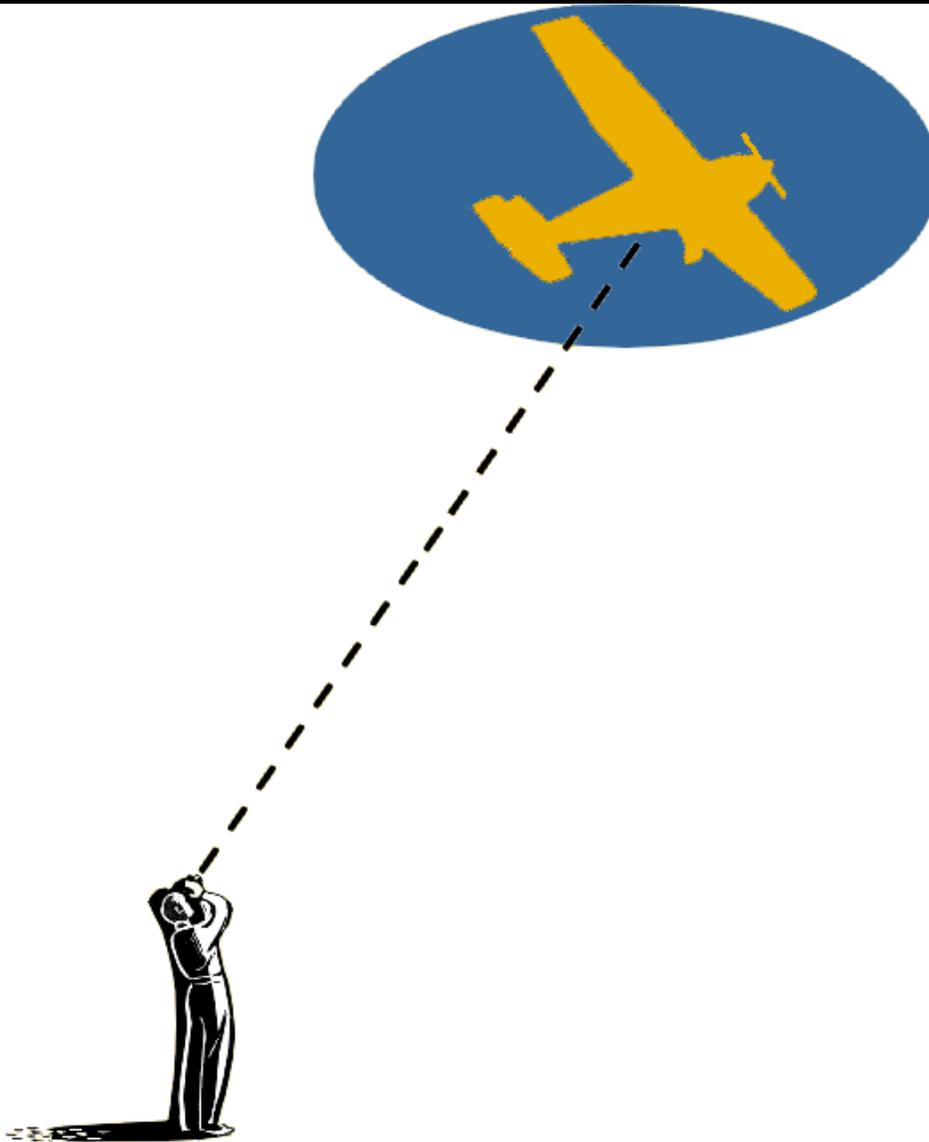


Chapter 14

AIRCRAFT RECOGNITION



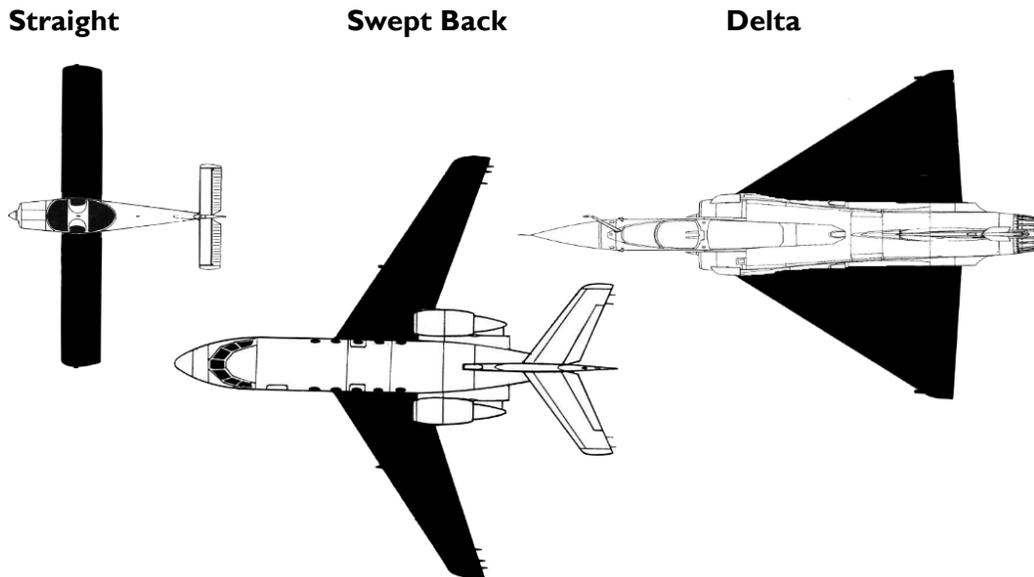
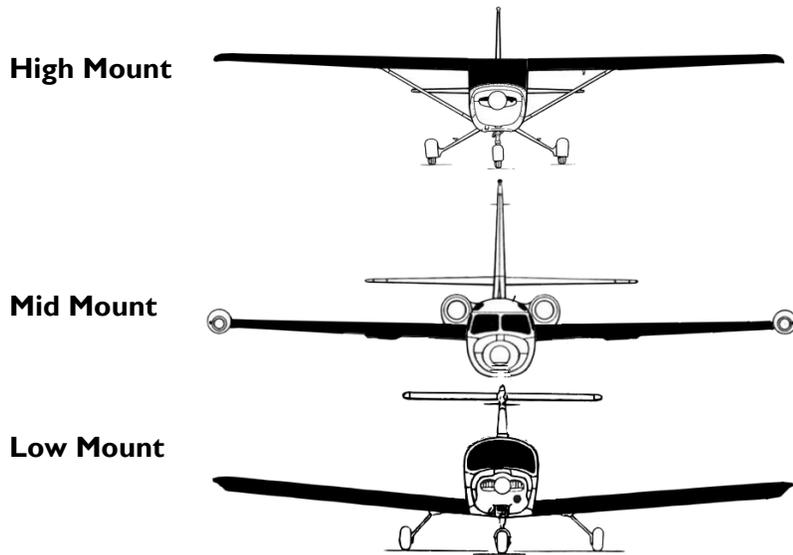
All aircraft are built with the same basic elements: wings to provide lift, engine(s) to provide motive power, a fuselage to carry the payload and controls, and a tail assembly which usually controls the direction of flight. These elements differ in shape, size, number, and position. The differences distinguish one aircraft type from another. An instructor can isolate the individual components for description and study as separate recognition and identification features, but it is the composite of these features that must be learned to recognize and identify an aircraft.

Based on the visual aircraft recognition (VACR) standardization agreement signed in 1984 between allied countries, we will be going over the WEFT features. That's the wing, engine(s), fuselage, and tail features of aircraft.

Wings

Fixed wings are attached permanently to the body of the aircraft and cannot be moved. Until the development of the helicopter, all aircraft had fixed wings. The usual three wing positions for fixed-wing aircraft are high-, mid-, and low-mounted.

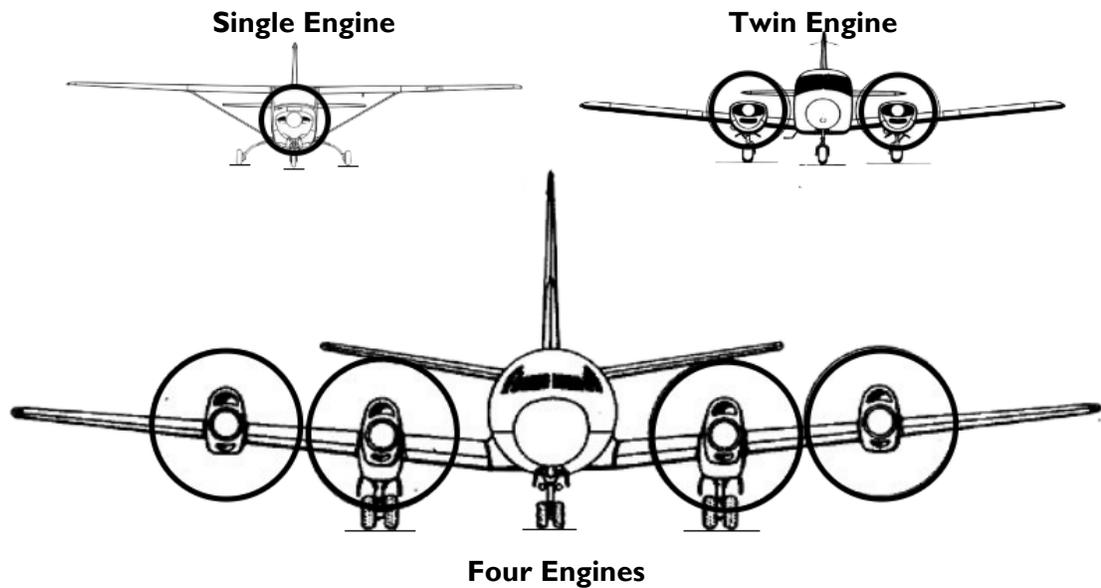
There are many variations and shapes of wings. There are four basic wing shapes: straight, swept-back, delta, and semi delta.



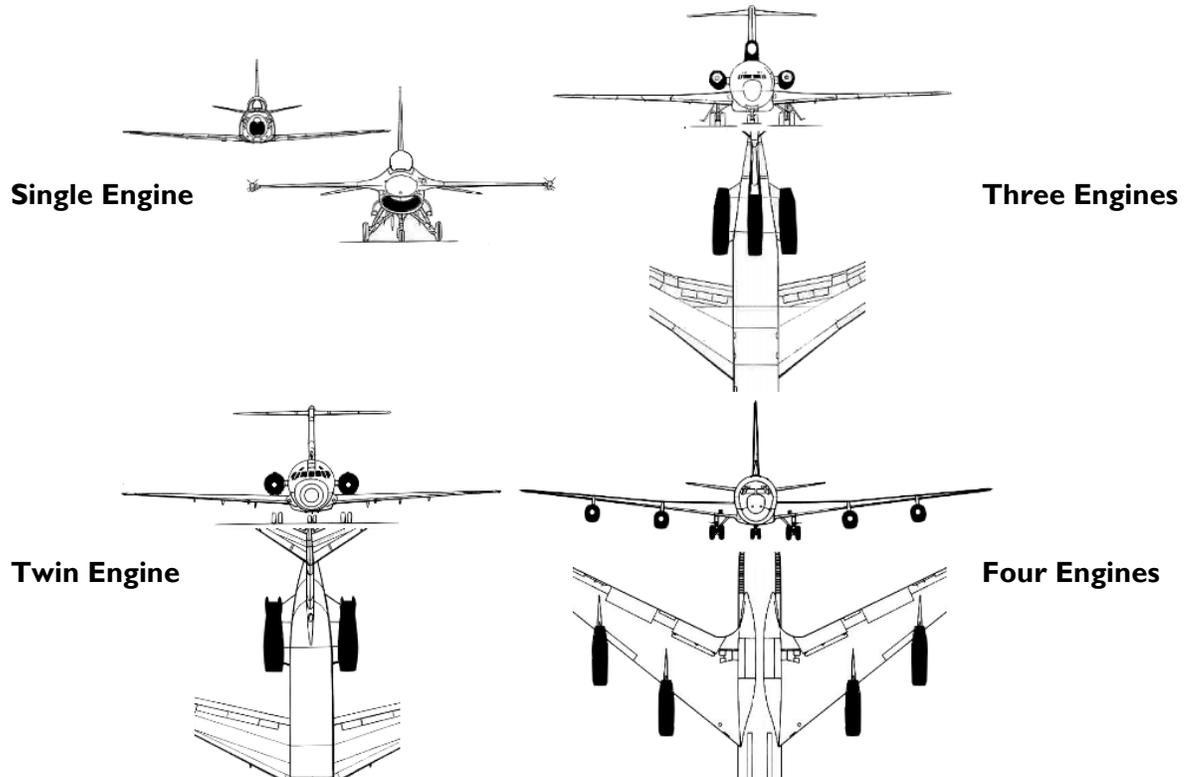
Engines

Recognition and identification features for aircraft engines are type, number, and location. Other features include the air intake and exhaust locations. Of significant interest is whether an aircraft is propeller-driven or jet-powered.

Aircraft that have engines, which drive propellers, are propeller-driven. Those driven by reaction engines are jets. Aircraft engines, piston or turboprop, are located on the nose for single-engine aircraft and on the leading edges of the wings for most multiengine aircraft. The following illustration shows examples of propeller-driven aircraft.



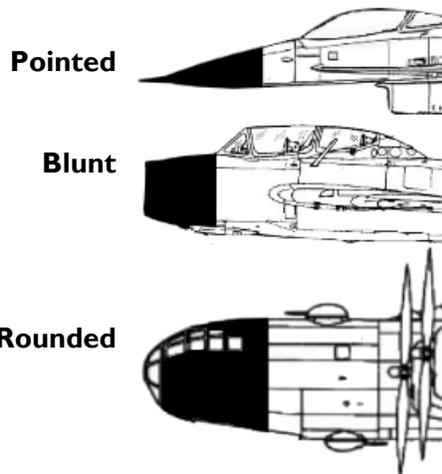
Generally, single-engine jet aircraft have the engine mounted inside the rear section of the fuselage.



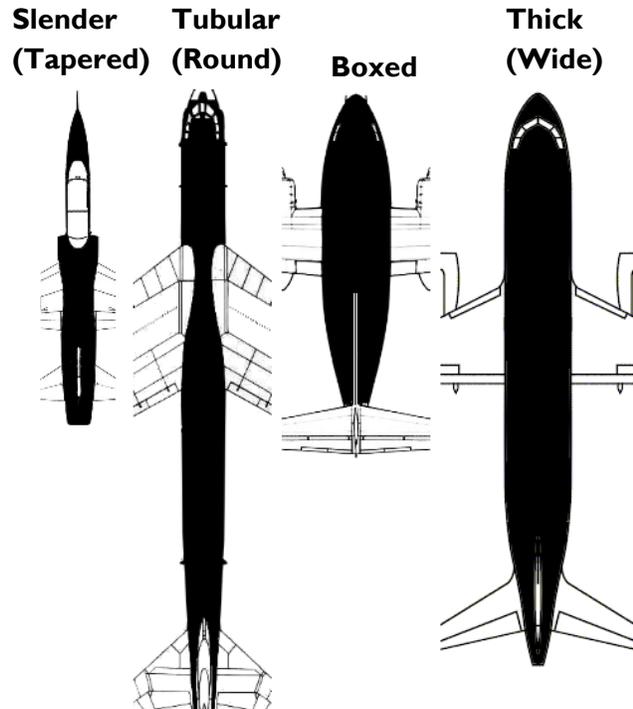
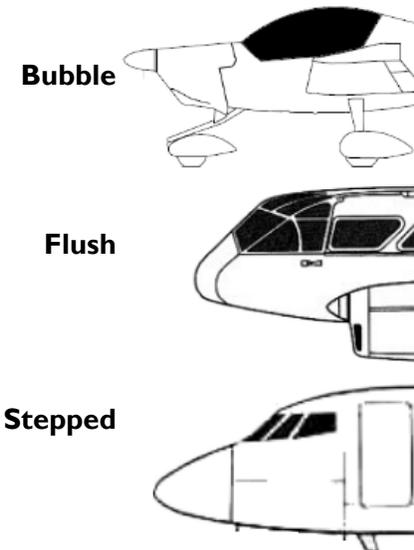
Fuselage

Like other features, the fuselage (body) comes in many shapes and sizes. There are three main sections of the fuselage: nose, mid, and rear. The cockpit or cabin is also a part of the fuselage, as well as special fuselage features. See the illustration to the right.

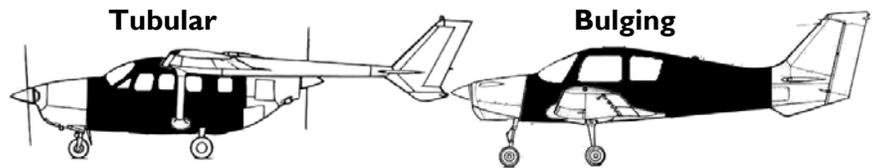
The front or forward portion of the aircraft is the nose section. See illustration below.



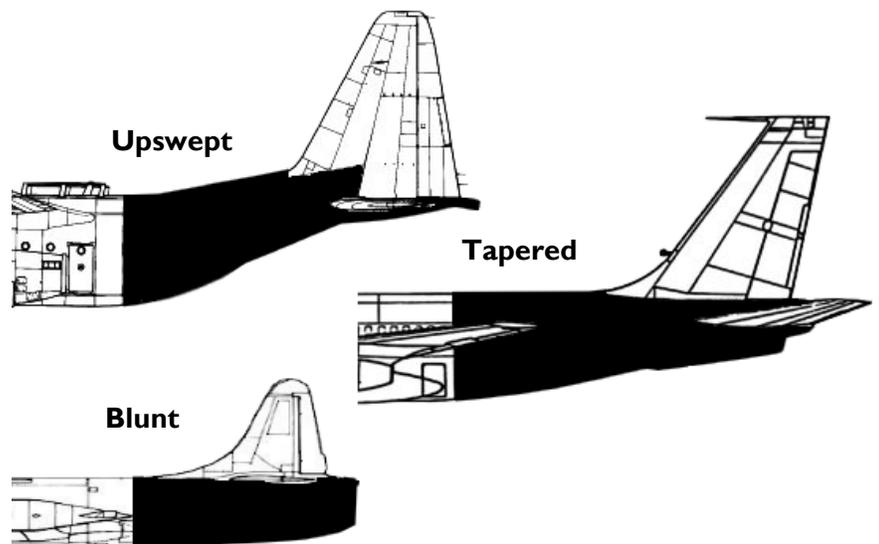
The cockpit or cabin of an aircraft is the compartment that accommodates the pilot and or other personnel. It is usually covered by a transparent canopy or glassed-in enclosure. At times, the terms cockpit, cabin, and canopy are interchanged.



The midsection does not include the wings, nose, or tail section. This is a good recognition and identification feature since is generally the largest part of the aircraft. See illustrations below.



The rear of the fuselage where the tail assembly is attached is the rear section. See illustration below.



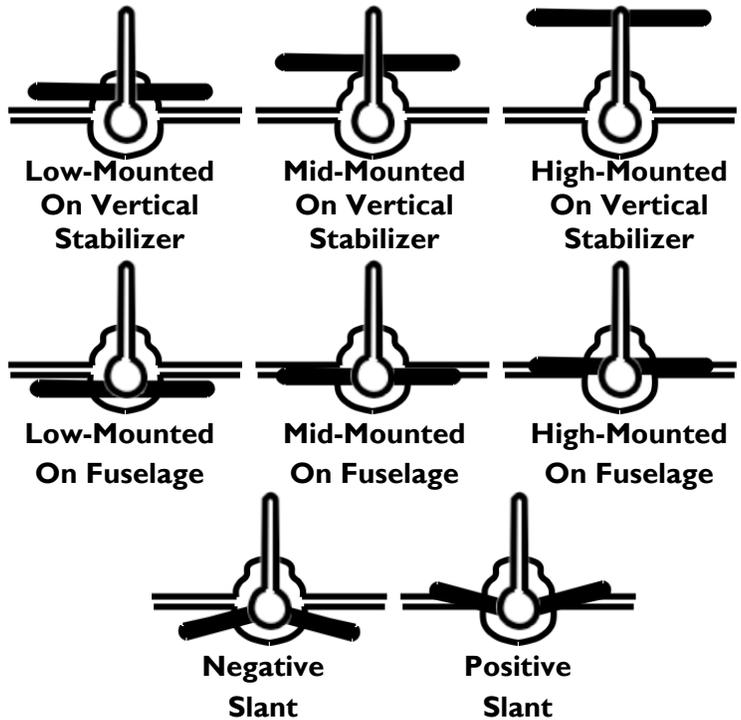
Tail

The tail structure consists of the horizontal and vertical stabilizer. Tail structures are classified according to the shape of stabilizers, number, and mounting.

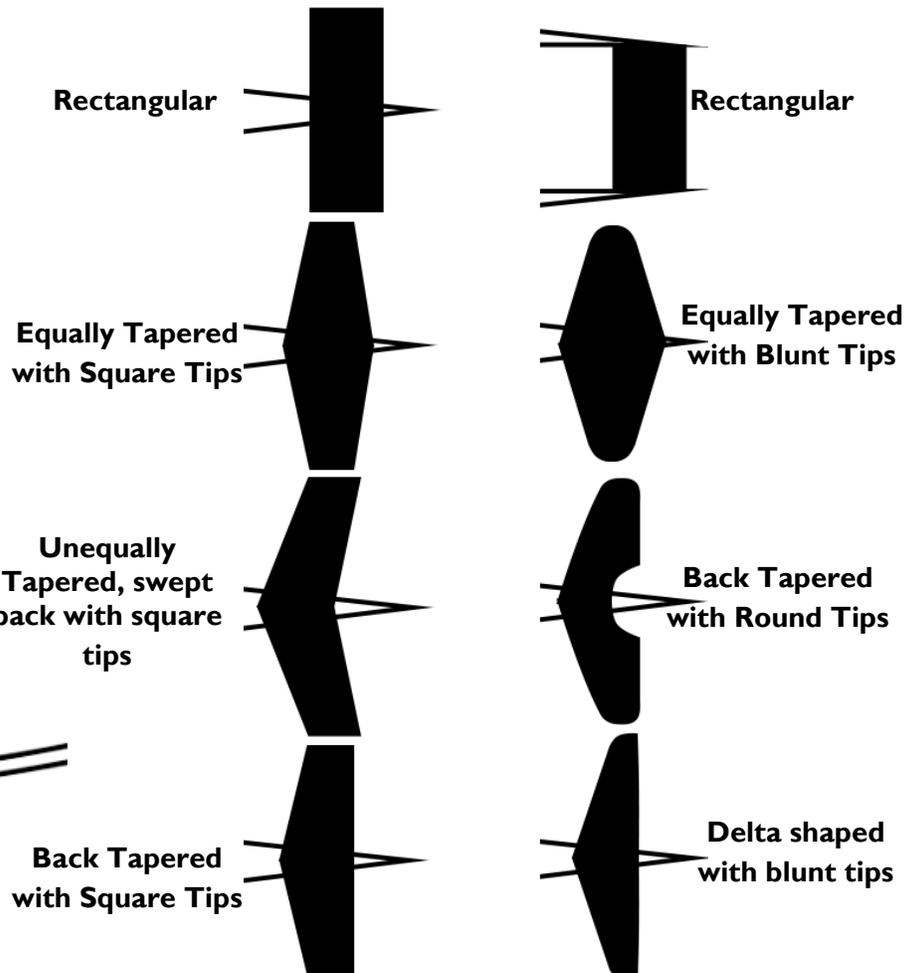
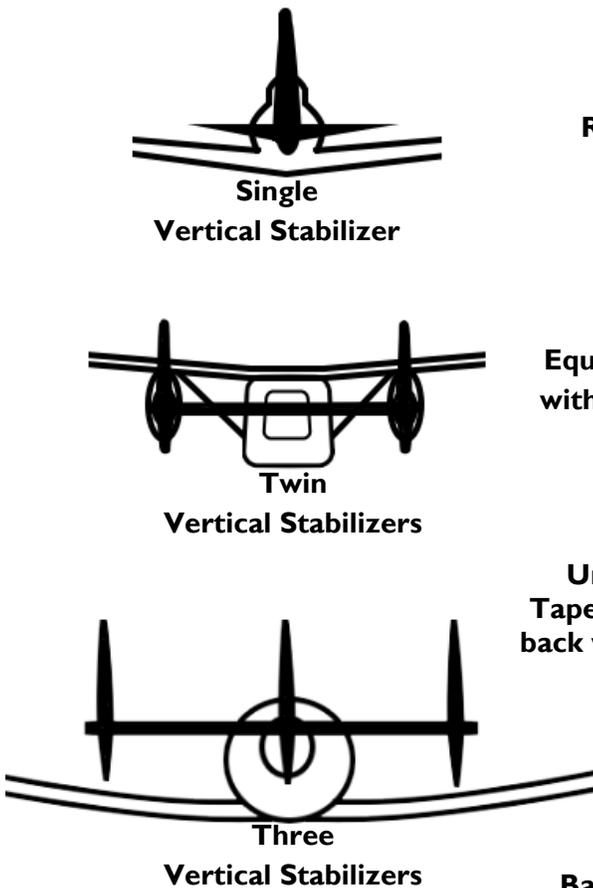
Review the illustrations in the right column. Note the location of the horizontal stabilizer on the vertical stabilizer and on the fuselage. Also review the different shapes.

The number of vertical stabilizers on an aircraft helps to distinguish aircraft types such as jets or propeller-driven aircraft. This reduces the number of aircraft that must be sorted through to identify a specific aircraft. The illustration below shows three examples of single and multiple fin aircraft fin locations.

HORIZONTAL STABILIZER



VERTICAL STABILIZER





Highlights

The Cessna 172 Skyhawk is a common aircraft in the Civil Air Patrol fleet. Skyhawks are equipped with direction finding equipment that allows aircrews to home in on signals transmitted by downed aircraft, boats in distress, or persons lost. The aircraft is a light weight, high wing aircraft that is ideal for search and rescue missions.

Fleet Models: E, K, M, N, P, Q, R, S

C-172 SKYHAWK

Span: 36 ft., 1in.
Length: 27 ft., 2 in.
Max Speed: 141 mph

Wing - High, Straight
Engine - Single Prop in Front
Fuselage - Square, Rear Tapered
Tail - High mount on fuselage



Highlights

The Cessna 182 Skylane is the primary aircraft in the Civil Air Patrol fleet. Although there are many models in the fleet, newer glass cockpit models are begin rotated in. The aircraft is similar to the Cessna 172, however it offers more power allowing aircrews to arrive to a search area faster. Like the Cessna 172, they are equipped with Direction Finding equipment. Many of the Skylanes are also equipped with satellite communication equipment to allow aircrews to send reconnaissance photos to a mission base while in flight.

Fleet Models: P, Q, R, T

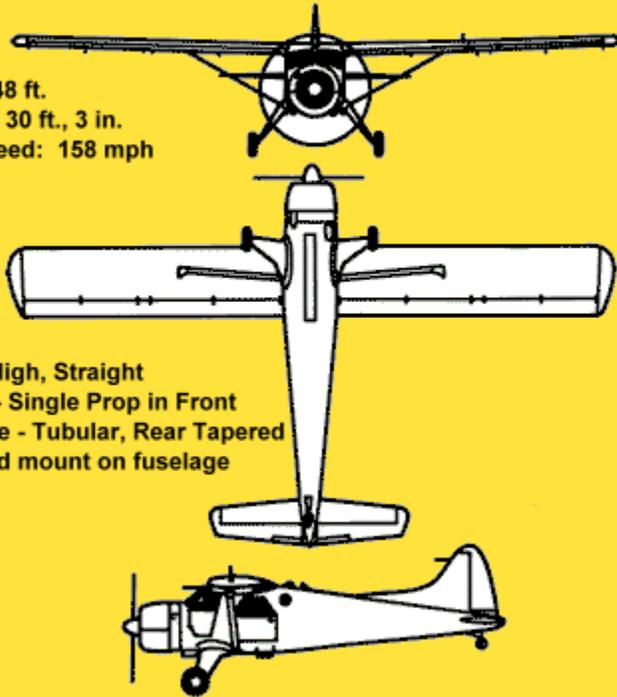
C-182 SKYLANE

Span: 36 ft
Length: 29 ft
Max Speed: 171 mph

Wing - High, Straight
Engine - Single Prop in Front
Fuselage - Square, Rear Tapered
Tail - High mount on fuselage

DHC-2 BEAVER

Span: 48 ft.
 Length: 30 ft., 3 in.
 Max Speed: 158 mph



Wing - High, Straight
 Engine - Single Prop in Front
 Fuselage - Tubular, Rear Tapered
 Tail - Mid mount on fuselage

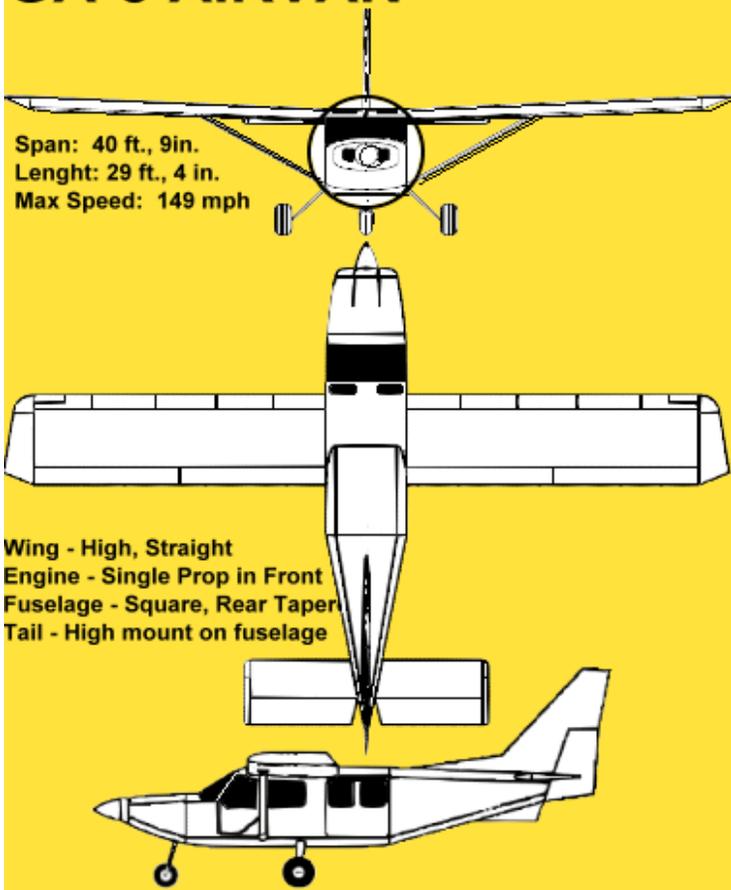


Highlights

The De Havilland DHC-2 Beaver is used by the Alaskan and Hawaii Wing for search and rescue missions. The Beaver has a powerful engine that allows high altitude flight over mountainous terrain. This aircraft is being phased out to do the high maintenance cost associated with lack of available parts.

GA-8 AIRVAN

Span: 40 ft., 9 in.
 Length: 29 ft., 4 in.
 Max Speed: 149 mph



Wing - High, Straight
 Engine - Single Prop in Front
 Fuselage - Square, Rear Tapered
 Tail - High mount on fuselage



Highlights

The Gippsland GA-8 Airvan is primarily used as the ARCHER platform. The aircraft is imported from Australia. It features a very strong fixed tricycle landing gear system. The aircraft can hold a total aircrew up to six persons, however during an ARCHER operations, the aircrew usually totals no more than four. The ARCHER system utilizes a hyper spectral camera system that assist operator with identifying objects that may potentially be the search target. Like the Cessna aircraft in the fleet, the high wing design makes a great observation platform for aircrews.



Highlights

The Schweizer glider is easy to fly, of simple construction, and quite rugged and forgiving of a lot of abuse, it serves its role as a trainer very well. It is primarily used as an orientation aircraft in the cadet program.

Fleet Models: SGS 1-26, SGS 1-34, SGU 2-22, SGS 2-23, ASK 21

Schweizer 1-34

Span: 49 ft
Length: 25 ft

Wing - High, Straight-Tapered
Engine - None
Fuselage - Round, Tapered
Tail - Low Mount on Tail



Highlights

The L-23 Super Blanik glider is an all-metal, two-seat, self-supporting, high-winged glider. Due to its all-metal construction, the glider is guaranteed a service life of 6,000 hours assuming that mostly ground-launching is used. It is primarily used as an orientation aircraft in the cadet program.

Fleet Models: L-23, L-13

Super Blanik L-23

Span: 53 ft
Length: 28 ft

Wing - High, Forward-Tapered
Engine - None
Fuselage - Round, Tapered
Tail - High mount on Tail

SUMMARY

1. What are the four main features of an aircraft when using visual recognition techniques?

- a. _____ b. _____
c. _____ d. _____

2. Identify the following aircraft:





3. Describe the wings on the following aircraft.



4. Describe the tail on this aircraft.



5. Describe the rear of the fuselage.



6. Describe the front of the fuselage.



NOTES
