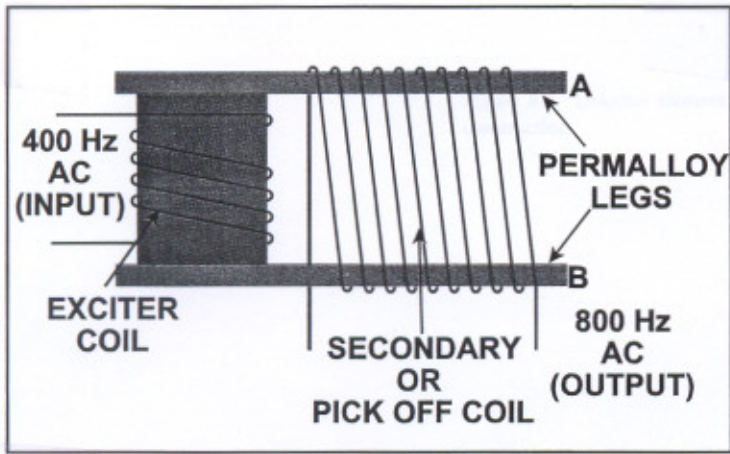


Figure 16.1. A Simplified Diagram of a Flux Valve.

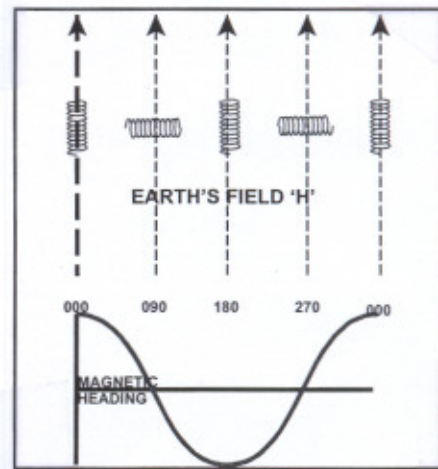
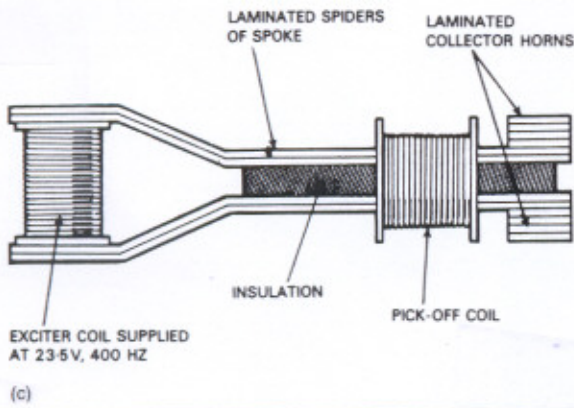
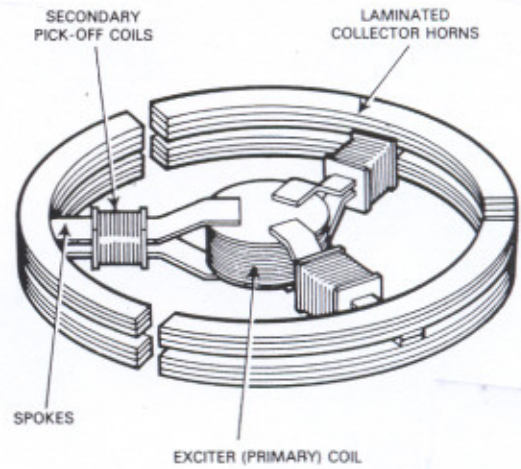


Figure 16.4.

Figure 8.5 Flux wave characteristics.

