

CLASSIFICATION OF AIRCRAFT

- AS PER LIFTING SURFACES
 - ROTARY WING



CLASSIFICATION OF AIRCRAFT

- AS PER LIFTING SURFACES
 - ROTARY WING



CLASSIFICATION OF AIRCRAFT

- AS PER LIFTING SURFACES
 - ROTARY WING



CLASSIFICATION OF AIRCRAFT

- AS PER LIFTING SURFACES
 - FIXED WING



CLASSIFICATION OF AIRCRAFT

- AS PER LIFTING SURFACES
 - FIXED WING



CLASSIFICATION OF AIRCRAFT

- AS PER POWER PLANT USED
 - PISTON ENGINED



CLASSIFICATION OF AIRCRAFT

- AS PER POWER PLANT USED
 - PISTON ENGINE



CLASSIFICATION OF AIRCRAFT

- AS PER POWER PLANT USED
 - TURBINE POWERED - TURBOPROP



CLASSIFICATION OF AIRCRAFT

- AS PER POWER PLANT USED
 - TURBINE POWERED - TURBOJET



CLASSIFICATION OF AIRCRAFT

- AS PER POWER PLANT USED
 - TURBINE POWERED - TURBOJET



CLASSIFICATION OF AIRCRAFT

- AS PER POWER PLANT USED
 - TURBINE POWERED - TURBOFAN



CLASSIFICATION OF AIRCRAFT

- AS PER POWER PLANT USED
 - TURBINE POWERED - TURBOFAN



CLASSIFICATION OF AIRCRAFT

- AS PER POWER PLANT USED
 - TURBINE POWERED - TURBOFAN





CLASSIFICATION OF AIRCRAFT

- AS PER POWER PLANT USED
 - RAMJET
 - SCRAMJET
 - ROCKETS

X-43A





CLASSIFICATION OF AIRCRAFT

○ BASED ON ROLE

- FIGHTERS
- CLOSE AIR COMBAT
- RECONNAISSANCE
- TRANSPORT
- CARGO
- PASSENGER
- SEARCH AND RESCUE

CLASSIFICATION OF AIRCRAFT

○ BASED ON SPEED

- What is Mach number?

- $M = v/a$ in the same medium

where $v =$ speed of the object

$a =$ local speed of sound

$= \sqrt{\gamma R T}$

CLASSIFICATION OF AIRCRAFT

○ BASED ON SPEED

- LOW SUBSONIC [$M < 0.5$]
- HIGH SUBSONIC [$0.5 < M < M_{crit}$]
- SUPERSONIC [$M > M_{SA}$]
- HYPERSONIC [$M > 5$]

CLASSIFICATION OF AIRCRAFT

- BASED ON
ENGINE LOCATION
 - UNDERSLUNG



CLASSIFICATION OF AIRCRAFT

- BASED ON
ENGINE LOCATION
 - OVERSLUNG



CLASSIFICATION OF AIRCRAFT

- BASED ON
ENGINE LOCATION
 - EMBEDDED



CLASSIFICATION OF AIRCRAFT

- BASED ON NUMBER OF ENGINES
 - SINGLE ENGINED



CLASSIFICATION OF AIRCRAFT

- BASED ON NUMBER OF ENGINES
 - SINGLE ENGINED



CLASSIFICATION OF AIRCRAFT

- BASED ON NUMBER OF ENGINES
 - TWIN ENGINED



CLASSIFICATION OF AIRCRAFT

- BASED ON NUMBER OF ENGINES
 - TWIN ENGINED



CLASSIFICATION OF AIRCRAFT

- BASED ON NUMBER OF ENGINES
 - TWIN ENGINED



CLASSIFICATION OF AIRCRAFT

- BASED ON NUMBER OF ENGINES
 - TWIN ENGINED



CLASSIFICATION OF AIRCRAFT

- BASED ON NUMBER OF ENGINES
 - MULTI-ENGINE



CLASSIFICATION OF AIRCRAFT

- BASED ON NUMBER OF ENGINES
 - MULTI-ENGINE



CLASSIFICATION OF AIRCRAFT

- BASED ON NUMBER OF ENGINES
 - MULTI-ENGINE



CLASSIFICATION OF AIRCRAFT

- BASED ON NUMBER OF ENGINES
 - MULTI-ENGINE



CLASSIFICATION OF AIRCRAFT

- BASED ON PROPELLER LOCATION
 - PUSHER



CLASSIFICATION OF AIRCRAFT

- BASED ON PROPELLER LOCATION
 - PUSHER



CLASSIFICATION OF AIRCRAFT

- BASED ON PROPELLER LOCATION
 - PUSHER



CLASSIFICATION OF AIRCRAFT

- BASED ON PROPELLER LOCATION
 - PULLER



CLASSIFICATION OF AIRCRAFT

- BASED ON PROPELLER LOCATION
 - PULLER



CLASSIFICATION OF AIRCRAFT

- BASED ON PROPELLER LOCATION
 - TILT ROTOR



CLASSIFICATION OF AIRCRAFT

- BASED ON PROPELLER LOCATION
 - TILT ROTOR



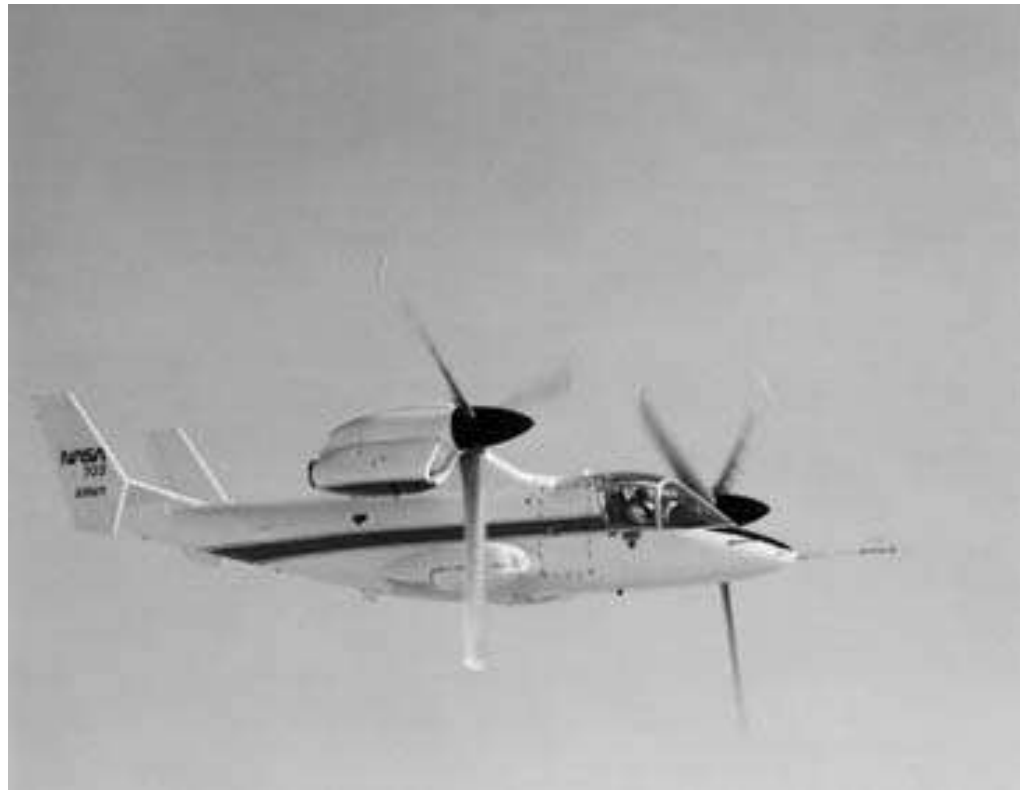
CLASSIFICATION OF AIRCRAFT

- BASED ON PROPELLER LOCATION
 - TILT ROTOR



CLASSIFICATION OF AIRCRAFT

- BASED ON PROPELLER LOCATION
 - TILT ROTOR



CLASSIFICATION OF AIRCRAFT

- BASED ON WING LOCATION



High-wing



Mid-wing



Low-wing

CLASSIFICATION OF AIRCRAFT

- BASED ON WING LOCATION
 - LOW WING



CLASSIFICATION OF AIRCRAFT

- BASED ON WING LOCATION
 - LOW WING



CLASSIFICATION OF AIRCRAFT

- BASED ON WING LOCATION
 - HIGH WING



CLASSIFICATION OF AIRCRAFT

- BASED ON WING LOCATION
 - HIGH WING



CLASSIFICATION OF AIRCRAFT

- BASED ON WING LOCATION
 - HIGH WING



CLASSIFICATION OF AIRCRAFT

- BASED ON WING LOCATION
 - MID WING



CLASSIFICATION OF AIRCRAFT

- BASED ON WING LOCATION
 - CANARD



CLASSIFICATION OF AIRCRAFT

- BASED ON WING LOCATION
 - CANARD



CLASSIFICATION OF AIRCRAFT

- BASED ON WING LOCATION
 - CANARD



CLASSIFICATION OF AIRCRAFT

- BASED ON WING LOCATION
 - CANARD



CLASSIFICATION OF AIRCRAFT

- BASED ON WING LOCATION
 - CANARD



CLASSIFICATION OF AIRCRAFT

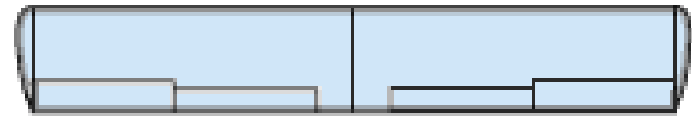
- BASED ON WING PLANFORM
 - STRAIGHT WING



CLASSIFICATION OF AIRCRAFT

- BASED ON WING PLANFORM

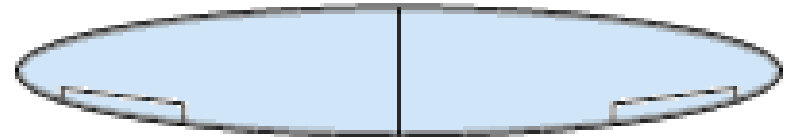
- STRAIGHT



- TAPERED

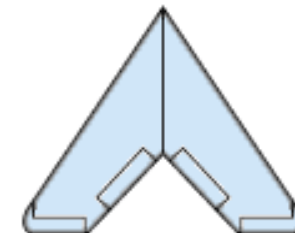
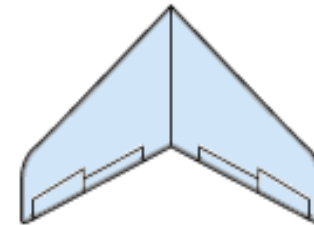
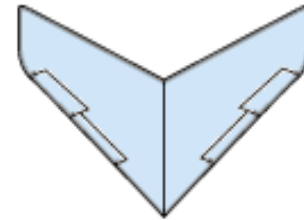


- ELLIPTICAL



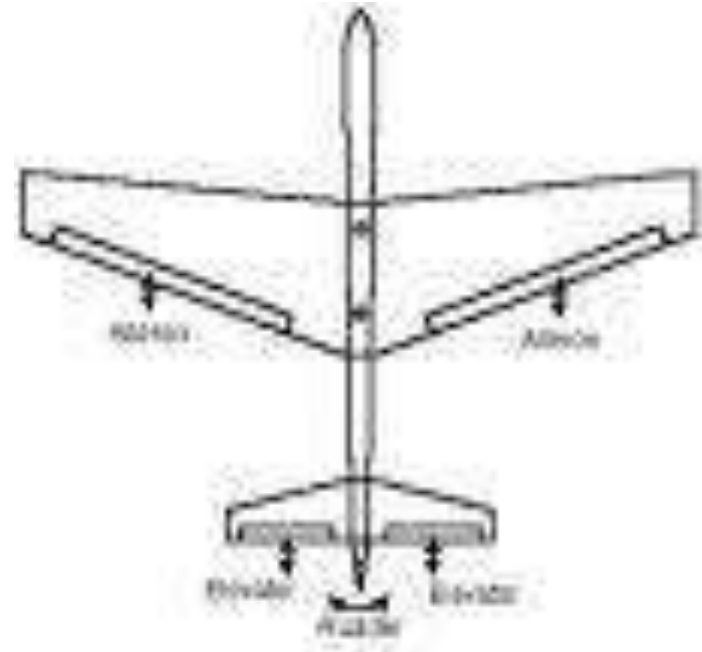
CLASSIFICATION OF AIRCRAFT

- BASED ON WING PLANFORM
 - FORWARD SWEEP
 - SWEPT BACK



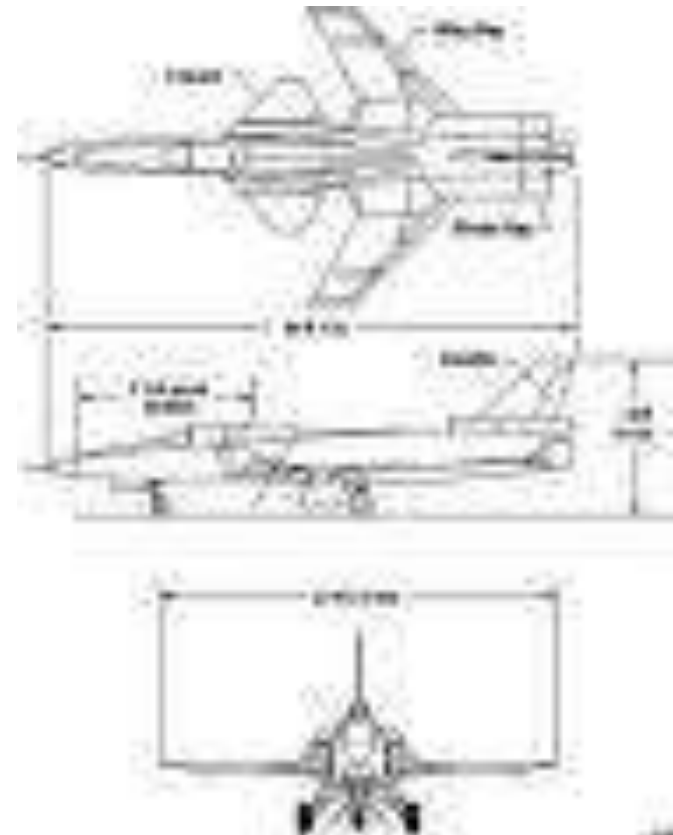
CLASSIFICATION OF AIRCRAFT

- BASED ON WING
PLANFORM
FORWARD SWEEP



CLASSIFICATION OF AIRCRAFT

- BASED ON WING PLANFORM
 - FORWARD SWEEP



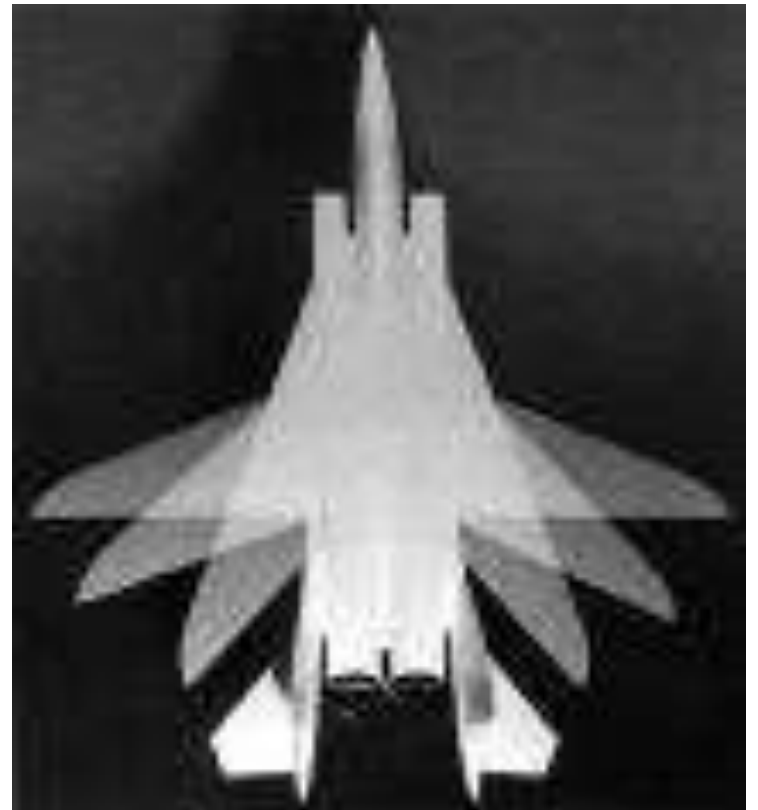
CLASSIFICATION OF AIRCRAFT

- BASED ON WING PLANFORM
 - SWEEPED BACK



CLASSIFICATION OF AIRCRAFT

- BASED ON WING PLANFORM
 - SWEPT WING
 - VARIABLE SWEEP



CLASSIFICATION OF AIRCRAFT

- BASED ON WING PLANFORM
 - SWEPT WING
 - VARIABLE SWEEP



CLASSIFICATION OF AIRCRAFT

- BASED ON WING PLANFORM
 - DELTA WING



CLASSIFICATION OF AIRCRAFT

- BASED ON WING PLANFORM
 - DELTA WING



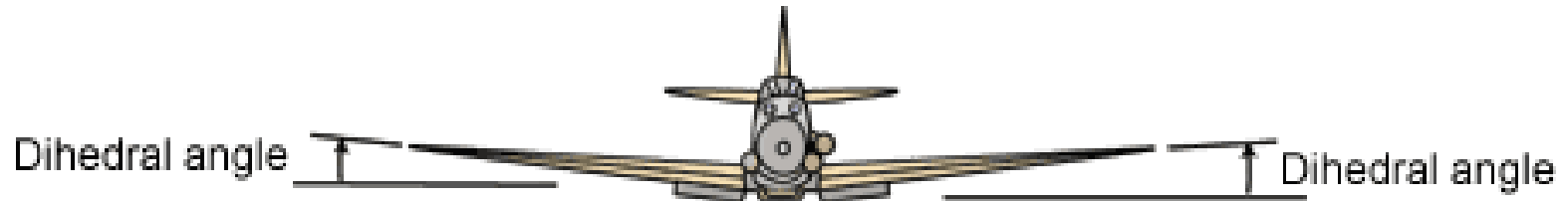
CLASSIFICATION OF AIRCRAFT

- BASED ON WING PLANFORM
 - DELTA WING



CLASSIFICATION OF AIRCRAFT

- BASED ON WING ANGLES
 - DIHEDRAL



CLASSIFICATION OF AIRCRAFT

- BASED ON WING ANGLES
 - DIHEDRAL



CLASSIFICATION OF AIRCRAFT

- BASED ON WING ANGLES
 - ANHEDRAL



CLASSIFICATION OF AIRCRAFT

- BASED ON WING ANGLES
 - ANHEDRAL



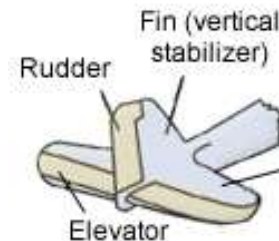
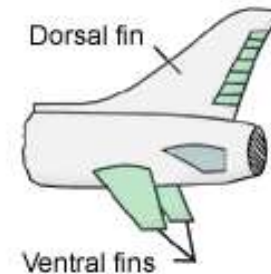
CLASSIFICATION OF AIRCRAFT

- BASED ON WING ANGLES
 - ANHEDRAL

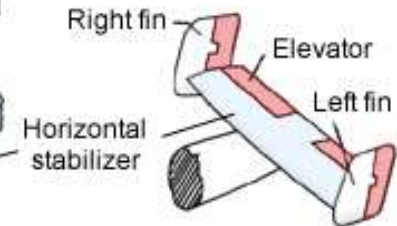


CLASSIFICATION OF AIRCRAFT

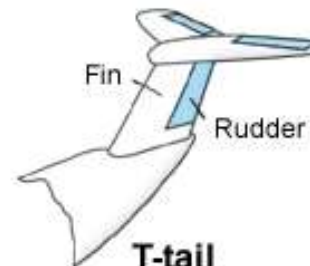
- BASED ON TAIL CONFIGURATION



Standard Tail



Twin Tail



T-tail



V-Butterfly-Tail

CLASSIFICATION OF AIRCRAFT

- BASED ON TAIL CONFIGURATION
 - V TAIL



CLASSIFICATION OF AIRCRAFT

- BASED ON TAIL CONFIGURATION
 - T TAIL



CLASSIFICATION OF AIRCRAFT

- BASED ON TAIL CONFIGURATION
 - 3 TAIL



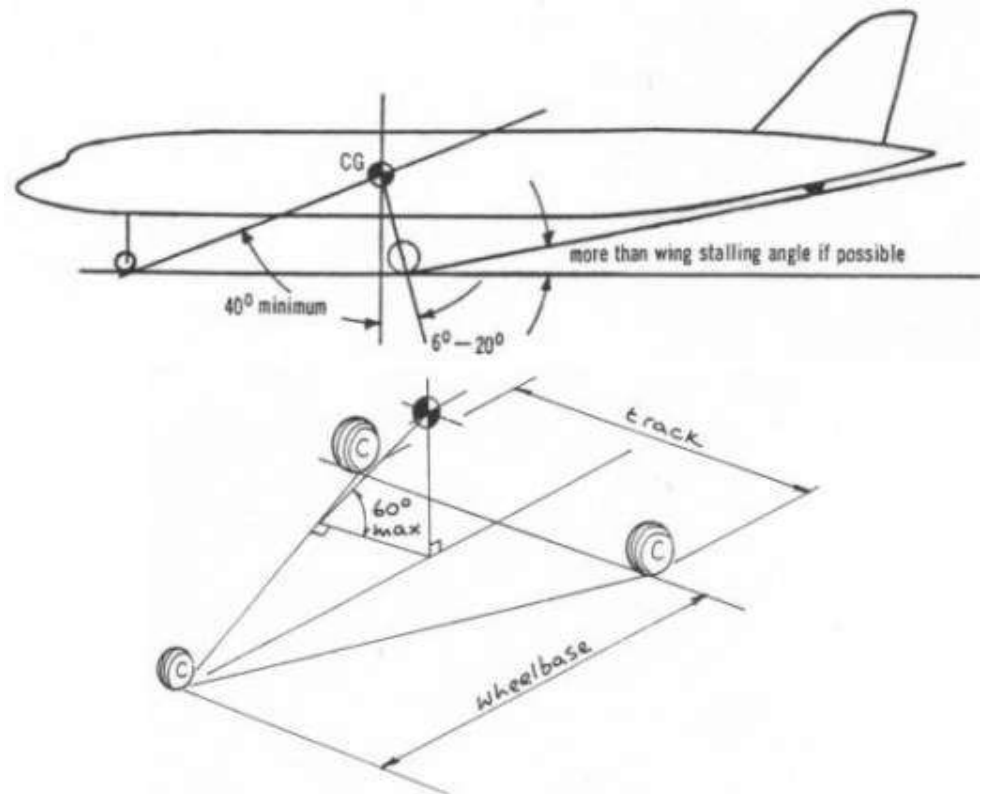
CLASSIFICATION OF AIRCRAFT

- BASED ON TAIL CONFIGURATION
 - 3 TAIL



CLASSIFICATION OF AIRCRAFT

- BASED ON UNDERCARRIAGE CONFIGURATION
 - TRICYCLE



CLASSIFICATION OF AIRCRAFT

- BASED ON UNDERCARRIAGE CONFIGURATION
 - TAILDRAGGER



CLASSIFICATION OF AIRCRAFT

- BASED ON UNDERCARRIAGE CONFIGURATION
 - BOGIE



CLASSIFICATION OF AIRCRAFT

- BASED ON UNDERCARRIAGE CONFIGURATION
 - TANDEM



CLASSIFICATION OF AIRCRAFT

- BASED ON FUSELAGE / WING
 - BIPLANES



CLASSIFICATION OF AIRCRAFT

- BASED ON FUSELAGE / WING
 - BIPLANES



CLASSIFICATION OF AIRCRAFT

- BASED ON FUSELAGE / WING ATTACHMENT

- WIRE BRACED
- TRUSSES



CLASSIFICATION OF AIRCRAFT

- BASED ON FUSELAGE / WING ATTACHMENT

- BRACED OR SEMI- CANTILEVER



CLASSIFICATION OF AIRCRAFT

- BASED ON FUSELAGE / WING ATTACHMENT
 - CANTILEVERED



CLASSIFICATION OF AIRCRAFT

- BASED ON FUSELAGE / WING
 - TWIN POD/BOOM
 - SAAB J-21A



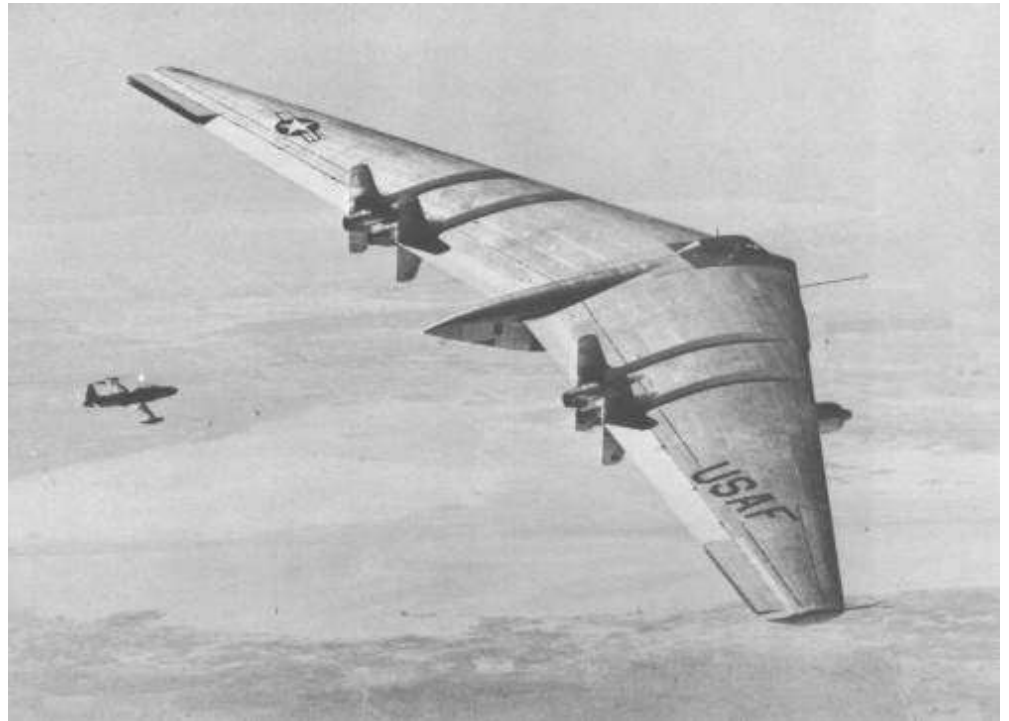
CLASSIFICATION OF AIRCRAFT

- BASED ON FUSELAGE / WING
 - FLYING WING



CLASSIFICATION OF AIRCRAFT

- BASED ON FUSELAGE / WING
 - FLYING WING



CLASSIFICATION OF AIRCRAFT

- BASED ON FUSELAGE / WING

- FLYING WING



Northrop B-49: flying wing

CLASSIFICATION OF AIRCRAFT

- BASED ON FUSELAGE / WING

- FLYING WING



CLASSIFICATION OF AIRCRAFT

- BASED ON FUSELAGE / WING
 - FLYING WING



CLASSIFICATION OF AIRCRAFT

- BASED ON FUSELAGE / WING
 - FLYING WING



CLASSIFICATION OF AIRCRAFT

- BASED ON FUSELAGE / WING
 - FLYING WING





ASSIGNMENT NO.1

- **CHOOSE 05 AIRCRAFT EACH**
- **EACH AIRCRAFT SHOULD BE OF A DIFFERENT TYPE – e.g. FIGHTERS, TRANSPORT, AIRSHIP, HELICOPTERS, BIPLANES**
- **DRAW FREE HAND SKETCHES OF ALL THREE VIEWS OF THE AIRCRAFT**



Thank you

Additional Slides For Info





Fixed-wing

The forerunner of the fixed-wing aircraft is the kite.

Whereas a fixed-wing aircraft relies on its forward speed to create airflow over the wings, a kite is tethered to the ground and relies on the wind blowing over its wings to provide lift.

Kites were the first kind of aircraft to fly, and were invented in China around 500 BC. Much aerodynamic research was done with kites before test aircraft, wind tunnels.



The first heavier-than-air craft capable of controlled free-flight were gliders.

A glider designed by Cayley carried out the first true manned, controlled flight in 1853.

Otto Lilienthal was the first to fly heavier than air craft in a consistent and frequent pattern.

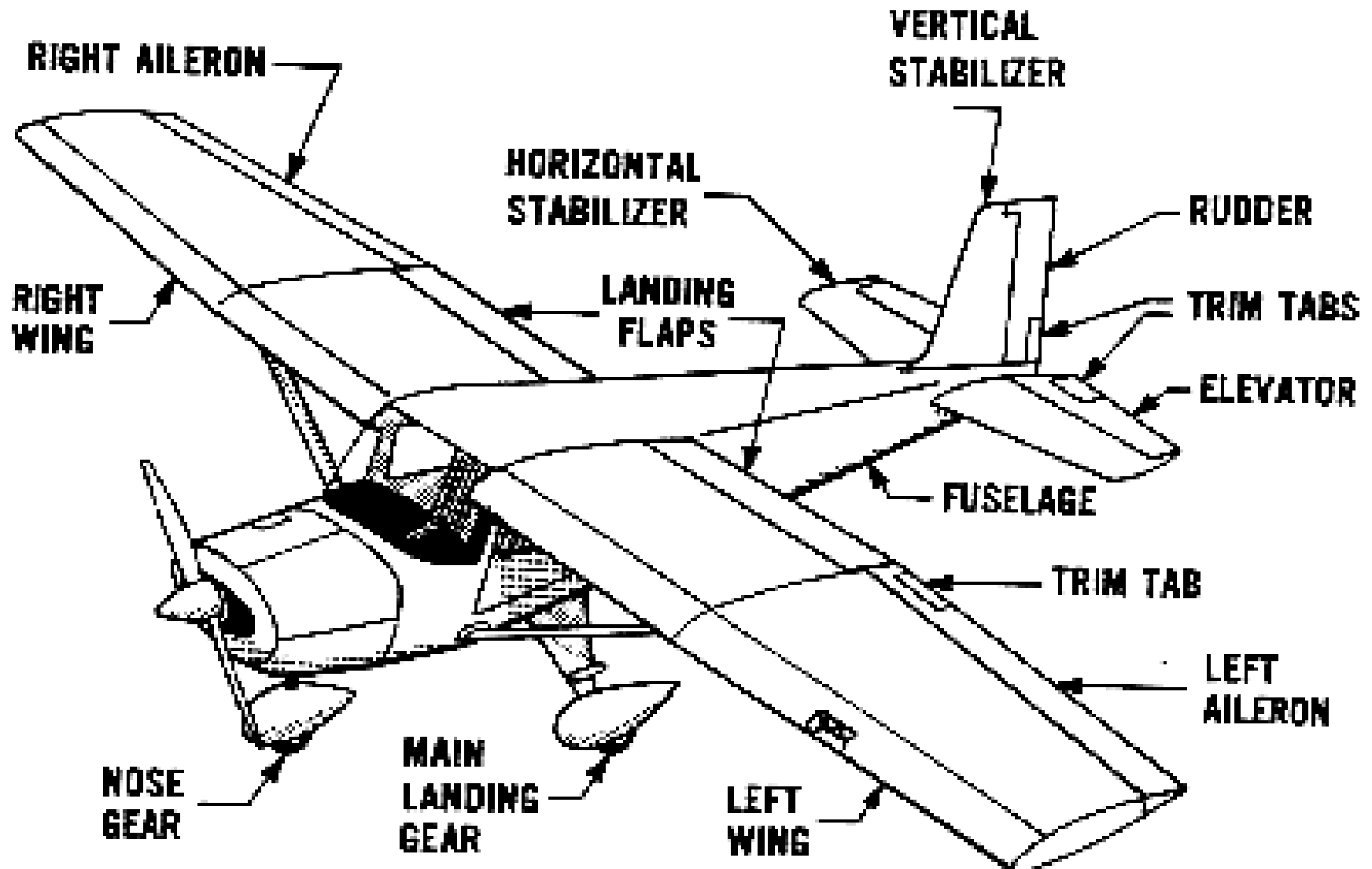
Practical, powered, fixed-wing aircraft (the aeroplane or airplane) were invented by **Wilbur** and **Orville Wright**.

PARTS OF AEROPLANE

THE IMPORTANT PARTS OF AN AEROPLANE

- **WINGS**
- **FUSELAGE**
- **EMPENNAGE**
- **LANDING GEARS**
- **CONTROL SURFACE**
- **ENGINES**

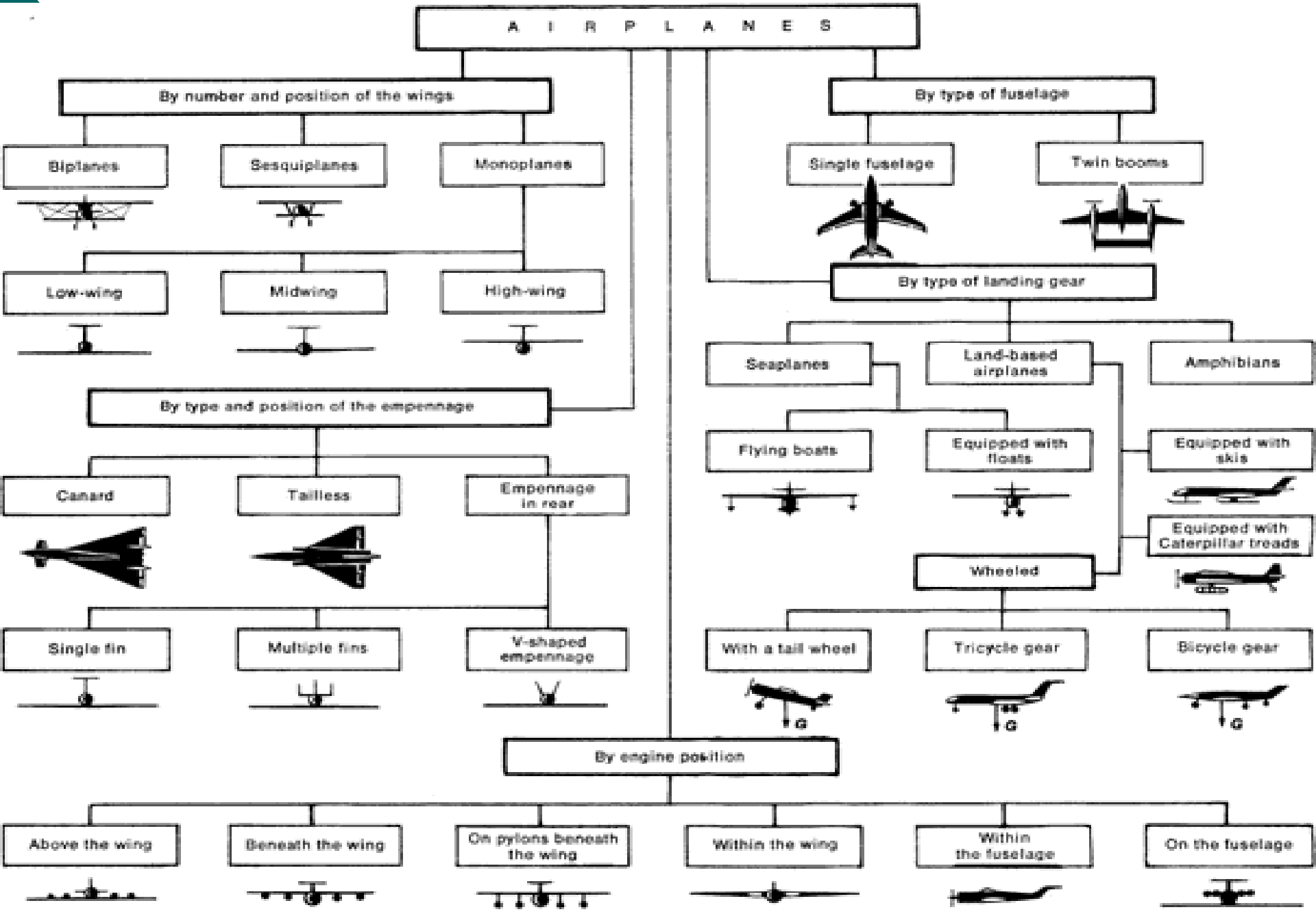
PARTS OF AEROPLANE



FIXED WING CLASSIFICATION

- Speed - Subsonic, Transonic, and Hypersonic**
- Engines - Piston-prop, Turbo-prop and Turbo-jet**
- Engine Mount- Fuselage, Over wing, Underslung**
- Wings Planform - Rectangular, Tapered, Sweepback, Delta**
- Wing Position - High wing, Mid wing, Low wing**

AEROPLANES CLASSIFICATION



AIRCRAFT : CLASSIFICATION AND PARTS

1. CLASSIFICATION BY CONFIGURATION

POSITION OF THE WING

- LOW WING
- MID WING
- HIGH WING

○ NUMBER OF WINGS

- MONO PLANE
- BI PLANE
- TRI PLANE

○ SHAPE OF THE WINGS

- DELTA WING
- DIAMOND WING
- SWEPT WING
- TAPERED WING

○ POSITION OF THE WINGS

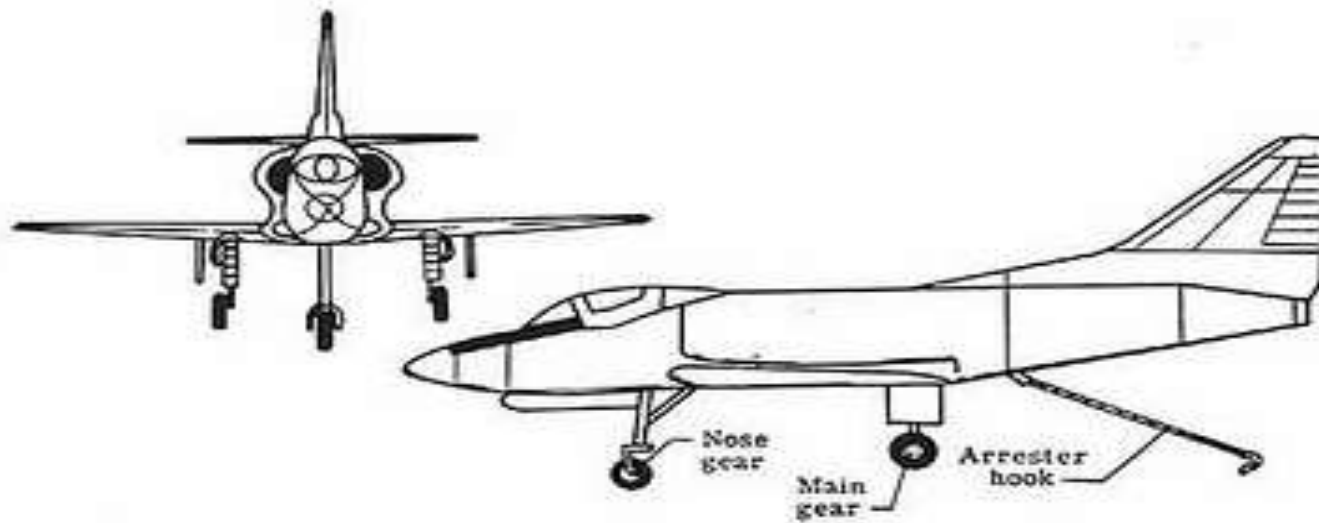
- CONVENTIONAL WING
- NO TAIL OR TALESS
- HORIZONTAL TAIL LOCATED ABOVE THE VERTICAL TAIL
- CANARD TYPE



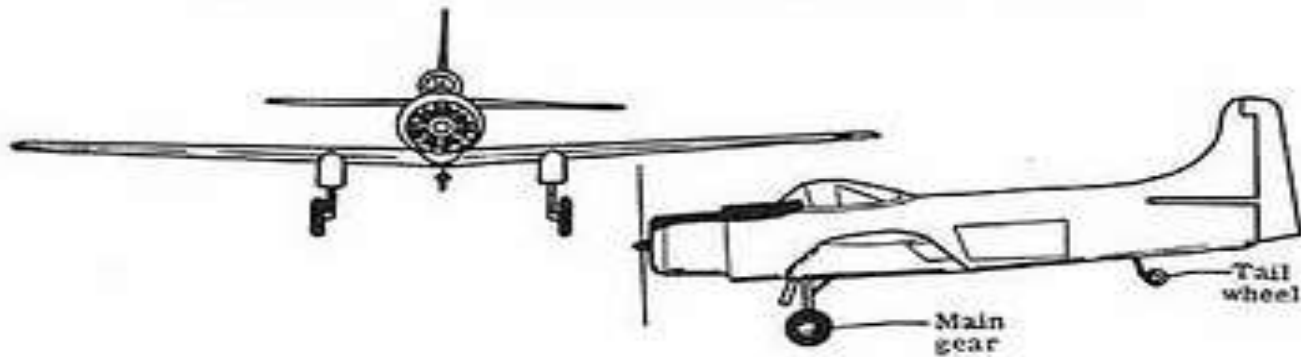
AIRCRAFT : CLASSIFICATION AND PARTS

LOCATION AND TYPE OF LANDING GEAR

- RETRACTABLE
- NON RETRACTABLE
- TAIL WHEEL
- NOSE WHEEL



(a) Tricycle gear – nose wheel, two main wheels.



(b) Conventional gear – tail wheel, two main wheels.



(c) Unconventional gear – skis, skids, or floats.



AIRCRAFT : CLASSIFICATION AND PARTS

TYPES OF FUSELAGE

- ROUND
- SQUARE
- OVAL

AIRCRAFT : CLASSIFICATION AND PARTS

B. CLASSIFICATION BY POWER PLANTS

A. POWER PLANT TYPES

- PISTON ENGINE
- TURBO PROP
- TURBO SHAFT
- TURBO JET
- TURBO FAN
- ROCKET

B. NUMBER OF ENGINES

- SINGLE ENGINE
- TWO ENGINE
- MULTI ENGINE

C. LOCATION OF THE ENGINES

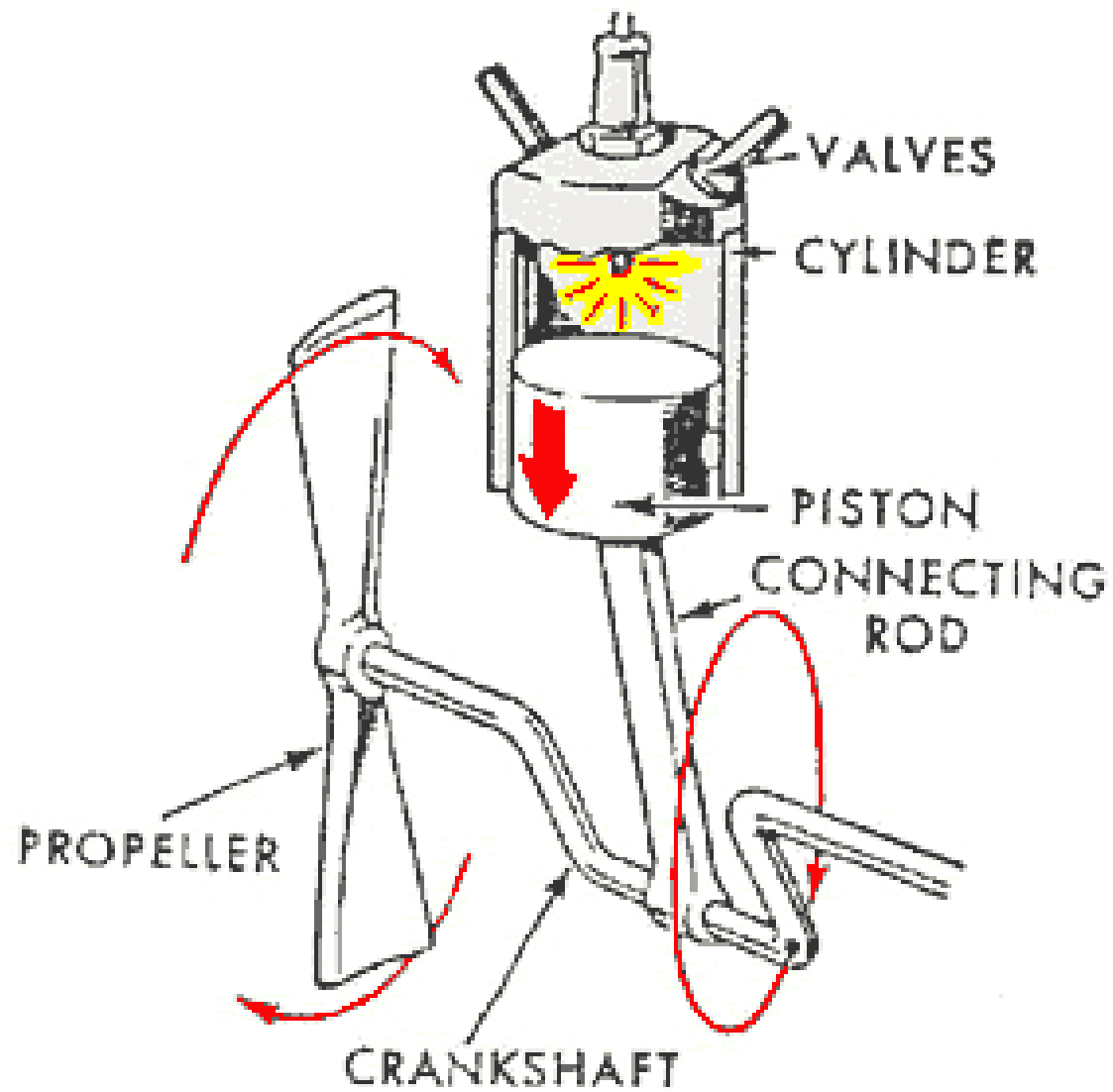
- NOSE
- FUSELAGE
- JET ENGINE SUBMERGED IN WING
- PYLON MOUNTED



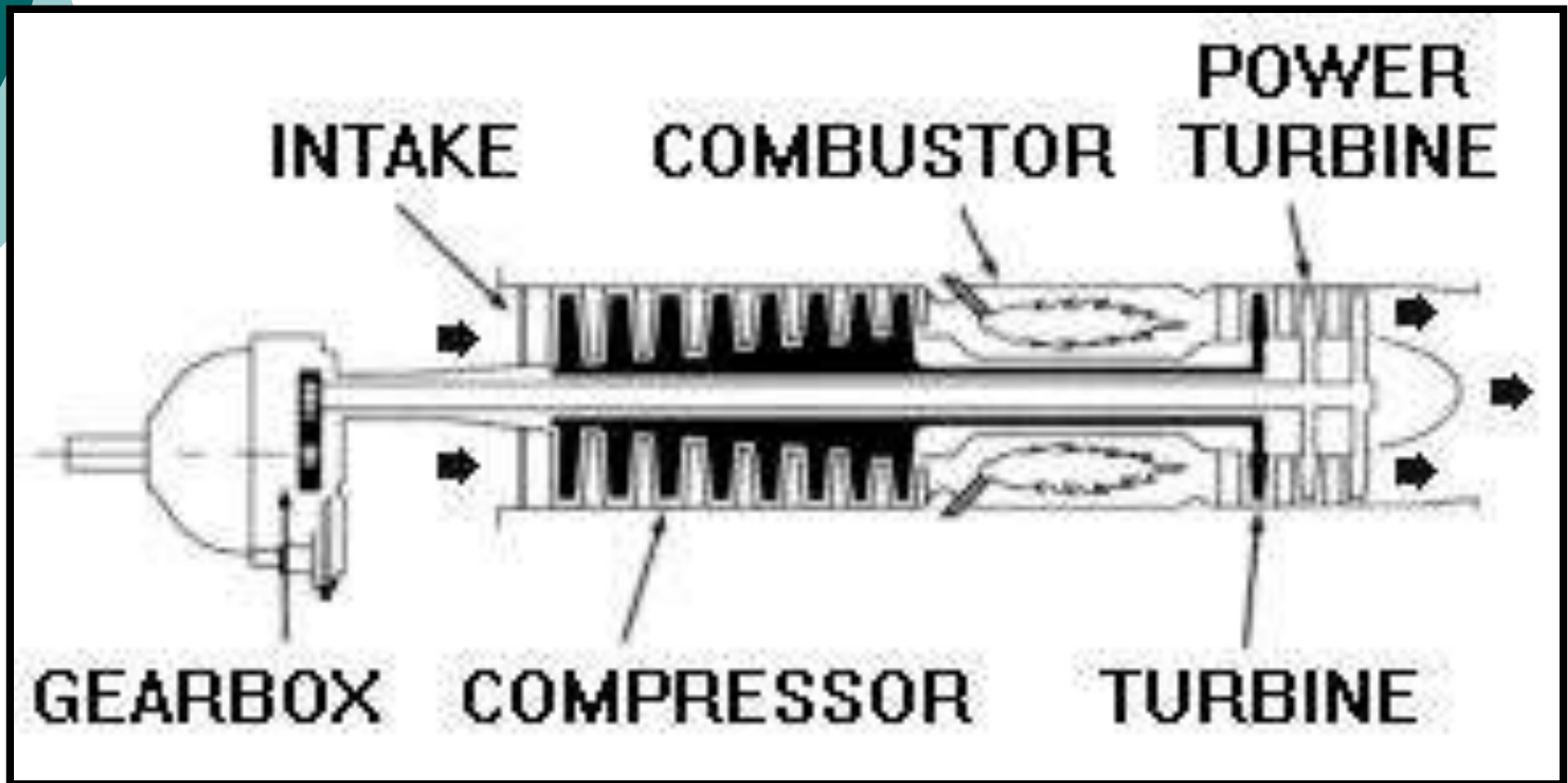
AIRCRAFT ENGINES

DIFFERENT TYPES OF AIRCRAFT ENGINES ARE

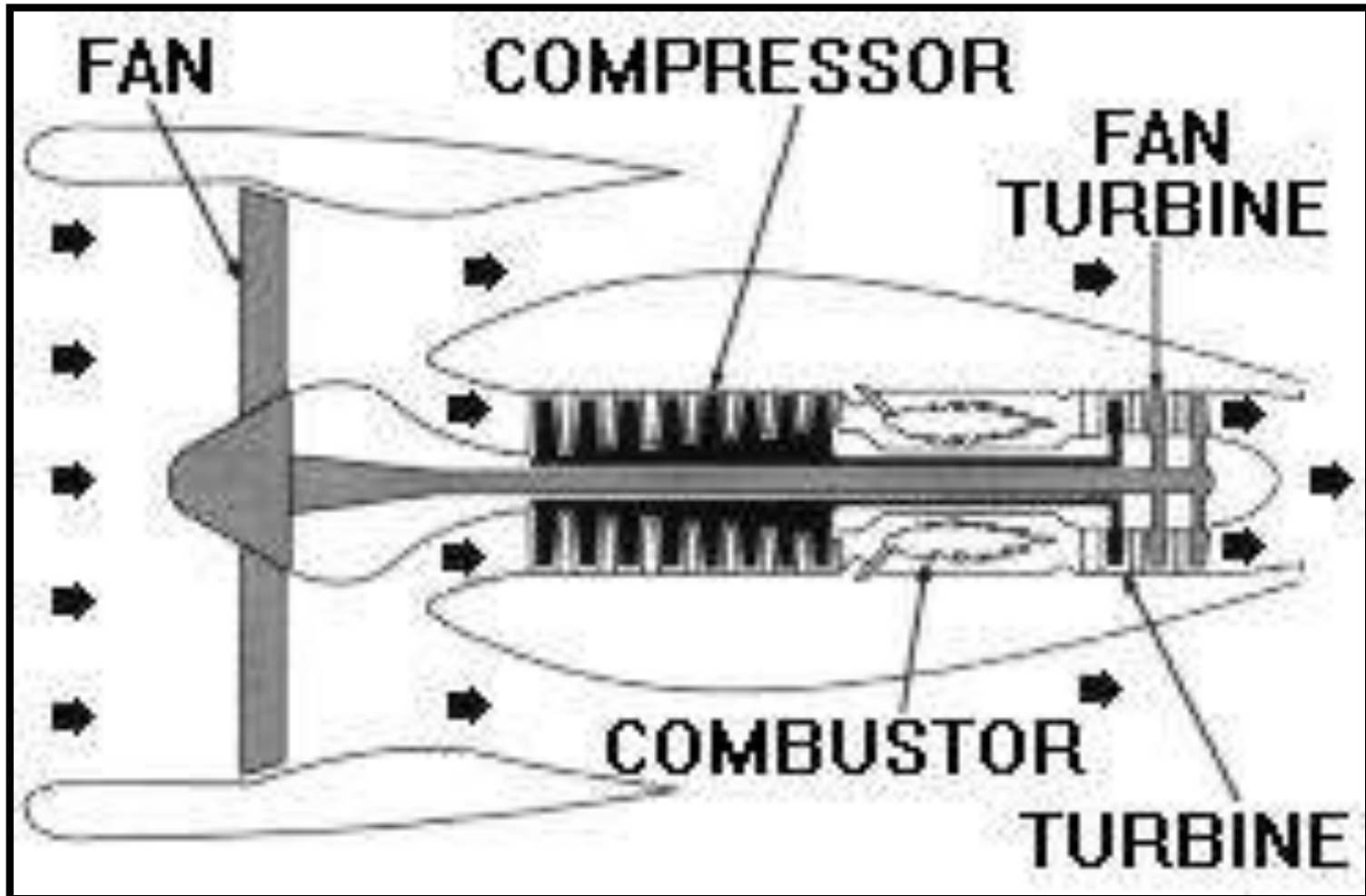
- PROPELLER WITH PISTON ENGINE
- JET ENGINE
 - TURBOPROP
 - TURBOFAN
 - TURBOJET
 - RAMJET
- ROCKET ENGINE



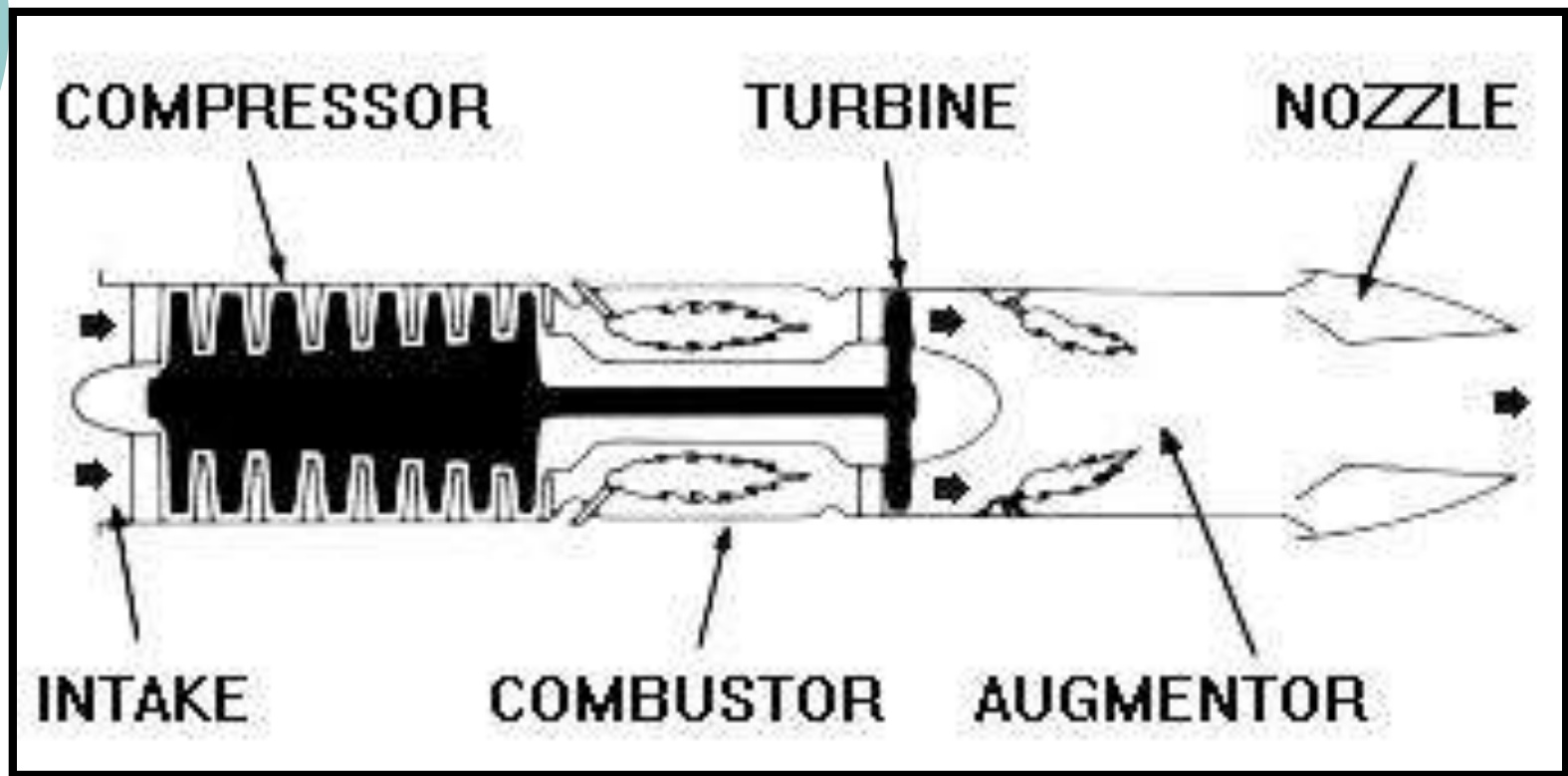
TURBOPROP



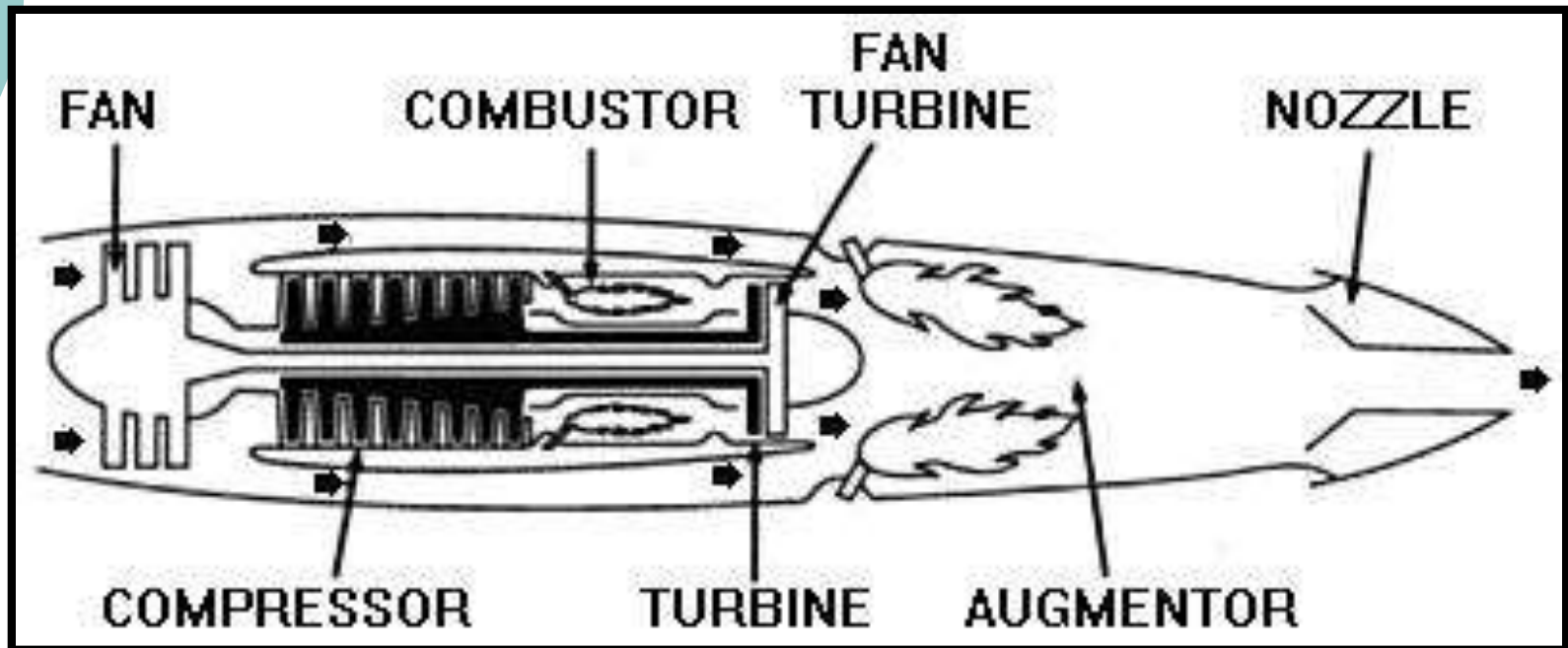
TURBOFAN



TURBOJET

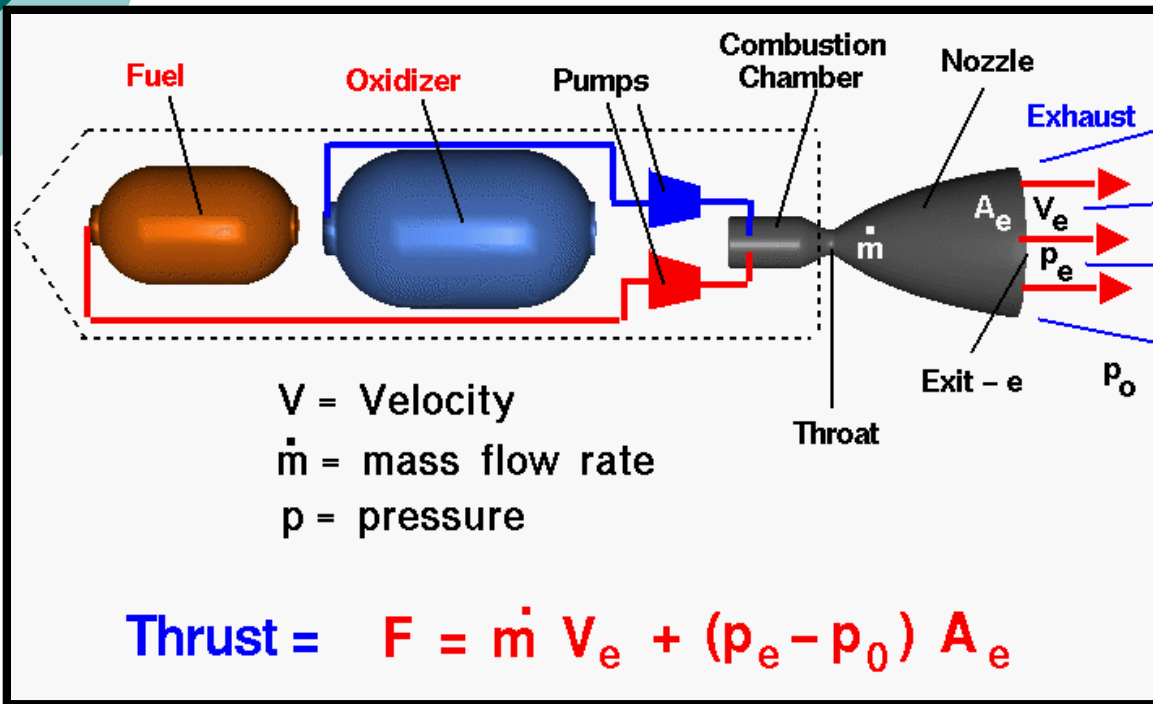


TURBOJET WITH AFTERBURNER

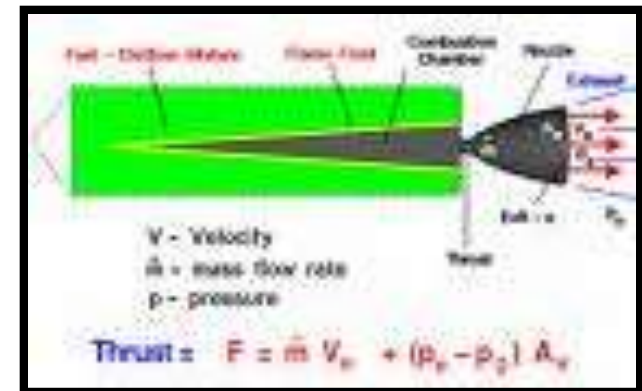


ROCKET ENGINE

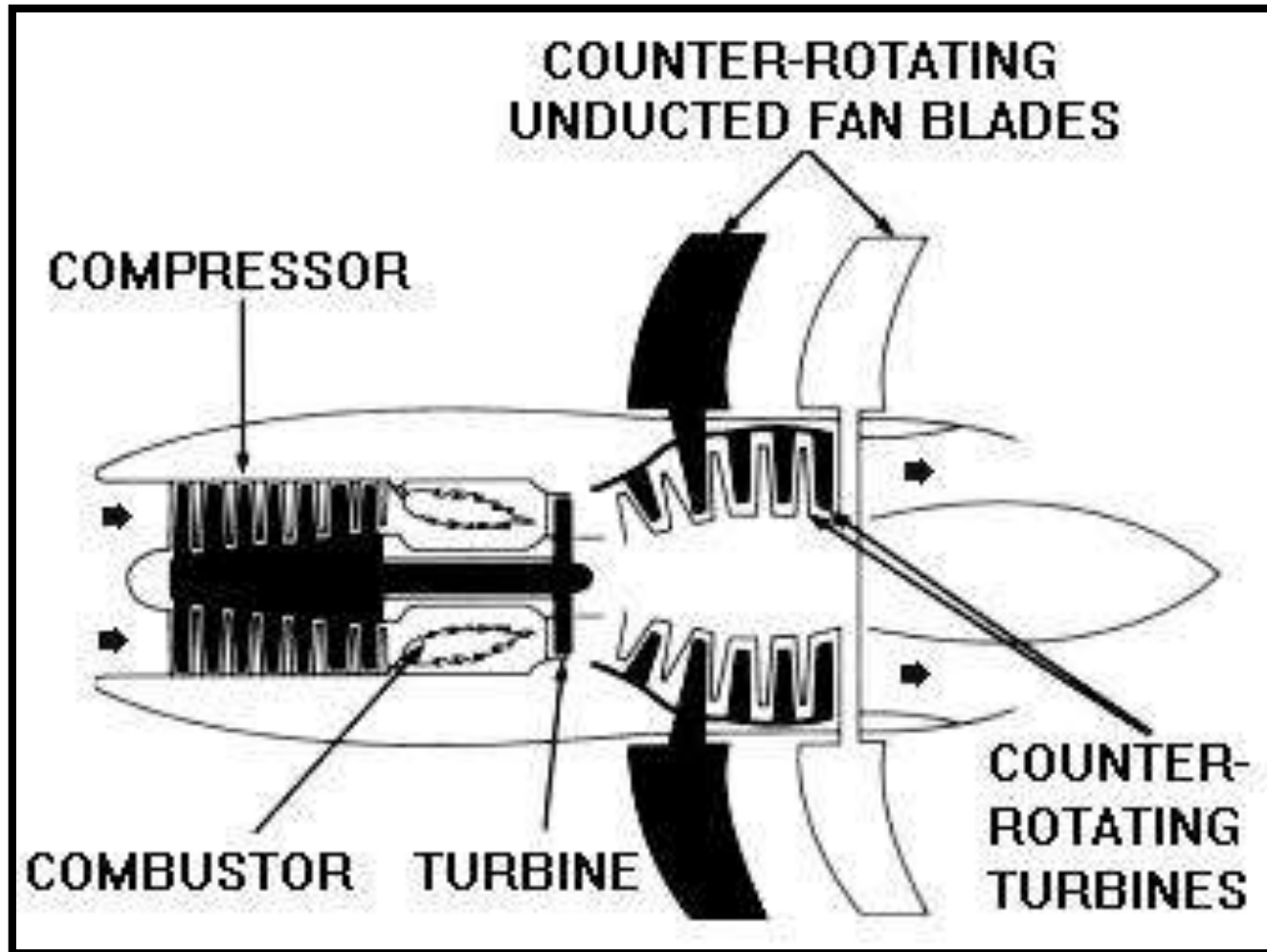
LIQUID FUEL



SOLID FUEL



PUSHER



5. CLASSIFICATION BY PURPOSE

- A. CIVIL
- B. CARGO
- C. MILITARY
 - I. BOMBERS
 - II. FIGHTERS
 - III. INTERCEPTORS



THANK YOU